



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14218**

This is to certify that the  
**Compensator, Bellow of Rubber Material**

with type designation(s)  
**Types ERV-Rotex, ERV-G, ERV-R, ERV-Yellow-Steel (GS and GS-HNBR)**

Manufactured by  
**ELAFLEX - Gummi Ehlers GmbH**  
**HAMBURG, Germany**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships**  
**Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment**  
**Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70**

### Application

**May be used for: Fuel- & lube oil, fresh & sea water, compressed air, sanitary, acids, alkalis, salt solutions, cooling water, heating water, ballast lines (not through pipe tunnels or double bottom) and bilge. (Dep. on type, see cert.)**

<b>Temperature range:</b>	<b>Dependent on type: up to +130°C</b>
<b>Max. working press.:</b>	<b>PN 6, PN10, PN 16</b>
<b>Sizes:</b>	<b>DN 25 to DN 600 (1" to 24")</b>

This Certificate is valid until **2015-06-30**.

Issued at **Høvik** on **2013-05-02**

DNV local station: **Essen Business Support**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

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for **Marianne Spæren Marveng**  
**Head of Section**

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Rubber expansion joint with swivel flanges in stainless steel, carbon steel, hot galvanised and zinc plated steel.

### Types:

ERV-G, ERV-R, ERV-Yellow-Steel (GS and GS-HNBR), ERV-Rotex

### Materials:

ERV-G: Liner of NBR reinforced with nylon textile cord, cover of CR.  
ERV-R: Liner of butyl/EPDM reinforced with nylon textile cord cover of EPDM.  
ERV-Yellow-Steel (GS): Liner of NBR reinforced with steel wire, cover of CR.  
ERV-Yellow-Steel (GS-HNBR): Liner of HNBR reinforced with steel wire, cover of CR.  
ERV-Rotex: Liner of EPDM with polymere textile cord, cover of EPDM

## Application/Limitation

### Type ERV-G

May be used for fuel and lubricating oil, fresh and seawater, compressed air and sanitary.

### Type ERV-R

May be used for fresh and sea water, light acids, alkalis, salt solutions and sanitary water.

### Type ERV-Rotex

May be used for heating water, cooling water and hot air and sanitary water

### Type ERV-Yellow-Steel (GS and GS-HNBR)

May be used for fuel and lubricating oil, fresh and seawater, compressed air, sanitary cooling water, ballast lines (not through pipe tunnels or double bottom) and bilge for sizes between DN25 to DN600. Larger sizes may be used in cooling water, sanitary, fresh and sea water systems.

### Working pressures:

ERV-G and ERV-R, Rotex: 0 to 16 bar.  
ERV-GS+GS HNBR: -0.88 to 10 bar

### Temperature range:

ERV-Rotex: 0 to +130°C  
ERV-G: 0 to +90°C.  
ERV-R: 0 to +100°C.  
ERV-GS: 0 to +90°C.  
ERV-GS HNBR: 0 to +100°C.

## Type Approval documentation

- Manufacturer's catalogue "Gummikompensatoren + Rohrverbinder" no. 4
- Fire test report from WTD 71-223-87/95, 50/05, 51/05, 54/05 and 56/05.
- Fire test report from Dr.-Ing. T. Bäumer GmbH no IBB 472 dated 27.08.2009
- DNV Antwerpen burst test report dated 97-05-29
- Impulse test report from TUV Automotive dated 2006-01-30.
- Impulse test report from Contitech Air Spring Systems GmbH dated 11 April 2011
- Endurance test report from Contitech Business Unit Air Spring Systems dated 23/07/12
- Manufacturer's burst test report dated 2006-01-06.
- Burst test report 16304/Wicke from Contitech Business Unit Air Spring Systems dated 02/02/12 and 16/05/12

## Tests carried out

Burst test, fire test (ERV-G and ERV-Yellow-Steel), endurance test and impulse test (ERV-Yellow-Steel).

## Marking of product

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

- Manufacturers trade mark:



ERV-G: Yellow band.

ERV-R: Red band.

ERV-Yellow-Steel: Double yellow band

ERV-Yellow-Steel GS: Double yellow band

ERV-Yellow-Steel GS-HNBR: Yellow-Blue-Yellow band

ERV-Rotex: Double red band

## Certificate Retention Survey

For retention of the Type Approval, DNV Surveyor shall perform a survey every second year and before the expiry date of this certificate, to verify that the conditions for the type approval are complied with and to witness the following test on a selection of sizes:

- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Certification Notes no. 2.9. 5-791.70 "Type Approval of Flexible Hoses of Non-Metallic Material" or another recognized standard.

The test is to be performed with the type of couplings fitted that is Type Approved with the compensators.

END OF CERTIFICATE