Certificate No:
TAP0000204

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings

with type designation(s)
GR-S, GR-L

Issued to
Young Nam Metal Co.,Ltd.
Gimhae-si, Gyeongsangnam-do, **Republic of Korea**

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
GR-S	-50°C to +220°C (see page 2)	5 to 20 bar (see page 2)	15A to 350A
GR-L	-50°C to +220°C (see page 2)	5 to 20 bar (see page 2)	15A to 300A

Issued at **Høvik** on **2021-05-14**
This Certificate is valid until **2024-08-13**.
DNV local station: **Gimhae Station**

Approval Engineer: **Maheshraja Venkatesan**

for **DNV**

Zeinab Sharifi
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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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 joints (Grip type) in two standard (GR-S) and long (GR-L) types.
Material of construction:

Case	:	SUS304,316L
Rubber	:	EPDM, NBR, SILICONE, VITON
Bolt	:	SUS304,316L
Ring	:	SUS301/304

Application/Limitation

The slip-on joints (Grip type) are approved as fire resistant couplings and are allowed for Class II and III below piping systems:

1) Flammable fluids (flash point ≤ 60°C)
- Cargo oil lines (1)
- Crude oil washing lines (1)
- Vent lines

2) Inert gas
- Water seal effluent lines
- Scrubber effluent lines
- Main lines (1)
- Distributions lines (1)

3) Flammable fluids (flash point > 60°C)
- Cargo oil lines (1)
- Fuel oil lines
- Lubricating oil lines
- Hydraulic oil
- Thermal oil

4) Fresh water
- Cooling water system
- Condensate return
- Non-essential system

5) Sea water
- Bilge lines
- Water filled fire extinguishing systems, e.g. sprinkler systems
- Non water filled fire extinguishing systems, e.g. foam, drencher systems
- Fire main (not permanently filled)
- Ballast system
- Cooling water system
- Tank cleaning services
- Non-essential systems

6) Sanitary/drains/scuppers
- Deck drains (internal) (2)
- Sanitary drains

7) Sounding/vent
- Water tanks/dry spaces
- Oil tanks (f.p. > 60°C)

8) Miscellaneous
- Service air (non-essential)
- Brine
- Steam

(1) Only in pump rooms and open decks
(2) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

Sizes	Maximum working Pressure	
	GR-S	GR-L
15A, 20A, 25A, 32A, 40A	20 bar	20 bar
50A, 65A	18 bar	18 bar
80A, 100A	16 bar	16 bar
125A, 150A	12 bar	12 bar
200A, 250A	7 bar	7 bar
300A	5 bar	5 bar
350A	5 bar	-

Design temperature range dependent on gasket material:

NBR:	-30°C to +100°C
EPDM:	-40°C to +100°C, not to be used for hydrocarbon applications.
SILICONE:	-50°C to +190°C
VITON:	-30°C to +220°C

The couplings are to be assembled and mounted according to the manufacturer's recommendations.

Type Approval documentation

Tests carried out

Burst pressure test, Vibration/Impulse test, Fire test, Vacuum test, Pull-out test, Tightness test, Repeated assembly test

Marking of product

For traceability to this Type Approval each joint is to be marked with:

- Manufacturer's name or trademark
- Type designation
- Size
- Max. working pressure or pressure class

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.