

Mann
Tek

DDCouplings[®]
Dry Disconnect Couplings

**70 mm, 1½", 2" DDCoupling
Tank unit with pressure relief
and equalizing valve**

STANAG 3756



OPERATING MANUAL

Art. nr: 100111-0121 Version: 040623



Summary of revisions

<u>Date of change</u>	<u>Description</u>
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FOREWORD

This operating manual applies to the person or persons using the Dry Disconnect couplings.

It is very important to read and understand this operation manual before use of this coupling. Become familiar with the unit's operation, applications and limitations. Be particularly aware of its specific hazards. Store this manual in a clean area and always at a readily available location. Additional copies at no charge can be obtained through written requests.

IMPORTANT!! READ THE COMPLETE DOCUMENTATION

The base for this manual follows the E.G.-directive.

Pressure Equipment Directive:
97/23/EG of the 29th of May 1997

- Do not make modifications that are not authorized by the manufacturer.
- Read and respect all warnings and instructions provided to you.
- Use only original Mann Teknik spare parts for maintenance.

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3.1 GENERAL SAFETY RULES

ALL ASSEMBLY AND MAINTENANCE OPERATIONS MUST BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL.

Always read and understand the operation sheet included with each unit and the individual operations detailed in this manual.

Always wear protective goggles, gloves and foot protection.

Although this Dry Disconnect Coupling assembly is manufactured for dependable operation, it is impossible to anticipate that combination of circumstances that could result in an accident. The following instructions are recommended for proper maintenance of the Dry Disconnect Coupling assembly. The operator is cautioned to always practice "Safety First" during each phase of use, including set-up and maintenance of this unit.

Always depressurise the system before beginning any maintenance work on the Dry Disconnect Coupling assembly. Failure to do so could result in serious personal injury, property damage or joint leakage.

Consult the Service Instruction. Use of improper accessories may be hazardous.

Regular inspections are recommended to detect any worn or damage parts that could possibly cause a dangerous condition. Scheduled preventative maintenance should be done at regular intervals as determined by the application and frequency of use.

Hazard Identification

Definitions for identifying the various hazard levels shown on warning labels or to indicate proper safety procedures are provided below.



This symbol indicates important safety messages in this manual. When you see this symbol be alert to the possibility of personal injury and carefully read and fully understand the message that follows.

The use of the word "DANGER" signifies an immediate hazard with a likelihood of serious personal injury or death if instructions, including recommended precautions, are not followed.

The use of the word "WARNING" signifies the presence of hazards or unsafe practices that could result in serious personal injury or death if instructions, including precautions, are not followed

The use of the word "CAUTION" signifies possible hazards or unsafe practices that could result in personal injury, product or property damage if instructions, including precautions, are not followed.

The use of the word "NOTICE" signifies special instructions that are important but not related to hazards.

3.1 GENERAL SAFETY RULES

WARNING



Proper seal and wetted metal parts material selection is critical for safe operation. To assure maximum life for the service intended, use only those materials, sealing and lubricant compatible with the fluids being handled. Please note material being supplied and make certain that it is suited for the intended service.

This is especially important in the food processing industry.

Failure to do so could result in serious personal injury, property damage, or leakage.

WARNING



The Dry Disconnect Coupling assembly does not eliminate possible exposure to hazardous substances. Likewise, some product residue may appear on the disc faces. The conditions of handling and use are beyond our control, and we make no guarantee, and assume not liability for damages or injuries related to the use of this coupling assembly. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

- Always employ proper safety precautions and handling techniques.

Failure to do so could result in serious personal injury, property damage, or leakage.

WARNING



Piping systems must always be depressurised and drained before attempting disassembly and removal of any Mann Teknik AB products.

Failure to do so could result in serious personal injury, property damage, joint leakage or joint separation.

WARNING



Do not handle o-ring seals if their material appears charred, gummy or sticky. Use tweezers; wear neoprene or PVC gloves and protective goggles. Do not touch adjacent parts with unprotected hands.

3.2 OPERATOR SAFETY INSTRUCTIONS

Read and respect all warnings and instructions provided to you.

Failure to do so could result in serious personal injury, property damage, joint leakage or joint separation.

The Dry Disconnect Coupling assembly does not eliminate possible exposure to hazardous substances. Likewise, some product residue may appear on the disc faces. The conditions of handling and use are beyond our control, and we make no guarantee, and assume no liability for damages or injuries related to the use of the Dry Disconnect Coupling assembly. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

3.2.1 ASSEMBLING



CAUTION

Cleanliness is essential for trouble-free operation of the couplings. A new assemble requires the proper cleaning of the pitch from all squashed and hardened remains of the sealing compounds.

BSP Thread:

Parallel threads with flat seals; do need tightening again after twenty-four hours. Change of seal and new assembly do not require any expert knowledge

NPT Thread:

Hose fittings with tapered internal and external threads. Mainly PTFE tapes are used. A safe and promptly tight connection requires expert knowledge.

3.2.2 APPLICATION

Make sure that you are using the correct Dry Disconnect Coupling concerning materials, seals and lubricant suitable for the media and pressure in use.

3.3 SAFETY OF THE SYSTEM

The safeties of the Dry Disconnect Couplings are high if you follow the instructions and maintenance information in this Operating Manual.

3.3.1 OPERATING RESPONSIBILITY

Authorized and qualified personnel must carry out all assembly and maintenance operations. The installation must be equipped with suitable controls that prevent an increase of pressure beyond the maximum allowed limit (this is the responsibility of the installer/user).

Standard Couplings

A Ball valve must not be placed against a Tank unit, due to danger of preventing the function of the coupling.

Standard Couplings must not be placed in a system with a closed area with liquid.

For solutions to above problems, please contact Mann Teknik AB

3.3.2 MAINTENANCE

Make sure that the Dry Disconnect Couplings are assembled correctly. Check that the connections and couplings are tightening.

Use of dust-plug/cap is recommended.

3.3.3 RISK INFORMATION

This list contains instructions on how to avoid or minimize the possibility that risks might occur.

The solutions are classified as follows:

- a) Solutions for the elimination of the risk.
- b) Application of appropriate protective measures against risks that cannot be eliminated.
- c) Information for the user regarding the presence of residual risks.

Cause: Excess pressure beyond the maximum operating pressure.

Effect: Explosion, breaking, cracking or permanent deformation of the article.

Danger: Projection of metal parts, leakage of liquid.

- Solution:
- a) The article has been designed with appropriate safety margins. The installation must be equipped with suitable controls, which prevent an increase of pressure beyond the maximum allowed limit (this is the responsibility of the installer/user).
 - b) The installation is equipped with appropriate safety accessories to protect against excess pressure (this is the responsibility of the installer/user).
 - c) The maximum allowed operating pressure is noted on the Identification plate.

Cause: Forces or reactions to external forces for which the equipment is not designed.

Effect: Permanent deformation, structural damages, breaks.

Danger: Projection of metal parts, leakage of liquid.

- Solution:
- a) The article must not be weighed down with loads, which are heavier or different from those stated on the design drawings and in Operating Instructions.
 - b) The article must be installed in a protected location with controlled access.
 - c) The conditions under which the article is designed to operate are noted in the Operating Instructions.

Cause: Corrosion due to stray electric currents.

Effect: Localized perforation of the equipment.

Danger: Leakage of liquid.

- Solution:
- a) The article must be equipped with a grounding system (this is the responsibility of the installer / user).
 - b) The article must be installed in a protected location with controlled access.

Cause: Accidental departure of the vehicle while connected to the equipment.

Effect: Breaking of the article.

Danger: Permanent deformation, structural damages, breaks.

- Solution:
- a) The equipment must have a system which ensures the logical work sequence (this is the responsibility of the installer / user).
 - b) The equipments movements must be delimited by unambiguous signs with the installation.

Cause: Worn or inappropriate seals at the connection points.

Effect: Lacking of sealing at the connection point.

Danger: Leakage of liquid.

- Solution:
- a) The article must be installed using new and appropriate seals (this is the responsibility of the installer / user).
 - b) Before assembly, the surfaces of the seals must be inspected (this is the responsibility of the installer / user).
 - c) The above instructions are noted in the Operating Instructions.

Cause: Opening of the article while the system is under pressure but without appropriate operating conditions.

Effect: Untimely opening of the article while under pressure.

Danger: Leakage of liquid, excessive pressure of non appropriate elements
Situating on the truck.

- Solution:
- a) The opening of the coupler must be completed under safe conditions, having first correctly carried out the coupling to the male adaptor located on the truck.
 - b) Loading operations must be carried out using logical safety Control systems (opening of foot valve on the truck, opening And connection of the vapour return)
 - c) The above instructions are noted in the Operation Instructions.

Cause: Closing of the article while the system is under pressure but without appropriate operating conditions.

Effect: Untimely closing of the article while under pressure.

Danger: Excessive pressure, water hammer on the line.

- Solution:
- a) The closing of the coupler must be completed under safe Conditions when the product delivery is terminated.
 - b) Loading operations must be carried out using logical safety control systems (preset loading quantity, lever controls and Stop product delivery).

Cause: Maintenance of the article while the system is operative.

Effect: Untimely opening of the article.

Danger: Leakage of liquid, projection of metal parts.

- Solution:
- a) Maintenance operations must be carried out with the installation shut off and after having completely drained the pipes in an appropriate manner.
 - b) Maintenance operations must be carried out with the installation shut off and after having drained the pipes in an appropriate manner.
 - c) The above instructions are noted in the Operation Instructions.

Cause: Excessive flow of liquid.

Effect: Increase of pressure inside the article.

Danger: Increased wear of internal components with the possibility of leakage.

Solution:

- a) The article has been designed with appropriate safety margins. The installation must be equipped with appropriate safety devices which prevent an increase of the flow rate and thus of the pressure (this is the responsibility of the installer / user).
- b) The installation is equipped with appropriate safety accessories to protect against an increase of the flow rate (this is the responsibility of the installer / user).

4. FUNCTION

4.1 FUNCTIONAL DESCRIPTION

Dry Disconnect Couplings are designed for use wherever it is necessary to connect and disconnect hoses and pipelines under pressure, quickly and without spillage. They are designed primarily for use in the petroleum and chemical industries where reliability and safety are of prime concern.

It is always necessary to ensure that both the elastomeric sealing materials and wetted components are compatible with the chemical to be transferred.

Reference should always be made to the couplings specification in key areas as operating temperatures, maximum working pressures, etc.

Chemical resistance analysis should always include all elements that are in contact with the coupling.

Operation is single action, using a straightforward turning motion to connect the couplings and open a flow path.

An initial push and turn action on the hose unit causes engagement with the tank unit, thus locking and sealing the two units together. Further rotation causes the internal valves to open, thereby allowing flow with minimum pressure drop.

The connection and valve mechanism is interlocked such that fully engaging and sealing the hose unit on its matching tank unit can only open the valve.

On disconnection, the valve fully close before the couplings separate and spillage is therefore negligible.

Following are some applications that should generally be avoided.

- Fluids that can solidify at ambient temperature.
- Fluids such as bonding agents or resins that can build up layers of solidified material on key internal components.
- Fluids that contain large, sharp or abrasive elements.

5. MAINTENANCE

5.1 MAINTENANCE SCHEDULE

5.2 MAINTENANCE AND SERVICE

**5.3 TEST PROCEDURE, TANK UNIT WITH PRESSURE EQUALIZING
AND PRESSURE RELIEF VALVE**

**5.4 TEST PROCEDURE, STANDARD DDCOUPPLINGS (WITHOUT
PRESSURE EQUALIZING VALVE)**

5.1 MAINTENANCE SCHEDULE

Maintenance schedule

Daily Inspection		
	Three-month inspection	
	Three-month inspection	
	Three-month inspection	
	Three-month inspection	Yearly inspection

5.2 MAINTENANCE AND SERVICE



Maintenance and service instruction

Always depressurise the system and rinse off the parts before beginning any maintenance work. Use protective goggles. Do not handle O-ring seals if the material appears charred, gummy or sticky. Use tweezers and wear neoprene or PVC gloves. Do not touch adjacent parts with unprotected hands. Rinse off the parts once again before starting the “daily inspection”

Daily inspection

1. Inspect the coupling surface for cleanliness and corrosion.
2. Inspect the O-ring in the house unit connection for serviceability and correct seating in the groove.
3. Inspect the hose unit swivel for free rotation.
4. Inspect the tank- and hose unit for faultlessness and external signs of seizure.

Three-month inspection

1. Exterior cleaning of the coupling halves with a neutral cleanser.
2. Careful “daily inspection” of cleaned units.

Once a year

1. Exchange sealing and washer at least once a year.
2. Refill the hose unit ball bearing grooves with grease
3. Replace worn or damaged components. Repair procedures are straightforward and no special tools are required.

Check the state of the connection surface and verify that it is clean before proceeding with the connection.

Couple the repaired unit to a serviceable hose or tank unit as appropriate and check for correct operation of the valve actuating and bayonet locking mechanism. Couple and uncouple the unit(s) several times.

Use only original Mann Teknik spare parts for maintenance.

5.3 TEST PROCEDURE

TANK UNIT WITH PRESSURE EQUALIZING AND PRESSURE RELIEF VALVE

Tank unit are tested according to following procedure:

Working Pressure PN 25 (25bar/375 psi)

Tank- and Hose Unit disconnected

0,2 bar in min. 30 sec. with air under water – no bubbles

6 bar in min. 30 sec with air under water – no bubbles

18-22 bar with water, release of pressure (water)

Tank- and Hose Unit connected under bending spraying leak finder round the coupling

0,2 bar in min. 30 sec with air - no sound of leaking air

6 bar in min. 30 sec with air - no sound of leaking air

40 bar in min. 30 sec with water - no bubbles

Approved coupling stamps on the piston.

Number tested: 100%

5.4 TEST PROCEDURE STANDARD DD COUPLINGS (WITHOUT PRESSURE EQUALIZING VALVE)

Tank- and Hose Unit are tested according to following procedure:

Working pressure PN 16 (16bar/240 psi)

Tank- and Hose Unit disconnected

0,2 bar in min. 30 sec. with air under water – no bubbles

6 bar in min. 30 sec with air under water – no bubbles

25 bar in min. 30 sec with water – no leakage of water

Tank- and Hose Unit connected under bending spraying leak finder round the coupling

0,2 bar in min. 30 sec with air – no sound of leaking air

6 bar in min. 30 sec with air – no sound of leaking air

25 bar in min. 30 sec with water – no leakage of water

Working Pressure PN 25 (25bar/375 psi)

Tank- and Hose Unit disconnected

0,2 bar in min. 30 sec. with air under water – no bubbles

6 bar in min. 30 sec with air under water – no bubbles

40 bar in min. 30 sec with water under water – no bubbles

Tank- and Hose Unit connected under bending spraying leak finder round the coupling

0,2 bar in min. 30 sec with air - no sound of leaking air

6 bar in min. 30 sec with air - no sound of leaking air

40 bar in min. 30 sec with water - no bubbles

Approved coupling stamps on the piston.

Number tested: 100%

7. STORAGE

Storage in a dry, dustfree, dark place, in ambient temperature.

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