Certificate No: LR2006604TA
Issue Date: 19/07/2020
Expiry Date: 13/05/2022

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	**Wuxi CSI Bellows Co.,Ltd.**
Address	No.6-1 Jingui Road, Hudai Town, Binhu District, Wuxi, 214000, China
Place of Production	Wuxi CSI Bellows Co.,Ltd. No.6-1 Jingui Road, Hudai Town, Binhu District, Wuxi, 214000, China
Type	Expansion Bellows
Description	Stainless Steel Bellows Expansion Joints
Trade Name	A Type/AS Type/B Type/BS Type
Application	Marine piping systems CB 1153-93 A & AS Type: Fresh water piping systems CB 1153-93 B & BS Type: Sea water/Oil/Steam piping systems
Specified Standard	LR Rules and Regulations for the Classification of Ships, July 2019 CB 1153 – 93 Standards of EJMA (Ninth Edition)
Ratings	A & AS Type Construction details: 1~4 plies, unreinforced, loose flanges Nominal Pipe Diameter (mm): 50~500 Design Pressure Rating (MPa): 0.6/1.0/1.6

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Qing Dong

Specialist to Lloyd's Register Classification Society (China) Co Ltd
A member of the Lloyd's Register group

19th Floor, 550 Yan An dong Road, Shanghai,
Huangpu District, China

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Design Temperature (˚C):	200
B & BS Type	
Construction details:	1~4plies, unreinforced, loose flanges
Nominal Pipe Diameter (mm):	50~500
Design Pressure Rating (MPa):	0.6/1.0/1.6
Design Temperature (˚C):	200

Additional Tests

Hydraulic pressure test, burst pressure test and fatigue life test are conducted according to manufacturer's test specifications for representative samples of the expansion joints.

Other Conditions

1. Welding and non-destructive testing are to be in accordance with Part 5, Chapter 17 of the Rules, to the attending Surveyor's satisfaction.
2. The dimensions and materials of flanges, gaskets and bolting, and the pressure-temperature rating of the bolted flanges in pressure pipelines, in accordance with national or other established standards.
3. It is noted that austenitic stainless steel fittings are not recommended for salt-water services as they are prone to pitting, particularly in polluted waters, as per Part 5, Chapter 12, Section 11.3.4 of LR Rules.
4. Expansion joints are to be protected against over extension and compression. The adjoining pipes are to be suitably aligned, supported, guided and anchored.Where necessary, expansion bellows are to be protected against mechanical damage.
5. It should be noted that specified values of lateral displacement are not qualified on the drawings in this Type Approval. Bellows stresses S_1, S_2, S_3, S_4, S_5, S_6, S_t and fatigue life $N_c$are to be calculated in accordance with GB/T 12777-1999 or standards of EJMA to meet purchasers' specifications for individual products.

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This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Classification Society (China) Co Ltd of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document No. LR2006604TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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