



TYPE APPROVAL CERTIFICATE
No. MAC056616XT/001

This is to certify, as notified body 0474, that the product identified below is in compliance with the regulations herewith specified

<i>Description</i>	Metallic expansion joints
<i>Type</i>	AYVAZ Axial Expansion Joints with fixed & floating flanges PN6; PN10; PN16
<i>Applicant</i>	HACI AYVAZ ENDUSTRIYEL MAMULLER SAN. VE TIC. A.S. - AYVAZ
<i>Manufacturer</i>	HACI AYVAZ ENDUSTRIYEL MAMULLER SAN. VE TIC. A.S. - AYVAZ
<i>Place of manufacture</i>	ATATURK SANAYI BOLGESI, MUSTAFA INAN CAD., NO.36 34555 HADIMKOY, ISTANBUL TURKEY
<i>Reference standards</i>	RINA Rules for the Type Approval of Flexible Hoses and Expansion Joints

Issued in **ISTANBUL** on **October 10, 2016**. This Certificate is valid until **October 9, 2021**



RINA Services S.p.A.
Volkan Celik

This certificate consists of this sheet plus an attachment

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1. TECHNICAL CHARACTERISTICS

1.1 Design Specifications

Nominal Size (mm)	DN 25 to DN 800	DN 25 to DN 800	DN 25 to DN 350
Nominal Pressure	PN6	PN10	PN16
Max. Working Pressure (bar)	6	10	16
Max. Working Temperature (°C)	+550	+550	+550
Tie rods	No	No	No
Axial Movements (mm)	+10/-20	+10/-20	+10/-20
Flanged type	Fixed/floating	Fixed/floating	Fixed/floating

1.2 Materials

Part Name	Material
Bellow	14401 / 14404/ 1.4541
Band	14401 / 14404/ 1.4541
Flange	1.0038

When other choices of materials are used per manufacturer's recommendations, the RINA agreement is to be obtained

2. REFERENCE DOCUMENTS

- Manufacturer's catalogue dated 1999 March Edition
- Drawings Expansion Joint with fixed flanges series PN 6-30 mm. N° 702.046.120.025 to 702.046.120.800
- Drawings Expansion Joint with floating flanges series PN 6-30 mm. N702.036.140.025 to 702.036.140.800
- Drawings Expansion Joint with fixed flanges series PN 10-30 mm. N° 702.046.130.025 to 702.046.130.800
- Drawings Expansion Joint with floating flanges series PN 10-30 mm. N° 702.036.140.025 to 702.036.140.800
- Drawings Expansion Joint with fixed flanges series PN 16-30 mm. N° 702.046.140.025 to 702.046.120.350
- Drawings Expansion Joint with floating flanges series PN 16-30 mm. N° 702.036.140.025 to 702.036.140.350
- Documents of type approval tests NTTAL.4.007 rev. 0

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- Type tests according to Testing Programme performed in-house
- Pressure impulse test, hydraulic pressure test, burst pressure test and cyclic expansion test (1000 cycles)
- Compensators test reports N°001, 002, 003,004,005, 006, 007 and 008.



4. FIELDS OF APPLICATION

4.1 The expansion joints may be used for the following services on board

- Steam pressure lines
- Exhaust gas lines (PN 6 fixed and floating type)
- Marine class II & III piping systems acc. to the requirements stated in Pt C, ChI, Sec10 of the RINA Rules

4.2 The use of floating flanges is only permitted for Class III water pipes and open-ended lines.

4.3 The use of stainless steel is restricted as per RINA Rules.

4.4 Reduction factors are to be taken in consideration for maximum working pressure and tolerable movement caused by temperature influence according to manufacturer's recommendations.

4.5 The calculated maximum values of axial and/or lateral movements at 1000 full cycles are not to be exceeded.

4.6 The expansion joints are to be installed according to manufacturer's instructions and RINA Rules

4.7 The expansion joints must only be fitted in areas where they are always accessible

5.ACCEPTANCE CONDITIONS

5.1 The products are to be supplied by HACI AYVAZ END. MAMULLERSAN. VETIC. A.S. in compliance with the type and the requirements described in this certificate.

5.2 Each expansion joint is to be hydraulic pressure tested to twice the maximum working pressure under witnessing of a Society's Surveyor when required by the Rules.

5.3 RINA Product Certificate is required.

6. MARKING OF PRODUCT

The product shall be marked with at least:

- Manufacturer's name or logo
- Type designation
- Date of manufacture
- Society's brand as relevant

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.