

TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00001YN
Revision No:
3

This is to certify:

that the **Compensator, Bellows of Rubber Material**

with type designation(s)
ERV GS, ERV

issued to
ELAFLEX HIBY GmbH & Co. KG
Hamburg, Germany

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
ERV GS	up to 100°C	10bar	DN20 up to DN600
ERV	up to 130°C	10bar, 16bar, 20bar, 25bar	DN20 up to DN1000

Issued at **Hamburg** on **2025-03-24**

This Certificate is valid until **2030-03-23**.

DNV local unit: **Hamburg – CMC North/East**

Approval Engineer: **Hagen Markus**

for **DNV**



This document has been digitally signed and will therefore not have handwritten signature

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Rubber expansion joints consisting of rubber bellows with fabric or steel reinforcement and swivel flanges made of carbon steel, hot dip galvanised and zinc plated steel, stainless steel, gun metal or bronze.

Design of bellows, flanges and expansion joint configurations according to Elaflex "Rubber Expansion Joints Catalogue - Group 4".

Overview

Types	Design			Piping systems / Media
	Liner	Reinforcement	Cover	
ERV-G	NBR	PA textile cord	CR	Fuel oil, lubricating oil, hydraulic oil, bilge, sea water and freshwater cooling, ballast water, water filled fire extinguishing, compressed air, sanitary.
ERV-G LT	NBR		CR	
ERV-G-AF	Special compound ¹		CR	
ERV-H2+	Special compound ¹		CR	
ERV-R	Butyl / EPDM		EPDM	
ERV-Rotex	EPDM	Polymer textile cord	EPDM	Heating water, cooling water, hot air and sanitary water.
ERV-BR	BR/NR	PES textile cord	BR/NR	Abrasive media such as sludges, slurries, solid/liquid mixtures and emulsions, dust or powdering products (e.g. carbon-black steel) and all kind of non-oil containing water.
RED SPOT (ERP)	Butyl EPDM	PA textile cord	EPDM	Ballast water, sea water and fresh water, cooling water, water filled fire extinguishing and sanitary.
ERV CR	CR		CR	
ERV-OR	NBR		CR	
ERV-GR	CSM		CSM	
ERV-W	NBR		CR	
ERV-VITEX	FKM		ECO	
FSH, Fire sleeve for ERV		For the use in fuel oil and lubricating oil systems, sea water cooling, bilge and ballast water systems arranged in machinery spaces each compensator of type ERV is to be provided with a fire sleeve of type FSH.		

Types	Design			Piping systems / Media
	Liner ¹	Reinforcement	Cover	
ERV-GS Yellow-Steel	NBR	Steel wire cord, CR rubberised	CR	Fuel oil, lubricating oil, hydraulic oil, bilge, sea water and freshwater cooling, ballast water, water filled fire extinguishing, compressed air, sanitary. Application in ballast water lines (not through pipe tunnels and double bottom).
ERV-GS HNBR Yellow-Steel	HNBR			

Note

¹ Seamless, electrically conductive

Application/Limitation

Types	Working pressure ¹	Temperature range	Size range
ERV-G	Up to 16bar depend on size ¹	up to +90°C	DN20 up to DN 300, where fire resistance by the Rules is required (fire sleeve applications) > DN300 up to DN1000, where fire resistance is not required DN700 up to DN1000 ²
ERV-G LT			
ERV-R		up to +100°C	
ERV-Rotex		up to +130°C	
ERV-BR		up to +70°C	
ERV-CR		up to 90°C	
ERV-GR		up to +100°C	
ERV-W		up to +90°C	
ERV-VITEX		up to +110°C	
RED SPOT (ERP)		10bar	
ERV-G AF	20bar	up to +65°C	DN50 – DN150
ERV-H2+			
ERV-OR	25bar	up to +90°C	DN20 – DN200

Notes

¹ Working pressure and vacuum according to product data sheets released by Elaflex

² For installation in piping systems without vibration load

Types	Working pressure	Temperature range	Size range
ERV-GS Yellow steel	up to 10bar	up to +90°C	DN20 up to DN600
ERV-GS HNBR Yellow steel		up to +100°C (+120°C short term)	

Fire sleeve applications

Expansion joints with bellows reinforcement other than steel, intended for application in piping systems conveying flammable media or sea water, where failure may result in flooding shall be completely covered by a fire sleeve of type FSH (fire tested acc. to ISO 15540/41).

Limitations

Rubber expansion joints are to be installed at visible and accessible positions.

Installation is not permitted:

- In permanently pressurized starting air lines of diesel engines
- In cargo lines of tankers
- At the ship's side

Installation

For selection and installation of the expansion joints the Elaflex "Rubber Expansion Joints Catalogue -Group 4" is to be observed.

In piping systems conveying fuel oil, lubricating oil, sea water cooling and compressed air, a shut-off device, e.g. globe valve, is to be provided to isolate the expansion joint in case of bellows rupture.

Production testing


Each expansion joint or batch is subject to hydrostatic pressure test with 1.5 times the maximum working pressure. Appropriate works certificate (W) to be issued.


Type Approval documentation

Tests carried out

Pressure test, Burst pressure test, Endurance tests, Pressure impulse test, Ozone and Liquid resistance test, Fire resistance test acc. to ISO15540/41.

Marking of product

Bellows	
Scope	Example
Manufacturers trademark	
Type	ERV
Nominal pressure	PN16
Nominal size	DN50, 2 in.
Production date Year/Quarter/Week	
QR Code	
ERV Yellow steel – GS	Double yellow band
ERV Yellow steel – GS HNBR	Yellow-Blue-Yellow band
ERV-G	Yellow band
ERV-G LT	Yellow band + white imprint LT
ERV-G AF	Yellow band
ERV-H2+	Grey Band
ERV-R	Red band
ERV-ROTEX	Double red band
ERV-BR	Blue Spot
ERV-Red Spot (ERP)	Red Spot
ERV-CR	White imprint "CR"
ERV-OR	Orange band
ERV-GR	Green band
ERV-W	White band
ERV-VITEX	White-green-white band

Flanges	
Scope	Example
Manufacturers trademark	
Batch number	
Flange manufacturer short sign	
Type of material	S235JR
DN / PN	80 / 16
Serial number / QR Code	

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNV-CP-0338, Section 4.

In addition, burst pressure testing to be carried out in the course of the renewal of the certificate.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

Manufactured by:

ELAFLEX HIBY GmbH & Co. KG¹, Schnackenburgallee 121, 22525 Hamburg

Note:

¹ Formerly ELAFLEX – Gummi Ehlers GmbH

End of certificate