DNV·GL

Certificate No:
TAP00001FX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Expansion Joint for Pipe, Slide Type and Flexible Type

with type designation(s)
SHD, STL

Issued to
Taixing Navigation Machinery Factory
Taixing City, JIANGSU, China

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
SHD	Up to 200 °C. Refer to certificate.	Up to 16 bar. Refer to certificate.	DN65 - DN600
STL	Up to 200 °C. Refer to certificate.	Up to 16 bar. Refer to certificate.	DN65 - DN600

Issued at **Hamburg** on **2018-07-30**
This Certificate is valid until **2023-07-29**.
DNV GL local station: **Jiangyin**

Approval Engineer: **Andrii Pishchanskyi**

for **DNV GL**

Olaf Drews
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

This type approval certificate includes two fire resistant expansion joint types:

STL - Mechanical slip-on sliding type expansion joint, restrained by a limit bolt.
SHD - Mechanical slip-on packing type expansion joint, restrained by stud bolts.

Materials and components

Type SHD

Component	Material designation	Remark
Nut	25	Non-alloy steel
Spring gasket	65Mn	Non-alloy steel
Gasket	Q235A	Non-alloy steel
Sleeve	20	Non-alloy steel
Flange	Q235A	Non-alloy steel
Stud	30	Non-alloy steel
Seal ring	FKM	
	NBR	
Limit bolt	2Cr13[1]	Stainless steel

Footnote
[1] The specified stainless steel grade is not approved for application in piping systems conveying sea water or for installation on open decks and other areas not protected against green sea.

Type STL

Component	Material designation	Remark
Slip pipe	Non-alloy steel	Assembly
Stud	30	Non-alloy steel
Gland	Q235A	Non-alloy steel
Body	Non-alloy steel	Assembly
Spring gasket	65Mn	Non-alloy steel
Nut	25	Non-alloy steel
Gasket ring	FKM	
Carbon fibre packing	Carbon fibre	
Sealing ring	H62	Copper alloy

The material certificate requirements of pressurised parts depend on the pipe class of the intended application. The following shall be observed:

- DVNGL-RU-SHIP Pt.4 Ch.6 Sec.1 Table 1 (pipe classes);
- DVNGL-RU-SHIP Pt.4 Ch.6 Sec.2 Table 3 (material certificates acc. to pipe classes).

Overview size range and nominal pressures

Type	Size	Pressure	Type	Size	Pressure
SHD	65	PN16	STL	65	PN16
SHD	80	PN16	STL	80	PN16
SHD	100	PN16	STL	100	PN16
SHD	125	PN16	STL	125	PN16
SHD	150	PN16	STL	150	PN16
SHD	200	PN16	STL	200	PN16
SHD	250	PN10	STL	250	PN10
SHD	300	PN10	STL	300	PN10
SHD	350	PN10	STL	350	PN10
SHD	400	PN10	STL	400	PN10
SHD	450	PN10	STL	450	PN10
SHD	500	PN10	STL	500	PN10
SHD	600	PN10	STL	600	PN10

Temperature range

The applicable service temperature range for the coupling is limited by the material of:

- Sealing / gasket;
- Metal for the pressurised parts.

The approved service temperatures for the individual components are as follows:

Component	Material	Temperature range
Sealing / gasket	FKM	-30°C up to + 200°C
	NBR	-20°C up to + 80°C
Pressurised part	Non-alloy steel	-20°C up to + 450°C

The maximum pressure for which the mechanical joints are type approved is defined as maximum allowable pressure for continuous service at +20°C. For application at elevated temperatures the pressure reduction factors shall be observed as follows:

Temperature [°C]	Pressure reduction factor
20	1.00
50	1.00
100	1.00
150	0.89
200	0.81
250	0.72
300	0.65
350	0.59
400	0.54
450	0.50

Application/Limitation

The pipe coupling of types SHD and STL are type approved for application for classes II and III of piping systems as specified in DNVGL-RU-SHIP Pt.4 Ch. 6 Sec. 9 Table 11 and 12.
Type of mechanical joint: Slip-on Joints (slip type) – fire resistant type.

Piping systems	**Footnotes**
Flammable fluids (flash point ≤ 60 °C)	
Cargo oil lines	4)
Crude oil washing lines	4)
Vent lines	3)
Inert gas	
Water seal effluent lines	NA
Scrubber effluent lines	7)
Main lines	2), 4)
Distribution lines	4)
Flammable fluids (flash point > 60 °C)	
Cargo oil lines	4)
Fuel oil lines	2), 3), 7)
Lubricating oil lines	2), 3)
Hydraulic oil lines	2), 3), 7)
Thermal oil lines	2), 3)
Sea water	
Bilge lines	1)
Water filled fire extinguishing systems (e.g. sprinkler)	3)
Non-water filled fire extinguishing systems (e.g. foam, drencher systems)	3)
Fire main (not permanently filled)	3)
Ballast systems	1)
Cooling water systems	1)
Tank cleaning services, Non-essential systems	NA
Fresh water	
Cooling water systems	1)
Condensate return systems	1)
Non-essential piping systems	NA
Sanitary/drains/scuppers	
Deck drains (internal)	6)
Sanitary drains	NA
Scuppers and discharge (overboard)	Not approved
Sounding/vent	
Water tanks/dry spaces	NA
Oil tanks (flash point > 60 °C)	2),3)
Miscellaneous	
Starting/control air	Not approved
Service air (non-essential)	NA
Brine	
CO2 system	Not approved
Steam	5)

Footnotes - Fire resistance capability

1) Approved for installation inside machinery spaces of category A.
2) Not 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.
3) Approved.
4) Approved. Only in pump rooms and open decks.

Footnotes - General

5) Approved for pipes on deck with design pressure of 10 bar or less.
6) Approved only above bulkhead deck of passenger ships and freeboard deck of cargo ships.
7) Not approved in piping systems with impulse pressure load other than water hammer.

Installation

Pipe couplings are not approved for:

- Piping arranged in cargo holds, tanks and other spaces which are not easily accessible. Application of these joints inside tanks may be permitted only for the same media that is in the tanks;
- Piping sections directly connected to sea openings or tanks containing flammable liquids which in the event of damage could cause flooding or fire.

The pipe coupling of type SHD and STL are only to be used in cases where compensation of axial movement of clamped pipes is considered necessary. Usage of these type of joints as the main means of pipe connection is not permitted.

The joints are to be assembled and mounted according to manufacturer's instructions.

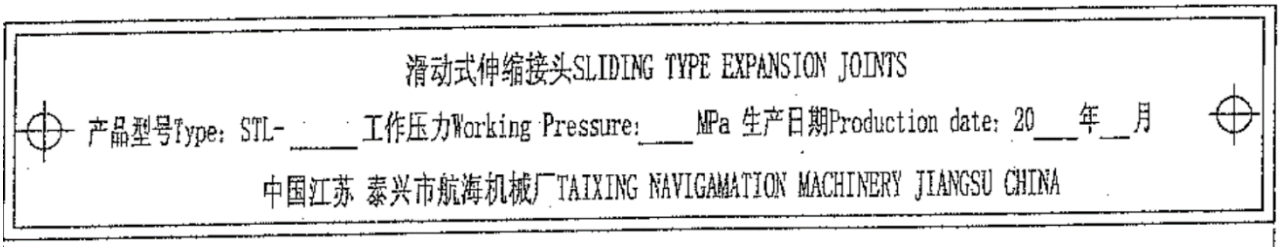
Packing elements and other parts of type SHD subject to wearing shall be replaced by new parts in case of repeated installation or use of the joints.

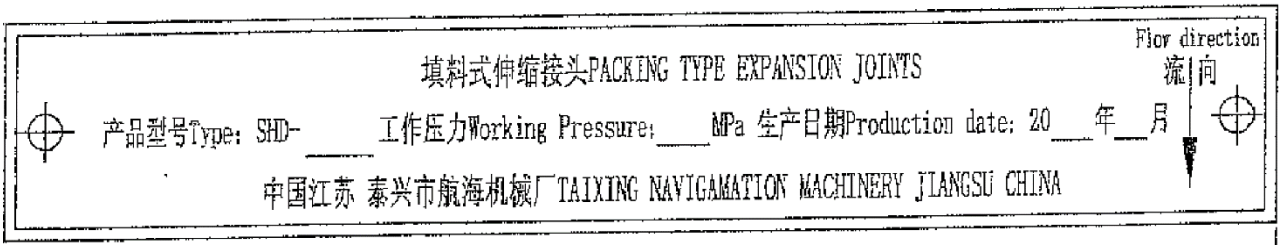
Type Approval documentation

Tests carried out

Marking of product

Each pipe coupling shall bear legible and durable marking on a plate fixed securely to the body. Scope of marking shall be at least as follows:





Periodical assessment

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out. The objective of the periodical assessment is to verify that the conditions for the TA have not been altered.

Main scope of the assessment:

- verification of the production and quality control system;
- review of quality control documentation of recent deliveries;
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application;
- verification of the product marking.

Refer to DNVGL Class Programme CP-0338 for the scope of the periodical assessment.

In connection with the renewal assessment, burst pressure tests on test assemblies are to be carried out in the presence of the DNV GL surveyor. The test assemblies shall consist of two pieces of tubing connected with a mechanical joint of straight type. Selection of joint sizes and quantity of test assemblies is to be determined prior to the assessment. At least one of the test assemblies is to be manufactured in the presence of the surveyor according to the manufacturers specification.