



Marine & Offshore

Certificate number: 09738/E0 BV

File number: ACM 135/2504/002

Product code: 2106H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

YOUNGNAM METAL CO., LTD.

Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

for the type of product

MECHANICAL JOINTS - SLIP-ON JOINTS - GRIP TYPE

GR-S (Grip Ring Type Standard)

GR-L (Grip Ring Type Long Size)

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 16 Apr 2025

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 16 Apr 2020,

Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the Internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarm.com/veristamb/jsp/viewPublicPdfTypepec.jsp?id=zjrhakqr3>
BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

GR-S (Grip Ring Type Standard) ,GR-L (Grip Ring Type Long Size)

1.1 Rating

Type	Dimension (mm)	Max. Working Pressure (bar)
GR-S	DN 15 to DN 40	20
GR-L	DN 15 to DN 40	20
GR-S, GR-L	DN 50 & DN 65	18
GR-S, GR-L	DN 80 & DN 100	16
GR-S, GR-L	DN 125 & DN 150	12
GR-S, GR-L	DN 200	7
GR-S, GR-L	DN 250	7
GR-S, GR-L	DN 300	5
GR-S	DN 350	5

Temperature range : -20°C to +100°C EPDM / -20°C to +80°C NBR / -20°C to 200°C VITON / -60°C to 200°C SILICON

Nota: The maximum working pressure is not to exceed one quarter of the burst pressure at the service temperature

1.2 Materials and/or components

Body: SUS 304 / SUS 316L

Seal: EPDM , NBR, SILICONE or VITON

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Dimension Sheet "GR-S and GR-L types" N°YG-0002-0 dated 21/05/2019

- Drawing "Grip Ring Standard Type - Sizes 15A to 350A" N°YG-0002-1 Rev.0 dated 21/05/2019

- Drawing "Grip Ring Long Type - Sizes 15A to 300A" N°YG-0002-2 Rev.0 dated 21/05/2019

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

3.1 Initial test reports:

- Repeated assembly test, tightening test, burst test, vacuum test, pull-out test N° SE 08-0220-001 dated 20/02/2008 and N°YNF0805-04/0 dated 15/02/2008, vibration test dated 07/12/2007 and N° 08-2007-01223/01129/01148 dated 28/12/2008, pressure pulsation test dated 07/12/2007

- KOMERI Test report N°07T179/80/81/82/83/84 dated 03/03/2008: Tightness test, pressure pulsation test, burst pressure test, fire endurance test, vacuum test and repeated assembly test

3.2 2014 test reports:

- Tightness test, pressure pulsation test, burst test, pull-out test, fire endurance test, vacuum test and repeated assembly test report N° YNT-14T001 to N° YNT-14T006 dated 08/04/2014.

- Vibration test report N° 2014-V-003 to N° 2014-V-008 dated 03/05/2014 & 04/05/2014.

- Specimens tested: GR-L DN 40, DN 100, DN 200 & GR-S DN 40, DN 100, DN 200.

3.3 Type Approval Inspection and Test Plan 17/10/2019

3.4 2019 test reports:

- Tightness test, vibration test, pressure pulsation test, burst test, pull-out test, fire endurance test, vacuum test and repeated assembly test reports N° YNQ-19TGS015, N° YNQ-19TGS350, N° YNQ-19TGL015 and N° YNQ-19TGL300 dated 11/10/2019

Specimens tested: GR-S DN 15, GR-S DN 350, GR-L DN 015 and GR-L DN 300

4. APPLICATION / LIMITATION

4.1 May be used on board for services of class II and class III piping systems:

- **Flammable fluids (flash point ≤ 60°C)** - cargo oil (2), crude oil washing (2), vent lines

- **Inert gas** - water seal/scrubber effluent, main lines (1+2), distributions lines (2)

- **Flammable fluids (flash point > 60°C)** - cargo oil (2), fuel oil (1), lubricating oil (1), hydraulic oil (1), thermal oil lines (1)

- **Sea water** - bilge/ballast/cooling water, water/non-water filled fire extinguishing systems, fire main, tank cleaning/non-essential lines

- **Fresh water** - cooling water, condensate return, non-essential lines
 - **Deck drains (internal)** (4), sanitary drains
 - **Sounding and venting** - water tanks/dry spaces, oil tanks (flash point > 60°C) (1)
 - **Miscellaneous** - service air (non-essential), brine, steam (3)
- (1)- *Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery space provided the joints are located in easily visible and accessible positions.*
- (2)- *Only in pump rooms and open decks*
- (3)- *May be used for pipes on deck with a design pressure of 10 bar or less.*
- (4)- *Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.*
- 4.2 Not to be used for scuppers and discharge (overboard), starting/control air and CO2 system.
- 4.3 In all cases the pipes are to be suitably supported and anchored. The joints are to be at any time accessible, excepting inside tanks where permitted by the Bureau Veritas rules.
- 4.4 The couplings can not be used on sea water or fresh water pipes passing through fuel oil or cargo tanks.
- 4.5 The material of the internal sealing sleeve is to be suitable for the proposed medium. EPDM is not to be used for hydrocarbons applications.

5. PRODUCTION SURVEY REQUIREMENTS

- 5.1 - The products are to be supplied by **YOUNGNAM METAL CO., LTD.** in compliance with the type described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
- 5.3 - **YOUNGNAM METAL CO., LTD.** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
- 5.4 - For information, **YOUNGNAM METAL CO., LTD.** has declared to Bureau Veritas the following production site:

YOUNGNAM METAL CO., LTD.
12-3, Jillye-ro, 74 Beon-gil, Jillye,
Gimhae (Gyeongnam),
KOREA (REPUBLIC OF)

6. MARKING OF PRODUCT

- The couplings shall be marked with at least:
- Manufacturer's name
 - Type designation
 - Size

7. OTHERS

It is **YOUNGNAM METAL CO., LTD.**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 09738/D0 BV issued by the Society.

*** END OF CERTIFICATE ***



Marine & Offshore

Certificate number: 05755/G0 BV

File number: ACM 135/2504/001

Product code: 2107H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

YOUNGNAM METAL CO., LTD.

Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

for the type of product

MECHANICAL JOINTS - SLIP-ON JOINTS - SLIP TYPE

MF-RS, MF-RL (Multi Flex Round types)

RCH-S, RCH-L, RCH-E, RCD-E (Repair Clamps types)

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 16 Apr 2025

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 16 Apr 2020,

Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Series MF-RS (Multi Flex Round Standard Type) and MF-RL (Multi Flex Round Long Type)

Series RCH-S (Repair Clamp Hinge Standard Type), RCH-L (Repair Clamp Hinge Long Type), RCH-E (Repair Clamp Hinge Elbow Type), RCD-E (Repair Clamp Double Lock Elbow Type)

1.1 Rating

Type	Pipe OD (mm)	Max. working pressure (bar)	Type	Pipe OD (mm)	Max. working pressure (bar)
MF- RS / MF-RL	21.7	20	RCH-S / RCH-L	21.7 / 27.2 / 34.0	14
MF- RS / MF-RL	27.2	20	RCH-S / RCH-L	42.7 / 48.6	12
MF- RS / MF-RL	34.0	20	RCH-S / RCH-L	60.5 / 76.3	10
MF- RS / MF-RL	42.7	20	RCH-S / RCH-L	89.1 / 114.3 / 139.8 / 165.2	8
MF- RS / MF-RL	48.6	20	RCH-S / RCH-L	216.3 / 267.4	7
MF- RS / MF-RL	60.5	18	RCH-S / RCH-L	318.5 / 355.6	6
MF- RS / MF-RL	76.3	18	RCH-S / RCH-L	406.4 / 457.2	4
MF- RS / MF-RL	89.1	16	RCH-S / RCH-L	508.0	3
MF- RS / MF-RL	114.3	16			
MF- RS / MF-RL	139.8	14			
MF- RS / MF-RL	165.2	14	RCH-E	21.7	11
MF- RS / MF-RL	216.3	10	RCH-E	27.2 / 34.0 / 42.7 / 48.6	8
MF- RS / MF-RL	267.4	10	RCH-E	60.5 / 76.3 / 89.1 / 114.3 / 139.8 / 165.2	7
MF- RS / MF-RL	318.5	8			
MF- RS / MF-RL	355.6	8	RCD-E	216.3 / 267.4	6
MF- RS / MF-RL	406.4	5	RCD-E	318.5 / 355.6 / 406.4	5
MF- RS / MF-RL	457.2	5	RCD-E	457.2	4
MF- RS / MF-RL	508.0	4	RCD-E	508.0	3

Temperature range: -20°C to +100°C EPDM / -20°C to +80°C NBR / -20°C to 200°C VITON / -60°C to 200°C SILICON

1.2 Materials

Body: SUS 304 / SUS 316L

Seal: EPDM / NBR / VITON / SILICON

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Drawing N° YM-5002-2 2013/08/19 & Drawing N° YM-S-5002-3 2013/08/19
- Drawing N° YM-S-5002-W 2002/8/16 & Drawing N° YM-L-5002-4 2013/08/19
- Drawing N° YM-L-5001-W 2002/08/16

- Dimension Sheet "RCH-S and RCH-L types" N°YR-0003-0 dated 21/05/2019
- Drawing "Repair Clamp Standard Type" N°YR-0003-1 dated 21/05/2019
- Drawing "Repair Clamp Long Type" N°YR-0003-2 dated 21/05/2019
- Dimension Sheet "RCH-E and RCD-E types" N°YR-0004-0 dated 21/05/2019
- Drawing "Repair Clamp Hinge Elbow Type" N°YR-0004-1 dated 21/05/2019
- Drawing "Repair Clamp Double Lock Elbow Type" N°YR-0004-2 dated 21/05/2019

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

3.1 Initial test reports:

- Repeated assembly test N° YNF 0805-04/0 dated 15/02/2008 / Tightening test N° YNF 0805-04/0 dated 15/02/2008
- Burst test N° YNF 0805-04/0 dated 15/02/2008 / Vacuum test N° YNF 0805-04/0 dated 15/02/2008
- Pull-out test N° YNF 0805-04/0 dated 15/02/2008 / Vibration test dated 07/12/2007
- Pressure pulsation test dated 07/12/2007 / Vibration test N° 08-2007-01223/01129/01148 dated 28/12/2008
- Pull Out test N°SE 08-0220-001 dated 20/02/2008
- KOMERI Test report N°07T185/86/87/88/89/90 dated 03/03/2008: Tightness test, pressure pulsation test, burst pressure test, fire endurance test: vacuum test and repeated assembly test

3.2 2014 test reports:

- Tightness test, burst test, fire endurance test and vacuum test report N° YNT-14T007 to N° YNT-14T012 dated 08/04/2014.
- Specimens tested: MF-RS DN 40, DN 100, DN 200 & MF-RL DN 40, DN 100, DN 200.

3.3 Type Approval Inspection and Test Plan 17/10/2019

3.4 2019 test reports:

- Tightness test, Burst test, Vacuum test report N° YNQ-19THS015, N° YNQ-19THS100 and N° YNQ-19THS500 dated 11/10/2019

Specimens tested: RCH-S DN 15, RCH-S DN 100, RCH-S DN 500

- Tightness test, Burst test, Vacuum test report N° YNQ-19THL015, N° YNQ-19THL100 and N° YNQ-19THL500 dated 11/10/2019

Specimens tested: RCH-L DN 15, RCH-L DN 100, RCH-L DN 500

- Tightness test, Burst test, Vacuum test report N° YNQ-19THE015 and N° YNQ-19THE100 dated 11/10/2019

Specimens tested: RCH-E DN 15 and RCH-E DN 100

- Tightness test, Burst test, Vacuum test report N° YNQ-19TDE500

Specimen tested: RCD-E DN 500

3.5 Types RCH-S, RCH-L, RCH-E and RCD-E have not been tested for fire resistance.

4. APPLICATION / LIMITATION

4.1 May be used on board for services of class II and class III piping systems:

- **Flammable fluids (flash point $\leq 60^{\circ}\text{C}$)** - cargo oil (4), crude oil washing (4), vent lines (3)
- **Inert gas** - water seal/scrubber effluent, main lines (2+4), distributions lines (4)
- **Flammable fluids (flash point $> 60^{\circ}\text{C}$)** - cargo oil (4), fuel oil (2+3), lubricating oil (2+3), hydraulic oil (2+3), thermal oil lines (2+3)
- **Sea water** – bilge/ballast/cooling water (1), water/non-water filled fire extinguishing systems (3), fire main, tank cleaning/non-essential lines
- **Fresh water** - cooling water (1), condensate return (1), non-essential lines
- **Deck drains (internal)** (6), sanitary drains
- **Sounding and venting** - water tanks/dry spaces, oil tanks (flash point $> 60^{\circ}\text{C}$) (2+3)
- **Miscellaneous** - service air (non-essential), brine, steam (5)

(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 space 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.*

(5)- *May be used for pipes on deck with a design pressure of 10 bar or less.*

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

4.2 Not to be used for scuppers and discharge (overboard), starting/control air and CO2 system.

4.3 In all cases the pipes are to be suitably supported and anchored. The joints are to be at any time accessible, excepting inside tanks where permitted by the Bureau Veritas rules.

4.4 The couplings can not be used on sea water or fresh water pipes passing through fuel oil or cargo tanks.

4.5 The packing material must be compatible with the fluid to be conveyed and the maximum working temperature, according to the manufacturer's recommendation.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **YOUNGNAM METAL CO., LTD.** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **YOUNGNAM METAL CO., LTD.** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **YOUNGNAM METAL CO., LTD.** has declared to Bureau Veritas the following production site:

YOUNGNAM METAL CO., LTD.
12-3, Jillye-ro, 74 Beon-gil, Jillye
Gimhae (Gyeongnam)
KOREA (REPUBLIC OF)

6. MARKING OF PRODUCT

The couplings shall be marked with:

- Manufacturer 's name
- Type designation
- Size

7. OTHERS

It is **YOUNGNAM METAL CO., LTD.**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 05755/F0 BV issued by the Society.

*** END OF CERTIFICATE ***