ERV

Rubber Expansion Joints

ELAFLEX

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FLEXIBLE PIPE CONNECTIONS, PREMIUM CLASS.

For pipe construction, you will need compensators to absorb thermal expansion, to reduce vibration and noise.
Our 'ERV' rubber expansion joints have reliably performed these tasks since 1956.

Due to their construction and premium quality, our expansion joints have become international industry standard.

This brochure gives an overview of technical features and helps to choose the right product for your needs.

ELAFLEX – EXPERIENCE YOU CAN RELY ON

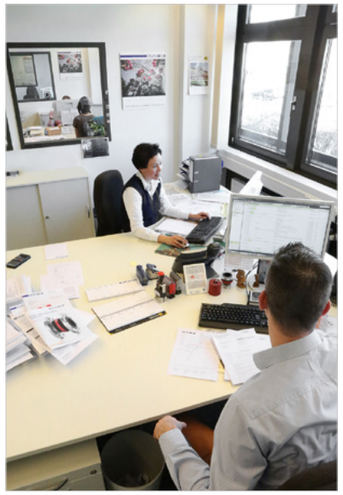
ELAFLEX is a specialist company in safe connections for refuelling and pipe equipment.

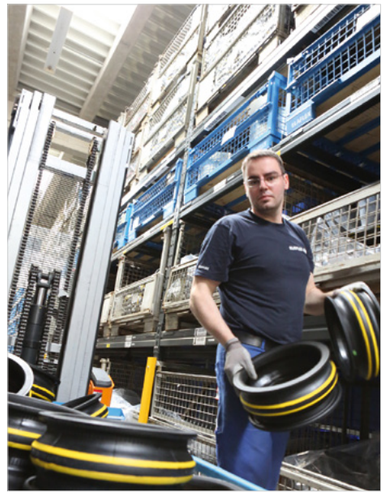
Since 1923 we stand for values which are typical of a family owned company: The spirit of innovation, reliability, continuity and flexibility in thought and action.

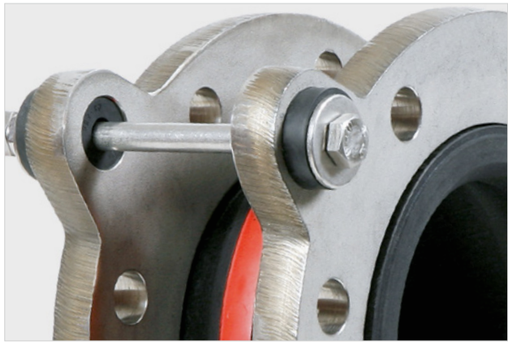
ERV expansion joints are an important part of our product portfolio.

The rubber bellows are manufactured in Germany and assembled and distributed by ELAFLEX.

We are a committed partner to our customers who count on quality engineered and durable products. Choosing ERV expansion joints is a sound investment both in terms of performance and total cost of ownership.







Service and Added Value

ELAFLEX customers appreciate service factors such as professional technical advice, reliability, up-to-date online product information and global support by local ELAFLEX distribution partners.

Service also means the ability to supply a major part of our product range ex works with short lead times. A large 4500 sqm warehouse and a 1350 sqm workshop result in an efficient delivery capability. More than 25.000 bellows and a large number of flanges and accessories are permanently available ex stock.

According to customer specification, we supply the assembled product. Our modular system, developed over the years, is important both for efficiency and for safe assembling. Bellows, flanges and accessories always come from one source only and to the latest industry standards. The combination of both modular system and control over the whole production chain safeguard that everything fits perfectly.

Our operational procedures also translate into better service. An up-to-date warehouse management system helps for good inventory accuracy and confirmation of readiness for delivery to the customer. Further, a 'pick by voice' and barcode-assisted stock management minimise the possibility of incorrect deliveries and speeds up the delivery process.

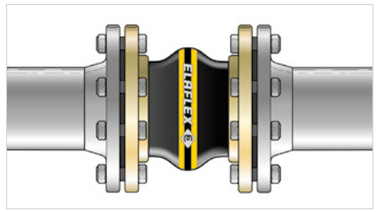
ELAFLEX

WHAT ARE RUBBER EXPANSION JOINTS?

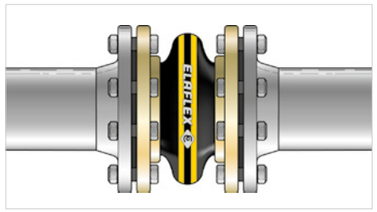
Rubber expansion joints are flexible connectors for the construction of pipe systems.

They relieve system strain by reducing vibration and noise and compensate static or dynamic movements caused by thermal change, load stress, pumping surges or construction settlement.

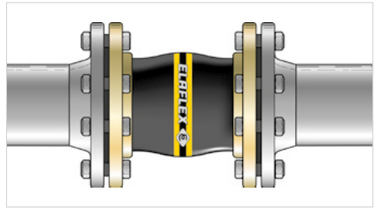
They also compensate assembling inaccuracies (misalignment during installation) and can be used as pipe insert pieces to facilitate inspections.



Standard length

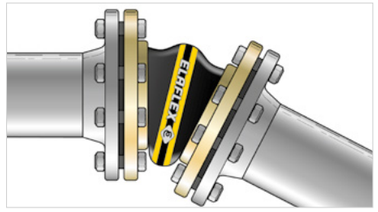


Axial compression

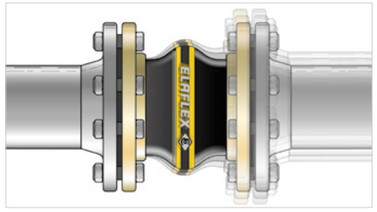


Axial elongation

Lateral offset



Angular offset



Vibration

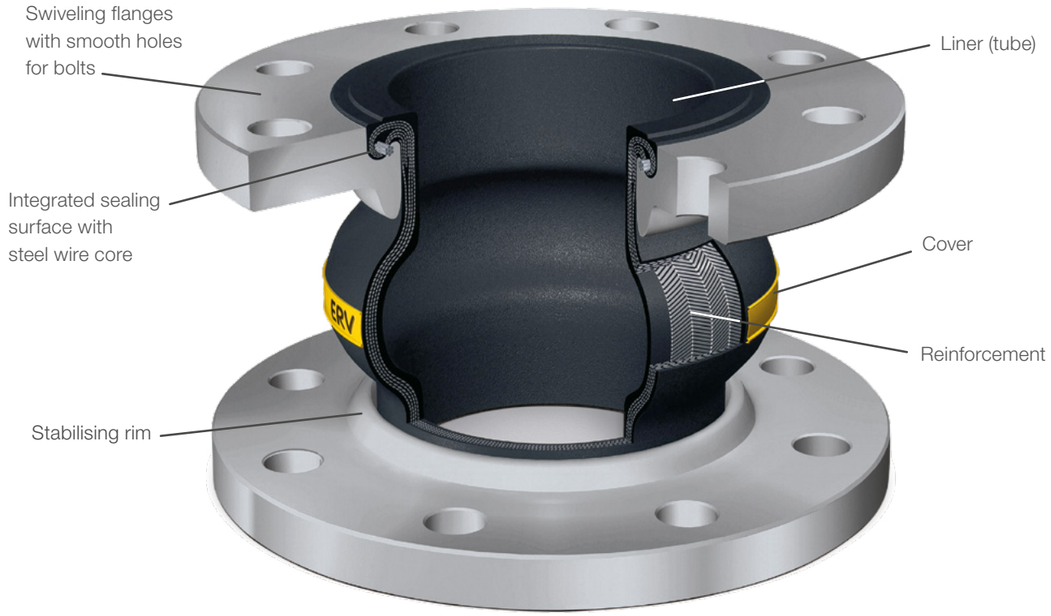
Comparing Metal Expansion Joints with Rubber Expansion Joints

Rubber Expansion Joints

- show no fatigue failure due to high frequencies of vibration
- are not endangered by stress corrosion cracking due to their higher flexibilty
- are suitable for a larger range of media due to their available type variety
- will absorb outer physical influences, e.g. accidental impacts without any damage
- can be used to protect the pipework against high shock stress
- offer max. movement ranges, at the same time they are very compact (short installation length)
- are suitable to substantially reduce vibration and noise

WHY YOU SHOULD CHOOSE ERV

ERV expansion joints from ELAFLEX are moulded single sphere type rubber bellows with swiveling metal flanges. Their construction and lengths (installation sizes) have since become internationally recognised standard.



Premium products have their price. But the additional cost for ERV will pay off for the operator in the long run.

The calculation: For a defined period (e. g. 15 years), all direct and indirect costs for a product application with expansion joints are determined and added.

Cost factors include the initial product price, shipping, indirect acquisition expenses, effort for installation and inspection. Most important, the expected lifetime until replacement shall be reflected - including the often non considered costs arising from product failure: plant downtime, environmental damage and replacement cost.

We claim that - due to their superiour lifetime - ERV shows the lowest Total Cost of Ownership, for the major part of applications.

Assuming proper installation and operation within their admissable operating limits, they are trustworthy components for engineers and purchasers who think and calculate in long terms.

Optimal Shape and Construction of the Bellows

- Large axial, lateral and angular range of allowable movement, no double sphere necessary
- Low reaction forces and low inherent resistance
- Noise dampening: the major part of the piping's structure-borne noise and the low-frequency noise generated by fluids is eliminated
- Vibration dampening: ERV efficiently absorb vibrations caused by engines, turbines or compressors

Experience and Know How

- Applications since 1956
- Consistent suppliers and manufacturing methods ensure a constant quality

Customer Focus

- Large warehouse of bellows (>25.000 bellows permanent stock) and flanges / accessories ensure short lead times for standard types
- Technical service: professional advice, documentation, testing certification (audited to European Pressure Equipment Directive)
- Online ERV configurator: ervconfigurator.elaflex.de helps to find and visualize the required product in a few seconds
- Global support by local ELAFLEX distribution partners

Warranty

- Warranty period of 24 months
- Consistent quality results in a neglectable claim rate
- Each examination is free of charge, not depending on the result

Easy Installation

- Swiveling flanges and smooth bolt holes make assembling easy
- The highly flexible bellows eases installation in problematic locations

Certificates

- Various ERV types are certified for civil and navy ship construction, drinking water, foodstuffs, heating and gas supply installations

Superior Life Time

- HiTech rubber compounds
- Physical properties of compounds and reinforcements are optimised for each bellows type: elongation at break, ozone and UV resistance, cold flexibility, tensile strength, volumetric extension etc.
- Permanent testing of raw material properties – before and during production
- Rubberized reinforcements for superior adhesion of all layers
- Integrated sealing surface with type matched steel wire core
- Made in Germany, ELAFLEX quality pilosophy
- High operational safety, 1:4 safety factor regarding burst pressure

Large Product Range

- Variety of 13 different types, sizes 1" – 40" (DN 25 – 1000 mm), various lengths and a vast choice of flange type / material and accessories

The Bellows

- International quality reference for some applications, e. g. ERV-G for tank trucks (fuels), ERV-R for drinking water, ROTEX for heating systems, ERV-OR for LP Gas
- Some unique products such as ERV-GS (ship engine room type approved), ERV-GS HNBR (large application range, temperature, abrasion & fire resistant), ERV-G LT (low temperature down to -40 °C)
- Efficient due to standardised bellows lengths

Flanges

- Modular system – flanges match with all bellows
- Certified materials, EN 10204 - 3.1
- Standard types with stabilising rim
- Marked with size, standard, material, manufacturer
- Cr (VI)-free corrosion protection for steel flanges long-lasting and environmentally friendly

CHECKLIST FOR EXPANSION JOINTS

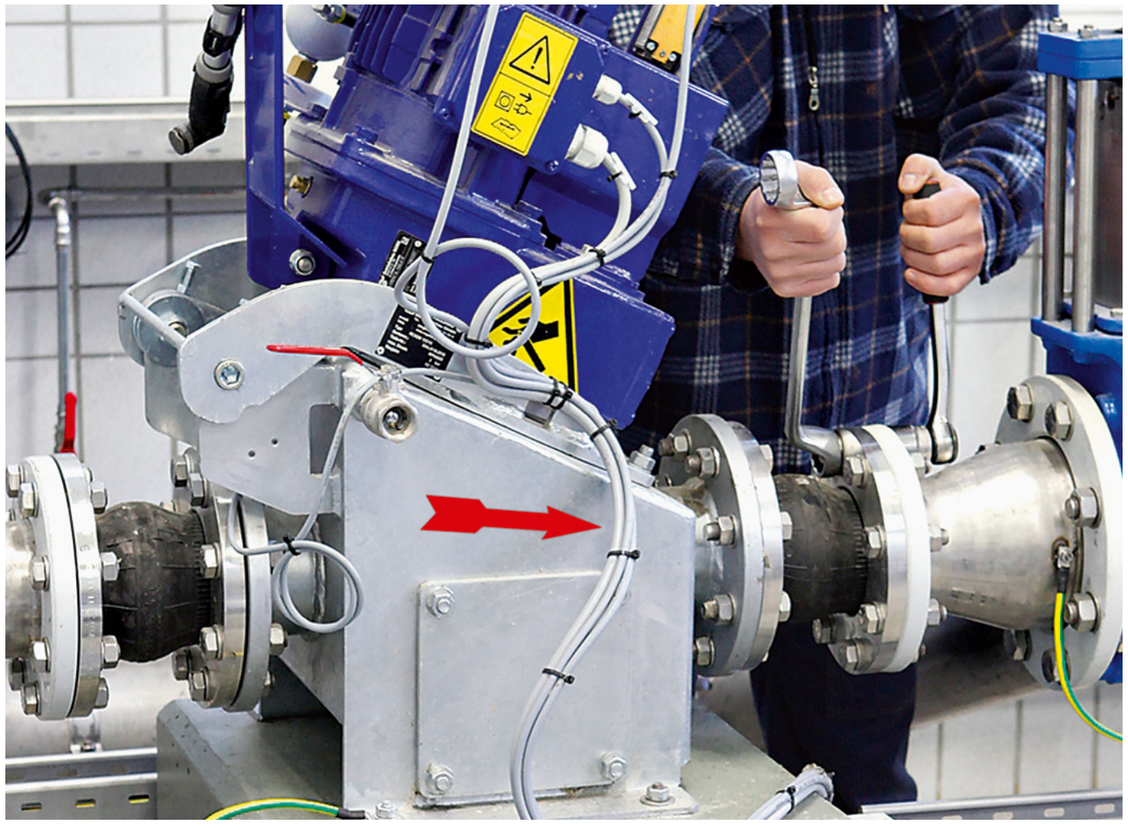
If you are not sure about the required type, execution and flange material, going through this checklist helps us to quote according to your needs.

1. Medium
- Chemical composition
- Gaseous, liquid, paste-like
- Abrasion by soldid particles expected

2. Operation Conditions
- Minimum/maximum temperature
- Maximum pressure/peaks/load changes
- Vacuum possible
- Axial range of movement (elongation/compression)
- Angular Load
- Lateral offset

3. Operating Site
- Indoor or outdoor
- Exposure to sunlight (UV)
- Salt-containing atmosphere

4. Certificates and Testing
- Required certificates and/or testing, e. g. to European Pressure Equipment Directive



CERTIFICATES

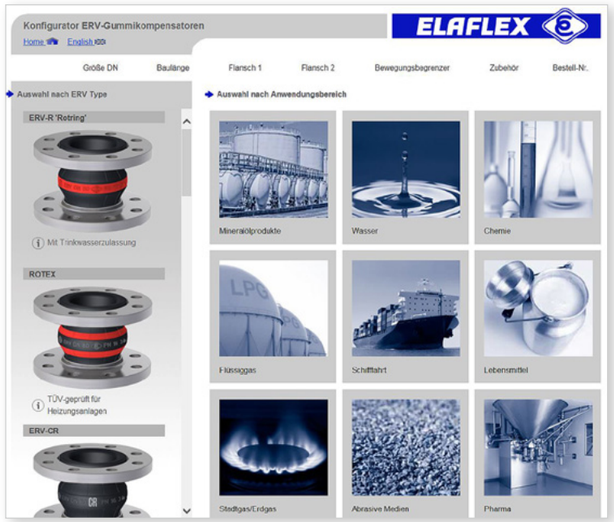
Approvals	ERV-GS	ERV-GS HNBR	ERV-G	ERV-R	ROTEX	ERV-CR	Other
DNV (Det Norske Veritas)	✔	✔	✔	✔	✔	✔	✔ all
Lloyd's Register	✔	✔	✔	✔	✔		
Bureau Veritas	✔	✔	✔	✔		✔	
RINA Services S.p.A.	✔	✔	✔	✔	✔	✔	✔ (ERV-BR, -OR, -GR)
American Bureau of Shipping	✔	✔	✔	✔			
Nippon Kaiji Kyokai	✔	✔	✔	✔	✔		
China Classification Society	✔	✔	✔	✔		✔	
Korean Register	✔	✔	✔	✔			
Dienststelle Schiffssicherheit BG Verkehr *)	✔ Marine Equipment Directive ✔						
Technischer Überwachungs-Verein					✔ DIN 4809		
Bundesamt für Wehrtechnik und Beschaffung			✔	✔			
Attestation de Conformité Sanitaire				✔ Drinking water			
Water Regulations Advisory Scheme				✔			✔ (ERP)

*) Certificate expires in a year, after which it will probably be replaced by DNV.

PDF of certificates can be downloaded under www.elaflex.de/en/certificates/erv

ERV CONFIGURATOR

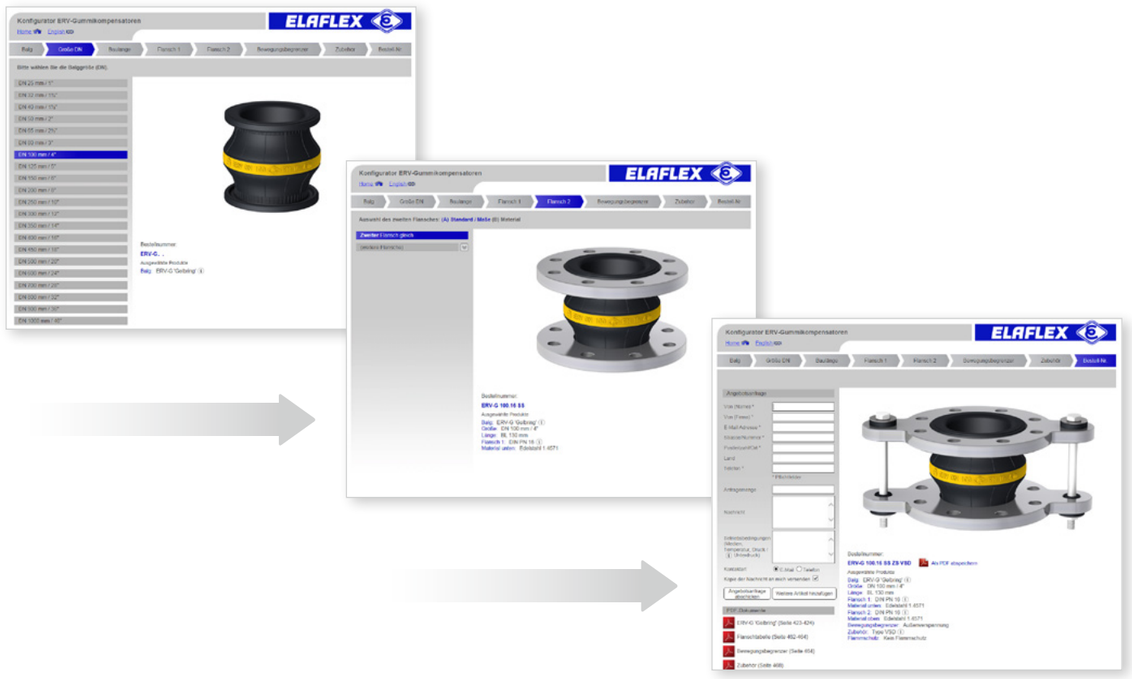
Many options, fast choice: The online ERV configurator ervconfigurator.elaflex.de helps to combine bellows, flanges and accessories.



Choose

- Bellows type
- Size (DN) and length
- Flange standard and material
- Movement limiters
- Accessories

A direct enquiry is possible and you can also save the link or PDF on your computer if required.



ERV PRODUCT RANGE

ERV high quality expansion joints DN 25-1000 by ELAFLEX. With swiveling flanges (various types and materials). For detailed information see ELAFLEX catalogue.

ERV-R

RED BAND expansion joint for water, drinking water, waste water, seawater, cooling water, chemical waste water (without oil), chemicals, acids and alkalis, salt solutions, alcohols. Temperature range -40 °C up to +100 °C, temporarily up to +120 °C. Lining Butyl/EPDM.

Type ERV-R

ROTEX

ROTEX expansion joint for permanent service with heating water, cooling water and hot air (without oil). W.P. 10 bar up to +100 °C, 6 bar up to +110 °C. Temperature range -40 °C up to +130 °C, temporarily up to +150 °C. TÜV approved for heating installations. Lining EPDM.

Type ROTEX

ERV-CR

CR expansion joint for cold and warm water, seawater (also oil containing), various waste water, lube oils and greases, air, compressed air. Temperature range -25 °C up to +90 °C, temporarily up to +100 °C. Lining Chloroprene.

Type ERV-CR

ERV-BR

BR expansion joint for abrasive media such as sludges, solid/liquid mixtures, dustlike and powdery products. Temperature range -50 °C up to +70 °C, temporarily up to +90 °C. Lining BR/NR.

Type ERV-BR

ERP

RED SPOT expansion joint for sanitary facilities, cold/warm water, swimming pool water, seawater, drinking water. Highly flexible + low own resistance. W.P. max. 10 bar. Temperature range -40 °C up to +90 °C, temporarily up to +120 °C. Lining Butyl / EPDM.

Type ERP

ERV-G

YELLOW BAND expansion joint for petroleum based products up to 50 % aromatics, also town gas and natural gas, cooling water emulsions with corrosion preventing oil. Temperature range -20 °C up to +90 °C, temporarily up to +100 °C. Lining NBR.

Type ERV-G

ERV-GS

YELLOW STEEL expansion joint. Similar to type ERV-G, but fire resistant to ISO 15540 (type approved). Temperature range -20 °C up to +90 °C, temporarily up to +100 °C. Lining NBR.

Type ERV-GS

ERV-GS HBNR

YELLOW STEEL HBNR expansion joint for petroleum based products up to 50 % aromatics and hydraulic oil. Very good ageing, weathering and ozone resistance. Temperature range -35 °C up to +100 °C, temporarily up to +120 °C. Lining HNBR.

Type ERV-GS HBNR

ERV-G LT

YELLOW BAND LT expansion joint designed for low temperature applications for petroleum based products. Temperature range -40 °C up to +90 °C, temporarily up to +100 °C. Lining NBR.

Type ERV-G LT

ERV-OR

ORANGE BAND expansion joint for Liquid Petroleum Gas (LPG) according to EN 589. Temperature range -20 °C up to +90 °C. Working pressure 25 bar, burst pressure > 100 bar. Lining NBR.

Type ERV-OR

ERV-GR

GREEN BAND expansion joint for acids, alkalis, chemicals and aggressive chemical waste water. Temperature range -20 °C up to +100 °C, temporarily up to +110 °C. For oil contaminated compressor air up to +90 °C. Lining CSM.

Type ERV-GR

ERV-W

WHITE BAND expansion joint for foodstuffs, also oils and fat containing food. Liner conforms to German foodstuff regulations. Temperature range -20 °C up to +90 °C, temporarily up to +100 °C. Lining NBR, light grey.

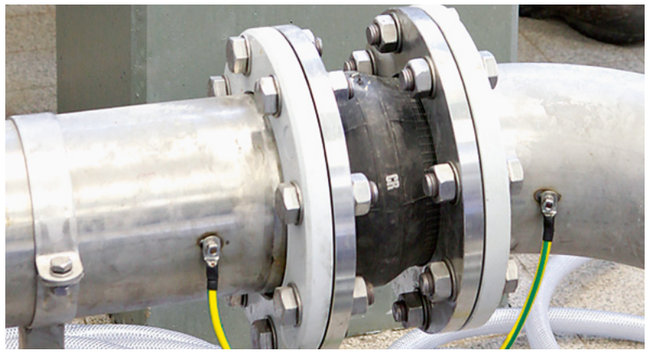
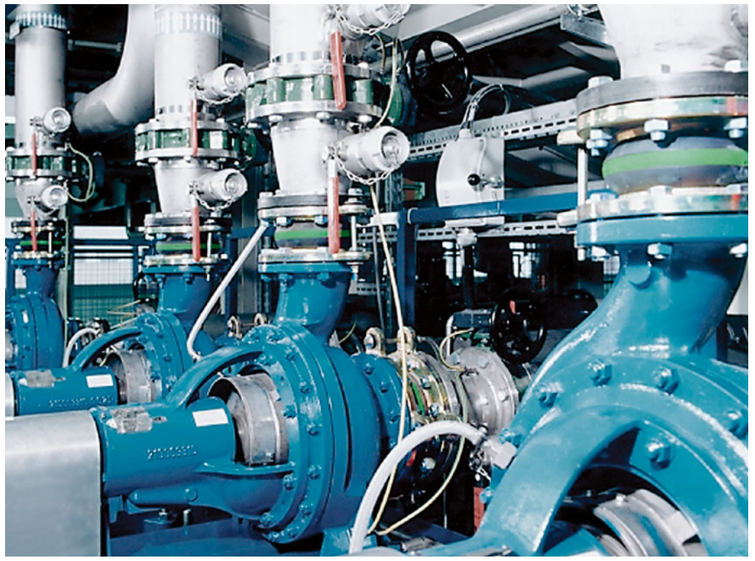
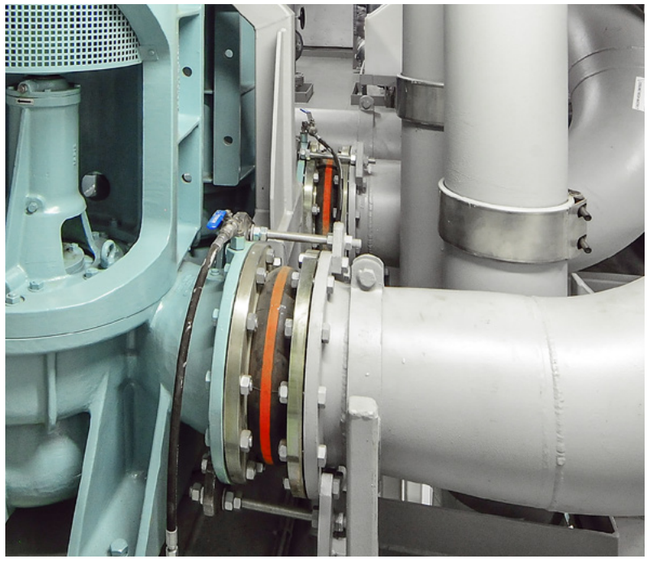
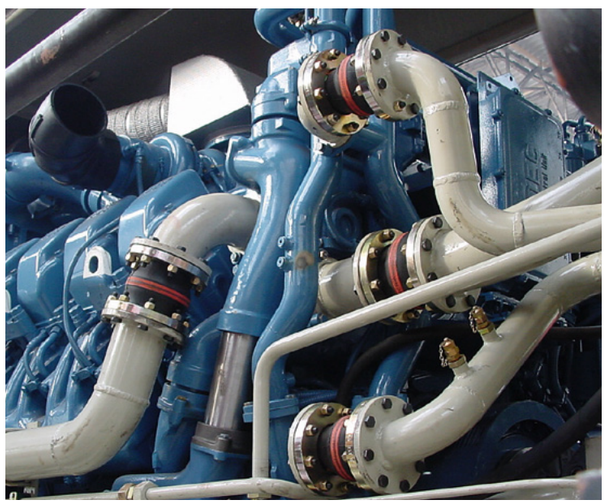
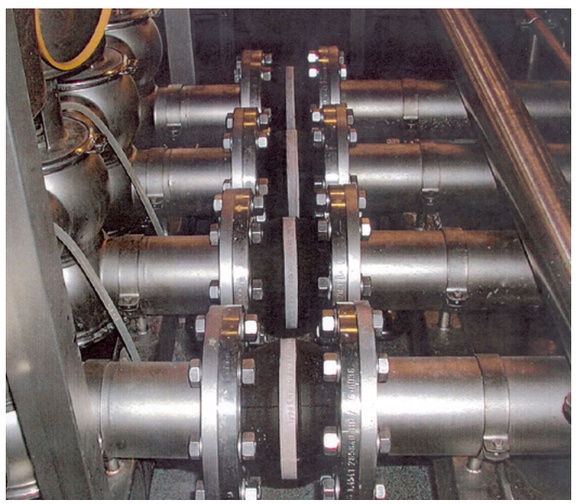
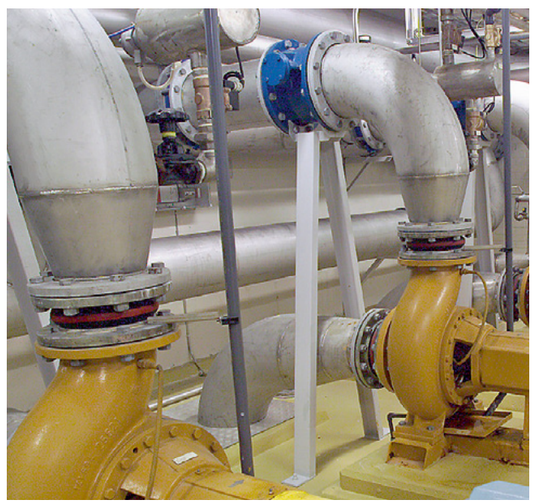
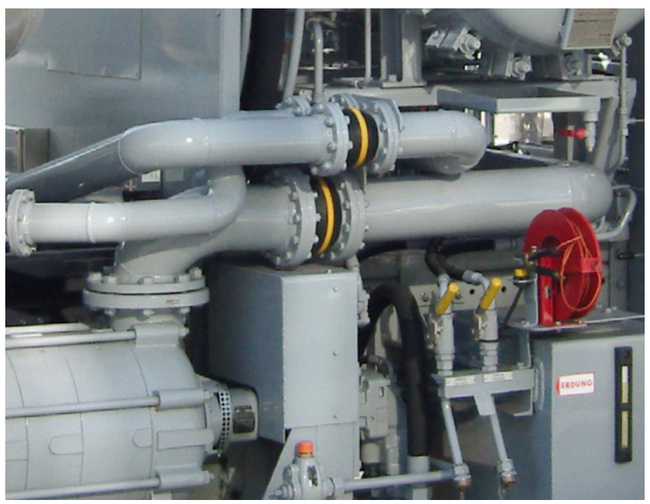
Type ERV-W

ERV-G AF

ERV-G AF rubber expansion joints for all aviation fuels to aviation hose standard EN ISO 1825 / EI 1529. Temperature range -40 °C up to +65 °C. Working pressure 20 bar. Lining Special Compound.

Type ERV-G AF

Accessories

- Tie rods with outer limitation (...ZS)
- Tie rods with inner and outer limitation (...ZSS)
- Angular limiter (...RG)
- Inner protection sleeve stainless steel (...SR)
- PTFE liner (...TA)
- PTFE liner and vacuum support ring (...TAS)
- Vacuum support spiral stainless steel (..VSD)
- Vacuum support ring stainless steel (...VSR)
- Bolted vacuum support ring stainless (...VSRV)
- Flame protection cover (...FSH)
- Flame protection cover Naval Standard (...FSH-M)
- Earth Cover (...EAH)

APPLICATIONS