



Type Approval Certificate

[Quick Connect-Disconnect Coupling(QCDC)]

Initial Approval 22nd December, 2021

Manufacturer Mann Teknik AB
Strandvagen 16, SE-542 31, Mariestad, Sweden

Product Description Model : Dry Cryogenic Couplings (DCC)

“ See Appendix 1 ”



Approval Condition “ See Appendix 1 ”

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Pt 7, Annex 7A-3, Art. 202 of the Rules for the Classification of Steel Ships and ISO 21593:2019.

This Certificate is valid until 21st December, 2026

Issued at Busan, Korea on 22nd December, 2021



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No(ME21032345563) and certificate No.(CPH45584-PE001).



KOREAN REGISTER

*General Manager of
Marine & Ocean Equipment Team*

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
 2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
 3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
 4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

Date of Issue : 22nd December, 2021

A. Product Description

1. Product Specification

- 1) Nominal Bore : 1", 2", 2½", 3", 4", 6", 8"
- 2) Design Temperature : -196 °C to 85°C
- 3) Design Pressure : 25 bar
- 4) Material : EN 10272 1.4404+AT (Seal: PTFE)
- 5) Flange type : ANSI B16.5 Class 150

2. Approved Drawings and Documents

- 1) 1" Dry Cryogenic Couplings (DCC)
LCI1xxA4, MCI1xxA4, 6652, 6653 Rev.1, 6657 Rev.1, 6658, 6659, 6672
- 2) 2" Dry Cryogenic Couplings (DCC)
LCI2xxA4, MCI2xxA4, 6523, 6524 Rev.2, 6532 Rev.2, 6533, 6534, 6550
- 3) 2½" Dry Cryogenic Couplings (DCC)
LCI3xxA4, MCI3xxA4, 5445 Rev.1, 6479 Rev.1, 6480 Rev.1, 6753 Rev.2, 6754 Rev.2, 6765 Rev.1, 6766 Rev.1, 6778 Rev.1
- 4) 3" Dry Cryogenic Couplings (DCC)
LCI4xxA4, MCI4xxA4, 5949 Rev.1, 6479 Rev.B, 6480 Rev.C, 6481 Rev.2, 6482 Rev.1, 6487 Rev.2
- 5) 4" Dry Cryogenic Couplings (DCC)
LCI5xxA4, MCI5xxA4, 6705 Rev.1, 6706 Rev.1, 6720 Rev.2, 6721, 6723, 6731
- 6) 6" Dry Cryogenic Couplings (DCC)
LCI6xxxA4, LCI6100A4-1, MCI6xxxA4, MCI6100A4-1, 6257 Rev.1, 6411 Rev.4, 6436 Rev.2, 6437 Rev.5, 6439 Rev.1, 6913 Rev.2
- 7) 8" Dry Cryogenic Couplings (DCC)
LCI8xxxA4, LCI8105A4-1, MCI8xxxA4, MCI8105A4-1, 6457 Rev.1, 6458 Rev.1, 6459 Rev.2, 6471 Rev.1, 6567 Rev.3, 6915 Rev.3

3. Test Reports, etc.

- 1) Type tests were performed on 5 May 2020 by MannTek acc. to ISO 21593:2019
 - Specimen size : 1", 2", 2½", 3", 4", 6", 8"
 - Kinds of test ;
 - Shell tightness at minimum working temperature
 - Internal valve tightness test at minimum working temperature (low pressure at 50kPa)
 - Internal valve tightness test at minimum working temperature (1.1 times design pressure)
 - Operation test at minimum working temperature
 - Bending test
 - Tightness and strength test of the shell and seat at ambient temperature

B. Approval Condition

1. Application & Limitation

- 1) Materials for the main components are to be supplied by the approved manufacturers and to be certified by the Society or to be satisfactory to the Surveyor.
- 2) The couplings shall be installed according to the manufacturer's instructions.
- 3) Verification or replacement of the seals must be carried out according to the manufacturer's instructions.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is required.

3. Marking

- 1) Manufacturers name or trade mark
- 2) Type designation

4. Others

- N/A

[End of Certificate]