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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" - 8"

### 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
- Used for receiving and storing liquid oxygen, liquid hydrogen, and LNG for rocket and engine testing

### 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 breakaway coupling/self sealing quick release
- Conforms to ISO/DTS 18683 dimensions for dry disconnects used for bunkering
- Couplings meeting ISO 21593 are available
- 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
- Meets ASTM F3312/F3312M – 18 Standard Practice for Liquefied Natural Gas (LNG) Bunkering Hose Transfer Assembly
- 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

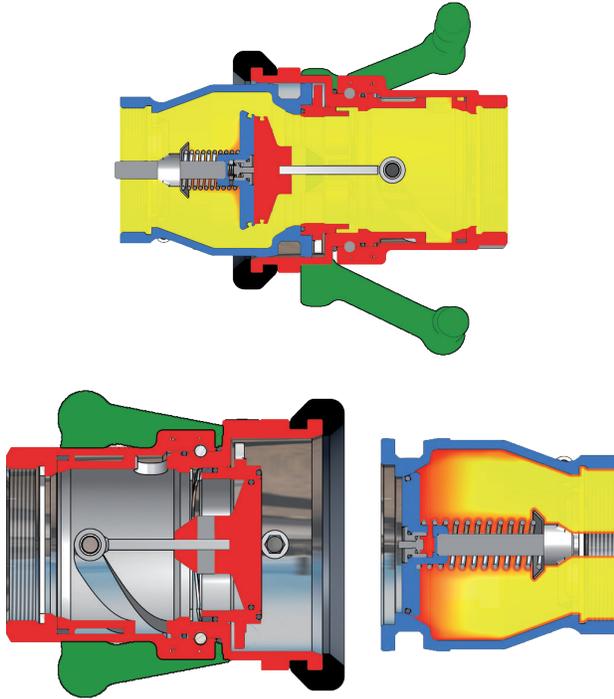
- Conforms to ISO/DTS 18683
- DNV, NKK, and BV type approved



LNG fueling application on off-highway mining truck

# Cryogenic Dry Disconnect Couplings

## How It Works

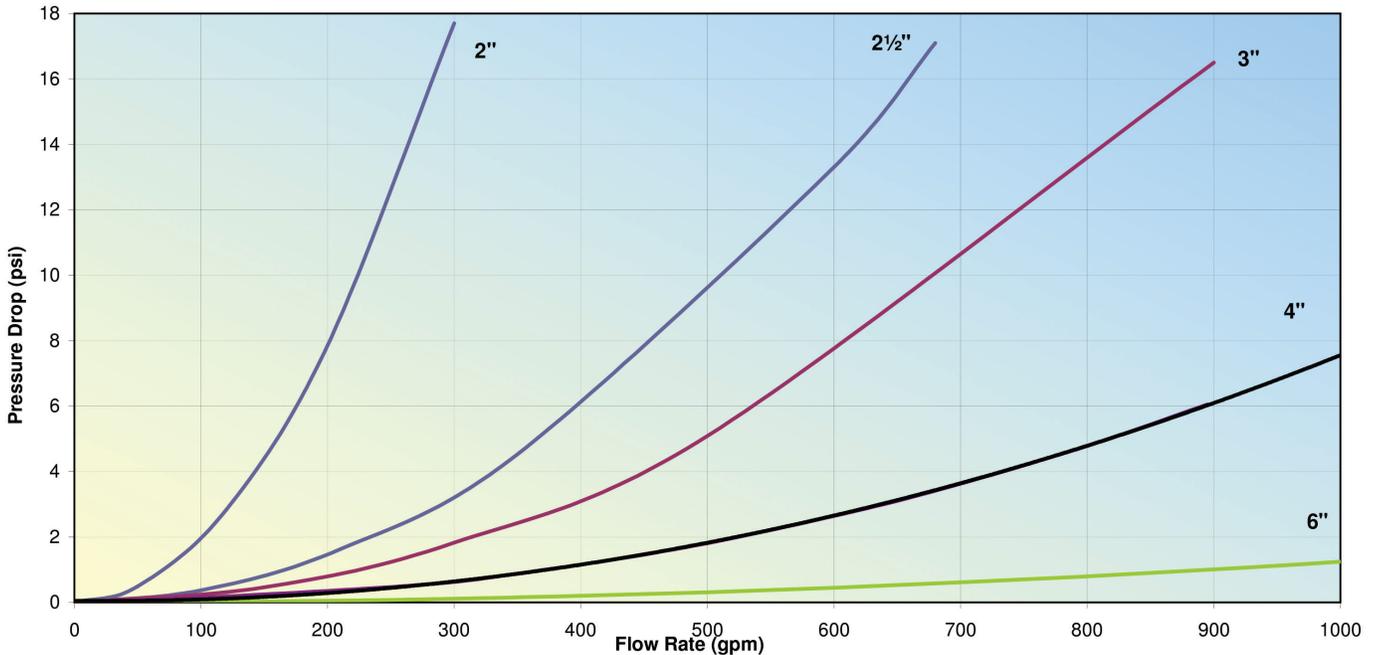


**To connect:**  
Push and turn - it's coupled at full flow

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

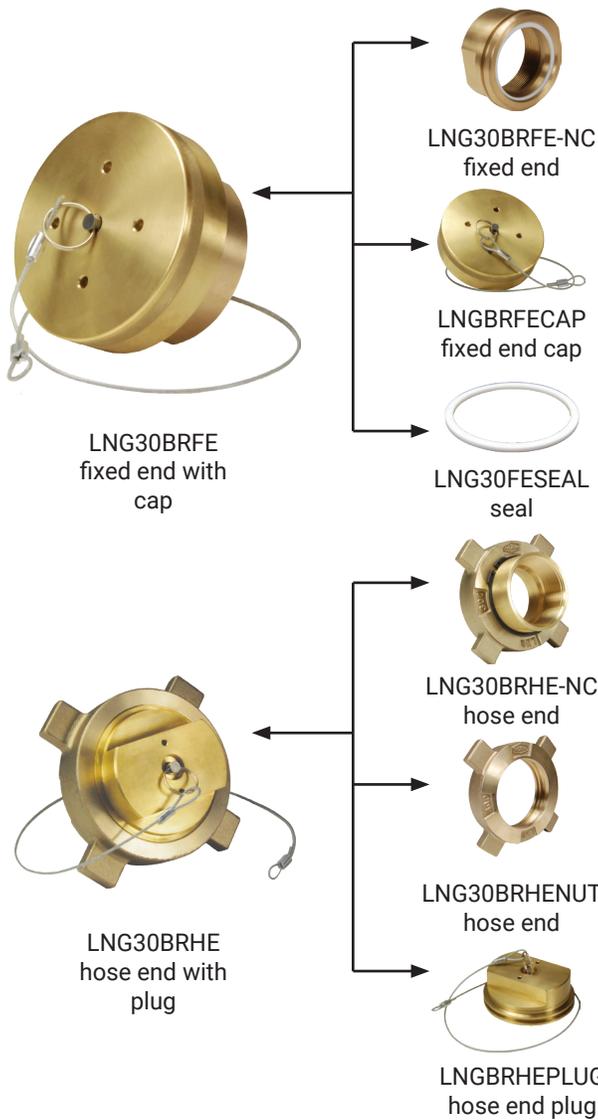
Dry cryogenic couplings consist of a tank unit or adapter with a spring loaded poppet and a hose unit or coupler with a valve driven by an internal cam. To couple, simply align the rollers on the coupler with the notches on the adapter, push the coupler onto the adapter and rotate past 100 degrees. This 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/ft³    Viscosity: 0.11 cps

## Liquified Natural Gas (LNG) Couplings



### Application

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

### Sizes

- 2" and 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 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 #
2"	LNG30 fixed end with 2" female NPT thread / cap and retaining cable	LNG20BRFE
3"	LNG30 fixed end with 3" female NPT thread / cap and retaining cable	LNG30BRFE
3"	LNG30 fixed end with 3" female NPT thread	LNG30BRFE-NC
3"	LNG30 PTFE seal	LNG30FESEAL
	Cap for LNG30BRFE and LNG20BRFE	LNGBRFECAP

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

## Cryogenic Breakaway Couplings



### Applications

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

### Sizes

- 1" - 8"

### 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)**

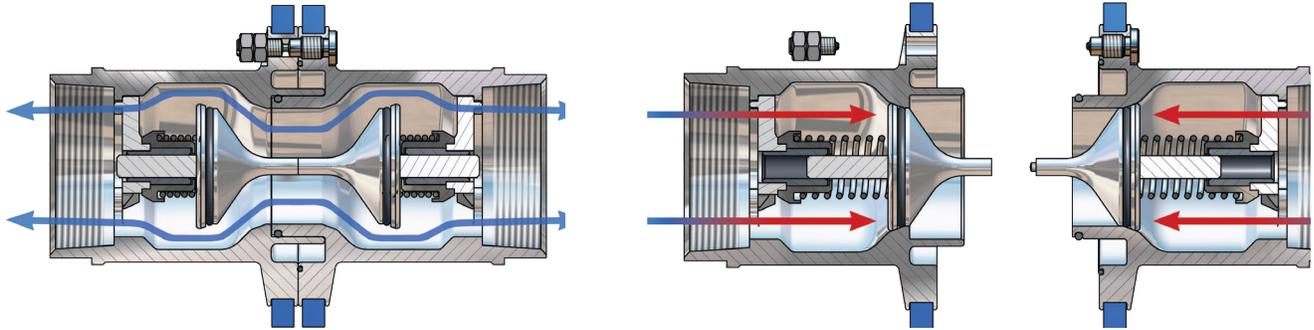


## Cryogenic Breakaway Couplings

### How It Works

The cryogenic breakaway 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 breakaway coupling reacts in a natural way to the reduction of the hose break forces.



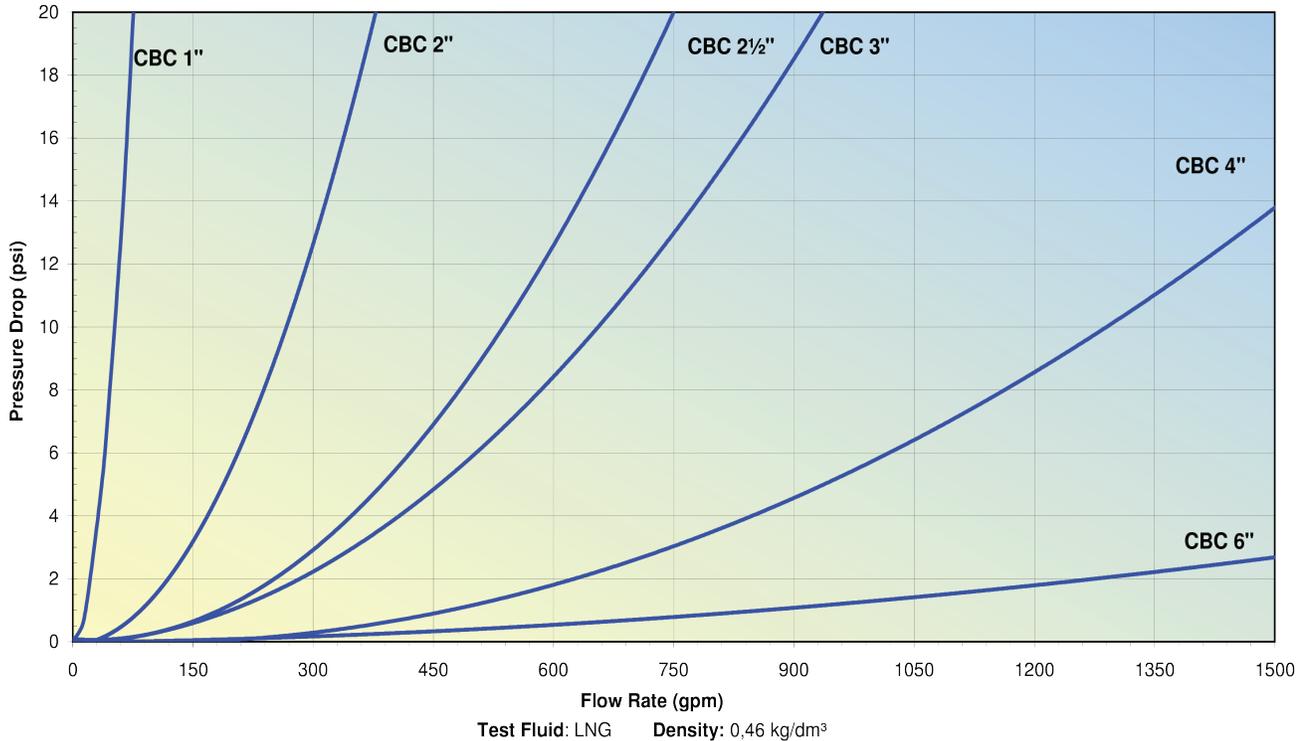
**BEFORE emergency disconnect**

**AFTER emergency disconnect**

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

When the cryogenic breakaway 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

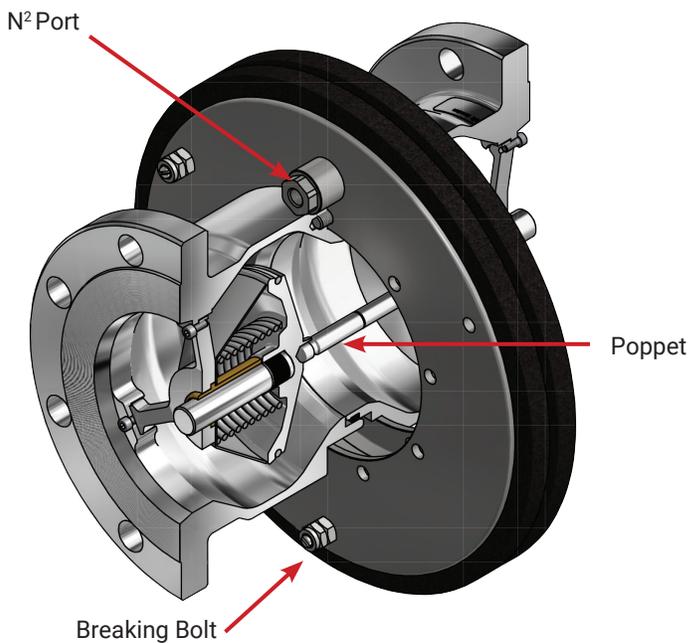
- Two halves close when there is excessive force or when pressurized nitrogen is introduced to the coupling halves from a control unit to break the bolts and separate the couplings

### 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
- Conforms to specification EN10272 1.4404
- 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	360 PSI	52	85
6"	DN150	230 PSI	92	132
8"	DN200	230 PSI	165	270
10"	DN250	230PSI	151	181

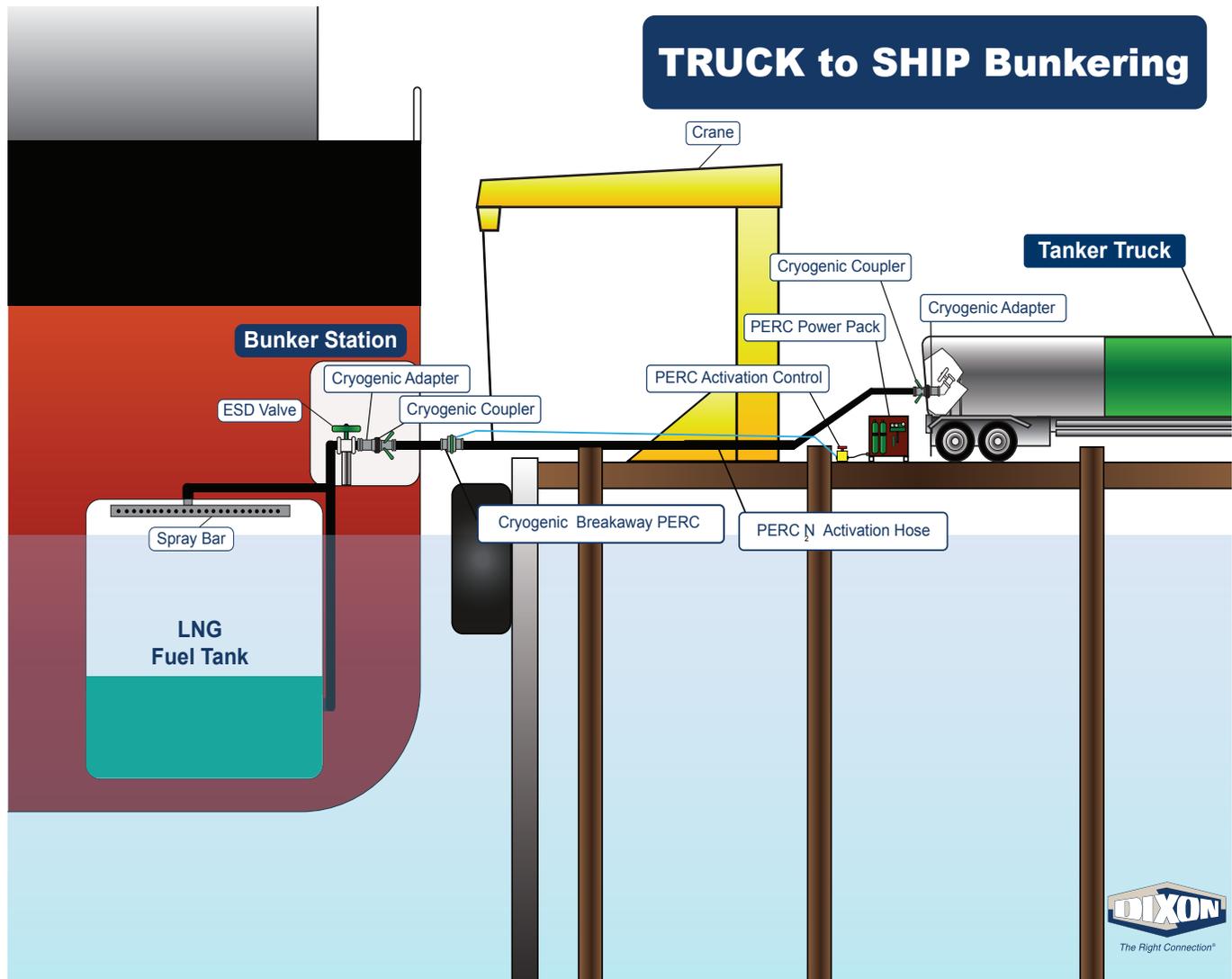
## Power Emergency Release Coupling (PERC)



**Breaking Pin Type Breakaways**

- SAFE!
- SEPARATE ON COMMAND!

The Mann Tek Cryogenic PERC design combines the passive safety feature known from our breaking pin type breakaways 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 Breakaway 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

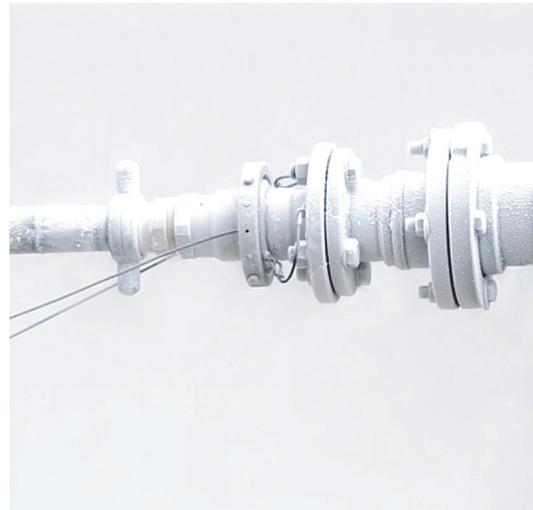
- Sturdy design
- Safe operation
- Release angle up to 90° by cable activation
- Maintenance friendly
- Break force does not change with system pressure or angle of pull
- Protects system components by minimizing the amount of stress placed on system

### 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
- Conforms to specification EN10272 1.4404
- 316L conforms to specification ANSI A479



Example of cable release coupling

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

### Cryogenic Globe Valves

#### 1/2" - 2" BOLTED BONNET WITH CRYOGENIC EXTENSION

#### Applications

- Cryogenic piping systems
- High purity industrial gas tanks
- ISO containers
- Transportation trailers
- Typical fluids:
  - LNG
  - Hydrogen
  - Argon
  - Oxygen
  - Nitrogen

#### Sizes

- 1/2" to 2"

#### Features

- Field repairable / repair kits available
- Butt weld pipe or tube ends
- Options:
  - Soft seat: PCTFE or PTFE
  - Purge ports
  - Graphite packing / gaskets
  - Electropolished interior
  - Air actuation

#### Materials

- Body: 316L stainless steel from bar stock
- Bonnet: F316L stainless steel
- Body seat: 316L stainless steel
- Bellows: Inconel® rated for 10,000 cycles
- Packing: PTFE
- Bonnet Gasket: PTFE/316 stainless steel

#### Specifications

- Operating temperature: **-452°F to 300°F (-269°C to 149°C)**
- Operating pressure: Per ASME B16.34 CL800
- Testing:
  - External leakage / structural integrity
    - Hydro to API 598 CL800
    - Helium mass spectrometer to  $1 \times 10^{-7}$  scc He/sec
  - Seat Leakage
    - Hydro to API 598 CL800
    - Bubble tight to **600 PSIG** nitrogen

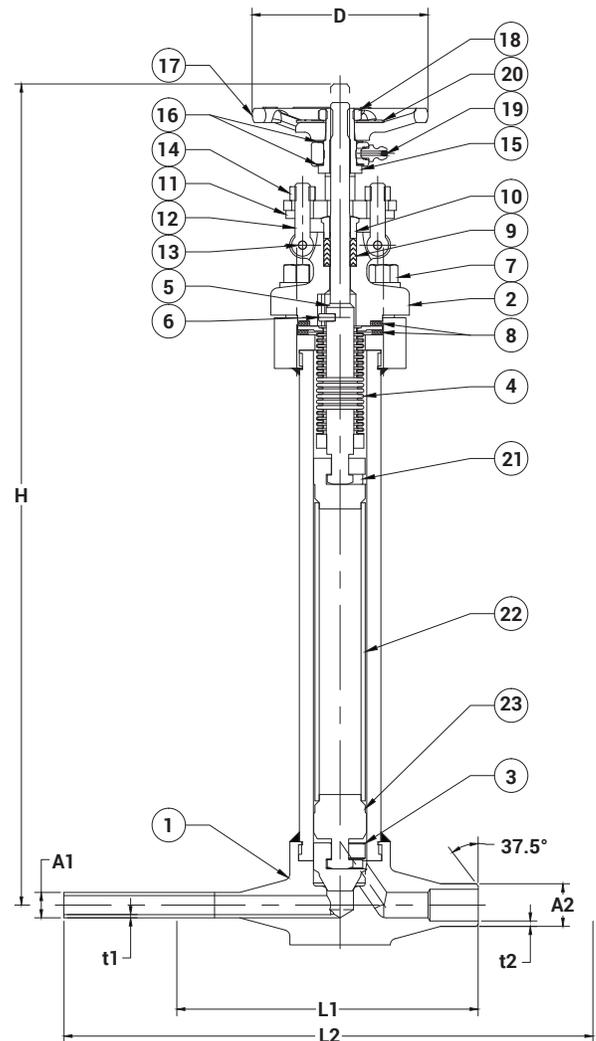


Dixon Eagle valves are designed to work safely for their intended use. Failure to know and understand the intended use or to consider the size, temperature, application, media, pressure, and manufacturers recommendations when selecting the proper valve assembly components can result in accidents and injuries, including death and serious and permanent injuries. Dixon® recommends that all valve assemblies be tested in accordance with ASME and API recommendations and be inspected regularly to ensure that their use remains appropriate and that they are not damaged.

At no charge, Dixon is available to consult, train, and recommend the proper selection and application of all valves we sell. We strongly recommend that distributors and end users make use of Dixon's Testing and Recommendation Services. Contact Dixon® to learn more.

### Bill of Materials

Item #	Description	Material
1	body assembly	316 stainless steel
2	bonnet	F316L stainless steel
3	disc	316 stainless steel
4	bellows	Inconel®
5	stem	316 stainless steel
6	pin	316 stainless steel
7	bonnet bolts	A193 B8
8	bonnet gaskets	PTFE/316 stainless steel
9	packing	PTFE
10	gland bushing	304 stainless steel
11	gland plate	316 stainless steel
12	gland bolts	304 stainless steel
13	pins	304 stainless steel
14	gland nuts	304 stainless steel
15	yoke sleeve	Copper alloy
16	thrust collars	410 stainless steel
17	handwheel	Malleable iron
18	handwheel nut	304 stainless steel
19	grease fitting	Commercial
20	nameplate	Aluminum
21	upper disc adapter	316 stainless steel
22	stem tube	316 stainless steel
23	lower disc adapter	316 stainless steel



#### Tube Ends/ Butt weld Globe Valves Dimensions

Size	A1	A2	t1	t2	L1	L2	H	D	LIFT
1/2"	0.50	0.84	0.06	0.11	5.50	11.00	16.3	3.94	0.26
3/4"	0.75	1.05	0.06	0.11	6.25	12.75	16.3	3.94	0.26
1"	1.00	1.32	0.06	0.13	7.00	13.50	17.0	4.92	0.26
1-1/2"	1.50	1.90	0.06	0.15	8.75	15.25	20.0	6.30	0.43
2"	2.00	2.38	0.06	0.15	9.75	16.25	20.8	7.09	0.49



## Limited Warranty

DIXON VALVE AND COUPLING COMPANY, LLC (herein called "Dixon") warrants the products described herein and manufactured by Dixon to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon under normal use and service. Its sole obligation under this warranty being limited to repairing or replacing, as hereinafter provided, at its option any product found to Dixon's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon's factory within three (3) months after discovery of the defect. The repair or replacement of defective products will be made without charge for parts or labor. This warranty shall not apply to: (a) parts or products not manufactured by Dixon, the warranty of such items being limited to the actual warranty extended to Dixon by its supplier; (b) any product that has been subject to abuse, negligence, accident, or misapplication; (c) any product altered or repaired by others than Dixon; and (d) to normal maintenance services and the replacement of service items (such as washers, gaskets, and lubricants) made in connection with such services. To the extent permitted by law, this limited warranty shall extend only to the buyer and any other person reasonably expected to use or consume the goods who is injured in person by any breach of the warranty. No action may be brought against Dixon for an alleged breach of warranty unless such action is instituted within one (1) year from the date the cause of action accrues. This limited warranty shall be construed and enforced to the fullest extent allowable by applicable law.

Other than the obligation of Dixon set forth herein, Dixon disclaims all warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose, and any other obligation or liability. The foregoing constitutes Dixon's sole obligation with respect to damages, whether direct, incidental, or consequential, resulting from the use or performance of the product.

Some products and sizes may be discontinued when stock is depleted or may require a minimum quantity for ordering.

## About This Catalog and Our Products

This catalog is intended as a product offering. It is not a user or technical manual. Information in this catalog is subject to change without notice. We may modify product design and specification without notice and without any obligation to modify or substitute products previously purchased. All users and distributors of products sold through this catalog are strongly encouraged to contact Dixon with questions on use, compatibilities, coupling procedures, and life of product. Our full-time engineering and test staff are always available to recommend uses and to assist distributors and users with questions.



## Safety



Safety logos, which appear throughout our catalog, are used as a reminder that the user should carefully review for the appropriateness of the product for the media, application, and environment in which it will be used.

NOTE: Because of the health hazards associated with contamination and lead content in drinking water systems, Dixon couplings, unless otherwise specifically approved, are not recommended for potable water service and should not be used in applications where drinking water will contact the wetted surfaces of the coupling.

All Dixon products are shipped in cartons with the following warning:

**"WARNING:** This product contains lead, a chemical known to the State of California to cause cancer and birth defects or other reproductive harm."

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