

# New: Rubber compensator type MS-1

## Setting new standards in function and design!

### Applications:

- for compensating large axial, lateral and angular movement by a highly flexible twin-convoluted universal expansion joint
- for reducing thermal and mechanical tension in pipes and their system components
- to comply with fire safety regulations
- to compensate for installation inaccuracies
- in industrial and plant engineering as well as the maritime industry

innovative bellow design with ring reinforcement, developed for maximum load

extremely flexible rubber bellows made of EPDM (e.g. acid- and hot water resistant) or NBR (e.g. oil resistant)

bellows pressure rating PN 16  
Burst pressure  $\geq 50$  bar

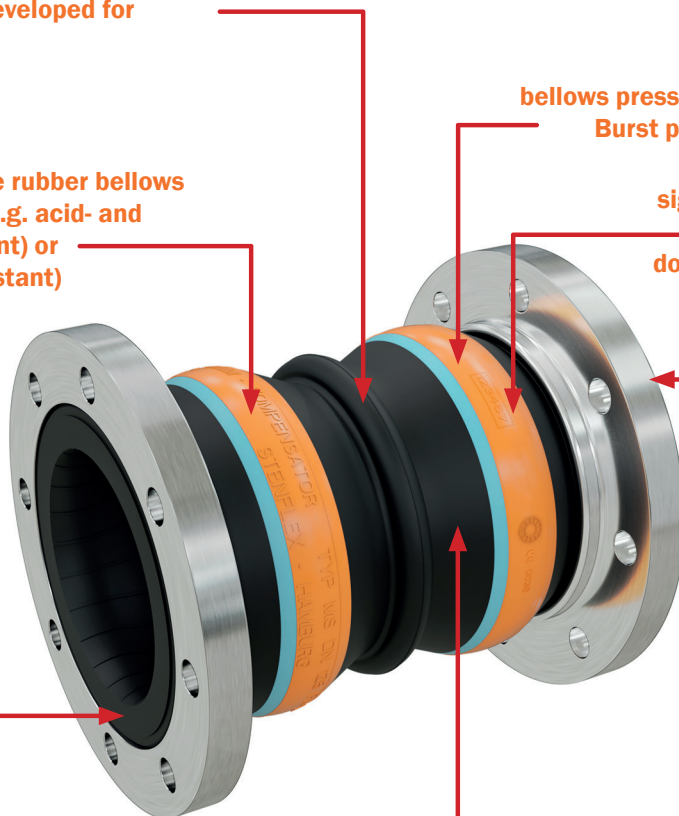
significantly reduced weight  
(up to 50 % compared to double expansion joints with intermediate flange)

variety of connection options and flange materials (1.0038, 1.4541, 1.4571 etc.)

easy installation due to rotatable flanges

Stenflex  
„sealing technology“

up to + 110°C  
loadable and flame resistant



### Contact

#### Sales team

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# ASSEMBLY:

## Rubber expansion joint type MS-1



The expansion joints are available in different rubber qualities to ensure the optimum solution for every application. The rubber quality can be recognised by the different colour markings. The additional embossing on the bellows serves to identify the nominal size and the product designation.



For different pressure and temperature requirements, different reinforcing materials are used in the intermediate layer of the rubber bellows. The rubber collar is self-sealing and additionally reinforced with wire cable cores for stability (protruding wire in the illustration).

## Type MS-1

# DOUBLE SHAFT UNIVERSAL COMPENSATOR

Large movements and pressures can be present in piping systems due to a wide variety of influences. Temperature differences of the medium or the environment can cause considerable changes in the length of the pipes. Especially on ships, large movements can occur in pipelines and their suspension points due to ship movements or ship deformation.

**In order to reduce the forces on the pipelines and pipe bearings resulting from large movements, customers from the plant engineering, engine or apparatus construction sectors often resort to a conservative solution consisting of two rubber expansion joints with an intermediate piece.**

**Although this solution is also adequate, STENFLEX offers significant advantages with the use of a modern double bellows expansion joint. These range from a significant reduction in weight of up to 50% and the associated improvement in vibration behavior, to a reduction in the force acting on the plain bearings and fixed points. In addition, the solution requires less maintenance, since the visual and rubber hardness tests are limited to a few components.**

STENFLEX offers various rubber qualities, so that many areas of application are covered, from coolant and lubricating oil circuits to applications in waste disposal and air conditioning technology.

Modernizations of global plants are no problem either, as STENFLEX carries many international flange standards such as ASME, BS, DIN, JIS, and customer-specific flange bores are also possible on request.

A trouble-free operation increases the efficiency and thus also the profitability of a plant. Therefore STENFLEX developed a special self-sealing rubber collar, which works reliably even under highest loads due to a wire reinforcement. A special wire fiber, which sits between the individual rubber layers, increases the maximum permissible pressure load and also ensures that the expansion joint will function for a short time in the event of external flaming of 800 °C (fire resistant according to ISO 15540).

These safety factors are continuously monitored and improved in order to constantly increase the benefits for the customers. We know how important approvals from various monitoring bodies are in many areas of application, this is why STENFLEX is continuously investing in the acquisition of such certificates.

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# RUBBER EXPANSION JOINT TYPE MS-1

**FLAME-PROOF**

## TWIN-CONVOLUTED UNIVERSAL EXPANSION JOINT DN 65 – DN 250



### STRUCTURE TYPE MS-1 / RUBBER BELLOWS PN 16

- Universal expansion joint (double shafted), consisting of a rubber bellows and rotatable flanges
- Highly elastic molded bellows in various rubber grades
- Steel wire cord reinforcement
- Wire-reinforced self-sealing rubber rim

<b>Rubber grade*</b>	EPDM	NBR
<b>Colour code</b>	orange/blue	red/blue
<b>Possible uses</b>	Hot water, acids, lyes	hydrocarbon containing liquids

\*Check or inquire about the resistance of the rubber grade to temperature and medium.

Technical design	
Max. perm. operating pressure	16 bar*
Max. perm. temperature	+130 °C
Bursting pressure	≥ 50 bar
Vacuum operation	with vacuum supporting ring (at permanent vacuum)

Max. operating pressure to be set 30 % lower for shock loads.

\*Please consider a decrease of pressure due to temperature (see technical annex).

### FLANGES / VERSIONS

- Rotatable flanges with stabilizing collar
- Flange drilling for through bolts
- Special machined groove for rubber rim annex

	Standard	Others
<b>Dimensions</b>	EN 1092	ANSI, BS etc. Connection dimensions see technical annex page 213 – 215
<b>Materials</b>	1.0038 (S235JR)	1.4541, 1.4571 etc.
<b>Corrosion protection</b>	electrogalvanized	hot-dip galvanized, special varnish, special coating, etc.

### NOTE

Please comply with the general technical instructions regarding reaction force, moving force, fixed point load, installation instructions etc.

Subject to technical alterations and deviations resulting from the manufacturing process.

Chemicals used for water treatment (particularly in heating systems and coolant systems) can corrode the materials of the rubber expansion joint. According to VDI Directive 2035, DIN 4809 part 1 and VGB R 455P, the manufacturer of the chemicals must state that the materials used in the expansion joint, especially for the rubber bellows, will not be damaged by the chemicals.

### APPLICATIONS

- for compensating large axial, lateral and angular movement
- for reducing thermal and mechanical tension in pipes and their system components, e.g.
  - pumps
  - compressors
  - engines
- for muffling vibration and noise
  - at appliances
  - in cooling water and lub oil
  - pipes
- to compensate for installation inaccuracies
- to meet fire protection regulations
- shipbuilding industry
- in heating plants

### CERTIFICATES

- CE (PED 2014/68/EU)
- DNV GL® / DNV®

## DIMENSIONS STANDARD PROGRAM

DN	BL	Pressure rate	Ø dj Bellows inner Ø mm	Ø C Raised face outer Ø mm	Ø E Raised face inner Ø mm	Ø W* Con- volution Ø mm	PN Flange connection EN 1902	Ø D Flange outer Ø mm	b Flange thickness mm
65	220	16	63+5/63-1	115	72 ± 1	113	16	185	18
80	250	16	75+5/75-1	127	84 ± 1	135	16	200	20
100	275	16	98+5/98-1	151	109 ± 1	160	16	220	20
125	275	16	125+5/125-1	178	133 ± 1	184	16	250	22
150	275	16	151+5/151-1	206	161 ± 1	212	16	285	22
200	275	10	200+5/200-1	260	209 ± 1	265	10	340	25
250	275	10	250+5/250-1	313	262 ± 1	218	10	395	25

\*unpressurized

Please contact us for further flange dimensions.

## MOVEMENT COMPENSATION

DN	BL	Δ ax Axial movement		Δ lat Lateral movement ± mm	Δ ang* Angular movement ± <math>\sphericalangle</math> degrees	A** Effective bellows cross sectional area at 16 bar cm <sup>2</sup>	Permissible vacuum w/o supporting ring at length BL bar absolute	Weight approx. kg
		Compression - mm	Elongation + mm					
65	220	60	20	30	30	14	0,0	6,05
80	250	80	20	30	30	12	0,0	7,90
100	275	80	20	30	30	16	0,4	9,17
125	275	80	20	30	30	15	0,5	11,80
150	275	80	20	30	24	29	0,4	14,40
200	275	90	30	30	16	152	0,7	20,40
250	275	90	30	15	10	328	1,0	28,00

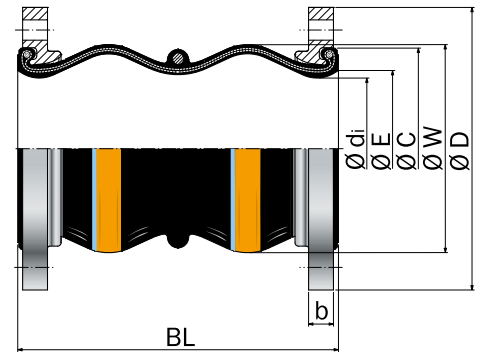
\* Larger Δ ang possible for compressed installation length.

\*\*Effective bellows cross sectional area is a theoretical value.

Please inquire for simultaneous (different) movement.

### ACCESSORIES

- Vacuum supporting ring
- Internal guide sleeve



### Type MS-1

Universal expansion joint without restraint