Type Approval Certificate

[Mechanical Joints]

Initial Approval 3 February 1993

Manufacturer YOUNGNAM METAL CO., LTD.

12-3 Jillye-ro 74beon-gil, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, 50874, Republic of Korea

Product Description

Model	Type of joint	Nominal Diameter
GR-S (Grip Ring Standard)	Slip-on joints Grip type	15A - 350A
GR-L (Grip Ring Long)		15A - 300A
MF-RS (Multi Flex Round Standard)	Slip-on joints Slip type	15A - 500A
MF-RL (Multi Flex Round Long)		15A - 500A
RCH-S (Round Clamp Hinge Standard)		15A - 500A
RCH-L (Round Clamp Hinge Long)		15A - 500A
RCH-E (Round Clamp Hinge Elbow)		15A - 150A
RCD-E (Round Clamp Double Lock)		200A - 500A

" 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 5, Ch 6, Sec 1 of the Rules for the Classification of Steel Ships

This Certificate is valid until 2 February 2028

Reissued at Changwon, Korea on 2 February 2023

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(ME23004788304) and certificate No.(CWN04436-PE001).

KOREAN REGISTER

General Manager of Changwon Branch Office

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 : 2 February 2023

A. Product Description

1. Product Specification

1) Max. Working Pressure

Type	Norminal Diameter (A)	Max. Working Pressure (bar)	Type	Norminal Diameter (A)	Max. Working Pressure (bar)
MF-RS	15 - 40	20	MF-RS	200 - 250	10
	50 - 65	18		300 - 350	8
	80 - 100	16		400 - 450	5
	125 - 150	14		500	4
MF-RL	15 - 40	20	MF-RL	200 - 250	10
	50 - 65	18		300 - 350	8
	80 - 100	16		400 - 450	5
	125 - 150	14		500	4
GR-S	15 - 40	20	GR-S	125 - 150	14
	50 - 65	18		200 - 250	12
	80 - 100	16		300 - 350	10
GR-L	15 - 40	20	GR-L	125 - 150	14
	50 - 65	18		200 - 250	12
	80 - 100	16		300	10
RCH-S	15 - 25	14	RCH-S	200 - 250	7
	32 - 40	12		300 - 350	6
	50 - 65	10		400 - 450	4
	80 - 150	8		500	3
RCH-L	15 - 25	14	RCH-L	200 - 250	7
	32 - 40	12		300 - 350	6
	50 - 65	10		400 - 450	4
	80 - 150	8		500	3
RCH-E	15	11	RCD-E	200 - 250	6
	20 - 40	8		300 - 400	5
	50 - 150	7		450	4
				500	3

2) Material
- Body : SUS 304, SUS 316L
- Rubber Packing : EPDM, NBR, Silicon, VITON

3) Temperature Range
- EPDM : -20 ℃ to 100 ℃
- NBR : -20 ℃ to 80 ℃
- Silicon : -60 ℃ to 200 ℃
- VITON : -20 ℃ to 200 ℃

2. Approved Drawings and Documents

1) Product catalogue and drawings intended for MF-RS, MF-RL, GR-S, GR-L, RCH-S, RCH-L, RCH-E and RCD-E series as followings ;
- GR-S/L : YG-0002-0~2 dated 31 Aug 2020
- GR-S/L : YG-5001 dated 24 July 2002
- MF-RS/RL : YM-0001-0~2 dated 21 May 2019
- RCH-S/L : YR-0003-0~2 dated 21 May 2019
- RCH-E/RCD-E : YR-0004-0~2 dated 21 May 2019

3. Test Reports, etc.

1) Type test report No. 07T179 - 07T190 carried out at KOMERI.
2) Type test report intended for MF-RS, MF-RL, RCH-S, RCH-L, RCH-E and RCD-E series dated 25 Oct. 2019 in the presence of KR Surveyor.
- Tightness Test, Burst Pressure Test, Vacuum Test
- Fire Endurance Test for MF-RS and MF-RL (except RCH-S, RCH-L, RCH-E and RCD-E)

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3) Type test report intended for GR-S, GR-L series dated 17 Oct.2019.
- Tightness Test, Burst Pressure Test, Vacuum Test
- Fire Endurance Test for GR-S/L

B. Approval Condition

1. Application & Limitation

1) Intended for :

(1) Inert gas
: Water seal effluent lines(*)
: Scrubber effluent lines(*)

(2) Flammable fluids(Flash point > 60 ℃)
: Fuel oil lines(*)①②
: Lubricating oil lines(*)①②
: Hydraulic oil(*)①②
: Thermal oil(*)①②

(4) Sea water
: Permanent water filled fire extinguishing systems, e.g. fire main, sprinkler systems(*)②
: Ballast system(*)③
: Cooling water system(*)③
: Tank cleaning services
: Non-essential systems

(5) Fresh water
: Cooling water system(*)③
: Condensate return(*)③
: Non-essential system

(6) Sanitary/Drains/Scuppers
: Deck drains(internal)④
: Sanitary drains

(7) Sounding/Vent
: Water tanks/Dry spaces
: Oil tanks(f.p. > 60 ℃)①②

(8) Miscellaneous
: Service Air(Non-essential)
: Brine
: Steam⑤

(*) Only mechanical joints with fire endurance test are allowed.

NOTES - Fire resistance capability and General
① Slip on joints are not accepted 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(refer to MSC/Circ.734).
② Approved fire-resistant types except in cases where such mechanical joints are installed on open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
③ Fire endurance test shall be applied when mechanical joints are installed inside machinery spaces of category A.
④ Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.
⑤ Slip type slip-on joints as shown in Fig 5.6.2. May be used for pipes on deck with a design pressure of 10 bar or less.

2) Limitations
(1) RCH-S, RCH-L, RCH-E and RCD-E series are not approved as fire resistant type since they have not been tested for fire resistance.
(2) EPDM material is not to be used with fuel oil. Material of mechanical joints is to be compatible with the piping material and internal and external media.
(3) These mechanical joints are not to be used for Class I piping system.
(4) 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 ship's side below the bulkhead deck of passenger ships and freeboard deck of cargo ships or tanks containing flammable fluids.
(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 inside tanks may be permitted only for the same media that is in the tanks.

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(6) These mechanical joints are not to be used in pipe systems where pressure pulsation other than water hammer is expected.
(7) Where the application of mechanical joint results in reduction in pipe wall thickness, this is to be taken into account in determining the minimum wall thickness of the pipe to withstand the design pressure.
(8) Any significant changes in design or construction of the products may render this certificate invalid.

2. Individual Product Cert. and Drawing Approval Requirement

1) Individual Product Certification is required where the mechanical joints are intended to be used for Class Ⅱ piping system.

3. Marking

For traceability to this type approval, the couplings are at least to be marked with ;
1) Manufacturer's name or trademark
2) Date of manufacture (month/year)
3) Type designation
4) Nominal diameter, Pressure rating, Temperature rating

4. Others

- Not applicable

< End of Certificate >