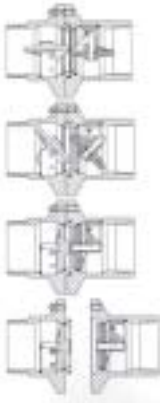


A safe identified parting point within a loading system ensures complete protection

A local supplier of liquid loading systems and dry break couplings introduces a wide range of emergency release and mechanical break couplings to safeguard tanker loading and off-loading operations. Though not common, there is a potential risk of tankers departing from a loading bay or jetty whilst still coupled to a hose or loading arm system, the equipment available ensures that the loading arm or hose disconnect from the tanker preventing damage to the loading system and tanker manifold itself, integral valves ensure that both the tanker and storage side piping are isolated with minimum spillage.

Breakaways



Take two poppets, lay them on their sides like flaps. They lock each other, offering minimum head loss until the coupling parts.

The flaps are released and allow the bias springs to rotate through a controlled arc . . .

. . . until they have moved through 90, where they snap onto their seats prior to the coupling fully parting.

With 100% shut-off achieved, the two coupling halves then part completely.

Supplied by a global leader in the manufacture of mechanical breakaway couplings and the inventors of the original FLIP-FLAP design of coupling are compliant with the 'Pressure Equipment Directive 97/23/EC'. Utilised in industrial and marine product transfer installations, the industrial Breakaway Coupling is specifically designed to activate under a bending moment with an applied force at an angle of up to 90 degrees to the plane of the coupling. Typically installed into loading arm and hose assemblies where at least one side of the coupling is attached to a rigid and fixed point. The original FLIP-FLAP design not only provides minimum head loss through the unit but also ensures that under no circumstances can the seal between the two coupling body halves open to atmosphere, before the internal flap valves have been released and provided a 100% shut off. This design eliminates the potentially hazardous scenario called 'Partial Break'. 'Partial Break' is when the coupling has been partially parted but not fully, due to the applied force being prematurely removed (perhaps due to an operator beginning to move the vehicle and then stopping). With some designs of Breakaway coupling it could be possible for a 'Partial Break' and an uncontrollable spillage of media to occur, this cannot happen with the original FLIP-FLAP design.



Emergency release couplings

These are systems designed to provide automatic shut-off either mechanically, pneumatically or

hydraulically. In this range of couplings the break-studs utilised in the mechanical break couplings are replaced by a collar release mechanism. This arrangement is typically used on loading arm assemblies, where tensile loads being exerted on the arm are minimised. The collar release via a cable, pneumatic or hydraulic system, activates at a predetermined point during over extension of the loading arm. These systems are supplied either in Flip-Flap, Double Poppet or Double Ball Valve configurations depending upon the particular application.

Introducing the QE

The QE Quick Connect / Disconnect Coupler (QC/DC) and Emergency Release Coupling (ERC) combination has been designed for road and rail loading arm systems where the loading arm must couple to a standard flange on the tanker, there is a growing need in industry for a safety system capable of carrying out the following:



- Quick connection to a tanker flange without having to use nuts, bolts and gaskets.
- Quick disconnect from a tanker flange.
- Interception of the flow
- Draining of residual product upon completion of the transfer.
- Automatic emergency disconnection with interception of the flow on both sides should the truck inadvertently move away prior to having completed the transfer operation.

This has resulted in the design of a system compatible with the operational

characteristics of the loading facility and to meet the following requirements.

- Reduced overall dimensions
- Light weight
- Minimum pressure drop

And, above all, cater for safety aspects such as:

- Intrinsically safe against operator / operational errors.
- Ensure minimum spillage after an emergency disconnect.
- Minimise the quantity of fluid to be drained upon completion of loading

The end result being a system that comprises of the following:

- A coupler with rotating cams for quick connecting to and quick disconnection from the tanker flange. The rotation of a single operating lever causes the three cams to simultaneously connect to and disconnect from the tanker flange. During connection to the flange a spring preloaded floating head integral with the coupler shall be compressed. The floating head is spherically shaped so as to guarantee a tight connection even under unbalanced external load conditions. As standard the cams are manufactured from high strength bronze with anti-spark properties.
- A manually operated ball valve, integral with the coupler, to isolate the line during normal operation.
- An ERC to keep the two halves of the system connected rigidly comprising of:
 - Two conically shaped ERC flanges, integral to the two valves, shaped in such a way to minimise the quantity of product spilt following an emergency disconnection.
 - A pre-tensioned articulated collar with four clamps to keep the ERC flanges together.
 - A second ball valve preset to be permanently open during normal operation. The two ball valves are connected by a cross linkage which – **in case of an emergency disconnect only** – causes the simultaneous closure of both valves prior to the release.
 - A ¼" draining system for residual product between tanker valve and QE valve after loading.
 - An emergency disconnect system, designed to operate only in the case of the tanker moving out of its operating envelope whilst still connected to the loading arm.