



BSS



Planning aids and basic knowledge
Fire protection systems

Building Connections





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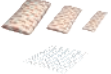













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Planning and mounting aids

	General information	4
	Insulation – PYROMIX® mortar insulation	12
	Insulation – PYROPLATE® Fibre soft insulation	16
	Insulation – PYROBAG® cushion insulation	20
	Insulation – PYROSIT® NG fire protection foam	24
	Insulation – PYROPLUG® foam series	28
	Insulation – PYROCOMB® pipe sleeve	48
	Insulation – PYROLIQ® casting compound	56
	Insulation – PYROCOMB® Intube pipe shell	60
	Small insulation, bandage and individual cables acc. to MLAR	64
	Escape route installations - false ceiling mounting	74
	Fire protection ducts	96
	Cable bandages	106
	Maintaining electrical functionality – cable-specific support constructions	110
	Maintaining electrical functionality – standard support structures, vertical ladders – Strain relief	126
	Maintaining electrical functionality - Junction boxes, individual routing, pipes and metal duct	150
	Anchorings	162

1

First protection aim: Maintenance of the fire sections



The division of buildings into fire sections protects unaffected building sections against the spread of fires for specific periods of time. Insulation maintains the fire sections, thus limiting the spread of fire and smoke. These constructive measures protect people and property, allowing fire brigades to prevent the spread of fires to other parts of the building through extinguishing measures.

Function of fire walls

Fire walls should ensure that a fire cannot pass to neighbouring buildings or building sections. This creates so-called fire sections. The construction design of these fire walls (materials, fire resistance classes, stress values) is regulated by the building regulations and standards.

Electrical cables and pipes may only be run through walls and ceilings at the ends of rooms when there is a guarantee that they do not present an opportunity for fire and smoke to spread. Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.

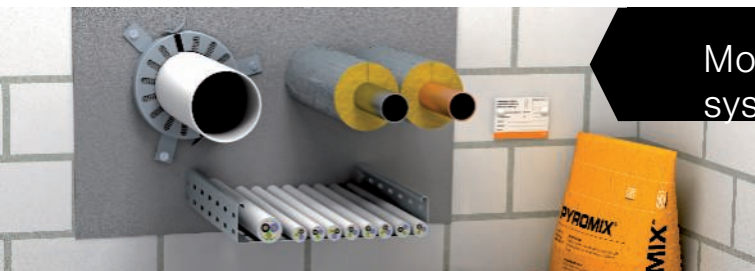
Special requirements

The following requirements apply to cable penetrations with cable insulation:

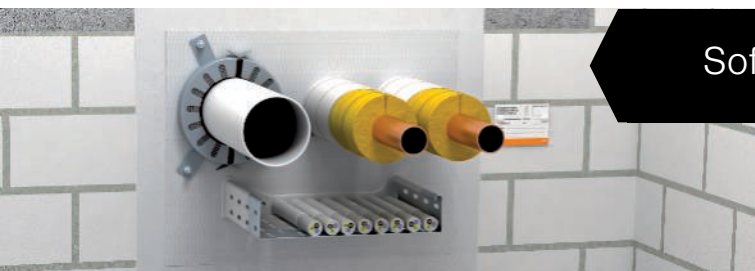
- The spread of fire and smoke must be prevented
- Room closure must be guaranteed
- On the side of the insulation away from the fire, the surfaces of cables, pipes, cable support systems and the surface of the insulation may not heat up to an impermissible level

Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.

Insulation systems



Mortar insulation systems



Soft insulation systems



Foam systems



Pipe shell systems



Cushion insulation systems

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2

Second protection aim: Protection of escape routes



What is an emergency and escape route?

According to the construction regulations, there must be routes in buildings which not only permit access to the building in a horizontal and vertical direction in normal situations, but which also offer the option of rescue in case of fire. It is therefore obligatory to equip buildings with at least one constructive emergency and escape route. Additional emergency and escape routes may also be necessary, depending on the type of building.

These include:

- Necessary staircases (vertical access)
- Connecting rooms between the necessary stairwells and exits to the outside
- Necessary corridors (horizontal access)

There must be a guarantee that, if there is a fire, these routes can be used to leave the building without any risk. In addition to evacuation, the emergency and escape routes also aid the local fire brigades as a point of attack.

In the area of emergency and escape routes, an installation may not pose an additional fire load. This requirement can be fulfilled using an appropriate type of installation:

- Concealed installation
- Installation in fire protection duct systems
- Installation above suspended fire protection ceilings
- Use of non-combustible materials
- Routing of cables with improved behaviour in case of fire

Approximately 95% of all deaths during fires are caused by smoke poisoning! In case of fire, emergency and escape routes are the central lifeline of the building and must remain usable under all circumstances.

Escape route installations

False ceiling mounting



Fire protection ducts



Cable bandages



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3

Third protection aim: Maintaining the function of electrical systems



If there is a fire, emergency and escape routes must remain usable and important technical equipment, such as emergency lighting, fire alarm systems and smoke extraction systems, continue to function. Therefore, it is essential that the power supply for these systems is specially protected. In addition, certain technical systems must support the fire brigades in fighting fires for a sufficiently long period of time.

Where is the maintenance of electrical function required?

Technical equipment that maintains electrical function is required for the following buildings and systems:

- Hospitals
- Hotels and restaurants
- Tower blocks
- Meeting points
- Commercial buildings
- Closed large garages
- Underground railway systems
- Chemicals industry
- Power stations
- Tunnels

This could be because these constructions are regularly frequented by many people. This creates an increased safety risk for gatherings of people. However, with certain systems, property and the environment must also be protected.

E30

30 minutes: Maintenance of electrical function for a safe evacuation and rescue

The first 30 minutes after the start of a fire play an important role. For the affected building to be cleared quickly the maintenance of electrical function must be guaranteed for the following equipment during this time:

- Safety lighting systems
- Lifts with fire control
- Fire alarm systems
- Alarm systems and systems to issue instructions
- Fire extraction systems

E90

90 minutes: Maintenance of electrical function for effective fire-fighting

To support fire-fighting operations, it is imperative that certain technical equipment is supplied with sufficient power even up to 90 minutes after a fire breaks out in a building. This equipment includes:

- Water pressure increase systems for fire water supply
- Mechanical smoke extraction systems and smoke protection pressure systems
- Fire brigade lifts
- Bed lifts in hospitals and similar equipment

Systems that maintain the electrical function



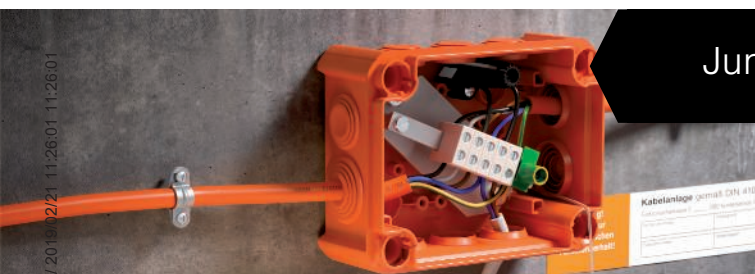
Cable trays and cable ladders



Vertical ladders



Individual routing



Junction boxes

Seminars

OBO BSS seminars: First-hand knowledge

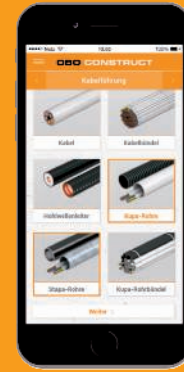
With a comprehensive programme of training courses and seminars on the subject of fire protection systems, OBO is able to support its customers with specialist knowledge from a single source. Alongside the basic theoretical principles, the programme also deals with practical implementation in everyday applications. Special calculation and application examples round off the comprehensive programme of knowledge transfer.





Construct BSS Online Tool

Works on any computer with Internet access: The BSS software simplifies the planning of suitable fire protection systems. After the basic data has been entered, the user obtains an overview of the approved insulation systems, as well as of necessary and optional system accessories. Thus, they can create, edit and export a personal shopping list in a targeted manner. All the key information on standards and approvals can be found directly with the systems.



BSS app

The Construct BSS app makes finding the right product even quicker. In only a short time, the app determines the fire protection systems required for the appropriate project. It offers the full scope of the Construct BSS module, allowing simple planning and material calculations in any location. Practical: The parts list can be sent directly by e-mail. Available for Android and Apple devices for Google Play Store and the iTunes App Store.



Fire protection guide

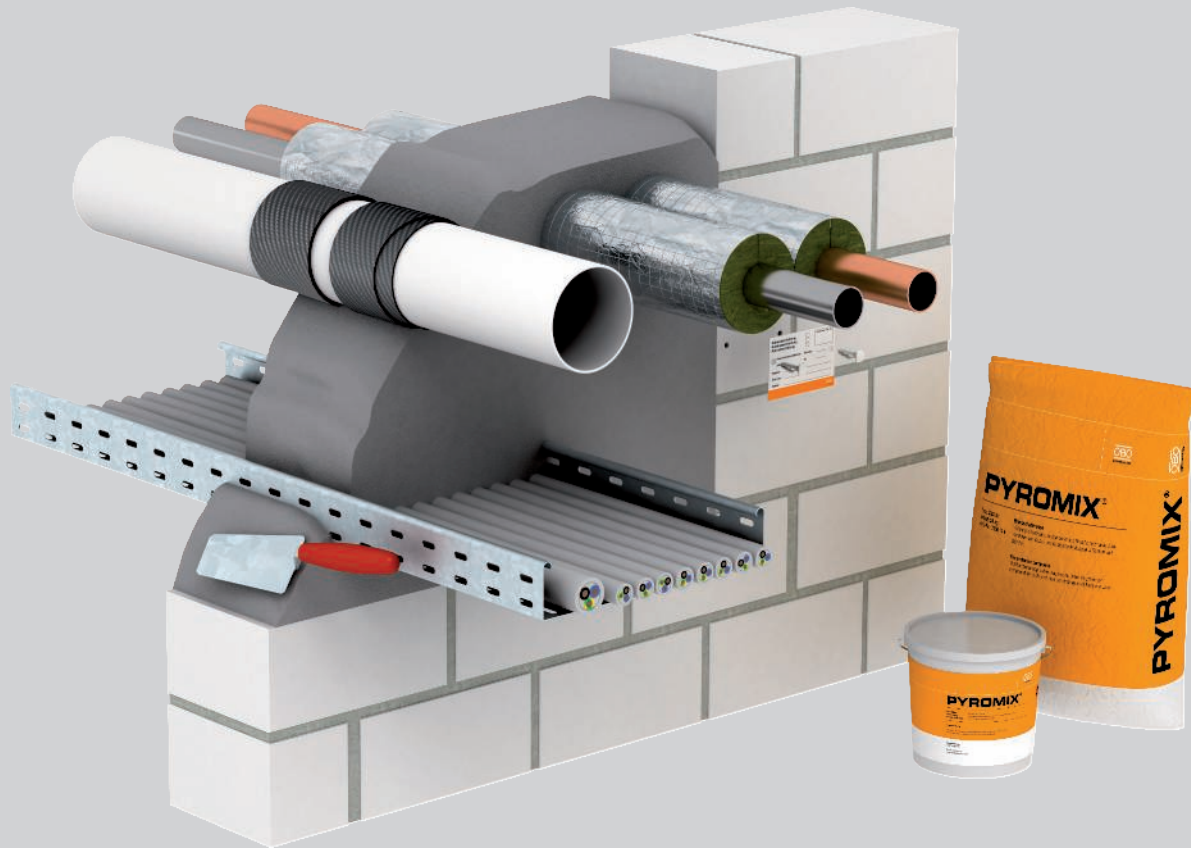
In the guide, we wish to explain the interconnections of fire protection in technical building equipment. Perhaps you will find some new aspects which can help you in the planning or implementation of fire protection systems.





Mortar insulation PYROMIX®

System description



The PYROMIX® system from OBO is used to create cable and combination insulation made of a mineral fibre-free special mortar. Depending on the amount of water added, the finished compound can be applied to openings by hand, with pumps or with presses. The high level of substrate adhesion makes lining un-

necessary for small insulation areas. The porous consistency of the mortar means that reinstallation is easy. If there is a fire, the fire protection mortar reliably prevents the spread of fire and smoke.

Mortar insulation PYROMIX®

Installation principle



Stir the mortar with water until the desired consistency is reached.



Apply mortar to the opening, use lining as necessary.



Use approved section insulation for metal pipes.



Section insulation should also be applied to steel electrical installation pipes.



Mount pipe sleeves for combustible pipes on both sides of the wall.



Apply labelling to combination insulation for various structures.

Classification to DIN

S30

S60

S90

Classification to EN

EI15

EI30

EI45

EI60

EI90

EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.





Mortar insulation PYROMIX®


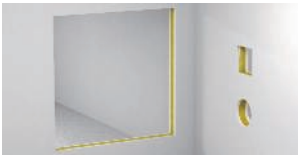




Registration data

Combination insulation in walls/ceilings

Fire resistance class	EI 180, EI 240
Proof of application	European Technical Assessment of DIBt, Berlin
Approval number	ETA-17/0472
Testing standard	EN 1366-3

Installation locations

Insulation in walls and ceilings

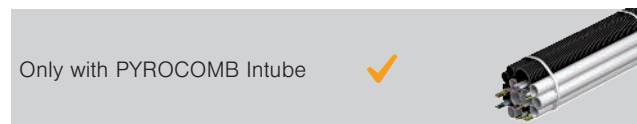
Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		15 cm (EI 60 / EI 90 / EI 120)	-	15 cm (S30 / S60 / S90)
Min. insulation thickness		15 cm (EI 60 / EI 90 / EI 120) 24 cm (EI 120)	-	15 cm (EI 60 / EI 90 / EI 120) 24 cm (EI 120)
Opening size		↔ ≤ 120 cm (for EI 120) ↕ ≤ 200 cm	-	↔ 120 cm (for EI 120) ↕ ≤ 60 cm x ≤ 60 cm
		↔ 120 cm (for EI 120) ↕ ≤ 60 cm x ≤ 60 cm	-	↔ ≤ 100 cm ↕ Unlimited

Mortar insulation PYROMIX® Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



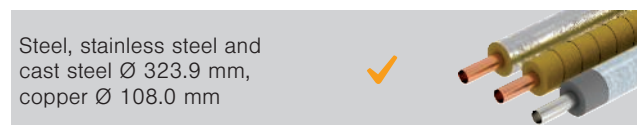
Cable support systems



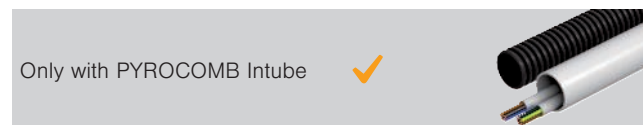
Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible

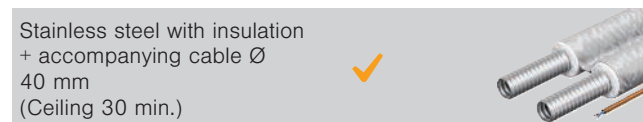


Plastic pipes

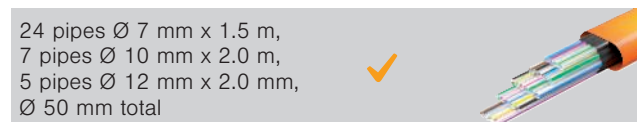


Special installations

Double solar pipes



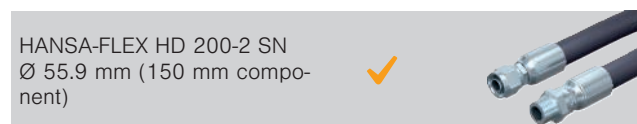
Speed pipe



Klimasplit



Hydraulic hoses



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.

Soft insulation, PYROPLATE® Fibre System description



The PYROPLATE® Fibre system from OBO is used to create cable and combination insulation. The core of the system is the mineral fibre plate coated with a moisture-resistant ablation coating. When there is a fire, the fire protection coating creates an insulating carbon foam and, in combination with the mineral fibre plate, prevents the spread of fire and smoke. According to the European Technical Assessment, in ad-

dition to the cables, pipes made of steel, copper or various plastics may also be run through the same insulation. For pipelines, additional fire protection measures, such as section insulation and pipe sleeves, are required. The mortar or soft insulation made of PYROPLATE® Fibre is thus combination insulation which is appropriate for diverse structures.

Soft insulation, PYROPLATE® Fibre

Installation principle



The installation is possible in light-duty partition walls or in solid walls.



Moisten the component layer and apply the coating to the cut edges for adhesion.



The plates can be inserted carefully with a hammer and board.



Use approved section insulation for metal pipes.



Apply the final coating to the surface and the installations.



Secure soft insulation in ceilings against footfall.



Cut the plates for mounting.



Finished installation in a light-duty partition wall.

Classification to DIN

S30 **S60** **S90**

Classification to EN

EI15 **EI30** **EI45** **EI60** **EI90** **EI120** **EI180** **EI240**



Erectors of combination insulation require training.

Always indicate the item number when ordering.



Soft insulation, PYROPLATE® Fibre

Registration data

Combination insulation in walls and ceilings

Fire resistance class	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120, EI 180, EI 240
Proof of application	European Technical Assessment of DIBt, Berlin
Approval number	ETA-17/0364
Testing standard	DIN EN 1366 Part 3

Installation locations

Insulation in walls and ceilings

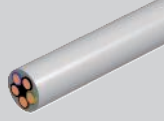
Component		Rigid walls	Flexible walls	Rigid floors
Min. component strength				
		10 cm (EI 15 / EI 30 / EI 60 / EI 90) 10 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120) 20 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120 / EI 180 / EI240)	10 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120)	12.5 cm (EI 15 / EI 30 / EI 60 / EI 90) 15 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120) 20 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120 / EI 180 / EI240)
Min. insulation thickness		6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120) 24 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120/ EI 180 / EI 240)	6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120)	6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120) 24 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120/ EI 180 / EI 240)
Opening size for 6 cm insulation thickness		$\leftrightarrow \leq 117.5$ cm $\updownarrow \leq 120$ cm	$\leftrightarrow \leq 117.5$ cm $\updownarrow \leq 120$ cm	$\leftrightarrow \leq 120$ cm x ≤ 240 cm $\updownarrow \leq 80$ cm x \leq unlimited
Opening size for 12 cm insulation thickness		$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm	$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm	$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm
Opening size for 24 cm insulation thickness		$\leftrightarrow \leq 60$ cm $\updownarrow \leq 60$ cm	-	$\leftrightarrow \leq 60$ cm $\updownarrow \leq$ Unlimited



Soft insulation, PYROPLATE® Fibre Installations

Cable

Cable Ø 80 mm



Pipe bundle of electrical installation pipes

Ø 100 mm, IR Ø 32 mm, cable Ø 21 mm

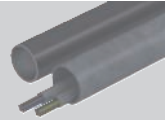


Cable bundle

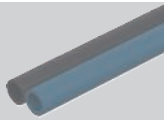
Ø 100 mm, cable Ø 21 mm



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems

Steel profiles



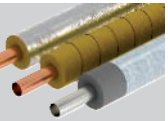
Electrical installation pipe made of plastic, rigid

Ø 16 mm



Metal pipes with path insulation

Steel, stainless steel and cast steel Ø 332.9 mm, copper Ø 108.0 mm



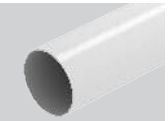
Electrical installation pipe made of plastic, flexible

Ø 32 mm, cable Ø 21 mm



Plastic pipes

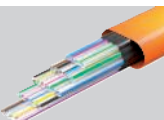
Ø 160 mm



Special installations

Speed pipe

24 pipes Ø 7 mm x 1.5 m,
7 pipes Ø 10 mm x 2.0 m,
5 pipes Ø 12 mm x 2.0 mm,
Ø 50 mm total



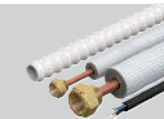
Double solar pipes

"NanoSUN" DN 16 to DN 40



Klimasplit

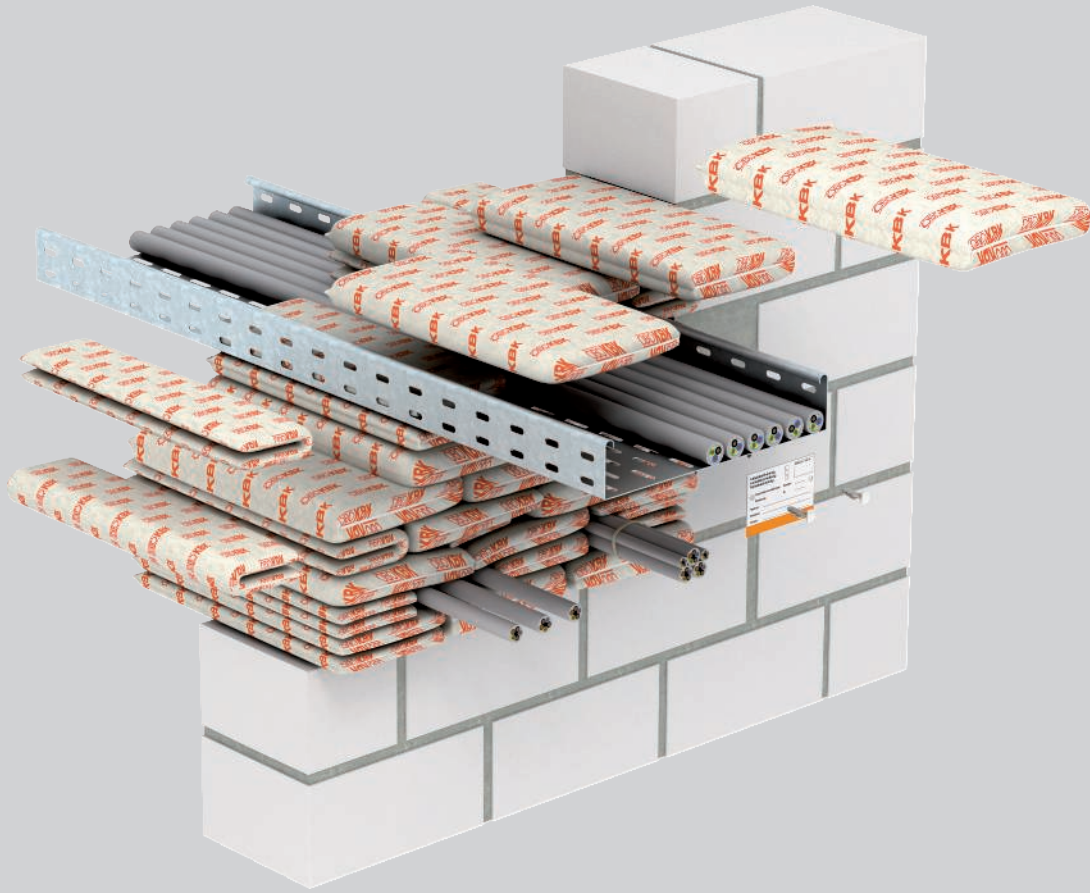
"Tubolit DuoSplit" & "Tubolit Split" or comparable
6.0 mm–22.0 mm



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.

Bag insulation PYROBAG®

System description



The PYROBAG® system from OBO is used to create cable insulation from fire protection cushions. The fire protection cushions, which can be shaped in any way, are stacked simply and quickly on top of each other, allowing absolutely tidy and dust-free mounting. The cushions can be used for permanent or temporary insulation in walls and ceilings, e.g. during renovations. The fire protection cushions are an ideal solution for frequent retroinstallations. Additional cables can be in-

stalled quickly, neatly and economically at a later date because the cushions can be used several times over. The cushions consist of a close-knit, dense and mechanically solid glass fabric with a special filling. The shell and the filling are free of mineral fibres and are also weatherproof and waterproof. Neither painting nor the use of filler are required.

Bag insulation PYROBAG®

Installation principle



Closing of the opening with cushions – without filler or coating.



Panels as mounting aid for the last cushion layer.



Lock against falling out during ceiling mounting.



Lock against slippage above the floor.



Cushions arranged in the trunking.



Retaining profile to prevent slippage in vertical arrangements.



Discreet attachment of the identification plate.

Classification to DIN



Erectors of combination insulation require training.

Always indicate the item number when ordering.



Bag insulation PYROBAG®

Registration data

Insulation in walls/ceilings







Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z- 19. 15-1115
Testing standard	DIN 4102 Part 9

Insulation in cable trunking


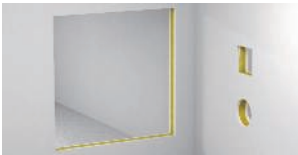

Fire resistance class	S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z- 19. 15-1119
Testing standard	DIN 4102 Part 9
Note: For this insulation, only a general construction approval of the DIBt, Berlin, is available. In countries where a European Technical Assessment (ETA/ETB) is required, the possible use of these components must be agreed with the local fire protection authorities!	

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (S30/S60/S90)	10 cm (S30/S60/S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)
Opening size		↔ ≤ 100 cm, ↕ ≤ 150 cm	↔ ≤ 100 cm, ↕ ≤ 100 cm	↔ ≤ 60 cm, ↕ unlimited

Insulation in cable ducts

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Duct size		35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)
Plastic ducts		21 cm x 10 cm	21 cm x 10 cm	21 cm x 10 cm
Metal ducts		21 cm x 8 cm	21 cm x 8 cm	21 cm x 8 cm

Bag insulation PYROBAG® Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



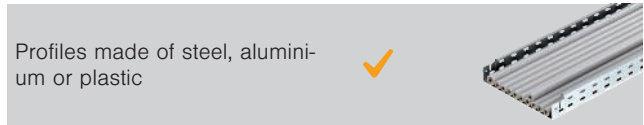
Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible

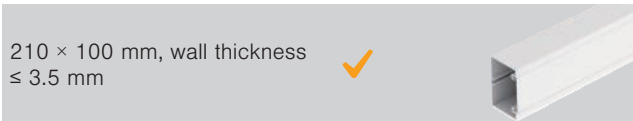


Plastic pipes

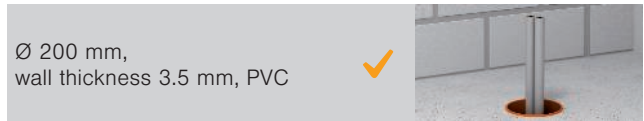


Special installations

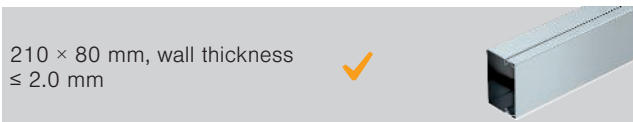
Plastic ducts



Insulation in the lining pipe



Metal ducts



Details on the version can be found in the proof of suitability or mounting instructions.
All the stated dimensions are maximum values.



Fire protection foam PYROSIT® NG System description



The PYROPLATE® NG system from OBO is used to create cable and combination insulation made of fire protection foam. The special recipe of the 2-component foam allows simple, "pinpointed" processing. The good substrate adhesion prevents the foam from running out of the opening. Work can easily be interrupted to carry out checks. The system can be installed without dust and fibres. Surface coating is not necessary. According to the construction approval, in addi-

tion to the cables, pipes made of steel, copper or various plastics may also be run through the same insulation. The PYROSIT® NG insulation is suitable as combination insulation for different units. Due to the soft consistency, the insulation made of PYROSIT® NG can be reassigned simply. The insulation system can be combined with the PYROPLUG® Block foam block.



Fire protection foam PYROSIT® NG

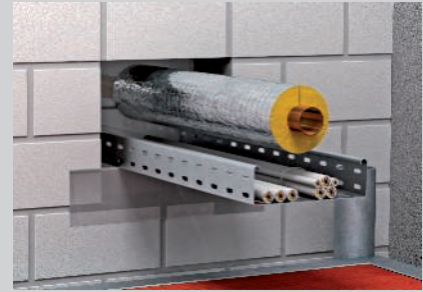
Installation principle



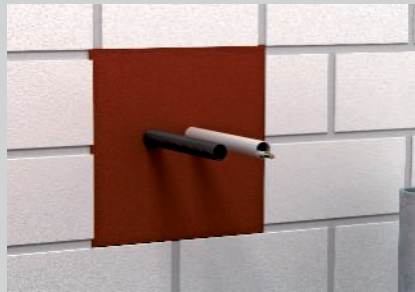
Clean the layer and attach the lining aids, e.g. adhesive tape.



Apply the foam from the rear to the front, and remove residues as necessary.



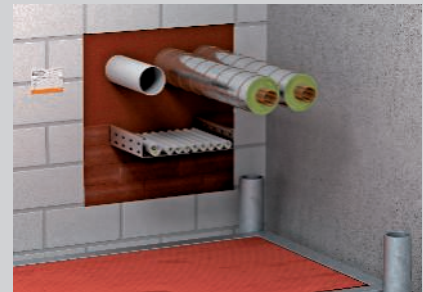
Use approved section insulation for metal pipes.



Electrical installation pipes up to M40, filled with cables or empty.



Combustible pipes up to Ø 50 mm can be run through without additional measures.



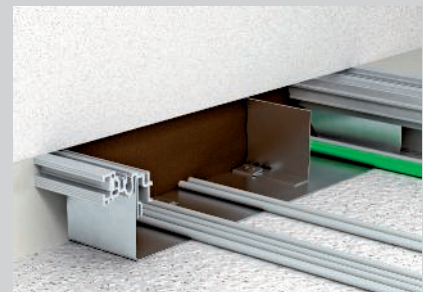
Combination insulation for various structures with labelling.



Application of the fire protection foam directly under the wall.



Labelled underfloor insulation with reserve empty pipe.



Empty pipes with tension wires can be foamed in for assignment at a later date.

Classification to EN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.



Fire protection foam PYROSIT® NG

Registration data

Combination insulation in walls/ceilings








Fire resistance class	EI 15, EI 30, EI45, EI 60, EI 90, EI 120
Proof of application	European Technical Assessment of OIB, Vienna
Approval number	ETA-11/0527
Testing standard	EN 1366-3

Additive proofs

Heat permeation	Fraunhofer IBP Stuttgart, P1-002/2012
Air permeation/pressure resistance	ift Rosenheim, 11-003694-PR03
Noise insulation	HfT Stuttgart, 122-007-04P-186a

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (EI30 / EI60 / EI90 / EI120)	10 cm (EI30 / EI60 / EI90 / EI120)	15 cm (EI30 / EI60 / EI90 / EI120)
Min. insulation thickness		14.4 cm (EI 30, EI 45 /EI 60 / EI 90) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30, EI 45 /EI 60 / EI 90) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30, EI 45 /EI 60 / EI 90) 20 cm (EI 90 / EI 120)
Opening size for 14.4 cm insulation thickness		↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 45 cm
Opening size for 20 cm insulation thickness		↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 45 cm

Fire protection foam PYROSIT® NG Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible

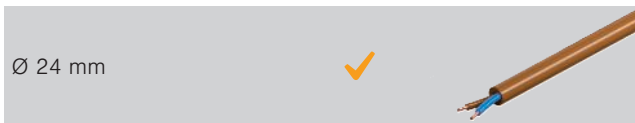


Plastic pipes



Special installations

Cables



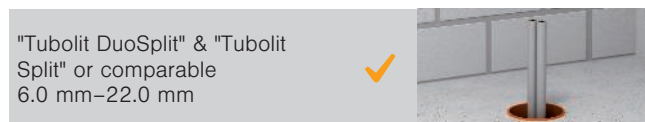
Open underfloor ducts



Screed-covered underfloor ducts



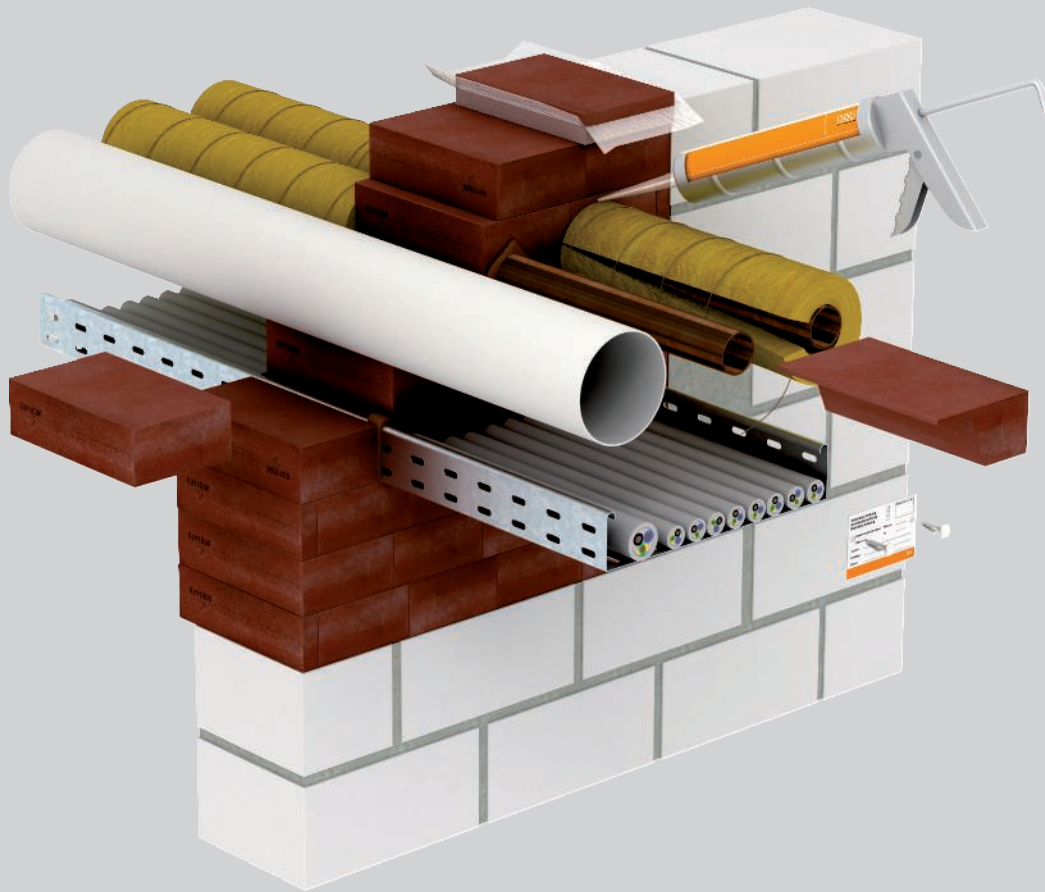
Klimasplit



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROPLUG® Block System description



The OBO PYROPLUG® Block combination insulation is created from foam blocks, which, if there is a fire, expand without any noticeable pressure creation. In so doing, they form an insulating carbon foam. This reliably prevents the penetration of fire and smoke through the cable insulation. Combustible pipes can be run in this insulation without an additional sleeve.

Copper and steel pipes can be insulated either with or without section insulation. All the PYROPLUG® Block insulation is completely dust and fibre-free. This also applies to any installations at a later date. This is an aspect, which is particularly important for installation in IT and laboratory rooms.



PYROPLUG® Block Installation principle



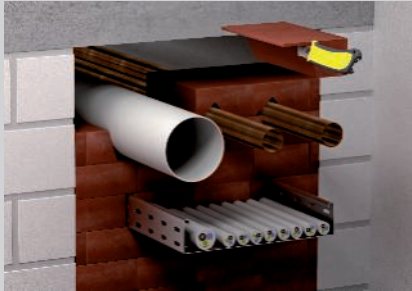
Mounting of the cut blocks.



Vacuum blocks for simple residual gap closing.



Simple reinstallation through removal of individual blocks.



Running of combustible pipes without additional measures.



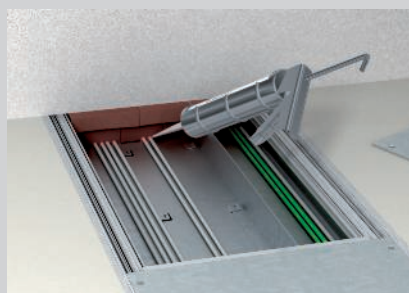
Run-through, non-combustible pipes with section insulation.



Tight-fitting installation of the blocks in the ceiling penetration.



Cut thin strips for the duct compartments.



Close the joints and spandrels between the installed cables and the blocks with a layer of the FBA-SP fire protection compound of at least 2 cm deep.



Close the residual joints between cables and blocks with the FBA-SP filler.

Classification to DIN

S30 **S60** **S90**

Classification to EN

EI15 **EI30** **EI45** **EI60** **EI90** **EI120**



Erectors of combination insulation require training.

Always indicate the item number when ordering.



Registration data

Combination insulation in walls/ceilings


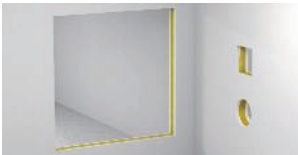


































Fire resistance class	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120
Proof of application	European Technical Assessment of OIB, Vienna
Approval number	ETA-15/0803
Testing standard	EN 1366-3

Additive proofs

Heat permeation	Fraunhofer IBP Stuttgart, P1-001/2012
Air permeation/pressure resistance	ift Rosenheim, 11-003694-PR02
Noise insulation	HfT Stuttgart, 122-007-04P-186a

Installation locations

Insulation in walls and ceilings

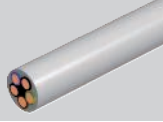
Component	Rigid walls	Flexible walls	Rigid floors
			
Min. component strength 	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120)
Min. insulation thickness 	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)
Opening size for 14.4 cm insulation thickness 	 ≤ 100 cm  ≤ 60 cm	 ≤ 100 cm  ≤ 60 cm	 ≤ 37.5 cm Unlimited  ≤ 40 cm  ≤ 60 cm
	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 100 cm	 ≤ 100 cm  ≤ 60 cm  ≤ 45 cm  ≤ 225 cm
Opening size for 20 cm insulation thickness 	 ≤ 100 cm  ≤ 60 cm	 ≤ 100 cm  ≤ 60 cm	 ≤ 37.5 cm Unlimited  ≤ 40 cm Unlimited
	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 130 cm  ≤ 70 cm  ≤ 100 cm



PYROPLUG® Block Installations

Cable

Ø 80 mm



Pipe bundle of electrical installation pipes

Ø 80 mm cable,
pipes max. Ø 40 mm



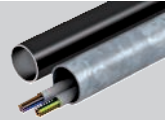
Cable bundle

Ø 100 mm,
cable Ø 21 mm

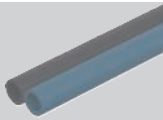


Electrical installation pipe made of steel

Ø 16 mm



Individual lines for control purposes



Cable support systems

Steel profiles



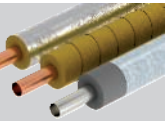
Electrical installation pipe made of plastic, rigid

Ø 40 mm



Metal pipes with path insulation

Steel, stainless steel and
cast steel Ø 88.9 mm,
copper Ø 88.9 mm



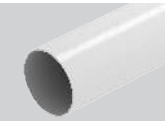
Electrical installation pipe made of plastic, flexible

Ø 40 mm



Plastic pipes

Ø 50 mm



Special installations

Cables

Ø 24 mm

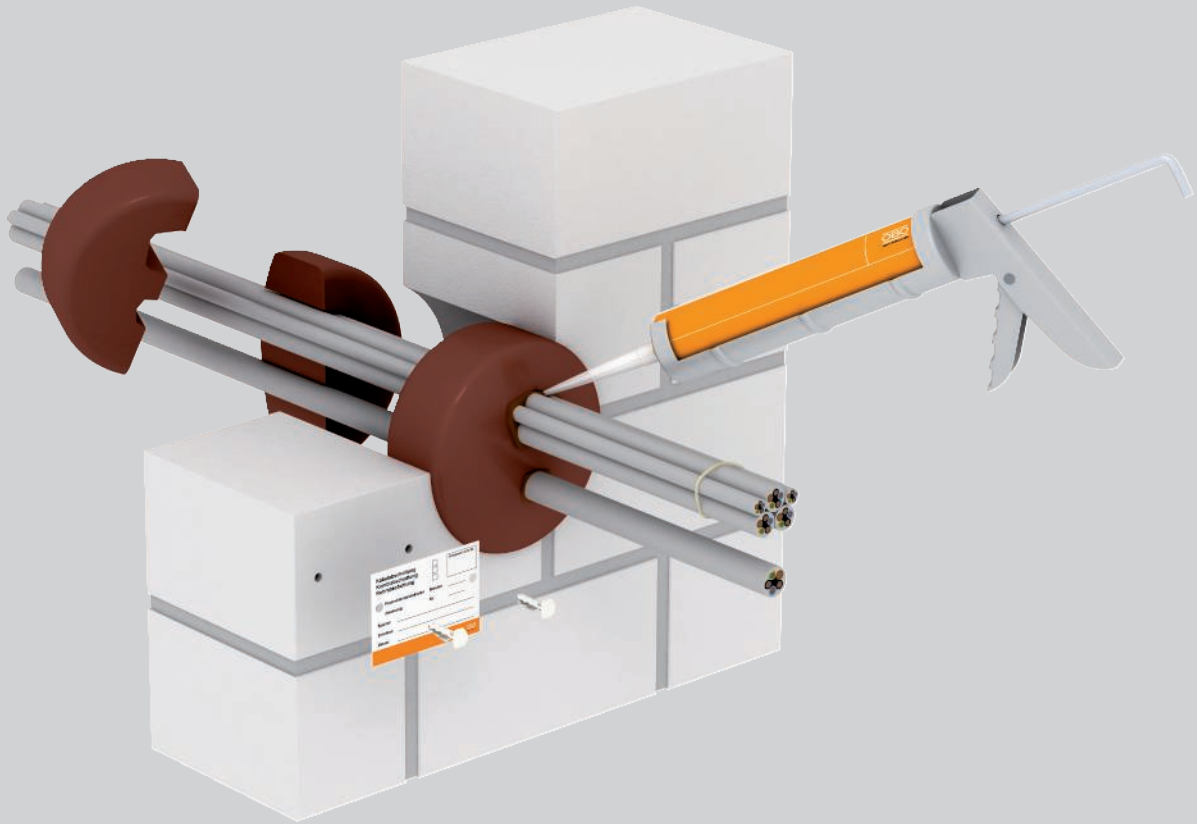


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROPLUG® Peg foam series

System description



The PYROPLUG® Peg system from OBO is used to create cable insulation with fire protection foam plugs. The foam plugs are ideal for closing core drill holes in solid walls and concrete ceilings. The foam plugs are made of permanently elastic, closed-pore foam, which expands in the event of fire without any significant pressure build-up, thus creating an insulating plastic foam. This reliably prevents the penetration of fire and

smoke through the cable insulation. The PYROPLUG® Peg insulation system can be used without difficulty in areas of data processing and in laboratories, as mounting is completely clean and is free of dust and fibres. This also applies to any necessary cable installations at a later date. Special tools are not required for processing, a knife is sufficient.



PYROPLUG® Peg foam series

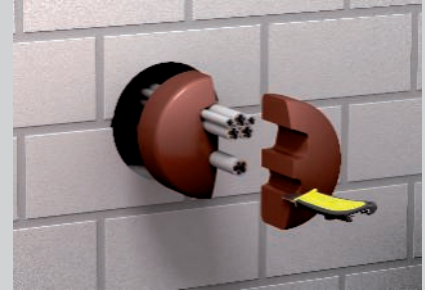
Installation principle



Ideal for core drill holes of 55 mm to 240 mm.



Cutting of the plugs for cable assignment on the edge of the core hole.



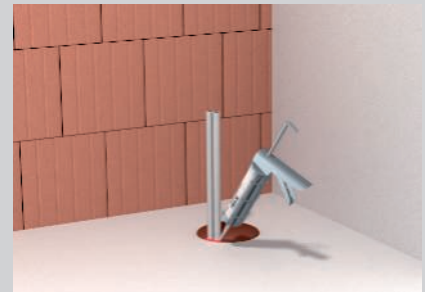
Push cut plugs into the core hole.



Due to the elastically material a quick mounting is possible.



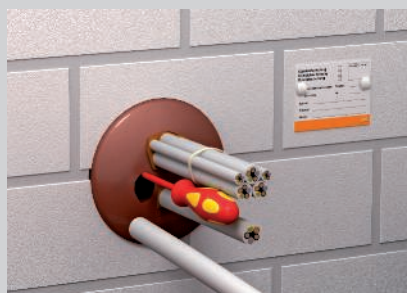
Cutting and mounting of the plugs in ceilings.



Residual joints are closed off with the filler FBA-SP.



Small distance to next core drill hole possible.



With retroinstallations, carefully cut or drill the plugs.

Classification to DIN



Classification to EN



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROPLUG® Peg foam series

Registration data

Combination insulation in walls/ceilings

Fire resistance class	EI 30, EI 45, EI 60, EI 90, EI 120
Proof of application	European Technical Assessment of OIB, Vienna
Approval number	ETA-15/0701
Testing standard	EN 1366-3

Additive proofs

Heat permeation	Fraunhofer IBP Stuttgart, P1-001/2012
Air permeation/pressure resistance	ift Rosenheim, 11-003694-PR01
Noise insulation	HfT Stuttgart, 122-007-04P-186a

Insulation – PYROPLUG® foam series



Installation locations

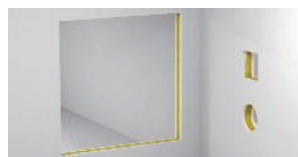
Insulation in walls and ceilings

Component F30

Rigid walls



Flexible walls



Rigid floors



		Rigid walls	Flexible walls	Rigid floors
Min. component strength		10 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)
Min. insulation thickness		>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)
Opening size		Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm	Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm	Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm

PYROPLUG® Peg foam series

Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible

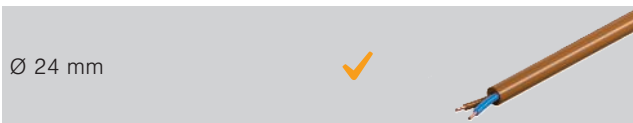


Plastic pipes



Special installations

Cables



Insulation in the lining pipe



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROPLUG® Box box insulation System description



The PYROPLUG® Box system from OBO is used to create cable insulation with boxes made of foam. The system is particularly suitable for simple mounting of cable insulation in lightweight partitions. No layering is required. Installation in solid walls and solid ceilings is also possible and approved. The insulation system consists of a two-part frame and two matching internal pieces. The permanently elastic, closed-pore foam

material expands in the event of fire without any significant pressure build-up, thus creating an insulating plastic foam. This reliably prevents the penetration of fire and smoke through the cable insulation. The usable area of the boxes corresponds to the maximum approval cable assignment area of 60%. It is thus impossible to over assign it with cables.



PYROPLUG® Box box insulation

Installation principle



Insertion of the split frame in light-duty partitions, without additional layering.



Mounting of the frame with previously installed cables.



Exact cutting of the internal pieces and then insertion in the frame.



Closing joint component on full assignment with FBA-SP filler.



Grouped arrangement of the boxes.

Classification to DIN



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROPLUG® Box box insulation

Registration data

Insulation in wall / ceiling

Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19. 15-1557
Testing standard	DIN 4102 Part 9

Installation locations

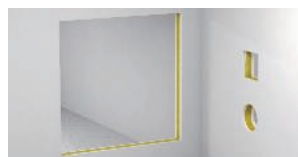
Insulation in walls and ceilings

Component F30

Rigid walls



Flexible walls



Rigid floors



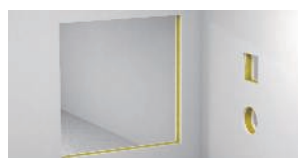
Min. component strength		5 cm (S30 / S60 / S90)	7.5 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		20 cm (S30 / S60 / S90)	20 cm (S30 / S60 / S90)	20 cm (S30 / S60 / S90)
Opening size		↔ ≤ 50 cm ↓ ≤ 50 cm	↔ ≤ 50 cm ↓ ≤ 50 cm	↔ ≤ 50 cm ↓ ≤ 50 cm

Component F90

Screed-covered



Flexible walls



Rigid floors



Min. component strength		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		20 cm (S30 / S60 / S90)	20 cm (S30 / S60 / S90)	20 cm (S30 / S60 / S90)
Opening size		↔ ≤ 50 cm ↓ ≤ 50 cm	↔ ≤ 50 cm ↓ ≤ 50 cm	↔ ≤ 50 cm ↓ ≤ 50 cm

PYROPLUG® Box box insulation Installations

Cable



Pipe bundle of electrical installation pipes



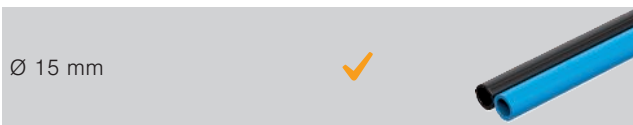
Cable bundle



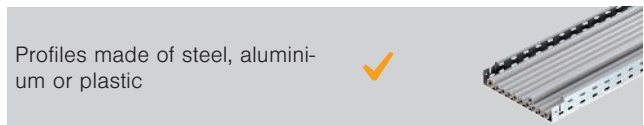
Electrical installation pipe made of steel



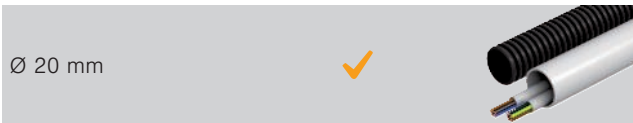
Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes

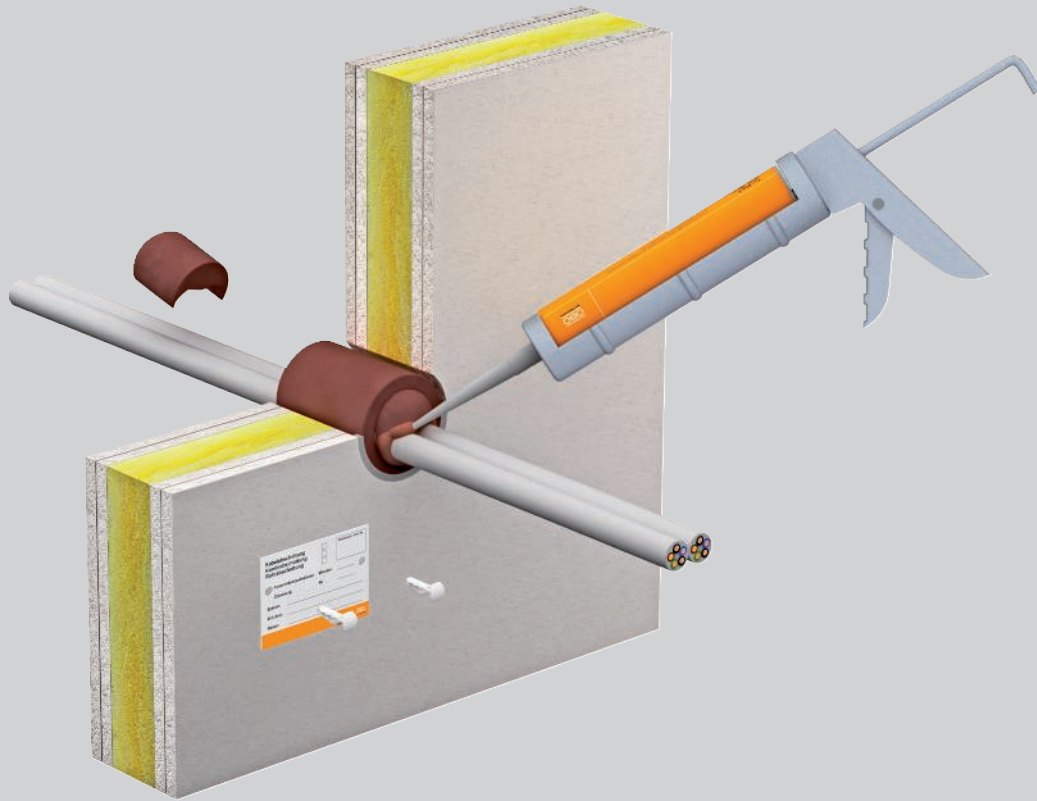


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROPLUG® SHELL pipe shells

System description



The OBO PYROPLUG® Shell system is specially designed for cable insulation in box drill holes in light-duty partitions. The insulation system consists of a pipe shell and two matching plugs. The material is made of permanently elastic, closed-pore foam, which expands in the event of fire without any significant pressure build-up, thus creating an insulating plastic

foam. This reliably prevents the penetration of fire and smoke through the cable insulation. The ratio of the external diameter to the internal diameter of the pipe shell ensures that over assignment with cables is not possible, even at full assignment.

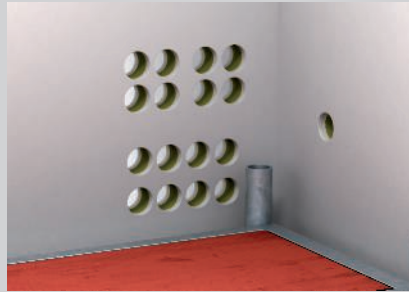


PYROPLUG® SHELL pipe shells

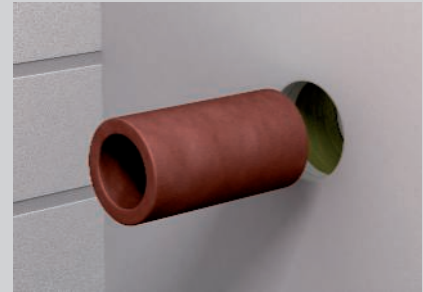
Installation principle



Drilling of a hole with a drill crown.



Grouped arrangement of the drill holes.



Insertion of the pipe shell in the light-duty partition.



For previously installed cables, cutting of the pipe shell.



Cutting and insertion of the plugs in the pipe shell.



Full assignment of the pipe shell.

Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROPLUG® SHELL pipe shells

Registration data

Insulation in wall / ceiling

Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19. 15-1559
Testing standard	DIN 4102 Part 9

Installation locations

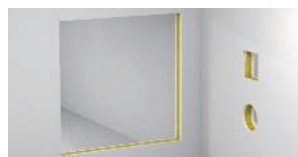
Insulation in walls and ceilings

Component F30

Rigid walls



Flexible walls



Rigid floors



Min. component strength



5 cm
(S30 / S60 / S90)

7.5 cm
(S30 / S60 / S90)

15 cm
(S30 / S60 / S90)

Min. insulation thickness



10 cm
(S30 / S60 / S90)

10 cm
(S30 / S60 / S90)

10 cm
(S30 / S60 / S90)

Opening size



≤ Ø 10 cm

≤ Ø 10 cm

≤ Ø 10 cm

Component F90

Screed-covered



Flexible walls



Rigid floors



Min. component strength



10 cm
(S30 / S60 / S90)

10 cm
(S30 / S60 / S90)

15 cm
(S30 / S60 / S90)

Min. insulation thickness



10 cm
(S30 / S60 / S90)

10 cm
(S30 / S60 / S90)

10 cm
(S30 / S60 / S90)

Opening size



≤ Ø 10 cm

≤ Ø 10 cm

≤ Ø 10 cm

PYROPLUG® SHELL pipe shells Installations

Cable



Pipe bundle of electrical installation pipes



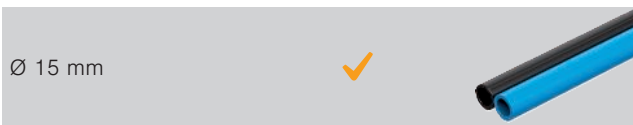
Cable bundle



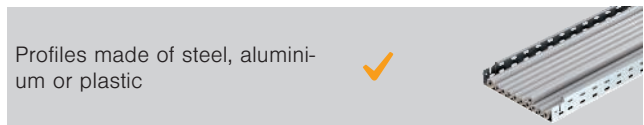
Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes

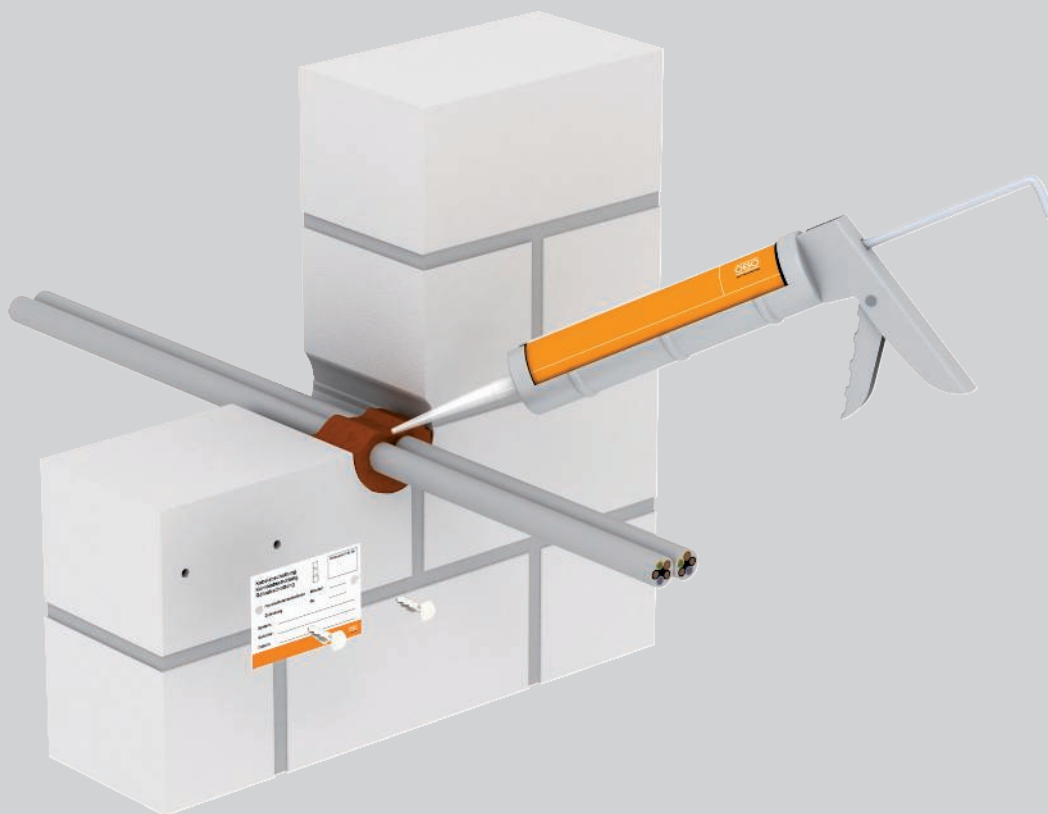


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROPLUG® Mini filler

System description



The OBO PYROPLUG® Mini system is ideal for small, round cable insulations up to a diameter of 8 cm. It only consists of the one-component filler PYROPLUG® Screed. In light-duty partitions, the empty mini pipe shell of the PYROPLUG® Shell system is used as lay-

ering. The interior of these pipe shells may be completely assigned. Only the residual joints must be filled with the filler.



PYROPLUG® Mini filler Installation principle



Closing of the opening with the filler FBA-SP.



In light-duty partitions, use of the mini pipe shell FBA-DR.



Complete assignment of the mini pipe shell.



Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROPLUG® Mini filler

Registration data

Insulation in wall / ceiling

Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19. 15-1851
Testing standard	DIN 4102 Part 9

Installation locations

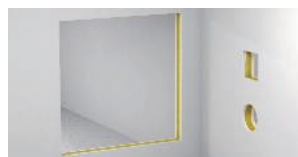
Insulation in walls and ceilings

Component F90

Rigid walls



Flexible walls



Rigid floors



Min. component strength		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Opening size		≤ Ø 8 cm	≤ Ø 8 cm	≤ Ø 8 cm

PYROPLUG® Mini filler

Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROCOMB® Tubes pipe sleeve

System description



The PYROCOMB® Tubes system is used to create cable insulation with pipe sleeves. The system comprises multiple sizes of the pipe sleeve, type TCX. This allows simple insulation of bundles of plastic electrical installation pipes, rigid or flexible, up to a size of M63. It is irrelevant whether the pipes are filled with cables

or are empty. In the event of fire, the fire protection material inserted within the seal foams up after a few minutes under high pressure, closing the softened bundles at a high pressure. This safely prevents the spread of fire and smoke, should a fire occur.



PYROCOMB® Tubes pipe sleeve

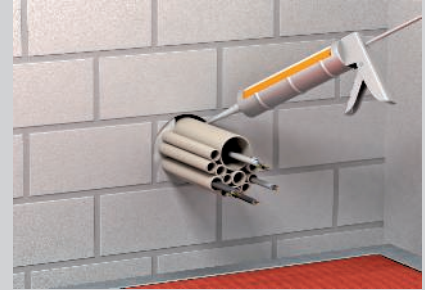
Installation principle



Two-sided arrangement of the pipe sleeves for wall mounting.



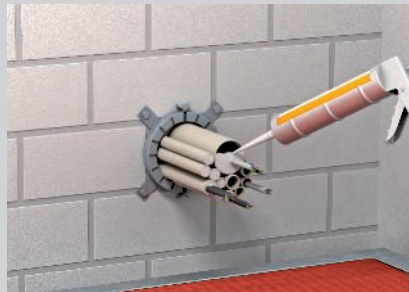
Mounting on the underside of the ceiling with metal anchors.



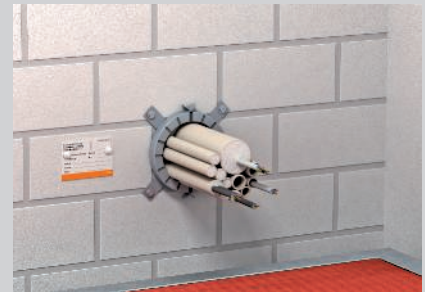
Closing of the ring gap with the insulation layer creator DSX.



Combination of the sleeve halves and fastening on the wall.



Closing of the pipe ends with the insulation layer creator DSX.



Labelled insulation of installation pipe bundles.



05_BSS / en / 2019/02/21 11:25:30 (LLExpert_02517) / 2019/02/21 11:26:01 11:26:01

Classification to DIN

S30 **S60** **S90**

Classification to EN

EI15 **EI30** **EI45** **EI60** **EI90** **EI120**



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROCOMB® Tubes pipe sleeve







Registration data

Combination insulation in walls and ceilings

Fire resistance class	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120
Proof of application	General construction approval of OIB, Vienna
Approval number	ETA-12/0207
Testing standard	EN 1366-3

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (EI 30 / EI 60 / EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120)
Min. insulation thickness		10 cm (EI 60 / EI 90 / EI 120)	10 cm (EI 60 / EI 90 / EI 120)	15 cm (EI 60 / EI 90 / EI 120)
Opening size		Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm

PYROCOMB® Tubes pipe sleeve Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.

PYROCOMB® pipe sleeve

System description



The PYROCOMB® system can be used as independent pipe sealing for combustible pipes (e.g. sanitary wastewater pipes). It is primarily made up of the pipe sleeves, type TCX. In the event of fire, the fire protection material inserted within the seal foams up after a few minutes under high pressure, closing the soft plastic pipes. This safely prevents the spread of fire

and smoke, should a fire occur. With wall mounting, the pipe sleeves are mounted on both sides of the wall with metal anchors. Ceiling penetrations only have a tube seal from the underside. In light-duty partitions, the pipe sleeves are fastened on passed-through threaded rods and connected together.



PYROCOMB® pipe sleeve

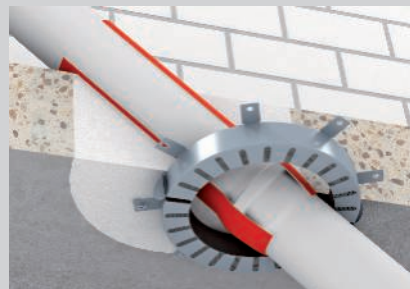
Installation principle



Two-sided arrangement of the pipe sleeves for wall mounting.



Mounting on the underside of the ceiling with metal anchors.



Sloping pipe penetration up to an angle of 39°.



Pipe sleeves in the area of the penetration.



Eccentric arrangement with max. 3 levels of larger pipe sleeves.



Pipe post systems with 2 accompanying cables.

Classification to DIN

S30

S60

S90

Classification to EN

EI15

EI30

EI45

EI60

EI90

EI120

EI180

EI240



Erectors of combination insulation require training.

Always indicate the item number when ordering.





PYROCOMB® pipe sleeve


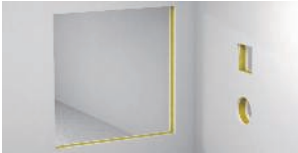




Registration data

Pipe insulation in underfloor ducts

Fire resistance class	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120, EI 180, EI 240
Proof of application	General construction approval of OIB, Vienna
Approval number	ETA-12/0182
Testing standard	EN 1366-3

Installation locations

Pipe insulation in walls and ceilings

Component	Rigid walls	Flexible walls	Rigid floors
			
Min. component strength 	10 cm (EI 30 / EI 60 / EI 90 / EI 120 / EI 240)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120) 30 cm (EI 180 / EI 240)
Min. insulation thickness 	10 cm (EI 30 / EI 60 / EI 90 / EI 120 / EI 240)	10 cm (EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120) 30 cm (EI 180 / EI 240)
Opening size 	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm

PYROCOMB® pipe sleeve Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes



Ø 400 mm



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



PYROCOMB® Intube pipe shell

System description

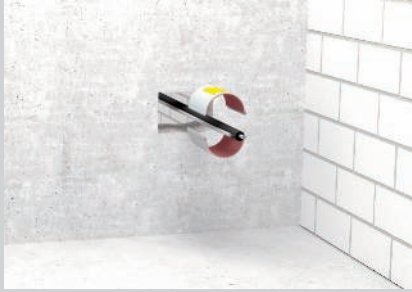


The PYROCOMB® Intube system is used to create cable insulation with pipe shells or half shells. The pipe shell is particularly suitable for core drill holes and can very easily be installed in solid ceilings or walls and also light-duty partitions. For this, two half pipe sleeves are clicked together and bedded in mortar in the core hole. Then the pipe sleeves are closed with seals and the surface is sealed with ASX ablation coating. The cables don't require any coating. The half shell can be used particularly well in the under-

floor area. It is sealed on one side with fire protection plugs and sealed with ASX ablation coating. In case of a fire, the inner coating of the pipe shells or the half shell expands and, in so doing, closes the opening cross-section completely. The transfer of fire and smoke is thus safely prevented. With the PYROCOMB® Intube system, 100% assignment of the interior is possible.

PYROCOMB® Intube pipe shell

Installation principle



Mounting of the pipe shell by clicking the half shells together around the existing installation.



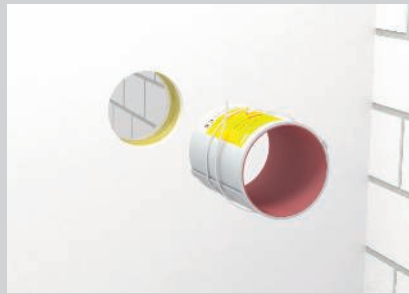
Closing of the opening with PYROMIX® mortar.



Adjust the foam plugs to installations using a knife and create smoke gas-tight sealing of the sealings using the ASX coating compound.



With ceiling mounting, use a lined body to prevent the pipe shell from falling out.



In certain applications, security with metal tensioning straps in light-duty partitions is necessary.



Pipe shells with full assignment with cable bundles and electrical installation pipes.



Mounting of the half shell.



Adjusting the foam plug to the cables.



Fully-installed half shell in PYROPLATE® Fibre soft insulation.

Classification to DIN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.

PYROCOMB® Intube pipe shell



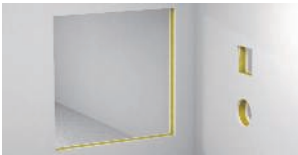






Registration data

Insulation in wall / ceiling

Fire resistance class	EI 60, EI 90, EI 120
Proof of application	General construction approval of OIB, Vienna
Approval number	ETA - 13/0904
Testing standard	EN 1366-3

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
Min. component strength		 10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	 10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	 12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Min. insulation thickness		10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Opening size		Ø 125 mm	Ø 125 mm	Ø 125 mm
		55 mm x 116 mm	55 mm x 116 mm	55 mm x 116 mm

PYROCOMB® Intube pipe shell Installations

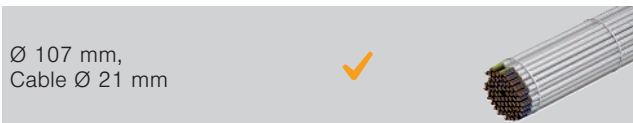
Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions.
All the stated dimensions are maximum values.

PYROCOMB® Intube pipe shell

System description



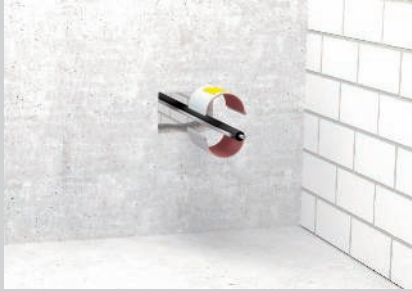
The PYROCOMB® Intube system is used to create cable insulation with pipe shells or half shells. The pipe shell is particularly suitable for core drill holes and can very easily be installed in solid ceilings or walls and also light-duty partitions. For this, two half pipe sleeves are clicked together and bedded in mortar in the core hole. Then the pipe sleeves are closed with seals and the surface is sealed with ASX ablation coating. The cables don't require any coating. The half shell can be used particularly well in the under-

floor area. It is sealed on one side with fire protection plugs and sealed with ASX ablation coating. In case of a fire, the inner coating of the pipe shells or the half shell expands and, in so doing, closes the opening cross-section completely. The transfer of fire and smoke is thus safely prevented. With the PYROCOMB® Intube system, 100% assignment of the interior is possible.



PYROCOMB® Intube pipe shell

Installation principle



Mounting of the pipe shell by clicking the half shells together around the existing installation.



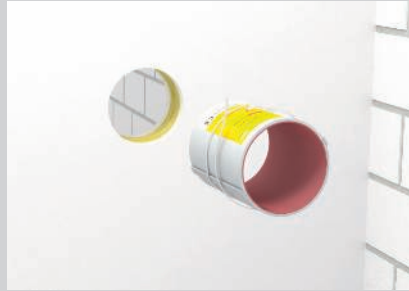
Closing of the opening with PYROMIX® mortar.



Adjust the foam plugs to installations using a knife and create smoke gas-tight sealing of the sealings using the ASX coating compound.



With ceiling mounting, use a lined body to prevent the pipe shell from falling out.



In certain applications, security with metal tensioning straps in light-duty partitions is necessary.



Pipe shells with full assignment with cable bundles and electrical installation pipes.



Mounting of the half shell.



Adjusting the foam plug to the cables.



Fully-installed half shell in PYROPLATE® Fibre soft insulation.

Classification to DIN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.



PYROCOMB® Intube pipe shell



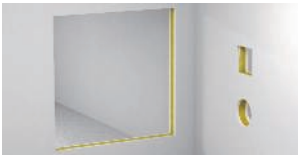






Registration data

Insulation in wall / ceiling

Fire resistance class	EI 60, EI 90, EI 120
Proof of application	General construction approval of OIB, Vienna
Approval number	ETA - 13/0904
Testing standard	EN 1366-3

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
Min. component strength		 10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	 10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	 12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Min. insulation thickness		10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Opening size		Ø 125 mm	Ø 125 mm	Ø 125 mm
		55 mm x 116 mm	55 mm x 116 mm	55 mm x 116 mm



PYROCOMB® Intube pipe shell Installations

Cable

Ø 80 mm



Pipe bundle of electrical installation pipes

Ø 107 mm

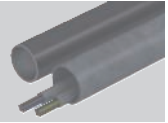


Cable bundle

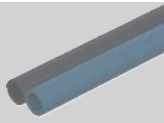
Ø 107 mm,
Cable Ø 21 mm



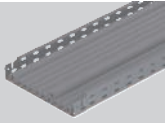
Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



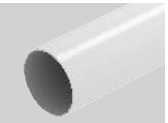
Electrical installation pipe made of plastic, flexible

Ø 32 mm,
cable Ø 21 mm



Plastic pipes

2 × Ø 32 mm

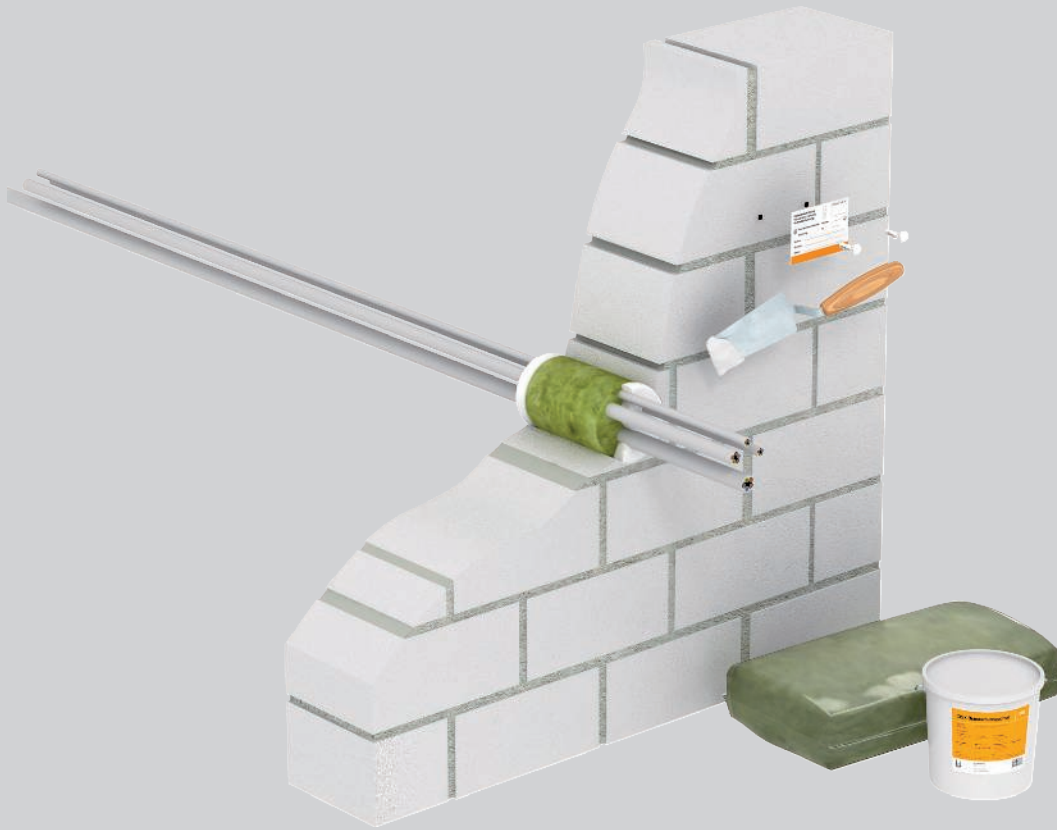


Details on the version can be found in the proof of suitability or mounting instructions.
All the stated dimensions are maximum values.



PYROMIX® Screed® small insulation

System description



Small insulation for cables is created using the PYROMIX® Screed system. It consists of OBO's insulation forming material, type DSX, and the MIW mineral wool. As the insulation basis, the opening is first filled using the non-combustible mineral wool (melting point $\geq 1,000$ °C). Then, both sides of the opening

are sealed with the DSX insulation creator. If there is a fire, the filler foams up, preventing penetration by fire and smoke. When the material foams up, heat is also drawn from the cables, thus considerably reducing the transfer of heat via the copper cores.



PYROMIX Screed® small insulation Installation principle



Mineral wool with melting point $\geq 1,000$ °C to plug the opening.



Closure of the surfaces on both sides with the DSX insulation layer creator.
(Minimum thickness 1 cm on each side.)



Labelling of the small insulation.



Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.

PYROMIX Screed® small insulation


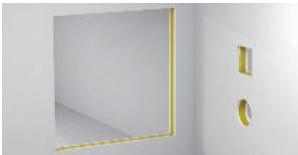










Registration data

Insulation in wall / ceiling

Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	ETA - Z-19. 15-2044
Testing standard	DIN 4102 Part 9

Installation locations

Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		15 cm (S30 / S60 / S90)	-	15 cm (S30 / S60 / S90)
Min. insulation thickness		15 cm (S30 / S60 / S90)	-	15 cm (S30 / S60 / S90)
Opening size		 ≤ 10 cm  ≤ 10 cm  ≤ Ø 10 cm	-	 ≤ 10 cm  ≤ 10 cm  ≤ Ø 10 cm



PYROMIX Screed® small insulation Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



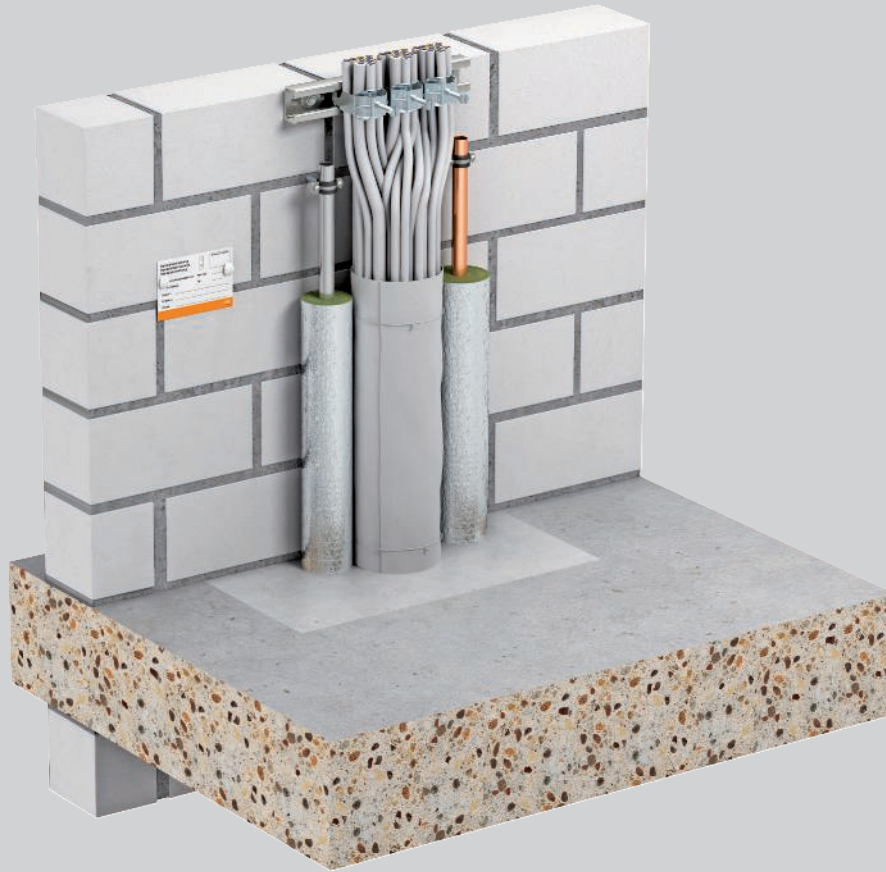
Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



Cable insulation Conlit® Bandage System description



The Conlit® system, consisting of the fire protection bandage, type CL-KS, is used within buildings as cable insulation for individual cables, cable and electrical installation pipe bundles (EIP). The flexible bandage is simply laid around the installations and fixed with a wire. Cable bundles and rigid EIPs must be wound with at least two layers of the bandage and flexible EIPs with at least three layers. In case of a

fire, the material foams up and closes the opening cross-section. The fire protection bandage is suitable for cable and electrical installation pipe bundles up to 100 mm diameter. No spacing is required to many insulated pipes. The system insulates fire sections for a period of max. 90 minutes.



Cable insulation Conlit® Bandage Installation principle



Preparation of the cable insulation.



Installation of the fire protection bandage.



Fixing of the bandage using winding wire.



Using mortar, close off the residual insulation opening and mount the identification plate.



Installation of the fire protection bandage with no distance to the Rockwool Conlit pipe insulation.

Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.



Cable insulation Conlit® Bandage

Registration data

Insulation in walls/ceilings

Fire resistance class	S30, S60, S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19.15-1877
Testing standard	DIN 4102 Part 9

Installation locations

Insulation in walls and ceilings

Component F30

Rigid walls



Flexible walls



Rigid floors



Min. component strength		5 cm (S30 / S60 / S90)	7.5 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)
Opening size		≤ Ø 10 cm	≤ Ø 10 cm	≤ Ø 10 cm

Component F90

Screed-covered



Flexible walls



Rigid floors



Min. component strength		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)
Opening size		≤ Ø 10 cm	≤ Ø 10 cm	≤ Ø 10 cm



Cable insulation Conlit® Bandage Installations

Cable

all Ø



Pipe bundle of electrical installation pipes

Ø 100 mm



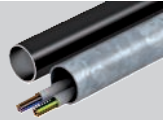
Cable bundle

Ø 100 mm,
cable all Ø



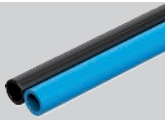
Electrical installation pipe made of steel

Ø 50 mm,
cable all Ø

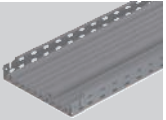


Individual lines for control purposes

Ø 15 mm



Cable support systems



Electrical installation pipe made of plastic, rigid

Ø 40 mm,
Cable Ø 32 mm



Metal pipes with path insulation

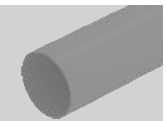


Electrical installation pipe made of plastic, flexible

Ø 40 mm,
cable Ø 22 mm



Plastic pipes

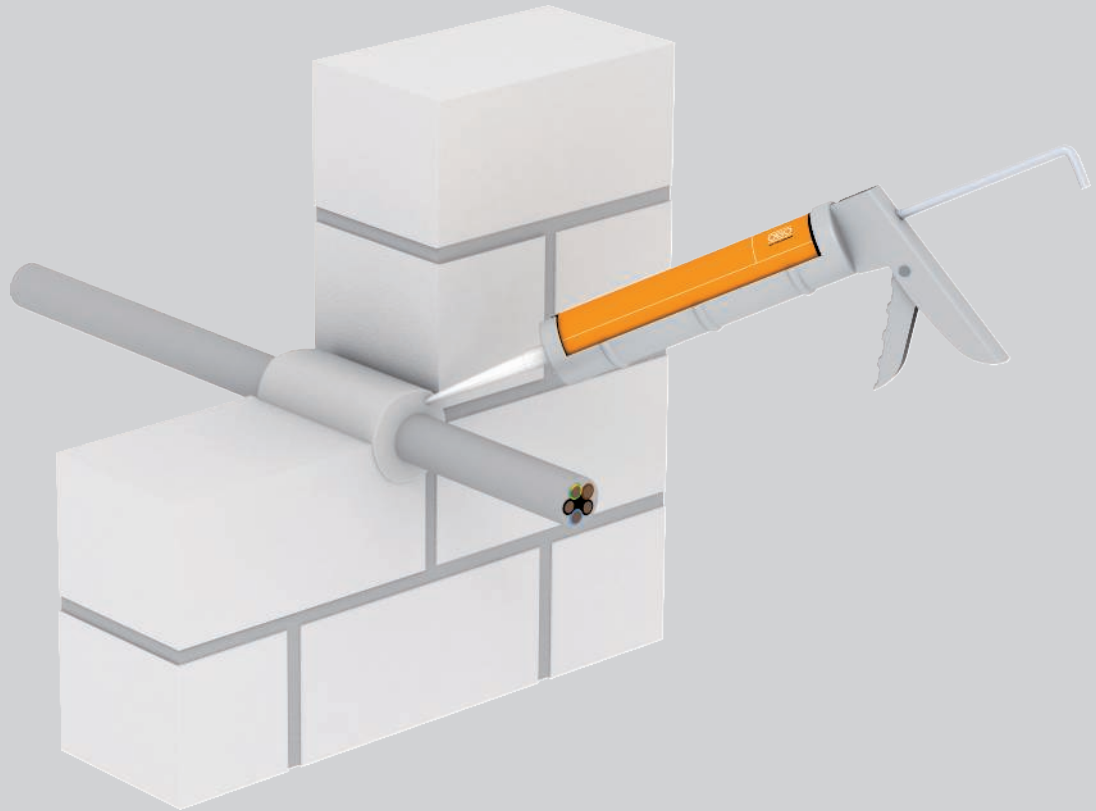


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



Individual cables according to MLAR with insulating layer forming agent

System description



The type DSX insulation forming material from OBO can be used to fill ring gaps around individual cables or multiple cables of a small cross-section routed alongside one another. The ring gap around the cable must be filled with fire protection filler along the entire wall thickness. If there is a fire, the filler foams up,

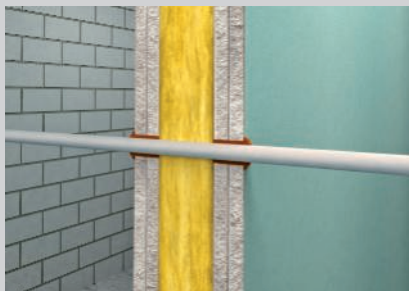
preventing penetration by fire and smoke. When the material foams up, heat is also drawn from the cables, thus considerably reducing the transfer of heat via the copper cores.



Individual cables according to MLAR with insulating layer forming agent Installation principle



DSX insulation layer creator, suitable for full-wall ring gap closure in solid walls and ceilings.



With light-duty partitions, filling the double plates to both sides is sufficient.

Classification to DIN 4102

F30

F60

F90

Insulation layer creator on dispersion basis

Material class	B2 – normally flammable
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19.11-1991
Testing standard	DIN 4102

Minimum dimensions of components and their fire resistance period

Min. solid component strength	60	70	80
Fire resistance class	F30	F60	F90
Ring gap max.	15	15	15

All data in mm. The data in the named proofs of applicability applies.



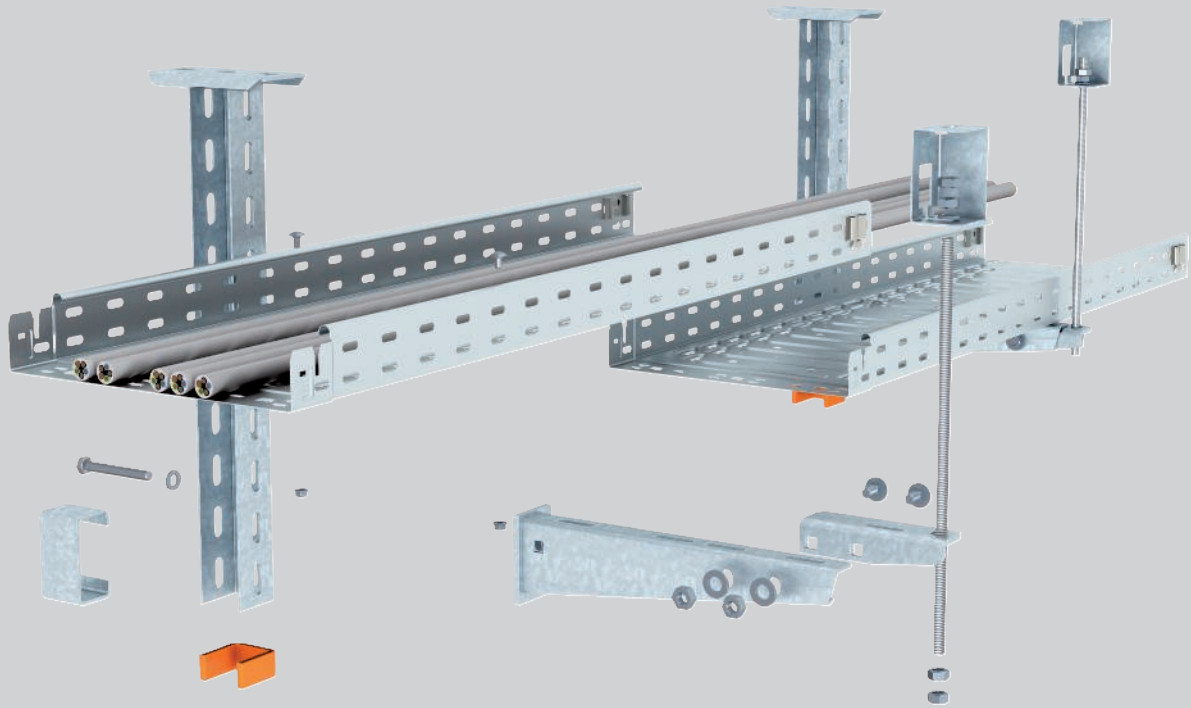
Erectors of combination insulation require training.

Always indicate the item number when ordering.



RKS-Magic® cable tray

System description



The tested RKS-Magic® cable tray system is suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the system has a proven mechanical stability of 30 minutes. The RKS-Magic® cable tray can be mounted under the ceiling or on the wall with brackets. The brackets are additionally secured on the ceiling with a threaded rod to prevent them from bending if there is a fire. A further option for ceiling mounting is the support of the cable tray on profile rails, each mounted under the ceiling

with two threaded rods. As the cable tray deforms in the event of fire, sufficient distance to the false ceiling must be maintained. This minimum distance is documented in the proof of testing for the various versions of the RKS-Magic® cable trays. If the cable loads and tray widths listed in the proof of testing are maintained and the minimum spacings to the false ceiling taken into account, then multi-layer variants can also be implemented.

RKS-Magic® cable tray

Installation principle



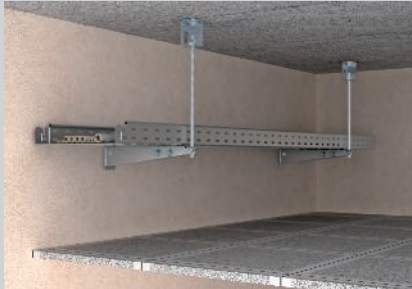
Single-layer ceiling suspension.



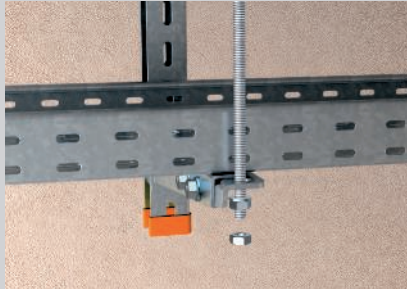
Two-layer ceiling suspension with bracket arrangement on one side.



Two-layer ceiling suspension with bracket arrangement on both sides.



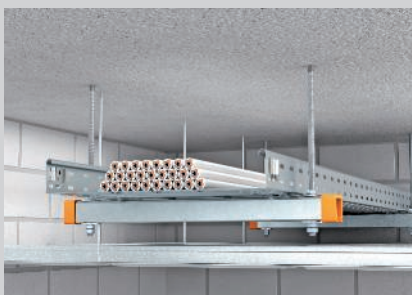
Wall mounting, one and two-layer possible.



Mounting of the threaded rod lock through the connection bracket on the tip of the tray.



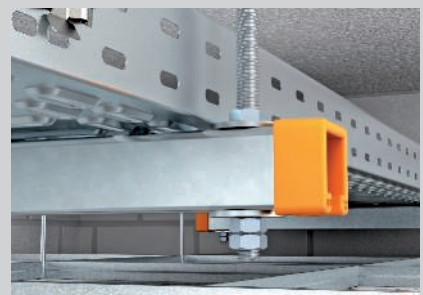
Complete screwless joint connection.



Single-layer ceiling mounting above suspended fire protection ceiling.



Two-layer ceiling mounting above suspended fire protection ceiling.



Clamp fastening for high load capacities.

Tested mounting options



CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Always indicate the item number when ordering.








RKS-Magic® cable tray

Proof



Fire-proof fastening above fire protection ceilings

Fire load	30 minutes
Proof of testing	OBO Bettermann
Document no. - Mounting with suspended support / bracket	05/170503-02
Document no. - Mounting with mounting rails	05/170503-01
Testing principles	In accordance with DIN 4102

Support spacing for wall / ceiling mounting with suspended support / bracket

Cable tray width	Cable load per cable tray					
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m	max. 1.50 m	max. 1.50 m	max. 1.20 m

Support spacing for ceiling mounting with mounting rails

Cable tray width	Cable load per cable tray		
100 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m

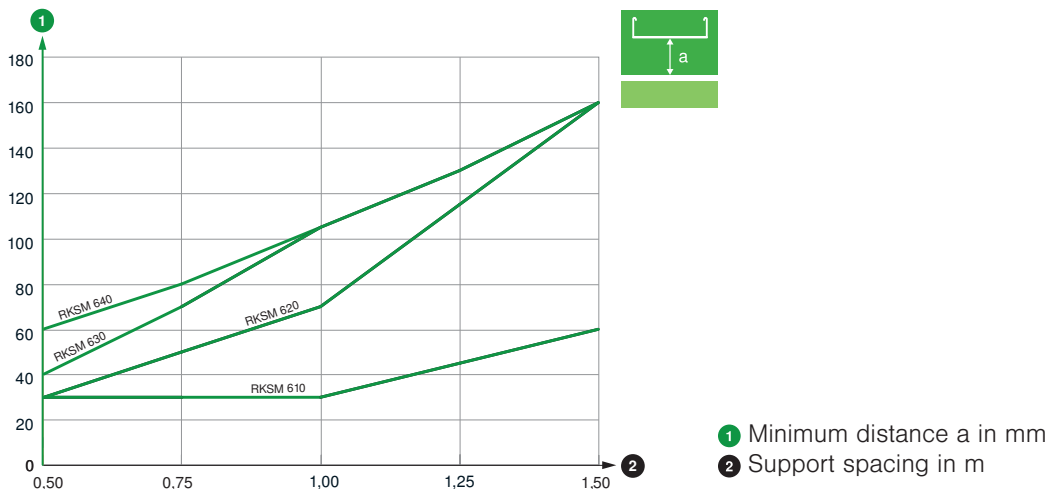
Required minimum spacing "a" under fire load at different support spacings

Cable tray width	Cable load per cable tray	max. 0.50 m	max. 0.75 m	max. 1.00 m	max. 1.25 m	max. 1.50 m
100 mm	max. 15 kg/m	30 mm	30 mm	30 mm	45 mm	60 mm
200 mm	max. 30 kg/m	30 mm	50 mm	70 mm	115 mm	160 mm
300 mm	max. 45 kg/m	40 mm	70 mm	105 mm	130 mm	160 mm
400 mm	max. 60 kg/m	60 mm	80 mm	105 mm	130 mm	160 mm

The stated values for the wall / ceiling mounting with suspended support / bracket and for ceiling mounting with mounting rails

The minimum spacing "a" relates to the distance of the under side of the cable tray to the top side of the fire protection ceiling.






Spacing diagram, RKSM cable tray



RKS-Magic® cable tray



Components used: RKSM cable tray

Wall/ceiling mounting with suspended support/bracket

Component	Type					
Cable tray	RKSM 6... FS	1	2	2	1	2
Support	US 5 K ... FT	1	1	1	0	0
Protective cap	US 5 KS OR	1	1	1	0	0
Wall and support brackets	AW30F... FT	1	2	2	1	2
Spacer	DSK 45	1	2	1	0	0
Hexagonal bolt	SKS 10x 90 F	1	2	1	0	0
Truss-head bolt	FRSB 6x 15 F	2	4	4	2	4
Threaded rod	2078 M12 G	1	2	2	1	2
Hexagonal nut	DIN 934 M12 G	4	5	8	4	5
Washer	966 M12 G	2	3	4	2	3
Connection sleeve	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1

Choose the fastening anchors according to the substrate

Ceiling mounting with mounting rails

Component	Type		
Cable tray	RKSM 6... FS	1	2
Mounting rail	See table	1	2
Protective cap	MS41... EK	2	4
Threaded rod	2078 M12 G	2	4
Hexagonal nut	DIN 934 M12 G	6	10
Large washer	DIN440 14 F	2	4
Washer	966 M12 G	2	4
Connection sleeve	12005 M12 G	0	2
Truss-head bolt	FRSB 6x 15 F	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate

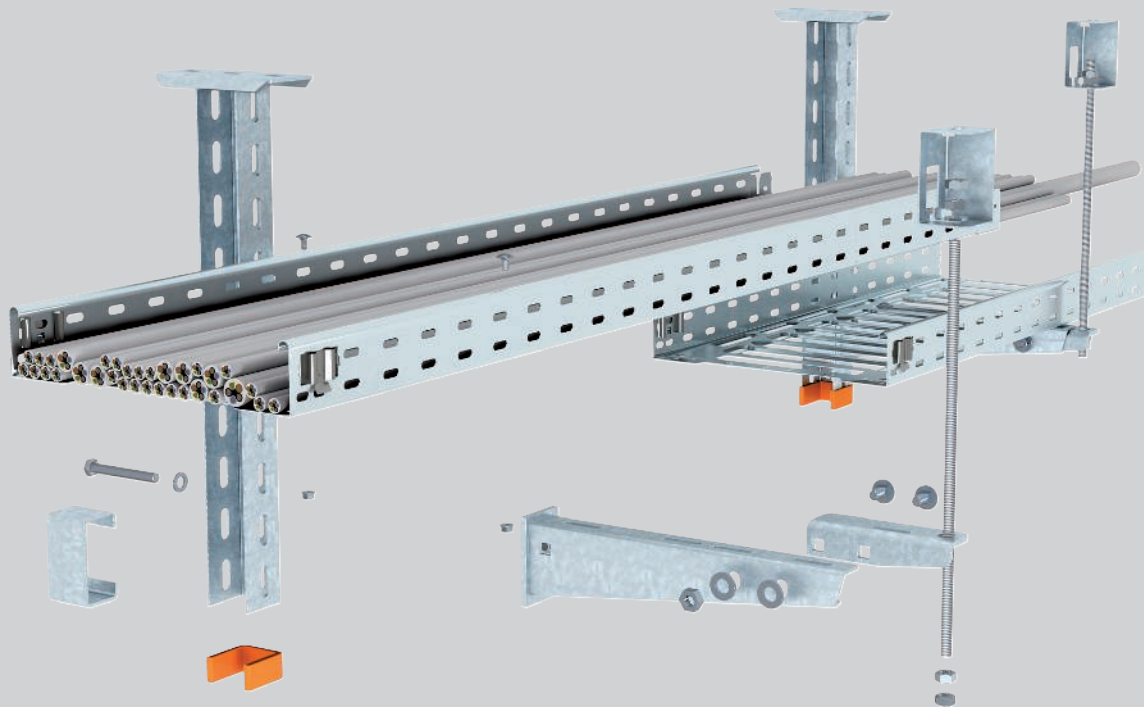
Mounting rails to be used according to support spacing

Cable tray type	Cable tray width	max. 0.50 m	max. 0.75 m	max. 1.00 m	max. 1.25 m	max. 1.50 m
RKSM 610 FS	100 mm	MS4121P	MS4121P	MS4121P	MS4121P	MSL4141P
RKSM 620 FS	200 mm	MS4121P	MS4121P	MS4121P	MSL4141P	MSL4141P
RKSM 630 FS	300 mm	MS4121P	MSL4141P	MSL4141P	MSL4141P	MS4141P
RKSM 640 FS	400 mm	MSL4141P	MSL4141P	MSL4141P	MS4141P	MS4141P



MKS-Magic® cable tray

System description

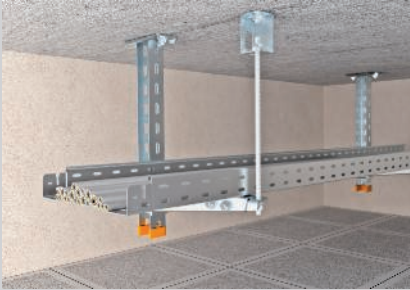


The tested MKS-Magic® cable tray system is suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the system has a proven mechanical stability of 30 minutes. The MKS-Magic® cable trays can be mounted under the ceiling or on the wall with brackets. The brackets are additionally secured on the ceiling with a threaded rod to prevent them from bending in a fire. As the cable trays deform in a fire, sufficient distance to the false ceiling must be maintained. This minimum distance is documented in the proof of testing of the MKS-Magic® cable trays. If the cable loads and tray widths listed in

the proof of testing are maintained and the minimum spacings to the false ceiling taken into account, then multi-layer variants can also be implemented. A further option for ceiling mounting is the support of the cable trays on profile rails, each mounted under the ceiling with two threaded rods. With this mounting variant, sufficient distances to the false ceiling must be maintained. A two-layer arrangement of the cable trays is possible, providing that the approved tensile stress in the threaded rods is also maintained in the event of fire.

MKS-Magic® cable tray

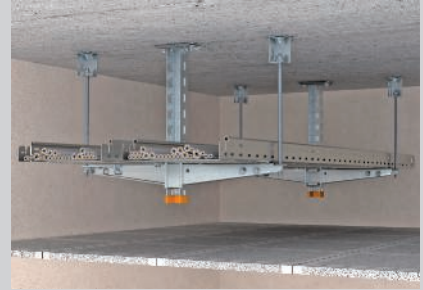
Installation principle



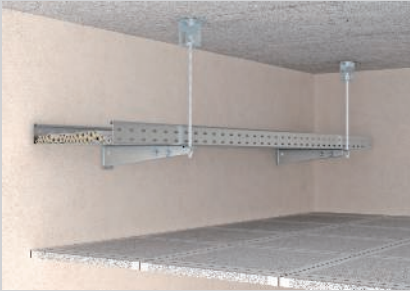
Single-layer ceiling suspension.



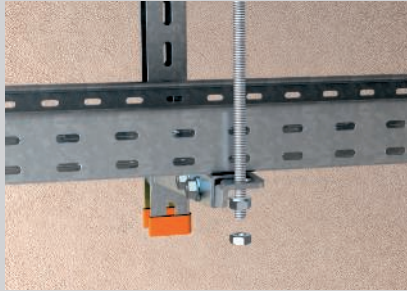
Two-layer ceiling suspension with bracket arrangement on one side.



Two-layer ceiling suspension with bracket arrangement on both sides.



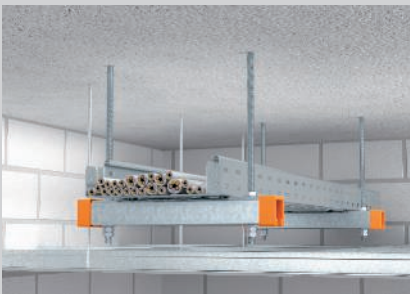
Wall mounting, single and double-layer possible.



Mounting of the threaded rod lock through the connection bracket on the tip of the bracket.



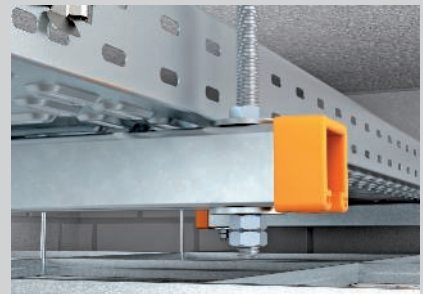
Screwless joint connection, only the base lugs need to be bent.



Single-layer ceiling mounting above suspended fire protection ceiling.



Two-layer ceiling mounting above suspended fire protection ceiling.



Clamp fastening for high load capacities.

Tested mounting options



CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Always indicate the item number when ordering.








Fire-proof fastening above fire protection ceilings



Fire load	30 minutes
Proof of testing	OBO Bettermann
Document no. - Mounting with suspended support / bracket	05/130301-04
Document no. - Mounting with mounting rails	05/130301-03
Testing principles	In accordance with DIN 4102

Proofs of testing are also available for the MKS cable trays and can be requested accordingly.

Support spacing for wall / ceiling mounting with suspended support / bracket

Cable tray width	Cable load per cable tray					
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m	max. 1.50 m	max. 1.50 m	max. 1.20 m

Support spacing for ceiling mounting with mounting rails

Cable tray width	Cable load per cable tray		
100 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m

Required minimum spacing "a" under fire load at support spacing max. 1.50 m



Cable tray width	Cable load per cable tray	max. 1.50 m
100 mm	max. 15 kg/m	55 mm
200 mm	max. 30 kg/m	105 mm
300 mm	max. 45 kg/m	180 mm
400 mm	max. 60 kg/m	180 mm

The stated values for the wall / ceiling mounting with suspended support / bracket and for ceiling mounting with mounting rails






The minimum spacing "a" relates to the distance of the under side of the cable tray to the top side of the fire protection ceiling.



MKS-Magic® cable tray



Components used, MKSM cable trays

Wall/ceiling mounting with suspended support/bracket

Component	Type					
Cable tray	MKSM 6... FS	1	2	2	1	2
Support	US 5 K ... FT	1	1	1	0	0
Protective cap	US 5 KS OR	1	1	1	0	0
Wall and support brackets	AW30F... FT	1	2	2	1	2
Spacer	DSK 45	1	2	1	0	0
Hexagonal bolt	SKS 10x 90 F	1	2	1	0	0
Truss-head bolt	FRSB 6x 15 F	2	4	4	2	4
Threaded rod	2078 M12 G	1	2	2	1	2
Hexagonal nut	DIN 934 M12 G	4	5	8	4	5
Washer	966 M12 G	2	3	4	2	3
Connection sleeve	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1
Choose the fastening anchors according to the substrate	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1

Choose the fastening anchors according to the substrate

Ceiling mounting with mounting rails

Component	Type		
Cable tray	MKSM 6... FS	1	2
Mounting rail	See table	1	2
Protective cap	MS4141 EK	2	4
Threaded rod	2078 M12 G	2	4
Hexagonal nut	DIN 934 M12 G	6	10
Large washer	DIN440 14 F	2	4
Washer	966 M12 G	2	4
Connection sleeve	12005 M12 G	0	2
Truss-head bolt	FRSB 5x 15 F	2	4
Large washer	DIN440 7 F	2	4

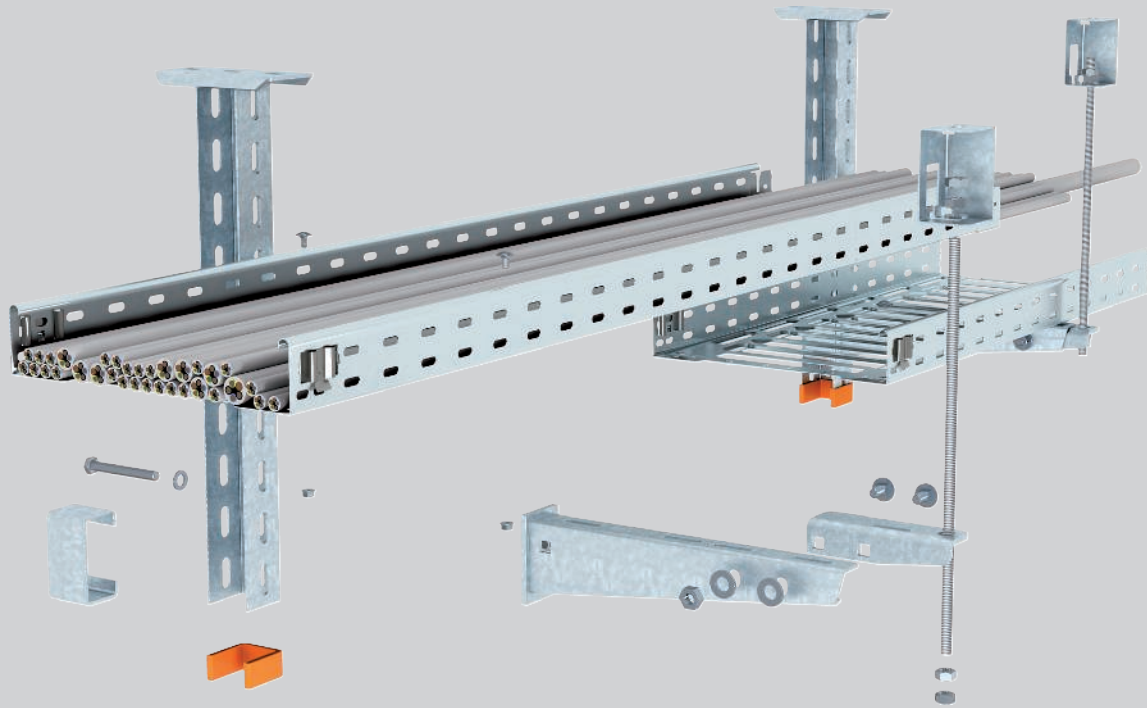
Choose the fastening anchors according to the substrate

Mounting rails to be used according to support spacing

Cable tray type	Cable tray width	max. 1.50 m
MKSM 610 FS	100 mm	MSL4141P
MKSM 620 FS	200 mm	MSL4141P
MKSM 630 FS	300 mm	MS4141P
MKSM 640 FS	400 mm	MS4141P



Cable tray SKS-Magic® System description



The tested SKS-Magic® cable trays can be mounted under the ceiling or on the wall with brackets. In the event of fire, the system has a proven mechanical stability of 30 minutes. The SKS-Magic® cable trays can be mounted under the ceiling or on the wall with brackets. The brackets are additionally secured on the ceiling with a threaded rod to prevent them from bending in a fire. As the cable trays deform in a fire, sufficient distance to the false ceiling must be maintained. This minimum distance is documented in the proof of testing of the SKS-Magic® cable trays. If the cable loads and tray widths listed in the proof of test-

ing are maintained and the minimum spacings to the false ceiling taken into account, then multi-layer variants can also be implemented. A further option for ceiling mounting is the support of the cable trays on profile rails, each mounted under the ceiling with two threaded rods. With this mounting variant, sufficient distances to the false ceiling must also be maintained. A two-layer arrangement of the cable trays is possible, providing that the approved tensile stress in the threaded rod is maintained in the event of fire.

Cable tray SKS-Magic® Installation principle



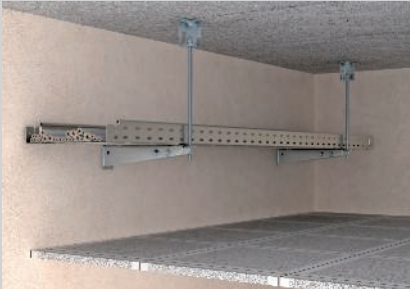
Single-layer ceiling suspension.



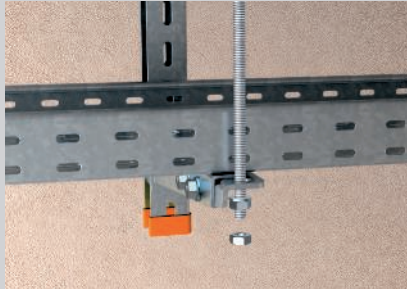
Two-layer ceiling suspension with bracket arrangement on one side.



Two-layer ceiling suspension with bracket arrangement on both sides.



Wall mounting, one and two-layer possible.



Mounting of the threaded rod lock through the connection bracket on the tip of the bracket.



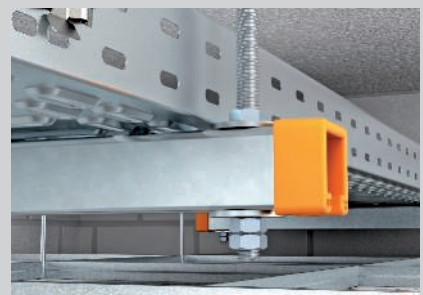
Screwless joint connection, only the base lugs need to be bent.



Single-layer ceiling mounting above suspended fire protection ceiling.



Two-layer ceiling mounting above suspended fire protection ceiling.



Clamp fastening for high load capacities.

Tested mounting options



CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Always indicate the item number when ordering.

Cable tray SKS-Magic®






Proof

Fire-proof fastening above fire protection ceilings



Fire load	30 minutes
Proof of testing	OBO Bettermann
Document no. - Mounting with suspended support / bracket SKSM	05/170601-02
Document no. - Mounting with mounting rails	05/170601-01
Testing principles	In accordance with DIN 4102

Proofs of testing are also available for the SKS cable trays and can be requested accordingly.

Support spacing for wall / ceiling mounting with suspended support / bracket

Cable tray width	Cable load per cable tray					
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m	max. 1.50 m	max. 1.50 m	max. 1.20 m
500 mm	max. 75 kg/m	max. 1.50 m	max. 0.90 m	max. 1.50 m	max. 1.50 m	max. 0.90 m
600 mm	max. 90 kg/m	max. 1.50 m	max. 0.75 m	max. 1.50 m	max. 1.50 m	max. 0.75 m

Support spacing for ceiling mounting with mounting rails

Cable tray width	Cable load per cable tray		
100 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 45 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 60 kg/m	max. 1.50 m	max. 1.20 m
500 mm	max. 75 kg/m	max. 1.50 m	max. 0.90 m
600 mm	max. 90 kg/m	max. 1.50 m	max. 0.75 m

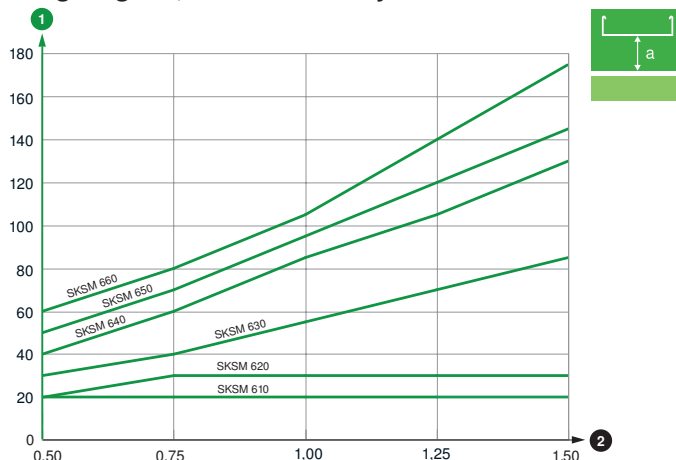
Required minimum spacing "a" under fire load at different support spacings

Cable tray width	Cable load per cable tray	max. 0.50 m	max. 0.75 m	max. 1.00 m	max. 1.25 m	max. 1.50 m
100 mm	max. 15 kg/m	20 mm	20 mm	20 mm	20 mm	20 mm
200 mm	max. 30 kg/m	20 mm	30 mm	30 mm	30 mm	30 mm
300 mm	max. 45 kg/m	30 mm	40 mm	55 mm	70 mm	85 mm
400 mm	max. 60 kg/m	40 mm	60 mm	85 mm	105 mm	130 mm
500 mm	max. 75 kg/m	50 mm	70 mm	95 mm	120 mm	145 mm
600 mm	max. 90 kg/m	60 mm	80 mm	105 mm	140 mm	175 mm

The stated values for the wall / ceiling mounting with suspended support / bracket and for ceiling mounting with mounting rails

The minimum spacing "a" relates to the distance of the under side of the cable tray to the top side of the fire protection ceiling.

Spacing diagram, SKSM cable tray








- 1 Minimum distance a in mm
- 2 Support spacing in m

Cable tray SKS-Magic®



Components used, SKSM cable trays

Wall/ceiling mounting with suspended support/bracket

Component	Type					
Cable tray	SKSM 6... FS	1	2	2	1	2
Support	US 5 K ... FT	1	1	1	0	0
Protective cap	US 5 KS OR	1	1	1	0	0
Wall and support brackets	AW30F... FT	1	2	2	1	2
Spacer	DSK 45	1	2	1	0	0
Hexagonal bolt	SKS 10x 90 F	1	2	1	0	0
Truss-head bolt	FRSB 6x 15 F	2	4	4	2	4
Threaded rod	2078 M12 G	1	2	2	1	2
Hexagonal nut	DIN 934 M12 G	4	5	8	4	5
Washer	966 M12 G	2	3	4	2	3
Connection sleeve	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1
Choose the fastening anchors according to the substrate	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1

Choose the fastening anchors according to the substrate

Ceiling mounting with mounting rails

Component	Type		
Cable tray	SKSM 6... FS	1	2
Mounting rail	See table	1	2
Protective cap	MS41... EK	2	4
Threaded rod	2078 M12 G	2	4
Hexagonal nut	DIN 934 M12 G	6	10
Large washer	DIN440 14 F	2	4
Washer	966 M12 G	2	4
Connection sleeve	12005 M12 G	0	2
Truss-head bolt	FRSB 6x 15 F	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate

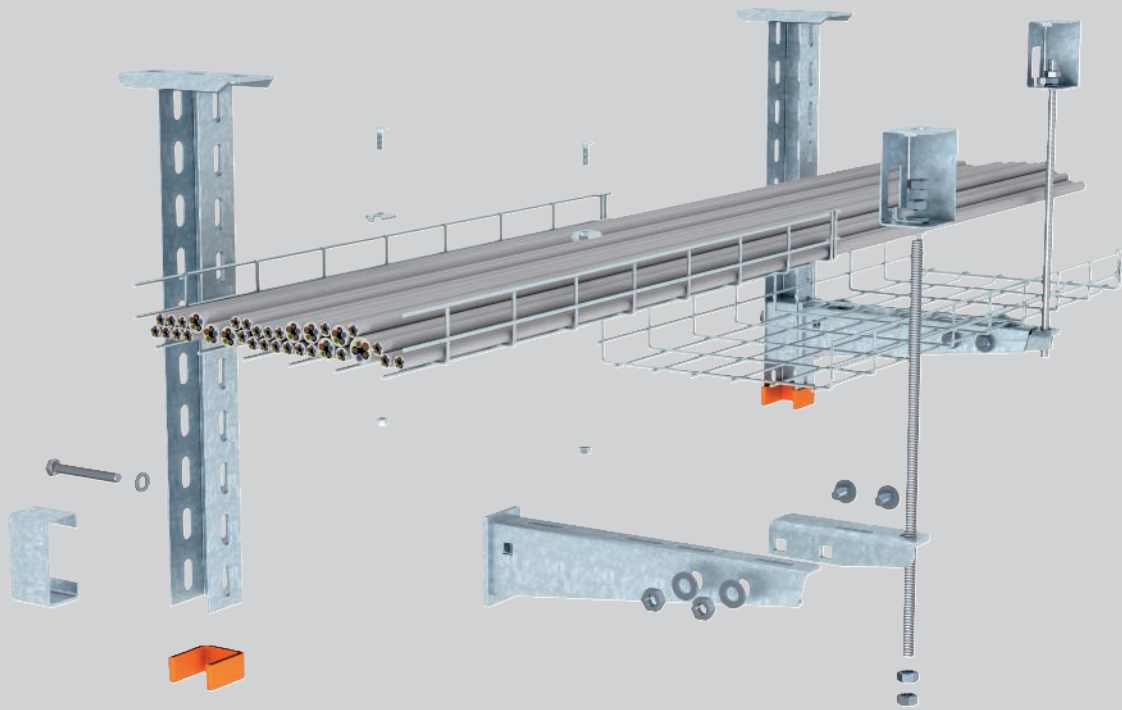
Mounting rails to be used according to support spacing

Cable tray type	Cable tray width	max. 0.50 m	max. 0.75 m	max. 1.00 m	max. 1.25 m	max. 1.50 m
SKSM 610 FS	100 mm	MS4121P	MS4121P	MS4121P	MS4121P	MSL4141P
SKSM 620 FS	200 mm	MS4121P	MS4121P	MS4121P	MSL4141P	MSL4141P
SKSM 630 FS	300 mm	MS4121P	MSL4141P	MSL4141P	MSL4141P	MS4141P
SKSM 640 FS	400 mm	MSL4141P	MSL4141P	MSL4141P	MS4141P	MS4141P
SKSM 650 FS	500 mm	MS4141P	MS4141P	MS4141P	MS4141P	MS4141P
SKSM 660 FS	600 mm	MS4141P	MS4141P	MS4141P	MS4141P	MS4141P



GR-Magic® mesh cable tray

System description



The tested GR-Magic® mesh cable tray system is suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the system has a proven mechanical stability of 30 minutes. The GR-Magic® mesh cable tray can be mounted under the ceiling or on the wall with brackets. The brackets are additionally secured on the ceiling with a threaded rod to prevent them from bending in a fire. As the mesh cable tray deforms in a fire, sufficient distance to the false ceiling must be maintained. This minimum distance is documented in the proof of testing for the various versions of the GR-Magic® mesh cable tray. If the cable loads and tray widths listed in the proof of

testing are maintained and the minimum spacings to the false ceiling taken into account, then multi-layer variants can also be implemented. A further option for ceiling mounting is the support of the mesh cable tray on profile rails, each mounted under the ceiling with two threaded rods. With this mounting variant, sufficient distances to the false ceiling must be maintained. A two-layer arrangement of the cable trays is possible, providing that the approved tensile stress in the threaded rods is also maintained in the event of fire.

GR-Magic® mesh cable tray

Installation principle



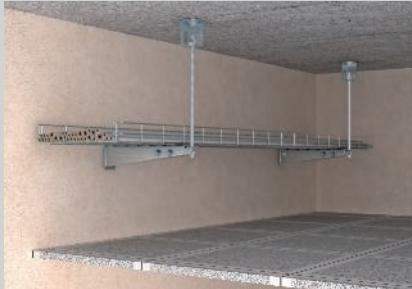
Single-layer ceiling suspension with suspended support and bracket.



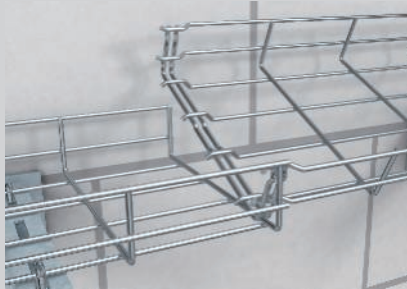
Two-layer ceiling suspension with bracket arrangement on one side.



Two-layer ceiling suspension with bracket arrangement on both sides.



Wall mounting, one and two-layer possible.



Interconnecting of two stock lengths of the mesh cable tray.



Screwless joint connection.



Single-layer ceiling mounting above suspended fire protection ceiling.



Two-layer ceiling mounting above suspended fire protection ceiling.



Clamp fastening for high load capacities.

Tested mounting options



CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Always indicate the item number when ordering.








GR-Magic® mesh cable tray

Proof



Fire-proof fastening above fire protection ceilings

Fire load	30 minutes
Proof of testing	OBO Bettermann
Document no. - Mounting with suspended support / bracket	05/130301-06
Document no. - Mounting with mounting rails	05/130301-05
Testing principles	In accordance with DIN 4102

Support spacing for wall / ceiling mounting with suspended support / bracket

Mesh cable tray width	Cable load per mesh cable tray					
200 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 40 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m

Support spacing for ceiling mounting with mounting rails

Mesh cable tray width	Cable load per mesh cable tray		
100 mm	max. 10 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 40 kg/m	max. 1.50 m	max. 1.50 m

Required minimum spacing "a" under fire load at support spacing max. 1.5 m



Mesh cable tray width	Cable load per mesh cable tray	max. 1.50 m
100 mm	max. 10 kg/m	150 mm
200 mm	max. 20 kg/m	155 mm
300 mm	max. 30 kg/m	160 mm
400 mm	max. 40 kg/m	165 mm

The stated values for the wall / ceiling mounting with suspended support / bracket and for ceiling mounting with mounting rails






The minimum spacing "a" relates to the distance of the under side of the mesh cable tray to the top side of the fire protection ceiling.



GR-Magic® mesh cable tray



Components used, mesh cable trays GRM

Wall/ceiling mounting with suspended support/bracket

Component	Type					
Mesh cable tray	GRM 55 ... G	1	2	2	1	2
Support	US 5 K ... FT	1	1	1	0	0
Protective cap	US 5 KS OR	1	1	1	0	0
Wall and support brackets	AW30F... FT	1	2	2	1	2
Spacer	DSK 45	1	2	1	0	0
Hexagonal bolt	SKS 10x 90 F	1	2	1	0	0
Clamping piece	GKS 34G	2	4	4	2	4
Threaded rod	2078 M12 G	1	2	2	1	2
Hexagonal nut	DIN 934 M12 G	4	5	8	4	5
Washer	966 M12 G	2	3	4	2	3
Connection sleeve	12005 M12 G	0	1	0	0	1
Fire protection clamp	BSB	1	1	2	1	1

Choose the fastening anchors according to the substrate

Ceiling mounting with mounting rails

Component	Type		
Mesh cable tray	GRM 55 ... G	1	2
Mounting rail	See table	1	2
Protective cap	MS41... EK	2	4
Threaded rod	2078 M12 G	2	4
Hexagonal nut	DIN 934 M12 G	6	10
Large washer	DIN440 14 F	2	4
Washer	966 M12 G	2	4
Connection sleeve	12005 M12 G	0	2
Clamping piece	GKS 34G	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate

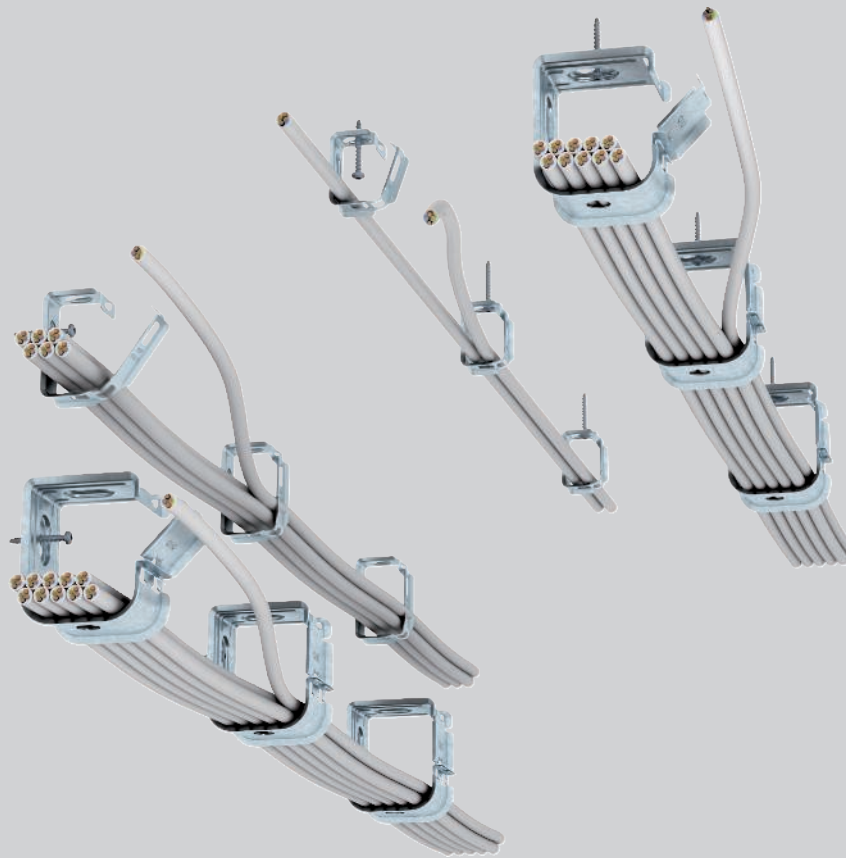
Mounting rails to be used according to support spacing

Mesh cable tray type	Mesh cable tray width	max. 1.50 m
GRM 55 100 G	100 mm	MS4121P
GRM 55 200 G	200 mm	MS4121P
GRM 55 300 G	300 mm	MSL4141P
GRM 55 400 G	400 mm	MSL4141P



Grip M grouped support

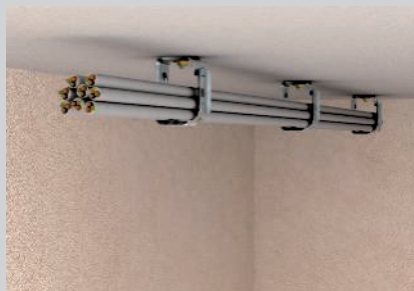
System description



The tested Grip M grouped supports are suitable for installation in the false ceiling area of escape and rescue routes. In the event of a fire, the grouped supports have a proven mechanical stability of 30 to 90 minutes. They can be mounted under the ceiling or on the wall. The grouped supports are made of sheet steel and can be opened and closed easily without

the use of tools. To allow simple cable insertion, the supports remain open during cable routing. Then, the grouped supports are closed through simple locking. The construction of the grouped support and weight of the installed cables prevent the lock from opening itself unintentionally.

Grip M grouped support Installation principle



Ceiling mounting of the grouped supports 2031 M15 and 2031 M 30.



Wall-mounted grouped supports 2031 M15 and 2031 M 30.



Grouped support 2031 M 70 as wall and ceiling mounting for large cable volume.



Opening of the grouped support and insertion of the cables.



Simple insertion the cables in the opened grouped support.

Tested mounting options



CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Always indicate the item number when ordering.





Grip M grouped support Proof



Fire-proof fastening above fire protection ceilings.

Fire load	30 and 90 minutes
Proof of testing	OBO Bettermann
Document no.	05/151214-01
Testing principles	In accordance with DIN 4102



Grouped support 2031 M 15, mounting parameter and required minimum spacing "a"

Fire load	Fastening spacing	Cable assignment		
30 minutes	max. 0.6 m	max. 3.3 kg/m	80 mm	100 mm
30 minutes	max. 0.8 m	max. 2.5 kg/m	100 mm	120 mm
90 minutes	max. 0.6 m	max. 3.3 kg/m	100 mm	120 mm
90 minutes	max. 0.8 m	max. 2.5 kg/m	120 mm	140 mm

Grouped support 2031 M 30, mounting parameter and required minimum spacing "a"

Fire load	Fastening spacing	Cable assignment		
30 minutes	max. 0.6 m	max. 5.8 kg/m	80 mm	110 mm
30 minutes	max. 0.8 m	max. 4.3 kg/m	100 mm	130 mm
90 minutes	max. 0.6 m	max. 5.8 kg/m	100 mm	130 mm
90 minutes	max. 0.8 m	max. 4.3 kg/m	120 mm	150 mm

Grouped support 2031 M 70, mounting parameter and required minimum spacing "a"

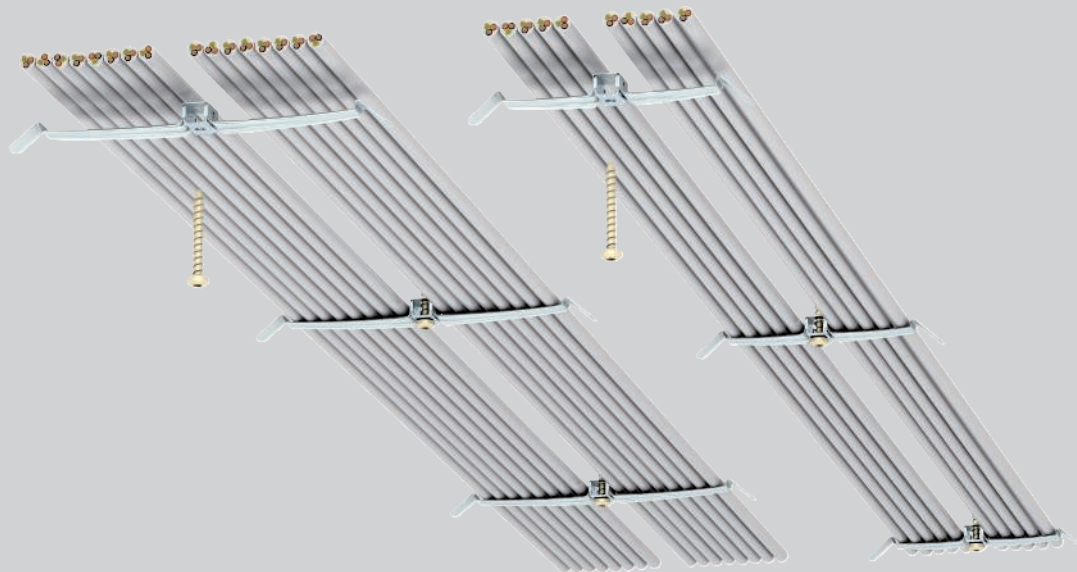
Fire load	Fastening spacing	Cable assignment		
30 minutes	max. 0.6 m	max. 20.0 kg/m	80 mm	120 mm
30 minutes	max. 0.8 m	max. 15.0 kg/m	100 mm	140 mm
90 minutes	max. 0.6 m	max. 13.0 kg/m	100 mm	140 mm
90 minutes	max. 0.8 m	max. 10.0 kg/m	120 mm	160 mm

The minimum spacing "a" relates to the distance of the under side of the grouped support to the top side of the fire protection ceiling.



Metal pressure clip

System description



The tested pressure clips are suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the pressure clips have a proven mechanical stability of 30 minutes. They are mounted under the ceiling. The pressure clips are made of sprung, rustproof steel. For installation, the hips of the

pressure clips are simply bent downwards without tools and the cables pushed in from the side. The edges of the clip are sloping to exclude the possibility of damage to the cables.



Metal pressure clip Installation principle



Ceiling mounting with pressure clip 2034M.



Ceiling mounting with pressure clip 2033 M.



Ceiling mounting with pressure clip 2035 M.



Simple cable installation through side insertion of the cables.



Space-saving and fireproof mounting of cables above a fire protection ceiling.



Tested mounting options




CAUTION: No maintenance of electrical functionality according to DIN 4102 Part 12!

Metal pressure clip Proof


Fire-proof fastening above fire protection ceilings.

Fire load	30 minutes
Proof of testing	OBO Bettermann
Document no.	05/170329-01
Testing principles	In accordance with DIN 4102


Pressure clip 2033 M, mounting parameter and required minimum spacing "a"

Fire load	Fastening spacing	Cable assignment	
30 minutes	max. 0.5 m	2x max. 1.84 kg/m	70 mm

Pressure clip 2034 M, mounting parameter and required minimum spacing "a"

Fire load	Fastening spacing	Cable assignment	
30 minutes	max. 0.5 m	2x max. 1.15 kg/m	50 mm

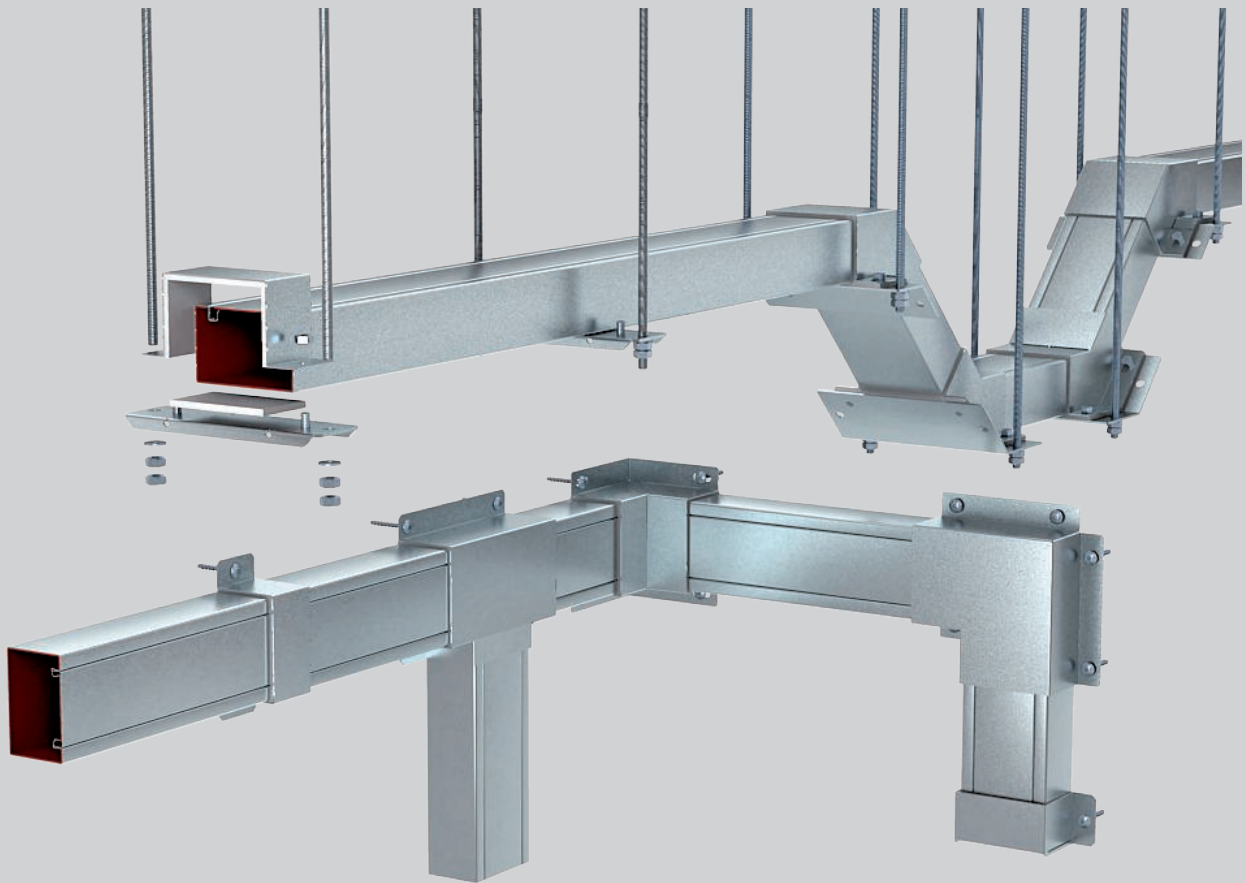
Pressure clip 2035 M, mounting parameter and required minimum spacing "a"

Fire load	Fastening spacing	Cable assignment	
30 minutes	max. 0.5 m	1x max. 1.84 kg/m	70 mm



PYROLINE® Rapid

System description



OBO's PYROLINE® Rapid fire protection duct is made from sheet steel with a profiled lid closing contour and an intumescent interior coating. If there is a fire, this provides active fire load encapsulation and safe prevention of the fire spread. This means that the escape and rescue routes remain free from fire and smoke. The PYROLINE® Rapid is tested and approved as an escape route duct for the classes I 30 to I 120. The shape matches the standard Rapid 80 cable routing duct. The fire protection duct can be installed directly on the wall or the ceiling. Mounting on

wall brackets or on a support system suspended from the ceiling is also possible. The lids can be engaged easily in the base, simultaneously creating the equipotential bonding. The connectors can also be used for suspension. Even overhead mounting is possible, as special brackets keep the cable load away from engaged lids. All the components are prefabricated. There are also no screw ends in the interior of the ducts, meaning that cables cannot be damaged.

Installation principle



Direct wall and ceiling mounting.



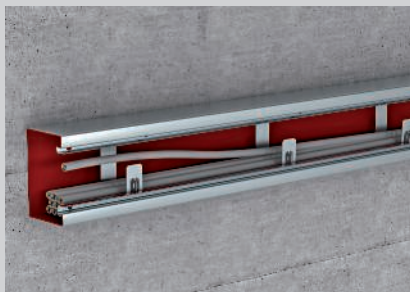
Mounting on raw concrete in system base.



Suspended mounting with vertical bends.



Cable outlet with V-TEC glands, singly or with multiple sealing ring.



Retaining clamps as installation aid to prevent cables from falling out.



Lid mounting without screws.

Classification according to DIN 4102 Part 11



Metal installation duct with intumescent inner coating

Fire resistance class	I30 to I120
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z-19.30-2229
Testing standard	DIN 4102 Part 11

The data in the named proofs of applicability applies.

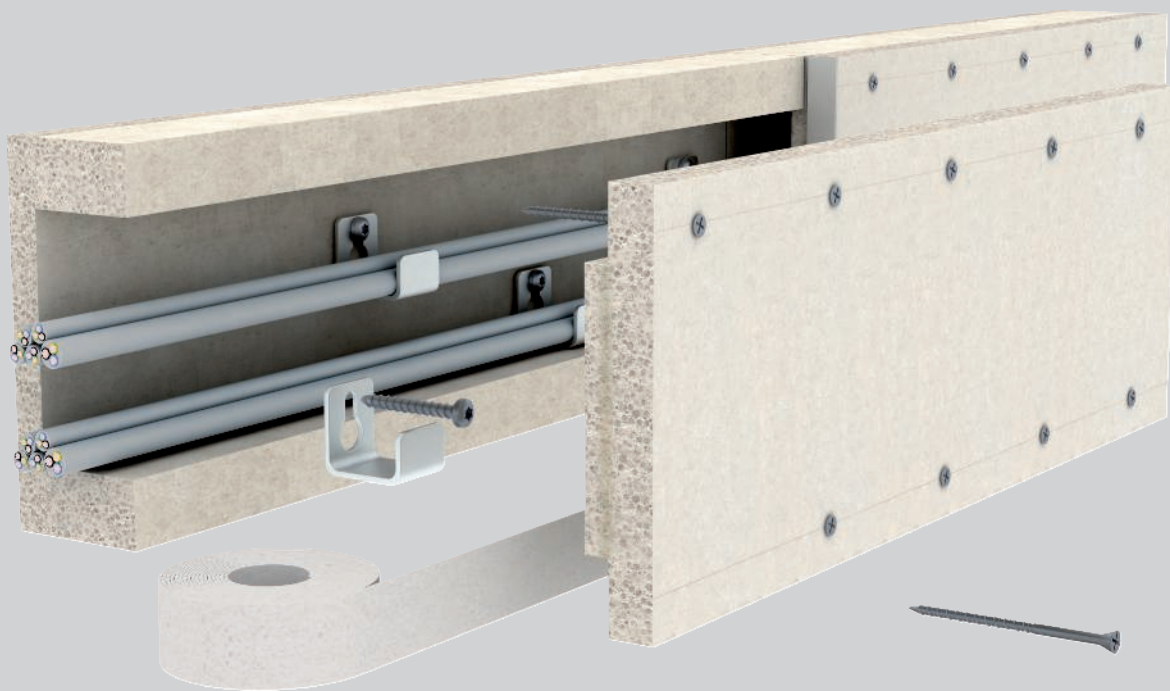
Note: For this metal installation duct with intumescent inner coating, only a general construction approval of the DIBt, Berlin, is available. In countries where a European Technical Assessment (ETA/ETB) is required, the possible use of these components must be agreed with the local fire protection authorities!



PYROLINE® Con D

Fire protection duct for direct wall and ceiling mounting

System description



The PYROLINE® Con D fire protection duct consists of fibreglass light concrete fire protection plates which are resistant to water and frost. The fire protection plates, which are classed as non-combustible (material class A1), have a compacted surface, which is hard, smooth and wear-resistant. The OBO PYROLINE® Con D is used as an I duct to protect escape and rescue routes against the effects of a possible cable fire. This means that the escape and rescue

routes remain free from fire, smoke and heat. As an E duct, PYROLINE® Con D allows the maintenance of electrical functionality of the safety-relevant circuits. The fire protection duct is mounted directly on solid walls and ceilings. Possibly necessary fittings can be created simply and flexibly on-site according to requirements. The fire protection ducts can be painted or papered over, as required.

PYROLINE® Con D

Fire protection duct for direct wall and ceiling mounting

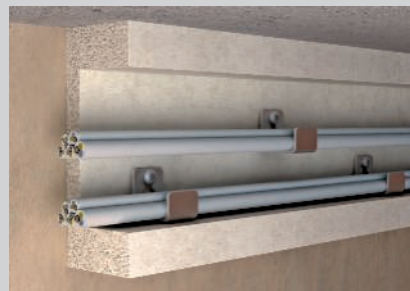
Installation principle



Mounted fire protection duct on wall and ceiling as I and E duct.



Flexible duct routing through individually creatable fittings.



Retaining profile and retaining clamp as mounting aid for cable insertion.



Cable fastening for vertical duct mounting with clips.



Closing surface treatment through painting or papering.



Minor damage can be eliminated at any time.

Classification according to DIN 4102 part 11 and part 12



Installation duct made of fibreglass reinforced lightweight concrete

Fire resistance class	I90 and I120 Installation in escape routes	E30 and E90 Maintenance of electrical functionality
Proof of application	General construction test certificate of the materials testing institute iBMB MPA Braunschweig	General construction test certificate of the materials testing institute iBMB MPA Braunschweig
Approval number	P-3109/0998-MPA BS	P-3320/381/14-MPA BS
Testing standard	DIN 4102 Part 11	DIN 4102 Part 12

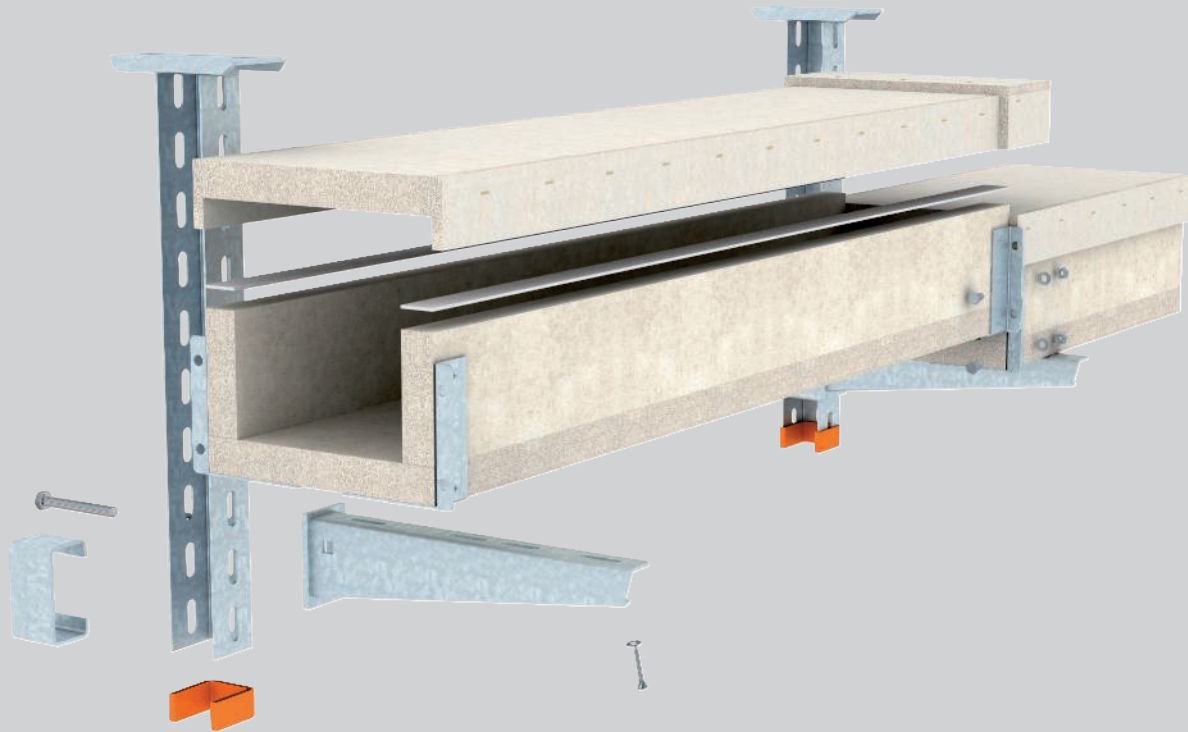
The data in the named proofs of applicability applies.



PYROLINE® Con S

Fire protection duct for suspended mounting

System description



The PYROLINE® Con S like the PYROLINE® Con D, fire protection duct consists of fibreglass light concrete fire protection plates which are resistant to water and frost. The OBO PYROLINE® Con S is used as an I duct to protect escape and rescue routes against a possible cable fire. This means that the escape and rescue routes remain free from fire, smoke and heat. As an E duct, it allows maintains the electrical function of the safety-relevant circuits. The fire protection

duct can be installed on wall brackets or on one of the support systems suspended from the ceiling. Mounted connectors permit quick connection of the duct sections in situ, while loosely placed covers permit quick inspection and reassignment. The duct allows elegant avoidance of objects from other areas such as heating, ventilation and sanitary applications.

PYROLINE® Con S

Fire protection duct for suspended mounting

Installation principle



Suspended ceiling mounting as I duct.



Wall mounting as I duct.



Mounting as E duct with additional threaded rod locking.



Secure joint connection by screwing on the pre-mounted armatures.



Loose-fitting lid for quick inspection and retro-assignment.



Pre-mounted standard fittings in the section.

Classification according to DIN 4102 part 11 and part 12



Installation duct made of fibreglass reinforced lightweight concrete

Fire resistance class	I90 Installation in escape routes	E30 Maintenance of electrical functionality
Proof of application	General construction test certificate of the materials testing institute iBMB MPA Braunschweig	General construction test certificate of the materials testing institute iBMB MPA Braunschweig
Approval number	P-3109/0998-MPA BS	P-3320/381/14-MPA BS
Testing standard	DIN 4102 Part 11	DIN 4102 Part 12

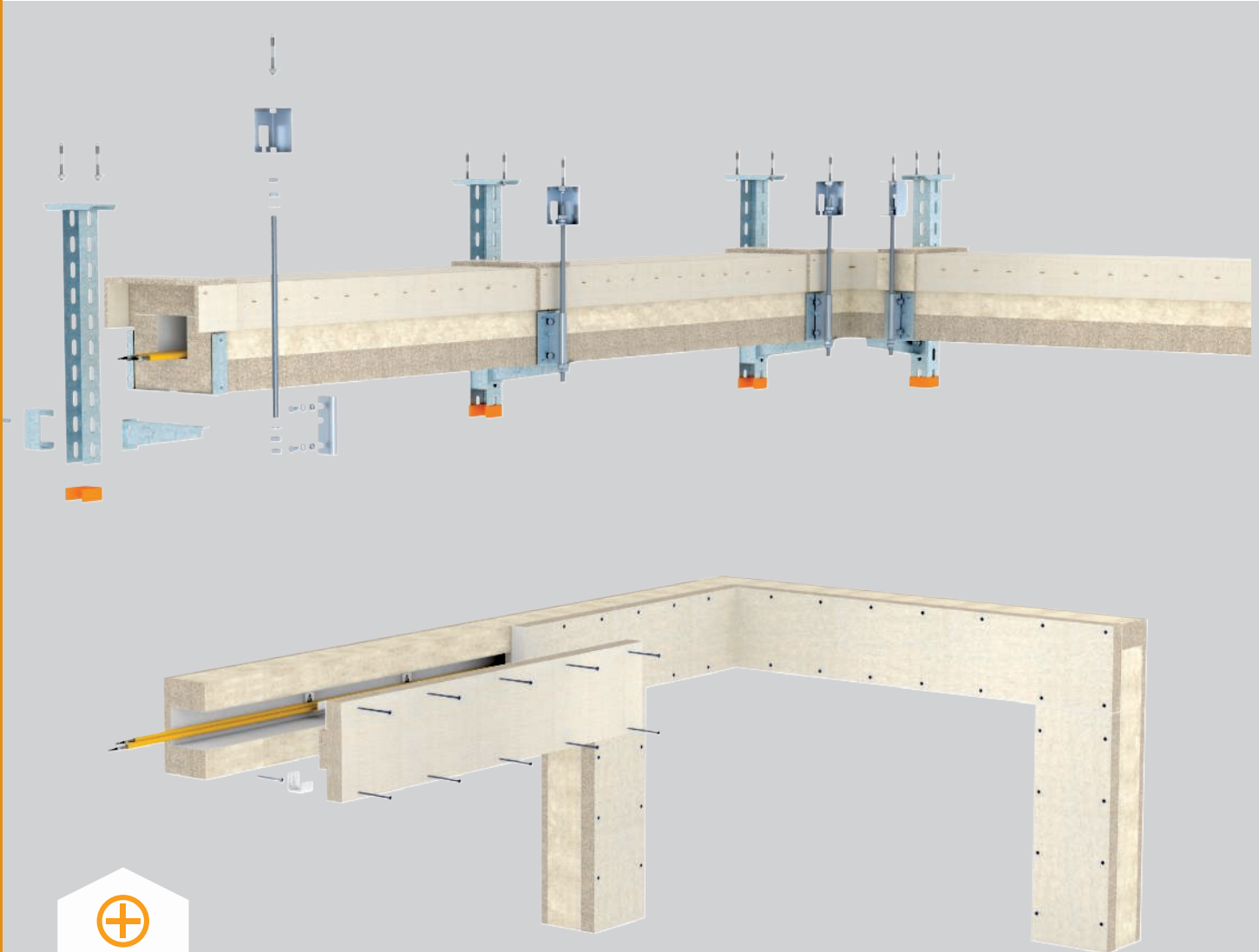
The data in the named proofs of applicability applies.



PYROLINE® Fibre Optics

Fire protection duct for suspended mounting

System description



Communication systems must continue to function even if there is a fire. Increasingly often, they are equipped with fibre optic cables, in order to process large data volumes securely. In industrial systems too, optical data transmission systems are used for process control. In the case of a fire, the processes must be ended in a controlled fashion, in order to prevent damage to people and the environment. For this reason, the fibre optic cables must be routed with

special protection in the event of fire.

Fibre optic cables cannot be evaluated according to the testing standard DIN 4102 Part 12, as the basic criteria only relate to copper conductors. The PYROLINE® Fibre Optics fire protection duct protects the fibre optic cables against an external fire for a period of 90 minutes. The achieved maintenance of electrical functionality class is "E 90".

PYROLINE® Fibre Optics

Fire protection duct for suspended mounting

Installation principle



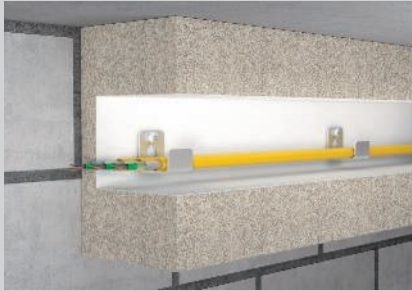
Direct wall and ceiling mounting.



Wall mounting on brackets and additional threaded rod lock.



Suspended ceiling mounting with additional threaded rod lock.



Retaining profile as mounting aid for insertion of the fibre optic cables.



With direct mounting, flexible duct routing through individually creatable fittings.



Prefabricated fittings for direction changes with suspended mounting.

Classification according to DIN 4102 Part 12



Fire protection duct made of fibreglass reinforced lightweight concrete

Maintenance of electrical functionality class	E30 to E90
Proof of application	General construction test certificate of the materials testing institute iBMB MPA Braunschweig
Approval number	P-3320/381/14-MPA BS
Testing standard	DIN 4102 Part 12
Application with fibre optic cables	Surveyor's report no. GA-2017/012-Nau of Ingenieurbüro für Brandschutz von Bauarten, IBB
Mounting variants	Direct wall and ceiling mounting Suspended mounting

The data in the named proofs of applicability applies



PYROLINE® Sun PV

Concrete photovoltaic duct for direct and suspended mounting

System description



The PYROLINE® Sun PV fire protection duct is the ideal fire protection duct for fireproof routing of photovoltaic DC cables. If there is a fire, its non-conductive surface ensures protection against dangerous contact voltages. In addition, the duct fulfils the requirements as an I duct according to DIN 4102 Part 11 for cable installations in emergency and escape routes. In addition, it meets the requirements of the VDE application

rule AR 2100-712. The fire protection duct can be installed directly on the wall or the ceiling. The appropriate connection armatures mean that suspended mounting is also possible. The duct is made of water and frost-resistant glass fibre lightweight concrete fire protection plates (non-combustible, material class A1), meaning that it is suitable for external areas.

PYROLINE® Sun PV

Concrete photovoltaic duct for direct and suspended mounting

Installation principle



Direct wall and ceiling mounting.



Flexible duct routing through individually creatable fittings.



Can be painted or papered over, to permit discreet integration in the building.



Suspended mounting on the connector elements.



Contact protection begins directly with the converter.



Labelling according to the VDE application rule.

Classification according to DIN 4102 Part 11



Installation duct made of fibreglass reinforced lightweight concrete

Fire resistance class	I30 Installation in escape routes
Proof of application	General construction test certificate of the materials testing institute iBMB MPA Braunschweig
Approval number	P-3109/0998-MPA BS
Testing standard	DIN 4102 Part 11
Photovoltaic application	According to VDE application rule for fireproof routing of PV-DC cables

The data in the named proofs of applicability applies.



PYROWRAP® Wet FSB-WLS

Application in interior areas and wet rooms

System description



The PYROWRAP® Wet FSB-WLS system can be used to wrap large cable bundles or cable support systems within the fire sections, in order to prevent the spread of a fire. The mesh possesses a fire protection coating, which stops a fire in its tracks at an early stage, e.g. in the case of a short circuit. If there is fire coming in from the outside, the material is not involved in the course of the fire, effectively preventing the spread of the fire, both in vertical and horizontal directions.

In the escape and rescue routes of small buildings,

the mounting of a cable bandage is permitted, as only low smoke development is to be expected and only a small number of people must be evacuated. In larger buildings, the residual risk of smoke development is accepted, even if considerably more people must be evacuated. Here, the fire protection bandage frequently presents the only economic solution compared to fire protection ceilings or panelling with plate materials.

PYROWRAP® Wet FSB-WLS

Application in interior areas and wet rooms

Installation principle



Complete encasement of the suspended cable run.



Complete encasement of the cables in a cable run as wall mounting.



Bandage fastening with metallic rails in a single-clip installation.



Bandage fastening with metallic tightening straps in a rail installation.



Cable exit with bandaging.



Bandaging of the cable bundles on support systems.

Cable jacketing to prevent fire spread

Proof of application	Application approval of DIBt Berlin Material approval of DIBt Berlin
Documents	Z-56.217-3600 Z-19.11-2183
Prevention of fire spread	min. 90 minutes
Material properties	Exterior grey glass fibre mesh, interior light grey materials class C-s2,d0 according to EN 13501-1 – hardly flammable
Max. fastening spacing	0.5 m
Cable types and cross-sections	No restriction

Caution!

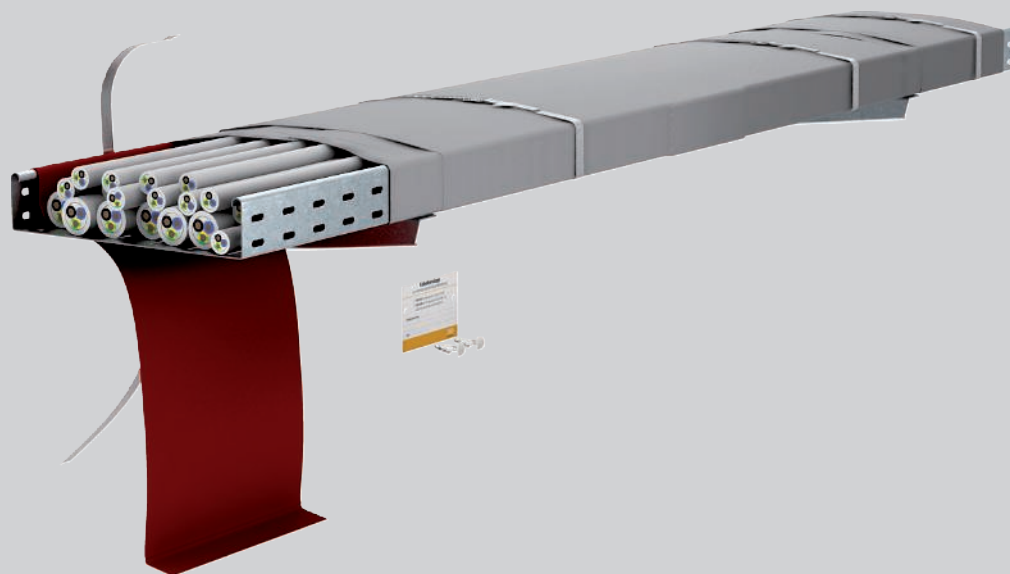
Use in emergency and escape routes of building classes 4 and 5 may require the approval of the construction supervision, e.g. through a fire protection concept.



PYROWRAP® Wet FSB-WB

Application in industrial areas / outdoors

System description



The PYROWRAP® Wet FSB-WB system comprises a fire protection bandage, which is used in areas with special environmental conditions. The fire protection bandage can be used to wrap large cable bundles or cable support systems, in order to prevent the spread of fire. The bandage is made of a weatherproof material, which is insensitive to various chemicals and oils.

It has construction approval from the DIBt as a highly flame-resistant material according to DIN EN 13501-1. When the fire protection coating foams up in the event of fire, this safely prevents the spread of fire via the cables.

PYROWRAP® Wet FSB-WB

Application in industrial areas / outdoors

Installation principle



Use of the bandage in aggressive environments, e.g. offshore.



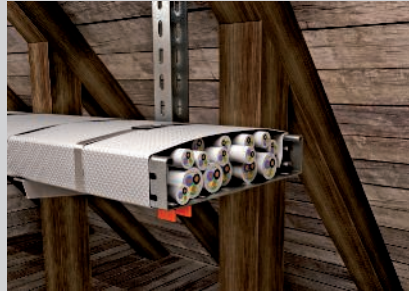
Bandaged rising section in the tower of a wind power plant.



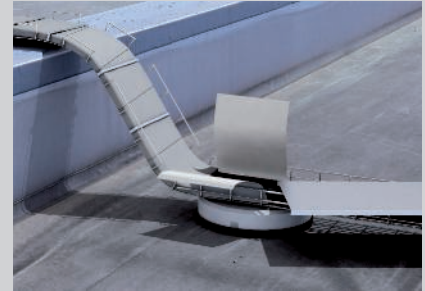
Use on support systems in supply rooms or production halls.



Cable tunnel with bandages in power stations.



Bandaged cable support systems in areas with many combustible materials.



Use for photovoltaic cables run over a fire wall.

Cable jacketing to prevent fire spread

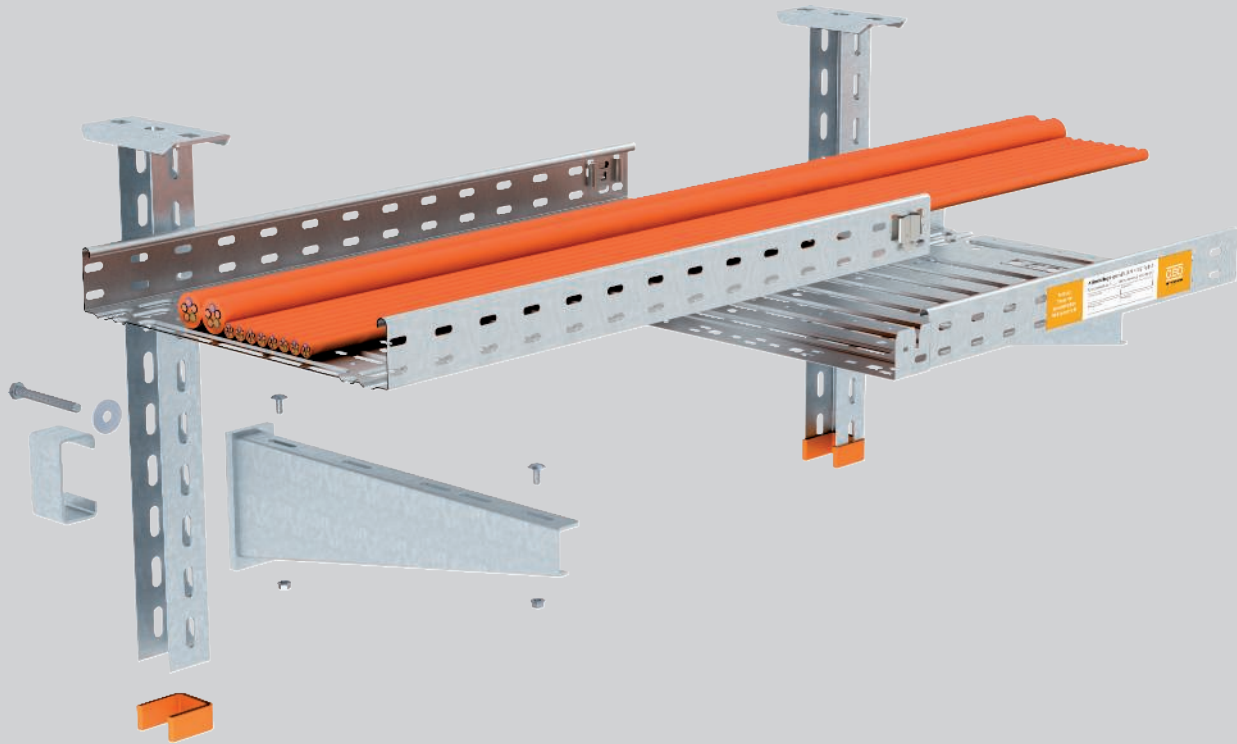
Proof of application	IEC test report of the iBMB MPA materials testing institute, Braunschweig National and European material approval of DIBt Berlin
Document no.	IEC-3630/081/10-AR Z-19.11-1971 ETA-13/0158
Prevention of fire spread	min. 120 minutes
Material properties	Exterior grey glass fibre mesh, interior red Materials class EN 13501-1: B1,d0,s1 – hardly flammable Weather-resistant, resistant to various chemicals and oils
Max. fastening spacing	0.5 m
Cable types and cross-sections	No restriction

Caution!

The use of photovoltaic cables over fire walls may require the approval of the local construction authorities. A positive special report is available.

Cable tray systems RKS-Magic®

System description



The RKS-Magic® cable tray has been tested as a cable-specific support construction for the maintenance of electrical functionality according to DIN 4102 Part 12 and approved for the maintenance of electrical functionality classes E 30 to E 90. Threaded rod locking is not required at the tip of the bracket. This saves not just material but also considerably simplifies and speeds up the installation of cables. The screwless connection system allows interconnection of the RKS-Magic® cable trays without tools and in a particularly

quick and economic manner. To ensure the maintenance of electrical functionality, only the locking lugs in the base need to be bent after the trays have been connected. The double material thickness in the joint area and the beading in the base mean that the cable tray has a very high load capacity. The installation of fittings in the section route is permitted, as is the mounting of separating retainers.

Cable tray systems RKS-Magic®

Installation principle



Ceiling mounting on both sides with max. three layers (2+1).



One-sided arrangement with max. two layers.



Wall mounting.



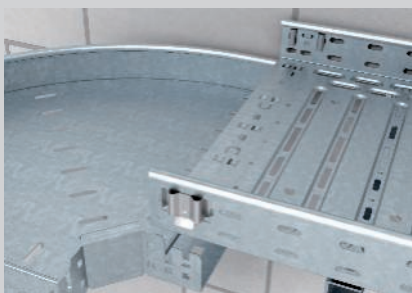
Creation of a straight connector through interconnection of the cable trays.



Bending the locking straps in the base.



Complete screwless joint connection.



Quick and simple fitting mounting with screwless Magic connection.



Separating retainer mounting with truss-head bolts.

Classification according to DIN 4102 Part 12

E30

E60

E90







Cable tray systems RKS-Magic®

Proof


Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-13-002
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variant	Ceiling mounting with suspended support and bracket without threaded rod lock Wall mounting with bracket without threaded rod lock
Material version	Galvanised steel

Support spacing for ceiling mounting with suspended support/bracket

Cable tray width	Cable load per cable tray				
100 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
200 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m





Support spacing for wall mounting with bracket

Cable tray width	Cable load per cable tray	
100 mm	max. 20 kg/m	max. 1.50 m
200 mm	max. 20 kg/m	max. 1.50 m
300 mm	max. 20 kg/m	max. 1.50 m
400 mm	max. 20 kg/m	max. 1.50 m

Cable tray systems RKS-Magic®


Components used

Ceiling mounting with suspended support/bracket

Component	Type				
Cable tray	RKSM 6... FS	1	2	2	3
Support	US 5 K ... FT	1	1	1	1
Protective cap	US 5 KS OR	1	1	1	1
Wall and support brackets	AW 30 11 FT, AW 55 21 FT, ... 31 FT, ... 41 FT	1	2	2	3
Spacer	DSK 45	1	2	1	2
Hexagonal bolt	SKS 10x 90 F	1	2	1	2
Large washer	DIN440 11 F	1	2	0	1
Truss-head bolt	FRSB 6x 15 F	2	4	4	6

Choose the fastening anchors according to the substrate

Wall mounting with bracket

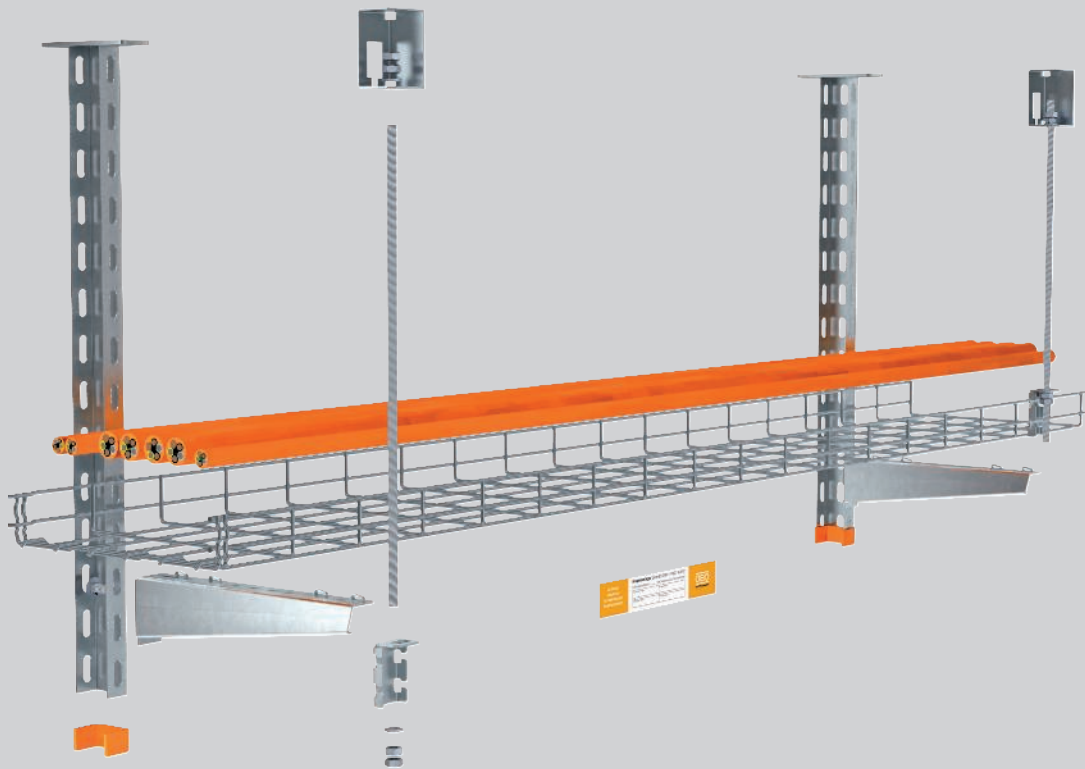
Component	Type	
Cable tray	RKSM 6... FS	1
Wall and support brackets	AW 30 11 FT, AW 55 21 FT, ... 31 FT, ... 41 FT	1
Truss-head bolt	FRSB 6x 15 F	2

Choose the fastening anchors according to the substrate



GR-Magic® mesh cable trays

System description

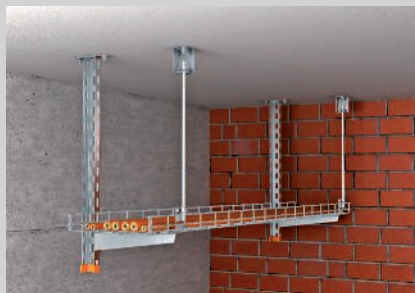


The GR-Magic® mesh cable tray has been tested as a cable-specific support construction for the maintenance of electrical functionality according to DIN 4102 Part 12 and approved for the maintenance of electrical functionality classes E 30 to E 90. The threaded rod lock is mounted directly on the tray rail, using the ABG connection component. This is just at-

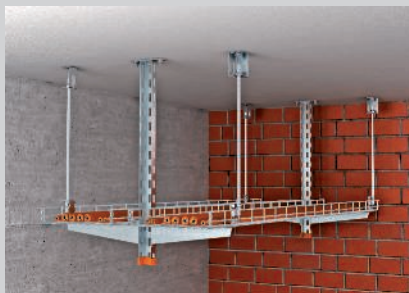
tached to the side lengthwise wires of the mesh cable tray. When the threaded rod has been mounted, the component is secured against unintentional release. The screwless connection system of the GR-Magic® mesh cable trays ensures toolless, and thus particularly rapid and economic, mounting.

GR-Magic® mesh cable trays

Installation principle



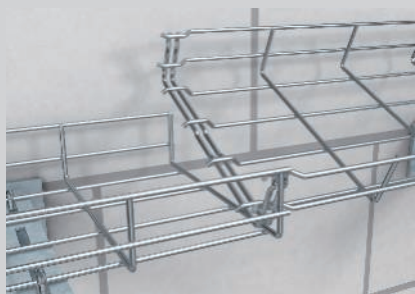
Ceiling mounting with brackets mounted on one side.



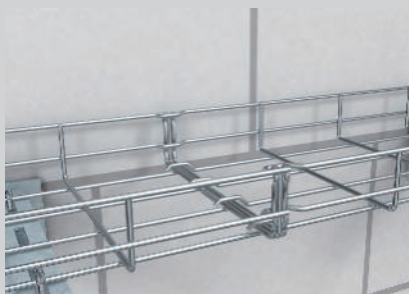
Ceiling mounting with brackets arranged on both sides.



Multi-layer wall mounting.



Interconnecting of two stock lengths of the mesh cable tray.



Finished screwless joint connection



Screwless mesh cable tray fastening on the bracket.



Screwless fastening of the connection component to the side wires.

Classification according to DIN 4102 Part 12

E30

E60

E90








GR-Magic® mesh cable trays

Proof




Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-12-011
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variant	Ceiling mounting with suspended support and bracket with threaded rod lock Wall mounting with bracket and threaded rod lock
Material version	Galvanised steel

Support spacing for ceiling mounting with suspended support/bracket

Cable tray width	Cable load per cable tray					
100 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
200 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m	max. 1.50 m






Support spacing for wall mounting with bracket

Cable tray width	Cable load per cable tray			
100 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m
200 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m
300 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m
400 mm	max. 15 kg/m	max. 1.50 m	max. 1.50 m	max. 1.50 m

GR-Magic® mesh cable trays




Components used

Ceiling mounting with suspended support/bracket

Component	Type					
Mesh cable tray	GRM 55 ... G	1	2	3	2	3
Support	US 3 K ... FT	1	1	1	1	1
Protective cap	US 3 KS OR	1	1	1	1	1
Wall and support brackets	AWG 15 ... FT	1	2	3	2	3
Truss-head bolt	FRS 10x 25 F	1	2	3	2	3
Connection component	ABG FT	1	2	3	2	3
Threaded rod	2078 M10 G	1	2	0	2	3
Threaded rod	2078 M12 G	0	0	3	0	0
Hexagonal nut	DIN 934 M10 G	4	5	0	8	9
Hexagonal nut	DIN 934 M12 G	0	0	6	0	0
Washer	966 M10 G	2	3	0	4	5
Washer	966 M12 G	0	0	4	0	0
Connection sleeve	12005 M10 G	0	1	0	0	1
Connection sleeve	12005 M12 G	0	0	2	0	0
Fire protection clamp	BSB	1	1	1	2	2

Choose the fastening anchors according to the substrate

Wall mounting with bracket

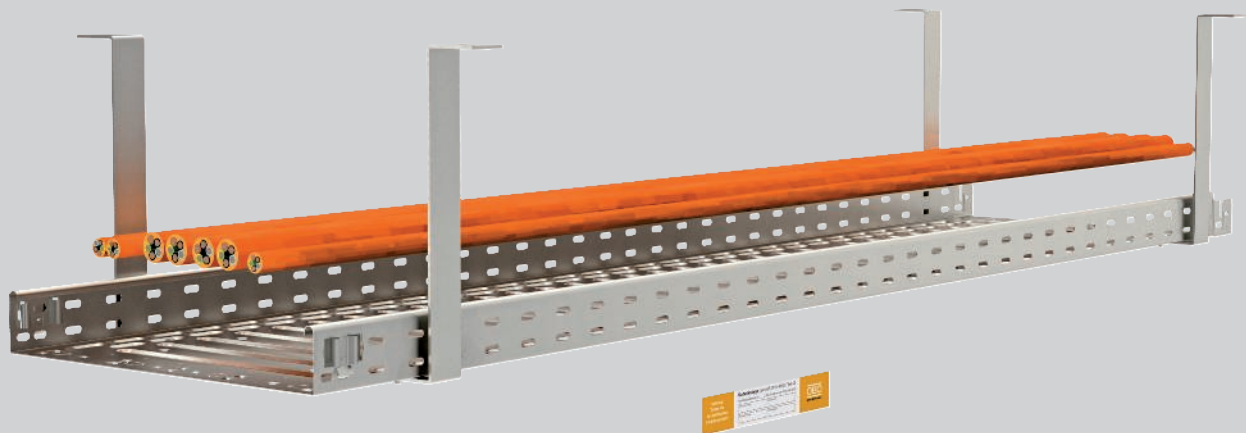
Component	Type			
Mesh cable tray	GRM 55 ... G	1	2	3
Wall and support brackets	AWG 15 ... FT	1	2	3
Connection component	ABG FT	1	2	3
Threaded rod	2078 M10 G	1	2	0
Threaded rod	2078 M12 G	0	0	3
Hexagonal nut	DIN 934 M10 G	4	5	0
Hexagonal nut	DIN 934 M12 G	0	0	6
Washer	966 M10 G	2	3	0
Washer	966 M12 G	0	0	4
Connection sleeve	12005 M10 G	0	1	0
Connection sleeve	12005 M12 G	0	0	2
Fire protection clamp	BSB	1	1	1

Choose the fastening anchors according to the substrate



Cable trays, RKS-Magic® VA

System description



The RKS-Magic® cable tray has been tested as a cable-specific support construction for the maintenance of electrical functionality according to DIN 4102 Part 12 and approved for the maintenance of electrical functionality classes E 30 to E 90. Threaded rod locking is not required at the tip of the bracket. This saves not just material but also considerably simplifies and speeds up the installation of cables. The screwless connection system allows interconnection of the RKS-Magic® cable trays without tools and in a particularly

quick and economic manner. To ensure the maintenance of electrical functionality, only the locking lugs in the base need to be bent after the trays have been connected. The double material thickness in the joint area and the beading in the base mean that the cable tray has a very high load capacity. The installation of fittings in the section route is permitted, as is the mounting of separating retainers.

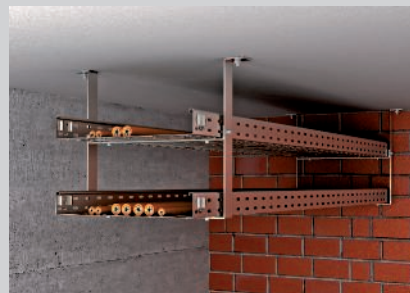
Cable trays, RKS-Magic® VA Installation principle



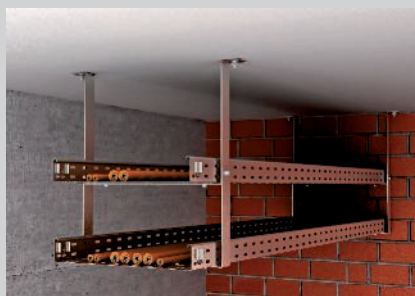
Single-layer ceiling mounting with suspension clamp.



Mounting under sloping ceiling with individually adapted suspension clamp.



Two-layer ceiling mounting with suspension clamp and intermediate clamp.



Two-layer ceiling mounting with suspension clamp and extension.



Fastening of the cable tray with truss-head bolts.



Joint connection without additional gland.

Classification according to DIN 4102 Part 12

E30

E60

E90





Cable trays, RKS-Magic® VA Proof

Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-12-003
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variant	Ceiling mounting with suspension clamp
Material version	Rustproof steel



Support spacing for ceiling mounting with suspension clamp

Cable tray width	Cable load per cable tray		
100 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 30 kg/m	max. 1.50 m	max. 1.50 m

Cable trays, RKS-Magic® VA

Components used

Ceiling mounting with suspension clamp

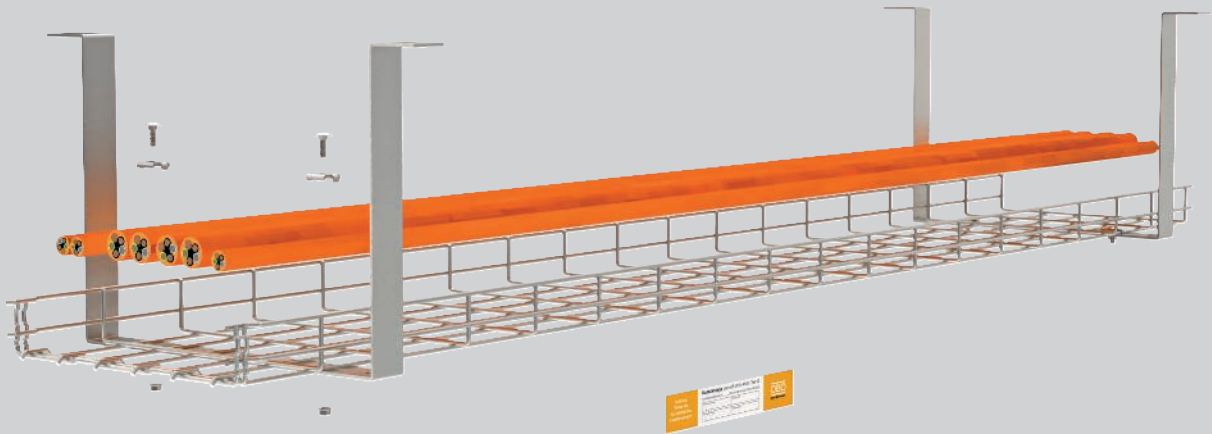
Component	Type		
Cable tray	RKSM 6... VA4571	1	2
Suspension clamp	AHB-T	1	1
Truss-head bolt	FRSB 6x12 A4	2	4
Intermediate clamp	AHB-TZ	0	1
Truss-head bolt	FRSB 6x16 A4	0	2

Choose the fastening anchors according to the substrate
Intermediate clamp AHB-TZ on request



GR-Magic® mesh cable trays VA

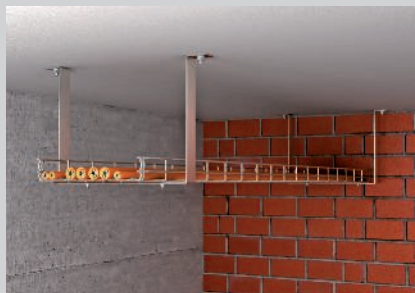
System description



The GR-Magic® mesh cable tray, made from rust-proof steel, has been tested as a cable-specific support structure for the maintenance of electrical functionality according to DIN 4102 Part 12 and approved for the maintenance of electrical functionality classes E 30 to E 90. The rustproof steel version permits mounting in areas with more aggressive ambient conditions. The design of the AHB-T suspension clamp means that it can be mounted on straight, slanting or curved ceilings, thus allowing simple, space-saving in-

stallation of the mesh cable tray. The benefits of the screwless connection systems of the GR-Magic® mesh cable trays also apply to this routing type. This makes mounting of mesh cable trays, for example in the installation of long sections in increased corrosion protection requirements, an economically viable routing variant. With this system, the mounting of separating retainers and lids is permitted.

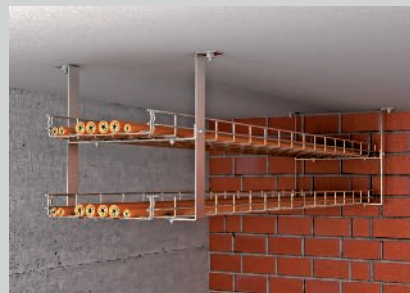
GR-Magic® mesh cable trays VA Installation principle



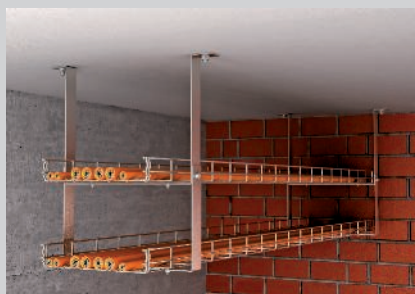
Single-layer ceiling mounting with suspension clamp.



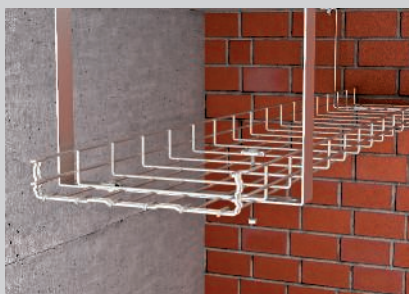
Mounting under sloping ceiling with individually adapted suspension clamp.



Two-layer ceiling mounting with suspension clamp and intermediate clamp.



Two-layer ceiling mounting with suspension clamp and extension.



Fastening of the mesh cable tray with clamping piece and truss-head bolts.



Joint connection without additional gland.

Classification according to DIN 4102 Part 12

E30

E60

E90





GR-Magic® mesh cable trays VA Proof

Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-12-003
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variant	Ceiling mounting with suspension clamp
Material version	Rustproof steel



Support spacing for ceiling mounting with suspension clamp

Cable tray width	Cable load per cable tray		
100 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m
200 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m
300 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m
400 mm	max. 20 kg/m	max. 1.50 m	max. 1.50 m

GR-Magic® mesh cable trays VA

Components used

Ceiling mounting with suspension clamp

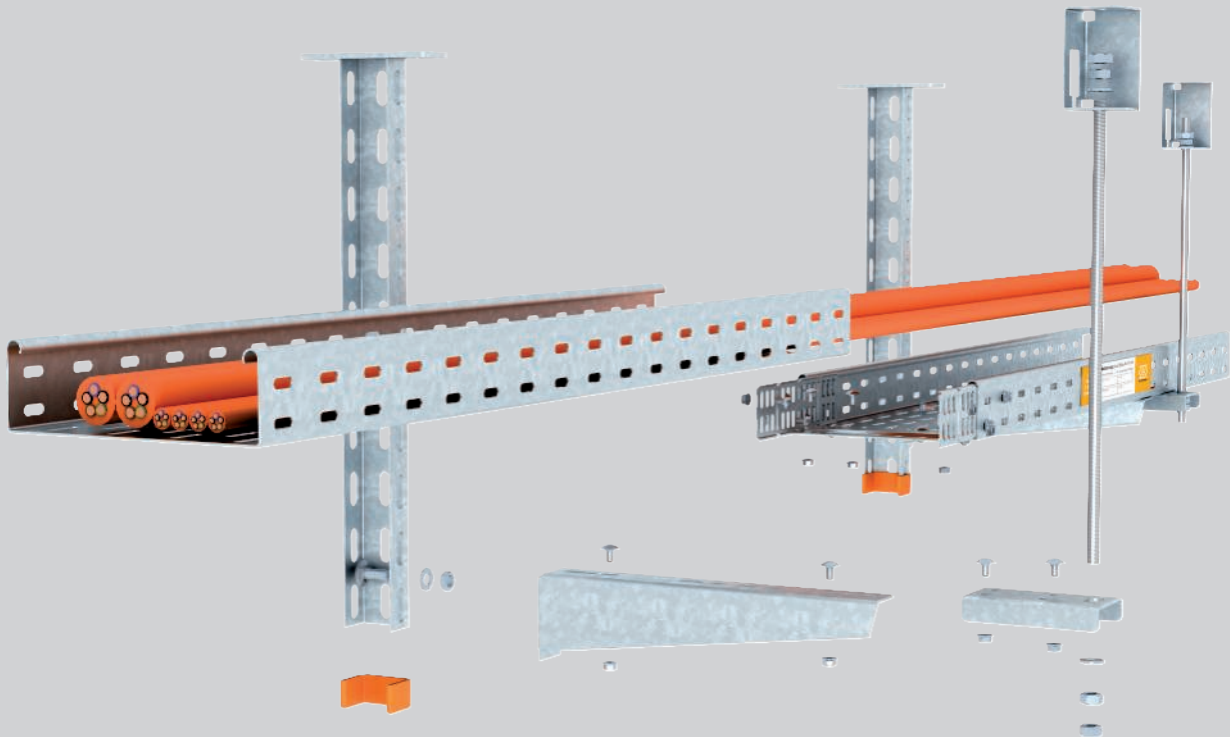
Component	Type		
Mesh cable tray	GRM 55 ... VA4401	1	2
Suspension clamp	AHB-T	1	1
Clamping piece	GKS 34 VA4401	2	4
Intermediate clamp	AHB-TZ	0	1
Truss-head bolt	FRSB 6x16 A4	0	2

Choose the fastening anchors according to the substrate
Intermediate clamp AHB-TZ on request



Cable trays SKS6..., ceiling mounting

System description



The routing type under the ceiling of cable trays of types SKS with U suspended supports and SKS on U transverse profiles fulfils all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30 to E 90.

The cable trays can be mounted on the U suspended support on one or both sides with up to six tray layers. The threaded rod lock is fastened with a maximum spacing of 100 mm beside the bracket. For this, the ABR connection component should be screwed under the tray base.

Due to the low construction height of the U transverse profile and threaded rod suspension on both sides saves a lot of space. Versions with one or two-layer mounting variants are approved.

With both types, the position of the joints between the individual support points can be chosen freely. The cable trays are screwed on using connectors in the side rail and an additional joint plate in the base of the tray.

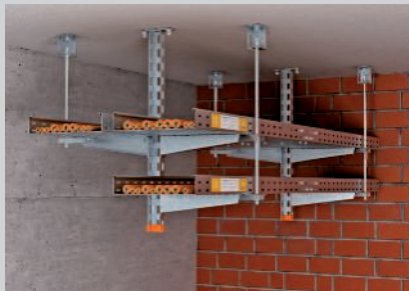


Cable trays SKS6..., ceiling mounting

Installation principle



Ceiling suspension with bracket arrangement on one side.



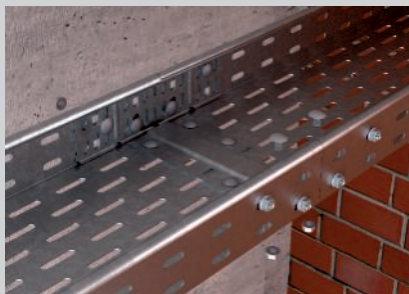
Ceiling suspension with bracket arrangement on both sides.



Mounting under sloping ceiling with variable head plate.



Bracket mounting on suspended support with truss-head bolt.



Fasten straight connectors and joint plate using truss-head bolts.



Threaded rod fastening on the tray with multi-layer arrangement.

Classification according to DIN 4102 Part 12

E30

E60

E90








Cable trays SKS6..., ceiling mounting

Proof



Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support system
Test certificate no.	GS 3.2/17-436-2
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variants	Ceiling mounting with suspended support, bracket and threaded rod lock Ceiling mounting with transverse profile and threaded rod lock on both sides
Material version	Galvanised steel

Support spacing for ceiling mounting with suspended support, bracket and threaded rod lock

Cable tray width	Cable load per cable tray					
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m






Support spacing for ceiling mounting with transverse profile and threaded rod suspension on both sides

Cable tray width	Cable load per cable tray		
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m





Cable trays SKS6..., ceiling mounting

Components used

Component	Type					
Cable tray	SKS 6... FS	1	2	3	2	3
Connector	RWVL 60 FS	2	4	6	4	6
Joint plate	SSLB ... FS	1	2	3	2	3
Support	US 3 K ... FT	1	1	1	1	1
Protective cap	US 3 KS OR	1	1	1	1	1
Wall and support brackets	MWA12... FS	1	2	3	2	3
Truss-head bolt	FRSB 6x 15 F	2	4	6	4	6
Connection component	ABR FT	1	2	3	2	3
Threaded rod	2078 M10 G	1	2	3	2	3
Hexagonal nut	DIN 934 M10 G	4	5	6	8	9
Washer	966 M10 G	2	3	4	4	5
Connection sleeve	12005 M10 G	0	1	2	0	1
Fire protection clamp	BSB	1	1	1	2	2

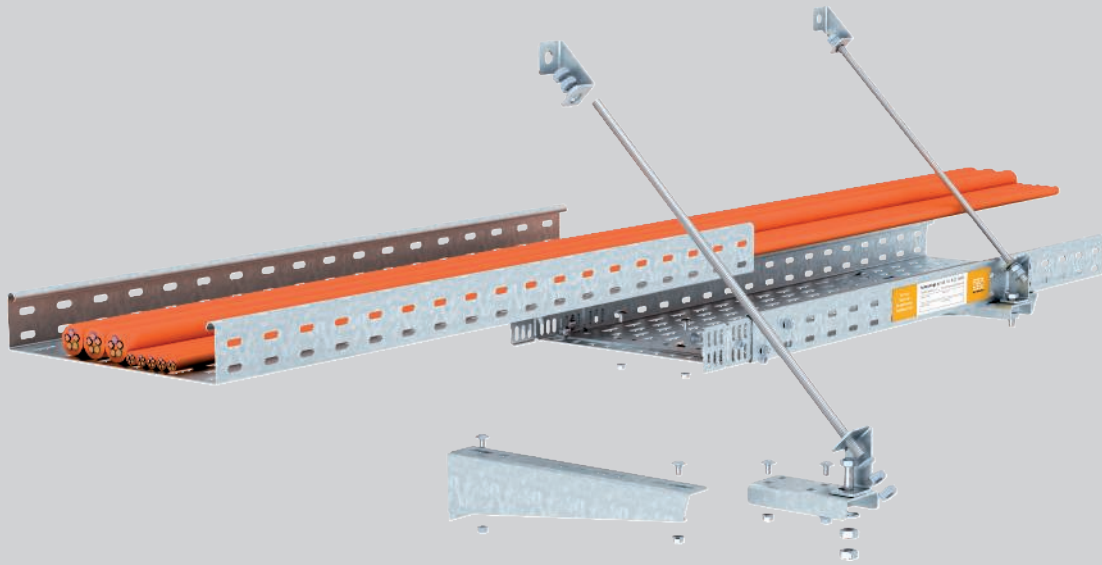
Choose the fastening anchors according to the substrate

Component	Type		
Cable tray	SKS 6... FS	1	2
Connector	RWVL 60 FS	2	4
Joint plate	SSLB ... FS	1	2
Support	US 3 ... FS	1	2
Protective cap	US 3 KS OR	2	4
Threaded rod	2078 M10 G	2	4
Hexagonal nut	DIN 934 M10 G	6	10
Large washer	DIN440 11 F	4	8
Connection sleeve	12005 M10 G	0	2
Truss-head bolt	FRSB 6x 20 F	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate



Cable trays SKS6..., wall mounting System description



The routing type of cable trays of type SKS with wall brackets on the wall fulfils all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30 to E 90. When the cable trays are mounted on the wall, up to three tray layers can be arranged vertically. The threaded rod lock is fastened vertically under the ceiling with a maximum spacing of 100 mm beside the bracket using an ABR connection component

screwed on beneath the tray base. In the case of one-layer section mounting, the threaded rod lock can alternatively be created using sloping connection components at an angle of 45° to the wall. Joints can be positioned freely between the individual support points. Connectors are screwed into the side rails and an additional joint plate to the base, in order to connect the cable trays.

Cable trays SKS6..., wall mounting Installation principle



Wall mounting, multi-layer, with vertical threaded rod locking.



Wall mounting with diagonal threaded rod locking.



Ceiling fastening of the threaded rods with fire protection clamps.



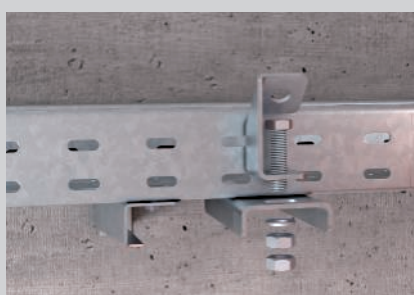
Threaded rod fastening on the cable tray with multilayer arrangement.



Fastening of the vertical threaded rod on the lowest cable tray.



Mounting of the brackets and the sloping connection components on a wall.



Fastening of the sloping connection component.

Classification according to DIN 4102 Part 12

E30

E60

E90






Cable trays SKS6..., wall mounting Proof


Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support system
Test certificate no.	GS 3.2/17-436-2
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variants	Wall mounting with bracket and vertical threaded rod lock Wall mounting with bracket and diagonal threaded rod lock
Material version	Galvanised steel

Support spacing for wall mounting with bracket and vertical threaded rod lock

Cable tray width	Cable load per cable tray			
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m



Support spacing for wall mounting with bracket and diagonal threaded rod lock

Cable tray width	Cable load per cable tray	
100 mm	max. 10 kg/m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m




Cable trays SKS6..., wall mounting

Components used

Component	Type		
Cable tray	SKS 6... FS	1	2
Connector	RWVL 60 FS	2	4
Joint plate	SSLB ... FS	1	2
Support	US 3 K ... FT	1	1
Protective cap	US 3 KS OR	1	1
Wall and support brackets	MWA12... FS	1	2
Truss-head bolt	FRSB 6x 15 F	2	4
Connection component	ABR FT	1	2
Threaded rod	2078 M10 G	1	2
Hexagonal nut	DIN 934 M10 G	4	5
Washer	966 M10 G	2	3
Connection sleeve	12005 M10 G	0	1
Fire protection clamp	BSB	1	1

Choose the fastening anchors according to the substrate

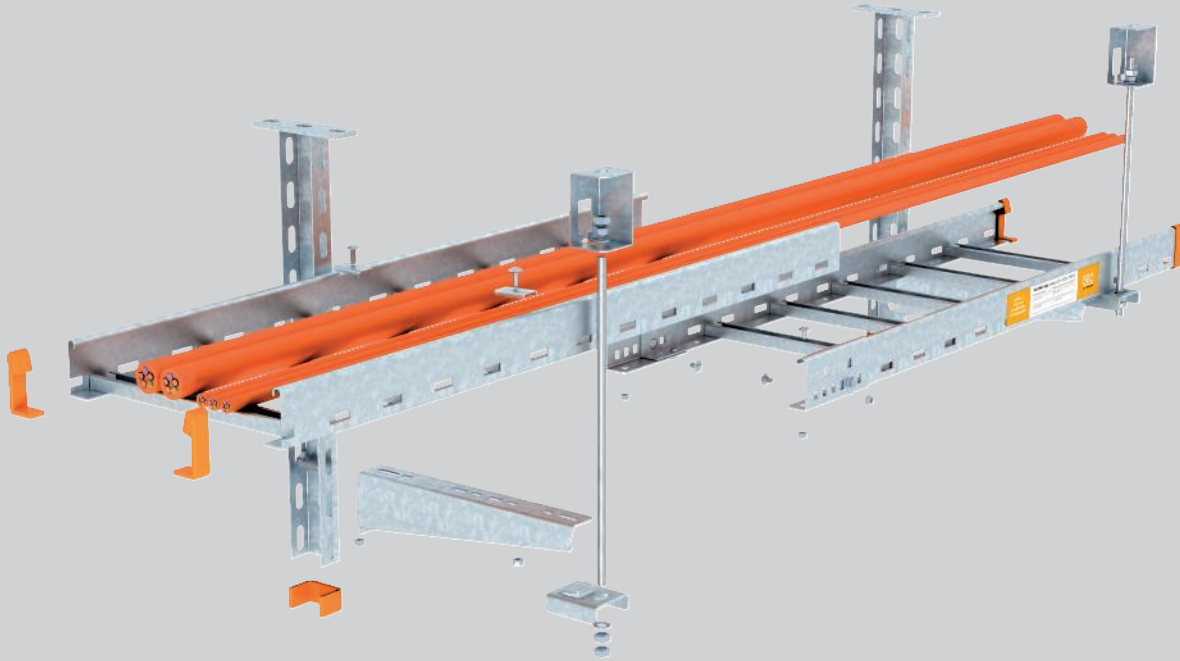
Component	Type	
Cable tray	SKS 6... FS	1
Connector	RWVL 60 FS	2
Joint plate	SSLB ... FS	1
Wall and support brackets	MWA12... FS	1
Truss-head bolt	FRSB 6x 15 F	2
Connection component	ABR FT	1
Connection component	ABS FS	2
Hexagonal bolt	SKS M10x40 F	1
Threaded rod	2078 M10 G	1
Hexagonal nut	DIN 934 M10 G	5
Washer	966 M10 G	2

Choose the fastening anchors according to the substrate



Cable ladders LG6...VSF, ceiling mounting

System description



The routing type under the ceiling of cable ladders of types LG with U suspended supports and LG with U transverse profiles fulfils all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30 to E 90.

The cable ladders can be mounted on the U suspended support on one or both sides with up to three layers. The threaded rod lock is fastened with a maximum spacing of 100 mm beside the bracket. The ABL connection component need simply be attached to the lower flange of the ladder rail. Mounting of the threaded rod secures the connection component against slipping.

Due to the low construction height of the transverse profile of just 30 mm, the routing variant with U transverse profile and threaded rod suspension on both sides saves a lot of space. Versions with one or two-layer mounting variants are approved.

With both cable ladder types, the joints of the ladder rails are connected using external connectors, which are screwed to the rails. The position of the joints between the individual support points can be chosen freely. The rung spacing for both cable ladder types is 150 mm. Therefore, no additional rung support plates are required.



Cable ladders LG6...VSF, ceiling mounting

Installation principle



Ceiling suspension with bracket arrangement on one side.



Ceiling suspension with bracket arrangement on both sides.



Mounting under sloping ceiling with variable head plate.



Mounting of the straight connectors using truss-head bolts.



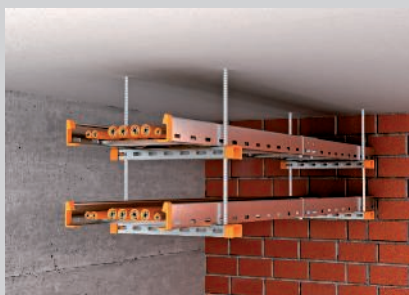
Attachment of the connection component on the lower flange of the ladder rail.



Attachment of the threaded rod in the fire protection clamp.



Single-layer ceiling mounting with U cross-section.



Two-layer ceiling mounting with U cross-section.



Mounting on transverse profile with clamping piece, truss-head bolts and large washers.

Classification according to DIN 4102 Part 12

E30

E60

E90








Cable ladders LG6...VSF, ceiling mounting Proof



Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support system
Test certificate no.	GS 3.2/17-436-1
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variants	Ceiling mounting with suspended support, bracket and threaded rod lock Ceiling mounting with transverse profile and threaded rod lock on both sides
Material version	Galvanised steel

Support spacing for ceiling mounting with suspended support, bracket and threaded rod lock

Cable ladder width	Cable load per cable ladder					
200 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
400 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m






Support spacing for ceiling mounting with transverse profile and threaded rod suspension on both sides

Cable ladder width	Cable load per cable ladder		
200 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m
300 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m
400 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m





Cable ladders LG6...VSF, ceiling mounting

Components used

Component	Type					
Cable ladder	LG 6... VSF FS	1	2	3	2	3
External connector	AVL 60 FS	2	4	6	4	6
Support	US 3 K ... FT	1	1	1	1	1
Protective cap	US 3 KS OR	1	1	1	1	1
Wall and support brackets	MWA12... FS	1	2	3	2	3
Clamping piece	LKS 40 FS	2	4	6	4	6
Connection component	ABL FT	1	2	3	2	3
Threaded rod	2078 M10 G	1	2	0	2	3
Threaded rod	2078 M12 G	0	0	3	0	0
Hexagonal nut	DIN 934 M10 G	4	5	0	8	9
Hexagonal nut	DIN 934 M12 G	0	0	6	0	0
Washer	966 M10 G	2	3	0	4	5
Washer	966 M12 G	0	0	4	0	0
Connection sleeve	12005 M10 G	0	1	0	0	1
Connection sleeve	12005 M12 G	0	0	2	0	0
Fire protection clamp	BSB	1	1	1	2	2

Choose the fastening anchors according to the substrate

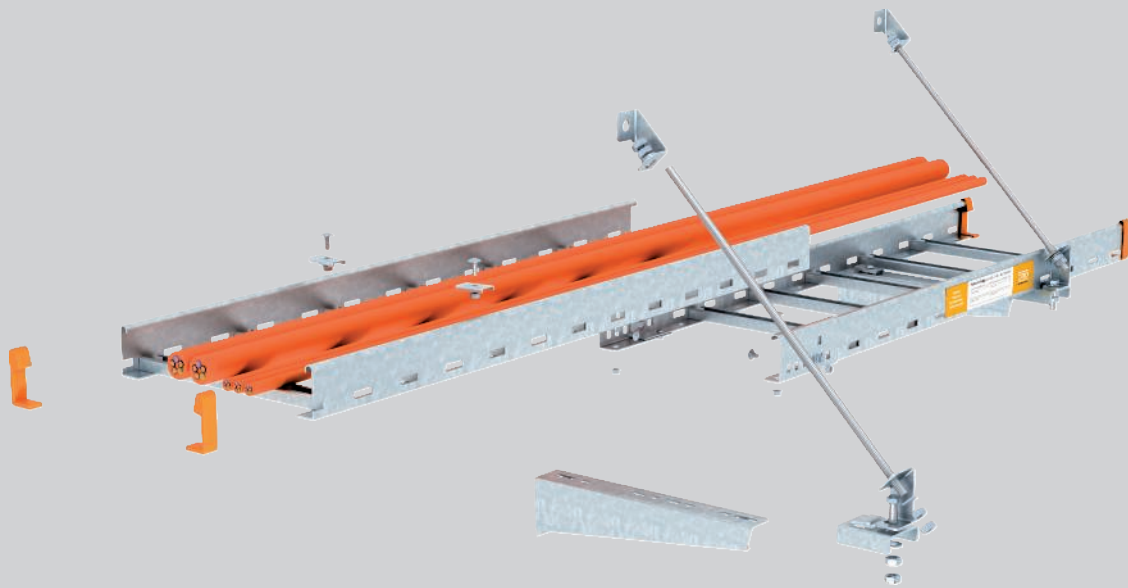
Component	Type		
Cable ladder	LG 6... VSF FS	1	2
External connector	AVL 60 FS	2	4
Support	US 3 ... FS	1	2
Protective cap	US 3 KS OR	2	4
Threaded rod	2078 M10 G	2	4
Hexagonal nut	DIN 934 M10 G	6	10
Large washer	DIN440 11 F	4	8
Connection sleeve	12005 M10 G	0	2
Clamping piece	LKS 40 FS	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate



Cable ladders LG6...VSF, wall mounting

System description



The routing type of cable ladders of type LG with wall brackets on the wall fulfils all the requirements of DIN 4102 Part 12 as a standard support structure. When cable ladders are mounted on the wall, up to two layers can be arranged on top of one another. The threaded rod lock to the ceiling is fastened vertically without screws using the ABL connection component attached to the lower flange of the ladder rail. The

maximum distance between the connection component and the bracket may be 100 mm. When only one cable ladder is mounted on the wall, the threaded rod lock can alternatively be created using sloping connection components at an angle of 45° to the wall.

Cable ladders LG6...VSF, wall mounting Installation principle



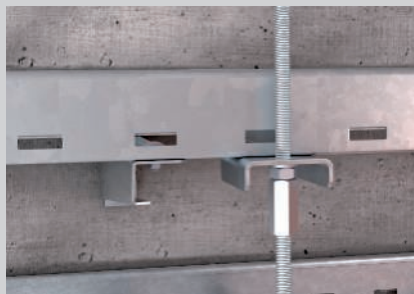
Wall mounting, multi-layer, with vertical threaded rod locking.



Wall mounting with diagonal threaded rod locking.



Ceiling fastening of the threaded rods with fire protection clamps.



Threaded rod fastening on the cable ladder with multilayer arrangement.



Fastening of the vertical threaded rod on the connection component.



Mounting of the brackets and the sloping connection components on a wall.



Diagonal mounting of the connection component using hexagonal bolt and hexagonal nuts.

Classification according to DIN 4102 Part 12

E30

E60

E90






Cable ladders LG6...VSF, wall mounting Proof


Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support system
Test certificate no.	GS 3.2/17-436-1
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Mounting variants	Wall mounting with bracket and vertical threaded rod lock Wall mounting with bracket and diagonal threaded rod lock
Material version	Galvanised steel

Support spacing for wall mounting with bracket and vertical threaded rod lock

Cable ladder width	Cable load per cable ladder			
200 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
400 mm	max. 20 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m




Support spacing for wall mounting with bracket and diagonal threaded rod lock

Cable ladder width	Cable load per cable ladder	
200 mm	max. 20 kg/m	max. 1.20 m
300 mm	max. 20 kg/m	max. 1.20 m
400 mm	max. 20 kg/m	max. 1.20 m




Cable ladders LG6...VSF, wall mounting

Components used

Component	Type			
Cable ladder	LG 6... VSF FS	1	2	3
External connector	AVL 60 FS	2	4	6
Wall and support brackets	MWA12... FS	1	2	3
Clamping piece	LKS 40 FS	2	4	6
Connection component	ABL FT	1	2	3
Threaded rod	2078 M10 G	1	2	0
Threaded rod	2078 M12 G	0	0	3
Hexagonal nut	DIN 934 M10 G	4	5	0
Hexagonal nut	DIN 934 M12 G	0	0	6
Washer	966 M10 G	2	3	0
Washer	966 M12 G	0	0	4
Connection sleeve	12005 M10 G	0	1	0
Connection sleeve	12005 M12 G	0	0	2
Fire protection clamp	BSB	1	1	1

Choose the fastening anchors according to the substrate

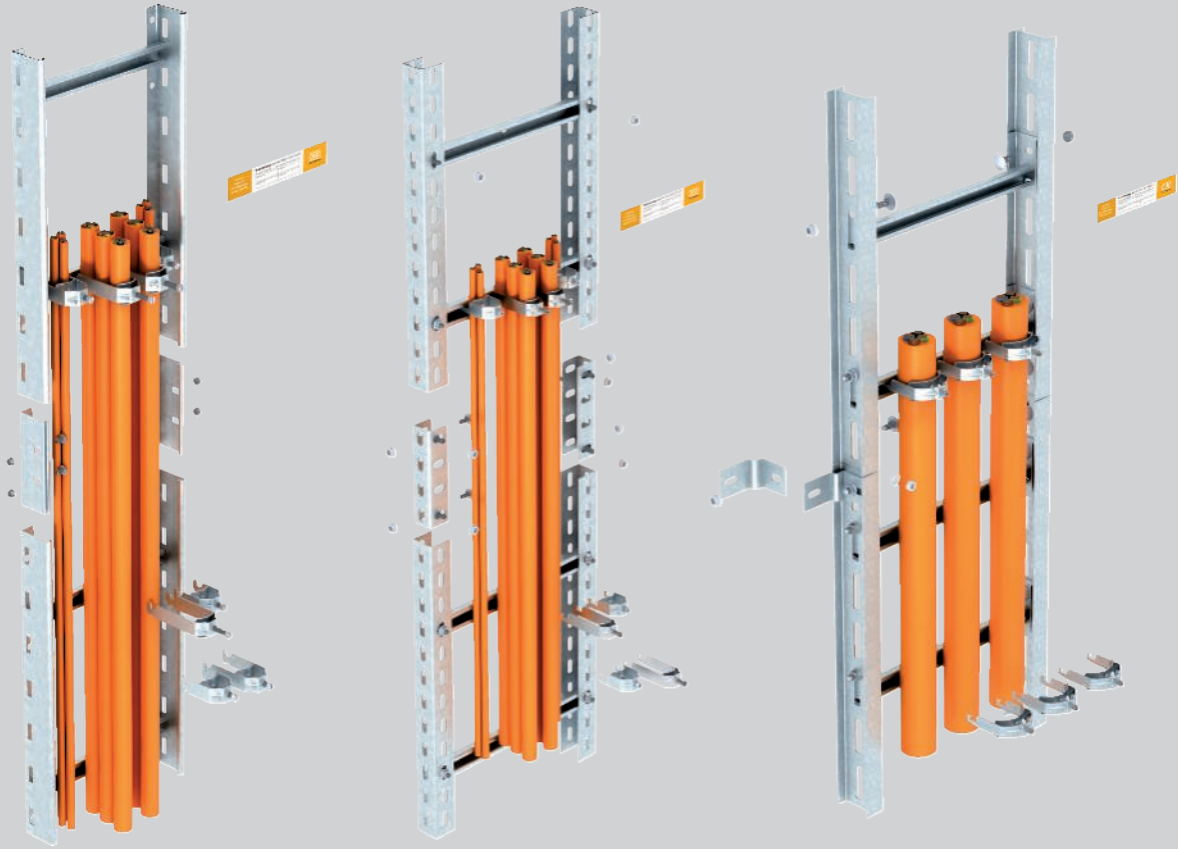
Component	Type	
Cable ladder	LG 6...VSF FS	1
External connector	AVL 60 FS	2
Wall and support brackets	MWA12... FS	1
Clamping piece	LKS 40 FS	2
Connection component	ABR FT	1
Connection component	ABS FS	2
Hexagonal bolt	SKS M10x40 F	1
Threaded rod	2078 M10 G	1
Hexagonal nut	DIN 934 M10 G	5
Washer	966 M10 G	2

Choose the fastening anchors according to the substrate



Vertical ladders

System description



Vertical ladders of type LM, type SLM and type SLS fulfil all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E30, E60 and E90. They are available in the widths 200 to 400 mm (type LG) and in the widths 400 to 600 mm (type SLM and type SLS). The vertical ladders are made up of straight profiles with riveted or screwed rungs. The rung spacing is 30 mm.

The vertical ladders are fastened directly to the wall through the ladder rails (type LG and type SLM) or

with fastening brackets (type SLS) at a spacing of maximum 1.2 m. Mounting of screwed-on connectors is approved and they can be positioned freely. The cables must be fastened on each rung with clamp clips with a riveted metal pressure sleeve. Mounting of the strain relief, type ZSE90..., is approved for storey heights of more than 3.5 m. The vertical ladder need not be interrupted as the strain relief is mounted via the continuous vertical ladder.



Vertical ladders

Installation principle



Direct mounting of the vertical ladder on solid walls.



Joint connection with screwed-on connector.



Fastening of the cables, either individually or as a bundle with clamp clips.



Direct mounting of the rising section on solid walls.



Joint design with screwed-on connector.



Installation of the cables with clamp clips, also possible in the case of multiple assignment.



Direct mounting of the vertical ladder on solid walls.



Mounting with screwed-on fastening brackets.



Cable installation with clamp clips on the rungs of the vertical ladder.

Classification according to DIN 4102 Part 12

E30

E60

E90



Vertical ladders

Proof

Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support system
Proof	Surveyor's report no. GS 3.2/17-436-3
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12
Material version	Galvanised steel

Note:

The surveyor's report is only valid in conjunction with valid general construction test certificates of a testing office for the appropriate installed cable type.

Mounting parameters, light-duty vertical ladder (type LG)

Fastening spacing	max. 1.2 m
Cable load	max. 20 kg/m
Rung distance	30 cm
Width	max. 400 mm
Suitable clamp clip	Type 2056 M ...
Individual cable diameter	Unlimited
Quantity of cables on bundling	max. 3
Cable diameter on bundling	max. 25 mm

Mounting parameters, heavy-duty vertical ladder (type SLM)

Fastening spacing	max. 1.2 m
Cable load	max. 20 kg/m
Rung distance	30 cm
Width	max. 600 mm
Suitable clamp clip	Type 2056 UM ...
Individual cable diameter	Unlimited
Quantity of cables on bundling	max. 3
Cable diameter on bundling	max. 25 mm

Mounting parameters, industrial vertical ladder (type SLS)

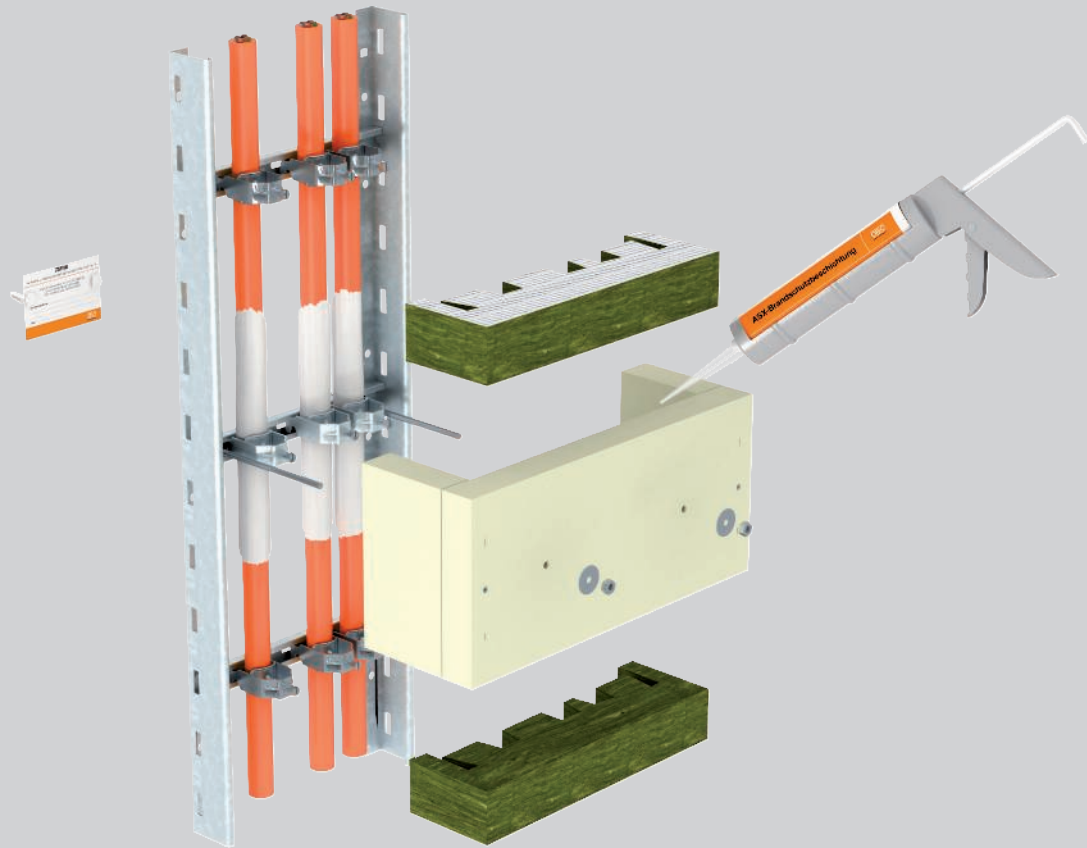
Fastening spacing	max. 1.2 m
Cable load	max. 20 kg/m
Rung distance	30 cm
Width	max. 600 mm
Suitable clamp clip	Type 2056 UM ...
Individual cable diameter	Unlimited
Quantity of cables on bundling	max. 3
Cable diameter on bundling	max. 25 mm





Strain relief ZSE90

System description

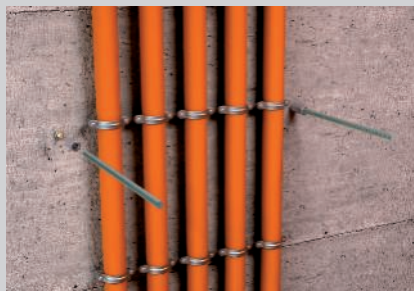


In the case of continuous, vertical routing of cables to maintain electrical functionality according to DIN 4102 Part 12, the standard requires effective cable support at a maximum spacing of 3.5 m. This requirement can be fulfilled with the OBO ZSE90 strain relief. The ZSE90 is approved for all classes ensuring the maintenance of electrical functionality from E30 to E90 in combination with standard support structures. It can be used for all rising section widths and also for vertical single-clip installations. The ZSE90 strain relief covers the fastening point of the cables on profile

rails, rungs or with single clips. In the event of fire, it prevents direct fire loads on the clips, meaning that they stay "relatively" cold. The weight of the cable is dissipated safely. There is no risk of the cables tearing through their intrinsic weight if there is a fire. This guarantees secure maintenance of electrical functionality. The strain relief can be fastened using slide nuts on profile rails, on the rungs of vertical ladders or on the wall next to installed cables.



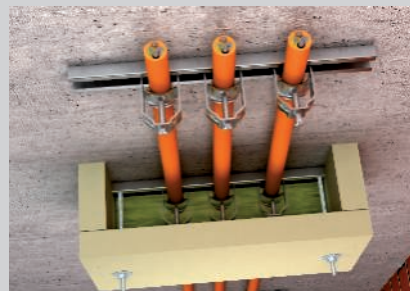
Strain relief ZSE90 Installation principle



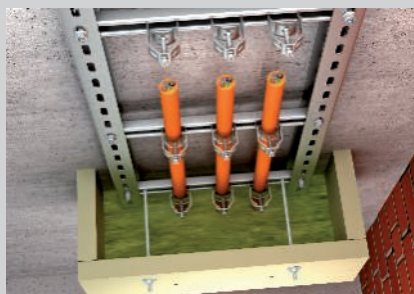
Fastening points next to the cables directly on the wall.



Fastening with threaded rods and slide nuts in the rungs.



Mounting of the strain relief in combination with cable routing on profile rails.



Effective support measure with ZSE90 strain relief.



Mineral wool filling for flexible cable assignment.



Closing all the remaining joints using the ASX fire protection compound.

Classification according to DIN 4102 Part 12

E30

E60

E90



Strain relief ZSE90

Proof

Maintenance of electrical functionality system according to DIN 4102 Part 12

Routing type	Standard support structure Effective support for vertical routing
Proof	Surveyor's report no. GS 3.2/17-361-1
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Note:

The surveyor's report is only valid in conjunction with valid general construction test certificates of a testing office for the appropriate installed cable type.

Mounting parameters

Fastening spacing	max. 3.5 m
Application area	Individual clip routing Cable routing on profile rails Vertical ladders
Fastening options	With threaded rods directly on the wall With threaded rods on profile rails With threaded rods on the rungs of the vertical ladders
Housing width (interior)	250–650 mm
Housing height (interior)	115 mm / 175 mm
Individual cable diameter	Unlimited
Cable types	No restrictions

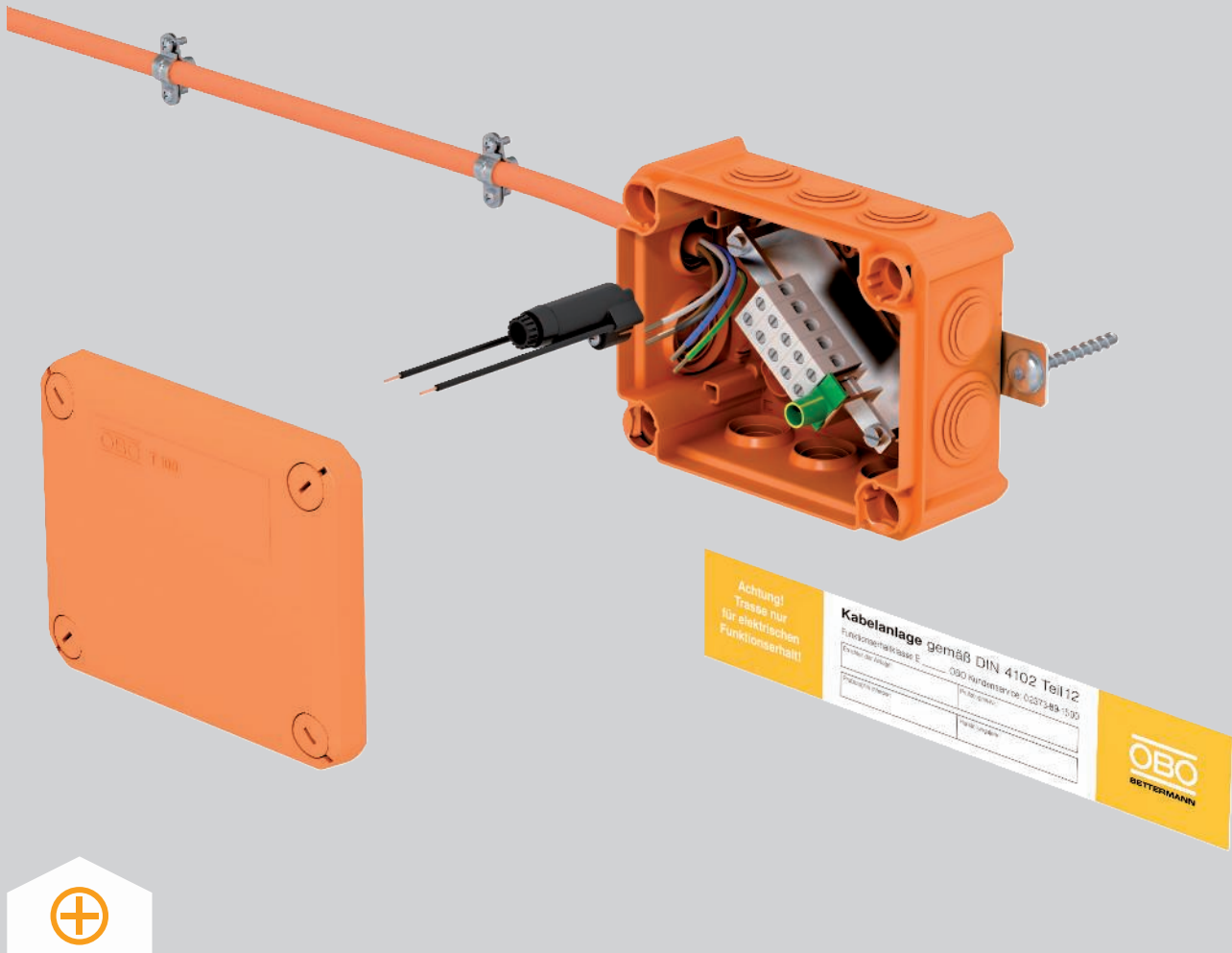
Combination options of strain relief with vertical cable installations

Strain relief type	Cable routing with individual clips	Cable routing on profile rails	Vertical ladder, type LG	Vertical ladder, type SLM	Vertical ladder, type SLS
ZSE90-25-11	✓	✓	✓	✗	✗
ZSE90-35-11	✓	✓	✓	✗	✗
ZSE90-45-11	✓	✓	✓	✓	✓
ZSE90-25-17	✓	✓	✓	✗	✗
ZSE90-35-17	✓	✓	✓	✗	✗
ZSE90-45-17	✓	✓	✓	✓	✓
ZSE90-55-17	✓	✓	✗	✓	✓
ZSE90-65-17	✓	✓	✗	✓	✓





Junction box, FireBox System description



Junction boxes of the FireBox series are available for connecting and branching safety cables. These are equipped with a high-temperature-resistant connection unit with ceramic terminals and offer terminal areas of 0.5 mm² to 16 mm² of copper cross-section. The T series FireBoxes possesses all the benefits of thermo-plastic cable junction boxes. These include the high IP protection rating of up to IP66 and the maximum impact resistance of up to IK10 and a high resistance to breakage. Boxes with soft plug-in seals or closed variants are available. Here, the cable glands can be located freely. Fastening either takes place on the out-

er straps or through the box base with fire protection bolt ties. The high-temperature-resistant terminals are pre-mounted on the connection unit. The protective conductor terminal is connected to the support clamp, meaning that covers of the metal parts are not required. The FireBox is tested and approved as a connection socket for maintenance of electrical functionality to DIN 4102 Part 12 with the classes E30, E60 and E90. A separate fuse holder allows protection of a branch.



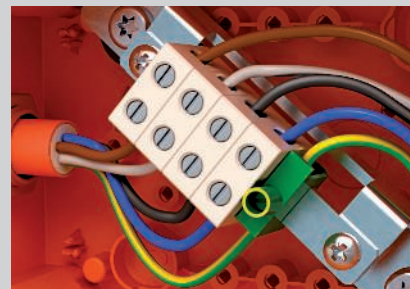
Junction box, FireBox Installation principle



Fully installed FireBox with identification plate.



FireBox mounting with mounting plate on cable tray.



Version with 4 terminals and protective conductor terminal for power cables.



Cable entry with plug-in seals.



Mounting with fire protection bolt tie through the clamp and base of the FireBox.



Quick lid mounting through 90° rotation of the corner screws.

Classification according to DIN 4102 Part 12

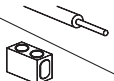






















System description

Routing type	Thermoplastic junction box with high-temperature-resistant connection unit
Test certificate no.	P-MPA-E-08-016 in conjunction with the surveyor's report 210005956-6 and GS 3-2/13-370-1
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Approved data

Clamping capacity of the ceramic terminals

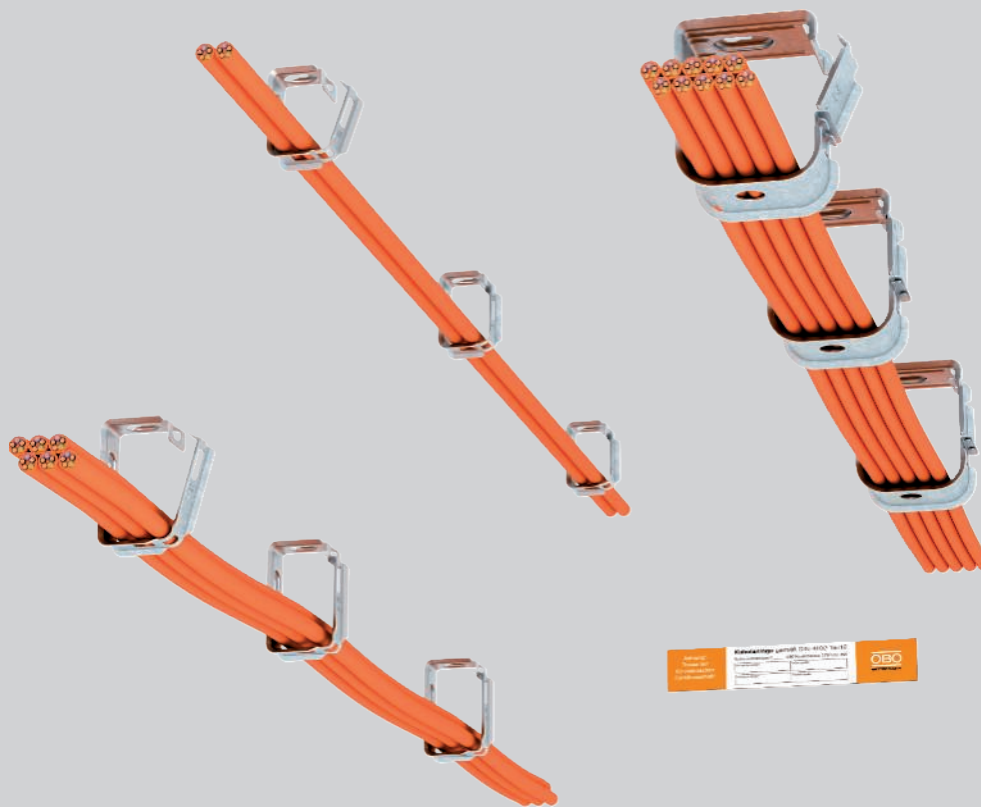
	0.5 mm ²	1.5 mm ²	2.5 mm ²	4 mm ²	6 mm ²	10 mm ²	16 mm ²
4 mm ²					-	-	-
6 mm ²						-	-
10 mm ²	-						-
16 mm ²	-						

The data in the general construction test certificates of the materials testing office of North Rhine-Westphalia, Erwitte, applies.

Always indicate the item number when ordering.

Grip M grouped support

System description



Cable routing with metal grouped supports is approved as a cable-specific routing type for the maintenance of electrical functionality classes E 30, E 60 and E 90 according to DIN 4102 Part 12. The collecting clamps used are made of sheet steel and can be opened and closed easily without the use of tools. To allow simple cable insertion, the supports can remain open during cable routing. Grouped supports for wall

and ceiling mounting are suitable. Depending on the tested cables and the grouped supports used for the tests, fastening spacings of maximum 0.8 m and a cable assignment of up to 6 kg/m are permitted. The instructions of the various cable manufacturers should be complied with.

Grip M grouped support Installation principle



Horizontal wall and ceiling mounting.



Mounted grouped support 2031 M 15.



Easy insertion of the cables into the opened grouped support.

Classification according to DIN 4102 Part 12

E30

E60

E90

System description

Routing type	Cable-specific support construction
Test certificate no. M15/M30/M70	P-MPA-E-09-007
Test certificate no. M15/M30	P-3846/9913-MPA BS
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Approved data

Type	Fastening spacing	Cable assignment, max.
2031 M15	0.5 m	1.1 kg
2031 M30	0.5 m	2.5 kg
2031 M70	0.8 m	6.0 kg

With regard to the fastening distance and cable assignment, deviating values are possible, depending on the test certificates of the cable manufacturers.

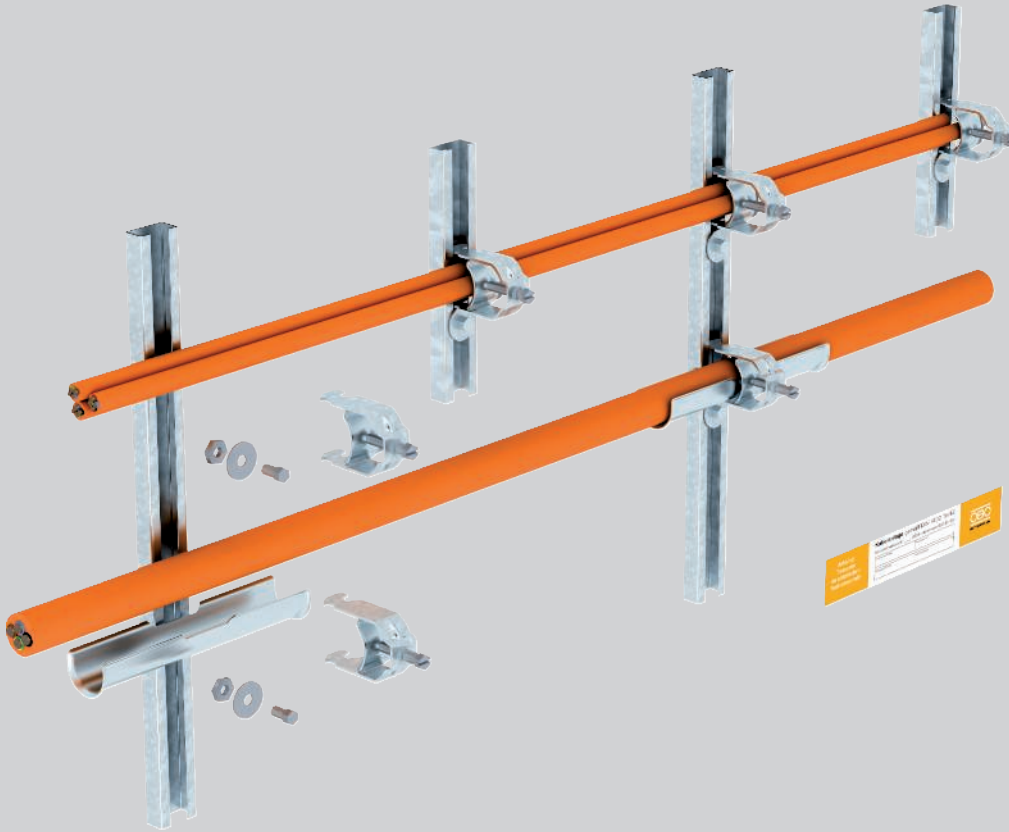
During mounting, ensure that the closure of the grouped support is located at the side.

Always indicate the item number when ordering.



Clamp clips with profile rails

System description



The routing types with clamp clips fulfil all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E30 and E90. Mounting as a cable-specific routing type is possible, depending on the specifications of the cable manufacturer. The clamp clips can be used for horizontal cable routing on walls and ceilings and vertical routing on walls. The clamp clips are made of sheet steel with a riveted metal pressure

trough. Long troughs made of galvanised sheet steel can be used to increase the support area for the cables. These are inserted loosely between the cables and the metal pressure troughs of the clamp clips. Bundling of up to three cables in a clamp clip is possible. The individual diameter of the bundled cables may not exceed 25 mm. If only individual cables are installed, then there is no limit to the cable diameter.

Clamp clips with profile rails

Installation principle



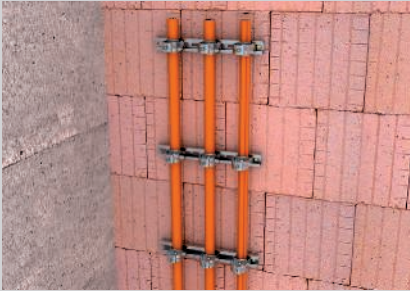
Horizontal mounting with clamp clips and long troughs on the wall and under the ceiling.



Horizontal cable mounting with clamp clips on the wall.



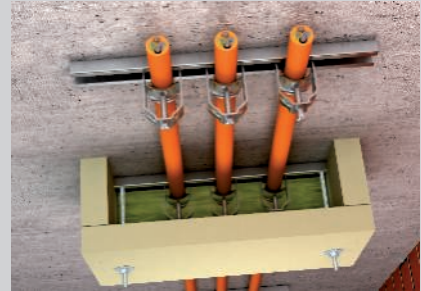
Horizontal cable mounting with clamp clips under the ceiling.



Vertical cable mounting with clamp clips on the wall.



Installation of the cables, either individually or as a bundle.



Effective support measure with ZSE90 strain relief.

Classification according to DIN 4102 Part 12

E30

E60

E90

System description

Routing type	Standard support structure Cable-specific support construction
Surveyor's report no.	3038/625/11-3-CM (standard)
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Approved data

Rail fastening distance, max.	0.3 m (without long trough) as standard support structure
Rail fastening distance, max.	0.6 m (with long trough) as standard support structure
Max. anchor spacing in rail	0.25 m
Max. individual cable diameter	62 mm with long trough, 100 mm without long trough
Max. cable bundle	3x Ø 25 mm as standard support structure
Cable-specific	Cable types and mounting parameters dependent on the cable manufacturer

Standard routing type:

The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

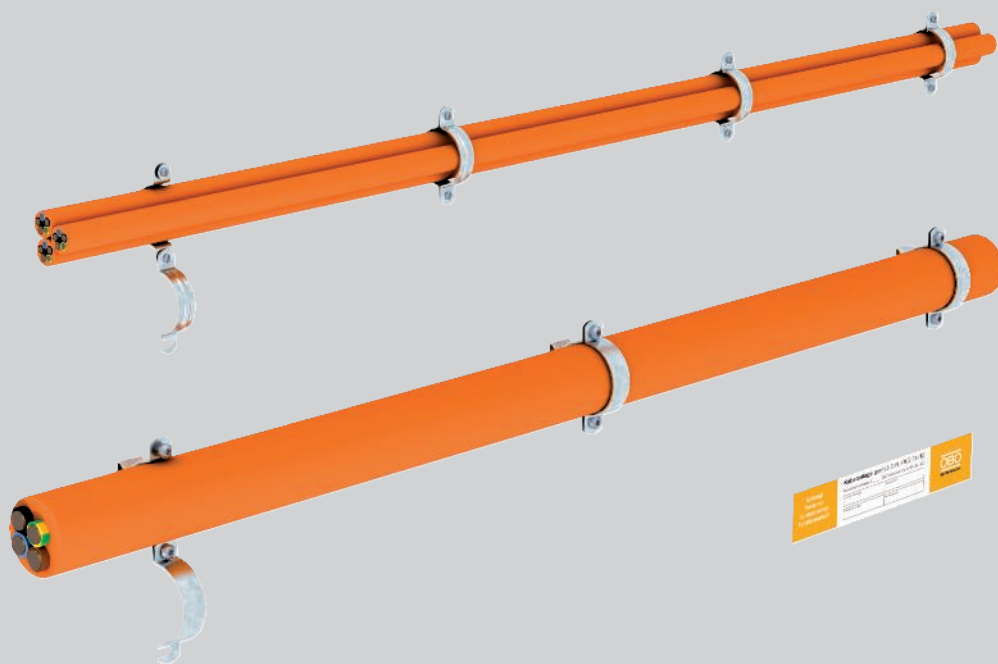
Cable-specific routing type:

A general construction test certificate of a materials testing institute for the cable type to be used is sufficient as proof.

With regard to the fastening distance and cable assignment, the details from the appropriate test certificate must be taken into account.

Screw-in spacer clips

System description



The routing types with single clips fulfil all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30, E 60 and E 90. In addition, mounting of the single clips as a cable-specific routing type is possible, depending on the specifications of the cable manufacturer. The screw-in spacer clips can be used for horizontal cable routing on walls and ceilings and vertical routing on walls. The closed screw-in spacer clips are made of galvanised sheet steel. Mounting is

carried out either by pushing through the slots of the clips or by screwing onto a fire protection anchor with threaded tip M6. Bundling of up to three cables together in a single clamp clip is possible for mounting as a standard support structure. The individual diameter of the bundled cables may not exceed 25 mm. There is no limit to the diameter of installed individual cables with screw-in spacer clips.

Screw-in spacer clips

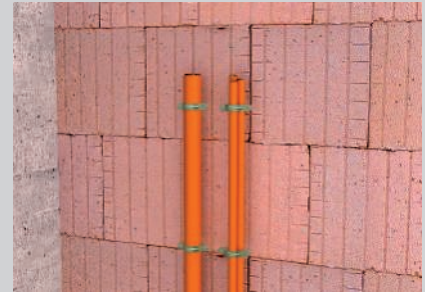
Installation principle



Horizontal cable mounting on the wall.



Mounting under the ceiling.



Vertical cable installation as individual and bundle routing on the wall.



Bundled cable routing under the ceiling.



Effective support measure with ZSE90 strain relief.

Classification according to DIN 4102 Part 12

E30

E60

E90

System description

Routing type	Standard support structure Cable-specific support construction
Surveyor's report no.	3038/625/11-3-CM (standard)
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Approved data

Max. fastening spacing	0.3 m as standard support structure
Max. individual cable diameter	63 mm
Max. cable bundle	3x Ø 25 mm
Cable-specific	Cable types and mounting parameters dependent on the cable manufacturer

Standard routing type:

The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

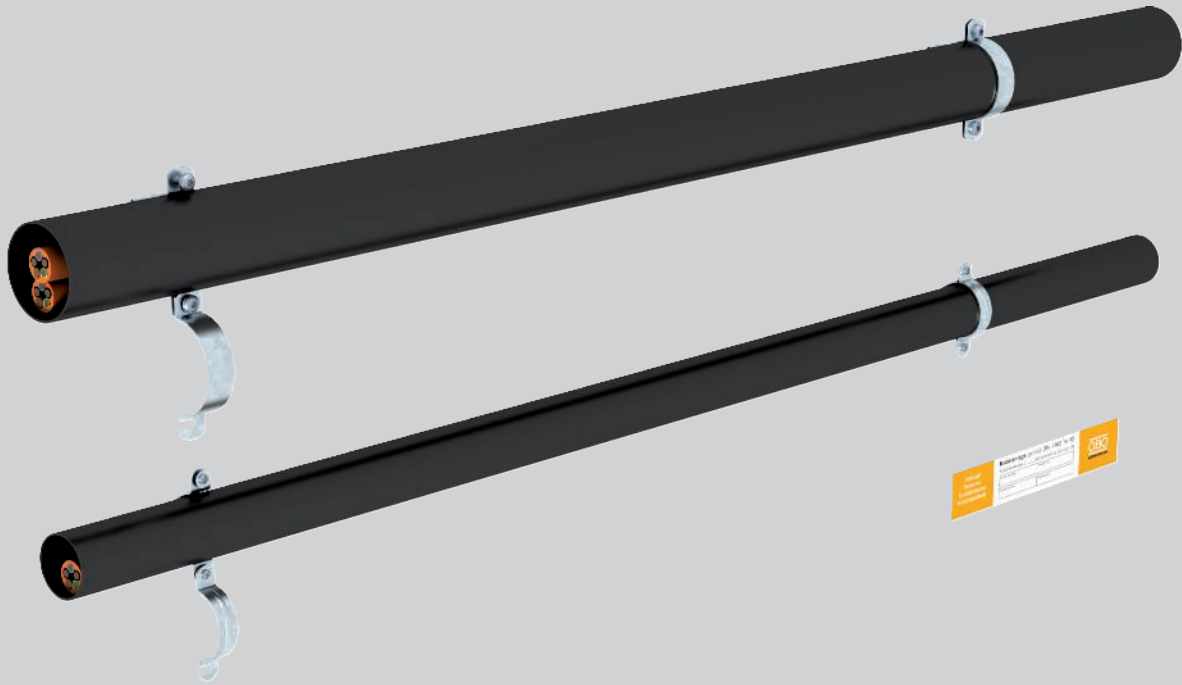
Cable-specific routing type:

A general construction test certificate of a materials testing institute for the cable type to be used is sufficient as proof.

With regard to the fastening distance and cable assignment, the details from the appropriate test certificate must be taken into account.

Cable routing in pipes

System description



Cable routing in the steel pipe, in combination with clamp clips or with screw-in spacer clips, fulfils the requirements of DIN 4102 Part 12 as a cable-specific routing type for the maintenance of electrical functionality classes E 30, E 60 and E 90. The steel pipes may be routed horizontally on the wall or under the ceiling and offer additional mechanical protection of the installed cables. Sheet steel clamp clips are used

together with a riveted metal pressure sleeve and the appropriate profile rails, or closed screw-in spacer clips made of galvanised sheet steel. Refer to the available test certificates of the cable manufacturer for the maximum possible dimensions of the pipes, the maximum fastening spacing of the clips and the number of cables to be run in the pipe.



Cable routing in pipes

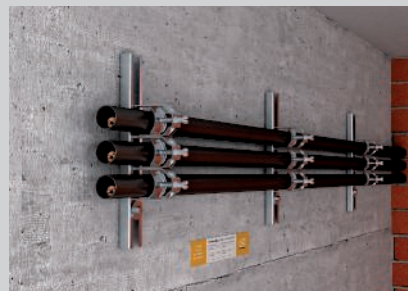
Installation principle



Ceiling mounting with screw-in spacer clip and clamp clip.



Horizontal wall mounting with screw-in spacer clip and clamp clip.



Space-saving installation of multiple pipes next to one another with clamp clips.



Insertion into the screw-in spacer clip by hooking the cover under the screw.



Multiple assignment according to the data of the test reports.

Classification according to DIN 4102 Part 12

E30 **E60** **E90**

System description

Routing type	Cable-specific support construction
Maintenance of electrical functionality classes	E30 to E90
Testing standard	DIN 4102 Part 12

Approved data

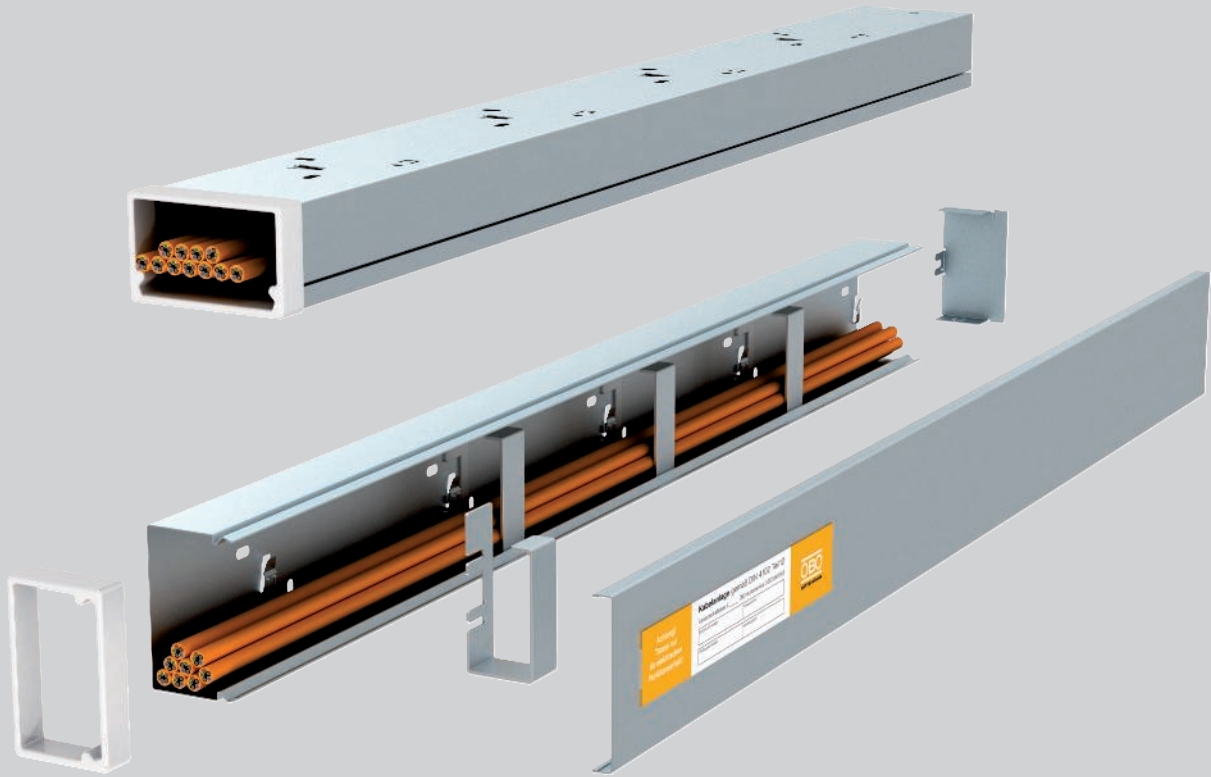
Cable-specific	Cable types and mounting parameters dependent on the cable manufacturer
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The data in the general construction test certificates applies.



LKM cable trunking

System description



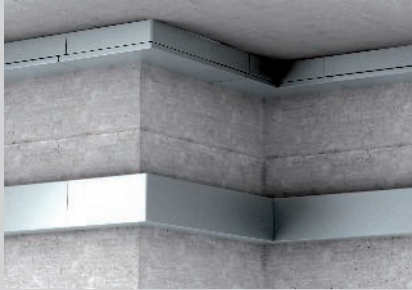
Cable routing with metal cable trunking, type LKM, is approved as a cable-specific routing type for the maintenance of electrical function classes E 30, E 60 and E 90 according to DIN 4102 Part 12. The trunking may be routed horizontally on the wall or under the ceiling and offer additional mechanical protection of the installed cables. This installation variant is also used if, for reasons of appearance, open routing of

the cables with the maintenance of electrical function is not wanted. A retaining clamp is available as an installation aid for the trunking type LKM60100. This prevents cables from falling out in the case of wall and ceiling mounting. When cable installation has been completed, the trunking cover is locked onto the trunking base.



LKM cable trunking

Installation principle



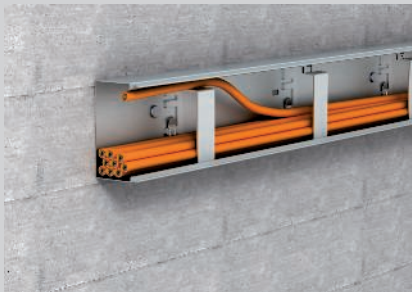
Horizontal wall and ceiling mounting.



Routing of power, data or fire alarm cables in the trunking, type LKM60100.



Tidy routing of data and fire alarm cables in the trunking, type 20030.



Retaining clamps locked into the base as installation aid for wall mounting.



Retaining clamps as mounting aid for the insertion of cables for ceiling mounting.



Closing of the trunking by simple locking of the lid onto the trunking base.

Classification according to DIN 4102 Part 12



System description

Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-11-008
Maintenance of electrical functionality classes	E30 and E90
Testing standard	DIN 4102 Part 12

Approved data

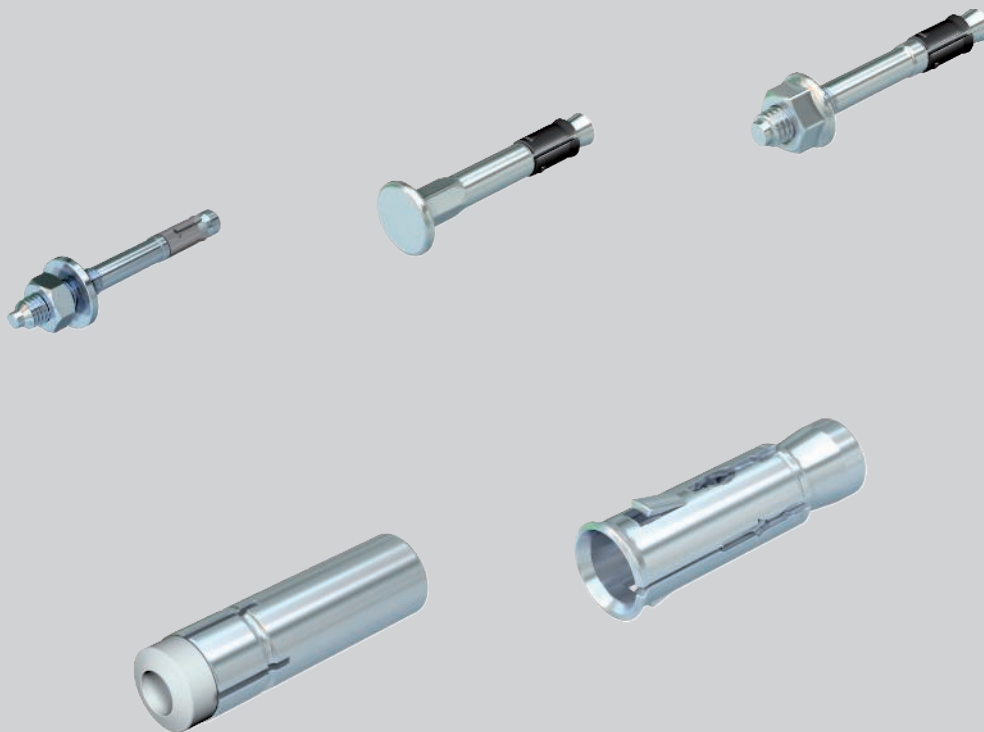
Type	Cable types	Fastening spacing	Cable load
LKM 20030	Data cable	max. 40 cm	max. 0.3 kg/m
LKM 60100	Power cable	max. 49 cm	max. 3.0 kg/m

The data in the general construction test certificates for the appropriate cable type applies.



Metal spreading anchor

System description



OBO Bettermann's metal spreading anchors for mounting in concrete components were tested for fire protection. Appropriate proofs are available for the tests carried out. Depending on the fire resistance length (up to 120 minutes), a maximum load capacity was determined when anchored in concrete. This load data is contained in the appropriate European Techni-

cal Assessments and appropriate test documentation. Although the load capacity of the anchors during a fire is below the load capacity when cold, this load capacity is completely sufficient for fireproof fastening of the different routing types. Special metal spreading anchors are offered for false ceilings.



Metal spreading anchor Installation principle



Nail tie, type N 6, with thread end.



Nail tie, type N-K 6, with flat head.



Bolt tie, type BZ.



Bolt tie, type BZ-IG.



Hollow core anchor, Easy type.

Classification according to proof of application

R30

R60

R90

R120

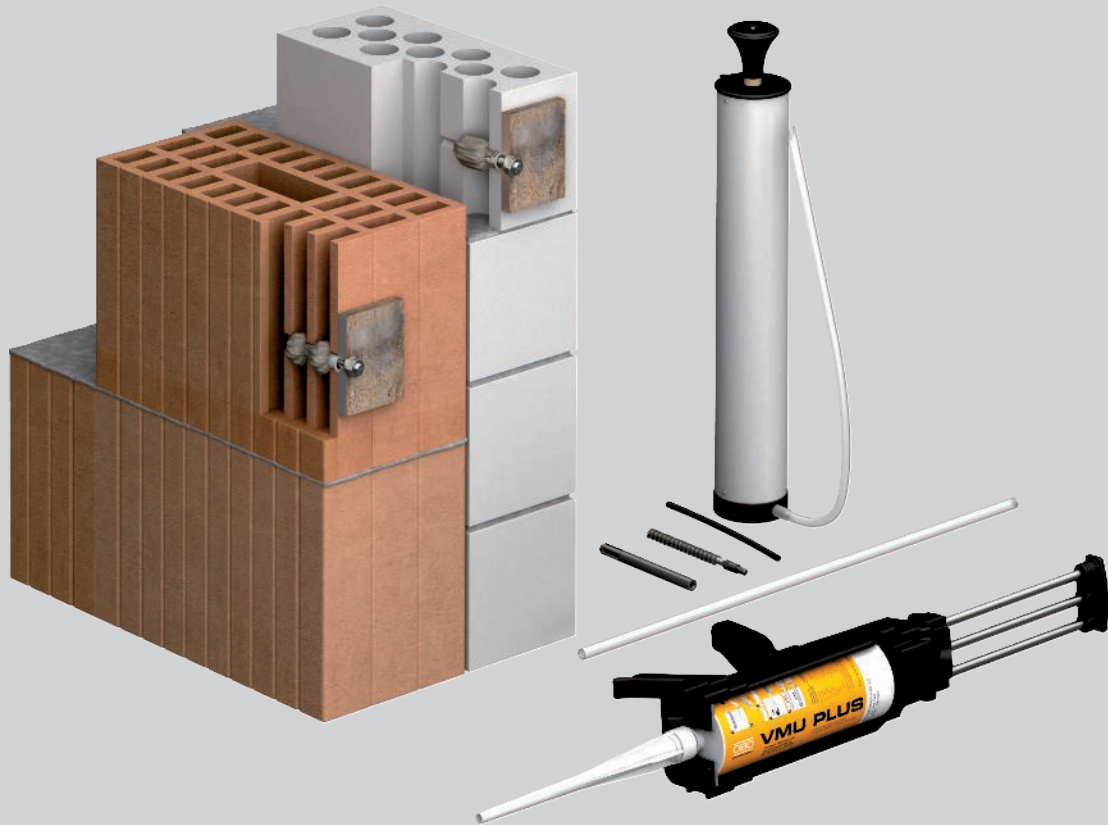
System description

Anchoring type	Anchor with spreading metal cone
Fire resistance classes	To R120 according to European Technical Assessment ETA
Substrate	Concrete

The data of the approval documents and any fire testing reports apply



Injection tie VMU Plus System description

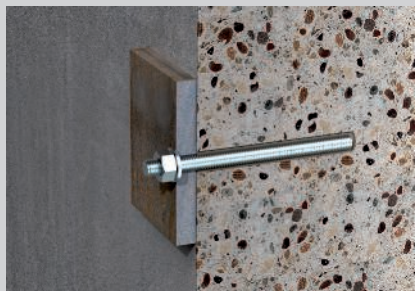


The VMS Plus injection mortar system is particularly suitable for fire protection fastening in hollow brick, concrete and porous concrete, calcareous limestone, sand-lime brick and masonry. The connection is free from spreading pressure and is created through the form fitting of the injection mortar with the substrate and an anchor rod. The components are tested and approved for a fire resistance period of 90 minutes.

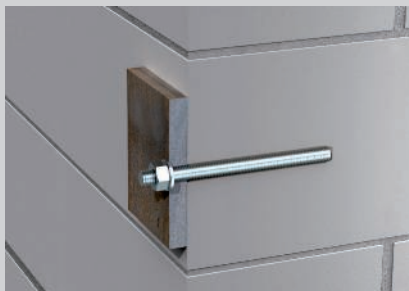
The maximum load capacity depending on the fire resistance period and the fastening substrate is documented accordingly in the available fire protection certificate. Although the load capacity of the injection mortar system is below the load capacity when cold, this load capacity is completely sufficient for fireproof fastening of the different routing types.



Injection tie VMU Plus Installation principle



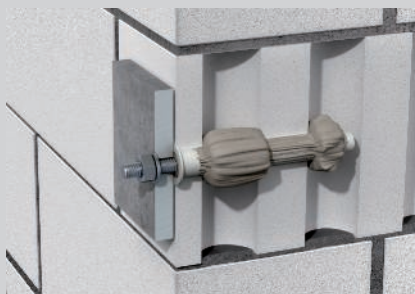
Anchor rod mounted in concrete without wire sleeve.



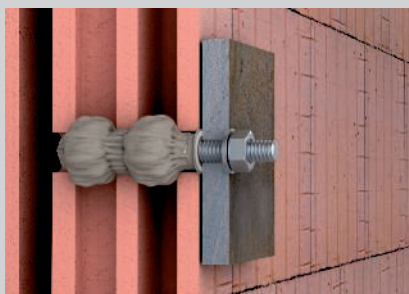
Anchor rod mounted in calcareous limestone full brick without wire sleeve.



In full brick, mount the anchor rod without a wire sleeve.



Anchor rod mounted in hollow calcareous limestone with wire sleeve.



Anchor rod mounted in hollow brick without wire sleeve.

Classification according to proof of application

R30

R60

R90

System description

Anchoring type	Spread-free connection with special mortar
Fire resistance classes	To R90 according to proof of fire protection
Substrate	Concrete, solid calcareous limestone brick, porous calcareous limestone brick, porous brick, full brick, porous concrete block
Load classes	Dependent on the resistances of the substrates, see approval

The data of the approval documents and any fire testing reports apply



Bolt tie

System description



OBO Bettermann's fire protection bolt ties were fire-tested according to ETAG 001 Part 3. The maximum load capacity, depending on fire resistance periods of up to 120 minutes, was determined for different types of solid masonry. These values are documented in the appropriate test certificates. Taking the occurring loads for the maintenance of electrical function application and for false ceiling mounting into account, the

determined load capacities for the different masonry types are absolutely sufficient. The fire protection bolt ties are screwed directly into the drill hole. There is no need for an additional anchor. No spreading forces develop and mounting near masonry edges is not required. The bolt tie is equally suitable for cracked concrete in ceilings.



Bolt tie

Installation principle



Version with truss head and T drive.



Version with large truss head and T drive.



Version with hexagonal head.



Version as shaft tie with M6 threaded tip.



Version with countersunk cone head and T drive.

Classification according to proof of application

F30

F60

F90

F120

System description

Anchoring type	Spread-free connection with self-tapping thread
Fire resistance classes	To F120 according to general building inspectorate approval
Substrate	Concrete Masonry: Solid calcareous limestone brick, porous calcareous limestone brick, full brick

The data of the approval documents and any fire testing reports apply



Wood screws

System description



Wood is a combustible material and, as with steel constructions, wooden components are firstly only suitable under certain conditions for the fastening of fire-tested electrical installations. Coatings and panning are also used in the constructions, in order to achieve a fire resistance class at all. However, if there is a fire, wood has a very good property: When burning, an insulated layer is created which delays further combustion. The wooden component must be dimensioned in such a way that failure of the carrying capacity cannot occur at an early stage. The combustion rates are a standard means for calculating the required wood cross-section, depending on the desired fire resistance class. The combustion rates depend

on the type of wood and the moisture content of the wood. Taking the combustion rates into account, various cable support systems for electrical safety systems with the maintenance of electrical functionality classes E30 and E60 can be fastened to wooden components. Wood screws with a suitable steel cross-section and sufficient embedment depth are used for fastening. The long screws drill deep into the cross-section of the wooden beam, ensuring a secure hold of the mounted support systems, despite burning. Various mounting variants are documented in a fire protection survey.



Wood screws

Installation principle



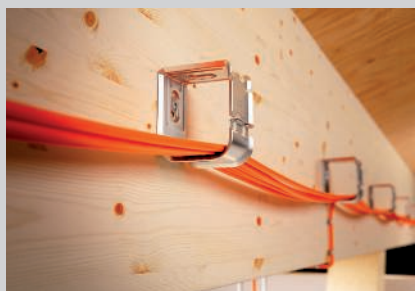
Bracket mounting on the side of the wooden beam with rear fire protection plate.



Suspended support mounting under the wooden beam with rear fire protection plate.



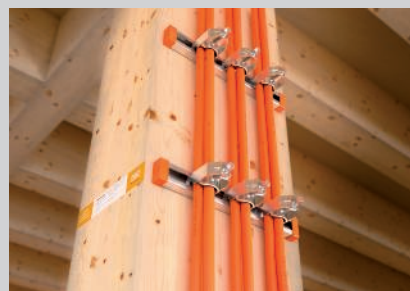
Cable routing with single clips and in the pipe, at the side on the wooden beam.



Cable routing with grouped support on the side on the wooden beam.



Mounting of the OBO FireBox on a wooden beam.



Vertical cable routing with rails and clips on a wooden beam.

Classification according to proof of application

E30

E60

System description

Anchoring type	Self-tapping wood screw
Maintenance of electrical functionality classes	E30 to E60
Substrate	Supporting components, that close off or do not close off rooms, (walls, ceiling or supports) made of solid wood
Proof of application	Surveyor's report of Ingenieurbüro für Brandschutz von Bauarten, IBB
Certificate number	GA-2016/034-Mey

The data in the named proofs of applicability applies



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