

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Axial Restraining Pipe Couplings**with type designation(s)
MJG, MJGL and MJGF

Issued to

Jeong Woo Coupling Co., Ltd.
Kyungnam Korea, Republic of Korea

is found to comply with

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature range:	-55°C to +80-125°C
Max. working press.:	7 - 16 bar
Sizes:	For types MJG and MJGL: 20A to 300A, for type MJGF: 65A, 80A, 100A, 150A, 200A and 300A

This Certificate is valid until **2019-06-30**.Issued at **Høvik** on **2016-02-10**for **DNV GL**DNV GL local station: **Gimhae MC & FIS**Approval Engineer: **Tom Berg-Nielsen**

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 Approval Certificate and not to the approval of equipment/systems installed.

Job Id:
Certificate No: **TAP0000054**

Product description

Grip type, slip-on joints.

Materials:

Internal and external casing MJG and MJGL and MJGF: SUS304, SUS316

Additional alloy for type MJGF: SUS304, SUS316

Bolts and nuts: SUS 304, SS41

Additional bolts and nuts for type MJGF: SUS316, SCM435

Rubber sleeve: EPDM, NBR, Silicone and Viton

Application/Limitation

The joints can be used in class II and III piping systems for the following pipelines according to DNV Ship Rules Pt. 4, Ch. 6:

Slip-on joints allowed for systems marked + with limitations/remarks, not allowed marked ÷ (no).

Systems			Systems		
			Fresh water		
			6	Cooling water system	+ 1)
			7	Condensate return	+ 1)
			8	Non-essential system	+
			Sanitary/Drains/Scuppers		
			9	Deck drains (internal)	+ 3)
			10	Sanitary drains	+
			11	Scuppers and discharge (overboard)	÷ (no)
Inert gas			Sounding/ vent		
1	Water seal effluent lines	+			
2	Scrubber effluent lines	+			
3	Main lines	+ 2) 4)			
4	Distribution lines	+ 4)			
Flammable fluids (Flash point > 60°C)					
5	Cargo oil lines	+ 4)	12	Water tanks/Dry spaces	+
			Miscellaneous		
			13	Starting/control air	÷(no)
			14	Service air (non-essential)	+
			15	Brine	+
			16	C02 system	÷(no)
			17	Steam	÷(no)

Limitations/remarks:

- 1) Not approved inside machinery spaces of category A
- 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) Above free board deck only.
- 4) Not approved for use in pump rooms and open decks.

The couplings are not to be considered to be fire safe apart from MJGF (65A & 125A with EPDM sealing) and MJGF (250A & 300A with NBR sealing).

Only NBR can be used for hydrocarbon application.

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Maximum working pressure and sizes:

Type MJGF		Types MJG and MJGL	
DN	Pressure	DN	Pressure
65A	16 bar	25 A	16 bar
80A		32 A	
100A		40 A	
150A		50 A	
200A	12 bar	65 A	14 bar
		80 A	
		100 A	
		125 A	
300A	10 bar	150 A	12 bar
		200 A	8 bar
		250 A	
		300 A	7 bar

Maximum working temperatures for couplings with the following sealing materials:

Sealing	Temperature
EPDM	-30 to 110 °C
NBR	-20 to 80 °C
Silicone	-55 to 125 °C
Viton	-30 to 125 °C

When used for systems where vacuum may occur, due measures shall be taken to avoid that packing element is sucked through the gap between pipe ends.

The materials used in the gaskets must be resistant to the fluid carried in the pipe and also to the surrounding fluid if the joints are mounted in a tank. EPDM is not to be used for hydrocarbon applications.

The joints are to be installed in accordance with the manufacturer's instructions.

Rubber elements and other parts subject to wearing are to be replaced by new parts in case of repeated use of the coupling.

Each joint is to be hydraulic pressure tested to 1.5 times the working pressure.

No product certificate is required.

Type Approval documentation

- Manufacturer's catalogue "Multi-Pipe Joint"
- Drawing no 150001 dated 2009.04.10
- Manufacturer's test report dated various dates in 2015
- Manufacturer's test reports dated 1998.7.7
- "Regional Office Of Pusan-Ulsan Small and Medium Business" Test report no. 1610 dated May 11, 1998, 2418 dated July 02, 1998, 1422-24 dated May 29, 1998
- KIMM test report no. 97153250 dated Aug. 25, 1997
- Drawing nos: 120000 and 220000 dated 2002-06-11
- DNV witnessed burst- and hydraulic testing dated 2003-09-03
- DNV's retention survey report dated 2007-06-19
- DNV's retention survey report dated 2011-06-09 & 2011-06-22 and 2015-09-01

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Tests carried out

Burst test, vacuum test. Tightness test on 80A, 100A, 150A and 200A, Repeated assembly test ,
Vibration test, Pressure pulsation test, Pull out test.

Marking of product

For traceability to this type approval the products are to be marked with:

- Manufacturer's name or trade mark
- Type designation
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Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a survey – every second year and before the expiry date of this certificate – to verify that the conditions for the type approval are complied with. The Surveyor shall perform the following tasks on samples selected at random from stock or from the running production:

- Verify that the dimensions of the couplings comply with Type Approved documentation.
- Verify that the material composition complies with Type Approved documentation.
- Witness burst testing.

END OF CERTIFICATE