

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Metallic Expansion Joints**

with type designation(s)

MAN 51.08105-0162 - Expansion Joint with Flex Hose

Issued to

**BOA Balg- und Kompensatoren Technologie GmbH
Stutensee, Germany**

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**Application :****Product approved by this certificate is accepted for installation on all vessels classed by DNV GL.****Temperature range:** up to + 650°C**Max. working press.:** 0,4 bar**Sizes:** DN 100Issued at **Hamburg** on **2018-04-20**This Certificate is valid until **2023-04-19**.DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Hagen Markus**

**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.



Job Id: **262.1-024519-1**
Certificate No: **TAP00000X2**

Product description

The MAN 51.08105-0162- Expansion Joint with Flex Hose consist of an Omega shaped bellow with filled welded flanges.

The bellows design is based on EJMA, Edition 9.

Materials

Component	DIN EN / AISI	Temperature range	Type of material certificate
Bellow - Outer ply - Inner ply	1.4571 / 316 Ti 1.4541 / 321	0 °C up to 650°C ¹	Test report (TR) ²
Flange	1.4301 / 304		
Braid			
Mesh			

Notes

¹ Based on conducted endurance testing at max. design temperature

² A document signed by the manufacturer stating:

- that the object complies with the rules
 - that tests are carried out on samples from the current production.
- Refer to Pt.1, Ch.3, Sec.5.

Design documents

Expansion bellow design	Drawing number
Bellow, Hose	2009683 – Rev. 00
Expansion Joint with Flex Hose ¹	5012762 – Rev. 03 - C

Notes

¹ EJMA calculation of bellows based on fatigue life testing with 12000 cycles with lateral load.
Standard safety factor 1,5.

Manufacturing places

Manufacturer	DNV GL local station
American BOA, Inc. Automotive 1485 Redi Road, PO Box 1301 Cumming, Georgia 30040 USA	Houston
BOA Balg- und Kompensatoren Technologie GmbH Lorenzstrasse 2 - 6 DE – 76267 Stutensee	Augsburg

Responsibilities

The company BOA Balg- und Kompensatoren Technologie GmbH , Stutensee takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

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Range of Application / Limitation

The MAN 51.08105-0162 - Expansion Joint with Flex Hose is type approved for installation in exhaust gas systems of combustion engines downstream (after) turbocharger.

This type approval does not cover design evaluation with respect to installation of the expansion joints directly on diesel engines, e.g. cylinder exhaust gas outlet.

Size range	DN100
Max. service pressure	0,4bar
Movements	Axial: +- 16mm
	Lateral: +- 16mm
Temperature range	0°C up to + 650°C

Bellow design depending on service conditions

This type approval is based on EJMA bellow design calculations with specific service parameters and life cycle expectations and design drawings as specified in this type approval certificate.

Bellow design modification within the type tested movement and temperature range are covered by this type approval certificate.

Applications not in compliance with the type tested conditions are subject to case by case approval.

Installation on board ship

The exhaust gas pipeline, in which an expansion bellow is to be fitted, is to be adequately adjusted, aligned and clamped. Refer to instruction of manufacturer BOA.

Type Approval documentation

Tests carried out

Marking of product

For traceability to this type approval, the final product is to be marked by a name plate or hard stamping on the flange at least with:

Scope	Example
Type	MAN 51.08105-0162
Production date, year / month	17/23

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Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval 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

Periodical assessment is to be performed after 2 years and after 3.5 years.

A renewal assessment will be performed at renewal of the certificate.

End of certificate