



TYPE APPROVAL CERTIFICATE

Certificate No. : RTD34402-PE002 **Initial Approval** : 1st October, 2015.
Product : Mechanical Joints
Manufacturer : UNI-Coupling B.V.
Kerkdijk-Zuid 11a, 5492 HW, Sint-Oedenrode, Netherlands

Product Description : UNI-FLEX(F)
- Mechanical Joint(Slip-on joint - Slip type)
- Axially not restrained
" 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 and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt. 5, Ch. 6, Sec. 1 of the Rules for Classification, Steel Ships and IACS UR P2, 2.11.

This Certificate is valid until 30th September, 2020.
Issued at Busan, Korea on 1st October, 2015.



KOREAN REGISTER OF SHIPPING

*General Manager of
Marine & Ocean Equipment Team*

*Note : 1 : The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate in the event that the extension has not been granted or the renewal of the Certificate is not underway.
2 : The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.*

Appendix 1

Product Description and/or Approval Condition

Certificate No : RTD34402-PE002

Date of Issue : 1st October, 2015.

1. Product Description :

1) Mechanical Joints Specification

(1) Design Pressure

Size range(OD) (mm)	PN (bar)
21 ~ 412	16
210 ~ 412	10
263 ~ 412	6

(2) Temperature Range

Rubber Material/Size range(OD) (mm)	Temperature range (°C)
NBR	-20 ~ 80
EPDM / 21 ~ 172	-30 ~ 125
EPDM / 180 ~ 406.4	-20 ~ 80

(3) Material

Component	Material	
	W2 (DIN) / W2 (AS)	W5 (DIN) / W5 (AS)
Casing	1.4016 / 301	1.4571 / 316Ti
Lock Bars S-Type	1.0760 / -	1.4571 / 316Ti
Lock Bars L-Type	1.4571 / -	- / -
Bolts	1.0760 / -	A4-80 / 316
Anchor Ring	1.4310 / 301	1.4310 / 301
Rubber Sleeve	NBR / EPDM	NBR / EPDM
Pipe Material	Carbon steel, stainless steel, Cu, CuNiFe	

(4) Performed type approval tests :

Tightness test, Burst test, Fire resistance test, Vacuum test

(5) Approved Drawing Numbers :

screw-DIN-912-W5, Brug Group 1-W5-G-F-R, Brug Group 1-G-F-R
Brug Group 2-W5-G-F-R-A-B-C, Brug Group 2-G-F-R-A-B-C, Flamprotection HOUSING
Rubber Group 1-2-F-R, Rubber Group 1-2-N-F-R, Rubber Group 2-2-F-R-200-2150
Rubber Group 2-2-F-R, Rubber Group 2-2-N-F-R-200-2150, Rubber Group 2-2-N-F-R
Housing Group 1-W5-F-G-R, Housing Group 1-F-G-R, Housing Group 2-W5-F-R-A
Housing Group 2-W5-F-R-B, Housing Group 2-W5-F-R-C, Housing Group 2-W5-G
Housing Group 2-F-R-A, Housing Group 2-F-R-B, Housing Group 2-F-R-C
Housing Group 2-G, Bolt_Guided_Group 1-2-3, Bolt_Guided_Group 1-2-3-W5

-To be continued-

Product Description and/or Approval Condition

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Hollow Bolt Guidet_Group 1-2-W5, Bolt_Threaded_Group 1-2-3
Bolt_Threaded_Group 1-2-3-W5, Hollow Bolt_Threaded_Group_1-2-W5, Revet

2. Intended for ;
This mechanical joints can be used for the following pipeline lines in easily visible and accessible positions ;

- 1) Flammable fluids(Flash point ≤ 60 °C)
: Cargo oil lines, Crude oil washing lines and Vent lines (note 5)
- 2) Inert gas
: Water seal effluent lines and Scrubber effluent lines
: Main lines(note 2, 5)
: Distribution lines(note 5)
- 3) Flammable fluids(Flash point > 60 °C)
: Cargo oil lines(note 5)
: Fuel oil lines, Lubricating oil lines, Hydraulic oil and Thermal oil(note 2, 3)
- 4) Sea water
: Bilge lines, Ballast system and Cooling water system(note 1)
: Fire main and water spray, Foam system and Sprinkler system(note 3)
: Tank cleaning services and Non-essential system
- 5) Fresh water
: Cooling water system and Condensate return(note 1)
: Non-essential system
- 6) Sanitary/Drains/Scuppers
: Deck drains (internal) (note 4)
: Sanitary drains
- 7) Sounding/Vent
: Water tanks/Dry spaces lines
: Oil tanks lines(Flash point > 60 °C) (note 2, 3)
- 8) Miscellaneous
: Service air (non-essential) and Brine
: Steam (note 6)

note 1 : Inside machinery space of category A – only approved fire resistant types

note 2 : Excluding inside machinery spaces of category A or accommodation spaces.
May be accepted in other machinery spaces provided the joints are located in easily visible and accessible position

note 3 : Approved fire resistant types

note 4 : Above free board deck only

note 5 : In pump rooms and open decks – only approved fire resistant types

note 6 : Slip type joints provided that they are restrained on the pipes, may be used for pipes on deck with a design pressure of 1 MPa or less

3. Approval condition and Limitation :

- 1) These mechanical joints are not to be used for Class I piping system.
- 2) These mechanical joints are to be mounted in accordance with the manufacturer's instructions.
- 3) These mechanical joints, which in the event of damage could cause fire or flooding, are not to be used in piping sections directly connected to the sea openings or tanks containing flammable fluids.
- 4) Piping in which these mechanical joints are fitted is to be adequately adjusted, aligned and supported. Supports or hangers are not to be used to force alignment of piping at the point of connection.
- 5) These mechanical joints are not to be used in pipelines in cargo holds, tanks, and other spaces which are not easily accessible. Application of these joints inside tanks may be permitted only for the same media that is in the tanks.
- 6) Individual Product Certification is required where the mechanical joints are intended to be used for Class II piping system.

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