



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 14/JUL/2021. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 17/MAY/2021 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Expansion Joints

Model Name(s): ERV-GS, ERV-GS HNBR, ERV-G, ERV-R

Presented to:

ELAFLEX-GUMMI EHLERS GMBH
SCHNACKENBURGER ALLEE 121
Germany

Intended Service:

Expansion joints for use in machinery spaces on-board of marine and mobile or fixed offshore installations in - oil piping systems and in Class III circulating water systems (ERV-GS, ERV-GS HNBR). - oil piping systems and in town and natural gas systems (ERV-G). - Class III circulating water systems (ERV-R).

Description:

Expansion Joints made of composite rubber fitted with either stainless steel or carbon steel flanges, the latter zinc plated or hot galvanized. ERV-GS and ERV-GS HNBR: Yellow Steel (Gelbstahl) reinforced with steel wire cord, sizes DN 25 to DN 600, with CR-cover and NBR or HNBR liner, fire resistant to ISO 15540:2002 and ISO 15541:2002. ERV-G: Yellow Band (Gelbring) reinforced with PA textile cord, sizes DN 25 to DN 1000, with CR-cover and NBR liner. ERV-R: Red Band (Rotring) reinforced with PA textile cord, butyl rubberized, sizes DN 25 to DN 1000, with EPDM cover and Butyl (IIR)/EPDM liner. Markings: ERV - GS: Two (2) yellow bands, ERV DN ..., PN ..., production date. ERV - GS HNBR: Yellow-blue-yellow bands, ERV DN ..., PN ..., production date. ERV-G: Yellow band, ERV DN..., PN ..., production date. ERV-R: Red band, ERV DN., PN.,, production date.

Ratings:

Nom. pressure: 10 / 16 bar. Nom. temperature: -20°C up to +90°C, temporarily up to +100°C (ERV-GS, ERV-G); -35°C up to +100°C, temporarily up to +125°C (ERV-GS HNBR), -40°C up to +100°C, temporarily up to +120°C (ERV-R).

Service Restrictions:

- Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be

clearly defined. Installation of the expansion joints only in accessible locations. - Expansion joints are to be installed in accessible locations to permit regular inspection and / or periodic servicing. - Expansion joints are to be permanently marked with the manufacturer's name and the month and year of manufacture. - Expansion joints type ERV-R are not to carry mineral oil products but are suitable in oily atmospheric environments.

Comments:

The manufacturer has provided a declaration about the control of, or the lack of asbestos in this product.

Notes / Documentation:

Document No. 1, Info Oil Containing Air, Revision: -, Pages: 1. Document No. Confirmation_ERV-R_oil cont. air, Confirmation Letter ERV-R oil cont. air, Revision: -, Pages: 1. Document No. Approval Certificate 37492-12HH_ISO6803 Hydraulic Impuls Test Bench, GL Type Approval Certificate, Revision: -, Pages: 2. Document No. CatPage_Gruppe_Section4, Data Sheets, Revision: -, Pages: 44. Document No. Contitech ERV-GS_ERV-GS HNBR, Contitech Overview Burst Pressure Results ERV-GS_ERV-GS HNBR, Revision: -, Pages: 1. Document No. Impulse test report TUEV DN 40_2006, TUEV Hydraulic Pressure Impulse Test Report for DN40, Revision: -, Pages: 3. Document No. Impulse test report TUEV DN 80_2006, TUEV Hydraulic Pressure Impulse Test Report for DN80, Revision: -, Pages: 3. Document No. Impulse test report TUE#V DN 80_2006, TUEV Hydraulic Pressure Impulse Test Report for DN80, Revision: -, Pages: 3. Document No. Impulse test report GL-LR_GS600_04, Contitech Hydraulic Pressure Impulse Test Certificate ERV-GS DN600, Revision: -, Pages: 8. Document No. Info_Berstdruck_ERV-G und -R_11, Contitech Overview Burst Pressure Results ERV-G_ERV-R, Revision: -, Pages: 1. Document No. PED-E1-3, DNV - GL_EC Product Quality Management Certificate, Revision: -, Pages: 2. Document No. Test Report_DN150_Gelb_03, Contitech Hydraulic Pressure Impulse Test Certificate ERV Yellow DN150, Revision: -, Pages: 7. Document No. Test Report_DN150_Gelbstahl_03, Contitech Hydraulic Pressure Impulse Test Certificate ERV-GS DN150, Revision: -, Pages: 7. Document No. Test Report_DN40_Gelb_04, Contitech Hydraulic Pressure Impulse Test Certificate ERV Yellow DN40, Revision: -, Pages: 6. Document No. Test Report_DN80_Gelb_03, Contitech Hydraulic Pressure Impulse Test Certificate ERV Yellow DN80, Revision: -, Pages: 6. Document No. Zert_ISO9001_e_bis 15, ISO 9001:2008 Quality Management System Certificate, Revision: -, Pages: 1. Document No. Test Report GS400_27, Baeumler GmbH Flame Resistance Test Report EVR-GS, Revision: -, Pages: 3. Document No. flame test_WTD Kiel_ERV-GS, WTD Flame Resistance Test Report EVR-GS, Revision: -, Pages: 3.

Term of Validity:

This Product Design Assessment (PDA) Certificate 16-HG1513975-PDA, dated 18/May/2016 remains valid until 17/May/2021 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

2016 Steel Vessel Rules: 1-1-4/7.7, 1-1-Appendix 3 and 4, 4-6-1/7, 4-6-2/5.8.1/5.17. 2016 Steel Vessels Under 90 Meters (295 Feet) in Length: 1-1-4/7.7, 1-1-Appendix 2 and 3. 2016 MODU Rules: 1-1-4/9.7, 1-1-Appendix 2 and 3, 4-2-1/11.7. 2016 Offshore Support Vessels: 1-1-4/7.7, 1-1-Appendix 3 and 4, 4-6-2/5.8.1. 2016 Steel Vessels for Service on Rivers and Intracoastal Waterways: 1-1-4/7.7, 1-1-Appendix 3 and 4. 2008 Bulk Carriers for Service on the Great Lakes: 1-1-4/7.7, 1-1-Appendix 3 and 4.

National Standards:**International Standards:**

ISO 15540:2002 and ISO 15541:2002

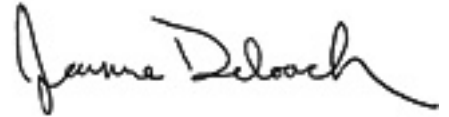
Government Authority:**EUMED:****Others:****Model Certificate****Model Certificate No****Issue Date****Expiry Date**

PDA

16-HG1513975-PDA

18/MAY/2016

17/MAY/2021



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.