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## **Safety**

Dixon's couplings and retention devices are designed to work safely for their intended use. The selection of the proper hose, coupling, and retention device, and the proper application of the coupling to the hose are of utmost importance.

Users must consider the size, temperature, application, media, pressure, and hose and coupling manufacturer's recommendations when selecting the proper hose assembly components. Dixon recommends that all hose assemblies be tested in accordance with the Association for Rubber Products Manufacturers' (ARPM) recommendations and be inspected regularly (before each use) to ensure that they are not damaged and have not become loose. Visit [ARPMINC.com](http://ARPMINC.com) for more information.

Where safety devices are integral to the coupling, they must be working and utilized. The use of supplementary safety devices such as safety clips or safety cables is recommended.

If any problem is detected, couplings must be removed from service immediately.

Dixon is available to consult, train, and recommend the proper selection and application of all fittings we sell. We strongly recommend that distributors and end users make use of Dixon's testing and recommendation services. Call 877.963.4966 or click [dixonvalve.com](http://dixonvalve.com) to learn more.

# Cryogenic Dry Disconnect Couplings



## Applications:

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

## Sizes:

- 1" - 6"

## Features:

- Single-action operation uses a straight-forward turning motion to connect the couplings and open the flow path
- Safe and reliable: valve cannot be opened until the unit is coupled and it closes automatically when disconnecting, eliminating spills
- Used with a wide range of cryogenic liquefied gases without the risk of cross connection due to human error
- Over 6,000 LNG fuel bunkering operations since 2013

## Material:

- Stainless steel

## Specifications:

- Connections: female NPT, flanged EN and ANSI, others available on request
- Working pressure: 1" to 4" at **360 PSI**, 6" at **230 PSI**
- Minimum working temperature: **-328°F (-200°C)**

## Approvals

- Meets requirements for USCG 16715 CG-OES Policy Letter No. 02-15 use of dry disconnects and break-away coupling/self sealing quick release
- Conforms to ISO/DTS 18683 dimensions for dry disconnects used for bunkering
- Meets MSC 95/3/4 (IGF code) Section 8.5 Requirements for bunkering system
- Meets The Society for Gas as a Marine Fuel (SGMF) Safety Guidelines for Bunkering
- DNV, NKK and BV type approved

# Dry Disconnect Couplings for Fueling Mobile Equipment



## Applications:

- Fueling on-highway trucks
- Fueling off-highway mobile equipment

## Size:

- 2", contact Dixon for other sizes

## Features:

- Single-action operation uses a straight-forward turning motion to connect the couplings and open the flow path
- Safe and reliable system:
  - valve cannot be opened until the unit is coupled
  - valve closes automatically when disconnecting coupler
  - a safety detent applies when disconnecting coupler
- Used with a wide range of cryogenic liquefied gases without the risk of cross connection due to human error

## Material:

- Stainless steel
- PTFE seals

## Specifications:

- Coupler connection is female NPT
- Receptacle is flanged for easy install, or female NPT connection
- **360 PSI** working pressure
- **-328°F (-200°C)** minimum working temperature

## Approvals

- Conforms to ISO/DTS 18683
- DNV, NKK and BV type approved

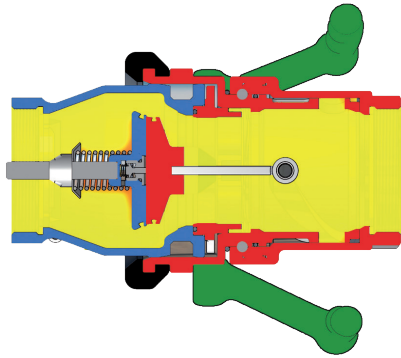


LNG fueling application on off-highway mining truck

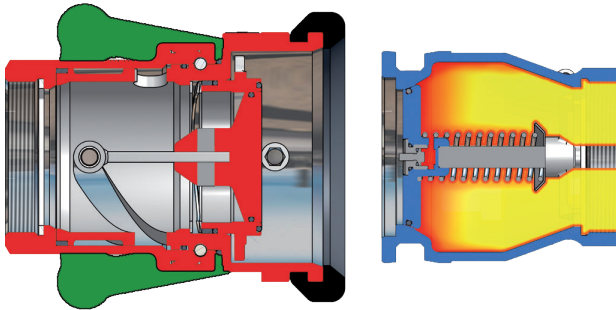


# Cryogenic Dry Disconnect Couplings

## How It Works



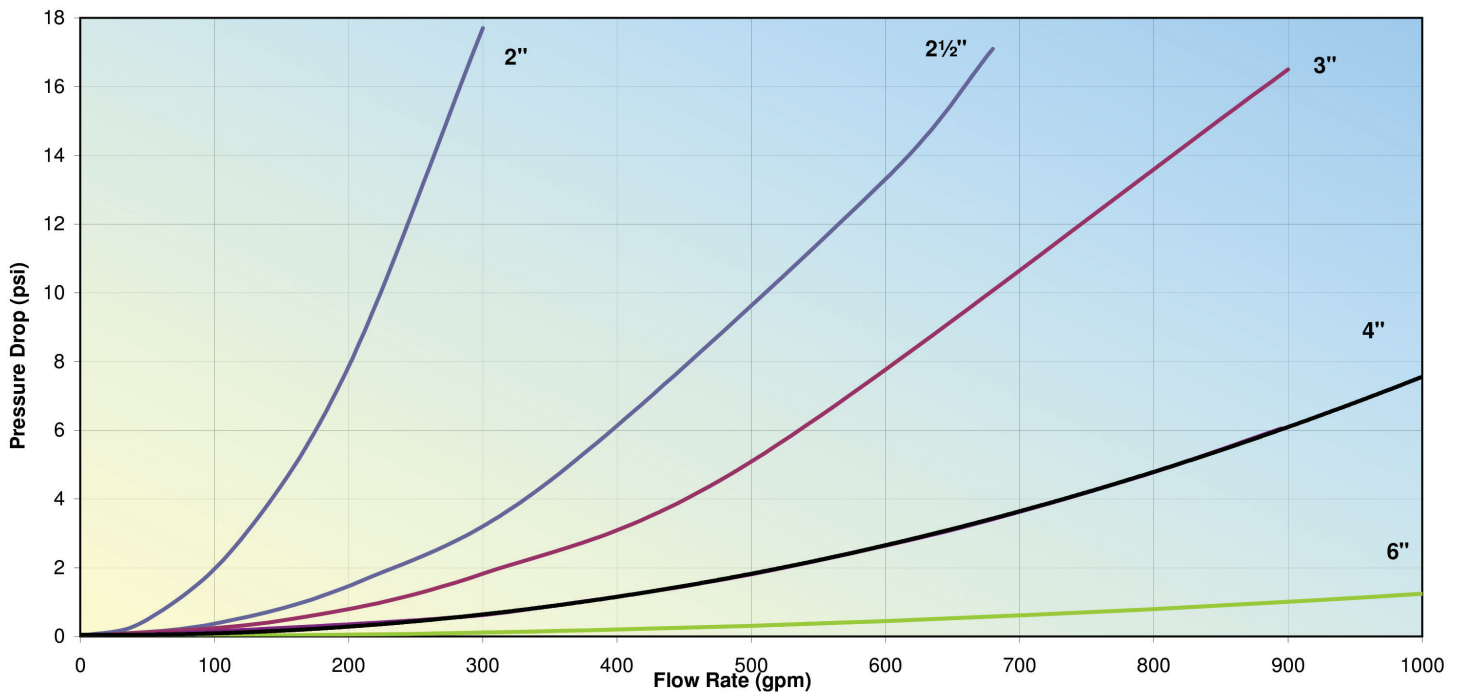
**To connect:**  
Push and turn - it's coupled at full flow



**To disconnect:**  
Turn and pull - it's released, no spillage

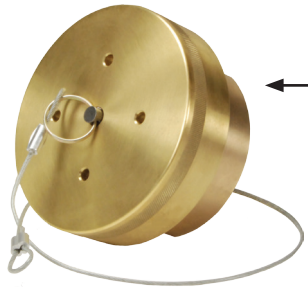
Dry cryogenic couplings consist of a tank unit or adapter with a spring loaded poppet and a hose unit or coupler with a valve driven by an internal cam. To couple, simply align the rollers on the coupler with the notches on the adapter, push the coupler onto the adapter and rotate past 100 degrees. This simple process locks the coupling together, creates a self-seal and opens the internal valves for full flow with low pressure drop. The dual poppet design shut-off mechanism safely seals liquids and gases behind the valve, eliminating fugitive emissions and the danger of a spill of cryogenic fluids.

## Flow Diagram



Test Fluid: LNG    Temperature: -256 °F    Density: 27.2 lbs/ft<sup>3</sup>    Viscosity: 0.11 cps

# LNG Couplings



LNG30BRFE  
fixed end with cap



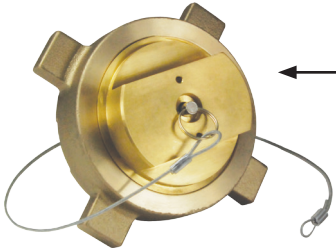
LNG30BRFE-NC  
fixed end



LNGBRFECAP  
fixed end cap



LNG30FESEAL  
seal



LNG30BRHE  
hose end with plug



LNG30BRHE-NC  
hose end



LNG30BRHENUT  
hose end



LNGBRHEPLUG  
hose end plug

## Application:

- Safe and reliable transfer of cryogenic LNG products to transport equipment such as cargo tanks, portable tanks, and liquefied natural gas liquid production facilities

## Sizes:

- 2", 3"

## Features:

- Fixed end design threads on tank truck pipe connection line, manifold, pipe outlet, or pipe connection
- PTFE gasket reduces force needed to make a tight connection
- Connect by hammering the acme threaded nut onto a fixed end
- Hose end designed female NPT thread to attached to hose end
- Snap ring keeps connection nut in place for easier connecting
- Hose end lugs intended to be struck with a non-sparking hammer or similar non-sparking device

## Materials:

- Body: brass
- Seal: PTFE

## Specifications:

- Compatible with LNG couplings made to CGA guidelines
- Temperature as low as **-320°F (-196°C)** at standard LNG transfer pressures
- **450 PSI** working pressure with 4-to-1 safety factor

## Approvals

- Meets CGA V-6 LNG-30 guidelines

Size	Description	Part Number
2"	LNG30 fixed end with 2" female NPT thread / cap and retaining cable	<b>LNG20BRFE</b>
3"	LNG30 fixed end with 3" female NPT thread / cap and retaining cable	<b>LNG30BRFE</b>
3"	LNG30 fixed end with 3" female NPT thread	<b>LNG30BRFE-NC</b>
3"	LNG30 PTFE seal	<b>LNG30FESEAL</b>
	Cap for <b>LNG30BRFE</b> and <b>LNG20BRFE</b>	<b>LNGBRFECAP</b>

Size	Description	Part Number
2"	LNG30 hose end with 2" female NPT thread / with plug and retaining cable	<b>LNG20BRHE</b>
3"	LNG30 hose end with 3" female NPT thread / with plug and retaining cable	<b>LNG30BRHE</b>
3"	LNG30 hose end with 3" female NPT thread	<b>LNG30BRHE-NC</b>
3"	LNG30 swivel nut	<b>LNG30BRHENUT</b>
	Plug for <b>LNG30BRHE</b> and <b>LNG20BRHE</b>	<b>LNGBRHEPLUG</b>

# Cryogenic Break-away Couplings



## Applications:

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

## Sizes:

- 1" - 6"

## Features:

- Operates independently of shut-off safety system and does not require an external power source
- Lightweight, easy to reset and repair on site with one person
- High flow rate / low pressure drop
- Positive shut-off of both coupling halves results in minimum product loss
- Passive security where a hose or loading arm could be subjected to inadvertent excessive loads
- Can be installed at fixed points or in the middle of hose strings
- Available as industrial or marine types
- No loose components that could be lost after release

## Material:

- Stainless steel

## Specifications:

- Connections: female NPT, flanged EN and ANSI, others available on request
- Working pressure: 1" to 4" = **360 PSI**, 6" = **230 PSI**
- Minimum working temperature: **-328°F (-200°C)**



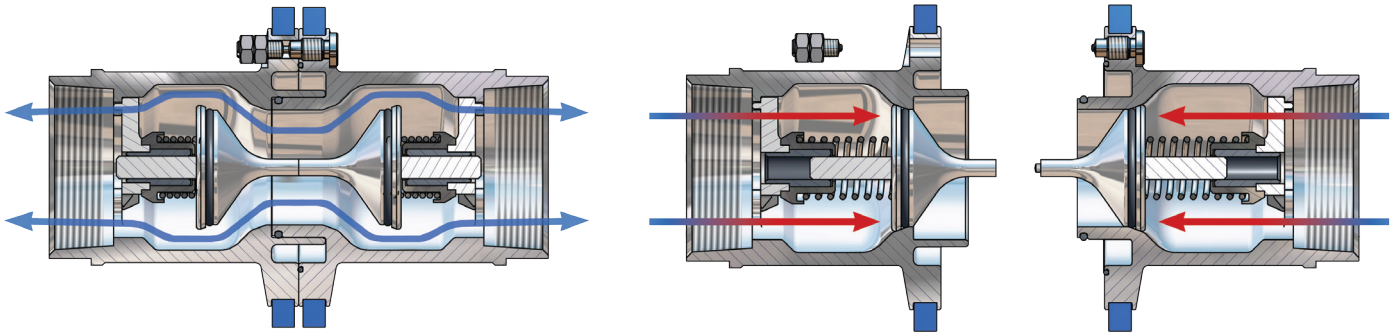
In use application of Safety break-away coupling

# Cryogenic Break-away Couplings

## How It Works

The cryogenic break-away couplings have three external break bolts. In the case of axial tension all 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.



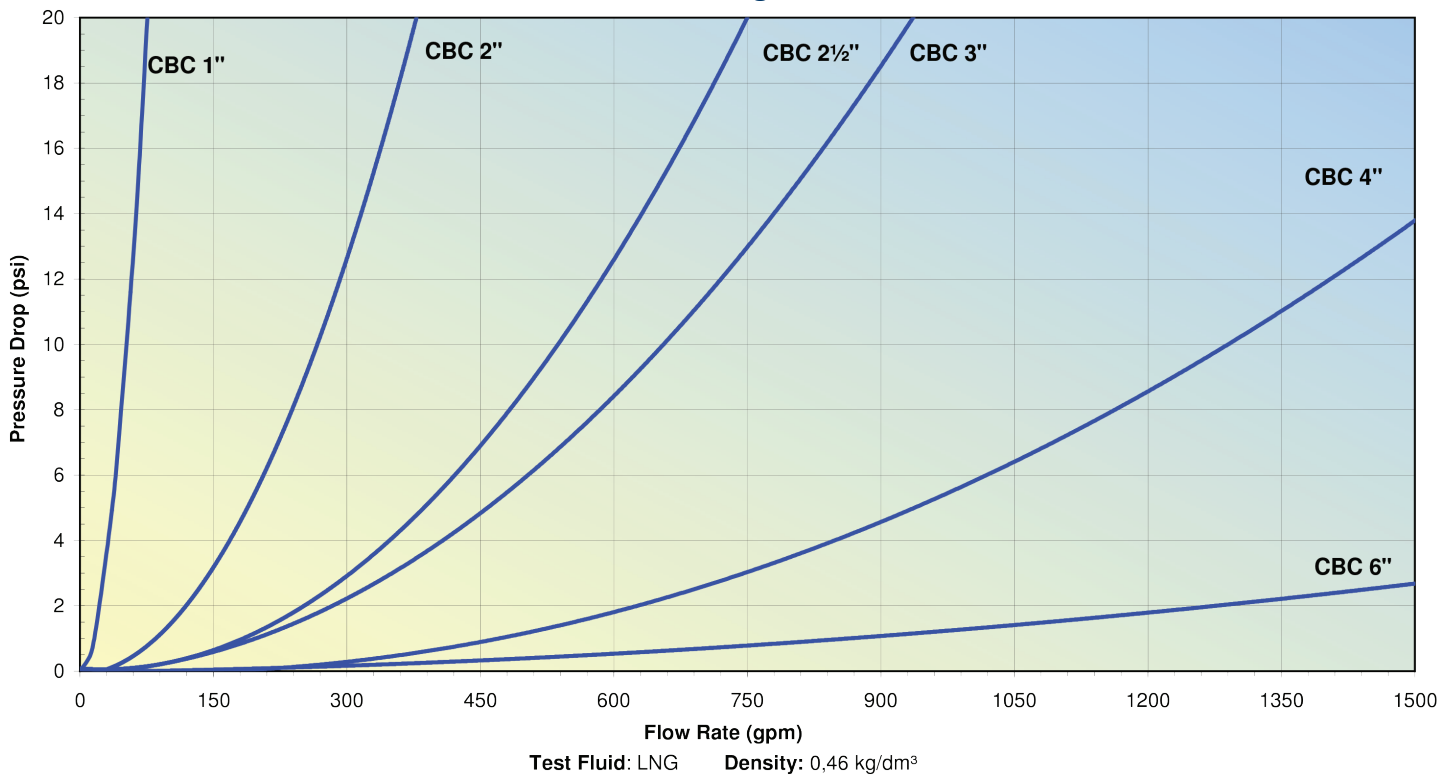
**BEFORE** emergency disconnect

**AFTER** emergency disconnect

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

When the cryogenic break-away couplings separate, the valves are able to close. The two valves close rapidly, minimizing exposure to personnel and the environment.

## Flow Diagram





# Power Emergency Release Coupling (PERC)

## Applications:

- Fuel bunkering
- Loading / unloading of tank trucks, rail cars, and ship tankers
- Vapor recovery lines

## Sizes:

- 4" (DN100) to 8" (DN200), others on request

## Features:

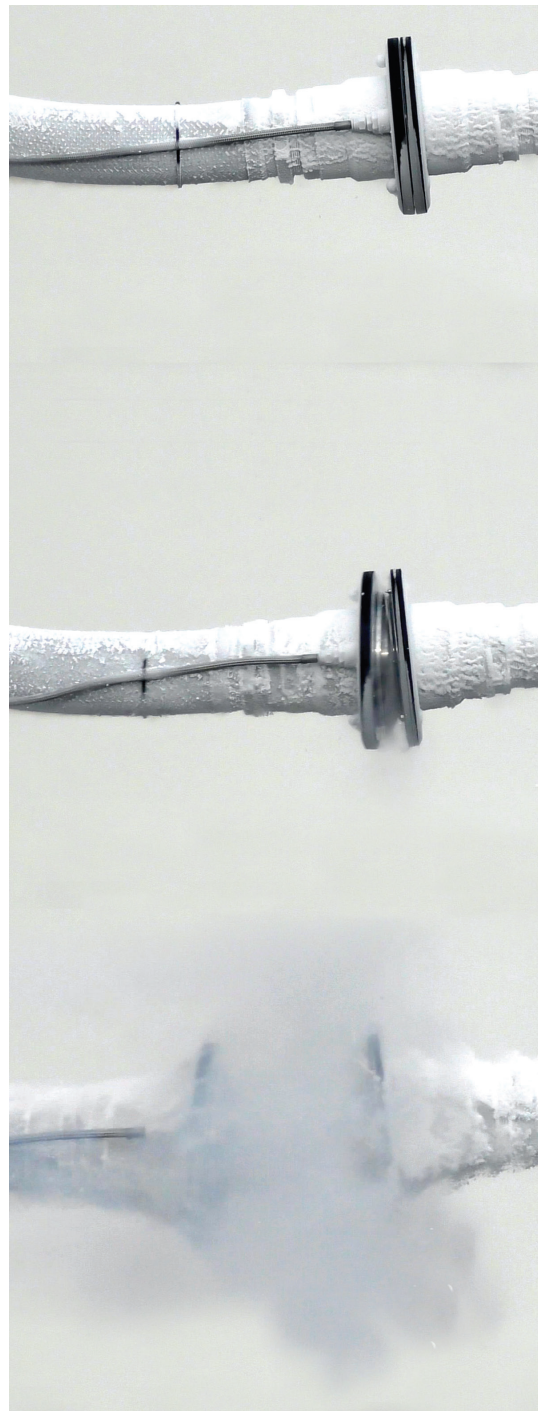
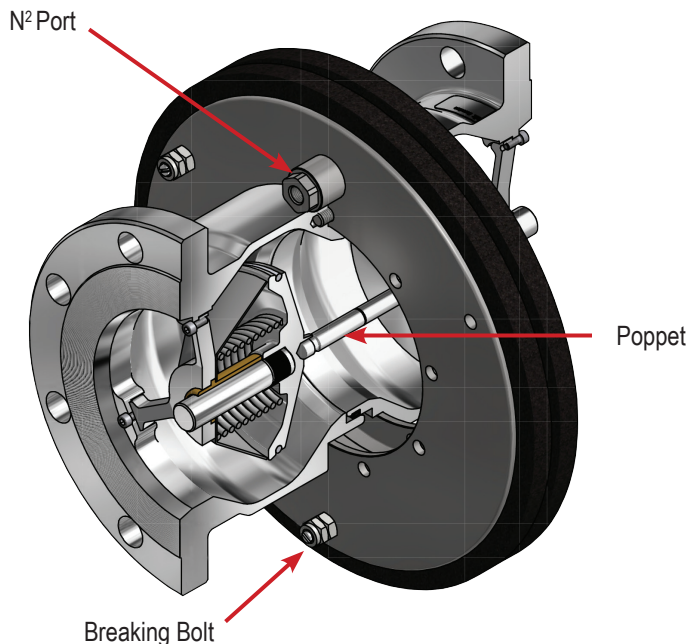
- Two halves close when there is excessive force or when pressurized nitrogen is introduced to the coupling halves from a control unit to break the bolts and separate the couplings

## Materials:

- Stainless steel
- Seal: PTFE

## Specifications:

- Calculation of the required wall thickness is made according to EN 12516-2
- Material is suitable for use with LNG and nitrogen to **-328°F (-200°C)** according to the recommendations in EN1160
- 1.4404 conforms to specification EN10272
- 316L conforms to specification ANSI A479
- Connections: NPT thread, EN1092 (DIN) or ANSI B16.5 flanges, others on request
- Temperature range: **-328°F (-200°C) to 150°F (65°C)**
- Recommended nitrogen supply pressure: 200 Bar (min 150 Bar)
- Recommended nitrogen latent seal pressure: 2 Bar
- Recommended tube / hose internal dimension: max 6.35 mm (1/4")
- Recommended tube / hose length: max 100m (smooth surface hose)
- Time to release: < 2 sec
- Gas consumption: max ~ 0.6 m<sup>3</sup>



Example of power emergency release coupling

Size	Nominal Size	PSI	Standard Break Force (kN)	Maximum Break Force (kN)
4"	DN100	<b>360 PSI</b>	52	85
6"	DN150	<b>230 PSI</b>	92	132
8"	DN200	<b>230 PSI</b>	165	270

# Power Emergency Release Coupling (PERC)

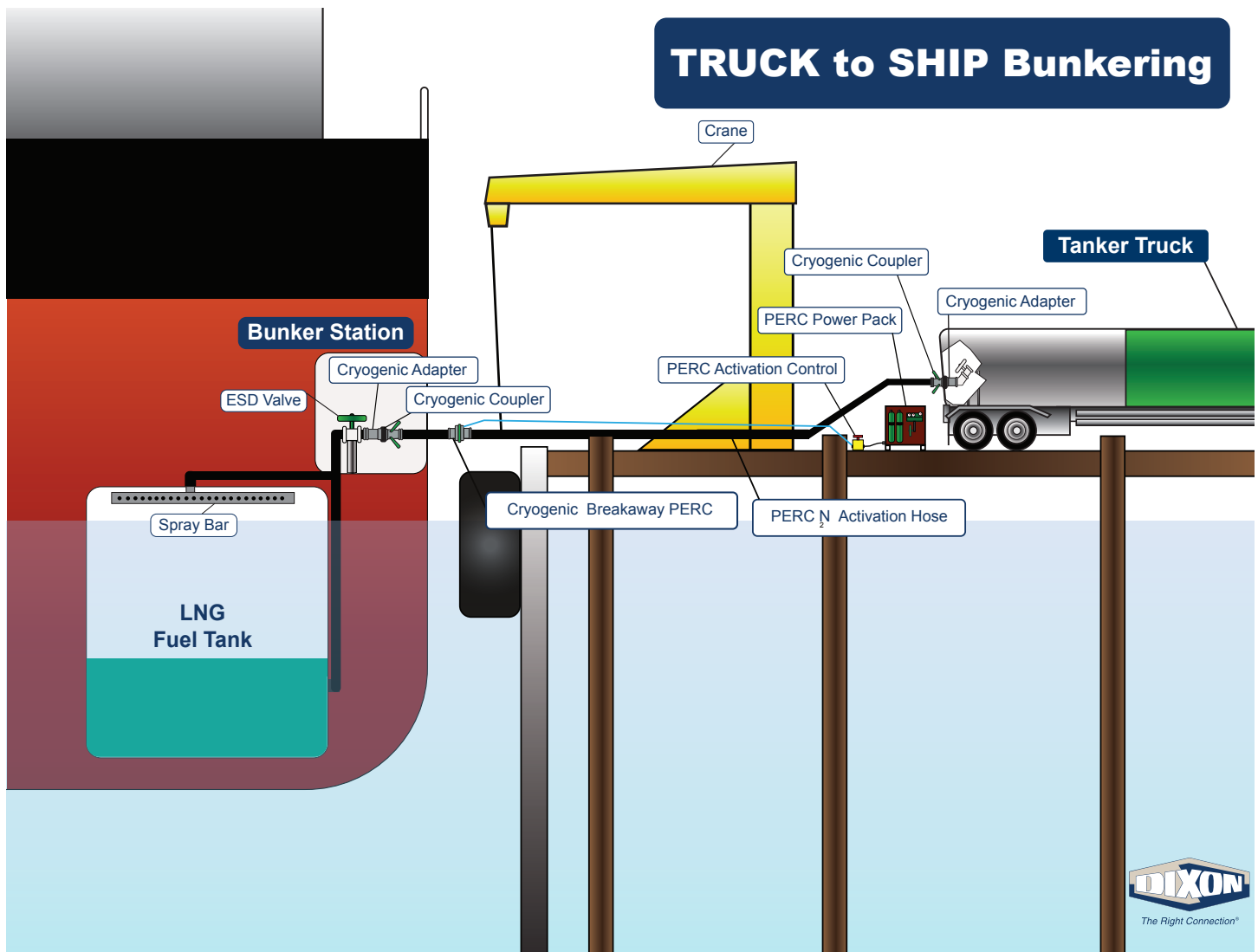


Breaking Pin Type  
Break-aways

• **SAFE!**

• **SEPARATE ON  
COMMAND!**

The Mann Tek Cryogenic PERC design combines the passive safety feature known from our breaking pin type break-aways with the ability to separate on command without any force on the hose. When actuated by a remote control, a pressurized gas cylinder will open and gas pressure will overcome the breaking bolts. The PERC system corresponds to standard EN1474-1:2008



# Cryogenic Break-away Couplings - Cable Release

## Applications:

- Plant engineering, power plant construction, chemical industry, food processing, process technology, and tank cleaning
- Filling systems: railroads, rail cars, tank trucks, ships, tank containers, and liquefied gas

## Sizes:

- 1" (DN25) to 8" (DN200), others on request

## Features:

- Sturdy design
- Safe operation
- Release angle up to 90° by cable activation
- Maintenance friendly
- Break force does not change with system pressure or angle of pull
- Protects system components by minimizing the amount of stress placed on system

## Materials:

- Stainless steel
- Seals: PTFE

## Specifications:

- Calculation of wall thickness is made according to SS-EN 12516-2
- Material is suitable for use with LNG and Nitrogen to **-328°F (-200°C)** according to the recommendations in EN1160
- Connections: NPT thread, EN1092 (DIN) or ANSI B16.5 flanges, others on request
- Temperature range: **-328°F (-200°C) to 150°F (65°C)**
- Pressure: PS25 Bar
- 1.4404 conforms to specification EN10272
- 316L conforms to specification ANSI A479



Example of cable release coupling

Size	Nominal Size	MAWP
1"	DN25	<b>360 PSI</b>
2"	DN50	<b>360 PSI</b>
3"	DN80	<b>360 PSI</b>
4"	DN100	<b>230 PSI</b>
6"	DN150	<b>230 PSI</b>
8"	DN200	<b>230 PSI</b>



Dixon®, founded in 1916, is a premier manufacturer and supplier of hose couplings, valves, dry-disconnects, swivels, and other fluid transfer and control products. The company's global reach includes a wide range of products for numerous industries including petroleum exploration, refining, transportation, chemical processing, food & beverage, steel, fire protection, construction, mining, and manufacturing. Dixon's strategic objective is to create solutions that make products safer, leak-free, longer lasting, and always available.



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**Dixon®**

800 High Street  
Chestertown, MD 21620  
ph: 877.963.4966  
fx: 800.283.4966

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