FABRIC COMPENSATORS

RAL Fabric Compensators mark of quality

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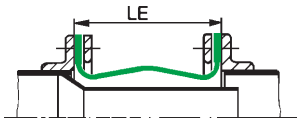
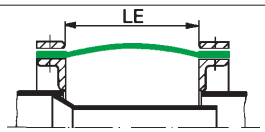
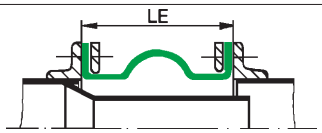
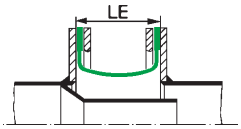
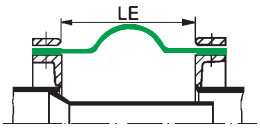
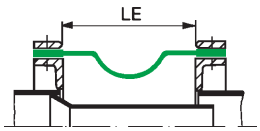
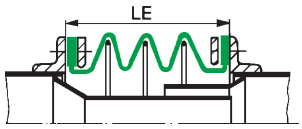
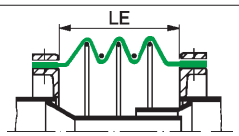
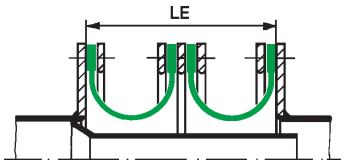
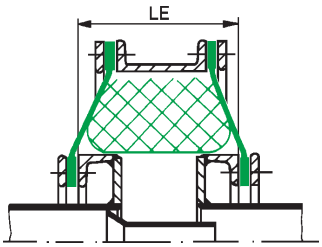
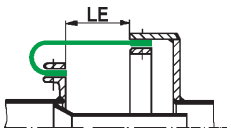
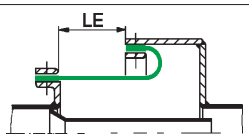
TÜV CERT EN ISO 9001

Fabric Compensators

Illustration	Type	Description	Movement-absorption[1)]	Comments
	**110**	Flanged Compensator	ΔI Axial (0,1 to 0,3) LE ΔI Offset (0,05 to 0,2) LE	Flanged and sleeve Compensators are the best value standard units for the majority of applications in circular and rectangular ducting. Type 110: LE = 150 to 400 mm Type 120: LE = 100 to 400 mm
	**120**	Sleeve Compensator		
	**211**	Flanged Compensator for positive pressure	ΔI Axial (0,2 to 0,5) LE ΔI Offset (0,1 to 0,2) LE	Particularly suitable for ducting with square or rectangular cross-section as a special corner construction is possible Type 211: LE = 200 to 400 mm Type 212: LE = 150 to 400 mm
	**212**	Flanged Compensator for negative pressure	ΔI Axial (0,2 to 0,5) LE ΔI Offset (0,15 to 0,2) LE	
	**221**	Sleeve Compensator for positive pressure	ΔI Axial (0,2 to 0,5) LE ΔI Offset (0,1 to 0,2) LE	With rectangular Compensators, the corners should be shaped by the height of the angular profile. LE = 150 to 400 mm
	**222**	Sleeve Compensator for negative pressure		
	**310**	Deep convolution Compensator with flange connection	ΔI Axial (0,4 to 0,7) LE ΔI Offset (0,1 to 0,2) LE	Deep convolution Compensators are particularly suitable for circular duct cross-section in the smaller sizes (up to about 2,000 mm diameter). With larger diameters only low pressures possible. LE = 200 to 800 mm
	**320**	Deep Convolution Compensator with sleeve ends		
	**412**	Multiple Compen-sator with interme-diate flanges and scissor support	ΔI Axial (0,4 to 0,7) LE ΔI Offset (0,1 to 0,3) LE	Multiple convolution Compensators can be applied to large rectangular or circular duct cross-sections and-are particularly suitable for largei axial movement. The intermediate flanges can be supported by scissor-type guides or special suspension systems. LE = 200 to 450 mm per convulation
	**510**	Membrane-type Compensator	ΔI Axial (0,4 to 0,7) LE ΔI Offset (0,1 to 0,2) LE	Membrane type Compensators are particularly suitable for large diam-eters, large axial movements and high temperatures. Compensators of this type require supporting or suspension systems. LE-dimension by agreement
	**621**	Rolling sleeve Compensator for positive pressure	ΔI Axial (0,6 to 0,8) LE ΔI Offset (0,1 to 0,2) LE	Rolling sleeve type Compensators have proved particularly useful in conjunction with steel chimney liners, as they can absorb very large axial and offset movements. LE-dimension by agreement
	**622**	Rolling sleeve Compensator for negative pressure		

1) The given values of the movement-absorption depend on the temperature. For more information contact our technical department.

Materials

Temperature and resistance to contents

The table shows the resistance of the Fabric Compensator foils, bonded coatings on various support materials, weaves and mats against long-term and short-term peak temperatures. Also their resistance against acids, alkalis and solvents.

Please note that within the limits of this booklet, only general indications of chemical resistance can be given.

Application conditions / Foils		Long-term temperature resistance °C	Long-term temperature resistance °F	Short-time peak temperature resistance °C	Short-time peak temperature resistance °F	Acid resistance	Alkali resistance	Solvent resistance
PTFE (Teflon)®		**260**	500	**280**	536	+	+	+
Aluminium		**500**	932	**550**	1,022	-	-	+
Stainless steel		**600**	1,112	**850**	1,562	+	+	+
Bonded coating / Carrier Woven material								
PVC	**Polyester**	**60**	140	**65**	149	+	+	0
Neoprene®	**Polyester**	**90**	194	**100**	212	0	0	-
Hypalon®	**Polyester**	**90**	194	**100**	212	+	+	-
Butyl/EPDM	**Woven Glass Fibre***	**100**	212	**120**	248	+	+	0
Silicon	**Polyester**	**150**	302	**160**	320	-	-	0
Viton®	**Polyester**	**150**	302	**160**	320	+	-	0
Silicon	**Woven Glass Fibre**	**220**	428	**230**	446	-	-	0
Viton®	**Nomex**	**205**	401	**250**	482	+	-	0
Viton®	**Woven Glass Fibre***	**205**	401	**250**	482	+	-	0
PTFE[1)]	**Woven Glass Fibre***	**260**	500	**290**	554	+	+	+
single-ply composite material								
EPDM	**1.4539[3)]* with wire mesh**	**100**	212	**130**	266	+	+	0
Butyl	**1.4539[3)]* with wire mesh**	**100**	212	**120**	248	+	+	-
Viton®	**1.4539[3)]* with wire mesh**	**180**	401	**>250[2)]**	>482[2)]	+	-	0
Weaves and Mats								
Kevlar®		**180**	356	**250**	482	+	+	+
Glass fibre weave		**400**	752	**450**	842	0	-	+
Glass fibre mats		**500**	932	**650**	1,202	0	-	+
Rock wool mat		**700**	1,292	**750**	1,382	0	0	+
Ceramic weave		**1,200**	2,192	**1,300**	2,372	0	0	+
Ceramic fibre mat		**1,000**	1,832	**1,250**	2,282	0	0	0
Silicate fibre mat		**1,200**	2,192	**1,350**	2,462	0	-	+
Silicate weave		**1,200**	2,192	**1,350**	2,462	0	-	+

[1)]sintered ® registered trade mark Messrs. DuPont (+) =yes (0) = limited resistance (-) = no * for FGD, FGS, incinerating plants
[2)]short-time peak temperatue; please consult our engineers regarding insulation [3)] alternatively also possible with glass weave

Fabric Compensator Questionnaire

Company: _____ Date: _____

Address: _____ Contact in case of query:

P.O.Box: _____ Telephone: _____ Telefax: _____ Order/Enquiry reference number:

To help us make an effective quotation, and to prevent the need for further questions from our side, please be good enough to let us have the following information:

1.0 Contents and operating conditions

1.1 Contents (analysis)

1.2 Temperature of contents in _____ °C, Ambient temperature _____ °C

1.3 Working pressure PB Positive pressure _____ mbar

Pressure pulsations ❑ yes ❑ no Negative pressure _____ mbar

1.4 Will dust be present? ❑ yes ❑ no

1.5 Will moisture be present? ❑ yes ❑ no

If yes, what kind (dropping below dew point, flushing) _____

1.6 Movement required from compensator: axial compression $-\Delta X$ _____ mm

axial extension $+\Delta X$ _____ mm

offset movement ΔY _____ mm

1.7 Number of movements occuring/frequency _____ Vibration ❑ yes ❑ no

1.8 Installation: outdoors ❑ indoors ❑

1.9 Installation: hoizontal ducting ❑ vertical ducting ❑ flow ❑ ❑

1.10 Have you allowed for an internal sleeve? ❑ yes ❑ no

2.0 Fabric Compensator: Type: _____

3.0 Dimensions

3.1 Internal diameter: Ø _____ mm, ▭ _____ x _____ mm

External diameter: Ø _____ mm, ▭ _____ x _____ mm

3.2 Distance between flanges (installation length LE) _____ mm

3.3 Distance between pipe ends or duct ends _____ mm

3.4 A detailed drawing showing end connections is essential

4.0 Type of connection

4.1 Tension straps: Number _____ , Width _____ , Material _____

4.2 Flange to standard: _____ , ND _____ , Material _____

P.C.D.: Ø _____ mm, Number of holes: _____ , Ø _____ mm

5.0 Should you wish to let us have additional sketches of illustrations, please use reverse side of this sheet.

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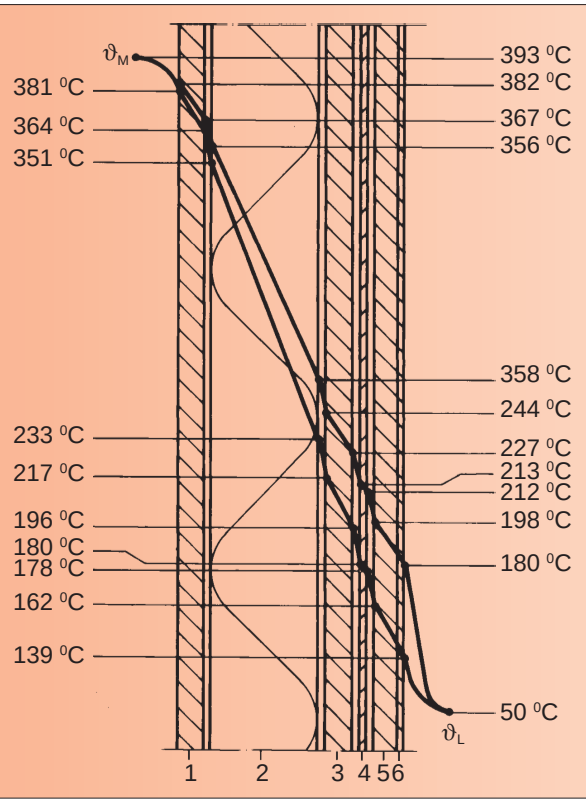
Fabric Compensators

Temperature calculations

Temperature curves

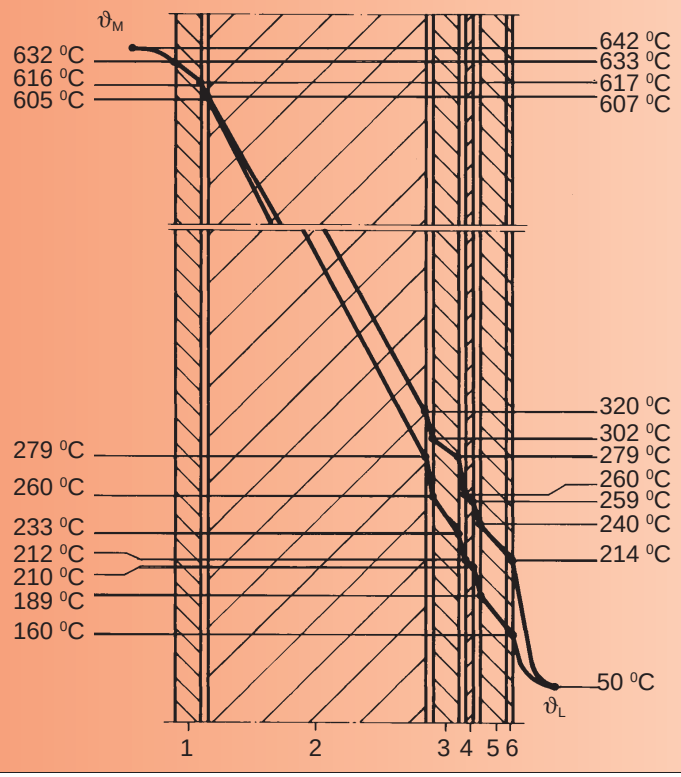
Example of Design



Temperature curve of a fabric Compensator with external silicon-impregnated layer.

1 Glass weave
2 Glass fibre mat
3 Glass weave
4 PTFE foil
5 Glass weave
6 External silicon layer

The upper/lower curve shows the temperature for restricted/free convection and radiation.



Temperature curve of a fabric Compensator with external PTFE layer.

1 Silicatex
2 Kerlane
3 Glass weave
4 PTFE foil
5 Glass weave
6 Outside PTFE layer

The upper/lower curve shows the temperature for restricted/free convection and radiation.

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