



Quick & Dry Disconnect
Fittings Catalog

OPW®
ENGINEERED SYSTEMS
a DOVER company

opw-es.com

ENGINEERING | WHAT'S NEXT

OPW ENGINEERED SYSTEMS a DOVER company

OPW Engineered Systems specializes in engineering, designing and manufacturing of systems for the safe and efficient loading and unloading of critical hazardous fluid materials. Highly dedicated to listening closely to the needs of customers and to providing high-value solutions that deliver safer, cleaner, faster methods of fluid handling. Simply put, we make your connections safer.

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Overview

The realities faced by today's chemical and petroleum industries demand innovative, carefully engineered products that are built to handle a wide range of applications. These are often extreme applications with hazardous fluids under high pressures or temperatures. It is imperative that the connections designed for fluid transfer be able to safely withstand these demands. Responsible business practices (as well as regulatory and environmental regulations) mandate secure connections with regard to the handling of hazardous or toxic fluids and vapors. Secure connections are, of course, important for business efficiencies as well as for environmental reasons. But more importantly, it is imperative for the safety of the people handling the materials. That's why we promise that our products are: **SAFER. CLEANER. FASTER.**

OPW Engineered Systems is a world-class manufacturer of quick and dry disconnect fittings to meet any fluid handling need. For more than 60 years, our products have been used the world over in a wide range of applications including:

- Petroleum Products
- Fatty Acids
- Liquefied Gases
- Asphalt
- Solvents
- Hazardous and Corrosive Chemicals

We are the experts in reducing the hazards involved with handling fluid products for a multitude of industries.

A Complete Line of connections are available, including quick disconnect products from **Kamlok®** and **Autolok®**, featuring the exclusive Twin-Kam™ arm design. For more hazardous fluids that require a dry disconnect, OPW's comprehensive line includes **Kamvalok®** , **Drylok™** and **Epsilon®**, all suitable for a broad range of hazardous liquid applications. For extreme pressure and temperature sealing applications, the **Hiltap™** brand offers innovative, high-performance couplings and connectors.

Innovative Products Designed For Safety.

It's what OPW Engineered Systems stands for. OPW products help keep employees out of harm's way, as well as contain fugitive emissions, transfer VOCs without product or vapor loss, and provide industries with solutions that further the efforts of responsive environmental management.

Quality Control For Dependable Operation.

OPW quick and dry disconnect couplings and fittings are manufactured in compliance with the highest standards of design, materials and construction. All manufacturing and testing procedures meet or exceed industry standards. Products are rigorously tested to ensure high quality. CNC equipment is used to machine all critical dimensions within precise tolerances to ensure that each product adheres to rigid engineering specifications.

Service and Support Beyond Compare.

OPW Engineered Systems is a time-tested industry leader with dedicated, experienced resources to provide technical assistance. From the initial design phase through installation and beyond, internal and external sales teams are knowledgeable about OPW products, and are trained to provide skilled solutions. Highly personalized professional service, site evaluations, design and applications engineering expertise and meticulously engineered, exceptionally built products ensure your complete satisfaction.

OPW continually strives to maintain their leadership position in the industry by responding to your needs and supplying the high-quality, dependable products you require.

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Quick Disconnects Overview

OPW Engineered Systems offers a comprehensive line of quick disconnect products in a wide variety of sizes and configurations.

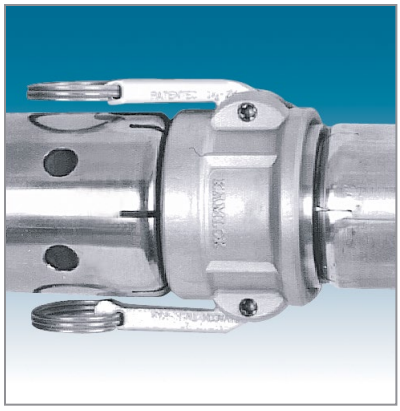
- **Kamlok®** is the world's most popular cam and groove. The name is synonymous with quick disconnects and has set the industry standard for safety and ease of use.
- **Autolok®** quick disconnects utilize a self-locking system to provide an added level of safety.

Kamlok® and **Autolok®** offer the exclusive Twin-Kam™, a patented system that holds the adaptor more securely for increased protection against accidental release. These popular couplers and adapters are the industry's safest, sturdiest, quickest coupler systems on the market.

Kamlok® Series

The World's Most Popular Cam and Groove Quick Disconnect

OPW Engineered Systems' Kamlok® Quick Disconnects are the industry standard in cam and groove couplers for safety and ease of use. All OPW **Kamloks®** feature the exclusive **Twin-Kam™** arm design to help prevent accidental release, and **Spring-Ring™** to ensure proper position of finger rings for ease of operation.



Spring-Ring™ Finger Rings prevent rings from getting trapped under arms.



Detent position of **Twin-Kam™** arms help prevent unintentional arm release.



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Kamlok® Series

Benefits

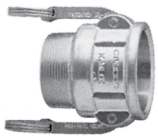
- **Long-Life Reliability** – Specially designed and manufactured with 316 stainless steel and gasket materials to endure the harshest environments.
- **Added Protection** – Exclusive features, such as Twin-Kam™ arms with special detent to secure arms in position to help prevent accidental uncoupling.
- **Ease-of-Use** – Cam and groove design means smooth coupling and uncoupling while the patented Spring-Ring™ feature ensures that the finger rings do not get trapped under the coupling arms.
- **Best Value** – Built to the highest quality standards with special ease-of-use design features at the price point of other standard cam and groove couplers makes OPW Kamloks® the best overall value in the industry.



Features

- **Cam and Groove Design** – Provides for reliable, smooth operation in 360° orientation.
- **Exclusive Twin-Kam™ Arms** – Provides detent position that helps prevent unintentional arm release beyond 45°. Guaranteed For Life (GFL™) – if an arm breaks, it is replaced FREE.
- **Spring-Ring™ Finger Rings** – Rings won't get trapped under the arms with this patented feature, so opening/closing is quick and easy every time.
- **Available in 316 SST steel in a wide variety of sizes/styles**

633 B Coupler* – Male NPT



Prod. No.	Size
633B-SS07	3/4"
633B-SS10	1"
633B-SS15	1-1/2"
633B-SS20	2"
633B-SS30	3"
633B-SS40	4"

*Designed for non-compressable liquids

633 D Coupler* – Female NPT



Prod. No.	Size
633D-SS05	3/4" Coupler x 1/2" FNPT
633D-SS07	3/4"
633D-SS10	1"
633D-SS12	1-1/4"
633D-SS15	1-1/2"
633D-SS20	2"
633D-SS30	3"
633D-SS40	4"

*Designed for non-compressable liquids

633 C Coupler* – Hose Shank



Prod. No.	Size
633C-SS07	3/4"
633C-SS10	1"
633C-SS15	1-1/2"
633C-SS20	2"
633C-SS30	3"
633C-SS40	4"

*Designed for non-compressable liquids

634 B Dust Cap**



Prod. No.	Size
634B-SS07	3/4"
634B-SS10	1"
634B-SS15	1-1/2"
634B-SS20	2"
634B-SS25	2-1/"
634B-SS30	3"
634B-SS40	4"

**Dust caps and plugs are NOT to be used in pressure applications.

Autolok® Series

Self-Locking Couplers for an Added Level of Safety

OPW Autolok® quick disconnects are self-locking couplers that provide an added level of safety and convenience at the fluid connection. **Autolok's®** patented locking mechanism, built into the coupling arm, means you simply snap the locking arms shut with one smooth motion and the coupler stays secure and shut until you unlock it. No clips, pins or buttons. **Autolok®** uses the patented **Twin-Kam™** to hold the adaptor more securely to the coupler to provide added protection against accidental release.







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Autolok® Series

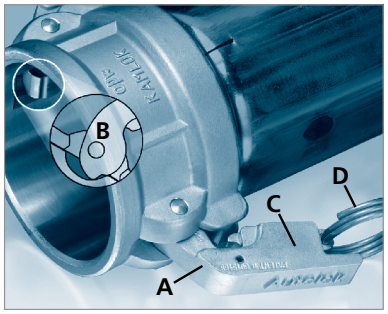


Benefits

- **Extra Protection** – Self-locking arms, featuring exclusive Twin-Kam™ design provides extra protection against accidental release or uncoupling.
- **Easy Operation** – Arms lock automatically with a positive click. Release requires only an easy tug on the patented lock release mechanism. No clips to insert or remove. No spring-loaded button to push.
- **Durable and Efficient** – Designed to ensure optimum flow rates. The heavy-duty, 316 stainless steel construction adds extra durability in harsh environments.

Features

- **Autolok® Patented Arms** – Close just like a regular quick coupler but then lock themselves automatically.
- **Spring-Ring™ Finger Rings** – Patented design keeps rings from getting trapped under the arms, making secure closing a snap. An easy tug on the rings release and open the coupling.
- **Heavy-Duty Construction** – Available in 316 stainless steel.
- **Guaranteed For Life (GFL™) Arms** – If our exclusive Twin-Kam™ arms ever break, they are replaced FREE



A – GFL™ arms guaranteed for life against breakage.

B – Twin-Kam™ helps prevent unintentional arm release beyond 45° angle.

C – Automatic self-locking arms guard against accidental uncoupling.

D – Spring-Ring™ finger ring keeps ring free from arm trapping.

733 BL Coupler* – Male NPT



Prod. No.	Size
733BL-05SB	3/4" Coupler x 1/2" FNPT
733BL-07SB	3/4"
733BL-10SB	1"
733BL-15SB	1-1/2"
733BL-20SB	2"
733BL-30SB	3"
733BL-40SB	4"

*Designed for non-compressable liquids

733 DL Coupler* – Female NPT



Prod. No.	Size
733DL-05SB	3/4" Coupler x 1/2" FNPT
733DL-07SB	3/4"
733DL-10SB	1"
733DL-12SB	1-1/4"
733DL-15SB	1-1/2"
733DL-20SB	2"
733DL-25SB	2-1/2"
733DL-30SB	3"
733DL-40SB	4"

*Designed for non-compressable liquids

733 CL Coupler* – Hose Shank



Prod. No.	Size
733CL-07SB	3/4"
733CL-10SB	1"
733CL-12SB	1-1/4"
733CL-15SB	1-1/2"
733CL-20SB	2"
733CL-30SB	3"
733CL-40SB	4"

*Designed for non-compressable liquids

733 DCL Dust Cap**



Prod. No.	Size
733DCL-07SB	3/4"
733DCL-10SB	1"
733DCL-12SB	1-1/4"
733DCL-15SB	1-1/2"
733DCL-20SB	2"
733DCL-25SB	2-1/2"
733DCL-30SB	3"
733DCL-40SB	4"

**Dust caps and plugs are NOT to be used in pressure applications

Adaptors

OPW Engineered Systems offers a broad range of adaptors for Autolok® and Kamlok® couplers, in a variety of sizes and configurations, including double couplers, reducing couplers, ANSI flanges, spool adaptors, socket weld and butt weld couplers/adaptors.

633 A Adaptor* – Female NPT



Prod. No.	Size
633A-SS05	3/4" Adaptor x 1/2" FNPT
633A-SS07	3/4"
633A-SS10	1"
633A-SS12	1-1/4"
633A-SS15	1-1/2"
633A-SS20	2"
633A-SS25	2-1/2"
633A-SS30	3"
633A-SS40	4"

*Designed for non-compressable liquids

633 E Adaptor*- Hose Shank



Prod. No.	Size
633E-SS07	3/4"
633E-SS10	1"
633E-SS12	1-1/4"
633E-SS15	1-1/2"
633E-SS20	2"
633E-SS30	3"
633E-SS40	4"

*Designed for non-compressable liquids

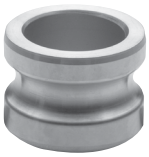
633 F Adaptor*- Male NPT



Prod. No.	Size
633F-SS05	3/4" Adaptor x 1/2" MNPT
633F-SS07	3/4"
633F-SS10	1"
633F-SS12	1-1/4"
633F-SS15	1-1/2"
633F-SS20	2"
633F-SS25	2-1/2"
633F-SS30	3"
633F-SS40	4"

*Designed for non-compressable liquids

634 A Dust Plug**



Prod. No.	Size
634A-SS07	3/4"
634A-SS10	1"
634A-SS12	1-1/4"
634A-SS15	1-1/2"
634A-SS20	2"
634A-SS25	2-1/2"
634A-SS30	3"
634A-SS40	4"

**Dust caps and plugs are NOT to be used in pressure applications

Reducing Couplers & Adaptors

633 CH Coupler 3"x 2-1/2" Hose Shank* (non locking)



Prod. No.	Size
633CH-SS3025	3" Coupler x 2-1/2" Hose Shank

*Designed for non-compressable liquids

633 DD Double Coupler* (non locking)



Prod. No.	Size
633DD-SS2020	2" x 2"
633DD-SS3030	3" x 3"

*Designed for non-compressable liquids

633 EH Adapter 3"x 2-1/2" Hose Shank*



Prod. No.	Size
633EH-SS3025	3" Adaptor x 2-1/2" Hose Shank

*Designed for non-compressable liquids

633 AA Spool Adaptor*



Prod. No.	Size
633AA-SS2020	2" x 2"
633AA-SS2030	2" x 3"
633AA-SS3030	3" x 3"

*Designed for non-compressable liquids

633 DA Coupler/Adaptor* (non locking)





Prod. No.	Size
633DA-SS2030	2" Coupler x 3" Adaptor
633DA-SS3020	3" Coupler x 2" Adaptor
633DA-SS4030	4" Coupler x 3" Adaptor
633DA-SS3020V	3" Coupler x 2" Adaptor w/ blow-down valve
633DA-SS3030V	3" Coupler x 3" Adaptor w/ blow-down valve

*Designed for non-compressable liquids

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Miscellaneous Couplers & Adaptors

633 AW Adaptor* (Socket Weld) Schedule 40



Prod. No.	Size
633AW-SS05	3/4" Adaptor x 1/2" SW
633AW-SS07	3/4"
633AW-SS10	1"
633AW-SS12	1-1/4"
633AW-SS15	1-1/2"
633AW-SS20	2"
633AW-SS25	2-1/2"
633AW-SS30	3"
633AW-SS40	4"

Note: Weld fittings designed for Sched. 40 only
*Designed for non-compressable liquids

733 DLW Coupler* (Socket Weld) Schedule 40



Prod. No.	Size
733DLW-05SB	3/4" x 1/2" SW
733DLW-07SB	3/4"
733DLW-10SB	1"
733DLW-12SB	1-1/4"
733DLW-15SB	1-1/2"
733DLW-20SB	2"
733DLW-25SB	2-1/2"
733DLW-30SB	3"
733DLW-40SB	4"

Note: Weld fittings designed for Sched. 40 only
*Designed for non-compressable liquids

633 FW Adaptor* (Butt Weld) Schedule 40



Prod. No.	Size
633FW-SS05	3/4" Adaptor x 1/2" BW
633FW-SS07	3/4"
633FW-SS10	1"
633FW-SS12	1-1/4"
633FW-SS15	1-1/2"
633FW-SS20	2"
633FW-SS25	2-1/2"
633FW-SS30	3"
633FW-SS40	4"

Note: Weld fittings designed for Sched. 40 only
*Designed for non-compressable liquids

733 BLW Coupler* (Butt Weld) Schedule 40



Prod. No.	Size
733BLW-05SB	3/4"x 1/2" BW
733BLW-07SB	3/4"
733BLW-10SB	1"
733BLW-15SB	1-1/2"
733BLW-20SB	2"
733BLW-30SB	3"
733BLW-40SB	4"

Note: Weld fittings designed for Sched. 40 only
*Designed for non-compressable liquids

633 LAS Adaptor* (150 lb. ANSI Flange)



Prod. No.	Size
633LAS-SS05	3/4" Adaptor x 1/2" Flange
633LAS-SS07	3/4"
633LAS-SS10	1"
633LAS-SS12	1-1/4"
633LAS-SS15	1-1/2"
633LAS-SS20	2"
633LAS-SS25	2-1/2"
633LAS-SS30	3"
633LAS-SS40	4"

*Designed for non-compressable liquids

733 LDS Coupler* (150 lb. ANSI Flange)



Prod. No.	Size
733LDS-05SB	3/4" Coupler x 1/2" Flange
733LDS-07SB	3/4"
733LDS-10SB	1"
733LDS-12SB	1-1/4"
733LDS-15SB	1-1/2"
733LDS-20SB	2"
733LDS-25SB	2-1/2"
733LDS-30SB	3"
733LDS-40SB	4"

*Designed for non-compressable liquids

Accessories

Style	Size	Part #
SST Chain with Hooks	12" Long	H31119M
	18" Long	H31120M
Brass Chain with "S" Hooks	6" Long	H06682M
	12" Long	H06683M
Spring Finger Ring	1" – 6"	H20550M

Twin-Kam™ Kamlok® Cam Arm Kits

with Guaranteed For Life (GFL™) Twin-Kam™ Arms



CAUTION: We do not recommend the use of Twin-Kam™ arms on couplers not manufactured by OPW. Dimensional differences do exist and proper performance cannot be assured.

Parts Kit includes:
- 2 Cam Arms
- 2 Pins
- 2 Finger Rings
- Instructions

Kit #	Size
633ARK-SS07*	1/2" & 3/4"
633ARK-SS10	1"
633ARK-SS20	1-1/4" – 2-1/2"
633ARK-SS30	3", 4" & 5"

*Note: Finger Rings are not included with 1/2" and 3/4" Kit.

Autolok® Cam Arm Kits



Kits for Autolok® Couplers and Dust Caps

Parts Kit includes:
- 2 Cam Arms
- 2 Finger Rings
- 2 Pins
- Instructions

Kit #	Size
733ARK-SS07	1/2" & 3/4"
733ARK-SS10	1"
733ARK-SS20	1-1/4" – 2-1/2"
733ARK-SS30	3" & 4"

Original Locking Design Repair Kits



Parts Kit includes:
- 1 Cam Arm
- 1 Finger Ring
- 1 Pin
- Instructions

Kit #	Size
733WARK-SS07	3/4"
733WARK-SS10	1"
733WARK-SS20	1-1/4" – 2-1/2"
733WARK-SS30	3" & 4"

634 CLK Cliplok™ Kits Provides locking mechanism for standard units

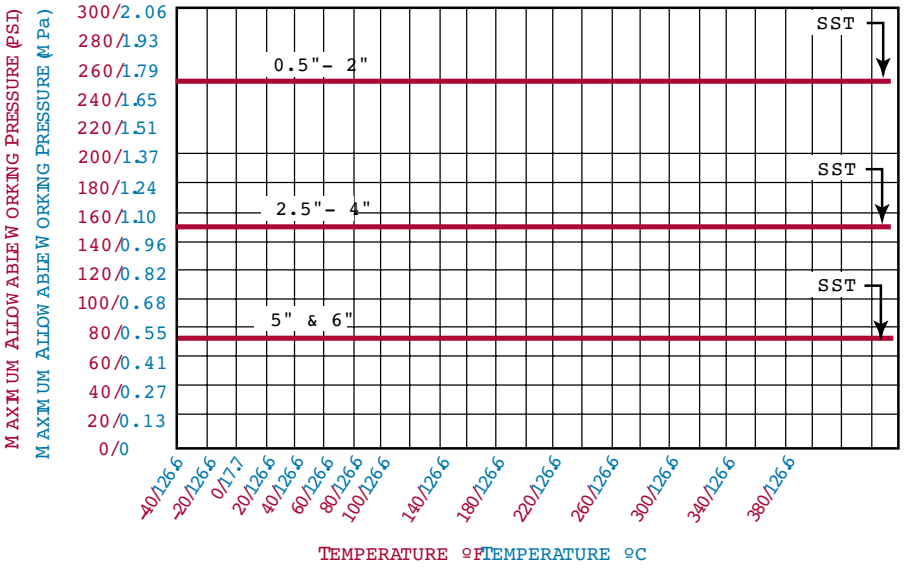


Kit includes:
- 1 Cliplok™
- 2 Pins
- 2 Washers
- 3 Wavey Washers
- Instructions

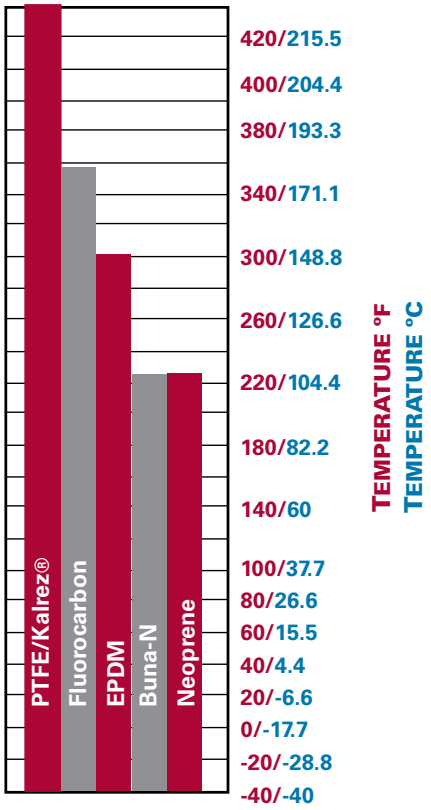
Kit #	Size
634CLK-1020	1-1/4" - 2-1/2"
634CLK-1070	3" & 4"

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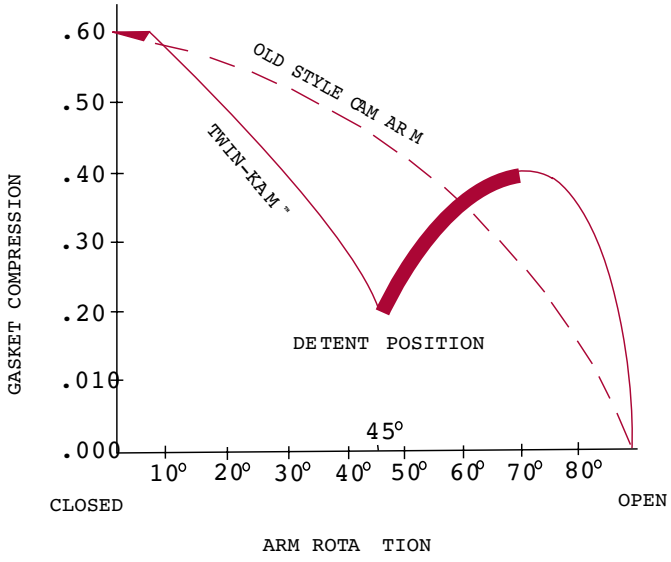
Pressure/Temperature Characteristics



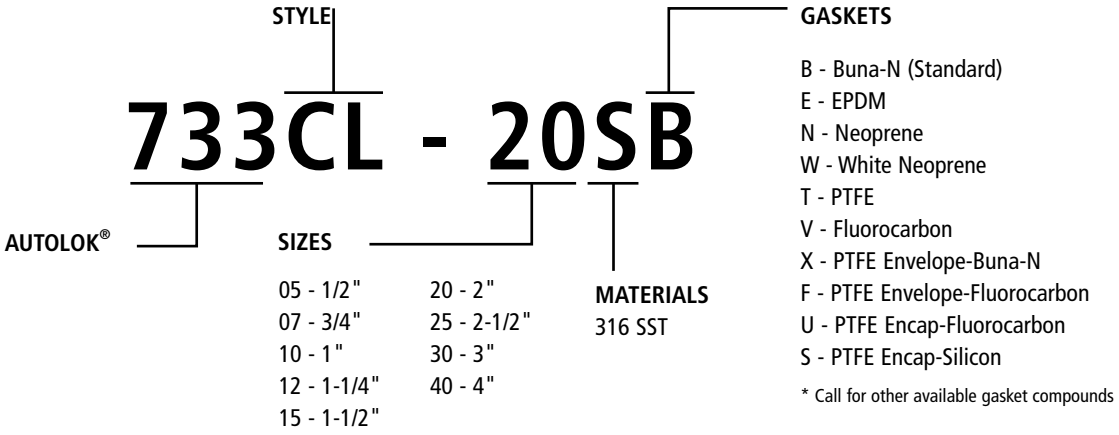
Temperature Characteristics

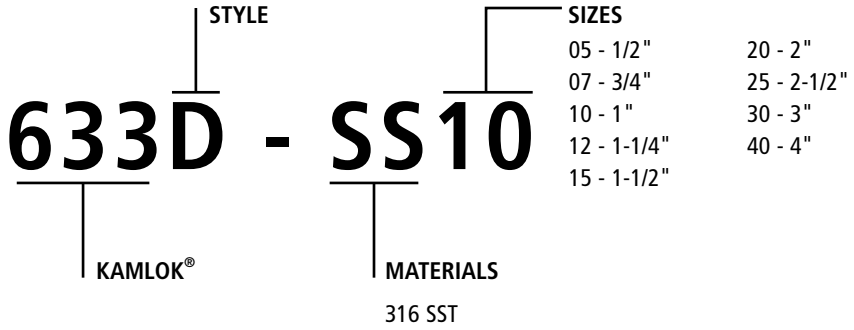


Kamlok® Twin-Kam™ Couplers



Ordering Specifications





Gaskets for Autolok®/Kamlok® Couplers

Size (in.)	Buna-N (Standard) Part No.	EPDM Part No.	Neoprene Part No.	White Neoprene Part No.	Fluorocarbon-A Part No.
3/4"	H06595M	H05215M	H01881M	**	H00966M
1"	H06480M	H05216M	H01884M	H04196M	H00967M
1-1/4"	H06477M	H20534M	H01887M	**	H00968M
1-1/2"	H06430M	H20535M	H01890M	H04200M	H00972M
2"	H20544M	H20536M	H01893M	H04201M	H00973M
2-1/2"	H20545M	H20537M	H01896M	H01189M	H00974M
3"	H20546M	H20538M	H01899M	H01190M	H00975M
4"	H20547M	H05225M	H01902M	H04208M	H00976M

Size (in.)	PTFE* Part No.	PTFE Envelope Buna Part No.	PTFE Envelope Fluorocarbon Part No.	PTFE Encapsulated Fluorocarbon Part No.	PTFE Encapsulated Silicone Part No.
3/4"	H01979M	H03304	H03401	H20887M	H20888M
1"	H01980M	H03307	H03402	H20889M	H20890M
1-1/4"	H01981M	H03310	H03405	H20891M	H20892M
1-1/2"	H01982M	H03317	H03407	H20893M	H20894M
2"	H01983M	H03325	H03408	H31116M	H07904M
2-1/2"	H02172M	H03330	H03410	H31118M	H07905M
3"	H02173M	H03333	H03411	H20895M	H20896M
4"	H02174M	H03336	H03412	H20845M	H31562M

*Solid PTFE gaskets recommended for use with viscous fluids
**Consult Factory

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Dry Disconnects Overview

OPW Engineered Systems offers the most comprehensive line of dry disconnect products in the industry. OPW's line of dry disconnects include Drylok™, Kamvalok® and Epsilon®, all suitable for a broad range of hazardous liquid applications.

Dry Disconnect coupling devices have been proven as successful technology to help protect workers and the environment in the transfer of hazardous materials. If your product is corrosive, toxic, caustic or otherwise harmful, **OPW Engineered System's** family of high-performance dry disconnect couplings reduces the hazard associated with the transfer of these products.

- **Kamvalok®** couplings can be used at any transfer point where product loss is unacceptable.
- **Drylok™** coupling systems are designed to safely transfer hazardous, corrosive, volatile liquids such as acids, solvents and petrochemicals.
- **Epsilon®** couplers are designed with a double ball valve system to prevent chemical spills and reduce fugitive emissions of VOCs.
- **Twist-Lok** is an industry-leading range of user-friendly Dry Disconnect Couplers that provides a quick, easy connection with minimal product loss.



Kamvalok® Overview

The Industry Standard in Dry Disconnect Couplings

The OPW Engineered Systems' Kamvalok® dry disconnect is designed to automatically shut off in the event of an accidental disconnection of the coupler and adaptor. Should the Kamvalok® be accidentally disconnected due to operator error or accident while the handle is in the open position and product flow is in progress, the poppet in the adaptor will automatically close and the seal cylinder will immediately stop flow through the coupler.

After the Kamvalok® adaptor and coupler are firmly coupled together, the coupler handle is turned to the OPEN position. This action moves the coupler poppet toward the adaptor poppet until the two mating poppets make contact. By completely turning the handle to the full open position the coupler poppet is extended beyond the end of the coupler, depressing the adaptor poppet back into the adaptor body. This creates clearance for the liquid flow around both the coupler and adaptor poppets. Guiding fins in the coupler and deflectors in the adaptor ensure even flow characteristics. When the handle is returned to the CLOSED position, the poppets are closed and the disconnection can be made. With the exception of the minimal amount of liquid captured between the two poppets, spillage upon disconnect is prevented.

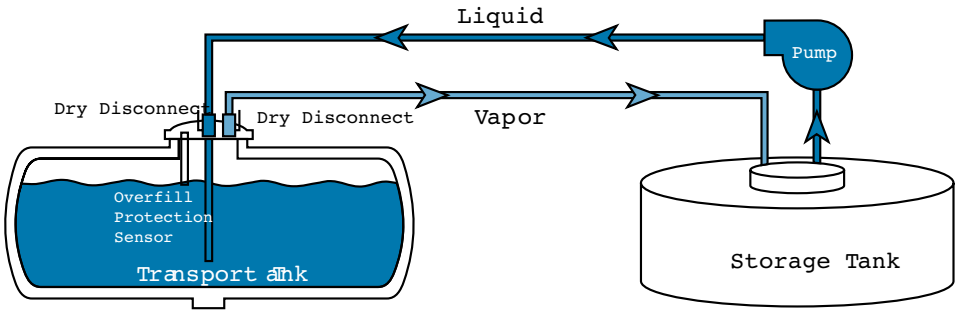
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Kamvalok® Applications

Because of its unique poppet action, the OPW Kamvalok® Dry Disconnect virtually eliminates spillage of any residual liquid contained within the line after disconnection. Kamvaloks® are used at transfer points where product loss is unacceptable. Common applications include: paint, lacquers, inks, adhesives, fatty acids, pharmaceuticals, liquid soaps, petroleum products, solvents, ag-chemicals, vegetable oils, detergents, and many acids and caustics.

OPW Engineered Systems' Kamvalok® Couplings and Adaptors Provide for Total Closed-Loop Loading Capabilities.

- Kamvalok® Dry Disconnect Couplings and Adaptors
- D2000™ Vapor Recovery Couplers
- Tank Trailer, Tank Car and IBC Dry Disconnect Adaptors
- Autolok®/Kamlock® Quick Couplings



The benefit of closed-loop loading is that it protects people and property from dangerous and costly exposure by keeping hazardous liquids and vapors in-line and out of the environment. Closed-loop loading can help you meet the guidelines of responsible product stewardship and be in compliance with the Clean Air Act, SARA TITLE III, OSHA and other regulations.



OPW Kamvalok® components allow you to create closed-loop configurations on railcars.



Genuine OPW Kamvalok® Dry Disconnect Couplings help prevent product loss from routine and accidental uncouplings.



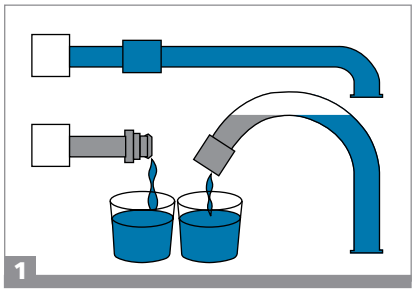
Through OPW's global distribution network, producers can create closed-loop systems using authentic OPW Kamvalok® products.



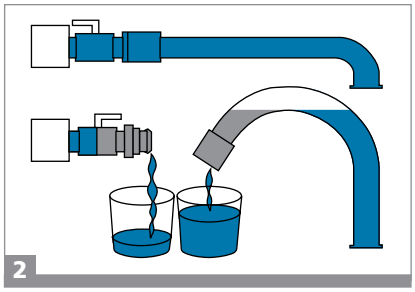
Major shippers of hazardous liquids choose specially designed fittings from OPW when converting tank car fleets.

Why Use Kamvaloks®

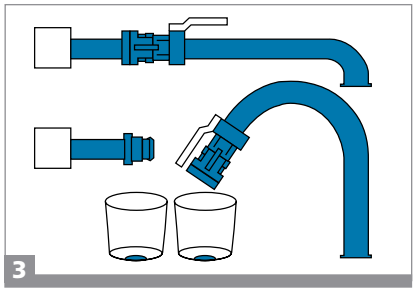
- If your product is corrosive, toxic, caustic or otherwise harmful, Kamvaloks® will reduce the hazard associated with the transfer of these products.
- If your product is a VOC (volatile organic compound) that has a high vapor pressure and tends to evaporate quickly, Kamvaloks® will keep the product in-line and out of the air.
- Kamvaloks® will contain fugitive emissions, transfer VOCs without vapor loss, help keep employees out of harm's way and help promote responsible environmental management.



Ordinary Quick Disconnect Couplings - Excessive amount of liquid spills out when coupling is disconnected.



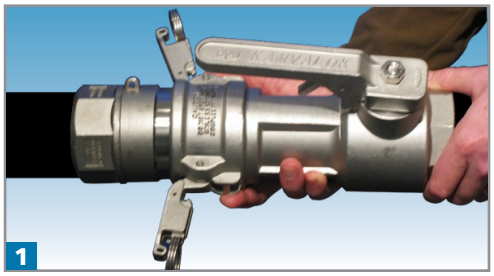
Ordinary Quick Disconnect Couplings Plus Ball Valve - Excessive amount of liquid spills out when coupling and ball valve are disconnected.



OPW Dry Disconnect Couplings - Virtually eliminates spillage of any residual liquid contained within the line after disconnection.

Kamvalok® Operation

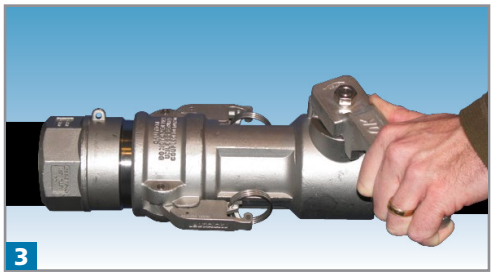
OPW Engineered Systems' Kamvalok® Dry Disconnects are easy to operate. Connections and disconnections are accomplished by simply closing and opening two cam arms which lock into the machined groove around the circumference of the mating adaptor. The adaptor contains a spring-loaded poppet assembly that is actuated by the handle-action on the coupler.



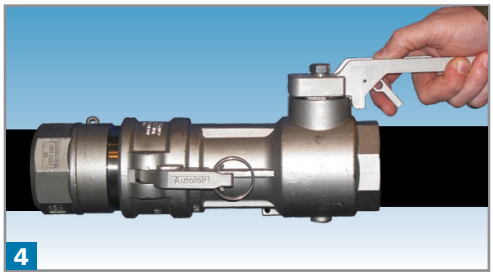
Coupler in any Position



Cam Arms Lock Coupler and Adaptor Together



Locking Handle Opens Valves

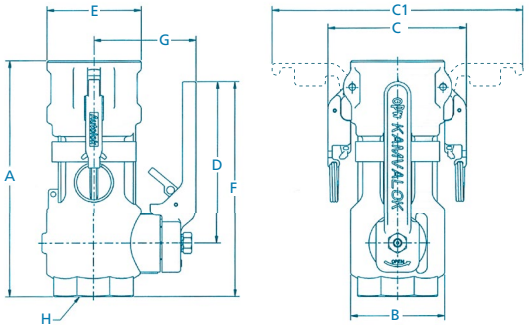


Handle Locks and Full Flow Begins

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1700DL Series Couplers

OPW Kamvalok® Dry Disconnect Couplings are considered the standard of the industry. Used at liquid transfer points where product loss could occur, OPW Kamvaloks® provide a reliable solution to prevent spillage during connection or disconnection. OPW Kamvalok® Dry Disconnect Couplings are used by manufacturers of paint, lacquers, inks, adhesives, fatty acids, pharmaceuticals, liquid soaps, and many other liquid products. They are particularly well suited for handling petroleum products, solvents, ag-chemicals, vegetable oils, detergents and many acids and caustics.





Features & Benefits

- **Poppeted Seal Cylinder with Snap-on Nose Seal**
  - Keeps hazardous liquids in-line and out of the environment
  - Nose seal can be easily replaced without need for new seal cylinder
  - AUTOMATIC CLOSURE
- **Autolok® Locking Arms**
  - Provide added protection with an automatic locking mechanism
  - Uncoupling requires only an easy tug on the lock release
- **SST Locking Handle**
  - Handle locks in both the opened and closed positions to prevent accidental opening or closing of valve
- Refer to page 24 for Performance Specifications

Dimensions

SIZES IN INCHES (Approximate)		1 1/2"	2"	3"
A	Length of Body	8"	8.81"	10.03"
B	Diameter of Body	3.12"	3.52"	5.50"
C	Distance across Cam Arms – closed	4.75"	5.22"	7.34"
C1	Distance across Cam Arms – open	8.94"	9.41"	14.78"
D	Centerline of Shaft to end of Handle	6.06"	6.06"	6.06"
E	Diameter of Coupler End	3.12"	3.52"	5.50"
F	Length from Pipe End to end of Handle	7.98"	8.03"	8.56"
G	Centerline of Coupler to top of Handle	3.56"	3.75"	4.53"
H	Pipe Thread (NPT)	1.50" (DN40)	2" (DN50)	3" (DN80)

Ordering Specifications

TYPE
17 - Coupler

CONFIGURATION
1 - Aluminum Body, Duplex Stainless Steel Internals
7 - Stainless Steel Body, Duplex Stainless Steel Internals

SIZE
15 - 1-1/2" DN40
20 - 2" DN50
30 - 3" DN80

17 1 1 DL - AL 15 - GL

STYLE
***** - Leave blank for FNPT
A - 150 lb. Flange
GL - Greaseless
KL- Keylok
T - 300 Lb. Flange

O-RING SEAL
1 - Buna-N
2 - Fluorocarbon
3 - PTFE / Silicone
4 - EPDM
6 - Chemraz®

DL - FNPT
DBL - FBSPT

CONSTRUCTION MATERIAL
AL - Aluminum Body (ASTM A356-T6 B-26)
SS - Stainless Steel Body (ASTM A351 CF3M 316L)

Kamvalok®
Flat-Face Coupler and Adaptor

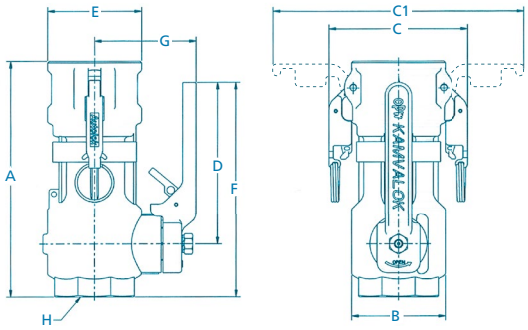
The new Kamvalok® Flat-Face is the next generation of OPW dry-disconnect couplings. We've taken our proven, best-in-class Kamvalok and flattened the connection points. This effectively eliminates all cavities where liquid can pool and subsequently spill upon disconnection.

Features & Benefits

- Reduce product loss at disconnect by up to 85%
- New patent-pending smooth, flat-face poppets
- Industry-standard locking handle
- Easy to close Autolok™ locking arms
- Automatic locking arms, no pins or buttons
- Vibration-resistant Twin-Kam™ arms



Kamvalok® Flat-Face Dry Disconnect Couplings



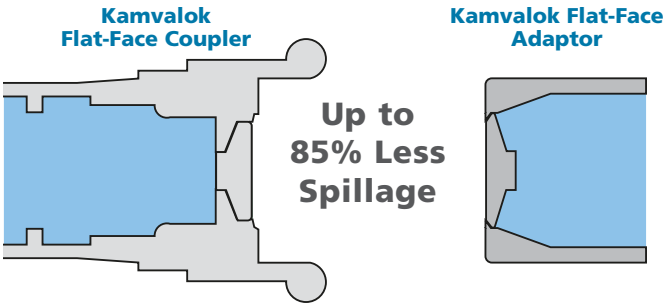
Dimensions

SIZES IN INCHES (Approximate)		1 1/2"	2"	3"
A	Length of Body	8"	8.81"	10.03"
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C	Distance across Cam Arms – closed	4.75"	5.22"	7.34"
C1	Distance across Cam Arms – open	8.94"	9.41"	14.78"
D	Centerline of Shaft to end of Handle	6.06"	6.06"	6.06"
E	Diameter of Coupler End	3.12"	3.52"	5.50"
F	Length from Pipe End to end of Handle	7.98"	8.03"	8.56"
G	Centerline of Coupler to top of Handle	3.56"	3.75"	4.53"
H	Pipe Thread (NPT)	1.50" (DN40)	2" (DN50)	3" (DN80)

Kamvalok® Flat-Face

Dry-Disconnect Coupler Design

Kamvalok Flat-Face reduces product loss at disconnect by **up to 85%** compared to our already high-performing standard Kamvalok.



*Percentage of fluid loss at disconnect varies depending on the size of the Kamvalok and if it is vertically or horizontally positioned.

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Coupler Ordering Specifications

Type
17 - Coupler

Configuration
1 - Aluminum Body, Duplex Stainless-Steel Internals
7 - Stainless-Steel Body, Duplex Stainless-Steel Internals

Size
15 - 1-1/2" DN40
20 - 2" DN50
30 - 3" DN80

1711DL - AL15 - GL - FLAT*

Style
* - Leave blank for FNPT
A - 150-lb. Flange
GL - Greaseless
KL - Keylok
T - 300-lb. Flange

O-Ring Seal
1 - Buna-N
2 - Fluorocarbon
3 - PTFE / Silicone
4 - EPDM
6 - Chemraz®

DL - FNPT
DBL - FBSPT

Construction Material
AL - Aluminum Body (ASTM A356-T6 B-26)
SS - Stainless-Steel Body (ASTM A351 CF3M 316L)

*** Simply add "FLAT" to the end of any standard Kamvalok Coupler Order**

Adaptor Ordering Specifications

Type
16 - Adaptor

Configuration
1 - Aluminum Body, Stainless-Steel Internals
7 - Stainless-Steel Body, Stainless-Steel Internals

Size
15 - 1-1/2" FNPT
20 - 2" FNPT
30 - 3" FNPT

1611AN - AL15 - GL - FLAT*

Style
GL - Greaseless
KG - Krytox Grease
KL - Keylok
P - Sanitary Triclamp

O-Ring Seal
1 - Buna-N
2 - Fluorocarbon (GFLT)
3 - PTFE / Silicone
4 - EPDM
6 - Chemraz®
7 - PTFE / Fluorocarbon

Connection
ANF - 150 lb. Flange
AN - Female NPT
ANFT - 300 lb. Flange
ABN - Female BSPT

Construction Material
AL - Aluminum Body
SS - Stainless-Steel Body

*** Simply add "FLAT" to the end of any standard Kamvalok Adaptor Order**

Design Parameters

Max Design Pressure	1-1/2" Size - 210 psig (15 bar) 2" Size - 150 psig (10.5 bar) 3" Size - 120 psig (8.5 bar)	
Temperature Range	• Buna-N	-20°F – 212°F (-29°C – 100°C)
	• Fluorocarbon	-20°F – 400°F (-29°C – 204°C)
	• PTFE Encapsulated Silicone	-15°F – 400°F (-26°C – 204°C)
	• EPDM	-50°F – 250°F (-46°C – 121°C)
	• Chemraz®*	-15°F – 400°F (-26°C – 204°C)

*Chemraz is a registered trademark of Greene-Tweed

Materials

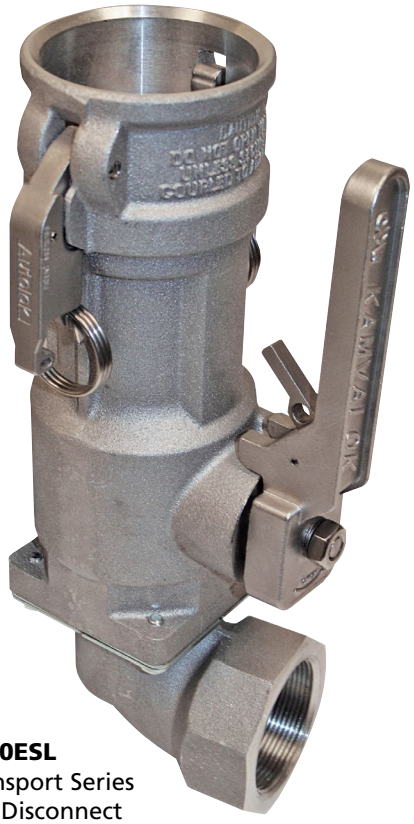
Body, Poppet, Seal Cylinder	Aluminum, Stainless Steel
Shaft Link, Cam Arms, Poppet Link	Stainless Steel

1700ESL Kamvalok® Coupler

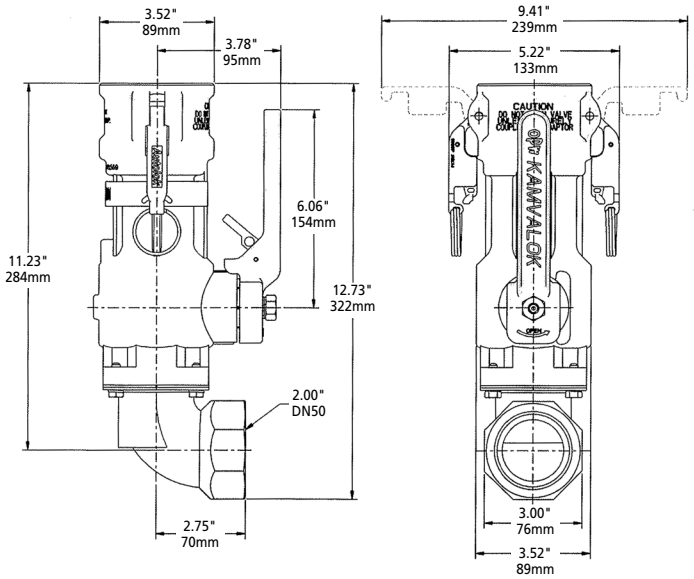
OPW Transport Series Dry Disconnect Couplings are considered the standard of the industry. For use on multi-compartment petroleum, solvent and chemical product delivery trucks with an on-board pumping unit.

Features & Benefits

- **Spill Protection** – Helps to reduce the hazards involved in the connection/disconnection process of transferring hazardous liquids.
- **Provides for Total Closed-Loop Loading Capabilities** – Keeps hazardous liquids and vapors in-line and out of the environment.
- **Dual Protection** – Poppeted seal cylinder design provides automatic closure from both directions – the coupler and the adaptor – to avoid accidental spills.
- **Autolok® Locking Arms** – Provide added protection with an automatic locking mechanism signaled by a positive click. Uncoupling requires only an easy tug on the lock release.
- **SST Locking Handle** – Locks in position to prevent accidental opening or closing of valve.
- **Ease of Use** – Built-in elbow swivel and simple connection and disconnection design provides freedom of movement and smooth operation.



1700ESL
Transport Series
Dry Disconnect
Couplings



Design Parameters

Design Standard	**ASME B31.3**
Max. Design Temp	200° F (93° C)
Min. Design Temp	-20° F (-29° C)
Max. Design Pressure	150 PSI (10.5 BAR)

Ordering Specifications

90° Elbow/Swivel Coupler

Prod. No.	Size/Description
1711ESL-AL20	2" KVL Coupler/Elbow Swivel, Locking Arms, Buna-N
1712ESL-AL20	2" KVL Coupler/Elbow Swivel, Locking Arms, Fluorocarbon
1714ESL-AL20	2" KVL Coupler/Elbow Swivel, Locking Arms, EPDM

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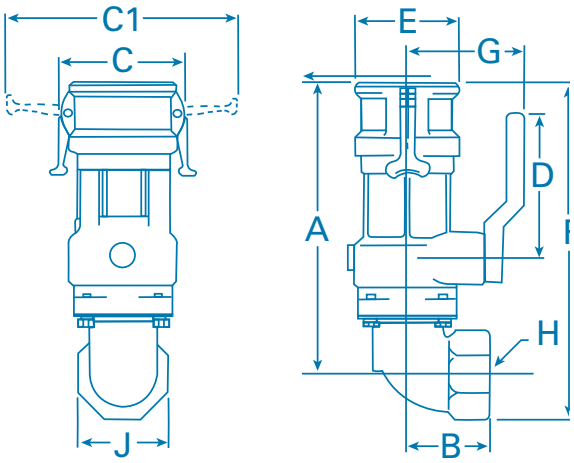
1700ES Series Couplers

OPW Transport Series Dry Disconnect Couplings are used on multi-compartment petroleum, solvent and chemical product delivery trucks with an on-board pumping unit when clearance is an issue.



Features & Benefits

- **Spill Protection** – Helps to reduce the hazards involved in the connection/disconnection process of transferring hazardous liquids.
- **Provides for Total Closed-Loop Loading Capabilities –** Keeps hazardous liquids and vapors in-line and out of the enviroment.
- **Dual Protection** – Poppeted seal cylinder design provides automatic closure from both directions – the coupler and the adaptor – to avoid accidental spills.
- **Ease of Use** – Built-in elbow swivel and simple connection and disconnection design provides freedom of movement and smooth operation.



Dimensions

SIZE IN INCHES (Nominal)		2"
A	Top of body to centerline of elbow	9-9/16"
B	Centerline of elbow to end of elbow	2-3/4"
C	Distance across cam arms when closed	4-3/8"
C1	Distance across cam arms when open	8"
D	Centerline of stem to end of handle	4-5/8"
E	Diameter of coupler end	3-33/64"
F	Length of unit	11-3/16"
G	Centerline of coupler to outside of handle	3-5/8"
H	Pipe thread (NPT)	2"
J	Distance across flats of octagon	3"

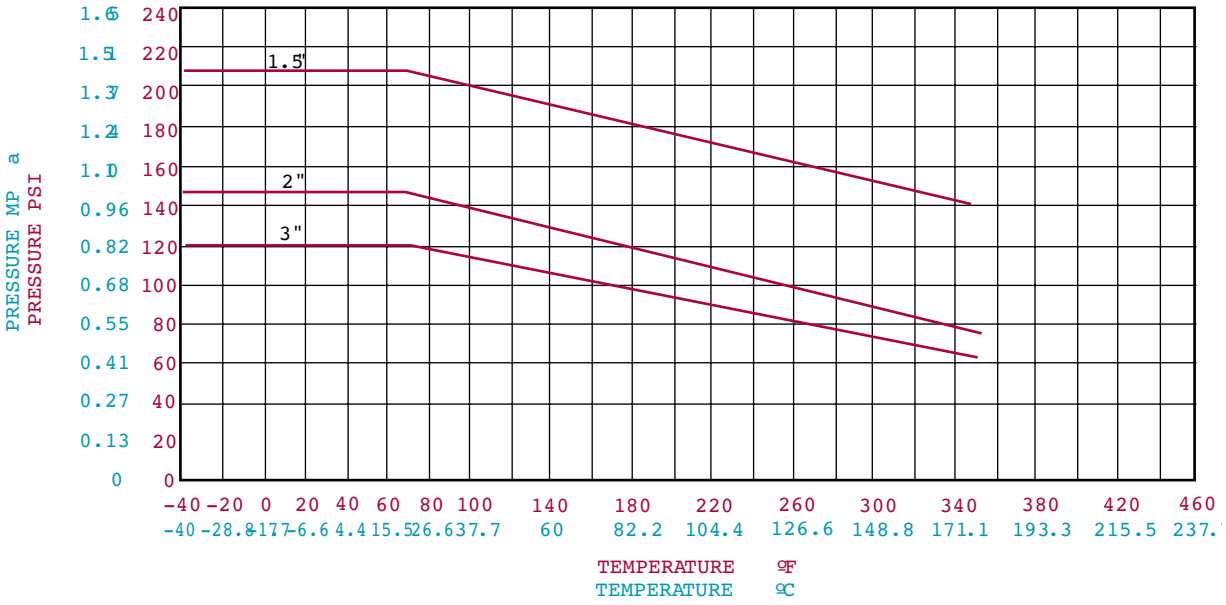
Ordering Specifications

90° Elbow/Swivel Coupler

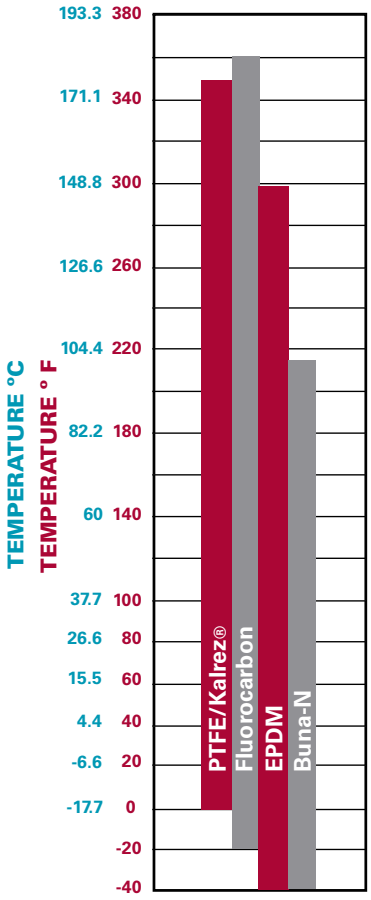
Prod. No.	Size/Description
1711ES-0200	2" Aluminum, Acetal, Buna-N Seals
1712ES-0200	2" Aluminum, Acetal, Fluorocarbon Seals
1714ES-0020	2" EPDM Aluminum, Acetal, EPDM

1700DL Series

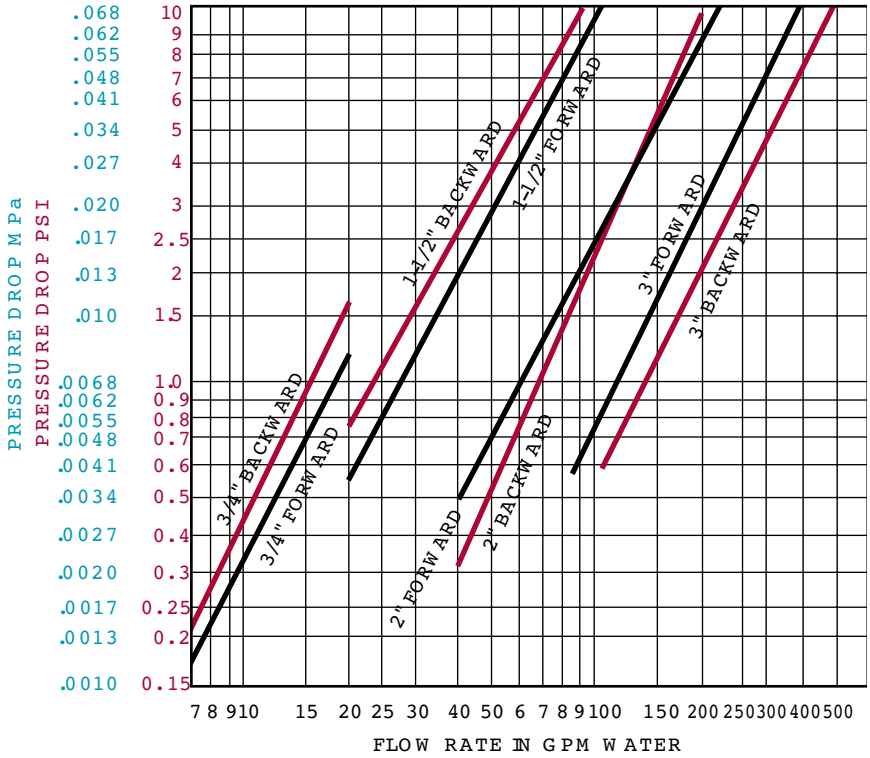
Temperature/Pressure Characteristics



Temperature Characteristics



Flow Characteristics



LEGEND:

Forward Flow From Coupler Through Adaptor

Backward Flow From Adaptor Through Coupler

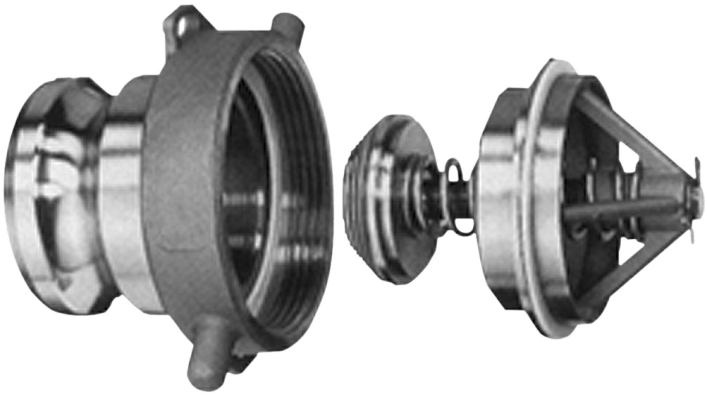
NOTE: For flow information on specific chemicals or liquid products, contact your OPW Representative or Factory Technical Customer Service.

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OPW 2173AVN

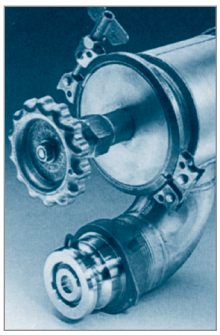
The OPW 2173AVN Vapor Recovery Dry Disconnect Coupling provides for easy access in recovering vapors for either top or bottom loading/unloading tank truck operations.

The OPW 2173AVN installs onto the QRB valve on tank trailers and can provide a dry disconnect connection for emergency evacuation of hazardous liquids in the case of roll-over.



Benefits

- **Closed-Loop Protection** – Helps protect people and the environment by providing a vapor and liquid tight seal during the connection/disconnection process specifically designed to contain VOC (volatile organic compounds) products that have high vapor pressure and evaporate quickly. Contains fugitive emissions and transfers VOCs without vapor loss.
- **Roll-Over Safety** – Its low profile design keeps the fitting below roll-over plane to minimize damage in the event of a roll-over. Meets IMO profile dimensions.
- **Easy Emergency Evacuation** – Provides a dry disconnect connection for emergency evacuation of hazardous liquids in case of roll-over
- **Quick and Easy Cleaning** – Designed for easy disassembly for routine cleaning





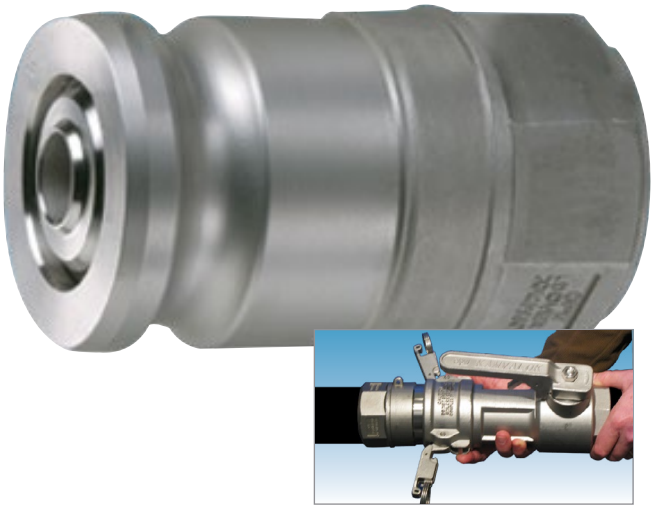
OPW's 2173AVN Dry Disconnect Coupling installs on the QRB valve on the truck

Features

- **Vapor Hose Connection** – 2" Kamvalok® Dry Disconnect or D2000™ Actuating Couplers
- **No Trailer Modifications Required** – Easy attachment to existing MC307, DOT407, MC312, and DOT412 trailers
- **3" Straight Thread Mounting** with 2" Kamvalok® dry disconnect cam and groove connection makes the ideal 3" x 2" adaptor for QRB valves
- **Can Replace Existing Clean-Out Caps for Closed Loop System**

1600AN

The 1600AN Series Adaptor is specifically designed to mate with OPW Kamvalok® Couplings to help prevent liquid spillage during the connection/disconnection process. The adaptor contains a spring-loaded poppet to assure fast closing and tight seal.



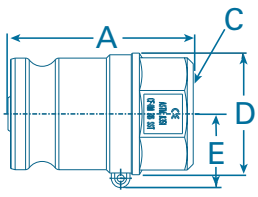
Benefits

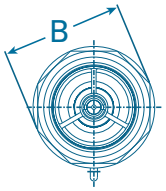
- **Single Piece Design** – Eliminates a possible leak path.
- **Spill Prevention** – Poppet-actuated design can only be opened with a Kamvalok® coupling; designed to provide a tight seal when closed.
- **Reliability of Operation** – The simple spring-loaded poppet design and heavy-duty construction provide for reliable, long-life operation.
- **Optimum Flow Rate** – Even flow and low pressure drop are achieved by a built-in deflector that reduces turbulence.

Features

- **Heavy-Duty Construction** – Available in aluminum, and stainless steel construction. Stainless steel corrosion resistance comparable to 316 stainless steel.
- **Female Threads** – Can be fitted to either a male pipe end or to a hose fitting
- **Spring-Loaded Poppet Design** – Assures fast closing and tight seal
- **Wide Range of Seals** – Available in Buna-N, Fluorocarbon, PTFE, EPDM, Chemraz®

Dimensions





SIZE IN INCHES (Nominal)

	1 1/2"	2"	3"
A	4-3/4"	4-15/16"	6-17/32"
B	2-1/2"	3-1/4"	4-1/2"
C	1-1/2"	2"	3"
D	2-21/32"	3-1/4"	4-7/8"

Ordering Specifications

TYPE
16 - Adaptor

CONFIGURATION
1 - Aluminum Body, Stainless Steel Internals
7 - Stainless Steel Body, Stainless Steel Internals

SIZE
15 - 1-1/2" FNPT
20 - 2" FNPT
30 - 3" FNPT

1611AN - AL15 - GL

STYLE
* Leave blank for FNPT
A - 150 lb. Flange
GL - Greaseless
KL- Keylok
T - 300 lb. Flange

O-RING SEAL
1 - Buna-N
2 - Fluorocarbon (GFLT)
3 - PTFE / Silicone
4 - EPDM
6 - Chemraz®
7 - PTFE / Fluorocarbon

CONNECTION
AN - FNPT
ABN - FBSPT
ANF - 150 lb. Flange
ANFT - 300 lb. Flange

CONSTRUCTION MATERIAL
AL - Aluminum Body
SS - Stainless Steel Body

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1600ANF

The OPW 1600ANF Series Adaptors are designed specifically for applications using an ANSI flange.

The OPW 1673ANF, 1674ANF and 1676ANF Dry Disconnect Adaptors keep hazardous chemicals and vapors in-line and out of the environment.

Rugged, yet quick and easy to install, the 1600ANF Series is ideal for closed-loop loading conversions.

Benefits

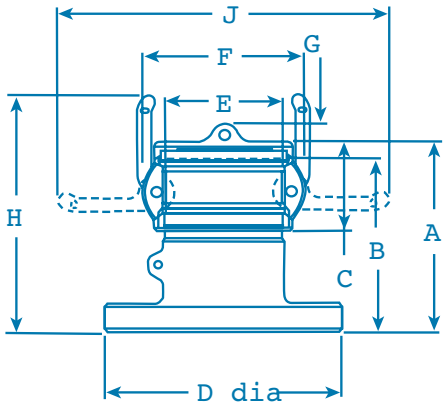
- **Eliminates Threads - One less leak point**
- **Spill Prevention** – The poppet-actuated design can only be opened with a Kamvalok® coupling; designed to provide a tight seal when closed.
- **Easy Access Connection** – Provides easy connection access for tank cars, tank trucks, intermodal tanks and in-process operations.
- **Connects with D2000™ Actuating Coupler or Kamvalok® 1700 Series Dry Disconnect Couplings**
- **Easy Cleaning** – Can be quickly disassembled
- **Specifically designed for applications using ANSI flanges**

Features

- **Heavy-Duty Construction** – Stainless steel corrosion resistance, comparable to 316 stainless steel
- **Available with 150# raised face flange or 300# tongue and groove design**
- **Spring-Loaded Poppet Design** – Assures fast closing and tight seal
- **Available in a Range of Seals** – PTFE, EPDM, Chemraz®, Buna-N and Fluorocarbon.
- **Available in 1-1/2", 2" and 3" sizes**



1673ANF and 1673ANFT

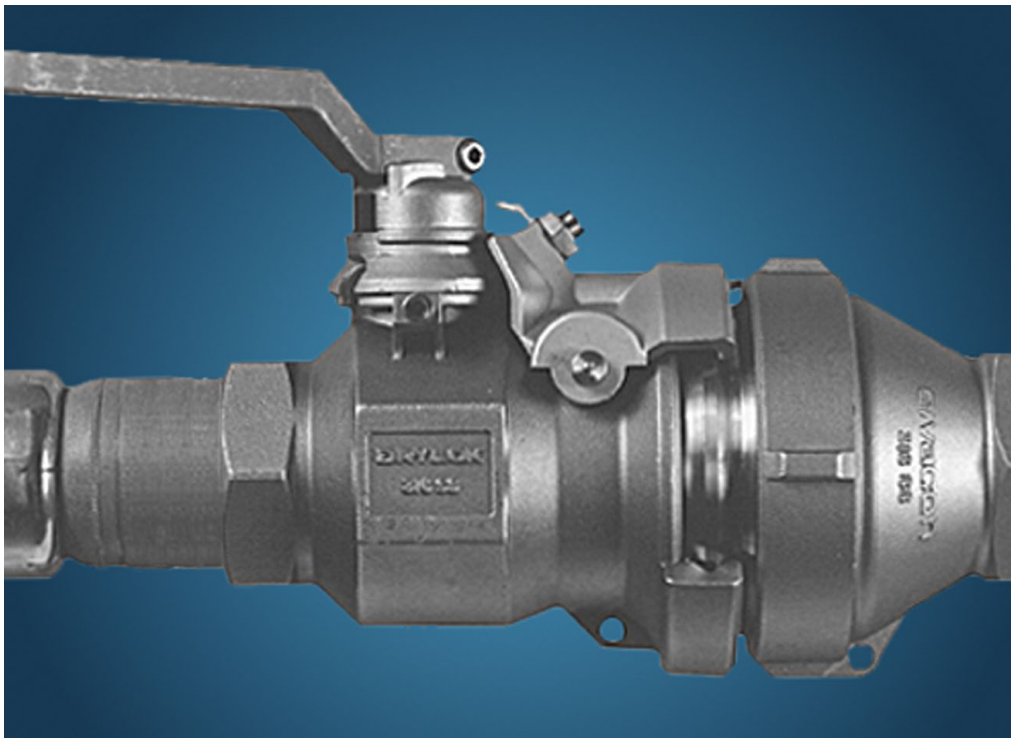


SIZE IN INCHES (1670ANF)

	1/2 x 2"	2"	3"
A Overall Length	4-47/64"	4-29/32"	6-9/16"
B Length of Body	4-13/32"	4-31/64"	6-1/8"
C Length of Cap	2-5/64"	2-1/4"	2-5/16"
D Diameter of Flange	6"	6"	7-1/2"
E Diameter of Body	2-1/2"	3"	4-45/64"
F Width of Cap	3-9/16"	4-1/16"	5-33/64"
G Height of Chain Lug	1/2"	7/16"	1/2"
H Length with Arms	6-1/32"	6-3/32"	8-1/8"
Number of Bolt Holes	4	4	4
Diameter of Bolt Holes	3/4"	3/4"	3/4"
Diameter of Bolt Circle	4-3/4"	4-3/4"	6"
J Max width of Arms	7-1/8"	8"	11-3/32"

SIZE IN INCHES (1670ANFT)

	2"	3"
A Overall Length	5-5/32"	6-13/16"
B Length of Body	4-47/64"	6-6/8"
C Length of Cap	2-1/4"	2-5/16"
D Dia. of Flange	6-1/2"	8-1/4"
E Dia. of Body	2-63/64"	4-45/64"
F Width of Cap	4-1/16"	5-33/64"
G Height of Chain Lug	7/16"	1/2"
H Length with Arms	6-21/64"	8-3/8"
Number of Bolt Holes	8	8
Diameter of Bolt Holes	3/4"	7/8"
Diameter of Bolt Circle	5"	6-5/8"
J Maximum width of Arms	8-9/32"	11-3/32"

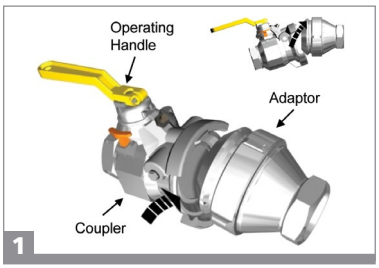


Drylok™ Overview

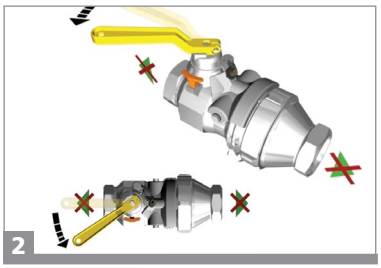
One of the Driest Disconnect Couplings for the Transfer of Hazardous Liquids

OPW's Drylok™ Dry Disconnect Coupling provides unprecedented safety in the transfer of hazardous liquids. With less than 1-cc of fluid loss from a 3-inch unit, Drylok™ is one of the driest disconnects in the industry. It meets or exceeds all of today's stringent emission and worker safety requirements set by EPA, OSHA and others.

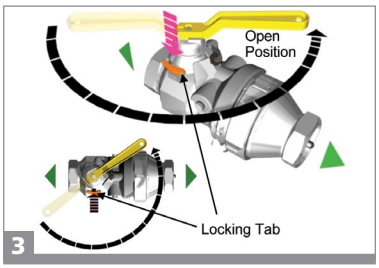
Drylok™ Operation Is Easy and Foolproof.



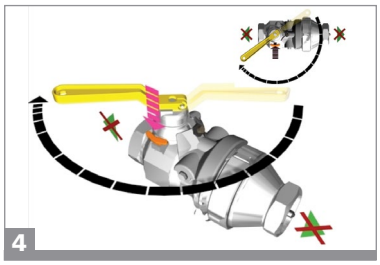
Push coupler onto adaptor by first engaging lower jaw of coupler under lip of adaptor and tilting the coupler upward to engage top jaw.



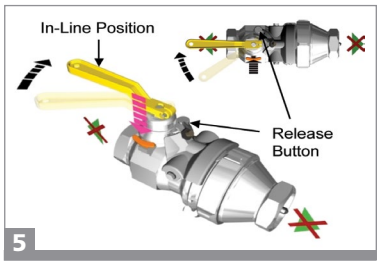
Turn handle counter-clockwise until lock engages. Coupler and adaptor are locked together but valve is closed.



Press button on coupler down and turn handle counter-clokwise until it locks. Valve is now open and product will flow.



To disconnect - press button on coupler and rotate handle clockwise until it locks. Valve is now closed.



Press button on coupler down and turn handle clockwise to the "In-Line" position. Press tab on opposite side of coupler to release the upper jaw and move coupler away.

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Drylok™

Drylok™ is designed to safely transfer hazardous corrosive, volatile liquids such as acids, solvents and petrochemicals. An interlocking handle averts accidental spills by preventing uncoupling while the valve is open. And, the unit's flat face minimizes fluid loss, further reducing exposure to risk during operation. Drylok™ is ideal for all kinds of hazardous fluids where product loss is a problem, such as high-pressure lines, high flow rates, slurries and gases.

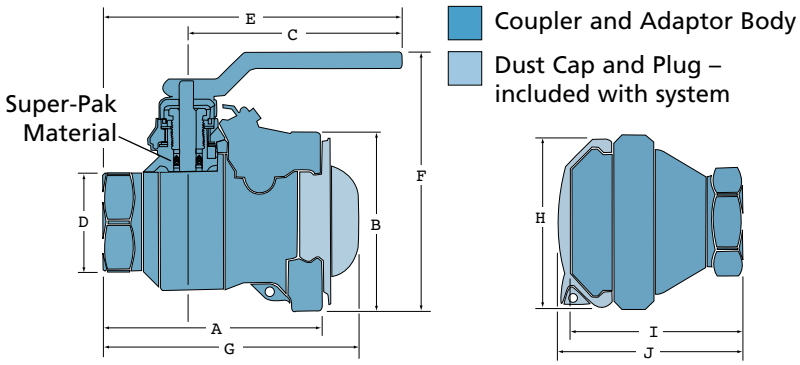


Benefits

- **One of the driest disconnects in the industry** – less than 1/2 ml (less than .10 teaspoon) of fluid loss from a 2" unit.
- **Unprecedented safety** – meets or exceeds all of today's stringent emission and worker safety requirements set by EPA, OSHA and others. Drylok™ cannot be uncoupled while the valve is open.
- **Optimum flow rate** – less obstruction in easy-flow interior optimizes the flow rate in high-pressure or high-viscosity applications.
- **Ease of use** – simple handle action connects valve to coupler and opens and closes the flow. 360° orientation ensures proper seating and alignment. No clamps, clips, loops or tabs that can cause operator error.

Features

- **Available in 1", 2" and 3" sizes**
- **Standard O-Ring seals for longevity, low cost and ease of maintenance**
- **Super-Pak Adjustable Packing with V-type material provides a continuous compression, emission-free seal on handle shaft. (2" & 3" only)**
- **Available in 316 stainless steel, Alloy 20® or Hastelloy® C with NPT, BSP, ANSI Flanged, BW, and SW end connections**
- **AAR Approved**
- **CRN Approved**



Super-Pak valve seal system on 2" and 3" models.*

**Super-Pak valve seal is a V-Type 75% PTFE and graphite blend, pressure energized packing. The packing nut can be tightened to stop leaks and emissions.*

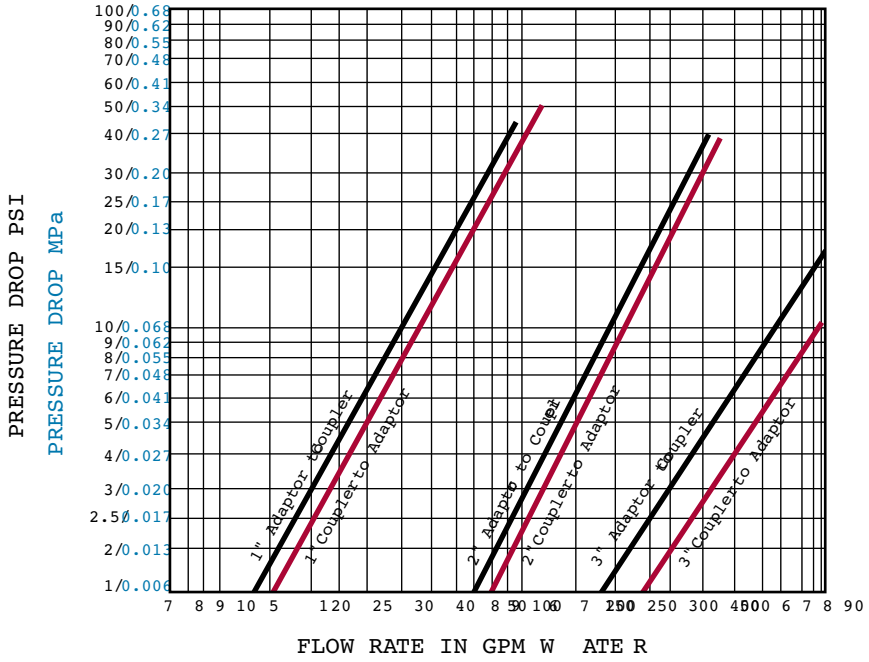
Type	Number	Size	Weight
Coupler	5770	1"	2-1/4 lbs./1.0 kg
		2"	10-1/4 lbs./4.6 kg
		3"	14-1/2 lbs./6.5 kg
Adaptor	5670	1"	1-1/4 lbs./.6 kg
		2"	7-1/2 lbs./3.4 kg
		3"	11-3/4 lbs./5.3 kg

Dimensions

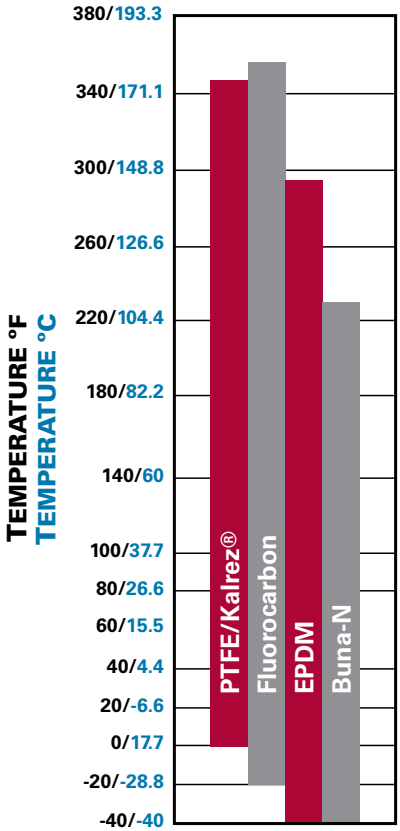
Size	A	B	C	D	E	F	G	H	I	J	Connected
1"	3-21/64" 85.6mm	2-15/32" 62.7mm	5-3/8" 136.5mm	1-7/8" 47.6mm	6-3/4" 171.5mm	4-37/64" 116.3mm	3-33/64" 89.3mm	2-5/32" 54.9mm	3-3/16" 81mm	3-3/4" 95.3mm	6-1/16" 153.9mm
2"	6-3/16" 173mm	5" 127mm	6" 152.4mm	2-3/4" 69.9mm	8-3/8" 212.7mm	7-1/4" 184.2mm	7-7/32" 183.4mm	5" 127mm	4-15/16" 125.4mm	5-5/16" 134.9mm	10-1/6" 255.5mm
3"	7-3/4" 196.9mm	6-3/16" 157.2mm	8-3/4" 222.3mm	4" 101.6mm	12" 304.8mm	8-31/32" 227.8mm	8-49/64" 197.3mm	5-1/2" 139.7mm	6-7/8" 174.6mm	7-17/64" 184.7mm	13-3/8" 339.7mm

Size indicates NPT Pipe Thread

Flow Characteristics



Temperature Rating/Seal Material



Pressure Rating

When connected to the adaptor, the Drylok™ Coupler can be opened and closed against a maximum of 150 psi head pressure.

Ordering Specifications

To assure that your order is processed promptly, please specify quantity, product number, size, construction materials and give a brief description of the product. Use the convenient product numbering system (below) to simplify your selections. Please consult factory for any design or special requirement you may need or desire.

5670 - V720N

O-RING SEAL
- B - Fluorocarbon-B
- C - Fluorocarbon-E
- E - EPDM
- F - PTFE Encapsulated Fluorocarbon
- N - Buna-N
- T - PTFE Encapsulated Silicone
- V - Fluorocarbon-A
- W - White Nitrile
- Y - Kalrez® (4079)
- Z - Kalrez® (6375)

CONSTRUCTION MATERIAL
- 7 - 316 Stainless Steel
- 8 - Alloy 20®

TYPE
- 56 - Adaptor
- 57 - Coupler

SIZE
- 10 - 1"
- 20 - 2"
- 30 - 3"

STYLE
- A - ANSI Flange 150 Lbs.
- B - Female BSPT
- C - Cutaway
- D - Din Flange
- N - Female NPT
- P - Sanitary Triclamp
- T - ANSI Flange 300 Lbs.
- W - Butt Weld
- X - Parking Adaptor

How to Order - Use this example as your guide to determine the part number of the Drylok™ coupling you need. Part numbers indicate coupling type, O-Ring seal material, construction material and size.

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EPSILON® Overview

Prevent Chemical Spills and Reduce Fugitive Emissions of VOCs

The EPSILON® Coupling System is designed to prevent chemical spills and reduce fugitive emissions of volatile organic compounds (VOCs), particularly in the process facility and during transfer to and from tank trucks and tank cars. During in-plant chemical transfers, the EPSILON® Chemical Containment System will provide your plant with process flexibility while improving operator safety, enhancing environmental compliance and reducing overall capital expenditures and operating costs.

EPSILON® is a low spill coupling, based on a double ball valve system integrating a sophisticated safety design in sizes of ¾", 1", 1½", 2" and 3". The design is constructed to handle a pressure of 435 psi (30 bar) and temperature up to 450°F (230°C) and is available with end connections complying to ANSI and DIN standards.

All wetted materials are 316/316L stainless steel (1.4401/1.4404) with TFM or PFA seals. Hastelloy® C is also available for use with more aggressive fluids.

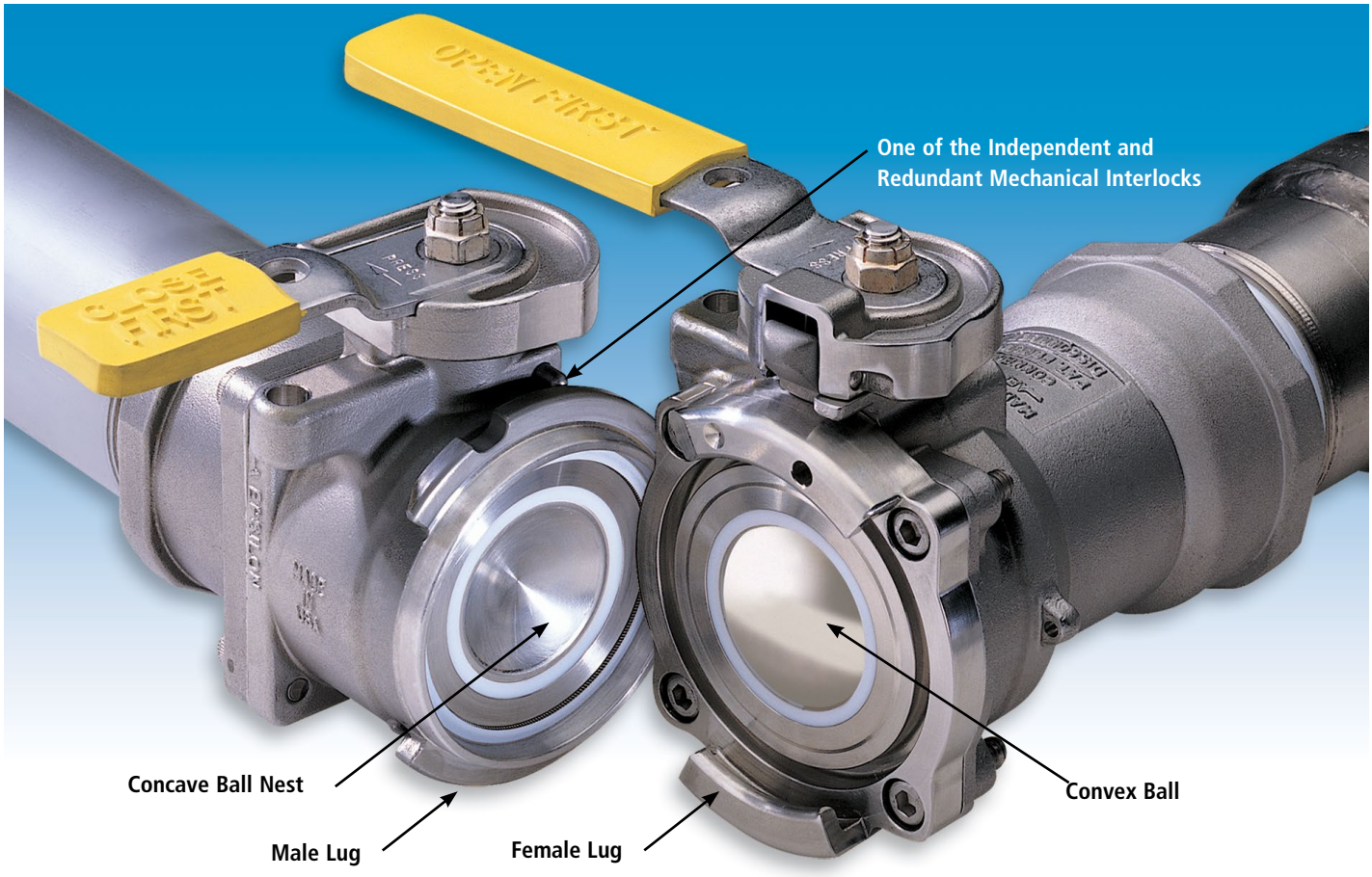
Beyond the common advantages of a ball valve design, EPSILON® provides for flow through an unrestricted flowpath and double shut off reliability in the coupling connection.

Superior Flow:
Unrestricted flow path provides less than 1psi pressure drop at 150 GPM.

Safety:
EPSILON® coupling is equipped with safety interlocks, which force the valves to open and close only with a deliberate action, preventing accidental opening of the valve.

Environment:
EPSILON® is a low spill system, specified to less than .40 ml spillage for the 2"coupling (2000 cycles test average 0.6 ml) and less than 1/10th of a teaspoon (half an eyedropper).

Maintenance:
EPSILON® was not only engineered for easy operations, but also for quick replacement of the transfer seal without any lockout. No special tools are required for replacement of seals.



EPSILON® Applications

- Bulk Storage
- In-plant Processing
- Reactor Units
- Filtration Units
- Tank Car
- Railcar

Features

- Spring-energized TFM or PFA U-cup sealing
- Male and female lug and flange connection interfaces
- Independent and multi-level safety interlocks
- Polyurethane dust cap or stainless steel pressure cap
- Available in ¾", 1", 1½", 2" and 3"
- Available in stainless steel and Hastelloy®*
- FDA-compliant seal materials

Benefits

- Dry Disconnect Reliability – Low spill face seal reduces amount of loss upon disconnect.
- Enhanced Environmental Compliance – Positive shut-off of coupling halves eliminates line contamination and accidental release of potentially hazardous fluids into the environment during connection and disconnection.
- Full Flow – Straight-through flow path provides unrestricted flow in either direction, minimizing pressure drop.
- Unparalleled Safety – Multiple safety interlocks eliminate unintentional spills and catastrophic chemical releases that threaten worker safety and the environment.
- Prevents Cross-Contamination – Optional keyed couplings mechanically lock out and isolate transfer lines.

* Hastelloy® is a registered trademark of Haynes International, Inc.

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Male and Female Lug and Flange Connection Interfaces

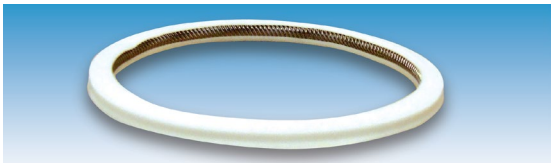
Ramped lug and flange interfaces are first aligned and then connected with a push, followed by a quarter (90°) turn. This "instant" connection method is done by hand without tools in order to create compression on the critical interface seal.

Concave/Convex Full-Flow Shut-Off Valve

A convex ball nests in a concave ball to virtually eliminate any cavity between the mating halves. The positive shut-off ball valves, and the absence of a cavity between them, minimize chemical loss when the coupling is disconnected. Each half is an independently operated, positive shut-off ball valve that is controlled by manually rotating the valve handles. The straight-through EPSILON® valve design also provides unrestricted, high flow in either direction and low pressure drop. All metal wetted components are 316 stainless steel or Hastelloy®.

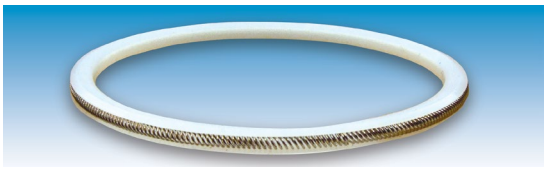
Independent and Redundant Safety Interlocks

EPSILON® technology involves five independent and redundant mechanical interlocks. They require deliberate sequential action by users, thereby eliminating unintentional spills and catastrophic chemical releases that threaten worker safety and the environment.



Spring-Energized and Spring-Loaded PTFE U-Cup Sealing

A spring-energized stem and face and flange seal provide initial sealing. The spring supplies all the load required for sealing when the media pressure is too low to fully actuate the lips of the seal. Testing confirms the low spillage and emission specifications are still achieved after 2,000 cycles.



Ultra Low Spill Face Seal (Optional)

This seal reduces the amount of spillage at disconnect to .38 ml. This seal is not pressure assisted and should only be used for applications lower than 100 psi.



Cavity Filled (Optional)

Designed to reduce the possibility of contamination by entrapment of process fluid in the void normally found behind the ball and the valve body. Ideal for applications where cross-contamination and cleanliness is a concern. Back side of the valve balls are bored for efficient cleaning.



Polyurethane Dust Cap

Used to protect the ball from damage and debris when coupling is closed and disconnected.



Stainless Steel/Hastelloy Pressure Cap

Used to increase the level of safety when coupling is closed, disconnected and under operating pressure.

**National Emission Standards for Hazardous Air Pollutants



Transportation Coupling System (TCS)

Specially designed for railcar, truck, isotainer or tote equipment used in transporting chemicals safely. Contact OPW Engineered Systems for more information.



Keyed Couplings

For extremely critical operations, EPSILON® offers the unique keyed interface which locks out and isolates transfer lines, preventing cross-contamination.

Designed for Maintainability

OPW Engineered Systems' EPSILON® design allows for easy maintenance. Seals, stems and bearings can be replaced easily to keep the connections performing like new.

Approvals

EPSILON® couplings are approved/listed for pressure service through a comprehensive set of international agencies.

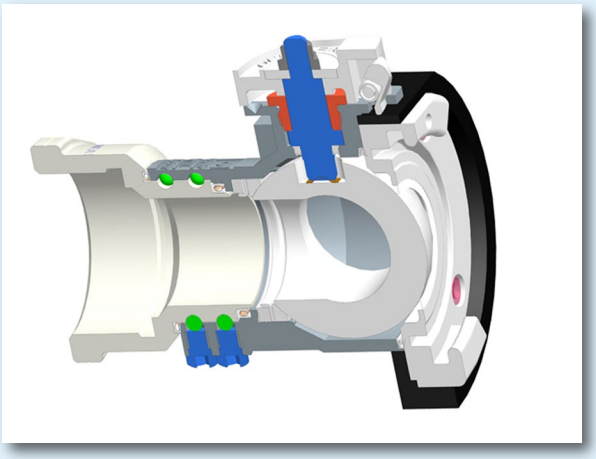
Consult factory for specific details for your application.

TFM - Standard Seal

Next generation PTFE with best combination of temperature ranging from -22°F (-30°C) to 450°F (230°C), sealing, and sliding characteristics.

PFA - Available Consult Factory

*Below limit of analytical detection.



Dual Ball Race (Optional)

Radial swivel seal

- Replaces dynamic face seal
- Lower leak rate
- Lower seal mortality rate caused by over-compressing seal to install bearings

Dual ball races with hardened stainless bearings

- Replaces PTFE sleeve bearing that may become overloaded and allow greater axial misalignment causing the dynamic face seal to leak
- Provides additional support for applications with long hose drops or high load requirements.

Spring energized dust seal

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WARNING: Due to the variety of chemicals that these couplings may be used to transfer, the user is responsible to verify the compatibility of the coupling body and the seal materials with the chemical being conveyed.

Performance Characteristics

Valve Size	Port Size	Spillage	Maximum Emissions	Flow Rate GPM (l/min)	C_V	Max Working Pressure psi (bar)	Weight - lbs (kg) Adapter	Coupler	Temp = °F (°C) Min	Max
1-inch	3/4", 1", DN 20 or DN 25 Port	<0.7 ml	<25 ppm	50 (189)	42	435 (30)	2.7 (1.2)	3.0 (1.4)	-22°F (-30°C)	450 (230)
2-inch	1-1/2", 2", DN 40 or DN 50 Port	<0.6 ml	<25 ppm	150 (568)	160	435 (30)	4.0 (1.8)	6.0 (2.7)	-22°F (-30°C)	450 (230)
3-inch	3" or DN 80 Port	<2 ml	<25 ppm	300 (1135)	240	360 (25)	16.0 (7.3)	19.0 (8.6)	-22°F (-30°C)	450 (230)

The features of the EPSILON® dry disconnect coupling are extensive. The "How To Order" chart below provides the specifics of these features.

Flow rates from 50 GPM for the 1" to 300 GPM for the 3" product line. This coupling will keep up with demand, whatever your application.

Flow coefficient (C_V) for valves. Flow rate shown in gallons per minute of 70°F water with 1.0 psi, pressure drop across the valve, 2" coupling features (C_V) of 160.

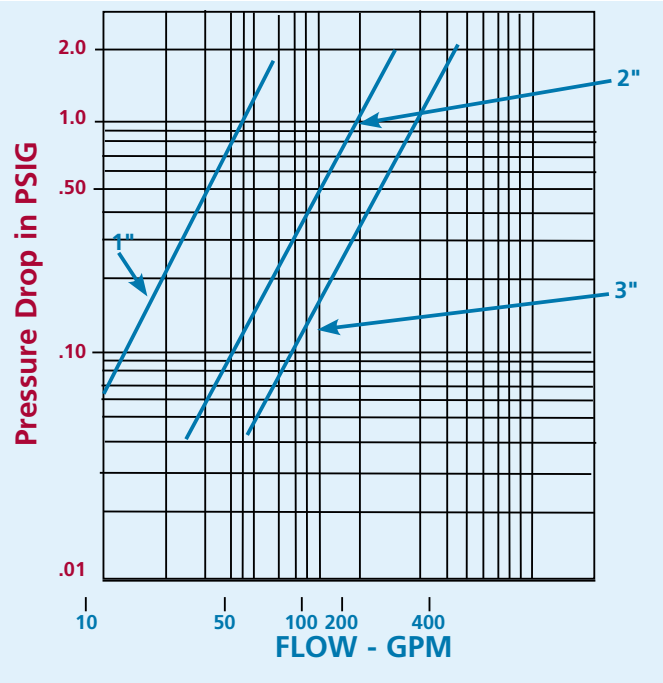
Fugitive emissions of less than 25 ppm, is standard. In most cases, it is below the limit of analytical detection.

Valve Size

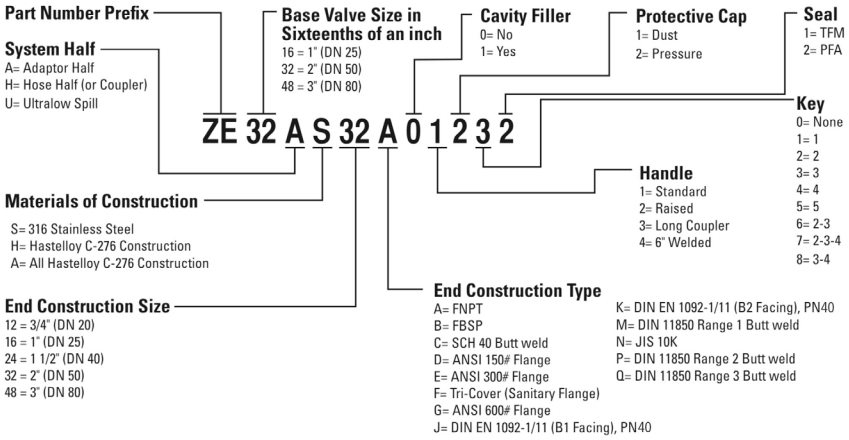
EPSILON® couplings can be attached to hose or pipe sizes ranging from 3/4" to 3" or DN 20 to DN 80. There are three different valve body sizes that are machined to accept the different sizes and different connection types.
The "Performance Characteristics" chart above indicates the valve body size that would be used with a given port size.

Pressure Drop vs. Flow 1", 2" & 3" EPSILON® Coupling

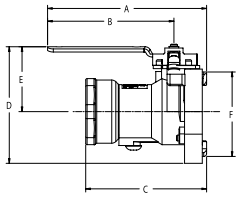
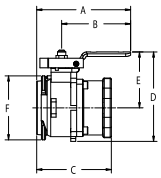
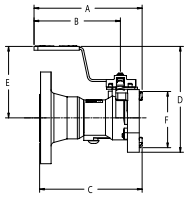
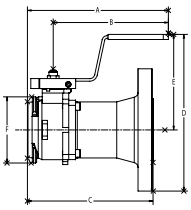
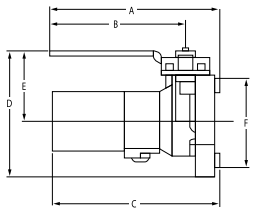
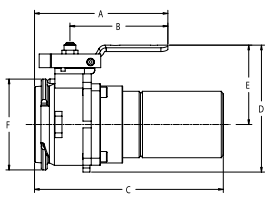
Flow vs. Pressure Drop - 70° F Water



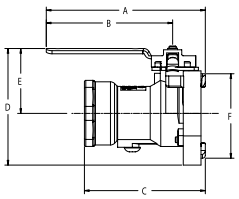
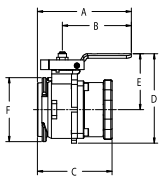
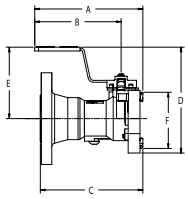
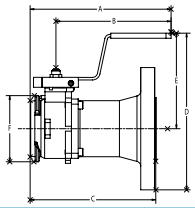
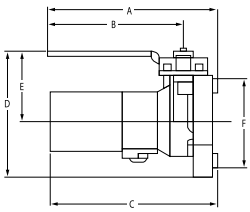
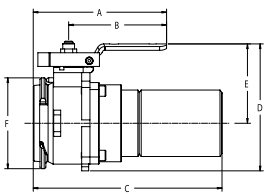
Ordering Specifications



Availability of styles, sizes, and materials may vary depending on swivel configurations. Consult OPW Customer Service regarding your exact requirements.

Sl. No.	Type	Size	End Connection	Dimensional Data - inch A	B	C	D	E	F
1	COUPLER HALF, NPT	1"	3/4"	4.5	3.4	4.3	4.4	2.7	3.0
		1"	1"	4.5	3.4	4.3	4.4	2.7	3.0
		2"	1 1/2"	6.9	5.5	5.3	5.1	2.8	3.7
		2"	2"	6.9	5.5	5.3	5.1	2.8	3.7
		3"	3"	8.6	6.5	8.1	7.7	4.4	5.0
2	ADAPTOR HALF, NPT	1"	3/4"	4.3	3.4	3.3	4.2	2.6	2.7
		1"	1"	4.3	3.4	3.3	4.2	2.6	2.7
		2"	1 1/2"	4.8	3.5	3.8	4.5	2.8	3.3
		2"	2"	4.8	3.5	3.8	4.5	2.8	3.3
		3"	3"	8.5	6.5	5.5	7.0	4.5	4.6
3	COUPLER HALF, FLANGED 150 LBS ANSI	1"	3/4"	4.7	3.6	5.7	5.7	3.9	3.0
		1"	1"	4.7	3.6	5.7	5.7	3.9	3.0
		2"	1 1/2"	7.1	5.7	5.8	6.9	4.7	3.7
		2"	2"	7.1	5.7	5.9	6.9	4.7	3.7
		3"	3"	8.6	6.5	9.5	7.7	4.4	5.0
4	ADAPTOR HALF, FLANGED 150 LBS ANSI	1"	3/4"	4.5	3.6	5.4	5.8	3.8	2.7
		1"	1"	4.5	3.6	5.4	6.0	3.8	2.7
		2"	1 1/2"	6.9	5.7	5.5	7.2	4.7	3.3
		2"	2"	6.9	5.7	5.5	7.7	4.7	3.3
		3"	3"	8.4	6.4	8.2	8.9	5.2	4.6
5	COUPLER HALF, BUTT WELD SCHEDULE 40	1"	3/4"	4.5	3.4	6.1	4.4	2.6	3.0
		1"	1"	4.5	3.4	6.1	4.4	2.6	3.0
		2"	1 1/2"	6.9	5.5	6.8	5.1	2.8	3.7
		2"	2"	6.9	5.5	6.8	5.1	2.8	3.7
		3"	3"	8.7	6.5	9.7	7.7	4.4	5.0
6	ADAPTOR HALF, BUTT WELD SCHEDULE 40	1"	3/4"	4.3	3.4	6.3	4.2	2.6	2.7
		1"	1"	4.3	3.4	6.3	4.2	2.6	2.7
		2"	1 1/2"	4.8	3.5	7.1	4.5	2.8	3.3
		2"	2"	4.8	3.5	6.8	4.5	2.8	3.3
		3"	3"	8.5	6.5	6.6	6.9	4.4	4.6

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Sl. No.	Type	Size	End Connection	Dimensional Data - mm A	B	C	D	E	F
7	COUPLER HALF, BSP	1"	G 3/4"	114.81	86.87	108.46	112.52	67.31	76.20
		1"	G 1"	114.81	86.87	108.46	112.52	67.31	76.20
		2"	G 1 1/2"	175.77	139.70	133.60	128.78	71.63	93.47
		2"	G 2"	175.77	139.70	133.60	128.78	71.63	93.47
		3"	G 3"	217.42	164.34	204.72	194.82	112.27	126.75
8	ADAPTOR HALF, BSP	1"	G 3/4"	109.47	86.87	84.07	106.17	66.04	68.58
		1"	G 1"	109.47	86.87	84.07	106.17	66.04	68.58
		2"	G 1 1/2"	121.16	88.90	96.27	115.32	72.14	82.55
		2"	G 2"	121.16	88.90	96.27	115.32	72.14	82.55
		3"	G 3"	214.88	164.34	139.19	176.78	113.28	116.84
9	COUPLER HALF, FLANGED DIN PN40	1"	DN20	119.63	91.69	145.29	143.76	98.81	76.20
		1"	DN25	119.63	91.69	144.53	143.76	98.81	76.20
		2"	DN40	179.58	143.51	147.83	175.77	118.62	93.47
		2"	DN50	179.58	143.51	148.59	175.77	118.62	93.47
		3"	DN80	217.42	164.34	241.05	194.82	112.27	126.75
10	ADAPTOR HALF, FLANGED DIN PN40	1"	DN20	114.30	91.69	137.92	146.56	97.28	68.58
		1"	DN25	114.30	91.69	137.16	151.13	97.28	68.58
		2"	DN40	175.77	143.51	139.70	182.63	119.13	82.55
		2"	DN50	175.77	143.51	140.46	195.33	119.13	82.55
		3"	DN80	213.36	163.07	208.03	226.06	130.81	116.84
11	COUPLER HALF, WELD END DIN 2559	1"	20	114.30	86.87	154.94	111.51	66.29	76.20
		1"	25	114.30	86.87	154.94	111.51	66.29	76.20
		2"	40	175.77	139.70	173.48	128.78	71.63	93.47
		2"	50	175.77	139.70	173.48	128.78	71.63	93.47
		3"	80	221.23	164.34	245.62	194.82	112.27	126.75
12	ADAPTOR HALF, WELD END DIN 2559	1"	DN20	109.47	86.87	159.26	106.17	66.04	68.58
		1"	DN25	109.47	86.87	159.26	106.17	66.04	68.58
		2"	DN40	121.16	88.90	181.36	115.32	72.14	82.55
		2"	DN50	121.16	88.90	172.97	115.32	72.14	82.55
		3"	DN80	214.88	164.34	167.13	176.02	112.52	116.84

Twist-Lok™ Dry Disconnect Coupler

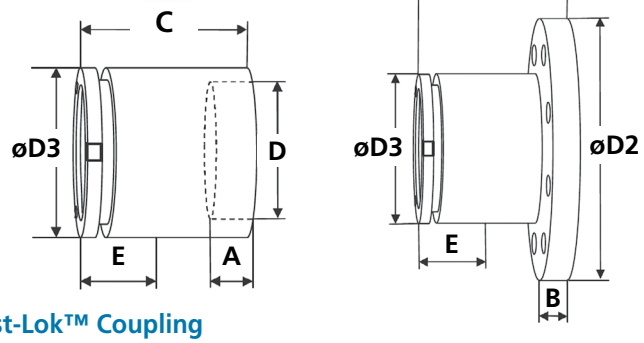
Minimize fluid loss with the quick and easy connection of the new Twist-Lok Dry Disconnect Couplings

Twist-Lok™ represents the latest addition to OPW's industry leading range of Dry Disconnect Couplings. With its user-friendly operation and simple handling, the Twist-Lok™ provides a quick, easy connection with minimal product loss.

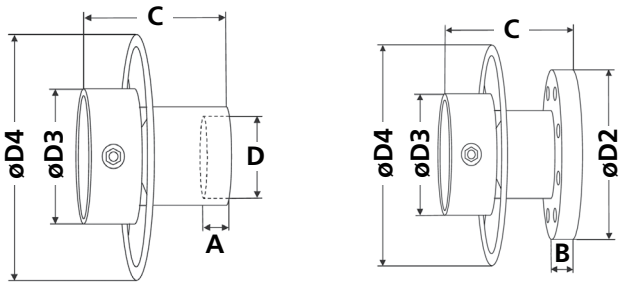


Features & Benefits

- **Fully Interchangeable** with other manufacturers, such as TODO-MATIC, Mann Tek, etc. Manufactured in accordance with NATO STANAG 3756.
- **Pressure Ratings** up to 360 PSI; ideal for LPG and other higher pressure applications.
- **316 Stainless Steel** Construction
- **Available** in 1", 2", 3" & 4" Sizes. Larger sizes available upon request.
- **Integral Heavy-duty Swivel** to aid connection and minimize hose wear.
- **Double Safety:** Fully Interlocked plus locking mechanism in open position
- **Product Selectivity** available via mechanical keying – minimize risk of cross contamination
- **Suitable for Vacuum Service**



Twist-Lok™ Coupling



Twist-Lok™ Adaptor

Technical Data - Adaptor (Male)

Type	Connection	Pressure Rating (lbs)	D	Ø D2 (In)	A (In)	B (In)	C (In)	E* (In)	Ø D3 (In)	Weight (lbs)
Twist-Lok NPS 1" Male	Female Thread	360	NPT 1"	–	0.68	–	3.54	0.94	2.18	1.8
	1" Flange	300	–	4.88	–	0.69	3.14	0.94	2.18	3.9
Twist-Lok NPS 2" Male	Female Thread	360	NPT 1-1/2"	–	0.70	–	4.17	1.33	2.73	3.9
	Female Thread	360	NPT 2"	–	0.75	–	3.77	1.33	2.73	3.9
	2"Flange	300	–	6.5	–	0.88	3.74	1.33	2.73	10.1
Twist-Lok NPS 3" Male	Female Thread	360	NPT 3"	–	1.20	–	5.83	1.63	4.69	8.6
	3" Flange	300	–	8.25	–	1.12	5.04	1.63	4.69	21.1
Twist-Lok NPS 4" Male	Female Thread	225	NPT 4"	–	1.30	–	5.90	1.41	5.31	14.3
	4" Flange	150	–	9.0	–	0.94	4.92	1.41	5.31	23.1

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Twist-Lok™ Dry Disconnect Coupling

Technical Data - Coupler (Female)

Type	Connection	Pressure Rating (lbs)	D	Ø D2 (In)	A (In)	B (In)	C (In)	Ø D3 (In)	Ø D4 (In)	Weight (lbs)
Twist-Lok NPS 1" Female	Female Thread	360	NPT 1"	–	0.68	–	4.92	2.16	3.74	4.5
	1" Flange	300	–	4.88	–	0.69	4.52	2.16	3.74	6.5
Twist-Lok NPS 2" Female	Female Thread	360	NPT 1-1/2"	–	0.70	–	5.40	3.30	9.44	7.7
	Female Thread	360	NPT 2"	–	0.75	–	5.35	3.30	9.44	7.7
	2"Flange	300	–	6.5	–	0.88	5.12	3.30	9.44	13.8
Twist-Lok NPS 3" Female	Female Thread	360	NPT 3"	–	1.20	–	8.74	5.70	11.02	22.0
	3" Flange	300	–	8.25	–	1.12	7.87	5.70	11.02	34.1
Twist-Lok NPS 4" Female	Female Thread	225	NPT 4"	–	1.30	–	9.05	5.90	14.56	25.3
	4" Flange	150	–	9.0	–	0.94	8.07	5.90	14.56	36.4

Materials of Construction

Stainless Steel (316Ti)- standard, Hastelloy, Brass & aluminum upon request.			
Seals	Fluorocarbon Seals (standard), EPDM, FFKM	**Connections**	FNPT, ANSI Flanges; others upon request
Pressure Rating	150-600 PSI	**Sizes**	1", 2", 3", 4"; larger sizes upon request
Temperature Rating	-40F – 350F (-40C – 177C)	**Approvals**	European & American Rail Car Approvals AAR Approval No. E989073-A

Ordering Specifications

Couplers & Adaptors

Type
6 = Adaptor
7 = Coupler

Material
7 = Stainless Steel

End Connection
1 = FNPT
2 = 150 ANSI
3 = 300 ANSI

Size
01 = 1"
02 = 2"
03 = 3"
04 = 4"

Seal
02 = Fluorocarbon
04 = EPDM
06 = FFKM/Chemraz

6 7 1 - TL - 0 1 0 2

TL = Twist-Lok

Seal Kits

TL = Twist-Lok

Seal Repair Kit

Type
6 = Adaptor
7 = Coupler

Size
01 = 1"
02 = 2"
03 = 3"
04 = 4"

Seal
02 = Fluorocarbon
04 = EPDM
06 = FFKM/Chemraz

TL - SRK - 6 - 0 2 0 2

Dust Caps & Plugs*

TL = Twist-Lok

Type
DC = Dust Cap
DP = Dust Plug
(for Couplers)

Size
01 = 1"
02 = 2"
03 = 3"
04 = 4"

TL - DC - 02

*PE construction with stainless steel chain

Hiltap™ RapidLOK™ Family of Products



For the Toughest High and Low Temperature and Pressure Applications

The Hiltap™ Series features innovative high and low pressure and temperature sealing couplings, connectors and product recovery/pipeline cleaning technologies. For over a decade, Hiltap™ and the RapidLOK® family of products have served global industries, providing safe transfer solutions for some of the most difficult and demanding liquid applications.

Benefits of the Hiltap™ RapidLOK™ Family:

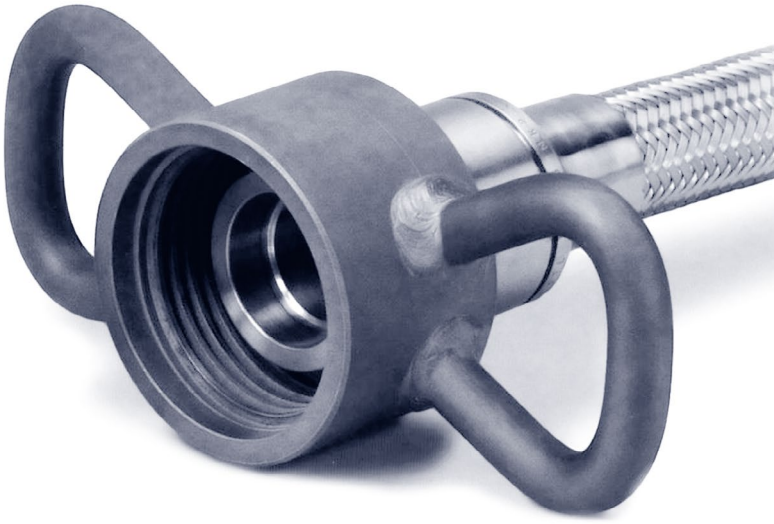
- Safely vents residual pressure
- Metal-to-metal wedge seal design for repeated use
- Leak-proof operation
- Operates through wide temperature/pressure ranges
- No variation in pipe diameter for most sizes
- Quality assurance to ISO 9001-2000
- Material traceability exists
- Canadian Registration Numbers (CRN)

This all-purpose, high-performance quick coupling offers a non-restrictive flow with no variation in pipe diameter when required and conditions allow. The reusable sealing components are made of different metals that have their own unique hardness and thermal properties so as to further enhance the seal as temperature changes are encountered. The sleeve retaining ring ensures safe venting at any residual pressure. The Hiltap™ brand offers front line solutions and allows design engineers to specify safe and environmentally responsible connections.

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3TL Series – Transfer Loading Safety Quick Coupling

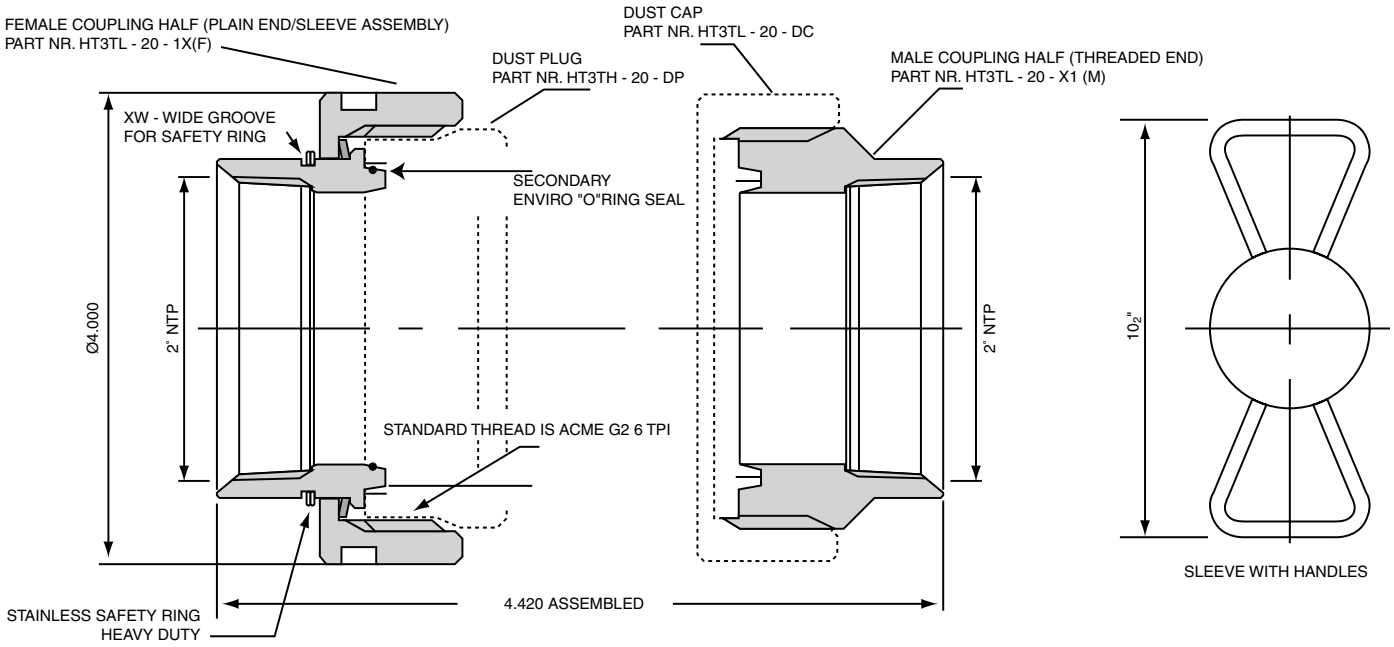
The 3TL Transfer Loading Series is an all purpose high performance quick coupling designed for leak proof sealing through a wide range of temperatures. The design offers a non-restrictive flow with no variation in pipe diameter.
The reusable metal-to-metal wedge sealing components further enhance the seal as temperature changes are encountered. The retaining ring ensures safe venting of any residual pressure.



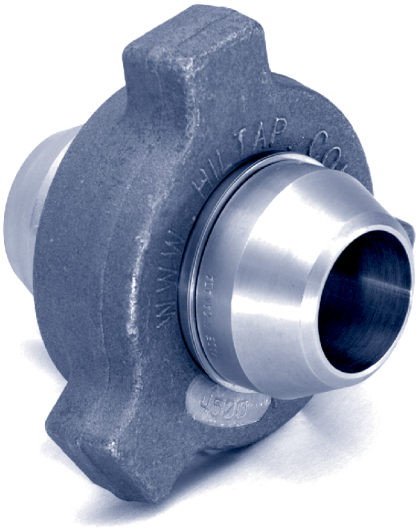
Features & Benefits

- Designed to replace hammer unions and conventional CAM locking couplings
- Repeatedly reusable metal-to-metal wedge seal with secondary enviro O-Ring seal
- Non-restrictive flow characteristics for faster hook-ups
- Unique automatic safety feature vents residual pressure
- Only light torque required when tightening to contain rated pressure
- Designed and tested to ASME B31.3
- Available in 3/4" to 6" sizes
- Materials: 316 stainless steel and carbon steel
- Compact and available in any combination, of threaded, butt welded or socket welded ends
- Variety of sleeve handle options available

2" 3TL - 20 - 11 (Internal NPT threads)



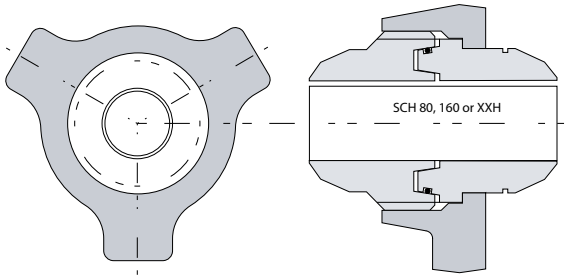
3IU Series High Performance Quality Impact Unions



The Hiltap™ 3IU impact union does what a conventional hammer union does, only better.

OPW's "impact union" is designed for leak proof operation over a wide range of temperatures and pressures. The reuseable sealing components offer a metal-to-metal wedge seal, as well as an additional O-Ring seal, targeting full compliance to the latest environmental laws.

Applications include: next to sensitive electronic equipment, e.g., most flow meters, modular skid "tie-ins," high pressure gas/oil, meter/production flow production, gas distribution "tie-ins," high axial load stresses, sour gas, unconventionally high pressures and high erosion/corrosion applications.



Features & Benefits

- Contains fugitive emissions
- Easier installation, skid fabrication and maintenance
- Low profile
- Light weight
- Low impact/torque required to engage
- Repeatedly reusable metal-to-metal wedge seals
- Secondary O-Ring seal
- Available in butt weld end configurations only
- Available in 2", 3" and 4" sizes
- Carbon steel materials

Model: 3IU

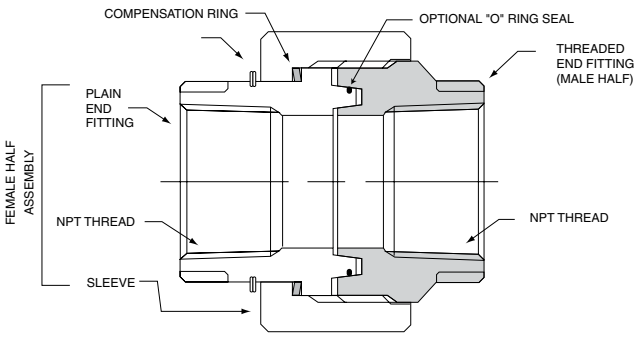
Specification Example: 3IU - 20 - 33 (2" IMPACT UNION Both Ends Butt Weld, Carbon Steel)

Pipe Size	Approx. Overall Length
2"	6.0"
3"	7.2"
4"	9.5"

3U Series – Medium Pressure and Temperate Quality Unions



The 3U Series is an all-purpose light weight quality union designed for leak proof operation as it cycles through a wide range of temperatures. The design offers a non-restrictive flow with no variation in pipe diameter in most sizes. The reusable metal-to-metal sealing components further enhance the seal as temperature and pressure changes are encountered. The safety ring ensures safe venting of residual pressure.



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3U Series – Continued

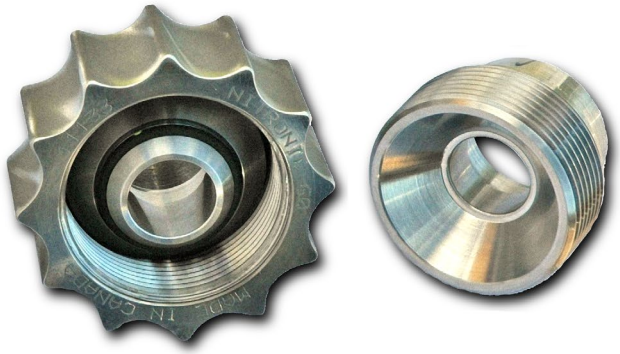
Features & Benefits

- Contains fugitive emissions
- Designed to replace conventional medium pressure unions/couplings
- Easier installation and maintenance
- Fully interchangeable with each other
- Low profile/light weight
- Reduced chance of galling
- Repeatedly reusable metal-to-metal wedge seal
- Unique automatic safety feature vents residual pressure during uncoupling should residual pressure remain
- Only light torque required when tightening to rated pressure
- Designed and tested to ASME B31.3
- Available in 1/4" to 2" sizes
- Materials: 316 stainless steel and carbon steel
- Compact and available in any combination of threaded, butt welded or socket welded ends

HGJ Ground Joint Utility Union – Safer Hose Connections

The HGJ series utility union is a high-quality coupling for most steam, water and standard utility applications. The outer scalloped knurled sleeve is ergonomic and made out of a non-galling material, ensuring easy and repeatable connectabilty.

The HGJ series uses a commercially available O-Ring seal and is fully interchangeable with conventional ground joint unions.



Features and Benefits

- Contains fugitive emissions
- Designed to replace conventional boss-type ground joint style unions/couplings
- Low profile/light weight, easier installation and maintenance
- Reduced chance of galling
- Elastomeric O-Ring seal
- Only light torque required when tightening
- Designed and tested to ASME B31.3
- Available in 3/4" only
- Materials: 316 stainless steel

Ordering Specifications

Note: For other materials, sizes and pressure ratings, consult Engineered Systems. Seal caps/plugs and dust caps are available

HGJ - 07 - 1N 1N - A - 3041 - V7

HGJ SERIES

SIZE
07 - 3/4"

FEMALE HALF
X - None
I - FNPT
3 - Socket Weld
SC - Seal Cap

MALE HALF
X - Female Half Only
I - FNPT
3 - Socket Weld
SC - Seal Cap

SST

HILTAP DRAWING PACKAGE

O-RING
Fluorocarbon only

LQC Series - "Twister®" Locking Quick Connect

The Twister® LQC is the next generation of quick couplings designed as an option to replace conventional cam & groove couplings that are used in critical service applications. The Twister® LQC is engineered to be used in conjunction with hoses and loading arms.



Features & Benefits

- Rapid engagement, 1/4 twist on/off
- Low pressure or vacuum locking
- Coupling locks during uncoupling should residual or line pressure be present
- Smooth bore, ideal for pigging applications
- Commercially available O-Ring seals
- Optional snap-in customized handles for tight spots
- Built to B31.3 specifications to ISO 9001-2000 Quality Standards
- Pressure ratings equivalent to ANSI 150/300
- Available in ¾", 1", 2", 3", 4" and 6" nominal sizes
- Materials: 316 stainless steel, cold temperature carbon steel and aluminum
- Surpasses Occupational Health & Safety Section 188 (October 2003)



LQC Railcar Unloading Adaptor

- Ergonomic connection to railcar
- Features LQC Adaptor for safe, easy connection
- Can be provided with other end connections

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415 Series, 425 Series, 450 Series Pipe Connecting: Safety Quick Couplings



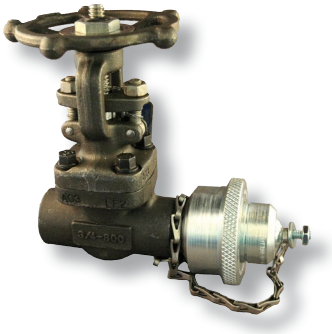
The 415/425/490 RapidLOK® Series Connector is an all-purpose lightweight quick coupling designed for leakproof operation at a wide range of temperatures. The metal-to-metal seal further enhances the seal as temperature changes are encountered. The safety ring ensures safe venting of any residual pressure.

Features

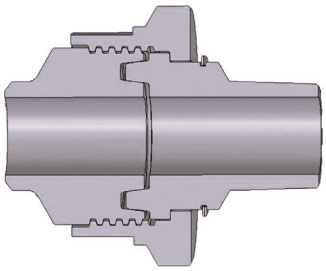
- The RapidLOK™ 415/425/490 series couplings can perform equal to the respective pipe schedules
- Repeatedly reusable metal-to-metal seal with an optional secondary enviro O-Ring seal
- No bolts, or hub clamps for faster hook-ups
- Unique automatic safety feature vents residual pressure
- No special heat treatment of seal rings required
- Only light torque required when tightening to rated pressure
- Compact and available in any combination, of threaded, butt welded or male socket welded ends
- Designed and tested to ASME B31.1 & B31.3
- Available in 3/4" - 2" sizes
- Materials: 316 stainless steel and carbon steel

SaVD™ Lite Gate Valve 390 Series - Safe Vent & Drain Safety Seal Cap/Hose Half

"Lite" Series Safety Seal Cap ANSI 800 and below

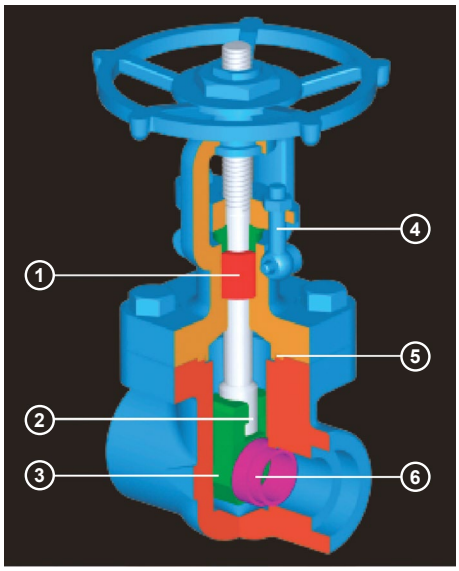


Lite Series Hose Half Assembly 390 Series



Features & Benefits

- The SaVD™ Safety Seal Cap is designed to replace high pressure bull plugs used in venting and draining SAGD steam and heavy oil piping.
- Safety Seal Cap (with chain) can be retightened to seal
- Outer seal and locking threads are located OUTSIDE the wetted surfaces
- Valve mounted couplings halves can be safely rodded, steam cleaned, pressure purged with specially designed and CRN registered adapters.
- NACE materials of construction: Carbon Steel
- Solid Material Wedge, NO overlays
- Available in 3/4", 1", 1-1/2" and 2" sizes
- Available with butt weld, MNPT, or seal cap



① Safe and tight stem seal by means of positive back seat and long life leak proof stuffing box design.
② The T-head connect of stem and disc assuring easy seating operation.
③ Solid fully guided wedge reducing wear on seating surfaces.
④ Gland eyebolts facilitating packing maintenance.
⑤ Leak proof Body-Bonnet Joint Cavity to eliminate the unwinding of the SS spiral metal.
⑥ Rolled-in seat to assure tight and effective seating.

Ordering Specifications (Complete Coupling, Female Half)

3TL - 30 - 1 N 1 N - A - 3010 - A A - D 2 - V7

FITTING DESIGNATION
3TL - 3 pc. Transfer Loading
H3U - 3 pc. Medium Pressure Union
3IU - 3 pc. Impact Union
3LB - 3 pc. Lube Blending
390 - 3 pc. SCH 80 for SAVDL

NOMINAL SIZE
02 - 1/4"
03 - 3/8"
05 - 1/2"
07 - 3/4"
10 - 1"
12 - 1 1/4"
15 - 1 1/2"
20 - 2"
25 - 2 1/2"
30 - 3"
40 - 4"
60 - 6"

PLAIN END CONNECTION TYPE
1 - Female NPT
2 - Male NPT
3 - Butt Weld
4 - Male Socket Weld
5 - Female Socket Weld
6 - Female BSP
8 - Hose Barb
SC - Seal Cap

PLAIN END COATING
N - None
A - Electroless Ni (High Phos)
Z** - Zinc
E - Annodized Red
S - Annodized Clear
F - Annodized Blue

THREADED END STYLE
X - None (Female Half Only)
1 - Female NPT
2 - Male NPT
3 - Butt Weld
4 - Male Socket Weld
5 - Female Socket Weld
6 - Female BSP
8 - Hose Barb
SP - Seal Plug

THREADED END COATING
Blank if Female Half Only
N - None
A - Electroless Ni (High Phos)
Z** - Zinc
E - Annodized Red
F - Annodized Blue

MATERIAL
A - Stainless Steel A479-316/316L (SA)
D - Carbon Steel A350 Gr. LF2 Cl.1
NACE
H - Aluminum 6061-T6

HILTAP DRAWING PACKAGE CODE
3102 - 1/4" Couplings
3103 - 3/8" Coupling
3105 - 1/2" Coupling
3107 - 3/4" SCH10 Coupling
3158 - 3/4" SCH10 to 80 Coupling
3001 - 1" SCH10 Coupling
3310 - 1" SCH80 Coupling
3002 - 1" SCH40 Coupling
3015 - 1 1/2" SCH10 Coupling
3113 - 1 1/2" 3P SCH80 Coupling
3000 - 2" 3TL and 3U SCH40 and 80 Couplings
3136 - 2" SCHXXS Impact Union with Hiltap Seal
3010 - 3" 3TL and LB SCH40 Couplings
2146 - 4" 3LB and 3TL SCH40 Coupling
0554 - 4" 3LB SCH10 Coupling
0536 - 6" 3TL SCH40 Coupling
0058 - 2" SCH160 Impact Union with Hiltap Seal
0057 - 2" SCH80 Impact Union with Hiltap Seal
0070 - 2" SCH160 Impact Union with Flat Face Seal
2034 - 3" SCHXXS Impact Union with Hiltap Seal
3189 - 3" SCH80 Impact Union with Hiltap Seal
0168 - 4" SCHXXS Impact Union with Hiltap Seal

SLEEVE STYLE
A - Loop Handle Sleeve
B - Wrench Flats Sleeve
C - Stick Handle
D - Paddle Sleeve
E - Aluminum Loop Handle for 3" Coupling (Except if Wetted Parts are Aluminum then as Above)
F - Lug Sleeve (Star Style)
IU - Impact Union Style Sleeve for 3TL
RK - Raised Knurled Sleeve
BH - Bar Handle Articulating Sleeve
HX - Hexagonal Sleeve
SW - Spanner Wrench Sleeve

SLEEVE COATING CODE
N - None
A* - Electroless Nickle (High Phos)
Z** - Zinc
E - Annodized Red
S - Annodized Clear
F - Annodized Blue

PLAIN END STYLE FOR 3010 PACKAGE ONLY
N - Standard 3"
T - Single Groove Tubing
S - Single Groove
D - Double Groove
C - Compoflex Hose Barb
E - 2 1/2" Single Groove

THREADED END STYLE FOR 3010 PACKAGE ONLY
N - Standard 3"
S - Sanitary
1 - 1 1/2"
2 - 2"
3 - 2 1/2"
4 - 4"

O-RING MATERIAL
Blank for None. Only Metal to Metal Seal
V7 - Fluorocarbon 75D

* All stainless steel sleeves are electroless nickel plated to prevent galling

** Zinc coating standard on all carbon steel products

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Ordering Specifications (Male Half Only)

HT3 - 30 - X1 - D - 3010 - 25 - ZNC

FITTING DESIGNATION
HT3 - 3 pc. Union and Transfer Loading
HT3IU - 3 pc. Impact Union Male

NOMINAL SIZE
02 - 1/4"
03 - 3/8"
05 - 1/2"
06 - 5/8"
07 - 3/4"
10 - 1"
12 - 1 1/4"
15 - 1 1/2"
20 - 2"
25 - 2 1/2"
30 - 3"
40 - 4"
60 - 6"

THREADED END STYLE
X1 - Female NPT
X2 - Male NPT
X3 - Butt Weld
X4 - Male Socket Weld
X5 - Female Socket Weld
X6 - Female BSP
X8 - Hose Barb
SP - Seal Plug

MATERIAL
A - Stainless Steel A479-316/316L (SA)
D - Carbon Steel A350 Gr. LF2 Cl.1
NACE
H - Aluminum 6061-T6

HILTAP DRAWING PACKAGE CODE
3102 - 1/4" Couplings
3103 - 3/8" Coupling
3105 - 1/2" Coupling
3107 - 3/4" SCH10 Coupling
3158 - 3/4" SCH10 to 80 Coupling
3001 - 1" SCH10 Coupling
3310 - 1" SCH80 Coupling
3002 - 1" SCH40 Coupling
3015 - 1 1/2" SCH10 Coupling
3113 - 1 1/2" 3P SCH80 Coupling
3000 - 2" 3TL and 3U SCH40 and 80 Couplings
3136 - 2" SCHXXS Impact Union with Hiltap Seal
3010 - 3" 3TL and LB SCH40 Couplings
2146 - 4" 3LB and 3TL SCH40 Coupling
0554 - 4" 3LB SCH10 Coupling
0536 - 6" 3TL SCH40 Coupling
0058 - 2" SCH160 Impact Union with Hiltap Seal
0057 - 2" SCH80 Impact Union with Hiltap Seal
0070 - 2" SCH160 Impact Union with Flat Face Seal
2034 - 3" SCHXXS Impact Union with Hiltap Seal
3189 - 3" SCH80 Impact Union with Hiltap Seal

SPECIAL CUSTOMIZED DESIGNATION
Standard 3"
S - Sanitary
20 - With Special 2" NPT on 3"
25 - With Special 2 1/2" NPT on 3"
BAY - With Special Bayonet

THREADED END COATING
Blank if No Coating Required
EN1 - Electroless Nickle Plating (High Phos)
ZNC* - Zinc

* Zinc coating standard on all carbon steel products

Ordering Specifications (Complete Coupling, Female Half)

LQC - 30 - 1 N 1 N - A - 3124 - A N - H -V7

FITTING DESIGNATION
LQC - Locking Quick Connect

NOMINAL SIZE
10 - 1"
20 - 2"
30 - 3"
40 - 4"
60 - 6"

PLAIN END CONNECTION TYPE
1 - Female NPT
3 - Butt Weld
5 - Female Socket Weld
SC - Seal Cap

PLAIN END COATING
N - None
A - Electroless Ni (High Phos)
Z* - Zinc
E - Annodized Red
S - Annodized Clear
F - Annodized Blue

MALE END CONNECTION TYPE
X - None (Female Half Only)
1 - Female NPT
3 - Butt Weld
5 - Female Socket Weld
SP - Seal Plug

MALE END COATING
- Blank if Female Half Only
N - None
A - Electroless Nickle (High Phos)
Z* - Zinc
E - Annodized Red
F - Annodized Blue

MATERIAL
A - Stainless Steel A479-316/316L (SA)
D - Carbon Steel A350 Gr. LF2 Cl.1 NACE
H - Aluminum 6061-T6

HILTAP DRAWING PACKAGE CODE
3124 - 1", 2", 3", 4" Couplings
3122 - 6" Coupling
3109 - 4" LQC Closure for PIG Launcher
3098 - 2" and 3" LQC Closure for PIG Launcher
3095 - 2" LQC Closure for PIG Launcher
3216 - 3" LQC Closure for PIG Launcher
3075 - 6" LQC Closure for PIG Launcher

SLEEVE STYLE
A - Standard Wagon Wheel Sleeve with Plunger
HND - Wagon Wheel with Crank Handle Sleeve
LH - Loop Handle Sleeve (No Standard)

SLEEVE COATING CODE
N - None
A - Electroless Nickle (High Phos)
Z* - Zinc
E - Annodized Red
S - Annodized Clear
F - Annodized Blue

SLEEVE MATERIAL IF DIFFERENT FROM WETTED PARTS
A - Stainless Steel A479-316/316L (SA)
D - Carbon Steel A350 Gr. LF2 Cl.1 NACE
H - Aluminum 6061-T6

O-RING MATERIAL
V7 - Fluorocarbon 75D

* Zinc coating standard on all carbon steel products

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Ordering Specifications (Male Half Only) Consult factory for odering specifications.

HTLQC - 30 - X1 - D - 3124 - 25 -ZNC

FITTING DESIGNATION
HTLQC - Locking Quick Connect

NOMINAL SIZE
10 - 1"
20 - 2"
30 - 3"
40 - 4"
60 - 6"

MALE END CONNECTION TYPE
X1 - Female NPT
X3 - Butt Weld
X5 - Female Socket Weld
SP - Seal Plug

MATERIAL
A - Stainless Steel A479-316/316L (SA)
D - Carbon Steel A350 Gr. LF2 Cl.1
NACE
H - Aluminum 6061-T6

SPECIAL CUSTOMIZED DESIGNATION
- Standard
S - Sanitary
HO - Tapper Down Connection
25 - With Special 2 1/2" NPT on 3"

THREADED END COATING
- Blank if no coating required
EN1 - Electroless Nickle Plating (High Phos)
ZNC* - Zinc
IP4 - IPC System 4

HILTAP DRAWING PACKAGE CODE
3124 - 1", 2", 3", 4" Couplings
3122 - 6" Coupling
3109 - 4" LQC Closure for PIG Launcher
3098 - 2" and 3" LQC Closure for PIG Launcher
3095 - 2" LQC Closure for PIG Launcher
3216 - 3" LQC Closure for PIG Launcher
3075 - 6" LQC Closure for PIG Launcher

* Zinc coating standard on all carbon steel products

Safety Breakaway Devices

NTS-PU Series (Pull-Away) Breakaway Coupling

Areas of Application

The OPW Engineered Systems' NTS-PU Series Breakaway protects loading facilities, hoses and prevents spills at the same time. Separation occurs by a simple pulling force on the hose line. It finds its application in fluid and gas transfer. The OPW Engineered Systems' NTS-PU is axially built into hose lines (see example design at right).

Construction of the NTS-PU Series

The NTS-PU consists of two halves (Adaptor and In-line), each equipped with spring-loaded valves. A straight or angular pulling force on the hose triggers the separation. To protect the hose line from damage, the separation force of the NTS-PU can be individually adjusted.

Function

While coupled, the valves of the Emergency Release System NTS-PU are open. Upon a pre-determined pulling force, the separation occurs. Both valves close, thus preventing spills and protecting the loading station at the same time.

The NTS-PU allows for a spare-part-free, non-destructive separation – no shear pins involved and no destruction.

After depressurizing and emptying the hose, the NTS-PU can be reassembled easily, without tools or spare parts.



Material: Stainless Steel (316), Anodized Aluminum. Others available upon request

Seals: Fluorocarbon, EPDM, Chemraz®

Pressure Ratings: 360 psi for all sizes (Alu 232 psi)

Connections: FNPT or Flange (TTMA/150/300 ANSI) 1", 2", 3", 4"

Ordering Specifications

NTS* - SZ - T - A - 02 02

Safety Breakaway

Series
SZ = Cable Release
PU = Pull-Away

Connection
T = FNPT x FNPT
F = 150 lb RF x 150 lb RF
F3 = 300 lb RF x 300 lb RF

Material
A = Anodized Aluminum
S = 316 Stainless Steel

Size
01 = 1"
02 = 2"
03 = 3"
04 = 4"

Seals
02 = Fluorocarbon
04 = EPDM
06 = Chemraz®

* Other materials and seals upon request. Specifications and conditions may vary.

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Safety Breakaway Devices

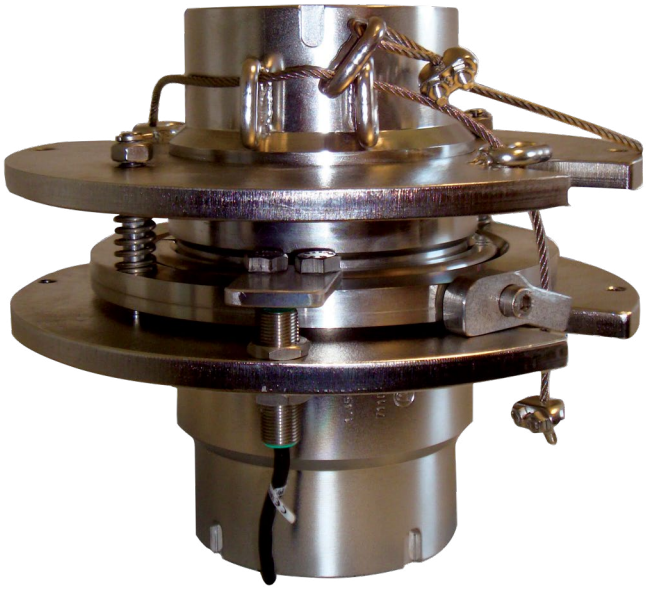
SZ Series (Cable Release) Breakaway Coupling

Areas of Application

The SZ Series Emergency Breakaway Coupling with cable control is designed to protect against unintended pull-aways of tank trucks, railcars, barges or ships. Loading arms and hose lines, conveying gases or liquid media, can be either newly equipped or retrofitted with the SZ Series.

Structure

Two non-return valves prevent product loss in case of emergency separation. Both coupler halves are held together with segments and a slide ring. A cable pull triggers the separation by flipping the levers out of their locked position. The NTS also is available with the proactive remote or hand separation.



Shown with optional proximity switch

Function

In a pull-off, the tensile force travels along the cable, leaving the hose or loading arm tension-free at all times. The levers are released, two non-return valves positively shut both ends, enabling the separation to occur. In contrast to most existing products, the SZ Series breakaways work independently from the working pressure and allow for a protective approach without the need to wait for an impact. With a proven track record of more than 25 years, the SZ Series Breakaway has earned an outstanding reputation of reliability in the industry.



Benefits

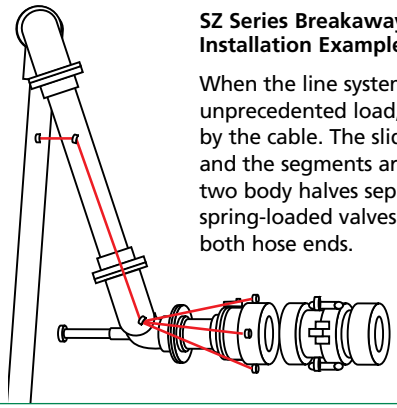
- Protection of loading-arm components
- Protection of loading facility
- Spill prevention
- Reconnectable

Materials: Stainless Steel (316). Others available upon request

Seals: EPDM, Fluorocarbon, Chemraz®

Pressure Ratings: 150 to 600 psi

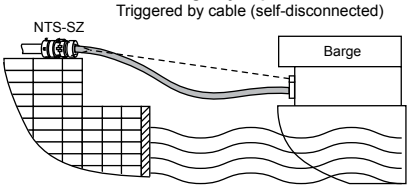
Available in 1", 2", 3", 4" and 6" (other sizes up to 12" available upon request)



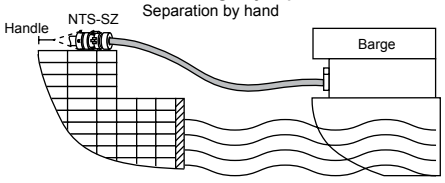
SZ Series Breakaway Coupling Installation Example

When the line system is subjected to an unprecedented load, the levers swing out by the cable. The slide ring is displaced and the segments are released. Then the two body halves separate and the two spring-loaded valves immediately shut both hose ends.

NTS Emergency Separation Device
Triggered by cable (self-disconnected)



NTS Emergency Separation Device
Separation by hand



SZ Loading Arm Marine Installation Example

Note: The length of the SZ cable must be shorter than the maximum movement of the loading arm hose in order to trigger the separation.



OPW
ENGINEERED SYSTEMS
a DOVER company

www.opw-es.com | 9393 Princeton-Glendale Road | Hamilton, Ohio 45011 | Phone: (800) 547-9393 | Phone: (513) 932-9114

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KAMLOK® & AUTOLOK®

THE ONLY STAINLESS-STEEL QUICK CONNECTS WITH A VIBRATION-PROOF LOCKING-ARM DESIGN AND SPRING RINGS.



STAINLESS STEEL

Upgrade your hose offering with the best cam-and-groove design.



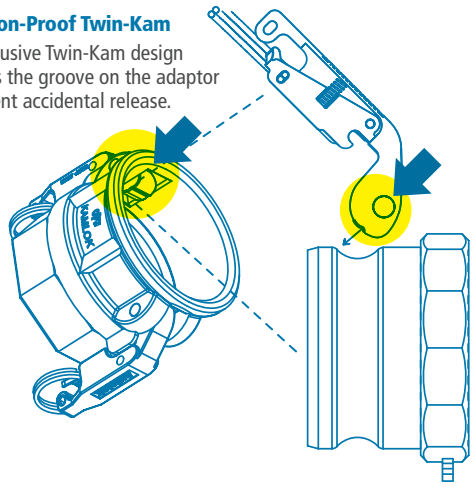
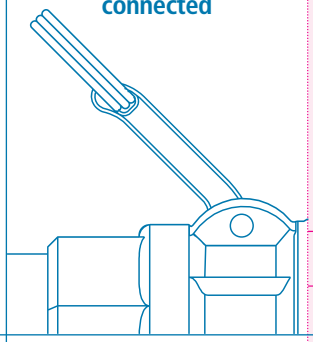
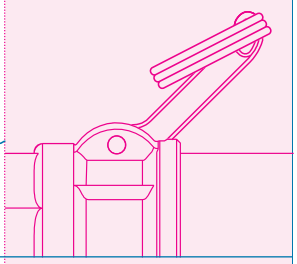
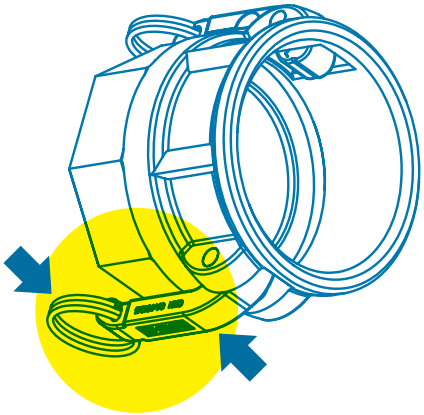
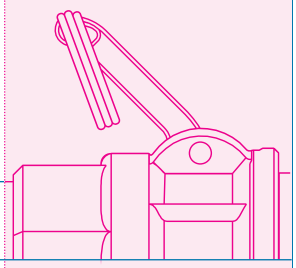
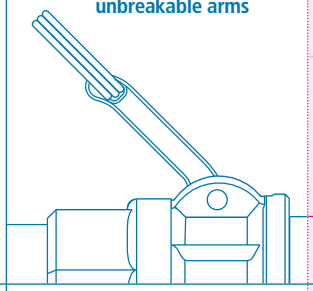
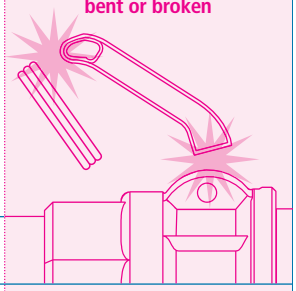
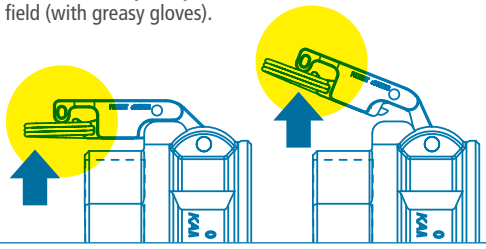
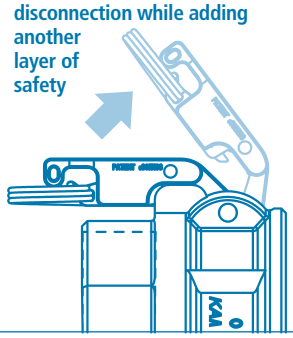
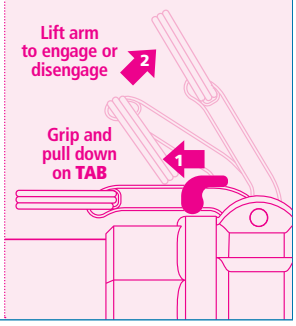
Packed with features the competition just can't match. OPW's Kamlok® and Autolok® are industry standards for good reason. Both are manufactured from 316 stainless steel and feature our exclusive Twin-Kam™ arm design that prevents accidental release under vibration. And unlike the competition, our Spring Ring™ finger rings stay in position, facilitating connection of your system. Autolok adds an extra level of protection with self-locking arms.

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ENGINEERING | WHAT'S NEXT

Why The Best Cam-and-Groove Design?

Kamlok	Autolok	FEATURE	BENEFIT	
			OPW	COMPETITORS
◆	◆	**Vibration-Proof Twin-Kam** The exclusive Twin-Kam design contacts the groove on the adaptor to prevent accidental release. 	Arms catch at 45 degrees and keep your system connected 	Arms will eventually fall and disconnect your system 
◆	◆	**Spring Ring** The only rings that spring back into neutral position so they remain parallel with the arms. 	Rings consistently facilitate connecting and disconnecting your system 	Rings curl under or over arms, obstructing connection or disconnection 
◆	◆	**Good for Life** We stand by our Kamlok/Autolok product as quality 316SST. If the arms are damaged, we'll send you a repair kit–for free.	Rugged and unbreakable arms 	Competition arms can be bent or broken 
	◆	**Locking Arms** Our arms are locked and unlocked in one smooth motion. No need to use a pin or struggle with an extra step to connect and secure your system in the field (with greasy gloves). 	Facilitates connection and disconnection while adding another layer of safety 	Other arms require more steps Lift arm to engage or disengage 2 Grip and pull down on TAB 1 

Check out our ordering guide at **opw-es.com/quickconnects**

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