

ELAFLEX



RUBBER EXPANSION JOINTS

高质量制造 橡胶膨胀节





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CO-OPERATION AT ITS BEST

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 premium quality and fast worldwide delivery service our expansion joints have become the industry standard.

This brochure shows the co-operation of CONTITECH and ELAFLEX, gives an overview of technical features and helps to choose the right product for your needs.



Our guiding principle – ContiTech. Engineering Next Level

As a driver and inspiration for new, cutting-edge technologies and an expert in materials and processes, we at ContiTech remain circumspect and considered as we take things to the Next Level – in every respect. We keep a close eye on changes and trends in society and technology so we can adapt appropriately to provide market-focused solutions for the benefit of our customers and of people around the world. As an innovation leader in natural rubber and plastic products, we are a major driving force behind the future viability of our partners – thanks to our wealth of expertise in materials and processes, which we have gathered over the decades. We are quick to offer the markets the solutions they need – always aiming for the top in quality, speed and service.

- ▣ Well-founded materials competence
- ▣ Long-standing development know-how
- ▣ Global support
- ▣ Flexible delivery service
- ▣ Top references

Expansion Joints / Rubber Bellows

The expansion joint business of ContiTech belongs to the CT Air Spring Systems company. Expansion joints and air springs are rubber bellow products with textile reinforcement. The design is similar to a bias ply tire. Expansion joints are parts of piping systems for fluid media. Air springs are pneumatic elements for the suspension of machines, cars and trucks.

Types

12 different rubber qualities

Sizes

DN 32 - DN 1000 mm, various lengths

Operating Pressure

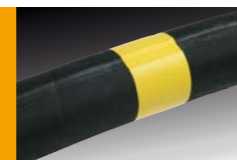
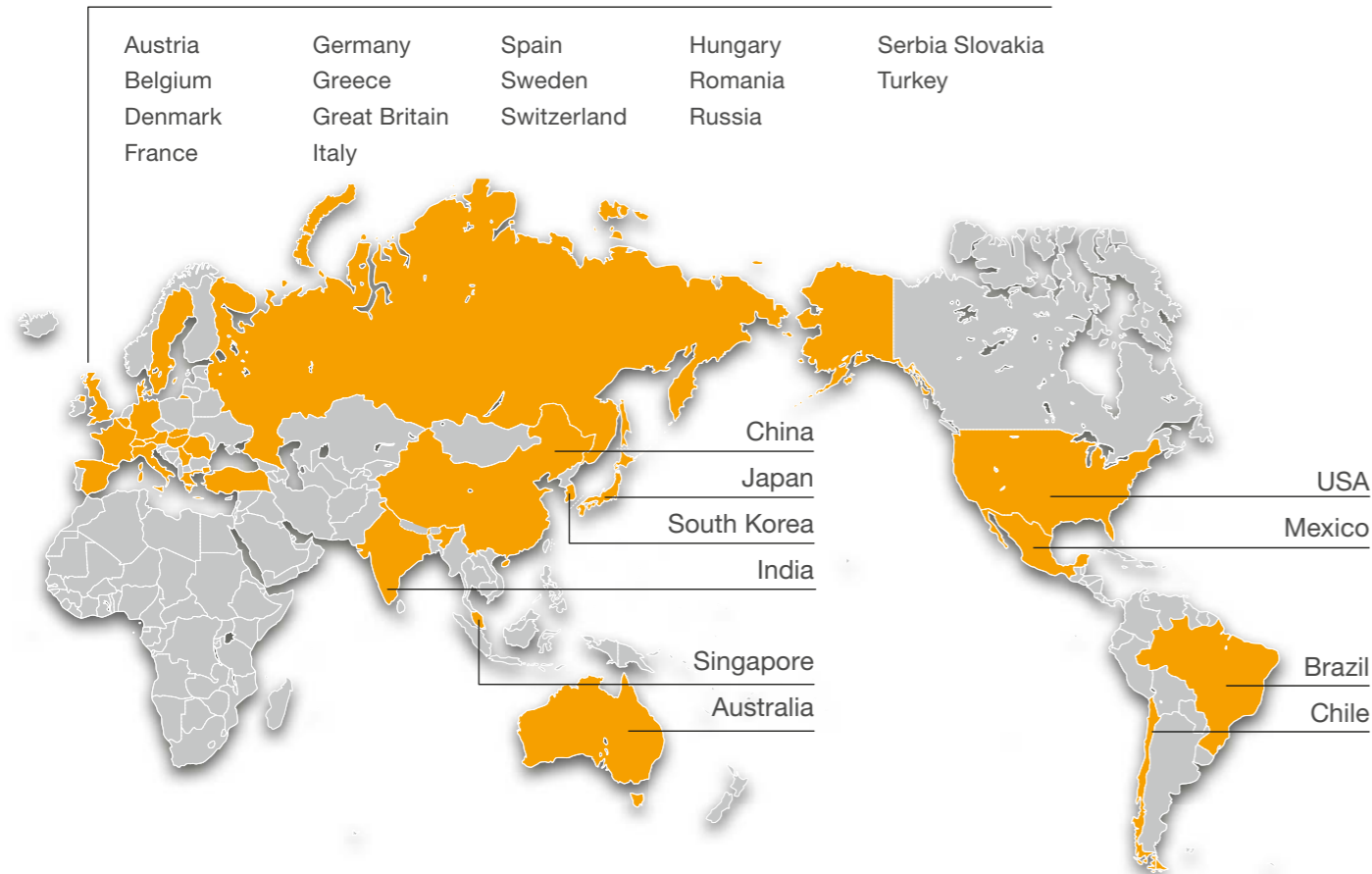
PN 10-25 bar, depending on size and type

Temperature Range

-40 °C to +130 °C, depending on rubber quality



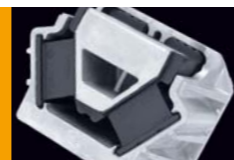
multifunctional test rig – photo showing elongation



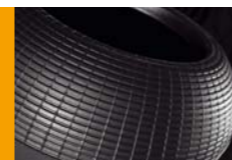
ContiTech Fluid Technology



ContiTech Power Transmission



ContiTech Vibration Control



ContiTech Air Spring Systems

ELAFLEX –

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.

Since the 1960s, ERV rubber expansion joints (co-developed with ContiTech) are an important part of our product portfolio.

Between both companies the work is divided. ContiTech takes care about the rubber bellows production side – made in Germany, while Elaflex is responsible for all other tasks.

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.



EXPERIENCE YOU CAN RELY ON

Service can be defined by facts such as professional technical advice, reliability, up-to date online product information or fair handling of claims. Service also means the ability to supply a major part of our product range ex works with short lead times. Our large 4500 m² warehouse and a 1350 m² workshop helps for an efficient delivery capability. More than 25.000 bellows, plus a large number of flanges and accessories are permanently available ex stock.

According to your 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.

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. The 'pick by voice' and barcode-assisted stock management minimizes the possibility of incorrect deliveries and speeds up the delivery process.

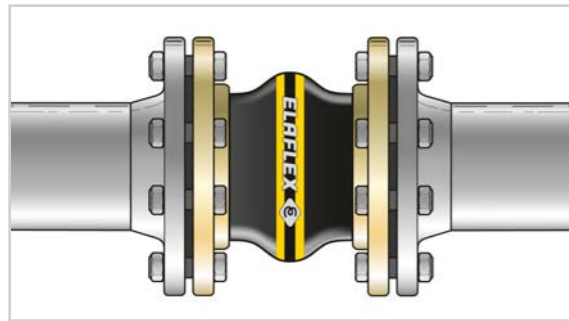


WHAT ARE RUBBER EXPANSION JOINTS?

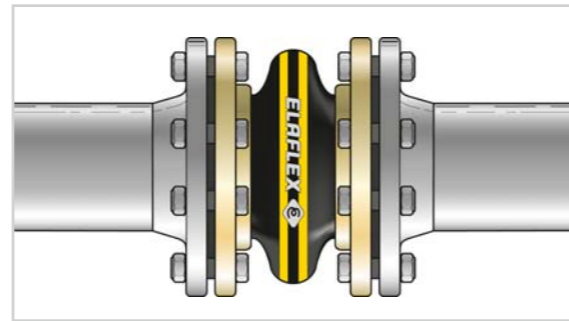
Rubber Expansion Joints are flexible connectors for the construction of pipe systems.

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

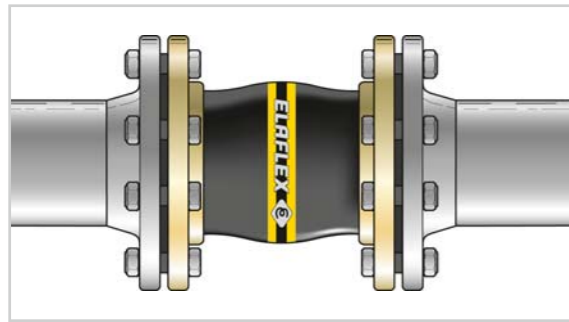
They also compensate assembly inaccuracies (misalignment during installation) and can be used as pipe insert pieces to facilitate inspections.



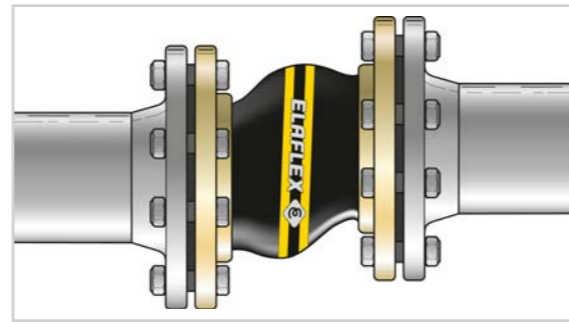
standard length



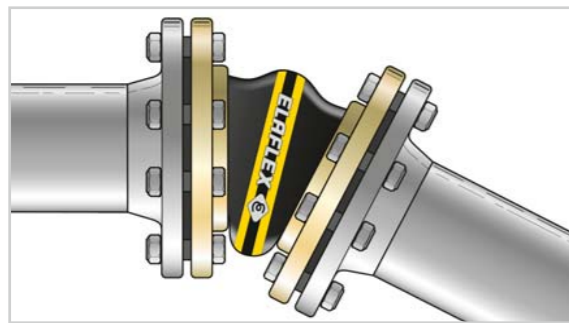
axial compression



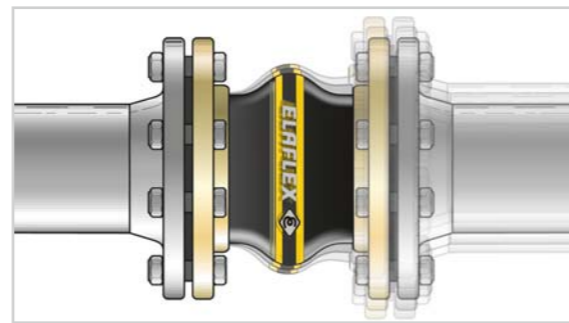
axial elongation



lateral offset



angular offset



vibration

Compared to metal expansion joints ...

- rubber expansion joints have no fatigue failure due to too high number of vibrancy cycles,
- show no stress corrosion (flexibility),
- have a better resistance against many media and outer influence,
- have a high shock strength,
- are easier to install & service in narrow spaces
- have superior vibration and noise reduction properties.

Metal expansion joints are usually used when operating temperature or working pressure exceed the limits of rubber expansion joints.



WHY YOU SHOULD CHOOSE THE BEST: ERV.

CONTI / ELAFLEX were the first to introduce the 'ERV' type in the year 1956. ERV expansion joints are moulded single sphere type rubber bellows with swiveling metal flanges.

Their construction and lengths (installation sizes) have become internationally recognised standard.



Premium products like ERV have their price. This is not a luxury surcharge – in the long run it will pay off for the user.

On the opposite page you can see a list the ERV Quality Facts, a number of arguments to favour our expansion joints compared to other brands.

Elaflex/ContiTech claim that, for the major part of applications, ERV have the lowest Total Cost of Ownership. 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 initial product price,

shipping, indirect acquisition expenses, effort for installation, maintenance, regular checks, mean time to failure, downtime after failure, replacement costs etc.

To put it simple, ERV have a higher initial product price than some competition products, but as they prove to have a superior lifetime and their use bears less risk of costly plant downtimes, 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
- Optimal dampening properties: the major part of the piping's structure-borne noise and the low-frequency noise generated by fluids is eliminated, vibration is prevented from being transmitted
- Very suitable to absorb vibrations caused by engines, turbines or compressors

Experience and Know How

- Applications since 1956
- Useful division of labour and competence: expertise by ContiTech, one of the leading international rubber product manufacturers, joined with Elaflex know-how regarding flanges, accessories, assembling, certification, testing and distribution
- Consistent production source and methods, staff and product range ensures a consistent 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 <http://ervconfigurator.elaflex.de> helps to find and visualize the required product in a few seconds
- Local support in China by ELAFLEX and ContiTech representatives

Warranty

- Minimum warranty period of 24 months
- Reliable, consistent quality results in a claim rate of less than 0.1% (of which the major part is damaged due to wrong installation and not by production failures)
- 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 bellow eases installation in problematic locations

Superior Life Time

- HiTech rubber compounds from ContiTech
- 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 24/7 testing of raw material properties – before and during production
- Rubberized reinforcements for superior adhesion of all layers
- Integrated sealing surface with wire core
- Made in Germany, Elaflex/Conti quality philosophy
- 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

- ERV fulfill a number of safety standards and are approved for various different applications – for examples please turn to page 19
- International quality reference for some applications, e.g. ERV-G for tank trucks, 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), VITEX (FPM liner), ERV-G LT (low temperature down to -40° C), and ERV-G HNBR (large application range, temperature, abrasion & fire resistant)
- Efficient due to standardised bellows lengths

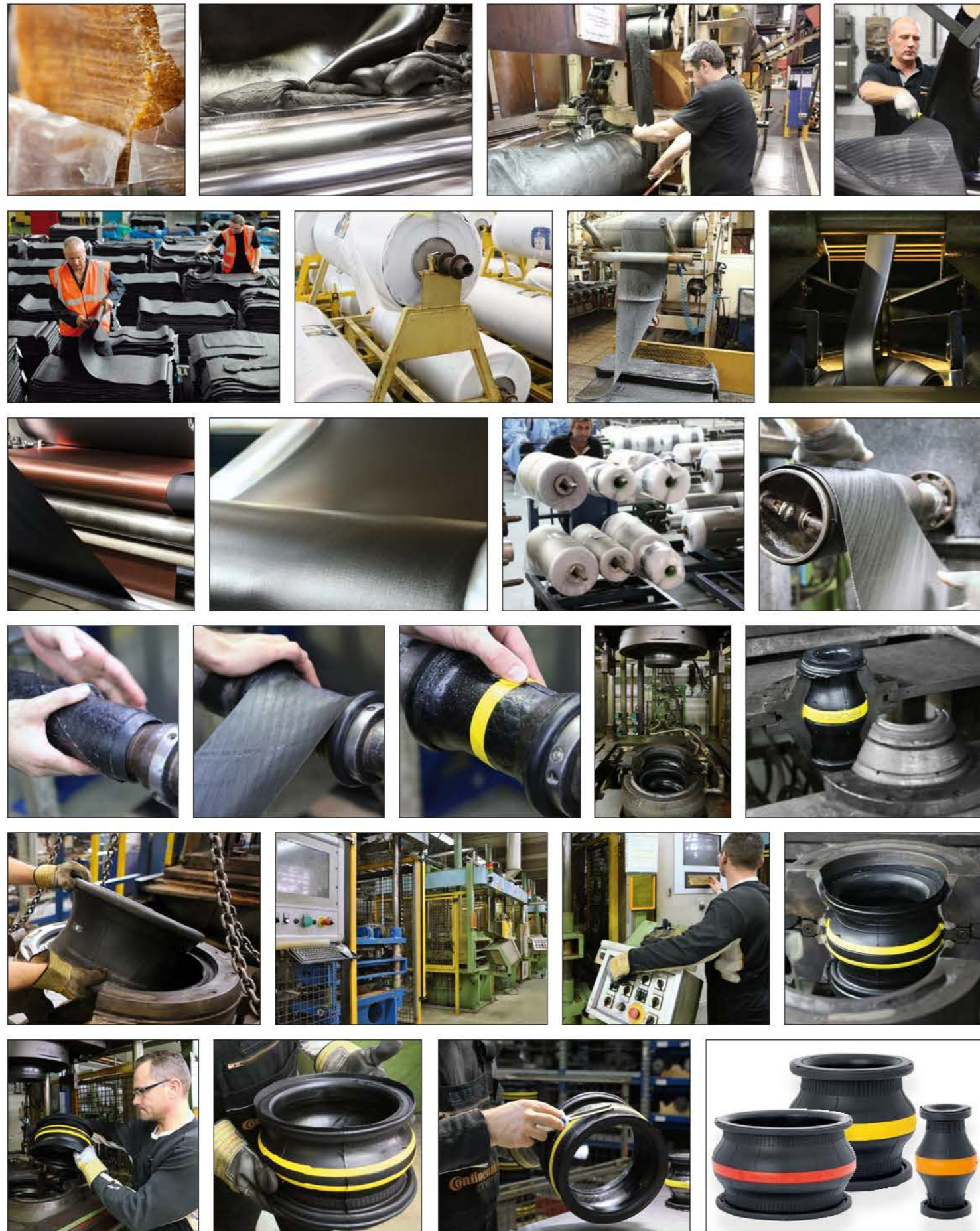
Flanges

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

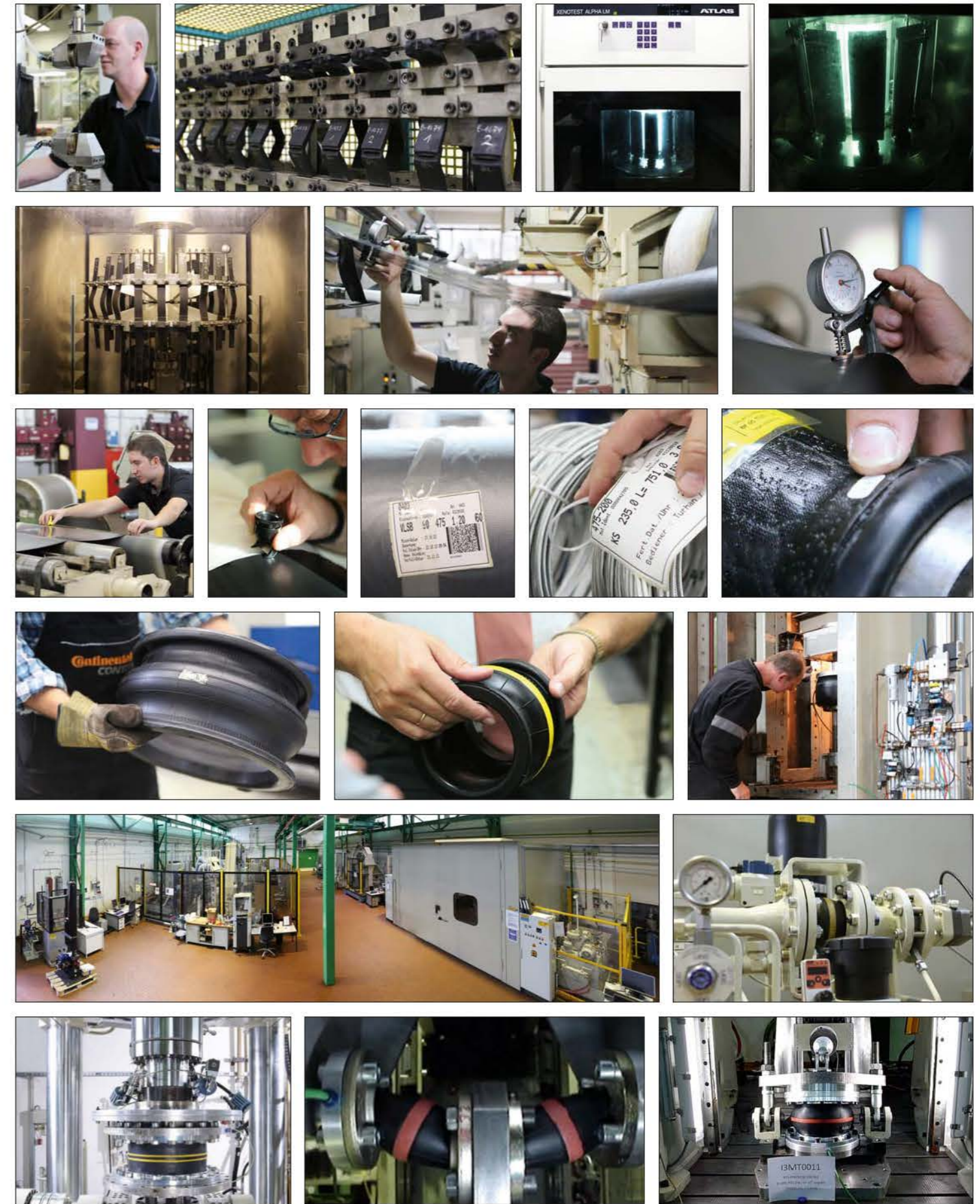
Certificates

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

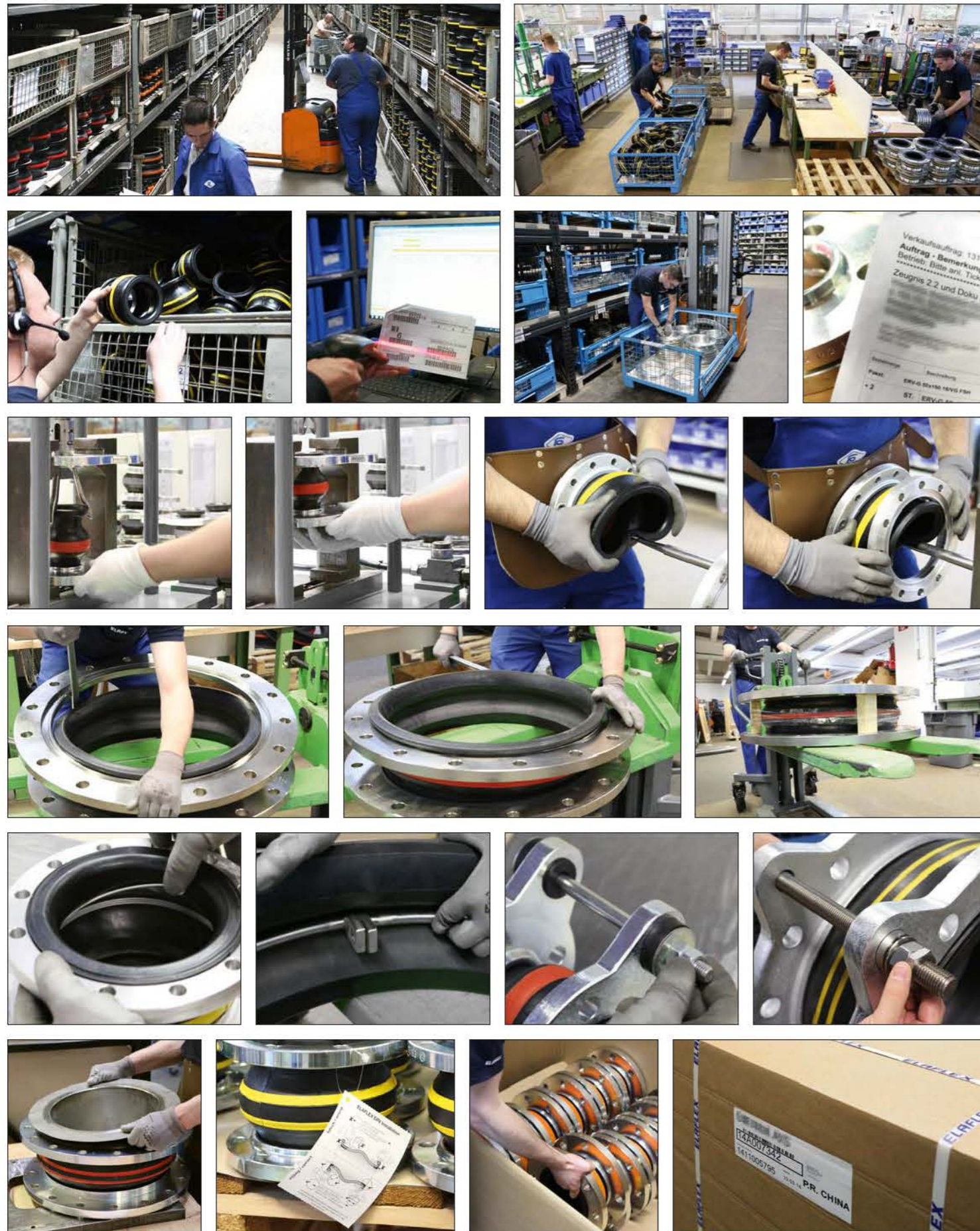
PRODUCTION CONTITECH



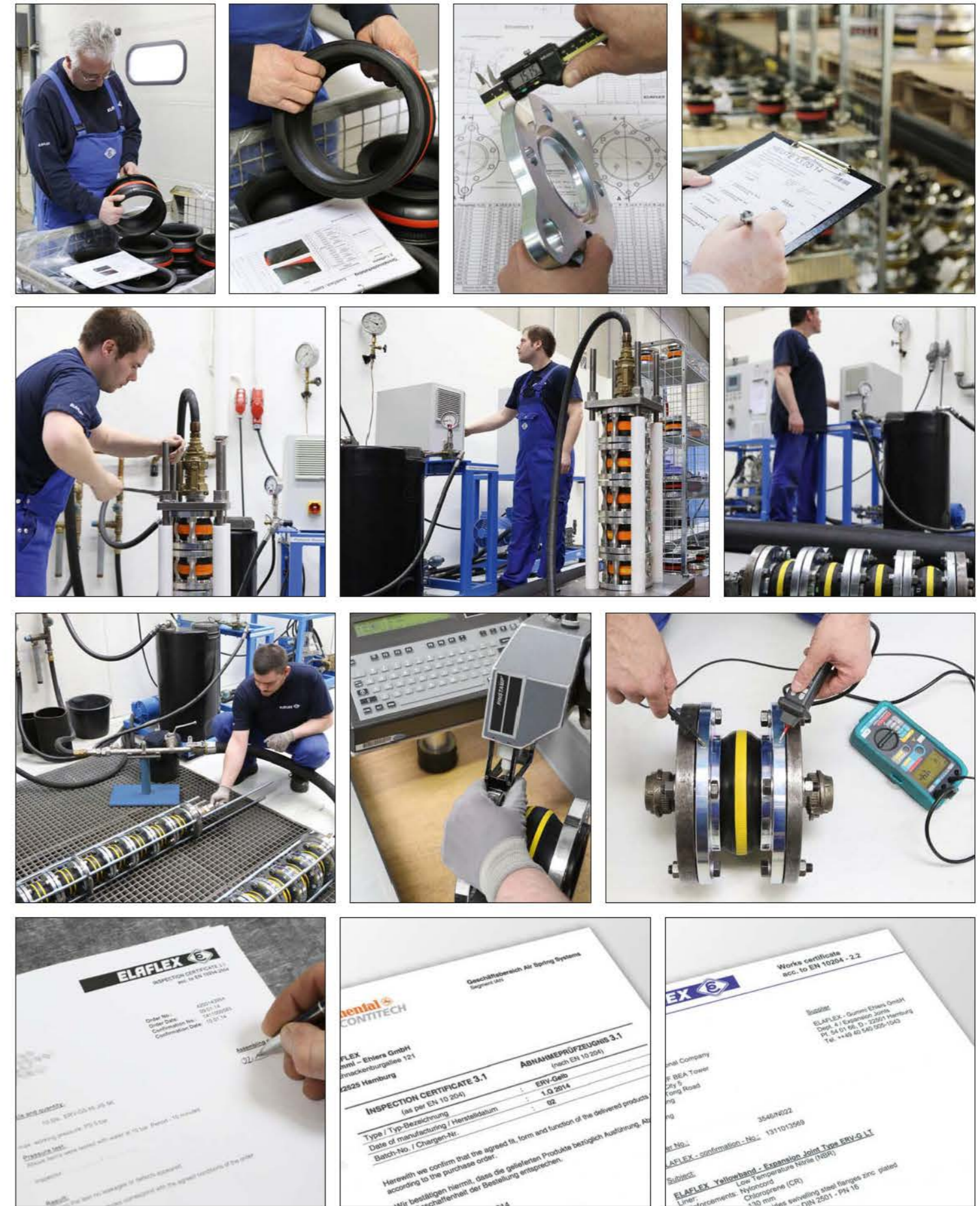
TESTING & QUALITY CONTROL CONTITECH

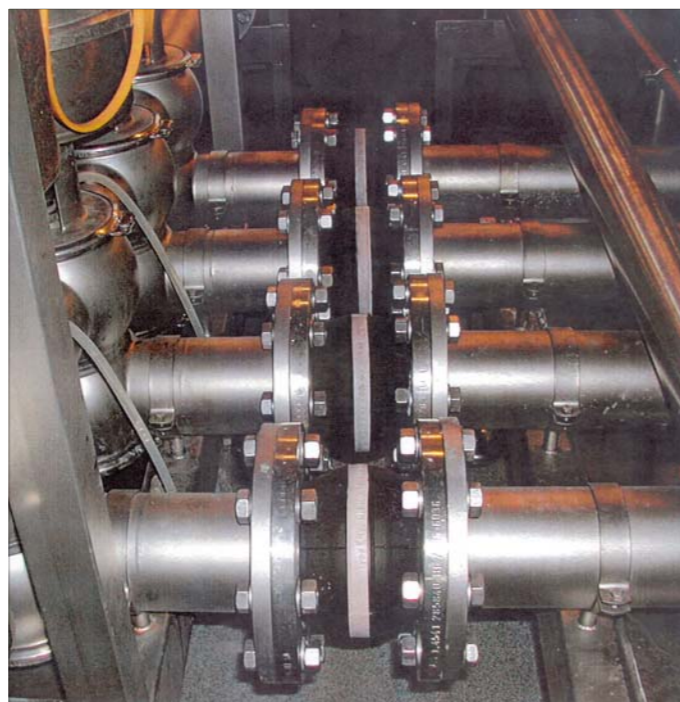
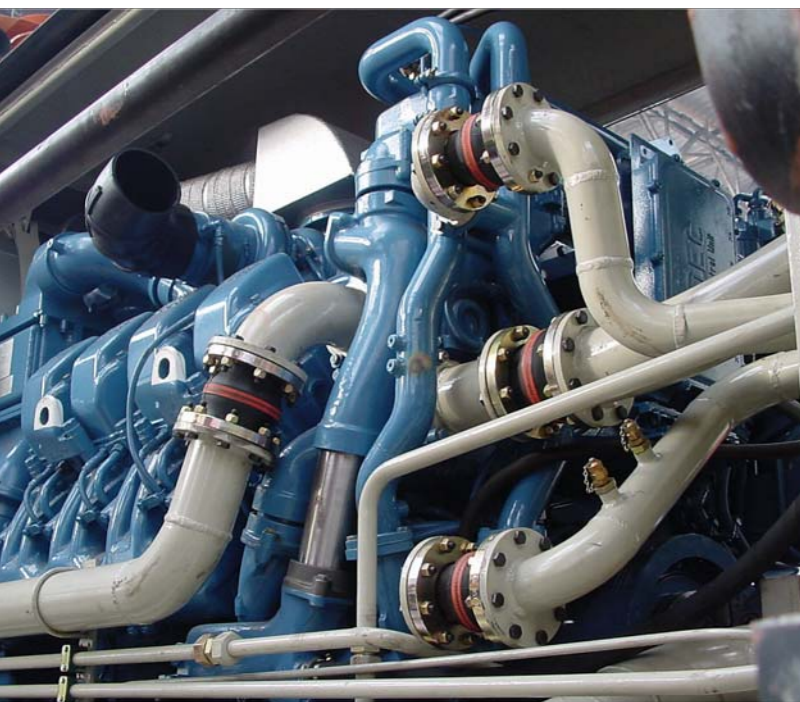
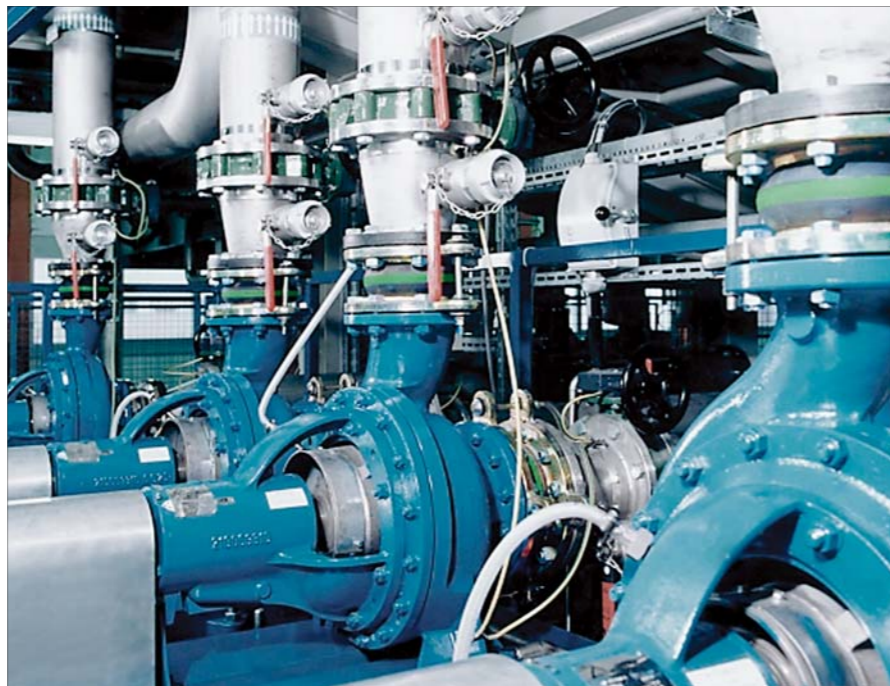


ASSEMBLING & WORKFLOW ELAFLEX



TESTING & QUALITY CONTROL ELAFLEX























REFERENCE LIST - CHINA













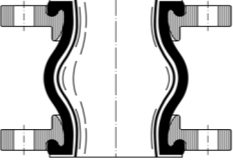
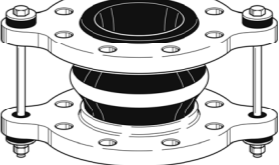
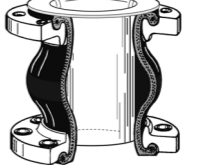
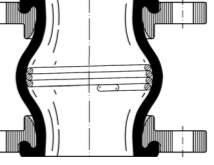
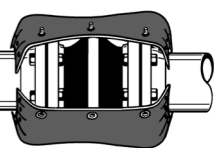
for ERV Rubber Expansion Joints

- Alfa Laval China Ltd.
- Ansteel
- BAIC Saab, Beijing
- Baoshan Iron & Steel Co. Ltd.
- Baosteel
- Baotou Steel
- Bayer Shanghai
- Beijing Hyundai Motor Co. Beijing
- BMW Brilliance Shenyang
- Chery Dalian
- China National Aviation Fuel Corp.
- Eaton Fluid Power
- FAW-VW Changchun
- GAC-FIAT Changsha
- Garlock Sealing Technologies
- Guangdong Nuclear Power Jointventure Co., Ltd.
- Halo Building Materials
- Lingao Nuclear Power Station
- Luxe Machinery
- Mansrich Ltd.
- Mawei Shipyard
- Nanjing Chenguang
- Proco International
- SGM Yantai
- Shanghai Chengfei
- Shanghai Fenghe Industrial Co.
- Shanghai GM Norsom, Shenyang
- Shanghai Pudong
- Shanghai Sungsan Mech. & Elec. Technology Co. Ltd.
- Shanxi Victory Group, Changzhi
- Shenhua Shendong Coal Group
- Suzhou Novartis Pharma Technology
- SVW Shanghai, Ningbo
- SVW Yizheng
- Weihai Guangtai Airport Equipment
- Zhenjiang CME
- Xiamen Jolac Petrochemical Equipment

OVERVIEW: OUR PRODUCT RANGE

Type	Liner	Key Feature
Water and Waste Water		
 ERV-R	Butyl (IIR)/EPDM	With drinking water approval
 ROTEX	EPDM	TÜV approved for heating systems
 ERV-CR	CR	The economical option
 ERP	Butyl (IIR)/EPDM	Extra flexible
Petroleum Based Products, Liquefied Petroleum Gas		
 ERV-G	NBR	For tank trucks, refineries and petrol stations
 ERV-GS	NBR	Fire resistant for 30 minutes at 800°C
 ERV-GS HNBR	HNBR	For extremely demanding conditions: -35°C to 120°C
 ERV-G LT	NBR	For low temperatures up to -40°C
 ERV-OR	NBR	For LPG and other gases up to 25 bar
Chemistry and Foodstuff		
 ERV-GR	CSM	For aggressive acids, lyes and chemicals
 VITEX	FPM	For media with more than 50% aromatics, Biodiesel etc.
 ERV-W	NBR light grey	Confirming to foodstuff standards
 ERV-TA	PTFE	Extensive chemical resistance, FDA conform
Flanges, Accessories and Hints		
	Flanges	DIN, ASA, SAE, BS, VG, TW, JIS
 ZS/ZSS RG	Accessories	Tie rods, axial and angular limiters
 SR TA/TAS		Inner protective sleeves, PTFE linings, PTFE vacuum support rings
 VSD/VSR VSRV		Vacuum support spirals, -support rings
 FSH		Flame protection covers

ERV high quality expansion joints DN 25 - 1000, by ELAFLEX / ContiTech. With swiveling flanges (various types and materials).

<p>ERV - R</p> <p>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.</p> <p>Type ERV - R</p> 	<p>ROTEX</p> <p>ROTEX expansion joint for permanent service with hot heating water, cooling water and hot air. W.P. 10 bar up to 100°C, 6 bar up to 110°C. Temperature range -40° up to 130° Celsius, temporarily up to 150°C. TÜV approved, DIN 4809. Lining EPDM.</p> <p>Type ROTEX</p> 	<p>ERV - CR</p> <p>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.</p> <p>Type ERV - CR</p> 		
<p>ERP</p> <p>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.</p> <p>Type ERP</p> 	<p>ERV - G</p> <p>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.</p> <p>Type ERV - G</p> 	<p>ERV - GS</p> <p>YELLOW STEEL expansion joint. Similar to type ERV-G, but fire resistant acc. to ISO 15540 (type approved). Temperature range -20°C up to 90°C, temporarily up to 100°C. Lining NBR.</p> <p>Type ERV - GS</p> 		
<p>ERV - GS HNBR</p> <p>YELLOW STEEL HNBR expansion joint for petroleum based products up to 50% aromatics and hydraulic oil. Very good ageing, weathering + ozone resistance. Temperature range -35°C up to 100°C, temporarily up to 120°C. Lining HNBR.</p> <p>Type ERV - GS HNBR</p> 	<p>ERV - G LT</p> <p>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.</p> <p>Type ERV - G LT</p> 	<p>ERV - OR</p> <p>ORANGE BAND expansion joint for Liquid Petroleum Gas (LPG) according to EN 589. Temperature range -20°C up to 90°C, temporarily up to 100°C. Lining NBR.</p> <p>Type ERV - OR</p> 		
<p>ERV - GR</p> <p>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 Hypalon.</p> <p>Type ERV - GR</p> 	<p>VITEX</p> <p>VITEX expansion joint in High-Tech design for hot oils, petroleum based products and aggressive chemicals. Temperature range -15°C up to 90°C, temporarily up to 130°C. Lining FPM.</p> <p>Type VITEX</p> 	<p>ERV - W</p> <p>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.</p> <p>Type ERV - W</p> 		
Accessories				
				
With additional PTFE liner (ERV...TA)	With tie rods as limiters (ERV...ZS)	With inner protection sleeve of stainless steel, e.g. for granulates (ERV...SR)	With vacuum support spiral (ERV...VSD) or ring (ERV...VSR)	Flame protection cover (FSH)

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 solid particles expected

2. Operation conditions

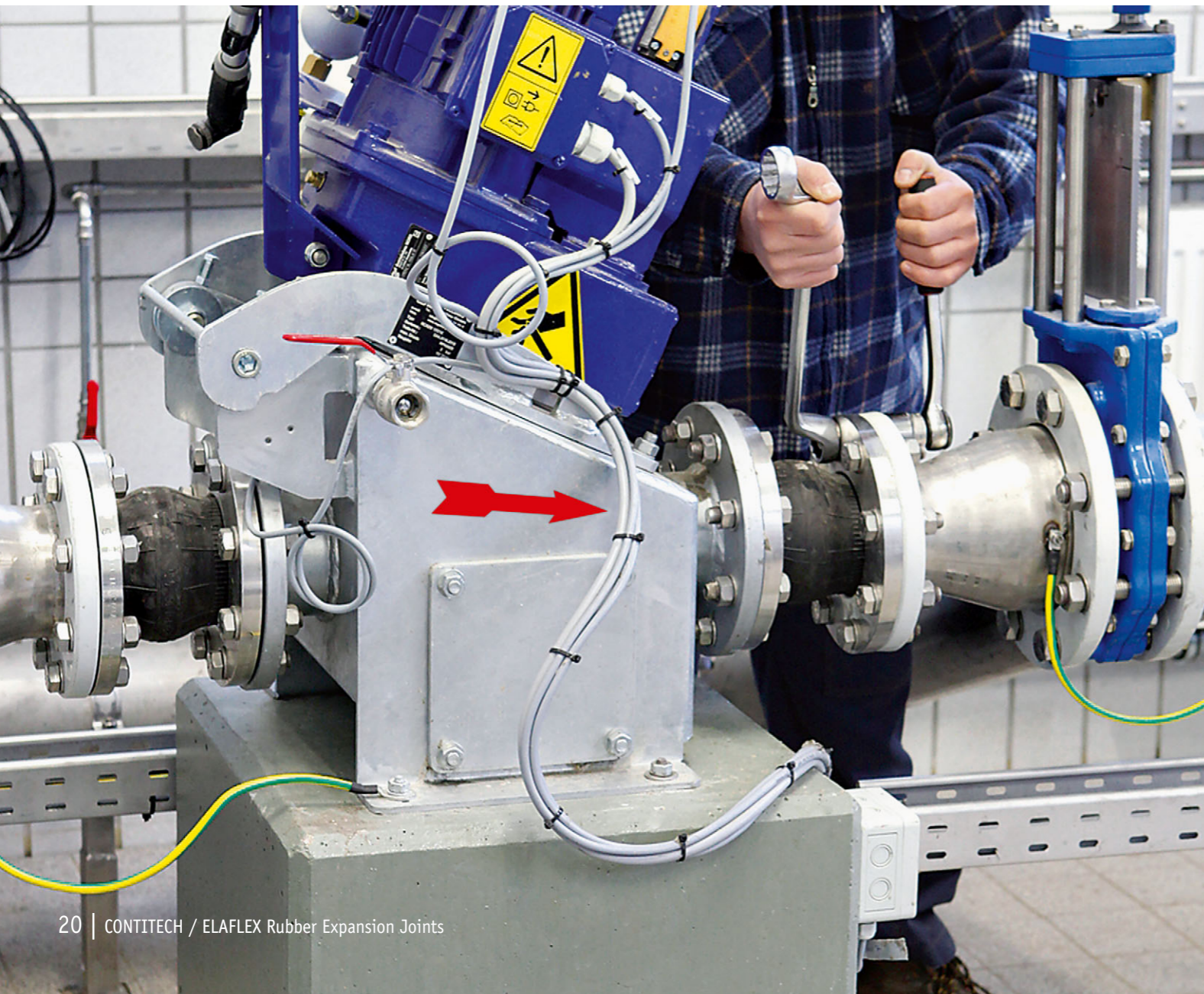
- Minimum / maximum temperature
- Max. pressure / peaks / load changes
- Vacuum possible
- Axial range of movement (elongation/compression)
- Angular load
- Lateral offset

3. Installation Site













- Indoor or outdoor installation
- Exposure to sunlight (UV)
- Salt-containing atmosphere

4. Testing and Certification

- Material certificates or testing required



CERTIFICATES

		ERV-GS	ERV-GS HBNR	ERV-G	ERV-R	ROTEX	ERV-CR	Other
Germanischer Lloyd		✓	✓	✓	✓	✓	✓	✓ all
Lloyd's Register		✓	✓	✓	✓	✓		
Bureau Veritas		✓	✓	✓	✓		✓	
Det Norske Veritas		✓	✓	✓	✓	✓		
American Bureau of Shipping		✓	✓					
Nippon Kaiji Kyokai		✓						
China Classification Society		✓		✓	✓		✓	
Technischer Überwachungsverein						✓		DIN 4809
Bundesamt für Wehrtechnik und Beschaffung				✓	✓			
Deutscher Verein des Gas- und Wasserfachs				✓	✓			Gas Drinking water
Attestation de Conformité Sanitaire					✓			Drinking water
Water Regulations Advisory Scheme					✓			(ERP)
Dienststelle Schiffssicherheit BG Verkehr (ex: See-Berufsgenossenschaft)		✓	✓					Marine Equipment Directive

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

ERV CONFIGURATOR

Fast and efficient: The online ERV Configurator <http://ervconfigurator.elaflex.de> helps to combine bellows, flange and accessories in all sizes, for a direct enquiry.

3. flange standard + material

4. other flange side

5. special flange form

6. accessories

1. choose bellows type

2. size DN + length

7. direct enquiry if required

8. save as PDF if required



Continental 
CONTITECH




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