



TYPE APPROVAL CERTIFICATE
No. MAC017220XG

This is to certify that the product identified below is in compliance with the regulations herewith specified.

<i>Description</i>	Rubber expansion joints
<i>Type</i>	As follows: TYP-46 TYP-49 TYP-50 TYP-55 TYP-55 SO
<i>Applicant</i>	WILLBRANDT KG SCHNACKENBURGALLEE 180 22525 Hamburg GERMANY
<i>Manufacturer</i>	WILLBRANDT KG
<i>Place of manufacture</i>	SCHNACKENBURGALLEE 180 22525 Hamburg GERMANY
<i>Reference standards</i>	Part C, Chapter 1, Section 10 of RINA Rules

Issued in **HAMBURG** on **July 21, 2020**. *This Certificate is valid until* **July 20, 2025**


RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure



TYPE APPROVAL CERTIFICATE

No. MAC017220XG

Enclosure - Page 1 of 3

As follows:

Reference documents:

- Drawing Approved HMMC-17205 with letter HMMC/2020/00569/AVE01 and Enclosures

Test carried out :

- BURST TEST reports No.:

I7FB0252 - I7FB0232 - I7FB0322 - I7FB0332 - I7FB0342 - I7FB0301 - I7FB0242 - I7FB0282

I7FB0292 - I8FB0012 - I8FB0022 - I8FB0092 - I8FB0221

- FIRE RESISTANCE TEST(*) reports. No.:

IBB 2172 / HAM1900721 / 3

IBB 2186 / HAM1900721 / 5

IBB 2168 / HAM1900721 / 1

- ENDURANCE TEST reports No.:

I9FB0192 - I9FB0202 - I9FB0222 - I9FB0232 - I9FB0242

- PULSE TEST reports No.

I7FB0312/2 - I7FB0352 - I8FB0082/1 - I8FB0231



(*)Fire endurance test carried out according to ISO 15540 and ISO 15541 (30 min. in wet conditions)

Technical characteristics:

Rubber expansion joints consisting of rubber bellows with fabric or steel reinforcement and end fittings made of steel / non-ferrous metal, ready for installation.

Design of bellow, flanges and expansion joint configurations according to drawing HMMC-17205.

Fields of application:

Piping systems conveying fresh water, sea water, grey/black waters and flammable oils (fuel oil, lubricating oil, hydraulic oil) and air on board of ships. Application in cargo lines conveying chemical and oil products is subject to case by case approval.

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TYPE APPROVAL CERTIFICATE

No. MAC017220XG

Enclosure - Page 2 of 3

TYPE	SIZE	APPLICATIONS	FIRE RESISTANT
46 RED Sp	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 RED	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 YELLOW	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 WHITE	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 GREEN	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 BLACK EPDM	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 BLACK CR	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 YELLOW Lt	(from DN 20 up to DN 50)	As per HMMC-17205	NO (**)
46 YELLOW St	(from DN 20 up to DN 50)	As per HMMC-17205	YES
46 YELLOW HNBR	(from DN 20 up to DN 50)	As per HMMC-17205	YES
49 A-RED	(from DN 32 up to DN 500)	As per HMMC-17205	NO (**)
49 BLUE	(from DN 32 up to DN 500)	As per HMMC-17205	NO (**)
49 YELLOW	(from DN 32 up to DN 500)	As per HMMC-17205	NO (**)
50 RED Sp	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 RED	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 YELLOW	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 WHITE	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 GREEN	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 ORANGE	(from DN 20 up to DN 400)	As per HMMC-17205	NO (**)



TYPE APPROVAL CERTIFICATE

No. MAC017220XG

Enclosure - Page 3 of 3

TYPE	SIZE	APPLICATIONS	FLAME RESISTANT
50 BLACK EPDM	(from DN 20 up to DN 400)	As per HMMC-17205	NO (**)
50 BLACK Cr	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
50 YELLOW Lt	(from DN 20 up to DN 400)	As per HMMC-17205	NO (**)
50 YELLOW St	(from DN 20 up to DN 1000)	As per HMMC-17205	YES
50 YELLOW HNBR	(from DN 20 up to DN 400)	As per HMMC-17205	YES
50 BR	(from DN 20 up to DN 400)	As per HMMC-17205	NO (**)
55 RED Sp	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
55 RED	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
55 YELLOW	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
55 GREEN	(from DN 20 up to DN 1000)	As per HMMC-17205	NO (**)
55 YELLOW St	(from DN 20 up to DN 400)	As per HMMC-17205	YES

(**) Fire protection cover type "FSH" can be added As per HMMC-17205.



Acceptance conditions:

- The installation is to be made in accordance with the manufacturer's instructions.
- Use of expansion joints is to be in accordance with Part C, Chapter 1 Section 10, Paragraph 2.6, of RINA Rules.
- The acceptance of the above mentioned product on board a ship, or other units classed by RINA, is subject to the satisfactory outcome of testing as per RINA Rules according to Part C Chapter 1 Sec 10 par. 21.4.6.
- The flanges shall be suitable for the actual design pressure and temperature of on board system.
- Expansion Joints are to be marked with type designation manufacturer's name and maximum working pressure.
- For applications with flammable oils on board of vessels with European flag, a MED Certificate is required.

HAMBURG July 21, 2020

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