

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Metallic Expansion Joints

with type designation(s)
GB/T12522-2009, CB1153-2008

Issued to

Wuxi Yan Qiao Bellow Factory
Wuxi, China

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

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:
GB/T12522-2009	Up to 550 °C.	Up to 0.1 MPa.	Up to DN 3200.
CB1153-2008	200 °C.	Up to 1.6 MPa.	Up to DN 500.

Issued at **Hamburg** on **2019-11-27**

This Certificate is valid until **2024-11-26**.

DNV GL local station: **Jiangyin**

for **DNV GL**

Approval Engineer: **Andrii Pishchanskyi**

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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.



Product description

Bellow type expansion joints with U-shaped convolutions with slip-on or loose flanges as follows:

Standard	Type	Flange type	Size	Design pressure [MPa]	Design temperature [°C]
GB/T12522-2009	Single expansion joint	A	DN 65 - DN 500	0.1	550
		AS, AJ	DN 65 - DN 1000		
		BS	DN 1200 - DN 3200	0.05	500
	Universal expansion joint	BS	DN 1000 - DN 3200		
		BJ	DN 1100 - DN 2600		
CB1153-2008	Single expansion joint	A, AS, B, BS	DN 300 - DN 500	0.4	200
		A, AS, B, BS	DN 50 - DN 500	0.6, 1.0, 1.6	200

The main components and their material are as follows:

Component \ Type	CB/T12522-2009 I	CB/T12522-2009 II
Flange	Q235	Q335
Bellow	SUS321 (stainless steel)	SUS321 (stainless steel)
Collar	SUS321 (stainless steel)	SUS321 (stainless steel)
Liner	SUS321 (stainless steel)	SUS321 (stainless steel)
Middle tube	N/A	SUS321 (stainless steel)

Component \ Type	CB1153 A, B, AS, BS
Loose flange	A3
Bellow	SUS316L (stainless steel)
Collar	SUS316L (stainless steel)
Weld-on ring	SUS316L (stainless steel)

Application/Limitation

The expansion joints are designed for the absorption of axial movement. Refer to manufacturer's instruction for exact values.

Expansion joints of types GB/T12522 are type approved for application in exhaust gas piping systems installed after turbocharger as per DNVGL-RU-SHIP Pt.4, Ch.6, Sec.9, 5.3.

Installation directly on diesel engines, e.g. cylinder exhaust gas outlet, is not included in this type approval and needs to be approved for each installation.

Expansion joints of types CB/T1153-2008 are type approved for application in class II and III piping systems for fuel oil, lubricating oil, fresh water and auxiliary steam.

The application of expansion joints in thermal-oil piping systems is subject to case by case approval. Refer to DNVGL-RU-SHIP Pt.4, Ch.6, Sec. 5.

Expansion bellow design

This type approval is based on EJMA bellow design calculation (Edition 10, 2015) with modification factor of lower bound $f_c = 1$.

The life time of expansion bellows depends on service condition such as working pressures, axial stroke, bending angle, lateral displacement. Accordingly, for each application bellows design shall be based on the applicable service condition and expected life time which is to be specified in the bellows design drawing.

Selection of bellow and flange materials

The bellow material SUS321 is considered as non-corrosion resistant to sea water and sea water atmosphere and therefore are not approved for the following applications:

1. Unprotected installation areas subject to sea water spray or green sea, e.g. open deck;
2. Wet exhaust gas, e.g. exhaust gas scrubber systems and similar application with high corrosive media;
3. In combination with carbon steel flanges for corrosive media.

Material selection shall consider the applicable service condition with respect to type of media, flow velocity, media temperature, installation area etc. In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be taken into account. Reference is made to DNVGL Rules Pt.4, Ch.6, Sec. 2 Materials.

Installation

Expansion joints shall be installed in places where they are always accessible. Possible exceptions to be considered in each case.

The pipeline, in which an expansion bellow is to be fitted, shall be adequately adjusted, aligned and clamped.

Production testing

Each batch of expansion joints for fuel oil, lubricating oil, fresh water and auxiliary steam systems shall be pressure tested with 1.5 times M.A.W.P. Each expansion joint shall be delivered with:

- Work Certificate for class II piping system with nominal diameter > DN 100;
- Test Report for class II piping system with nominal diameter ≤ DN 100 and class III piping systems.

Type Approval documentation

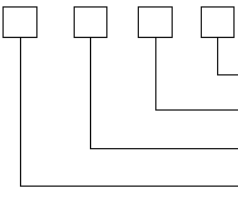
Tests carried out

1. Pressure test;
2. Tightness test;
3. Fatigue test;
4. Burst pressure test.

Job Id: **262.1-031986-1**
Certificate No: **TAP00001WU**

Marking of product

For traceability to this type approval, the final products are to be marked with:

Scope	Example
 公司编号Company Number (XXXXXX) 公称压力Nominal pressure (PN) 公称尺寸Nominal size (DN) 型式代号Type code	AS350-0.1-1951200

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 Type Approval are complied with. Refer to the Class Programme DNVGL-CP-0338, Sec.4.