



TYPE APPROVAL CERTIFICATE
No. MAC162820XT

This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

<i>Description</i>	Metallic Expansion Joint
<i>Type</i>	BMK-30 & BMK-60
<i>Applicant</i>	HACI AYVAZ ENDUSTRIYEL MAMULLER SAN. VE TIC. A.S.
	ATATURK ORGANIZE SANAYI BOLGESI, MUSTAFA INAN CAD. NO.44 ISTANBUL
	34555 Hadimkoy
	TURKEY
<i>Manufacturer</i>	HACI AYVAZ ENDUSTRIYEL MAMULLER SAN. VE TIC. A.S.
<i>Place of manufacture</i>	ATATURK ORGANIZE SANAYI BOLGESI, MUSTAFA INAN CAD. NO.44 ISTANBUL
	34555 Hadimkoy
	TURKEY
<i>Reference standards</i>	RINA "Rules for the Type Approval of Flexible Hoses and Expansion Joints"
<i>Reference documents</i>	Rules for the type approval.

Issued in **RINA Turkey Marine** on **December 29, 2020.** *This Certificate is valid until* **December 28, 2025**



RINA Services S.p.A.
Volkan Celik

This certificate consists of this page and 1 enclosure



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Reference documents:

Design Drawings reviewed under RINA dwg nos.: ISMC-5668 & ISMC-5669
Calculations filed for our reference under RINA dwg. no. ISMC-5651 & ISMC-5653.
Test Reports filed for our reference under RINA dwg. no. ISMC-5655.

Technical Characteristics & Fields of Application:

Max. working pressure: 0.5 bar
Sizes: DN200 to DN3000

- Expansion bellows covered by this certificate are found to be in compliance with the given design standard and may be installed in exhaust gas systems and scrubber systems.
- Approved movement: +10/-20 mm axial for BMK-30 (RINA dwg no: ISMC-5652/Cad No: E0803-01) and +20/-40 mm axial for BMK-60 (RINA dwg no: ISMC-5654/Cad No: E0803-02)
- No lateral and angular movements
- Approved life cycles: 1000 cycles
- Limitation on velocity: 7.32 m/s for all sizes without sleeve
- The Minimum design temperature is 0°C and the maximum design temperature is limited for materials as per below table:

Standard	Designation	Maximum Design Temperature
EN10095	ALL	+400 °C
EN10028-2	ALL	+400 °C
EN10028-7	1.4301, 1.4306, 1.4307, 1.4311, 1.4315, 1.4401, 1.4404, 1.4406, 1.4420, 1.4429, 1.4432, 1.4434, 1.4435, 1.4436, 1.4438, 1.4439, 1.4529, 1.4541, 1.4550, 1.4563, 1.4571, 1.4580, 1.4910, 1.4941, 1.4948, 1.4950, 1.4951, 1.4958, 1.4959, 1.4961	+550°C
	1.4547 ^(*)	+500°C
	1.4335, 1.4539, 1.4537	+400°C
	1.4318, 1.4466	+350°C
	1.4410 ^(*)	+250°C
EN10025-2	1.0038	+50°C
ASME SA-240	304, 304H, 316, 316H, 317, 304L, 316L, 321, 321H, 347, 347H, 348, 348H, 309H, 310, 310H, S31254, S32750, S32760, 309S, 310S	+300°C
ASME SA-516	60, 70	+300°C

(*) Only these materials are allowed to be used in seawater lines of scrubber systems.

The installation shall be done according to type approval holder's procedures.

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Acceptance conditions:

1. The acceptance of this product on board ships and other units classed by RINA is subject to the satisfactory outcome of testing as per the RINA Rules Part C, Chapter 1, Section 10, Article 21.2.1.
2. This product is not to be installed where it may be subjected to torsion deformation (twisting) under normal operating conditions.
3. The installation on board is to be made in accordance with the Manufacturer's instructions.

Marking:

This product is to be permanently marked by the Manufacturer with the following details:

- Manufacturer's name or trademark
- date of manufacture (month/year)
- designation type reference
- nominal diameter
- maximum design pressure
- maximum and minimum design temperatures.

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the products and of the conditions of this approval.