NIPPON KAIJI KYOKAI

TYPE APPROVAL CERTIFICATE

Certificate No. TA23151M

This is to certify that the undernoted products have been approved in accordance with the requirements 12.3.3, Chapt.12, Part D of "Rules for the Survey and Construction of Steel Ships" and Chapt.9, Part 6 "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".

This certificate is issued to

Manufacturer :	**YOUNGNAM METAL CO., LTD., KOREA**	
Name of Product :	**Mechanical Joint (Slip-on joint)**	
Model :	**GRIP RING TYPE :**	**GR-S (15A～350A)**
		GR-L (15A～300A)
	MULTI-FLEX TYPE :	**MF-RS (15A～500A)**
		MF-RL (15A～500A)
	REPAIR CLAMP HINGE TYPE :	**RCH-S (15A~500A)**
		RCH-L (15A~500A)
	REPAIR CLAMP ELBOW TYPE :	**RCH-E (15A~150A)**
		RCD-E (200A~500A)
Approval No. :	**08FV102B**	
Valid until :	**1 May 2028**	

This certificate is subject to the conditions specified in the attached sheet(s).

Issued at Tokyo on 6 June 2023.

S. Oishi
General Manager
Machinery Department

- **Particulars and conditions**

Design Temperature : -30 to 100 °C (NBR), -40 to 100 °C (EPDM)
-50 to 190 °C (SILICONE), -30 to 220 °C (VITON)

Material of Casing : SUS304 or SUS316

Design Pressure (bar):

<table>
<tr><th>Nominal Diameter</th><th>GR-S</th><th>GR-L</th><th>MF-RS
MF-RL</th><th>RCH-S
RCH-L</th><th>RCH-E</th><th>RCD-E</th></tr>
<tr><td>15A</td><td rowspan="5">20</td><td rowspan="5">20</td><td rowspan="5">20</td><td rowspan="3">14</td><td>11</td><td rowspan="8">-</td></tr>
<tr><td>20A</td><td rowspan="4">8</td></tr>
<tr><td>25A</td></tr>
<tr><td>32A</td><td rowspan="2">12</td></tr>
<tr><td>40A</td></tr>
<tr><td>50A</td><td rowspan="2">18</td><td rowspan="2">18</td><td rowspan="2">18</td><td rowspan="2">10</td><td rowspan="5">7</td></tr>
<tr><td>65A</td></tr>
<tr><td>80A</td><td rowspan="2">16</td><td rowspan="2">16</td><td rowspan="2">16</td><td rowspan="4">8</td></tr>
<tr><td>100A</td></tr>
<tr><td>125A</td><td rowspan="2">12</td><td rowspan="2">12</td><td rowspan="2">14</td></tr>
<tr><td>150A</td></tr>
<tr><td>200A</td><td rowspan="2">7</td><td rowspan="2">7</td><td rowspan="2">10</td><td rowspan="2">7</td><td rowspan="6">-</td><td>6</td></tr>
<tr><td>250A</td></tr>
<tr><td>300A</td><td rowspan="2">5</td><td>5</td><td rowspan="2">8</td><td rowspan="2">6</td><td rowspan="3">5</td></tr>
<tr><td>350A</td><td rowspan="3">-</td></tr>
<tr><td>400A</td><td rowspan="3">-</td><td rowspan="2">5</td><td rowspan="2">4</td></tr>
<tr><td>450A</td><td>4</td></tr>
<tr><td>500A</td><td>4</td><td>3</td><td>3</td></tr>
</table>

- **Application**

The mechanical joints with fire endurance test (FPC-GR-S : 30 minutes wet condition) can be used for the following piping lines in accordance with 12.3.3, Chapter 12, Part D of the Rules:

1. Fuel oil, lubricating oil, hydraulic oil, and thermal oil lines outside machinery spaces of category A and accommodation spaces
2. Water filled fire extinguishing systems, (e.g. fire main, sprinkler systems)
3. Ballast and cooling sea water lines
4. Sea water lines for tank cleaning and non-essential services
5. Cooling fresh water lines and condensate return lines
6. Fresh water lines for non-essential services

7. Vent lines and sounding lines for oil (flash point above 60 deg. C) tanks outside machinery spaces of category A and accommodation spaces
8. Vent lines and sounding lines for water tanks and dry spaces
9. Inert gas water seal effluent lines, scrubber effluent lines
10. Sanitary drain lines
11. Deck drain(internal) lines above free board deck
12. Compressed air lines for non-essential services and brine lines

Not to be used for piping belonging Group I specified in the requirements of 12.1.3, Chapter 12, Part D of the Rules.

- **Type approval tests carried out**

GRIP RING TYPE (GR-S, GR-L):
Tightness test, Burst pressure test, Fire endurance test (ISO 19921/19922) (30 minutes wet condition), Vacuum test, Pressure pulsation test, Repeated assembly test, Vibration test, Pull-out test

MULTI-FLEX TYPE (MF-RS, MF-RL):
Tightness test, Burst pressure test, Fire endurance test (ISO 19921/19922) (30 minutes wet condition), Vacuum test

REPAIR CLAMP HINGE TYPE (RCH-S, RCH-L):
Tightness test, Burst pressure test, Vacuum test

REPAIR CLAMP ELBOW TYPE (RCH-E, RCD-E):
Tightness test, Burst pressure test, Vacuum test

- **Documents**

DWG No. YG-5001-1, YM-5002-1, YG-0002, YM-0001, YR-0003, YR-0004 (21 May 2019)
Test Report (18 October 2019)

- **Installation**

The installation of mechanical joints is to be in accordance with the manufacturer's assembly instructions. Where special tools and gauges are required for installation of the joints, these are to be supplied by the manufacturer.

- **Production test**

  Hydraulic test for the pipe joints used for pipes in Group II are to be carried out in the presence of our surveyor.

- **Notice**

  Any significant changes in design or construction of the above items may render this certificate invalid.

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