DNV·GL

Certificate No:
TAP000017M

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
Type SD - Series LL, Type SD - Series L, Type SD - Series S

Issued to
SHIN IL ACE CO., LTD.
Busan, Korea

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

Application :

Products approved by this certificate are accepted for installation on vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
Type SD - Series LL	See Limitations on page 2	See Limitations on page 2	6 to 12 mm
Type SD - Series L			6 to 42 mm
Type SD - Series S			8 to 38 mm

Issued at **Høvik** on **2018-04-25**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Gimhae Station**

Approval Engineer: **Morten Engnestangen**

for **DNV GL**

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.

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Manufacturer product description is ”Bite type tube fittings for DIN 2353“.
Series LL – very light
Series L – light
Series S - heavy

Materials:
Stainless steel: EN 10088-3 1.4571, ASTM A479 Grade 316
Carbon Steel: JIS G4051 S20C, S45C

Sizes (tube outer diameter, mm):
Series LL: 6, 8, 10, 12
Series L: 6, 8, 10, 12, 15, 18, 22, 28, 35, 42
Series S: 8, 10, 12, 14, 16, 20, 25, 30, 38

Application/Limitation

Type	Material	Temperature range °C	Pressure range bar
Series LL	Carbon Steel	-40 to +120	250
	Stainless Steel	-60 to +400	
Series L	Carbon Steel	-40 to +120	250
	Stainless Steel	-60 to +400	250
Series S	Carbon Steel	-40 to +120	320
	Stainless Steel	-60 to +400	

When elastomer seals are used in the fitting the working temperature is not to exceed the following:

Type of elastomer seals	Temperature range °C
NBR (Nitile butadiene rubber, e.g. Perbunan)	-25 to 100
FKM (Fluorelastomers, e.g. Viton)	-20 to 200
PTFE (Tetrafluorethylene, e.g. Teflon)	-60 to 190

For couplings at elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temperature °C	< 50	50	100	120	150	200	250	300	350	400
Stainless Steel	1,00	0,95	0,85		0,77	0,71	0,67	0,63	0,6	0,58
Carbon steels	1,00	1,00	1,00	0,95	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

The couplings may be used for:
- Hydraulic oil
- Fuel oil
- Lubrication oil
- Fresh water cooling
- Sanitary
- Compressed air

Couplings with elastomer seals shall not be used in following systems:
- Hydraulic oil (can be used when installed on Open decks)
- Fuel oil
- Lubrication oil (can be used when installed on Open decks)
- Cooling water inside machinery space of category A
- Starting and control air for functions required by statutory requirements or guidelines

Definition of Open decks is as defined by SOLAS II/2 Part C Regulation 9 Chapter 2.3.3.2.2 (10):

Open deck spaces and enclosed promenades having little or no fire risk. To be considered in this category, enclosed promenades shall have no significant fire risk, meaning that furnishings shall be restricted to deck furniture. In addition, such spaces shall be naturally ventilated by permanent openings. Air spaces (the space outside superstructures and deckhouses).

The approval is only valid when the couplings are assembled on tubing with Rockwell Hardness HB ≤ 80.

These couplings should not be used on tubes in cold fabricated (hard temper) conditions.

The couplings are to be mounted according to the manufacturer's instructions.

The type approval does not cover threads and threaded joint for connection of the fittings, refer thread designations: -N, -G, -R, M-, -U.

For couplings with threaded ends where the pressure tightness is on threads, the limitations in DNVGL Pt.4 Ch.6 Sec.9 [5.2.6] shall be fulfilled.

Type Approval documentation

Manufacturer's product catalogue:
Shinilace Bite Type Tube Fitting DIN 2353, catalogue no. SCS820130620PHJ.
Manufacturer's product catalogue:
Tube Fitting for ISO8434 Part 1 & DIN 2353 With LL, L Series and S Series, catalogue no. S-310TF Aug.2010.
Revised page 4 and 5 for catalogue no. S-310TF, received 11th April 2018.
Manufacturer's test reports:
Dated 2005-05-27, 2005-06-17, 2005-06-29 and 2005-11-01 witnessed by DNV.
Dated 2012-04-02 to 2012-05-31, SIQM-CTR-T12-001 to 013 witnessed by DNV.

Tests carried out

Leakage test, repeated assembly test, burst pressure test, pull-out test, vibration test and pressure impulse test.

Marking of product

For traceability to this type approval, each coupling is to be marked with:
- Manufacturer's name
- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNV GL 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.