

Fiberseal Evolution-Sm Fiberseal Evolution-Sa Fiberseal-H Fiberseal-S

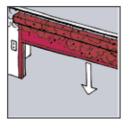






Innovation for your Protection!

## Protection concepts



### 1. For openings in walls

How can large openings in walls be sealed according to smoke protection requirements, although there is only less space available or architectural requirements need to be considered?

Smoke protection closure Fiberseal Evolution-Sm, Fiberseal Evolution-Sa

These automatic systems are very small and can be architecturally well integrated. If additional requirements concerning the fire resistance exist, the protection targets up to E120, EW90 as well as up to El120 in connection with a water impact can be achieved by modifying the fabric.

### 2. For openings in ceilings

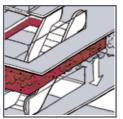
How can large openings in ceilings which create fire compartments be smoke-tightly sealed according to protection targets when there is only limited space available or architectural have to be achieved?

Smoke protection closure Fiberseal-H



Due to its construction only little space is necessary for the installation of these automatic systems and they can also be perfectly adapted to the architecture. Depending on the fire classification, the classes Sa and Sm according to DIN EN 13501-2 can be used. If required a fire protection target of E90 can be reached by modifying the fabric

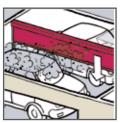
### 3. For compartmentation: a smoke protection closure that goes around the corner!



How can you create compartments with smoke protection closures which go around the corner and do not affect the architecture by using side guides which are necessary in the corners? Is it possible that the corners of an enclosed polygon can be other than rectangular?

Smoke protection closure Fiberseal-S

The smoke protection closure Fiberseal-S offers a polygonal smoke compartmentation without the disturbing side guides to reach the desired tightness. The flat casing of the systems can be well integrated in the ceiling. The system can run polygonal whereupon the angles can be between 30° and 150°. The systems have the characteristic protection target of the class Sa according to DIN EN 13501-2.



### 4. Smoke compartmentation in underground parkings

How can large passing openings be sealed - e.g. subdivision of large zones or gateways in consideration of the available space in the lintel and lateral area of the opening?





Smoke protection closure Fiberseal Evolution-Sm, Fiberseal Evolution-Sa

These automatic systems are very small and can be well integrated. Depending on the requested smoke protection classification you can choose between the target Sa or SM according to DIN 13501-2. If there are additional requirements concerning the fire protection class, the targets of E120 and EW90 can be reached by a modification of the fabric as well as the target El120 in combination with water discharge.



### 5. Automatic smoke protection closures in front of elevators

How can be secured that smoke won't be transmitted through elevator shafts from one storey to the next or through large openings from one room to another? Or how can large openings be sealed smoke tight according to DIN 18095 or EN 1634-3?

Rauchschutzabschluss Fiberseal Evolution-Sm. Fiberseal Evolution-Sa

These automatic systems are very small and can be architecturally well integrated. Depending on the required smoke protection classification you can chose between the target Sa or SM according to DIN 13501-2. If there are additional requirements concerning the fire protection class, the targets of E120 and EW90 can be reached by a modification of the fabric as well as the target FI120 in combination with water discharge

If the systems are free standing the sealing can also be done by the Fiberseal-S (see item 3).



How can security be provided in case of fire when drinks or snacks dispenser are placed in corridor niches and by this are an additional fire load? Do I have to create a separate room for this?

Smoke protection closure Fiberseal Evolution-Sm, Fiberseal Evolution-Sa



These automatic systems are very small and can be architecturally well integrated. Depending on the required smoke protection classification you can chose between the target Sa or SM according to DIN 13501-2. If there are additional requirements concerning the fire protection class, the targets of E120 and EW90 can be reached by a modification of the fabric as well as the target El120 in combination with water discharge.

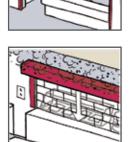
If there are free-standing dispenser, the sealing can take place with using Fiberseal-S (see item 3).

### Smoke protection closures for nurse's stations or receptions

How can sealed partitions in these areas be achieved without disturbing the communications by walls?

Smoke protection closure Fiberseal Evolution-Sm, Fiberseal Evolution-Sa

These automatic systems are very small and can be architecturally well integrated. Depending on the required smoke protection classification you can chose between the target Sa or SM according to DIN 13501-2. If there are additional requirements concerning the fire protection class, the targets of E120 and EW90 can be reached by a modification of the fabric as well as the target El120 in combination with water discharge.





## Is it possible to seal the connection between these areas without high restrictions?

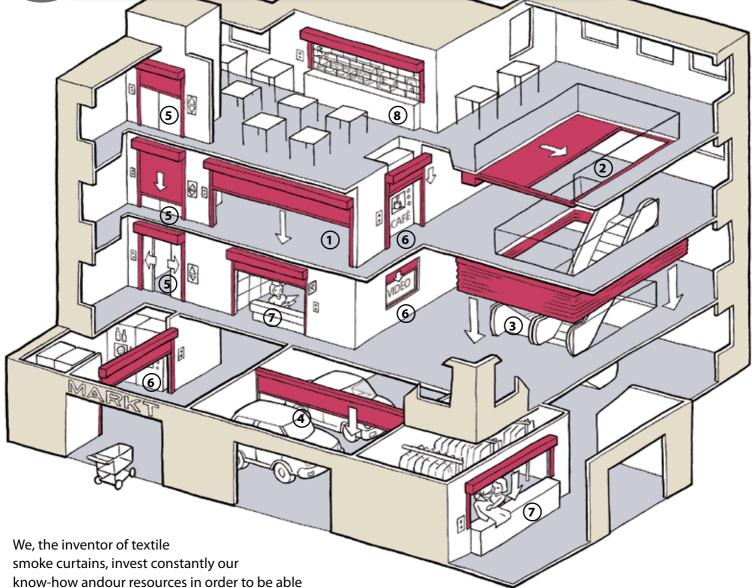
Smoke protection closure Fiberseal Evolution-Sm, Fiberseal Evolution-Sa

8. Separation of endangered zones between kitchen and canteen

These automatic systems are very small and can be architecturally well integrated. Depending on the required smoke protection classification you can chose between the target Sa or SM according to DIN 13501-2. If there are additional requirements concerning the fire protection class, the targets of E120 and EW90 can be reached by a modification of the fabric as well as the target El120 in combination with water discharge.

# Invisible smoke protection closures!

Building activities in the future with innovative textile closure systems



to always offer innovative solutions to realize your protection goal of fire protection plans. The result of our work is that now ten world novelties have been successfully introduced into the international market.

One of it is the textile smoke protection closure in different designs and classifications which achieves numerous applications in preventive structural fire protection.

By this, modern protection concepts can be realized without having to accept restrictions on architectural design or building use. Our well-founded practical experience with textile fire sealing was obtained in over 15 years and over 100 fire tests as well as in the about 10.000 completed projects in the following sectors: Retirement homes, car dealerships, automotive industry, banks, office buildings, heritage buildings, shopping centers, airports, hotels, industrial facilities, cafeterias, day care centers, cinemas, hospitals, furniture stores, museums, food industry, public buildings, parks, town halls, schools, training centers, supermarkets, theaters, parking garages, universities, insurance, hospitality, residential and commercial buildings, ...

## Protection targets

	$\mathcal{L}$			
	Characteristic per- formance features according to DIN EN 13501-2	Definition/ classification:	Achieved protection targets within the smoke protection classes resp. fire protection classes	Approvals (Tests according to DIN EN 1363-1, DIN-EN 1634-1/-3 and DIN 18095-3 DIN EN 14600, cycle test)
Fire detector		Smoke tight closure tested according to DIN EN 1634-3		
Smoke	Sm	DIN 18095-3 Max. Leakage: 50 m³/h for the whole system at ambient temperature and up to 200°C, at 50 Pa under- or overpressure		AbP: P-3359/128/08 PB: 3286-0926
Fire detector		Smoke tight closure tested according to DIN EN 1634-3		
Smoke	Sa	DIN 18095-3		AbP: P-3359/128/08 PB: 3286-0926
		Max. Leakage: 3 m <sup>3</sup> /h for each running meter joint length (without floor sealing) at ambient temperature; at 25 Pa under- or overpressure		
Fire detector		Tight closing closure		
	tight closing	Constructional characteristic:		
Smoke	(non-standardized term)	Sealing on three sides (without floor sealing) No standard testing for tight closing systems		
Fire detector		Integrity according to		
	E	DIN 1634-1 is the ability to resist the fire and prevent the	E 90	UB III/B-05-020 UB III/B-06-15
Fire Combustible material		passage of flames and hot gases (the protection target El can be reached by a zone free of any fire load)	E120	08062415 IBS
Fire detector				
	EW	Integrity with reduced heat radiation tested according to DIN 1634-1	EW 30	
Fire Combustible material 20 cm	EW	The reduction of radiation is the attribute that limits the fire spread by radiated heat to adjoining materials	FW 90	UB III/B-08-012 UB III/B-06-15
Fire detector Ceiling sprinkler		Insulation under the effect of fire		
	E	tested with compressed sprinkler lines according to DIN 1634-1	EI 90	
Fire Combustible material	<b>E</b> with sprinkler	Heat insulation is the capability that prevents the transmission of fire by heat. The transmission has to be limited in certain ways so that neither the opposite surfaces to the fire nor the materials near the surface are lit and people are protected.	El 120	UB III/B-08-016 08062416 IBS

# Fiberseal-Sm

The tight smoke protection closure with the classification **Sm** for high pressures and a smoke temperature of 200 °C

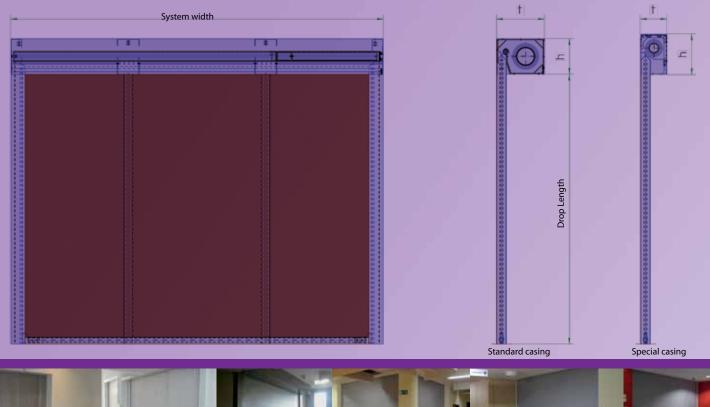


### **Characteristics of the Fiberseal Evoultion-Sm**

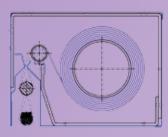
- Tested according to DIN EN 1634-3 resp. DIN 18095-3 with a classification according to DIN EN 13501-2 of the class Sm - max. leakage of 50 m<sup>3</sup>/h of the whole system up to 200°C and at 50 Pa – and fire resistant test according to DIN EN 1634-1
- Max. approved dimensions according to the AbP 7 m x 4.5 m • Technically feasible are dimensions of 10 m x 6 m
- (with EW90 requirement 10 m x 5 m) Cycle test according to class  $C_2 = 10,000$  cy
- Cycle test according to class C2 = 10.000 cycles (for different protection targets Sm, EW 90, E120)
- Elastic floor sealing to seal bigger unevenesses (e.g. to 30 mm within 1 m)
  Versatile mounting options
- Passive sealing system for closing, so that no compressors and wear parts are necessary. By this also the possibility of using it as a fire protection closure is given, as no sealing parts are combustible
- Additional protection targets by special fabrics for fire resistance classes of E 120 and also up to EW90
- High quality fabric with silicone coating, optionally with PU coating
- Patented tubular motor drive system with Gravigen technology
- Integrated safety edge as an option

Fabric	System width	Drop length	t (mm)	h (mm)	Casing
Protex 600 S / Ecotex 1100 2S	< 10 m	≤ 6 m	350	260	Standard
Protex 600 S / Ecotex 1100 2S	< 5 m	≤ 4,5 m	285	200	Special
Protex 600 S / Ecotex 1100 2S	< 3,5 m	≤ 3,5 m	190	290	Special
Protex 600 S / Ecotex 1100 2S	< 7 m	≤ 5 m	290	360	Special
Heliotex EW 90	< 10 m	≤ 5 m	350	260	Standard
Heliotex EW 90	< 5 m	≤ 2,5 m	285	200	Special
Heliotex EW 90	< 3,5 m	≤ 2 m	190	290	Special
Heliotex EW 90	< 7 m	≤ 3 m	290	360	Special

Casing 285 x 200 only for ceiling mounting



### **Choice of casings**

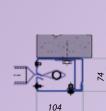


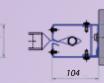
Standard casing

۲

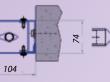
Special casing

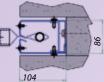
### Installation of the side guides





Standard





Installation to the wall

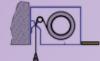
Installation in the embrasure Installation in the niche

### **Installation options**



Installation of the

casing to the wall



Installation of the casing to the wall; false ceiling is unilaterally connected to the casing



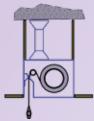
Installation of the casing directly to the ceiling



Installation of the casing directly to the ceiling, false ceiling is connected to the casing on both sides



Installation of the casing over a suspension to the ceiling



Installation of the casing over a suspension to the ceiling false ceiling is connected to the casing on both sides without fire protection

### **Protection targets**

Smoke protection closure tested according to DIN EN 18095-3 and DIN EN 1634-1/3 classified according to DIN EN 13501-2

Protection target	No requirements for fire protection closure		Requirements up to E 120 (Integrity)		Requirements up to EW 90 (limitation of heat transmission)		Requirements up to El 120 (characteristics: Insulation/ with water)	
Sm tested according to DIN EN 1634-3 DIN EN 18095-3		Fire detector Residual radiation Fire F		Fire detector		Fire detector Celling sprinkler		
Fire detector	Max. dimensions according to AbP/ limitated by the standard (w x h)	7 m x 4,5 m max 31,5 m²	Max. dimensions according to AbP/ limitated by the standard (w x h)	7 m x 4,5 m max 29,4 m <sup>2</sup>	Max. dimensions according to AbP/ limitated by the standard (w x h)	7 m x 3,2 m max 22,4 m <sup>2</sup>	Max. dimensions according to AbP/ limitated by the standard (w x h)	7 m x 4,5 m max 29,4 m <sup>2</sup>
PZ	technically feasible per side	10 m x 6 m	technically feasible per side	10 m x 6 m *	technically feasible per side	10 m x 6 m *	technically feasible per side	10 m x 6 m *
Smoke -200℃	Fabric	Protex 600 S	Fabric	Ecotex 1100 2S	Fabric EW 30 Fabric EW 90	Ecotex 1100 2S Heliotex EW 90	Fabric	Ecotex 1100 2S
	Certificate	AbP: P-3359/128/08 MPA Braunschweig	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-06-15 (E 120)	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-08-012 (EW 90) UB III/B-06-15 (EW 30)	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-08-016 (El 120)

\*) Limitations through country-specific extrapolations are possible





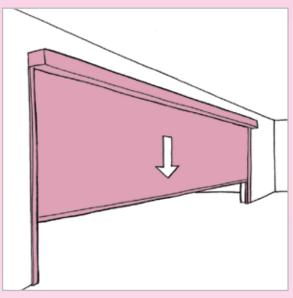
### **Bottom bars**



With safety edge

# Fiberseal-Sa

The tight smoke protection closure with the classification **Sa** tested for large openings

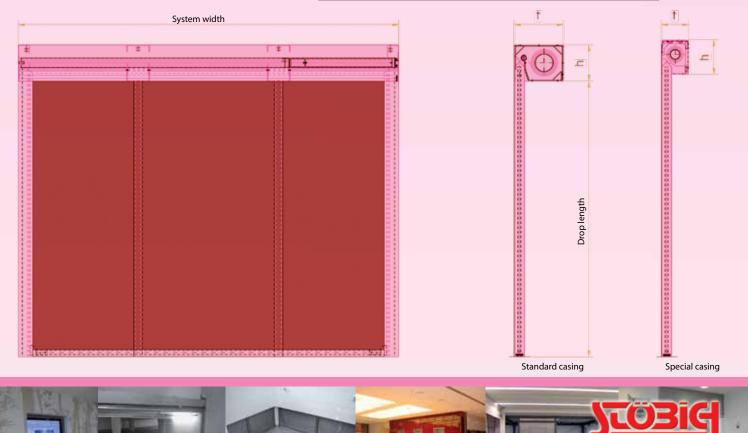


### **Characteristics of the Fiberseal Evoultion-Sa**

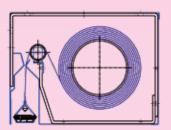
- $\cdot$  Tested according to DIN EN 1634-3 resp. DIN 18095-3 with a Classification according to DIN EN 13501-2 of the class Sa max. leakage of 3 m³/h of each linear meters at room temperature and 20 Pa.
- $\cdot$  Max. approved dimensions according to the test certificate 10 m x 6 m (for EW90 requirement 7 m x 3,2 m)
- $\cdot$  Cycle test according to class C2 = 10.000 cycles
- · Versatile mounting options
- Passive sealing system for closing, so that no compressors and wear parts are necessary. By this also the possibility of using it as a fire protection closure is given, as no sealing parts are combustible
- $\cdot$  Additional protection targets through special fabrics for fire resistance classes of E 120 and also up to EW90
- $\cdot$  High quality fabric with silicone coating, optional silicone-free with PU coating
- $\cdot$  Patented tubular motor drive system with Gravigen technology
- $\cdot$  Integrated safety edge as an option

Fabric	System width	Drop length	t (mm)	h (mm)	Case
Protex 600 S / Ecotex 1100 2S	< 10 m	≤ 6 m	350	260	Standard
Protex 600 S / Ecotex 1100 2S	< 5 m	≤ 4,5 m	285	200	Special
Protex 600 S / Ecotex 1100 2S	< 3,5 m	≤ 3,5 m	190	290	Special
Protex 600 S / Ecotex 1100 2S	< 7 m	≤ 5 m	290	360	Special
Heliotex EW 90	< 7 m	≤ 5 m	350	260	Standard
Heliotex EW 90	< 5 m	≤ 2,5 m	285	200	Special
Heliotex EW 90	< 3,5 m	≤ 2 m	190	290	Special
Heliotex EW 90	< 6 m	≤ 3 m	290	360	Special

Casing 285 x 200 only for ceiling mounting

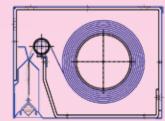


### **Choice of casings**



Standard casing

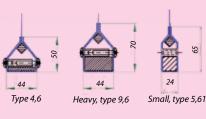
Special casing

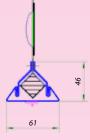


Special construction for self-levelling bottom bar

### **Bottom bars**

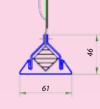
### Standard for small widths





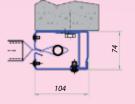
Self-levelling bottom

bar with safety edge

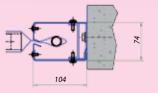


Self-levelling bottom bar

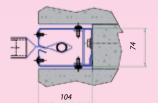
## **Choice of side guides**



Installation to the wall



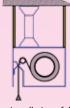
Installation in the embrasure

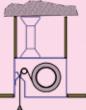


Installation in the niche



casing directly to the ceiling, false ceiling is connected to the casing on both sides





Installation of the casing over a suspension to the ceiling false ceiling is connected to the casing on both sides without fire protection

### **Installation options**





Installation of the casing to the wall

Installation of the casing to the wall; false ceiling is unilaterally connected to the casing

Installation of the

casing directly to

the ceiling

Installation of the



Installation of the casing over a suspension to the ceiling

### **Protection targets**

Smoke protection closure tested according to DIN EN 18095-3 and DIN EN 1634-1/3, classified according to DIN EN 13501-2

Protection target	ia ested according to DIN En 1634-3		Requirements up to E 120 (Integrity)		Requirements up to EW 90 (limitation of heat transmission)		Requirements up to El 120 (characteristics: Insulation/ with water)	
Sa tested according to DIN En 1634-3 DIN 18095-3			Fire detector Aluminium layer Fire		Fire detector Aluminium layer Fire Combustible material		Fire detector Ceiling sprinkl	
Fire detector	Max. dimensions according to AbP/ limitated by the standard (w x h)	10 m x 6 m	Max. dimensions according to test report (w x h)	10 m x 6 m *	Max. dimensions according to test report (w x h)	7 m x 3,5 m *	Max. dimensions according to test report (w x h)	10 m x 6 m *
Smoke	Fabric	Protex 600 S	Fabric	Ecotex 1100 25	Fabric EW 30 Fabric EW 90	Ecotex 1100 2S 1) Heliotex EW 90	Fabric	Ecotex 1100 25
	Certificate	AbP: P-3359/128/08 MPA Braunschweig	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-06-15 (E 120)	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-08-012 (EW 90) UB III/B-06-15 (EW 30)	Certificate	Test reports P-3286-0926 MPA Braunschweig, UB III/B-08-016 (El 120)

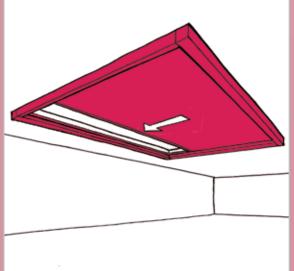
\*) Limitations through country-specific extrapolations are possible





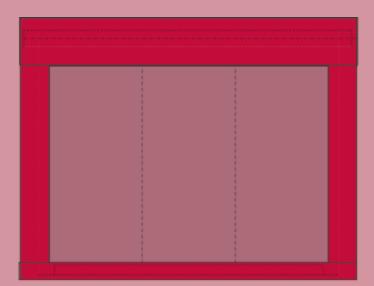
# Fiberseal-H

The  $(\mathbf{H})$  orizontal smoke protection closure for openings in the ceiling

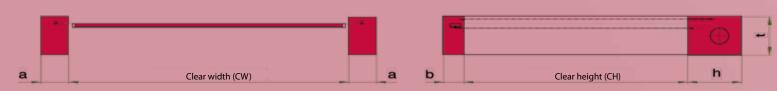


### **Characteristics of the Fiberseal-H**

- Tested according to DIN 18095-3 and DIN EN 1634-3 with a classification according to DIN EN 13501-2 of class Sa max. leakage of 3 m<sup>3</sup>/h of each linear meters at room temperature and 20 Pa.
- For large ceiling openings as smoke protection closure up to 20 m width and a drop length up to 8 m in the class Sa DIN EN 13501-2
- $\cdot$  Ceiling openings of the Sm class
- · Tested for 1.000 cycles
- Secure closing of the duplex-drive system with secured power supply • Active sealing system for compressed-air technologies
- High-quality fabric with silicone coating, optional silicone-free with PU coating
- · Installation flexibility under the ceiling or in ceiling openings
- Tension cables at a distance of 1.5 m to support the fabric with large dimensions, as well as for pressure loads during a fire



Clear width	Drop length	a (mm)	b (mm)	h (mm)	t (mm)
< 20 m	< 8 m	270	355	270	350

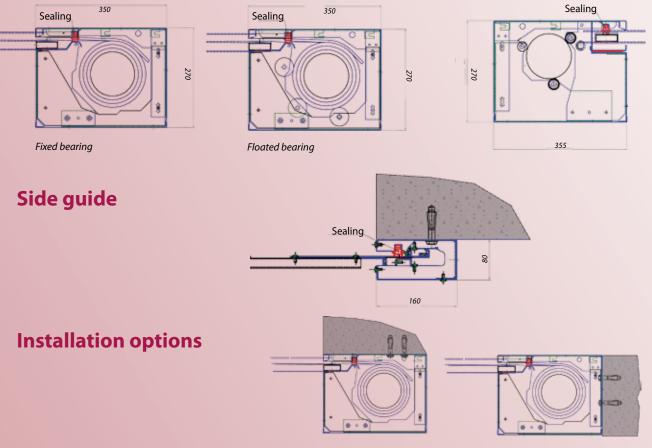






### **Choice of casings**

### **Receiving box + bottom bar**



Installation under the ceiling

Installation in the ceiling opening

### **Protection targets**

Protection target		nents for fire In closure	Requirements E120 (Integrity)		
Tested according to DIN EN 1634-3 Characteristics according to DIN EN 13501-2			Area free ol	any fire load	
	Fabric	Protex 1100 2S	Fabric	Protex 1100 2S	
Sa	Certification of the permanent function according to DIN EN 4102-18 class C1 = 500 cycles	Test report MPA 1,3 m³/h per linear meters length of joint	Certification of the permanent function according to DIN EN 14600 class C1 = 500 cycles	Smoke protection closure: test report MPA 1,3 m <sup>3</sup> /h per linear meters length of joint Fire protection closure: UB III/B-05-020 (E 120)	
Smoke RT	Max. dimensions (w x h) technically feasible	20 m x 8 m	Max. dimensions (w x h) technically feasible	20 m x 8 m	

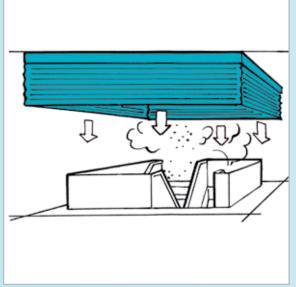
\*) Limitations through country-specific extrapolations are possible





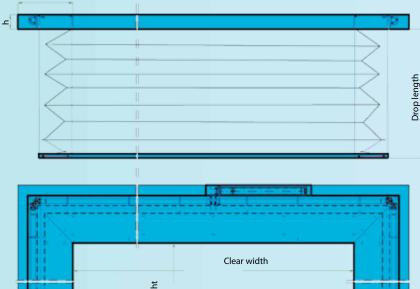
## The **S** ection building textile smoke protection closure/ the closure that goes around the corner

22

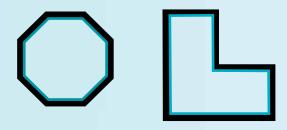


### **Characteristics of the Fiberseal-S**

- Tested according to DIN EN 1634-3 and 18095-3 with a classification according to DIN EN 13501-2 class Sa max. leakage of 3 m<sup>3</sup>/h of each linear meters at room temperature and 20 Pa.
- $\cdot$  For large sections with a side length of max. 10 m x 6 m.
- $\cdot$  Creation of corners without additional supports also different from a right angle (30°C to 150°)
- · Self-levelling bottom bar for a neat connection to the ceiling
- Standard drive unit Gravigen that means closing without auxiliary energy, no fire resistant cables are necessary
- $\cdot$  Cycle test according to class C2 = 10.000 cycles
- · Redundant drive units with safety catch device
- Additional protection targets through special fabrics for fire resistance classes of E 120 and with sprinklers also characteristics up to EI 120



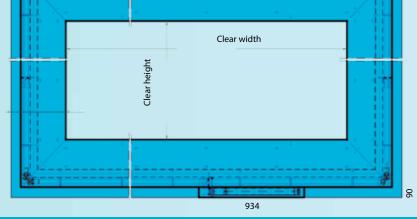
### Course of the smoke protection closure



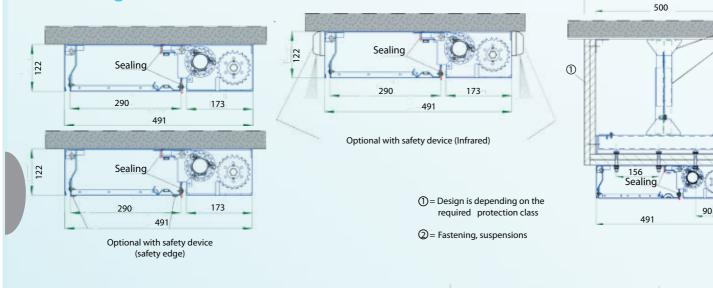
System circumference	Drop length	t (mm)	h (mm)
< 50 m	< 3 m	490	125
< 50 m	> 3 m - < 6 m	490	225

at least 2 motors and one more for each 10 m over 20 m circumference

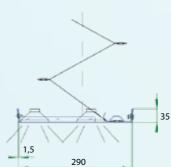


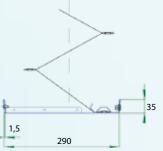


### Casing



### **Bottom bars**





580

2

300-960

122

Optional with spots or light strips (if necessary increasing of the construction height)

### **Protection targets**

Leak test according to DIN EN 1634-3 is planned; Fire resistance tested according DIN EN 1634-1

Protection target	No requirements for fire protection closure			s up to E 120 grity)	Requirements up to El 120 (characteristics: Insulation / with water)		
Characteristics according to DIN EN 13501-2			Fire detector	Residual radiation Combustible material	Fire detector Ceiling		
Fire detector	Technically per side	10 m x 6 m	Technically per side	10mx6m	Technically per side	10 m x 6 m	
Smole Sa	Max. circumference	50 m	Max. circumference	50 m	Max. circumference	50 m	
	Fabric	Ecotex 1100 2S	Fabric	Ecotex 1100 25	Fabric	Ecotex 1100 2S	

\*) Limitations through country-specific extrapolations are possible





### Locking devices approved by the building authorities

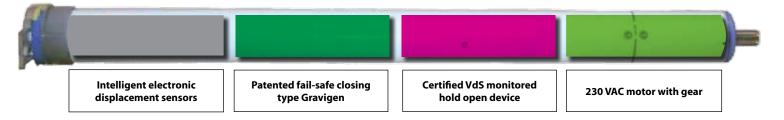
If the Fiberseal is used as an automatic partition, according to the standards for locking devices (ed. October 1988). It has to be powered by a locking device that is approved by the building authorities. Which components belong to a locking device approved by the building authorities?

The Stöbich control units type RZ have **all required components** which are also included in the approval

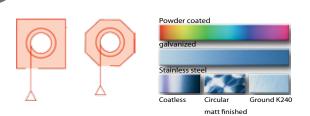


The VdS tested Stöbich control units are **approved by the building authorities** RZ 8 FA: Z-6.5-1872 RZ 7 BT: Z-6.5-2011 with VdS-tested operator protection

### Tubular motor type Gravigen Stöbich



### **Design for metal parts**



Besides colour and surface finishing Stöbich offers individual designs for the Fiberseal system.

### Stöbich – Innovation for your protection

Since 1980, Stöbich Fire Protection is not only the worldwide leader for conveyor system closures but also an international trendsetter in the field of textile fire protection.

The grown know-how due to the immense number of executed projects and fire tests and the proven expertise in design makes Stöbich Fire Protection to a specialist with a broad product range and comprehensive services.

Ten world novelties and numerous awards are an expression for innovative and customer-oriented product design and efficient process control.

Four branches and a large number of national and international agencies allow immediate presence and customer proximity in any state of the project.

Intertek

### **Tested Quality**









"Fire protection of

the year 2011" from

FeuerTRUTZ

FM<sup>6108ar</sup>

**Further information** (Please see Video, **CD or Interne** 

www.stoebich.de info@stoebich.de



### Honours and innovation awars

### **Invisible Fire Protection**



"Civil engineering in existing buildings from the Federal

"einfach genial": MDR

### Headquarters Stöbich Brandschutz GmbH

Pracherstieg 6 38644 Goslar, Germany Phone +49-(0)5321-5708-0 Fax +49-(0)5321-5708-1991

### **Branch East**

Stöbich Brandschutz GmbH Geltestraße 12 06188 Landsberg OT Queis Telefon (034602) 552-21 Telefax (034602) 552-50



### Branch South Stöbich Brandschutz GmbH Gewerbehof 8 73441 Bopfingen Telefon (07362) 9614-33

Telefax (07362) 9614-50

### **Branch West**

Stöbich Brandschutz GmbH 59423 Unna, Germany Phone +49-(0)2307-98689-0 Fax +49-(0)2307-98689-50



Branch North • Pracherstieg 6 • 38644 Goslar · Germany



Branch South • Gewerbehof 8 • 73441 Bopfingen · Germany



Branch East • Geltestraße 12 • 06188 Landsberg OT Queis · Germany



Branch West • Max-Planck-Straße 13 • 59423 Unna · Germany



Lexicon of German World Market Leaders, 2010



India

Ireland

Iceland

· Italy · Canada

Qatar

Croatia

Latvia

Kazakhstan

Colombia

· Luxembourg

Australia Bahrain Belgium Brazi Bulgaria Chile · China Denmark Finland France · Greece · Hong Kong

International sales partners respectively subsidiaries Macedonia (FYROM) New Zealand Netherlands Norway Paraguay Poland Portugal Romania Saudi Arabia Sweden Switzerland

Serbia and Montenegro Singapore Slovakia Spain Czech Republic • Turkey • Ukraine Hungary USA · UAE Belarus

12/2012-03-K-1000-EN