



Certificate no.:
TAP000035X

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Metallic Expansion Joints**

with type designation(s)

Single type SFL-1P-150-10-UN-1.4571 (11.67219-0033), Universal type BR-2P-100-10-UN-1.4571 (11.67219-0030)

issued to

Rattay DK ApS

Esbjerg, Syddanmark, Denmark

is found to comply with

DNV 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.

Type:	Temperature range:	Max. working press.:	Sizes:
Single type SFL-1P-150-10-UN-1.4571 (11.67219-0033)	0°C to 60°C	0.3 bar	DN150
Universal type BR-2P-100-10-UN-1.4571 (11.67219-0030)	-10°C to 280°C	4.5 bar	DN100

Issued at **Høvik** on **2026-03-27**

This Certificate is valid until **2031-03-26**.

for **DNV**

DNV local unit: **Denmark CMC**

Approval Engineer: **Marc Avice**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Metallic expansion bellows designed according to EJMA 10th edition / EN 14917:

Size	Code	Diameter	Pitch	Height	Ply x thk.	Convolutions
DN150	SFL-1P-150-10-UN-1.4571	168.1 mm	17.2 mm	16 mm	2 x 0.3 mm	12
DN100	BR-2P-100-10-UN-1.4571	111.2 mm	14.4 mm	12.5 mm	3 x 0.4 mm	2 x 9

Materials:

Bellows and internal sleeve: 1.4571 according to EN 10028-7

Flanges: 1.0460 (P250GH) according to EN 1092-1 / 1.0425 (P265GH) according to EN1092-1

Pipe: 1.0345 according to EN 10216-2

Application/Limitation

Expansion bellows covered by this certificate are found to be in compliance with the given design standard and may be installed in exhaust gas & compressed air systems.

- All dimensional data, movements and weld details shall be in accordance with approved dimensional tables/drawings.
- Maximum velocity for bellows without sleeves shall be in accordance with EJMA 10th edition table 4.10-1.
- Minimum thickness of internal sleeve: in accordance with EJMA 10th edition Table 4.10-3
- Minimum thickness of pipe (in universal bellows) shall fulfil requirements in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 Table 2 & Table 3.

Size	Code	Movement			Lifetime	Design Pressure
		Axial	Lateral	Angular		
DN 150	SFL-1P-150-10-UN-1.4571	+3 /-3 mm	13 mm	0°	100000 cycles	0.3 bar
DN 100	BR-2P-100-10-UN-1.4571	+0 /-9 mm	25.8 mm	0°	100000 cycles	4.5 bar

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions. Bellows of austenitic stainless steel shall not be used in direct contact with seawater.

Production testing

Production Testing for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Certification

Whenever the piping system is subject to approval by the society, the below limitations shall be considered:

- Bellows covered by this certificate shall be delivered with test report with reference to this type approval certificate (see to DNV-RU-SHIP Pt.4 Ch.6 Sec.1 Table 4).
- Welding shall fulfill requirements in DNV-RU-SHIP Pt.2 Ch.4.
- Material of bellow shall have material certificates in accordance with DNV-RU-SHIP Pt.4 Ch.6 Sec.2 Table 4. Approval of manufacturer is required for NV or W material certificates.

Type Approval documentation

Marking of product

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

- Manufacturer's trademark
- Type designation (as stated in the submitted drawings)
- Size
- Maximum working pressure
- Temperature range
- The flow direction, if applicable

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

For retention of the Type Approval, a DNV 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 DNV-CP-0338.



Job ID: **262.1-045776-1**
Certificate no.: **TAP000035X**

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>.

Manufactured by:

Rattay DK ApS, Esbjerg, Denmark