

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Pipe Couplings**

with type designation(s)

UNI-FLEX (F) - Axially not restraint

Issued to

**UNI-Coupling B.V.
Sint-Oedenrode, Netherlands**

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Temperature range:** Refer to certificate.
Max. working press.: 6bar up to 16 bar
Sizes: Pipe O.D. 19mm up to 412mmIssued at **Hamburg** on **2020-11-26**for **DNV GL**This Certificate is valid until **2025-11-25**.DNV GL local station: **Netherlands CMC**Approval Engineer: **Hagen Markus**.....
**Olaf Drews
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 Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Slip-on joint slip type pipe coupling with EPDM/NBR gaskets of type UNI-FLEX (F).
 Fire protected types in combination with flame protection housing of type UNI-FIRE.

For further details refer to UNI Coupling "Technical Manual".

Technical Data

Pipe coupling		
Components	Material combination	
	W2	W5
Housing with bridge	1.4016, 1.4301	1.4571, 1.4404, 1.4462, 1.4162
Sealing sleeve	EPDM/NBR	
Strip insert (optional)	1.4571, 1.4404, 1.4462, 1.4162	
Anchoring ring	1.4310	
Lock bar solid Standard (S)	1.0760	1.4571, 1.4404, 1.4462, 1.4162
Locking bolts	1.0760, 10.9, 12.9	A4-80, A4-70
Washer	200HV	200HV/A4

Flame protection		
Components	Materials	Reference
Housing	1.4571, 1.4404, 1.4462, 1.4162	Drawing 1-W5-VB
Fire protection material protected with aluminium tape	Acc. to drawing	Drawing 1-FP-VM

Pipe outer diameter (O.D) and Nominal pressure range (PN)

Pipe size O.D. ¹ mm	Nominal Pressure PN (bar)	Type designation
19 - 172	16	Group 1
185 - 412		Group 2
185 - 412	10	Group 2
277 - 412	6	Group 2

Temperature range¹

Sealing	Temperature	Pipe O.D. range
EPDM ²	-30°C to +125°C	21mm up to 172mm
	-20°C to +80°C	180mm up to 406,4mm
NBR	-20°C to +80°C	All diameters

Notes

¹ According to UNI Coupling "Technical Manual"

² EPDM is not to be used for hydrocarbon applications.

Application/Limitation

The slip-on joint slip type coupling of type UNI-FLEX (F) is type approved for pipe class II and III piping systems.

The pipe couplings are not approved in piping systems with impulse pressure load other than water hammer, e.g. pressure lines of hydraulic piping systems.

Table - Approved applications

Piping systems	Notes
Flammable fluids (flash point ≤ 60 °C)	
Cargo oil lines	4)
Crude oil washing lines	4)
Vent lines	3)
Inert gas	
Water seal effluent lines	--
Scrubber effluent lines	--
Main lines	2), 4)
Distribution lines	4)
Flammable fluids (flash point > 60 °C)	
Cargo oil lines	4)
Fuel oil lines	2), 3)
Lubricating oil lines	2), 3)
Hydraulic oil lines	2), 3)
Thermal oil lines	2), 3)
Sea water	
Bilge lines	1)
Water filled fire extinguishing systems (e.g. sprinkler)	3)
Non-water filled fire extinguishing systems (e.g. foam, drencher systems)	3)
Fire main (not permanently filled)	3)
Ballast systems	1)
Cooling water systems	1)
Tank cleaning services	--
Non-essential systems	--
Fresh water	
Cooling water systems	1)
Condensate return systems	1)
Non-essential piping systems	--
Sanitary/drains/scuppers	
Deck drains (internal)	6)
Sanitary drains	--
Sounding/vent	
Water tanks/dry spaces	--
Oil tanks (flash point > 60 °C)	2), 3)
Miscellaneous	
Service air piping systems (non-essential)	--

Notes - Fire resistance

For applications where "fire resistance types" are required, the pipe coupling is to be covered by flame protection housing.

- 1) Inside machinery spaces of category, A - only approved fire-resistant types.
- 2) Not 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 positions.
- 3) Approved fire-resistant types except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
- 4) Only in pump rooms and open decks - only approved fire-resistant types.

Notes - General

- 6) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

Fire resistance types

For application requiring fire resistance types as specified by the Rules Pt.4, Ch.6 – Section 9 – Table 9 Application of mechanical joints, the UNI-FLEX (F) pipe coupling is to be protected by a flame protection housing of type UNI-FIRE.

Limitations

Slip-on joints are in general not approved for the following installation locations and applications:

- pipe lines inside cargo holds, tanks and other spaces which are not easily accessible
- scuppers and discharge (overboard)
- starting, control air and CO2 systems
- systems containing oxygen (more than 25% by volume)

Reference DNV GL Pt.4, Ch.6 Section 9 – 5.2 Pipe couplings other than flanges, CP-0185.

Installation

Installation of pipe couplings inside tanks is permitted in case the pipes and tanks contain a medium of the same nature.

For correct mounting and installation of the couplings the instructions in the UNI Coupling "Technical Manual" are to be observed.

Type Approval documentation

Actual TAP0000276

Drawings

- Assembly drawings pipe couplings Group 1 and 2
- Individual parts drawings of pipe couplings
- Flame protection housing
- Type designations- Example

Type designation	1	S	F	W5	E	33-36
1-S-F-W5-E-33-36	Group 1 OD 21-172	Solid Lock bar	Flex	Material combination	EPDM	Clamping range

Burst pressure tests

Flex	PN	Test pressure bar	Remark
ø 33,6	16	64	solid bolts
ø 88,9	16	64	solid bolts
ø 168,9	16	64	solid bolts
ø 412	16	64	solid bolts

Burst pressure test report, 2020-10-14

Miscellaneous

- UNI Coupling - Technical Manual, version 3.30
- DNVGL Assessment report of production place Netherlands, 2020-03-05

Previous certificate


Type approval certificate 11 563 – 14 HH
GL Approval Ref. No.: 14-089324

Tests carried out


Visual inspection, Repeated assembly test, Tightness test , Burst test, Vacuum test, Pull out test, Vibration test, Fire resistance test acc. to ISO 19921/19922 (in combination with flame protection).

Marking of product

For traceability of the product to this certificate each pipe coupling, flame protection respectively shall be marked with at least as follows

Pipe coupling	
Scope	Example
Manufacturer's mark	UNI 
Coupling type	1-S-F-W5-E-33-36
Pipe O.D. size range mm	33-36
PN Marine application	PN 16 plus ship symbol
PN Industrial application	PN 25 plus factory symbol
Gasket material	EPDM
Bar code	
Bolt torque	20 Nm

Gasket	
Scope	Example
Manufacturer's short cut "X"	Manufacturer name
Production lot	Number Code
Article part number	Number code
Colour EPDM, NBR	Black

Flame protection	
Scope	Example
Manufacturer's mark	UNI 
Article part number	Number code
Type	UNI-FIRE
Size range	64-80

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNVGL-CP-0338, Sec.4.

End of certificate