DNV·GL

Certificate No:
TAP000012V

TYPE EXAMINATION CERTIFICATE

This is to certify:

That the Couplings for LNG/LPG

with type designation(s)
Cryogenic Break-away Couplings (CBC)

Issued to
Mann Teknik AB
MARIESTAD, Sweden

is found to comply with
ISO 16904:2016 Petroleum and natural gas industries – Design and testing of LNG marine transfer arms for conventional onshore terminals
EN 1474-3:2008 Installation and equipment for liquefied natural gas – Design and testing of marine transfer systems – Part 3: Offshore transfer systems

Application :

Emergency release couplings for LNG/LPG transfer systems

Max. working temp.:	Max. working press.:	Sizes:
-196°C to +65°C	10 bar / 16 bar / 25 bar	DN 25/50/65/80/100
-196°C to +65°C	10 bar / 16 bar	150

Issued at **Høvik** on **2017-11-07**
This Certificate is valid until **2022-11-06**.
DNV GL local station: **Gothenburg**

Approval Engineer: **Sinisa Sedlan**

for **DNV GL**

Marianne Spæren Marveng
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Examination Certificate and not to the approval of equipment/systems installed.

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Product description

Cryogenic Break-Away Coupling
Flange Connection: Flange EN 1092 (PN10/PN16/PN25/PN40) , ANSI B16.5 (Class 150)
Material of housing and check valve: 1.4404 EN 10272 – 1.4401+AT
Material of spring 1.4401 EN 10270

Reference standards

ISO 16904:2016 Petroleum and natural gas industries - Design and testing of LNG marine transfer arms for conventional onshore terminals (previously EN 1474-1:2008)

EN 1474-3:2008 Installation and equipment for liquefied natural gas - Design and testing of marine transfer systems - Part 3: Offshore transfer systems

Application/Limitation

Components covered by this certificate may be used for transfer of LNG/LPG into tanks within limits of maximum working pressure and temperature range mentioned on the front page.

Based on fire test performed on CBC-2", components covered by this certificate (except size DN150) may be installed where fire safe applications are required.

The couplings shall always be installed according to the manufacturer's instructions.

The couplings shall not be installed in systems where vibration may occur.

Each coupling is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure. In addition, seat leakage test at a pressure equal to 1.1 times the maximum working pressure on each component shall be performed before each delivery.

Furthermore cryogenic testing consisting of functionality and leakage verification for a minimum of 10% of each type and size of couplings intended to be used at a working temperature below -55°C have to be carried out.

Material certificates shall be according to ISO 16904 [9.3.2].

Installation of the couplings in the transfer system shall be as shown in document "Marine Loading arms - ISO 16904 calculation".

Type Examination documentation

Tests carried out

Tightness test, Functionality test, Burst test, Fire test

Marking of product

For traceability to this type examination each product is at least to be marked with:
- Manufacturer's name
- Maximum working pressure
- Size

Periodical assessment

For retention of the Type Examination, a DNV GL surveyor shall perform periodical assessment every second year and before the expiry date of this certificate. The scope of the periodical assessment survey

is to verify that the conditions stipulated for the type examination is complied with and that no alterations are made to the product design or choice of materials.