Mann Tek

Sweden

Gas (LPG)

DGCouplings®
Dry Gas Couplings

Swivels
Swivel Joints

SBCouplings®
Safety Break-away Couplings

Art. No XB12 Version 140617

DGCouplings®

Dry Gas Couplings

Dry Gas Couplings are used to prevent excess spillage. They protect people and property from dangerous and costly exposure by keeping hazardous liquids and vapors in-line and out of the environment.

Dry Gas Couplings are used at liquid or vapor transfer points where you do not want product loss. Using Dry Gas couplings will reduce the hazards typically found when handling/processing LPG

Why use the Mann Tek DGCoupling

- Spillfree handling for loading and unloading tank trucks, rail tankers and tank containers.
- Minimization spillage and product loss keeps the environment free from Hazardous Vapors and Liquids.
- “Easy to Use” – design saves time and minimises health risks.
- Reliability and easy servicing saves your investment.
- Approved for safe handling of LPG - Propane (CAS 74-98-6, UN 1978) and Butane (CAS 106-97-8, UN1011). UN-classification 2.1 and similar applications.
- 3” and 4” is compatible with existing Dry Disconnect / Dry Break Couplings according to STANAG 3756.
- The 1” is a heavy duty vehicle filling nozzle according to EN 13760.
- Approvals according to the European Directives PED and ATEX and the international requirements ADR, RID, IMDG and TDT.

The Dry Gas Coupling is deveoped for connection and disconnection at higher pressure (1"-4" up to 25 bar).

ATEX approved

Ex II 2G

DGCoupling Applications

1" DGCouplings

Used as light & heavy duty vehicle filling nozzle (EN 13760)

Vapor recovery line

2" DGCouplings

Loading / unloading for bobtail tank trucks and intermediate bulk trucks

Vapour recovery line

Connecting pipelines

3" DGCouplings

3” and 2” DGC for top loading of LPG rail tanker. 3” couplings for liquid phase and 2” for vapour phase

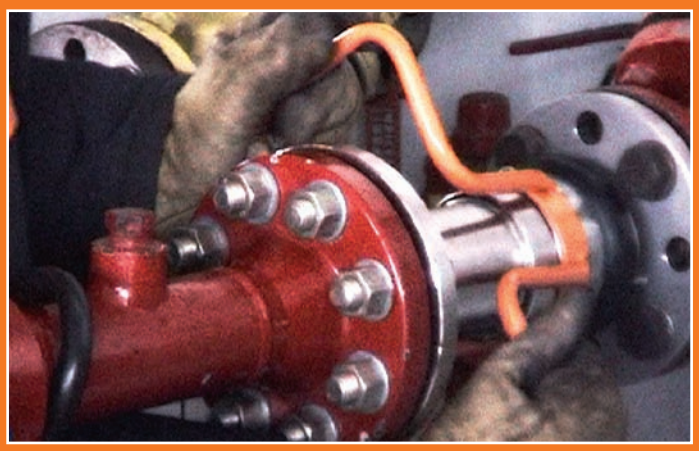
3” and 2” DGC for sprayloading of both LPG rail tanker and Gas trucks.
No vapour return.

3” and 2” DGC for bottomloading of both LPG rail tanker and Gas trucks.
3” couplings for liquid phase and 2” coup-lings for gas phase.

4" DGCouplings

Loading / unloading of ship tankers and rail tankers

Why use the Dry Gas Couplings



Traditional Acme connection

- Ca: 60 seconds to disconnect
- Special tool needed
- Operator exposed for vapours
- Risk of cold burns
- Spillage: min 500 ml

Mann Tek Dry Gas Couplings

- Disconnected in seconds
- No tools needed
- Risk free handling
- No vapours
- Spillage: max 0.6 ml

Calculation of Savings

The liquid release and the cost loss for 1.000.000 connections and disconnections in LPG logistics per year when 1 T LPG = 1000 $ could be :

Coupling type	Ton LPG/Year loss	Cost for lost LPG
Dry Gas Couplings	0,175 T	175 $
Traditional system (Acme threaded or flange to flange)	Min 250 T Max 5000 T	250.000 $ 5.000.000 $

Bennefits of using Dry Gas Couplings

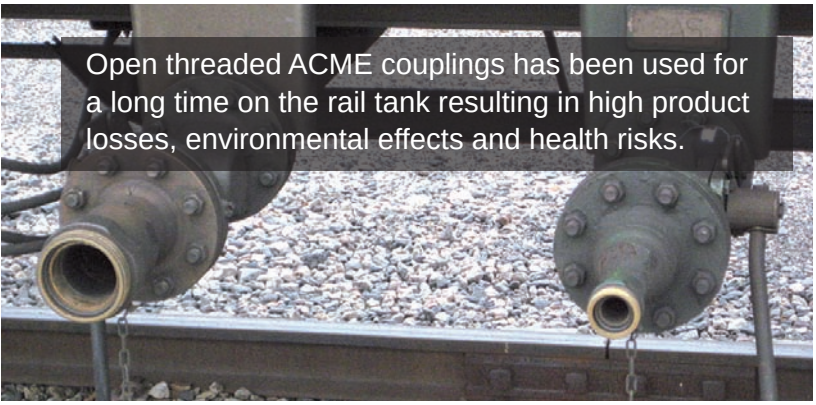
- Minimum emissions
- Connects and disconnects under pressure and flow
- Removes human error elements
- Decrease the time to connect and disconnect both in daily use and in case of emergancy.
- Return of the investment after few months
- Increase the net profit
- Environmentally friendly

Implementing The DGCoupling system

Loading hoses equiped with Mann Tek DGC Hose Unit permanently

Old Rail tanker equipped with Acme-type couplings

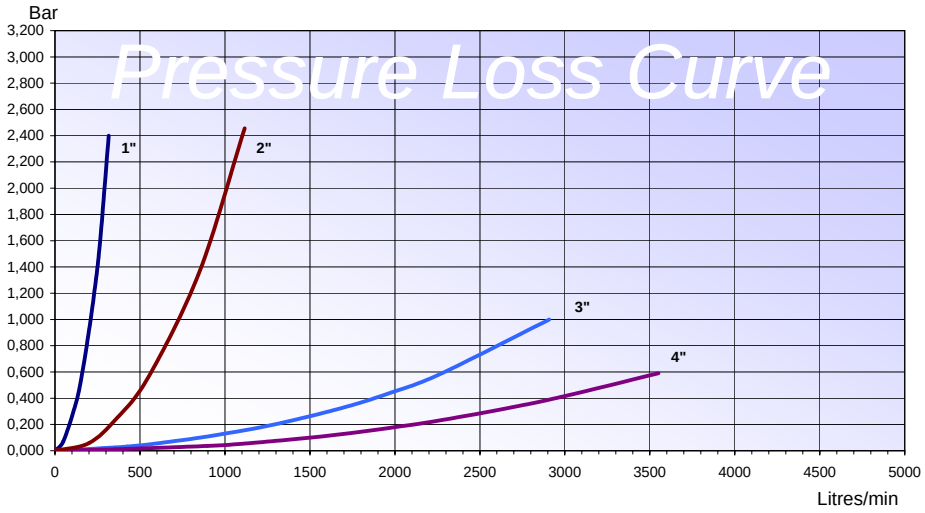
Dry Gas Tank units supplied with Acme-type threaded connections (adaptors) to be installed on the rail-tanker.



Open threaded ACME couplings has been used for a long time on the rail tank resulting in high product losses, environmental effects and health risks.

Acme-type threaded connections (adaptors).

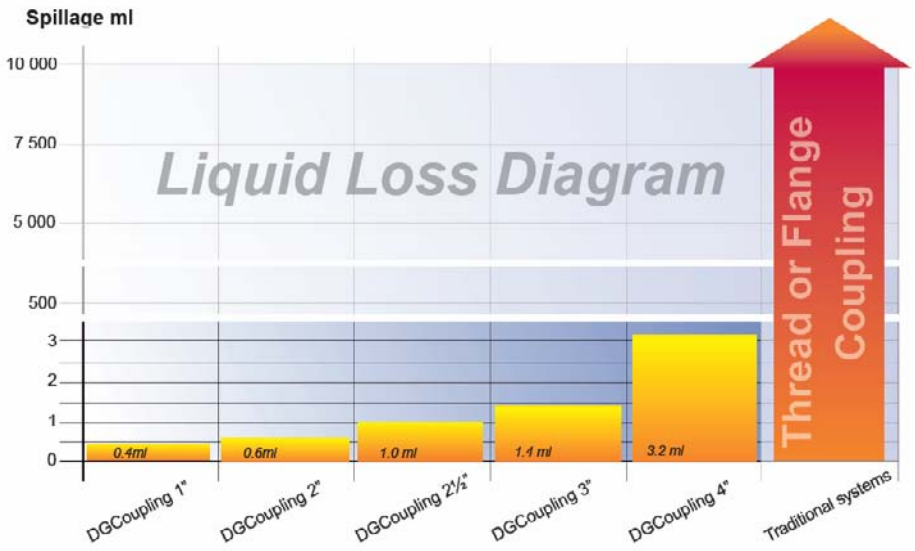
Flow Diagram - Pressure Loss Curve



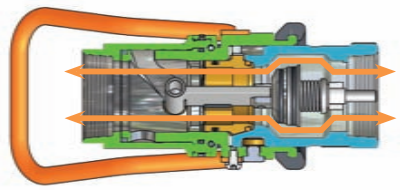
Fluid: *LPG,* ***Density:*** *0,54 kg/dm³*

Spillage diagram

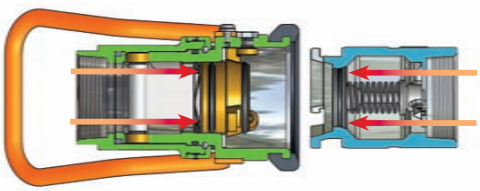
Comparasion of liquid loss during disconnection for Dry Gas Couplings and traditional systems using open threaded couplings, or flange to flange connections. The diagram shows that liquid loss for traditional systems may be as much as 10.000 times more than when using Dry Gas Couplings.



How it Works



To connect
Push and turn - it´s coupled
- full flow



To disconnect
Turn and pull -it´s released
- no spillage

Technical Data

Size:
1”, 2”, 3” and 4”

Materials:
Gunmetal / Brass and
Stainless Steel 316L
SS-EN 10 272-1.4404+AT

Seal:
FPM (Viton) or NBR (Nitrile)
according to EN549 B2/H3
other materials on request

Temperature range:
-20ºC (-4ºF) to 80ºC (176ºF)
(larger temperature range
from -50ºC (-58ºF) up to
+200ºC (392 ºF) is possible,
depending on Seal material)

Maximum Working pressure:
MWP PN 25.
MAWP 300 psi

Test Pressure:
38 bar
450 psi

Min. Burst Pressure:
125 bar / 1813 psi

Safety Factor:
5:1

End Connections:
Female and Male BSP / NPT,
ACME, Witworth threads and
flanged DIN and ANSI.

Other connections on request.

Dust Cap

Dust protection in rubber

A Dust Cap gives very good protection against corrosion, and withstands both hot and cold environments.

Dust Cap for increased safety

It´s only possible to remove the cap from the Tank unit /Adapter after pulling the securing stift and at the same time twisting the cap. The Dust Cap is manually lockable with padlock.

Standard Caps in Composite (Polyeten PE-HD 300).
It covers the widest range of chemical and petroleum products.

Pressure Cap - Working Pressure PN 25 bar / 363 psi

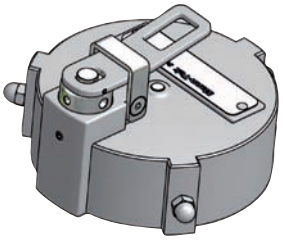
3rd closure (valve) on Rail tankers, Containers and Tank trucks

The pressure caps are allowed by ADR/RID regulations as 3rd closure on Rail tankers, Containers and Tank trucks. Meaning that the Pressure Cap can be used instead of the traditional Ball Valves.

The Mann Tek Pressure Cap for Tank units / Adapters is designed to maximize operator safety and containment safety.

Features

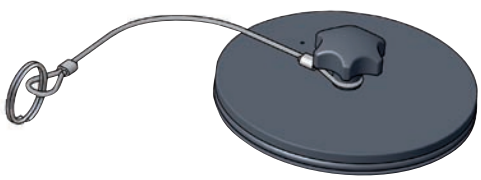
- Pressure indicator
- Depressurization
- Customs / tamper seal feature
- Automatic locking
- Manually lockable (with padlock)



Dust Plug to prevent ingress of dirt and water

Use the Mann Tek Dust Plug to prevent ingress of dirt and water in the couplings.

The material in the Dust Plug is Composite, Aluminium and Stainless Steel.

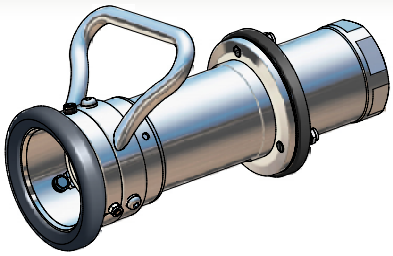


Non Projecting piston spindle

Tank units with no parts protruding from the coupling in connected position.

Used when Tank unit is installed direct to a Ball Valve or similar situation where space is limited so the Tank unit spindle can not project backwards.

Integrated Break-away

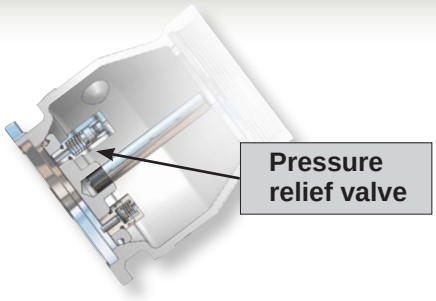


Integrated Break-away for Dry Gas Coupling Hose unit

Combines the benefits and safety thinking of both Dry Gas Couplings and the Safety Break-away couplings.

Available as both cable release and breaking pin types.

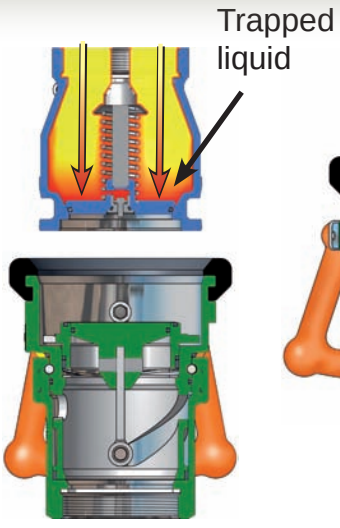
Pressure relief valve



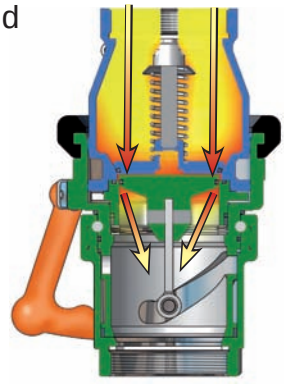
Pressure relief valve for DGC Hose and Tank unit is used to prevent "over pressure" in systems cause by terminal expantion or as safety "pressure control" valve.

When the pressure reaches a certain level the valve opens and releases the over pressure.

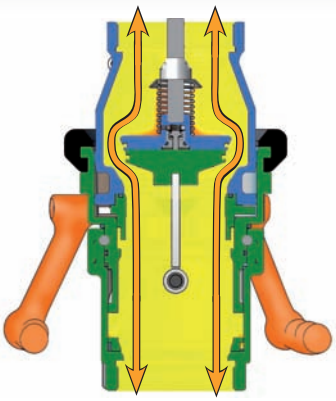
Pressure equalizing valve



Trapped liquid in Tank Unit



Open pressure equalizing valve
Pressure expands into Hose Unit



Open without pressure
Full flow

This system dissipates trapped fluid pressure into hose coupler without spillage, to allow easy connection.

Swivels

Swivel Joints

Hose swivels

Sizes
¾” (DN20) to 4” (DN100)

Maximum Working pressure:
MWP PN 10 / 16 / 25.
MAWP 150 / 300 psi

Test Pressure:
15 / 24 / 38 bar
225 / 450 psi

Materials
Aluminium, Brass, Stainless steel,
Hastelloy, Titanium. Others on request.

Connections
Female and Male BSP / NPT, ACME, Witworth threads and flanged DIN and ANSI. Others on request.

NOTE
Unsuitable for high bending moments. Heavy Duty Swivels should be used in these applications.

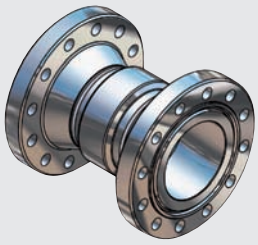
The use of swivel hose avoids torsion of hose assemblies, i.e. in filling machines, and improves the handling and coupling of nozzles for refuelling of petroleum based products and chemicals.

Features

- **Simple design, low maintenance.** Each unti consist of two body halves. Stainless Steel balls and a single spring assisted O-ring seal.
- **Compact external dimensions**
- **High flow rate / low pressure drop**
- **Full range of sizes, materials, seals and connections**
- **Minimal maintenance requirements**
- **Safety** Swivel function - allows the hose to relax to it´s natural rest position whilst allowing freedom of movement without imparting torque stress at the point of connection - Torque stress is the largest single cause of Composite, PTFE and Stainless Steel convoluted hose failure.
- **Economical** Cost effective solution to prolong lifetime of hoselines.

Heavy Duty Swivels - double ball race

Sizes
1½” (DN40) to 10” (DN250)



Materials
Stainless Steel.
Other material on request.

Maximum Working pressure:
MWP PN 10 - 125 bar
MAWP 150 - 1800 psi

Connections
Female and Male BSP / NPT, ACME, Witworth threads and flanged DIN and ANSI.
Others on request.

Swivel Joints are used in the industry wherever a movable pipe-connection system between two equipment parts is needed.

The swivel joints are designed for slow rotary motions under the influence of high internal pressures and/or big external stress such as traction and bending forces.

With an appropriate combination of swivel joints nearly all movements from the simple rotation or swivelling motion up to motional actions in space can be realized.

Safety Break-away couplings are used to prevent pull away accidents, the internal valves will close the flow in both lines and prevent unwanted release of product.

The Safety Break-away couplings are available as Industrial and Marine type.

Industrial Break-aways are used at fix points like manifolds, pipelines depots etc.

The Safety Break-away couplings are used in filling systems for airfields, rail tank cars, tank containers etc.

Industrial Break-away coupling is utilized all industrial product transfer installations.

The industrial SBCouplings are specifically designed to be able to activate with a tensile force being applied at an angle to the plane of the coupling housing, up to 90 degrees.

Features

- Passive security against situations where a hose or loading arm could be subjected to inadvertent excessive loads.
- Design features are a simple mechanism and no loose components which could be lost after release.
- Operates independently of shut off safety system and does not require an external power source.
- Easy to reset on site with one person
- High flowrate / low pressure drop
- Very low loss, positive shut-off of both coupling halves results in minimum product loss.
- Lightweight and robust design.
- Available with ANSI/DIN flanges or threaded (BSP or NPT).

SBCouplings®

Safety Break-away Couplings

Sizes
1" (DN25) to 12" (DN 300)

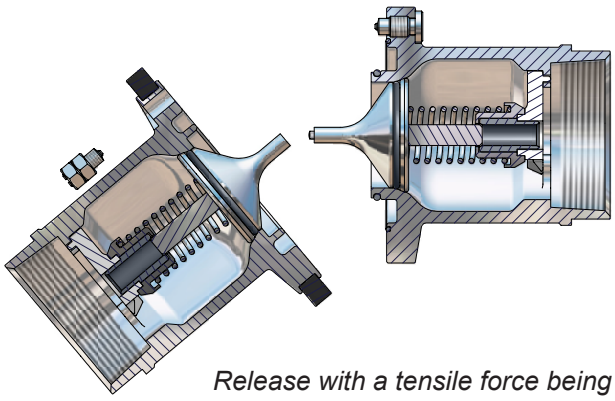
Working pressure
Max 25 Bar (363 psi)

Materials
Aluminium, Brass, Stainless steel, Hastelloy, Titanium. Others on request.

Connections
Female and Male BSP / NPT, ACME, Witworth threads and flanged DIN and ANSI. Others on request.

Industrial Break-away

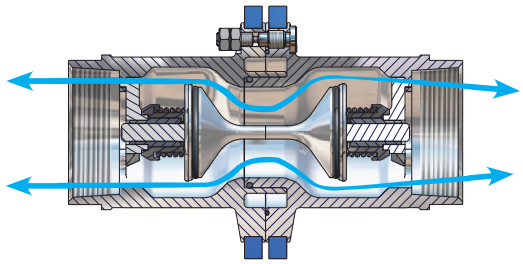
Typically installed into loading arm and hose assemblies, where at least one side of the coupling is attached to a rig and fixed point.



Release with a tensile force being applied at an angle to the plane of the coupling housing, up to 90 degrees.

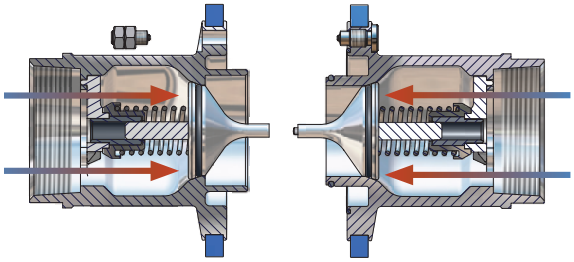
Before emergency disconnect

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



After emergency disconnect

When the SBCouplings separate, it allows the valves to close. The two valves closes rapidly, minimizing exposure to personnel and the environment.

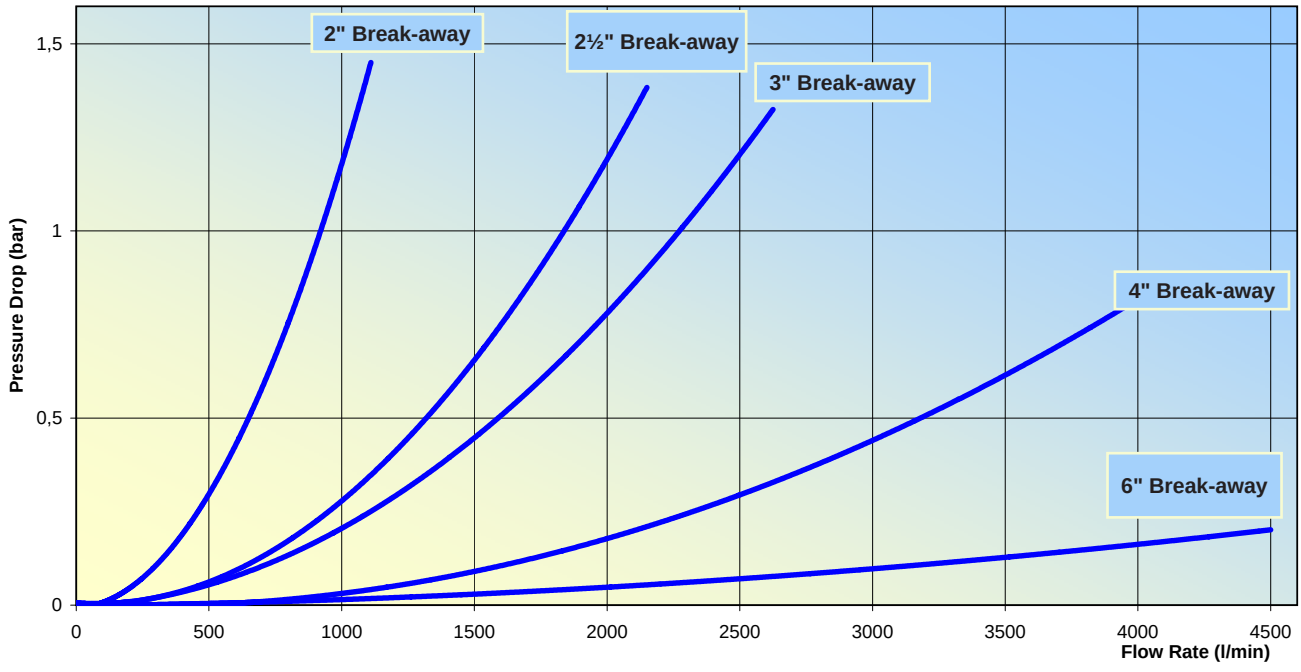


How it works
- before and emergency disconnect

The SBCouplings, Safety break-away couplings has three external break bolts. In the case of axial tension all of the bolts take up the force corresponding to the break force on the hose with a safety margin.

Non-axial forces concentrate the tension forces more strongly on one bolt, so that the safety break-away coupling reacts in a natural way to the reduction of the hose break forces.

Flow Diagram (Pressure Drop) for Break-away Couplings



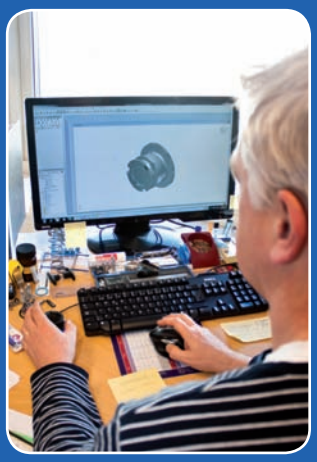
Test Fluid: n-paraffin **Temperature:** 20 °C **Density:** 0,75 kg/dm³ **Viscosity:** 1,75 mm²/s

About Mann Tek

Mann Teknik AB is a Swedish company located in Mariestad, Sweden.

Mann Teknik AB designs, manufactures and markets products for safe and environmentally friendly handling of aggressive fluids for the chemical and petrochemical industries.

The main product is the Dry Disconnect Couplings, DDCouplings®, for spill free liquid handling. The products are marketed through independent representatives in more than 30 countries.



Company Approvals

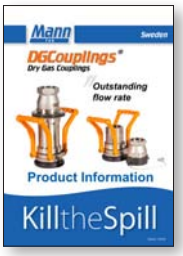
Mann Teknik AB are certified to ISO9001:2008. The products are CE-labeled. The main products are certified to PED, the European Pressure Equipment Directive and ATEX, the European directive for Equipment intended for use in Potentially Explosive Atmospheres.

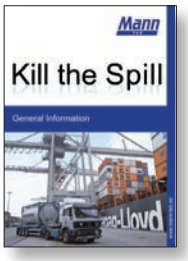
The products are produced in accordance with several important standards, e.g. the NATO STANAG 3756

Apragaz TDT VdTÜV Lloyd's Register Ex II 2G PG CE

KilltheSpill

Product and company information





Approvals

ISO 9001, PED 97/23/EC , TDT, TÜV, Apragaz, FMV, Gost, ATEX e.t.c

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Mann-Tek is a certified ISO9001-company.