Marine Breakaway Couplings

Typical offshore applications

Supply vessels to offshore platforms
Ship-to-Ship and Ship-to-Shore transfer
Other bulk transfer hose applications.

BLUEWATER RUBBER & GASKET CO.

KLAW

Product Guide

MARINE 2

Minimising risk during offshore transfer

The KLAW Marine Breakaway Coupling (Marine2) protects assets, personnel and the environment during offshore transfer operations.

The KLAW Marine2 provides an identified and safe parting point within the hose transfer system. When tensile forces exceed predetermined tolerances, the KLAW Marine2 activates.

The KLAW Marine2 therefore delivers two distinct safety features.

- **Closure of media flow: then;**
- **Allowing separation of the hose transfer system.**

Separation relieves stress on the hose transfer system and minimises risk of damage and spillage.

The KLAW Marine2 prevents damage to assets, injury to personnel, contamination of the environment and extended downtime.

The KLAW Marine2 protects against:

- **Vessel movement or loss of dynamic positioning.**
- **Adverse weather conditions such as storms.**
- **Pressure surge within the transfer system.**

This might lead to disruption of operation, extensive clean-up costs, litigation and damaged reputation.

Double closure on activation

When the KLAW Marine2 activates, the Flip-Flap Valve mechanism closes on both the upstream and downstream flow within the hose transfer system. This minimises spill on both sides of the hose transfer separation.

Reliable performance in the marine environment

The KLAW Marine Breakaway Coupling is designed specifically to resist those bending moments and torsional forces expected from floating wave motions and the rigours of the marine environment.

The design of the KLAW Marine Breakaway Coupling therefore prevents premature activation of the unit and protects the Breakstuds from fatigue.

Dependable performance

Instantaneous closure

Spill on activation is minimised by instantaneous closure of the Flip-Flap Valve mechanism.

The typical response closure time is between 0.2 and 0.5 seconds. (Dependent on pressure, flow and media density.)

100% shut-off

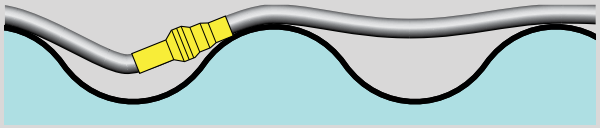
Delivering 100% closure and shut-off of upstream and downstream flow.

Minimum headloss

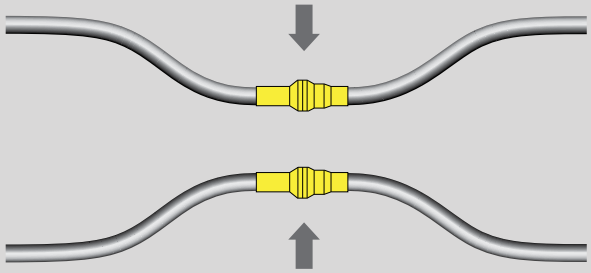
The KLAW Flip-Flip Valve design delivers minimum headloss when in the open position, compared with other valve designs.

Avoiding the consequences of Partial Break

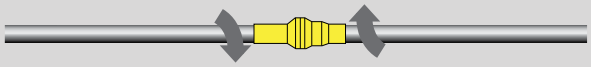
Resistant to vertical bending moments



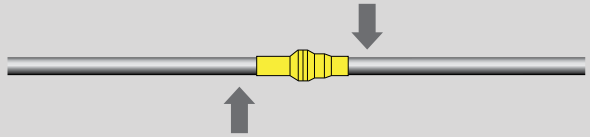
Resistant to horizontal bending moments



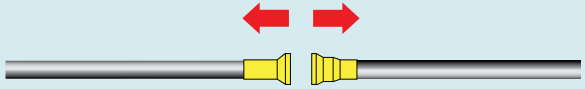
Resistant to twisting moments



Resistant to contradictory forces



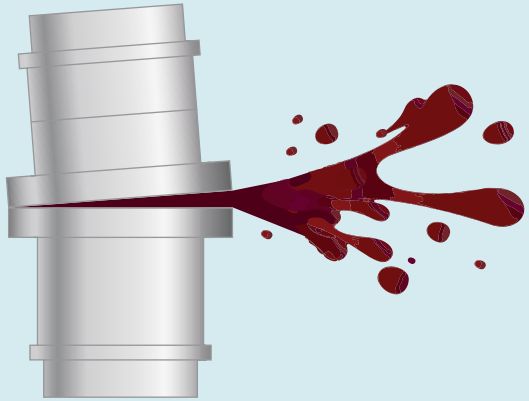
Designed to activate due to axial force



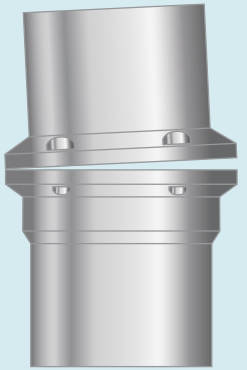
Partial Break occurs when a coupling only partially separates.

A Partial Break event provides a situation where spillage is uncontrollable.

The valve mechanism within the KLAW range is designed to avoid the risk of partial break.



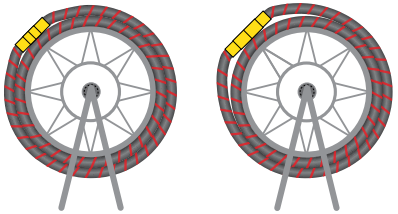
Other Breakaway Couplings can result in uncontrolled spillage in the event of a partial separation.



KLAW Breakaway Couplings provide 100% closure even on partial separation.

The shortest and lightest Marine Breakaway Coupling on the market

- Easy Reset Facility
- The Industry Standard
- Field serviceable
- Compact and lightweight
- Nyloc nuts resist vibration
- Extended male spigot resisting bending moments
- Breakstuds calibrated to hose string requirements
- No risk of Partial Break
- Easily adapted to hammer union connection
- Calibrated breaking load tolerances
- Fatigue resistant
- Proven KLAW Flip-Flap technology
- Automatic activation
- Self-energised
- Dowels to resist torsional forces
- Dowel pins allow lateral coupling activation
- 100% shut-off
- Double Closure on activation provides minimum upstream and downstream spillage
- Reliable and proven
- Robust construction
- Minimum headloss delivering efficient flow rates
- Instantaneous Closure
- No special tools required for servicing



KLAW Marine2 Alternative

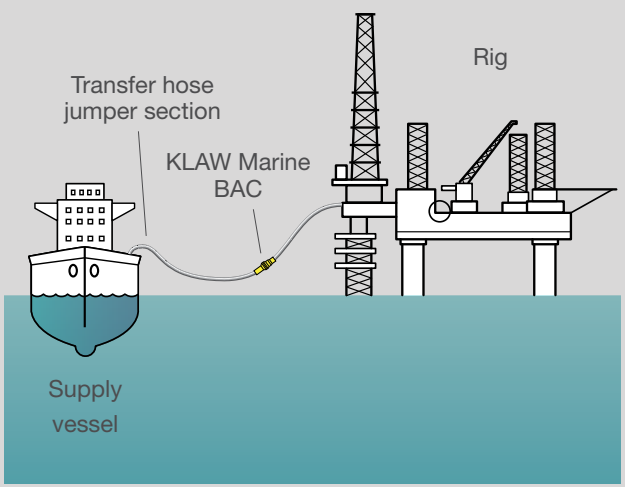
Marine2 is at least 32% shorter and 25% lighter than any alternative and that means the Marine2 is kinder to Hose Reel Systems

MARINE 2

Typical applications

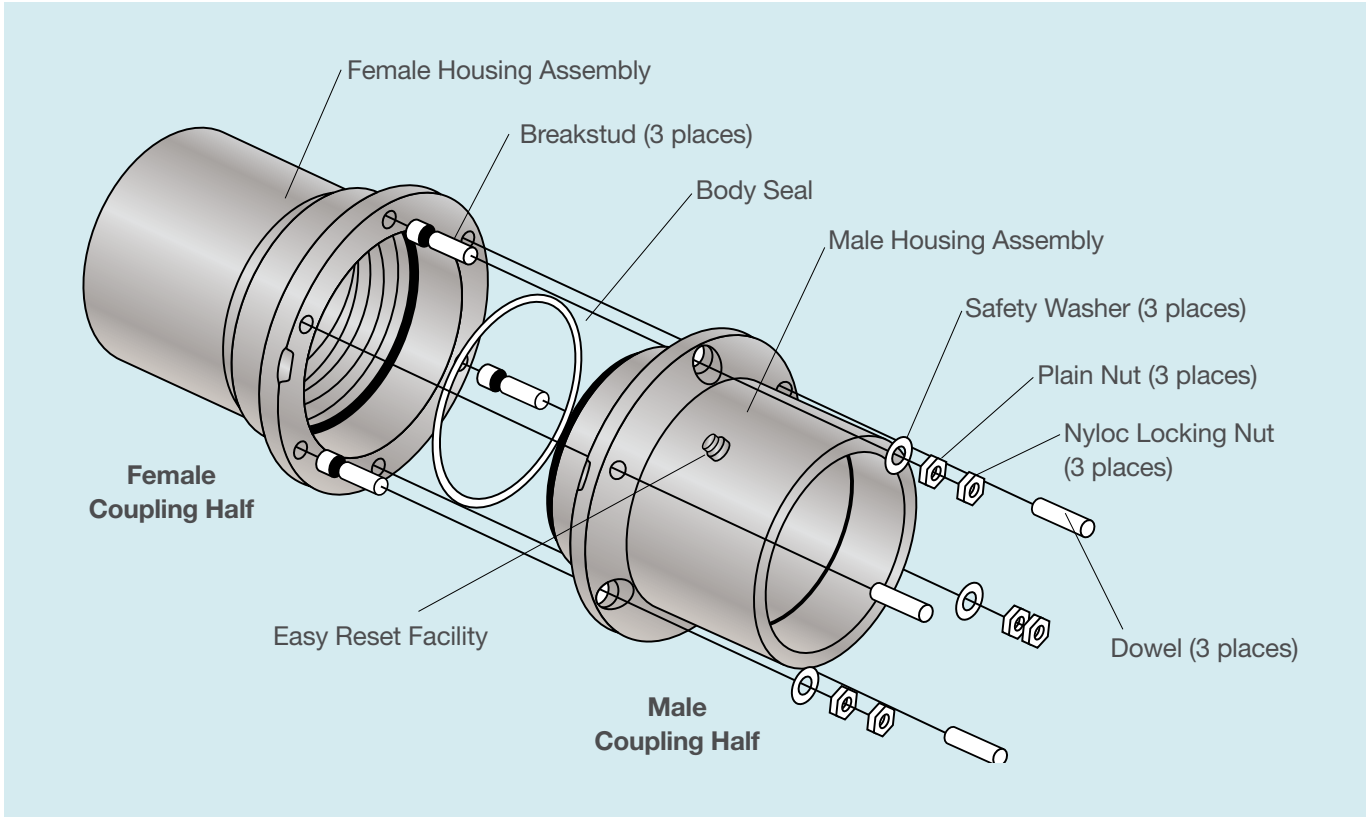
- **Ship-to-Ship**
- **Ship-to-Shore**
- **Supply Vessel to Rig**
- **Bunkering**

Typical Supply Vessel to Rig configuration



Exploded Assembly (typical)

Simple illustration demonstrating the interface components.



Sequential Closure KLAW Marine Flip-Flap Valve

Materials of Construction

Standard coupling housings are stainless steel 316. Other materials are available on request.

Sizes

Standard nominal bores available:
2˝, 3˝, 4˝, 5˝, 6˝

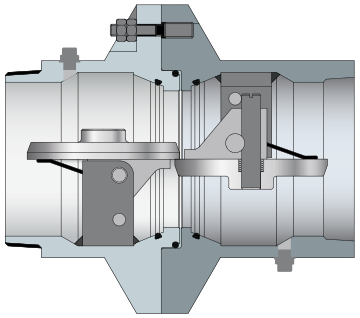
Hose compatibility

The KLAW Marine Breakaway Coupling is suitable for Rubber, Hard Walled and Composite hoses.

End Connections

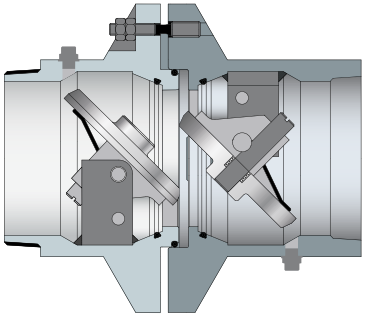
- NPT Threaded male or female
- BSP Threaded tapered or parallel
- Flanged Connections (ANSI 150/PN16 / ANSI 300/PN40)
- Hammer Union Fittings (Fig 100)
- Other End Connection configurations are also available on request.

1



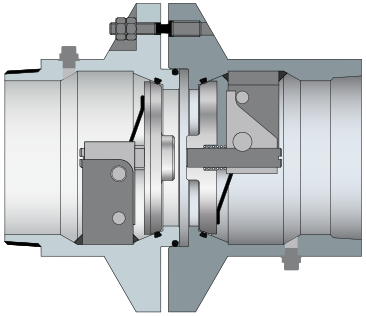
The valves interface into each other, providing minimum headloss.

2



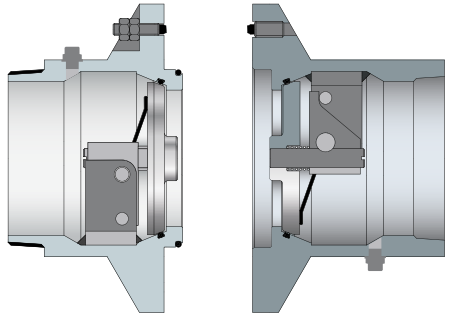
When the coupling separates, the flaps release and rotate.

3



The flaps instantaneously snap into the closed position.

4



100% shut-off is achieved as the coupling parts completely.

The KLAW Flip-Flap is the most reliable and efficient offshore Breakaway Coupling Valve design in the world.

Conceptual illustrations only. Contact KLAW for technical representations.

KLAW Marine Breakaway Coupling Specification Data

Example spillage by sizes		
DN	NB	Cubic Centimetres
50	2.0"	15cc
80	3.0"	65cc
100	4.0"	205cc
125	5.0"	433cc
150	6.0"	583cc

Maximum Design Flow Rates at Activation			
DN	NB	M3/h	L/min
50	2"	50	833
80	3"	100	1667
100	4"	150	2500
125	5"	225	3750
150	6"	300	5000

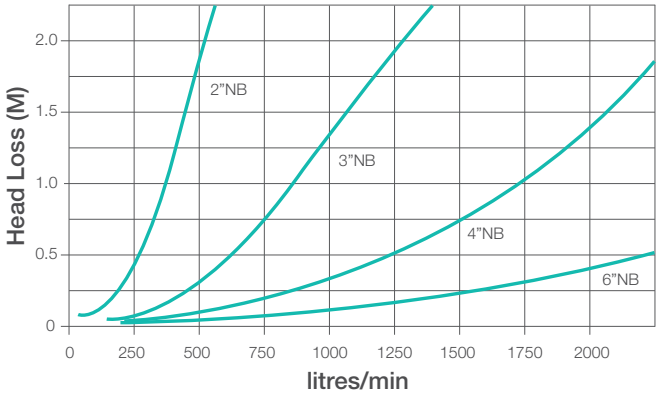
Flow rates are based on water at ambient temperature

Maximum Design Pressure (PS)			
DN	NB	Barg	Psig
50	2"	40	580
80	3"	40	580
100	4"	30	435
125	5"	27	392
150	6"	23	334

Minimum spillage

Minimum spillage on separation is a key benefit of the KLAW Marine Breakaway Coupling

KLAW Flip-Flap delivering lower headloss



Flow Rate Characteristics

Flip-Flap Mechanism
Low Headloss

KLAW Marine2

Poppet Mechanism
High Headloss

Competitor

Both couplings shown in the 'open' position.

Breaking loads

The break-loads on the KLAW Marine2 can be varied to suit any particular application.

In-field servicing and Spares Kits

The KLAW Marine2 is field serviceable.
KLAW Marine2 Spares Kits are also available.

These Kits contain the spares required for a typical service and re-setting after activation. An Installation, Operations and Maintenance Manual (IOM) is also included along with unlimited advice and technical backup.

For further information
+44 1373 827 100
support@klawproducts.com

Full Bore Marine Coupling options

Non-Closure Marine Breakaway Coupling

- Offering the advantage of full-bore flow and line separation but without flow closure.
- Ideal for transfer systems containing alternative flow control options or spill management processes.

Size: 5"

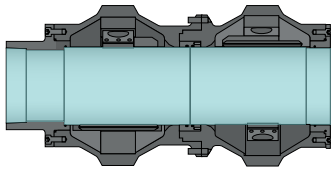
MARINE NON-CLOSURE OPTION

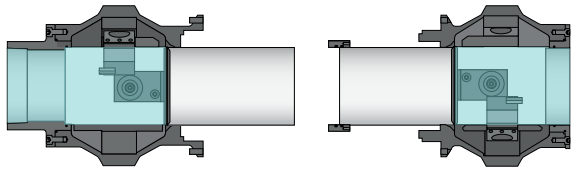
The KLAW Marine Non-closure contains no valve mechanism but retains the advantage of separation via Breakstud pre-calibrated loading tolerances. This is the ideal solution where spillage can be managed or controlled. The KLAW Marine Non-closure is full bore and is fully piggable unless the specification dictates reduced bore.

Typical media - Cement, Muds, Barite and other high viscous media.

The KLAWZERO Full Bore Marine Breakaway Coupling

- Delivering zero pressure drop
- Full unrestricted bore where all working mechanisms are protected from abrasive media.
- Ideal for cuttings fluid, well testing and flowback operations.





KLAWZERO

The advantages of KLAW transfer safety systems

KLAW designs and supplies a range of systems designed to improve safety and efficiency during the transfer of media.

This enables you to minimise risk to assets, personnel, the environment and reputation and protect against downtime and clean-up costs, litigation, injury, increased insurance and investment costs caused by higher risk.

KLAW offers experience and a track-record for innovation and reliable solutions.

The KLAW range

Marine Breakaway Couplings
Industrial Breakaway Couplings
Full Bore Marine Breakaway Couplings
Emergency Release Couplings
Emergency Release Systems
Cryogenic Emergency Release Systems
Dry Disconnect Couplings
Camlocks
Swivel Joints

IMPORTANT:

Specification: KLAW recommends that all information and data are confirmed with the KLAW Technical Department before specifying, ordering or commissioning.

Usage: Please refer to the correct Installation and Maintenance Manual for information or instruction regarding the installation, handling, operation, maintenance and servicing of any product mentioned in this literature. Further advice is available from the KLAW Technical Department.

BLUEWATER RUBBER & GASKET CO.

BLUEWATER RUBBER & GASKET CO
Bluewater Rubber & Gasket Co
1131 Barrow Street
Houma
Louisianna
LA 70360
USA

ISO 9001 BUREAU VERITAS Certification

UKAS MANAGEMENT SYSTEMS 008

Tel: +1 985 851 2400
www.BluewaterRubber.com
info@bluewaterrubber.com

KME1702D

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