

BSS



Fire protection systems

Export GmbH & Co KG

2019/2020

Building Connections

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Planning and mounting aids

	General information	4
	Insulation – PYROMIX® mortar insulation	13
	Insulation – PYROPLATE® Fibre soft insulation	23
	Insulation – PYROBAG® cushion insulation	33
	Insulation – PYROSIT® NG fire protection foam	41
	Insulation – PYROPLUG® foam series	51
	Insulation – PYROCOMB® pipe sleeve	77
	Insulation – PYROCOMB® Intube pipe shell	91
	Insulation – PYROLIQ® casting compound	99
	Small insulation, bandage and individual cables acc. to MLAR	103
	Escape route installations - false ceiling mounting	117
	Fire protection ducts	151
	Cable bandages	199
	Maintaining electrical functionality – cable-specific support constructions	207
	Maintaining electrical functionality – standard support structures, vertical ladders – Strain relief	243
	Maintaining electrical functionality - Junction boxes, individual routing, pipes and metal duct	283
	Anchorings	333
	Directories	357



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

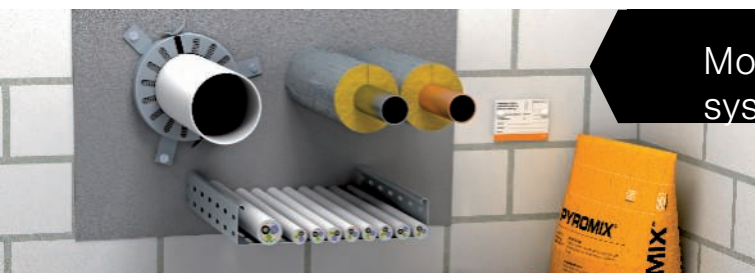
The following requirements apply to cable penetrations with cable insulation:

- 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

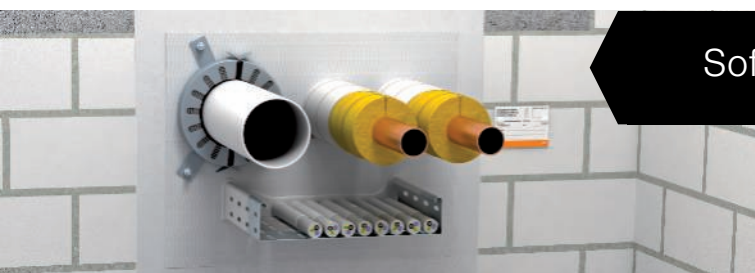
Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.



Insulation systems



Mortar insulation systems



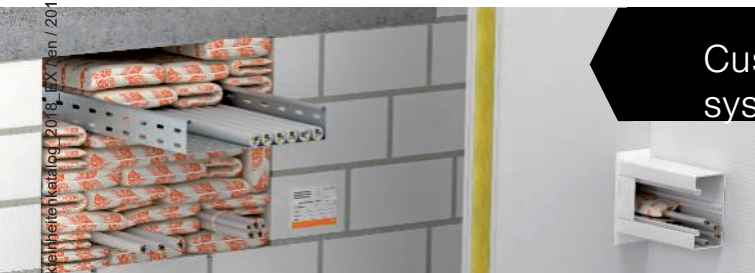
Soft insulation systems



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)

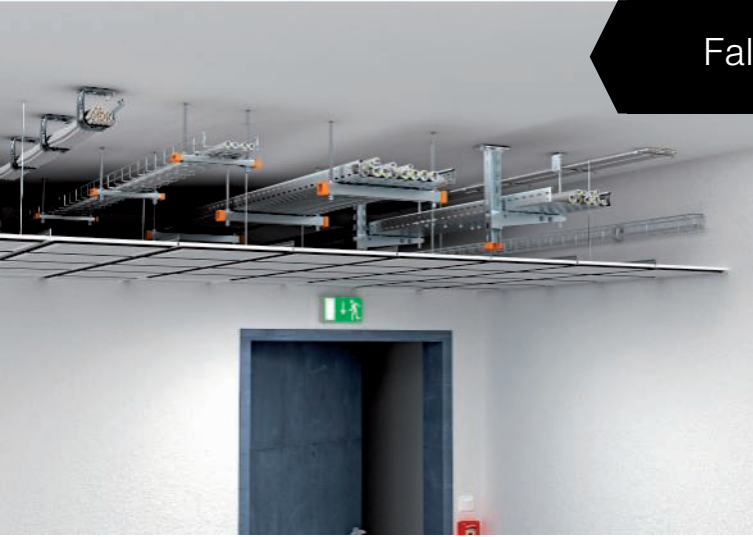
There must be a guarantee that, if there is a fire, these routes can be used to leave the building without any risk. In addition to evacuation, the emergency and escape routes also aid the local fire brigades as a point of attack.

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:

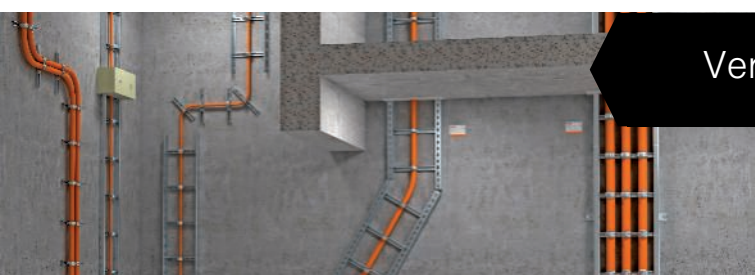
- Water pressure increase systems for fire water supply
- Mechanical smoke extraction systems and smoke protection pressure systems
- Fire brigade lifts
- Bed lifts in hospitals and similar equipment



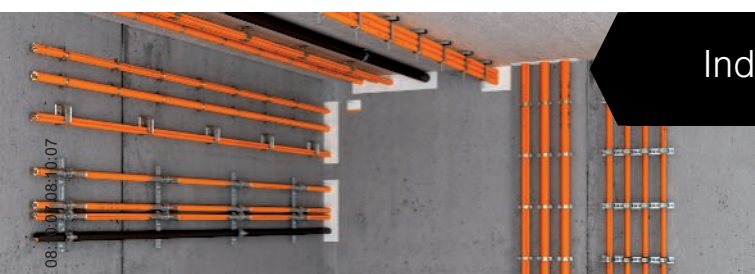
Systems that maintain the electrical function



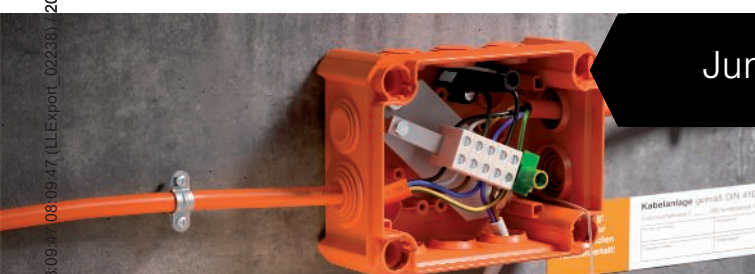
Cable trays and cable ladders



Vertical ladders



Individual routing



Junction boxes

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Technical support

Seminars

OBO BSS seminars: First-hand knowledge

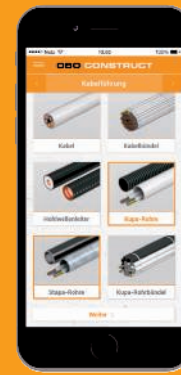
With a comprehensive programme of training courses and seminars on the subject of fire protection systems, OBO is able to support its customers with specialist knowledge from a single source. Alongside the basic theoretical principles, the programme also deals with practical implementation in everyday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



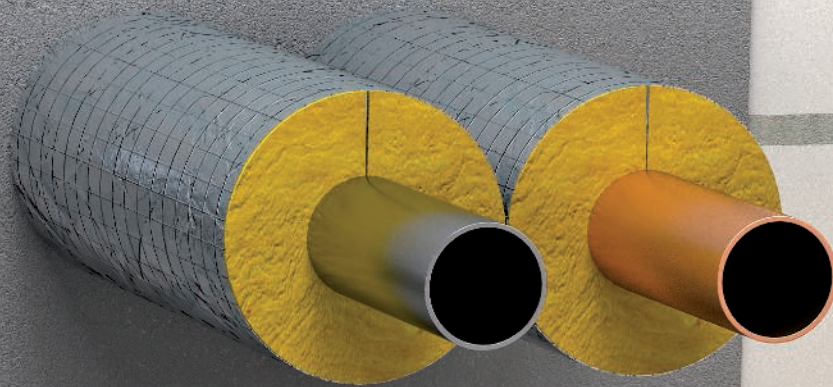
Fire protection guide

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.



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Rohrabschottung		<input type="checkbox"/>	<input type="checkbox"/>
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Zulassung	Nr.		
System:			
Erreicht:			
Datum:			



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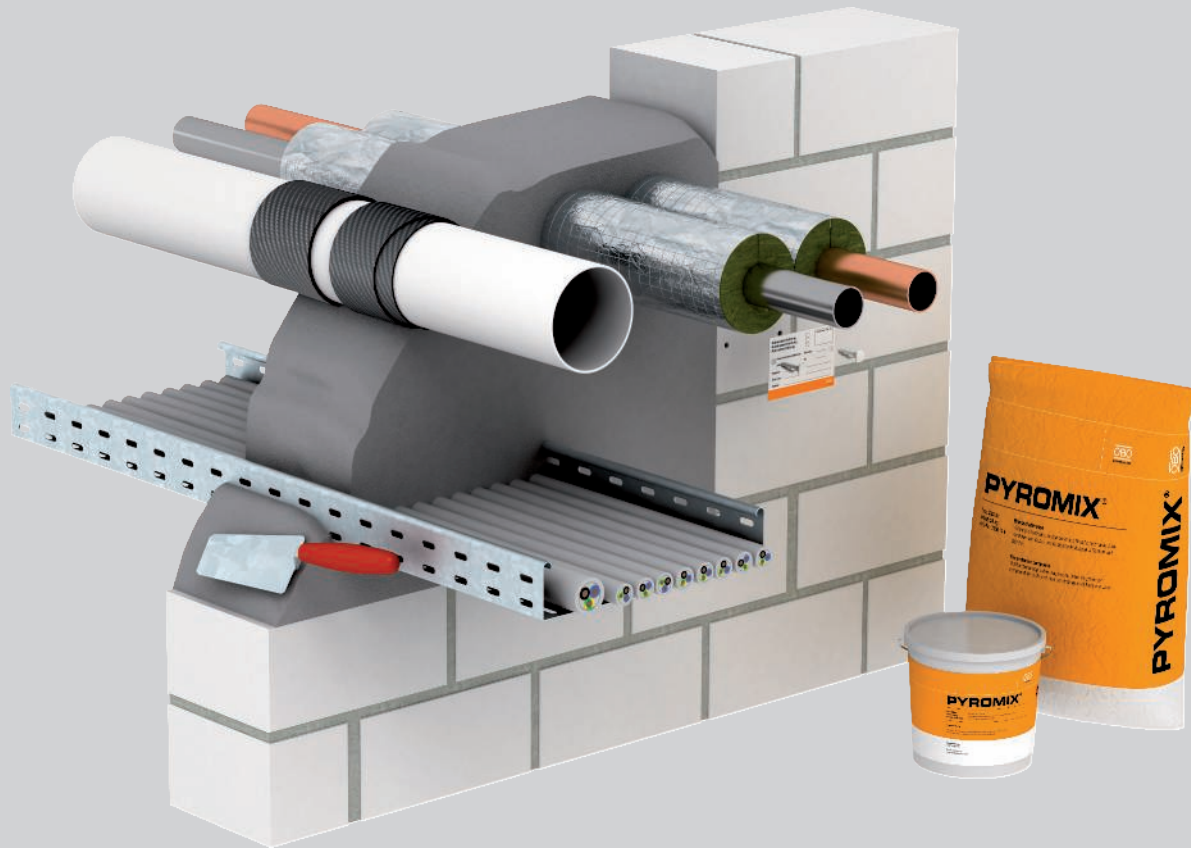
Mortar insulation PYROMIX®

	System description	14
	Products	18





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 unne-

cessary 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.



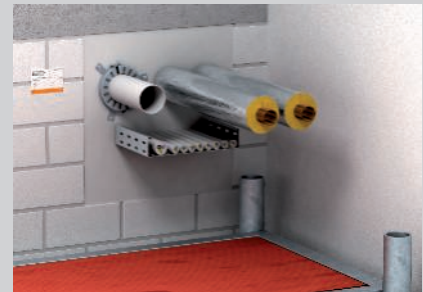
Use approved section insulation for metal pipes.



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.

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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®


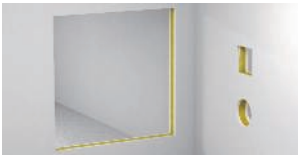




Registration data

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

Ø 80 mm ✓ 

Pipe bundle of electrical installation pipes

Only with PYROCOMB Intube ✓ 

Cable bundle

Ø 100 mm, cable Ø 21 mm ✓ 

Electrical installation pipe made of steel

Ø 16 mm, cable Ø 16 mm ✓ 

Individual lines for control purposes

✗ 


Cable support systems

Steel profiles ✓ 


Electrical installation pipe made of plastic, rigid

Ø 16 mm, cable Ø 21 mm ✓ 

Metal pipes with path insulation

Steel, stainless steel and cast steel Ø 323.9 mm, copper Ø 108.0 mm ✓ 

Electrical installation pipe made of plastic, flexible


Only with PYROCOMB Intube ✓ 

Plastic pipes

Ø 160 mm ✓ 

Special installations

Double solar pipes

Stainless steel with insulation + accompanying cable Ø 40 mm (Ceiling 30 min.) ✓ 


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 ✓ 

Klimasplit

Tubolit Duo Split Ø 6.0–18.0 mm ✓ 

Hydraulic hoses

HANSA-FLEX HD 200-2 SN Ø 55.9 mm (150 mm component) ✓ 



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



Mortar insulation PYROMIX®

PYROMIX® dry mortar in paper sack



Type	Contents	Pack. pcs	Weight		Item No.
	kg		kg/100 pcs.	pcs.	
MSX-S1	20	1	2,000.000		7206104

Special mortar

Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 6 litres of water to 20 kg of dry mortar produces about 20 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.

PYROMIX® dry mortar in bucket



Type	Contents	Pack. pcs	Weight		Item No.
	kg		kg/100 pcs.	pcs.	
MSX-E1	10	1	1,000.000		7206058

Special mortar

Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 3 litres of water to 10 kg of dry mortar produces about 10 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.

Insulation layer creator in a cartridge



Type	Contents	Pack. pcs	Weight		Item No.
	ml		kg/100 pcs.	pcs.	
DSX-K	300	1	50.000		7202300

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Insulation layer creator in a bucket



Type	Contents	Pack. pcs	Weight		Item No.
	kg		kg/100 pcs.	pcs.	
DSX-E	5	1	500.000		7202302

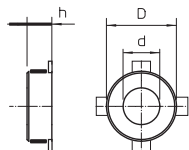
Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Pipe sleeve with 2 fastening straps



Type	Pipe Ø	Dimension h	Dimension D	Dimension d	Pack. pcs	Weight		Item No.
	mm	mm	mm	mm		kg/100 pcs.	pcs.	
TCX-032	32 - 34	26	50	36	1	6.500		7202200
TCX-040	40 - 42	26	58	44	1	7.000		7202201
TCX-050	50 - 52	26	68	54	1	8.000		7202203

Intumescent material

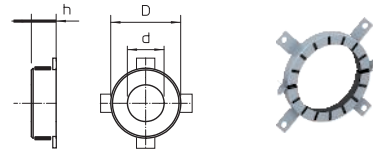
Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

Pipe sleeve with 4 fastening straps

Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-063	63 - 65	26	94	67	1	15.500	7202204
TCX-075	75 - 77	26	106	79	1	19.000	7202205
TCX-090	92	26.6	132	94	1	37.000	7202206
TCX-110	110 - 112	26.6	155	114	1	46.000	7202207
TCX-125	125 - 127	40	172	129	1	70.000	7202208



Intumescent material

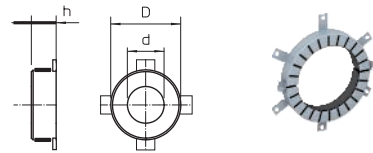
Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

Pipe sleeve with 6 fastening straps

Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-140	140 - 142	40	200	144	1	106.000	7202209
TCX-160	160 - 162	40	220	164	1	107.000	7202210



Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

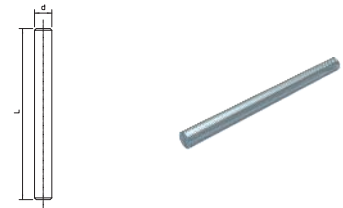
Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M6 1M G	M6	6	1000	10	18.300	3141047
TR M8 1M G	M8	8	1000	10	30.000	3141128

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



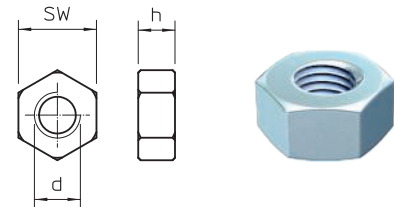
Hexagonal nut DIN 934

Type	Thread	Dimension SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M6 G	M6	10	5.2	6	100	0.225	3400069
HN M8 G	M8	13	6.8	8	100	0.474	3400085

St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



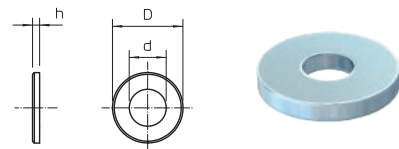
Washer ISO 7093

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M6 D28 G	M6	6.5	28	2.5	100	1.150	3402207
WS M8 D28 G	M8	8.5	28	2.5	100	1.100	3402215

St Steel

G Electrogalvanised

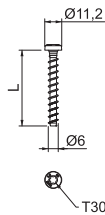
Washer of large outer diameter for universal use.





Mortar insulation PYROMIX®

Fire protection screw tie

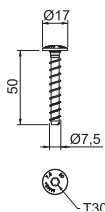


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 6X50	6 x 50	50	5	11.2	Torx	100	1.000	3498108

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with pan head for direct installation without additional anchors. Drive T30, drill hole 5 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Fire protection screw tie



Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Section insulation for metal pipes



Type	Length mm	Width mm	Thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-MA	8000	500	30	2	1,010.000	7202308

Mineral fibres

Mineral wool mats with aluminium lamination for section insulation on copper and steel pipes. Fastening with winding wire, securing of joints with aluminium adhesive tape.

Applicable in the systems:
 PYROMIX® mortar insulation
 PYROSIT® NG fire insulation foam
 PYROPLATE® Fibre soft insulation
 PYROPLUG® Block blocks

Material class EN 13501 - A1 non-combustible; melting point $\geq 1,000$ °C

Aluminium adhesive tape for section insulation



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-AT	10000	1	136.900	7202305

Aluminium adhesive tape for applying the aluminium-laminated section insulation. The aluminium adhesive tape is self-adhesive and not classified as combustible according to DIN 4102-1.

Winding wire for section insulation



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-TD	50000	1	10.000	7202309

- St** Steel
- VZ** Galvanised

The steel wire is used to fix the section insulation. It is non-combustible and guarantees optimum retention of the section insulation on non-combustible pipes and cables.



Type	Dimension	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
MIW-S	25 litre	1	250.000		7202306

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.
Material class EN 13 501 - A1, non-combustible; melting point ≥ 1.000 °C.



Mineral wool

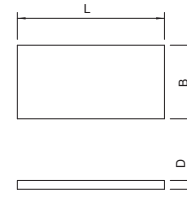
Calcium silicate plate

Type	Dimension			Pack. pcs	Weight		Item No.
	Dimension L mm	Dimension B mm	Dimension D mm		kg/100	pcs.	
KSI-P1	500	150	20	1	42.000		7202283
KSI-P2	500	250	30	1	111.000		7202904
KSI-P3	1000	250	30	1	222.000		7202912

Calcium silicate

Calcium silicate plate, as support plate, for the construction of frames in the penetration and to double thin wall thicknesses.

Materials class EN 13501 - A1 non-combustible.



Retrofit wedge

Type	Dimension	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
NIK-S	25x25/75x300	1	32.000		7206210

Calcium silicate

Retrofit wedges for mortar insulation, to mount in the fresh insulation. 1 set comprises 4 slanted calcium silicate strips. Material class EN 13501 - A1, non-combustible.

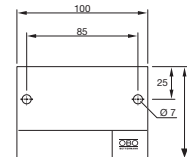


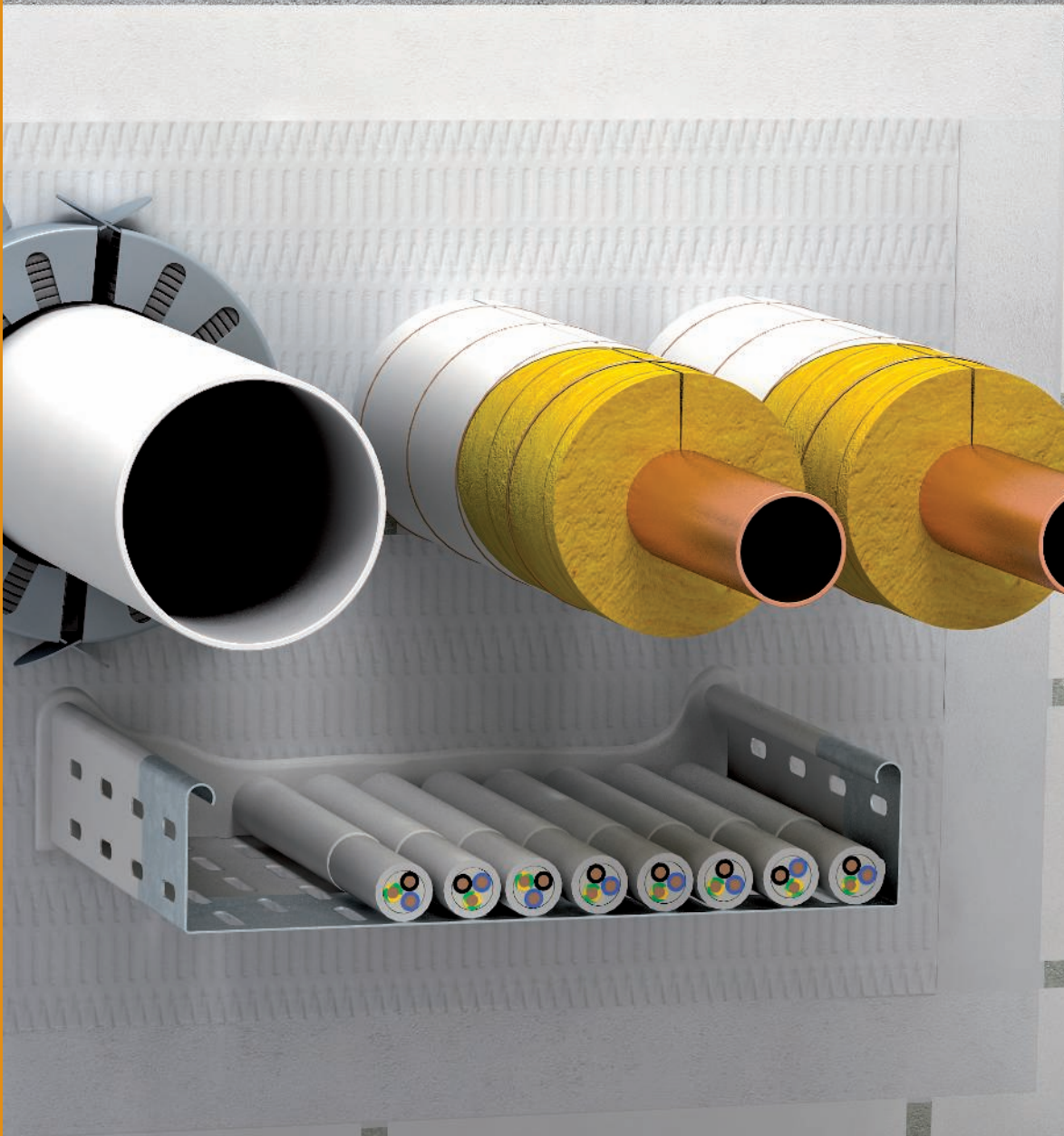
Identification plate

Type	Language	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
KS-S DE	German	1	2.400		7205425
KS-S SE	Swedish	1	2.400		7205426
KS-S ES	Spanisch	1	2.400		7205427
KS-S EN	English	1	2.400		7205429
KS-S HR	Croatian	1	2.400		7205438

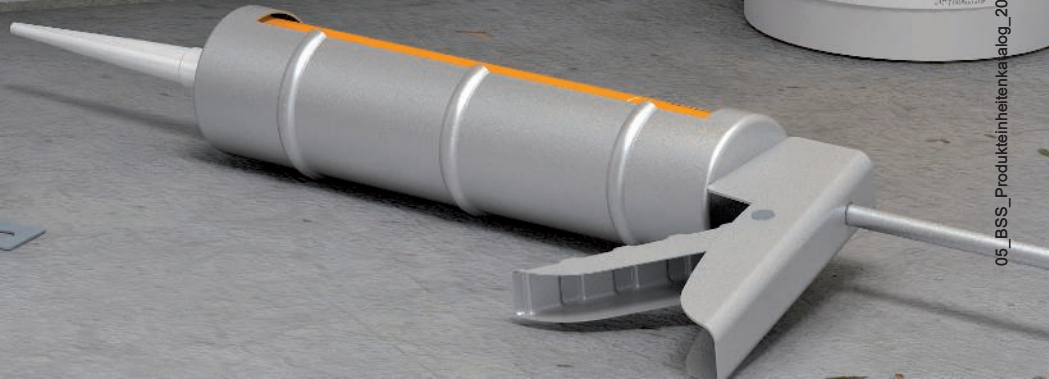
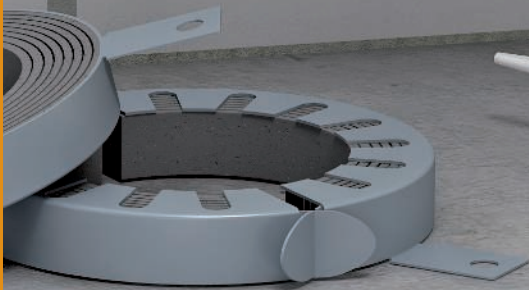
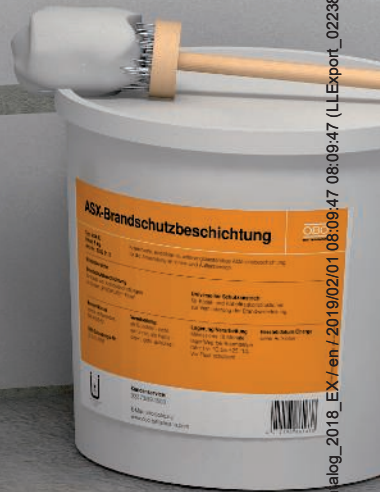
PS Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.







Kabelabschottung	<input type="checkbox"/>	Exaktwert / U/m Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Brandstanzklasse	Minuten	
Abmessung	Nr.	
Item:		
Gr.:		



Soft insulation, PYROPLATE® Fibre

	System description	24
	Products	28

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



Classification to EN



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

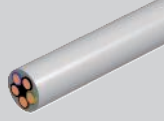
Component		Rigid walls	Flexible walls	Rigid floors
Min. component strength				
		10 cm (EI 15 / EI 30 / EI 60 / EI 90) 10 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120) 20 cm (EI 15 / EI 30 / EI 60 / EI 90/ EI 120 / EI 180 / EI 240)	10 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120)	12.5 cm (EI 15 / EI 30 /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



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

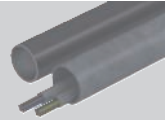


Cable bundle

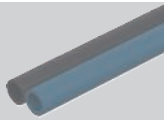
Ø 100 mm, cable Ø 21 mm



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems

Steel profiles



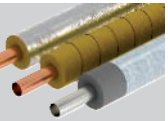
Electrical installation pipe made of plastic, rigid

Ø 16 mm



Metal pipes with path insulation

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



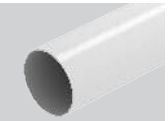
Electrical installation pipe made of plastic, flexible

Ø 32 mm, cable Ø 21 mm



Plastic pipes

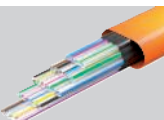
Ø 160 mm



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



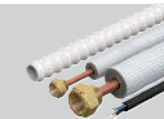
Double solar pipes

"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.

Soft insulation, PYROPLATE® Fibre

Ablation coating in a cartridge



Type	Contents	Pack. pcs	Weight		Item No.
	ml		kg/100 pcs.	pcs.	
ASX-K	310	1	50.000		7202310

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Ablation coating in a bucket



Type	Contents	Pack. pcs	Weight		Item No.
	kg		kg/100 pcs.	pcs.	
ASX-E	5	1	500.000		7202312

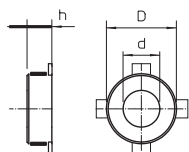
Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred. Sufficient for an area of 4 m².

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Pipe sleeve with 2 fastening straps



Type	Pipe Ø	Dimen- sion h	Dimen- sion D	Dimen- sion d	Pack. pcs	Weight		Item No.
	mm	mm	mm	mm		kg/100 pcs.	pcs.	
TCX-032	32 - 34	26	50	36	1	6.500		7202200
TCX-040	40 - 42	26	58	44	1	7.000		7202201
TCX-050	50 - 52	26	68	54	1	8.000		7202203

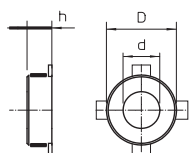
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

Pipe sleeve with 4 fastening straps



Type	Pipe Ø	Dimen- sion h	Dimen- sion D	Dimen- sion d	Pack. pcs	Weight		Item No.
	mm	mm	mm	mm		kg/100 pcs.	pcs.	
TCX-063	63 - 65	26	94	67	1	15.500		7202204
TCX-075	75 - 77	26	106	79	1	19.000		7202205
TCX-090	92	26.6	132	94	1	37.000		7202206
TCX-110	110 - 112	26.6	155	114	1	46.000		7202207
TCX-125	125 - 127	40	172	129	1	70.000		7202208

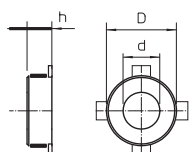
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

Pipe sleeve with 6 fastening straps



Type	Pipe Ø	Dimen- sion h	Dimen- sion D	Dimen- sion d	Pack. pcs	Weight		Item No.
	mm	mm	mm	mm		kg/100 pcs.	pcs.	
TCX-140	140 - 142	40	200	144	1	106.000		7202209
TCX-160	160 - 162	40	220	164	1	107.000		7202210

Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M6 1M G	M6	6	1000	10	18.300	3141047
TR M8 1M G	M8	8	1000	10	30.000	3141128

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



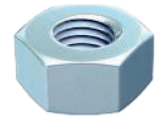
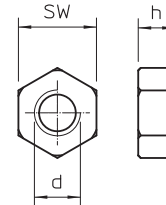
Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M6 G	M6	10	5.2	6	100	0.225	3400069
HN M8 G	M8	13	6.8	8	100	0.474	3400085

St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



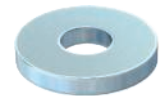
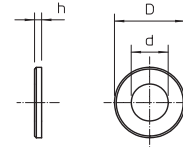
Washer ISO 7093

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M6 D28 G	M6	6.5	28	2.5	100	1.150	3402207
WS M8 D28 G	M8	8.5	28	2.5	100	1.100	3402215

St Steel

G Electrogalvanised

Washer of large outer diameter for universal use.



Section insulation for metal pipes

Type	Length mm	Width mm	Thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-MA	8000	500	30	2	1,010.000	7202308

Mineral fibres

Mineral wool mats with aluminium lamination for section insulation on copper and steel pipes. Fastening with winding wire, securing of joints with aluminium adhesive tape.

Applicable in the systems:
 PYROMIX® mortar insulation
 PYROSIT® NG fire insulation foam
 PYROPLATE® Fibre soft insulation
 PYROPLUG® Block blocks

Material class EN 13501 - A1 non-combustible; melting point $\geq 1,000$ °C

Aluminium adhesive tape for section insulation

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-AT	10000	1	136.900	7202305

Aluminium adhesive tape for applying the aluminium-laminated section insulation. The aluminium adhesive tape is self-adhesive and not classified as combustible according to DIN 4102-1.



Soft insulation, PYROPLATE® Fibre

Winding wire for section insulation



Type	Length	Pack.	Weight	Item No.
	mm	pcs	kg/100 pcs.	
MIW-TD	50000	1	10.000	7202309

SI Steel
VZ Galvanised

The steel wire is used to fix the section insulation. It is non-combustible and guarantees optimum retention of the section insulation on non-combustible pipes and cables.

Mineral wool

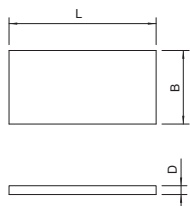
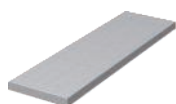


Type	Dimension	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
MIW-S	25 litre	1	250.000	7202306

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form. Material class EN 13 501 - A1, non-combustible; melting point ≥ 1.000 °C.

Calcium silicate plate



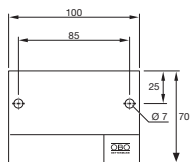
Type	Dimen- sion L	Dimen- sion B	Dimen- sion D	Pack.	Weight	Item No.
	mm	mm	mm	pcs	kg/100 pcs.	
KSI-P1	500	150	20	1	42.000	7202283
KSI-P2	500	250	30	1	111.000	7202904
KSI-P3	1000	250	30	1	222.000	7202912

Calcium silicate

Calcium silicate plate, as support plate, for the construction of frames in the penetration and to double thin wall thicknesses.

Materials class EN 13501 - A1 non-combustible.

Identification plate



Type	Language	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
KS-S DE	German	1	2.400	7205425
KS-S SE	Swedish	1	2.400	7205426
KS-S ES	Spanisch	1	2.400	7205427
KS-S EN	English	1	2.400	7205429
KS-S HR	Croatian	1	2.400	7205438

PS Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





Kabelabschottung
Kombiabschottung
Rohrabschottung

Bestell-Nr.

Hersteller: Menge:



Abteilung: Nr.:

System:

Erkfr.:

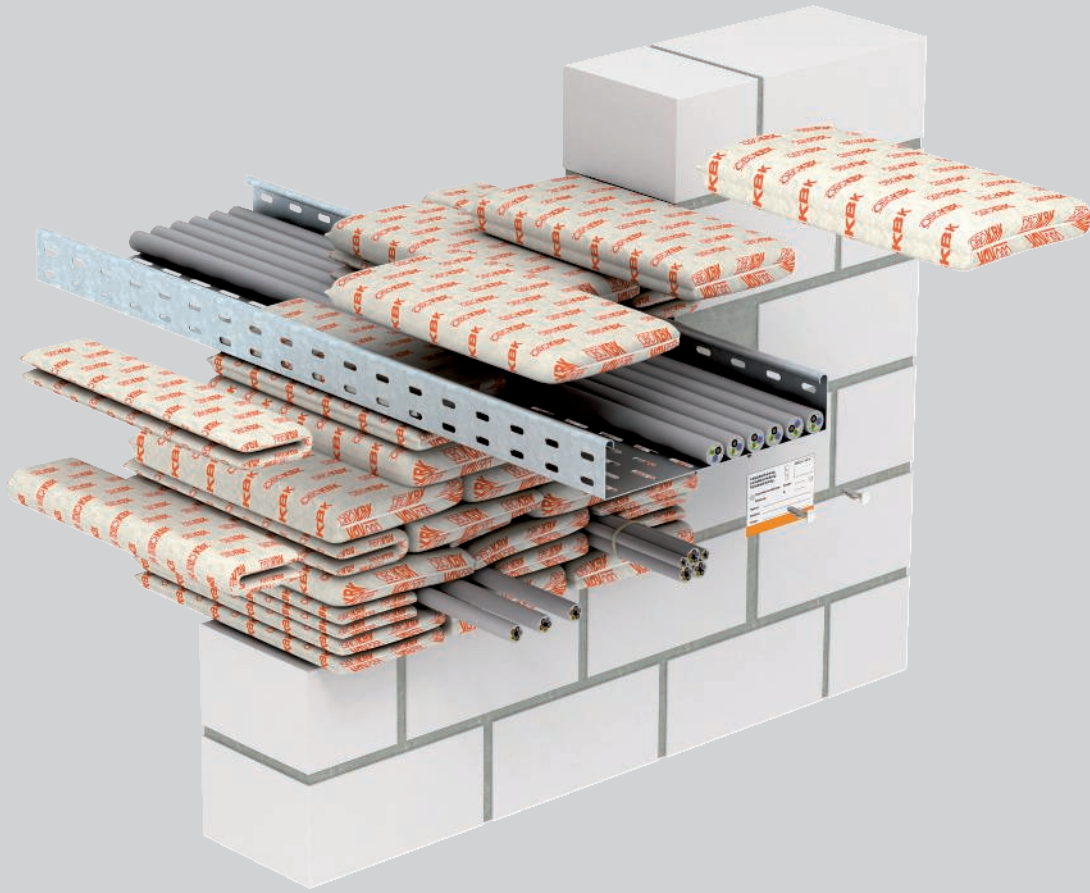
Datum:

Bag insulation PYROBAG®

	System description	34
	Products	38

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

- S30
- S60
- S90



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


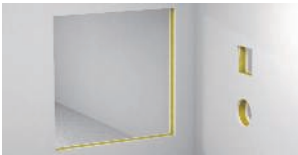

Fire resistance class	S90
Proof of application	General construction approval of DIBt, Berlin
Approval number	Z- 19. 15-1119
Testing standard	DIN 4102 Part 9
Note: For this insulation, only a general construction approval of the DIBt, Berlin, is available. In countries where a European Technical Assessment (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



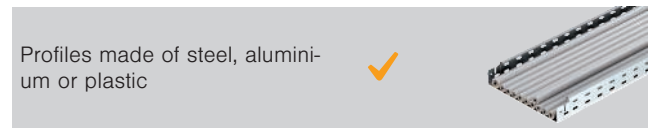
Electrical installation pipe made of steel



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

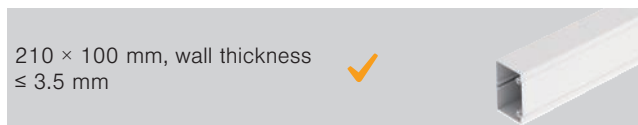


Plastic pipes

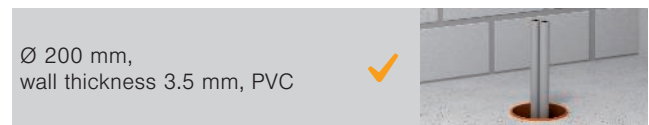


Special installations

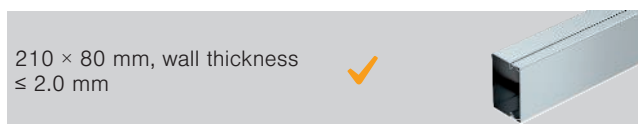
Plastic ducts



Insulation in the lining pipe

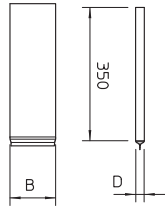


Metal ducts



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

PYROBAG® fire protection cushion

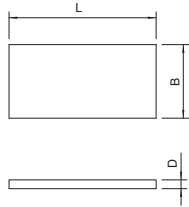
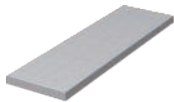


Type	Dimension B mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KBK-1	120	10	20	18.000	7202709
KBK-2	170	23	20	33.000	7202725
KBK-3	170	40	10	63.000	7202741

Glass mesh with special fire protection filling

Cable fire protection cushions made of dense, closely-knit and mechanically solid glass mesh with a special filling. Free from mineral fibres, weatherproof and water-resistant. Can be stored for an unlimited period of time in dry, frost-free rooms.

Calcium silicate plate

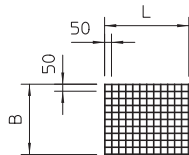
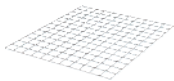


Type	Dimension L mm	Dimension B mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KSI-P1	500	150	20	1	42.000	7202283
KSI-P2	500	250	30	1	111.000	7202904
KSI-P3	1000	250	30	1	222.000	7202912

Calcium silicate

Calcium silicate plate, as support plate, for the construction of frames in the penetration and to double thin wall thicknesses. Materials class EN 13501 - A1 non-combustible.

Steel wire grid



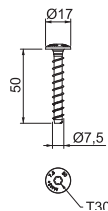
Type	Dimension L mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SDG-1	600	500	1	135.000	7202963
SDG-2	1000	600	1	270.000	7202971

St Steel

FT Hot-dip galvanised

Steel wire grid as support and protection grid, wire diameter 4 mm.

Fire protection screw tie



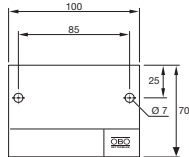
Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

St Steel

G Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Identification plate

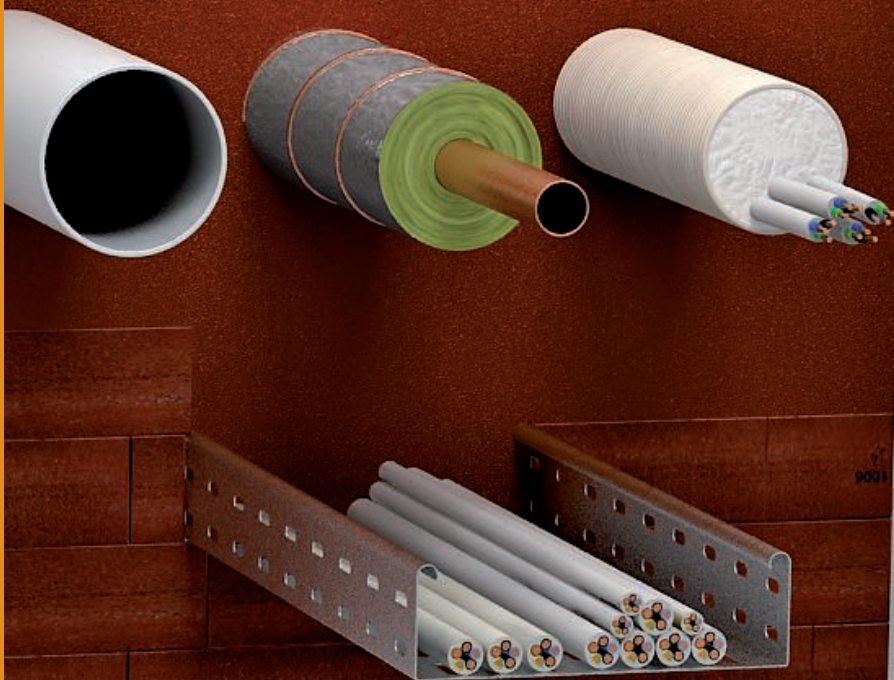


Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-S DE	German	1	2.400	7205425
KS-S SE	Swedish	1	2.400	7205426
KS-S ES	Spanisch	1	2.400	7205427
KS-S EN	English	1	2.400	7205429
KS-S HR	Croatian	1	2.400	7205438

PS Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.







Kalenderbuchführung	Produktbuchführung	Polymethacrylat
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Abteilung	Maßstab	
Datum		
Zeichner		
Geprüft		





Fire protection foam PYROSIT® NG

	System description	42
	Products	46



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

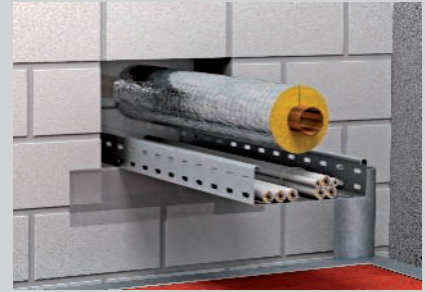
Installation principle



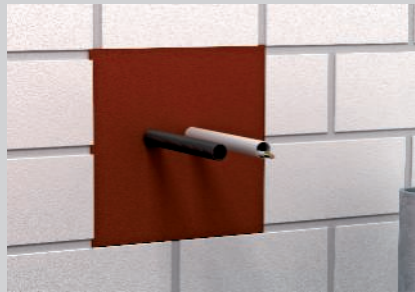
Clean the layer and attach the lining aids, e.g. adhesive tape.



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



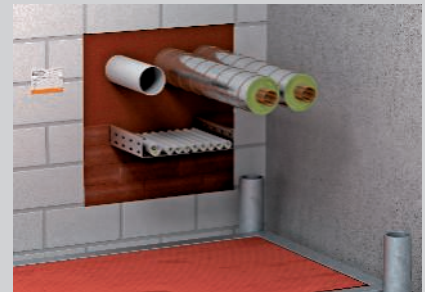
Use approved section insulation for metal pipes.



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

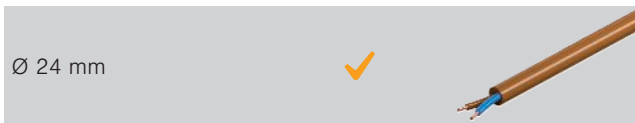


Plastic pipes



Special installations

Cables



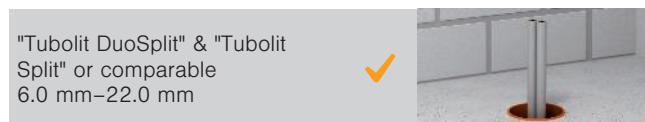
Open underfloor ducts



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.



Fire protection foam PYROSIT® NG

2-component fire protection foam PYROSIT® NG



Type	Contents ml	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
FBS-S	380	1	64.600	7203800

PYROSIT® NG 2-component fire protection foam in a cartridge, including 2 mixing tubes.

To create cable and combination insulation; always process with the cartridge pistols FBS-PH or FBS-PA.

In dry, frost-free rooms, the cartridge can be stored closed and standing upright at temperatures from +5 °C to +30 °C for up to 12 months.

Mixer pipe set



Type	Pack. Weight		Item No.
	PU	kg/100 PUs	
FBS-M	1	10.000	7203803

10 mixing tubes and 5 extension tubes in the set for PYROSIT® NG fire protection foam.

Fire protection case



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
FBS-K	1	420.000	7203809

The PYROSIT® NG fire protection case contains all the required products to create foam insulations. The complete set consists of: 3 x FBS-S, 1 x FBS-PH, 6 mixing and 5 extension pipes.

Professional cartridge pistol



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
FBS-PH	1	120.000	7203806

High-quality 2-component cartridge pistol for use with the PYROSIT® NG fire protection foam. The parallel movement of the outlet to the holding grip ensures easy working.

Tempering box



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
FBS-TB	1	610.100	7203818

Plastic

When squeezing out cartridges, the right temperature is essential. In order to achieve this, a temperature control box is recommended.

Section insulation for metal pipes



Type	Length mm	Width mm	Thickness mm	Pack. Weight		Item No.
				pcs	kg/100 pcs.	
MIW-MA	8000	500	30	2	1,010.000	7202308

Mineral fibres

Mineral wool mats with aluminium lamination for section insulation on copper and steel pipes. Fastening with winding wire, securing of joints with aluminium adhesive tape.

Applicable in the systems:
 PYROMIX® mortar insulation
 PYROSIT® NG fire insulation foam
 PYROPLATE® Fibre soft insulation
 PYROPLUG® Block blocks

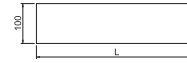
Material class EN 13501 - A1 non-combustible; melting point $\geq 1,000$ °C



Aluminium adhesive tape for section insulation

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-AT	10000	1	136.900	7202305

Aluminium adhesive tape for applying the aluminium-laminated section insulation. The aluminium adhesive tape is self-adhesive and not classified as combustible according to DIN 4102-1.



Winding wire for section insulation

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-TD	50000	1	10.000	7202309

- St** Steel
- VZ** Galvanised

The steel wire is used to fix the section insulation. It is non-combustible and guarantees optimum retention of the section insulation on non-combustible pipes and cables.



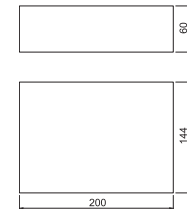
PYROPLUG® Block foam block

Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-B200-14	200x144x60	4	44.800	7202505

Permanently elastic, closed-pore foam

Foam block for cable and combination insulation, can also be used as a filler block in the PYROSIT® NG fire protection foam system.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.



Cable coil

Type	Width mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-WI	150	5000	1	384.000	7202510

Intumescent material

Self-adhesive, intumescent cable protector, 5 mm thick, for the use with large cable diameters and penetrated cable support systems, applicable in PYROPLUG® systems and PYROSIT® NG.



Adhesive tape

Type	Width mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SHT	50	5	12.000	7202521

PE Polyethylene

Fibre-reinforced, transparent adhesive tape as lining aid for applications with PYROSIT® NG fire protection foam and for universal fix. One roll contains 25 m².



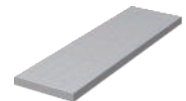
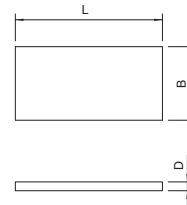
Calcium silicate plate

Type	Dimen- sion L mm	Dimen- sion B mm	Dimen- sion D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KSI-P1	500	150	20	1	42.000	7202283
KSI-P2	500	250	30	1	111.000	7202904
KSI-P3	1000	250	30	1	222.000	7202912

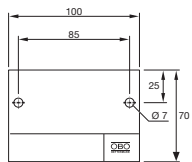
Calcium silicate

Calcium silicate plate, as support plate, for the construction of frames in the penetration and to double thin wall thicknesses.

Materials class EN 13501 - A1 non-combustible.



Identification plate



Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-S DE	German	1	2.400	7205425
KS-S SE	Swedish	1	2.400	7205426
KS-S ES	Spanisch	1	2.400	7205427
KS-S EN	English	1	2.400	7205429
KS-S HR	Croatian	1	2.400	7205438

PS Polystyrene







Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





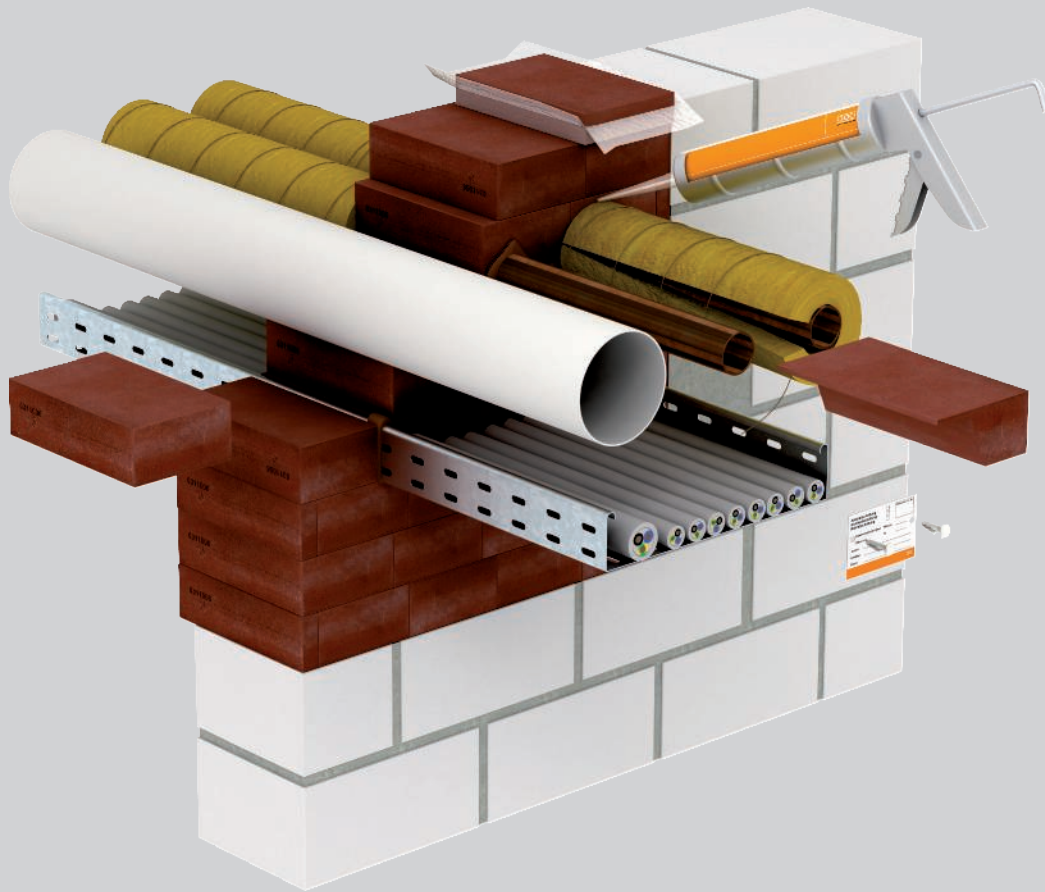


Foam series PYROPLUG®

	System description, PYROPLUG® BLOCK	52
	System description, PYROPLUG® PEG plugs	56
	System description, PYROPLUG® BOX box insulation	60
	System description, PYROPLUG® Shell pipe shells	64
	System description, PYROMIX® Mini small insulation	68
	Products	72



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



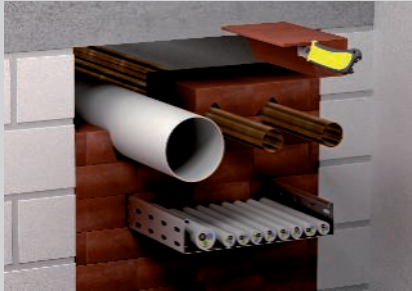
Mounting of the cut blocks.



Vacuum blocks for simple residual gap closing.



Simple reinstallation through removal of individual blocks.



Running of combustible pipes without additional measures.



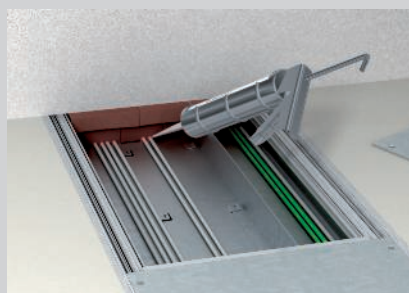
Run-through, non-combustible pipes with section insulation.



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				
Min. insulation thickness		10 cm (EI 30 / EI 60 / EI 90 / EI 120) 14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90 / EI 120) 14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	15 cm (EI 30 / EI 60 / 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



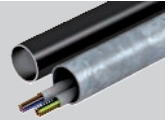
Cable bundle

Ø 100 mm,
cable Ø 21 mm

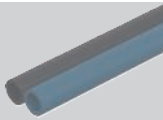


Electrical installation pipe made of steel

Ø 16 mm



Individual lines for control purposes



Cable support systems

Steel profiles



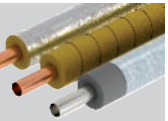
Electrical installation pipe made of plastic, rigid

Ø 40 mm



Metal pipes with path insulation

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



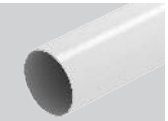
Electrical installation pipe made of plastic, flexible

Ø 40 mm



Plastic pipes

Ø 50 mm



Special installations

Cables

Ø 24 mm

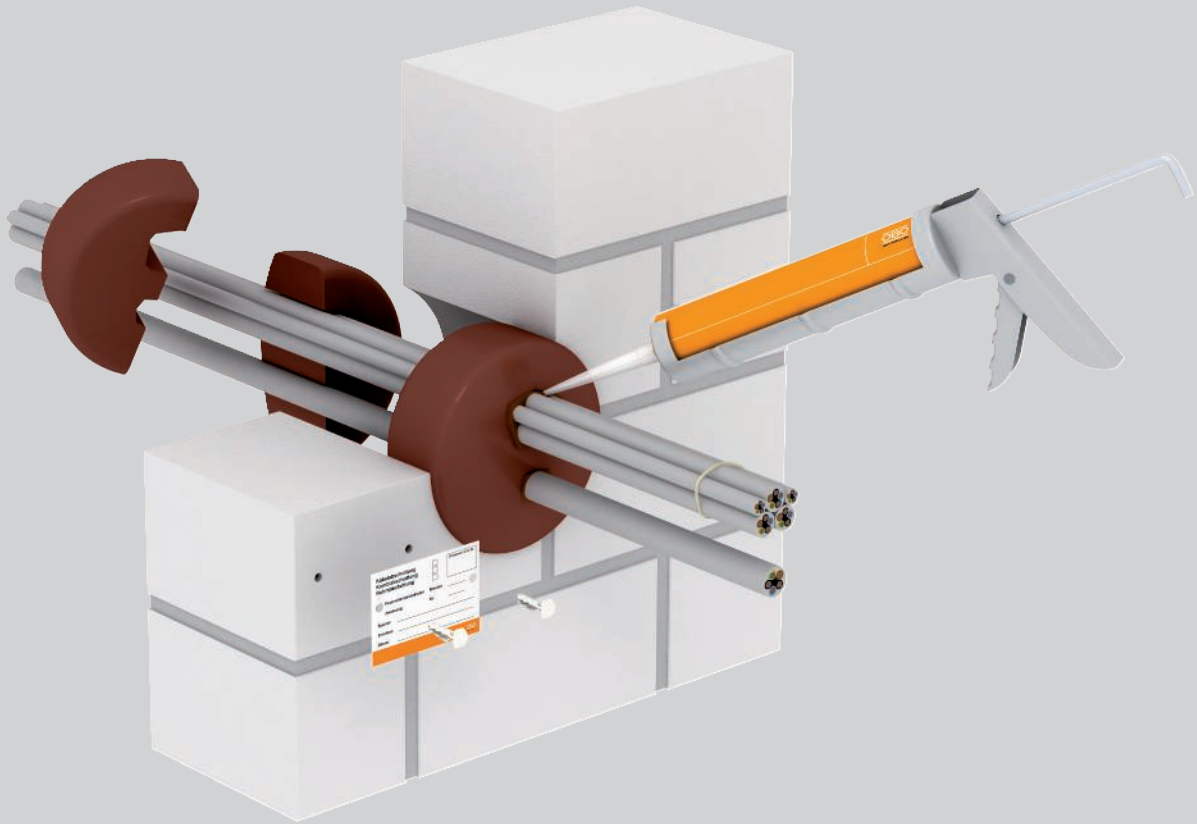


Details on the version can be found in the proof of suitability or mounting instructions.
All the stated dimensions are maximum values.



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

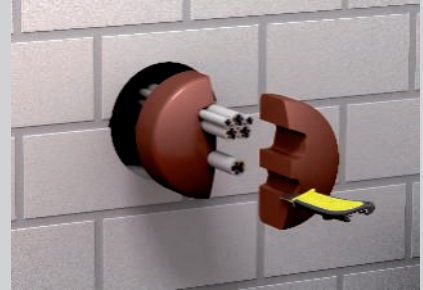
Installation principle



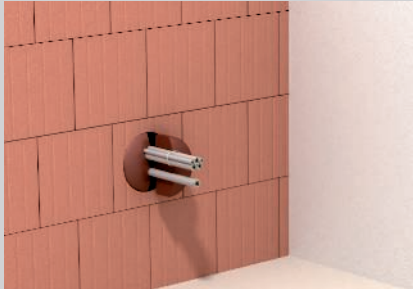
Ideal for core drill holes of 55 mm to 240 mm.



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.



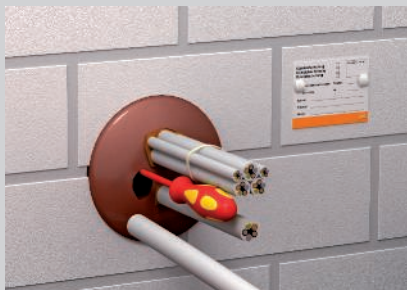
Cutting and mounting of the plugs in ceilings.



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



Small distance to next core drill hole possible.



With re installations, 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

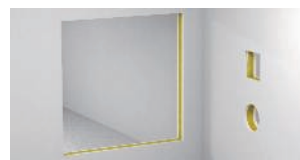
Insulation in walls and ceilings

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

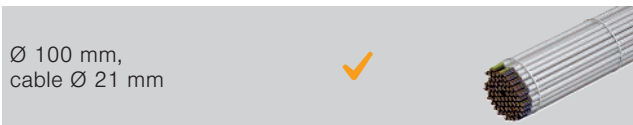
Cable



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



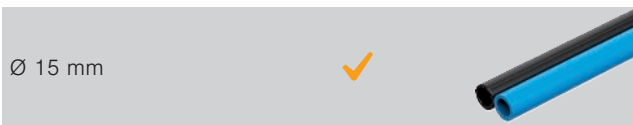
Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



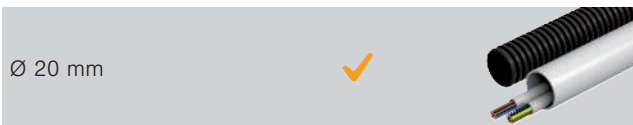
Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes

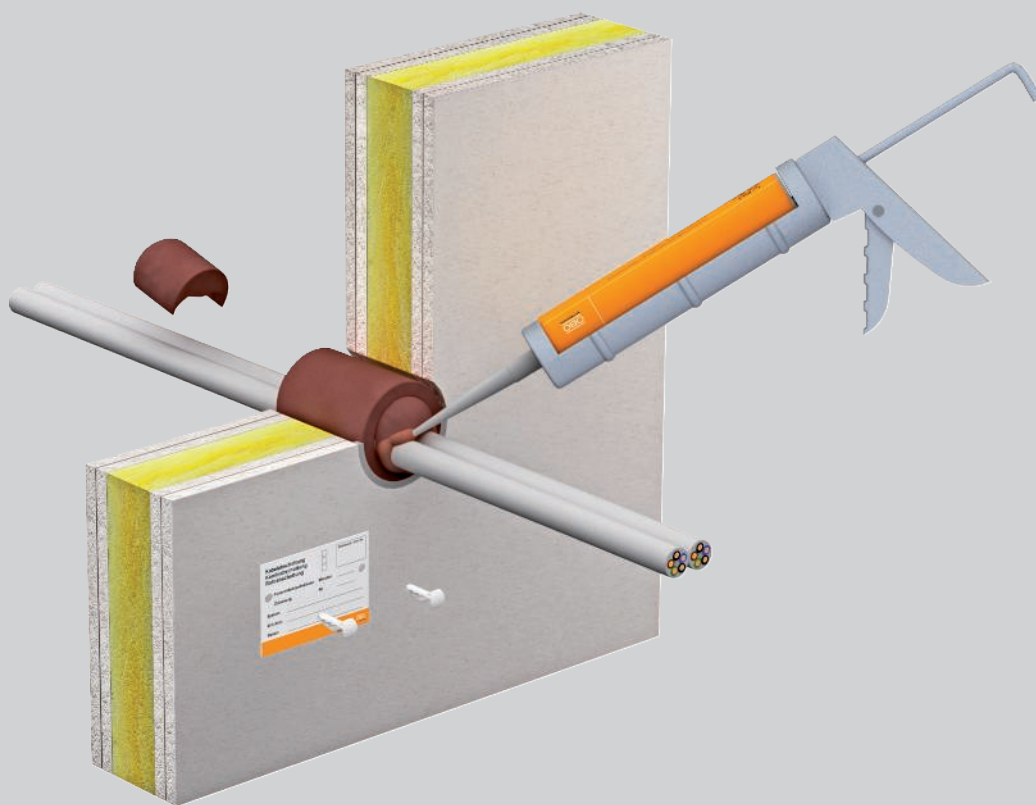


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



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.

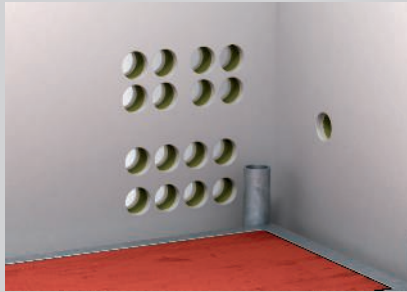


PYROPLUG® SHELL pipe shells

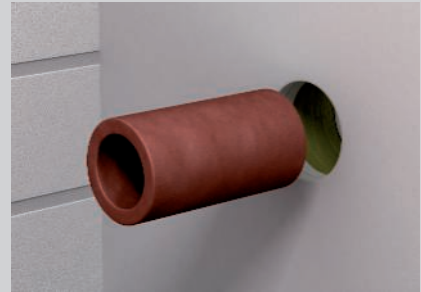
Installation principle



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

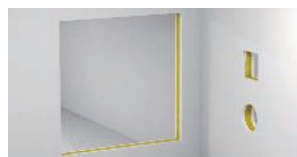
Insulation in walls and ceilings

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

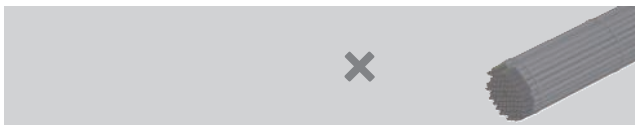
Cable



Pipe bundle of electrical installation pipes



Cable bundle



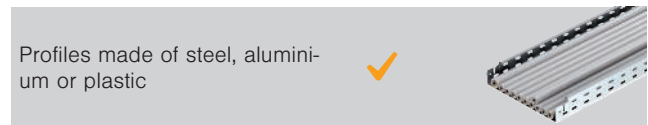
Electrical installation pipe made of steel



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

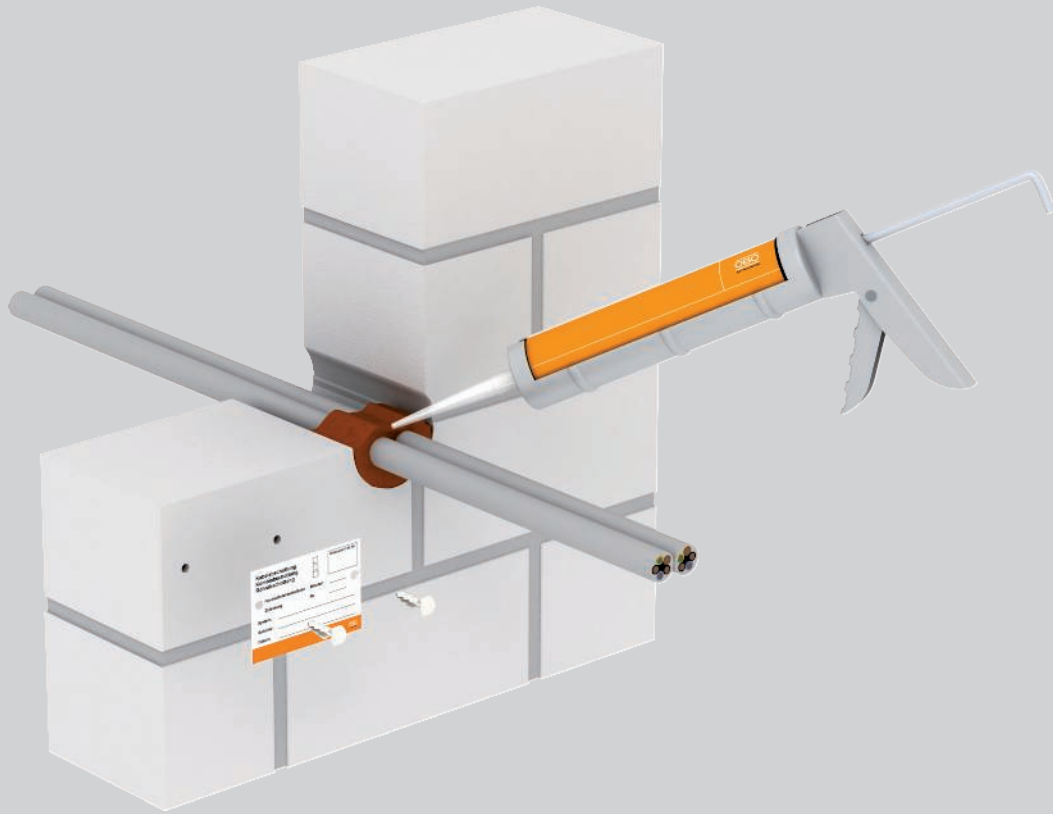


Details on the version can be found in the proof of suitability or mounting instructions.
All the stated dimensions are maximum values.



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

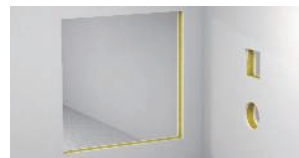
Insulation in walls and ceilings

Component F90

Rigid walls



Flexible walls



Rigid floors



		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



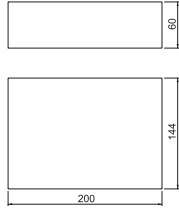
Plastic pipes



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



PYROPLUG® Block foam block



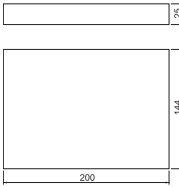
Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
FBA-B200-14	200x144x60	4	44.800		7202505

Permanently elastic, closed-pore foam

Foam block for cable and combination insulation, can also be used as a filler block in the PYROSIT® NG fire protection foam system.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.

PYROPLUG® Block vacuum block



Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
FBA-BV200-14	200x144x25	1	40.000		7202515

Permanently elastic, closed-pore foam

Vacuum block for cable and combination insulation.

After cutting into the foil, the vacuum block expands to its original size. It can be used with or without foil.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.

2-component fire protection foam PYROSIT® NG



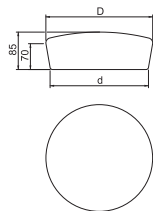
Type	Contents ml	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
FBS-S	380	1	64.600		7203800

PYROSIT® NG 2-component fire protection foam in a cartridge, including 2 mixing tubes.

To create cable and combination insulation; always process with the cartridge pistols FBS-PH or FBS-PA.

In dry, frost-free rooms, the cartridge can be stored closed and standing upright at temperatures from +5 °C to +30 °C for up to 12 months.

PYROPLUG® Peg plugs



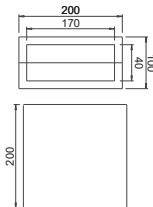
Type	For opening Ø mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight		Item No.
					kg/100	pcs.	
FBA-SN65	55 - 65	75	65	4	8.200		7202553
FBA-SN78	68 - 78	87	78	4	12.600		7202557
FBA-SN107	97 - 107	117	107	4	21.600		7202561
FBA-SN122	112 - 122	132	122	4	28.600		7202565
FBA-SN134	124 - 134	144	134	4	32.900		7202569
FBA-SN165	155 - 165	175	165	2	49.700		7202573
FBA-SN200	190 - 200	210	200	2	74.400		7202577
FBA-SN250	240 - 250	260	250	2	101.400		7202581

Permanently elastic, closed-pore foam

Plug for cable insulation

Protect the FBA plugs against water in order to guarantee safe foaming in case of fire.

PYROPLUG® Box box insulation



Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
FBA-F	200 x 200 x 100	1	122.000		7202660

Permanently elastic, closed-pore foam

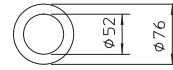
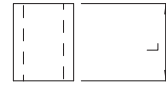
Box for cable insulation.

Consisting of a two-part, hard frame and two soft internal pieces. Protect the frame and internal pieces against water in order to guarantee safe foaming in case of fire.

PYROPLUG® Shell drill crown insulation

Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-D100	100	1	15.500	7202624
FBA-D150	150	1	19.200	7202628

Permanently elastic, closed-pore foam



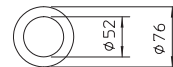
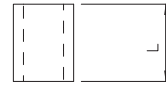
Empty mini pipe shell

Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-DR100	100	1	6.500	7202613
FBA-DR150	150	1	10.200	7202617

Permanently elastic, closed-pore foam

Empty pipe sleeve for use in FBA-SP small insulation in lightweight partitions.

Protect the pipe sleeves against water in order to guarantee safe foaming in case of fire.



PYROPLUG® Screed filler

Type	Contents ml	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-SP	310	1	46.000	7202322

Intumescent material

Fire protection filler in a cartridge.

Usable as small insulation and as joint closing compound in all insulation of the PYROPLUG® series.

In dry, frost-free rooms, the fire protection filler can be stored for up to 12 months at a temperature of +5 °C to +30 °C.



Section insulation for metal pipes

Type	Length mm	Width mm	Thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-MA	8000	500	30	2	1,010.000	7202308

Mineral fibres

Mineral wool mats with aluminium lamination for section insulation on copper and steel pipes.

Fastening with winding wire, securing of joints with aluminium adhesive tape.

Applicable in the systems:

PYROMIX® mortar insulation

PYROSIT® NG fire insulation foam

PYROPLATE® Fibre soft insulation

PYROPLUG® Block blocks

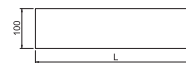
Material class EN 13501 - A1 non-combustible; melting point ≥ 1,000 °C



Aluminium adhesive tape for section insulation

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-AT	10000	1	136.900	7202305

Aluminium adhesive tape for applying the aluminium-laminated section insulation. The aluminium adhesive tape is self-adhesive and not classified as combustible according to DIN 4102-1.



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Winding wire for section insulation



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-TD	50000	1	10.000	7202309

SI Steel
VZ Galvanised

The steel wire is used to fix the section insulation. It is non-combustible and guarantees optimum retention of the section insulation on non-combustible pipes and cables.

Cable coil

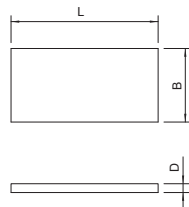


Type	Width mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FBA-WI	150	5000	1	384.000	7202510

Intumescent material

Self-adhesive, intumescent cable protector, 5 mm thick, for the use with large cable diameters and penetrated cable support systems, applicable in PYROPLUG® systems and PYROSIT® NG.

Calcium silicate plate



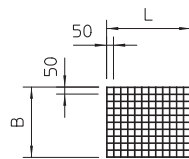
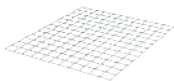
Type	Dimension L mm	Dimension B mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KSI-P1	500	150	20	1	42.000	7202283
KSI-P2	500	250	30	1	111.000	7202904
KSI-P3	1000	250	30	1	222.000	7202912

Calcium silicate

Calcium silicate plate, as support plate, for the construction of frames in the penetration and to double thin wall thicknesses.

Materials class EN 13501 - A1 non-combustible.

Steel wire grid

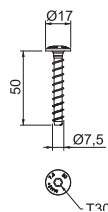


Type	Dimension L mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SDG-1	600	500	1	135.000	7202963
SDG-2	1000	600	1	270.000	7202971

SI Steel
FI Hot-dip galvanised

Steel wire grid as support and protection grid, wire diameter 4 mm.

Fire protection screw tie

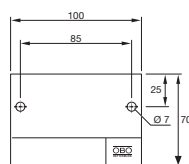


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

SI Steel
G Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Identification plate

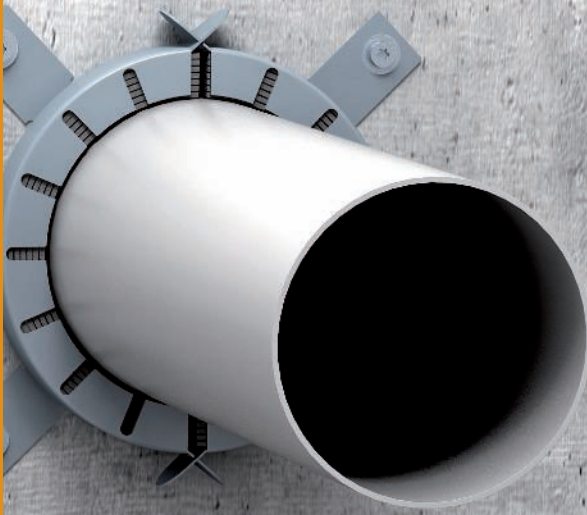


Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-S DE	German	1	2.400	7205425
KS-S SE	Swedish	1	2.400	7205426
KS-S ES	Spanisch	1	2.400	7205427
KS-S EN	English	1	2.400	7205429
KS-S HR	Croatian	1	2.400	7205438

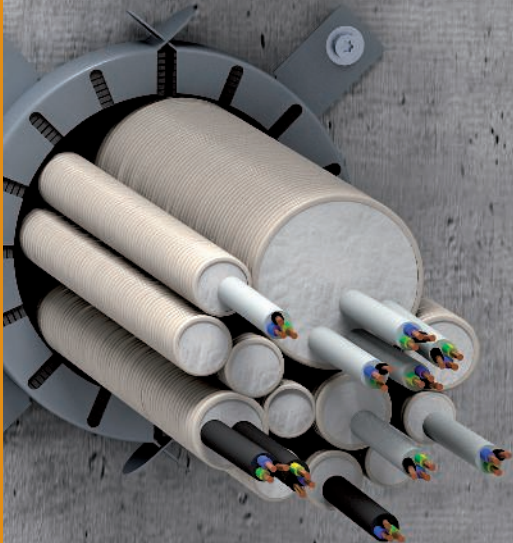
PS Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.








Kabelabschottung	<input type="checkbox"/>	Einbaust. / LIC. Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Widerstandsklasse	Minuten	
Zufassung	Nr.	
System:		
Errichter:		
Datum:		



Kabelabschottung	<input type="checkbox"/>	Einbaust. / LIC. Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Widerstandsklasse	Minuten	
Zufassung	Nr.	
System:		
Errichter:		
Datum:		



Pipe seal PYROCOMB®Tubes

	System description, PYROCOMB® Tubes cable insulation	78
	System description, PYROCOMB® pipe insulation	82
	Products	86



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

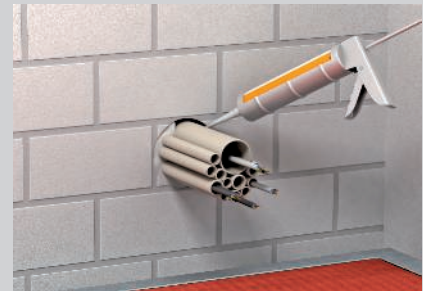
Installation principle



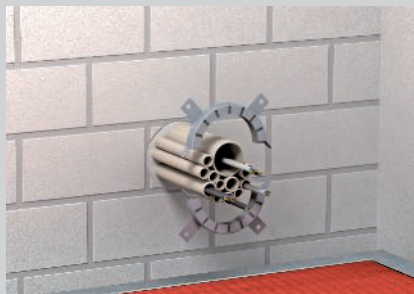
Two-sided arrangement of the pipe sleeves for wall mounting.



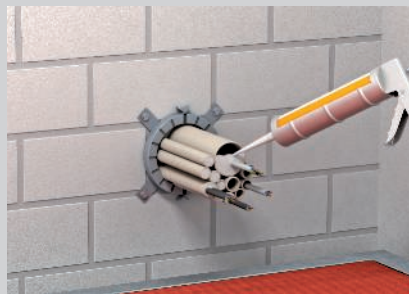
Mounting on the underside of the ceiling with metal anchors.



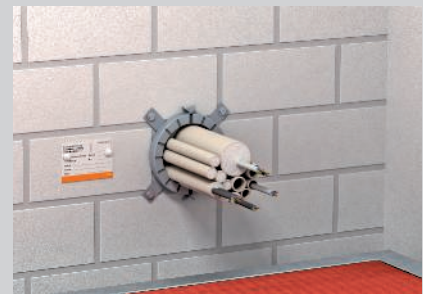
Closing of the ring gap with the insulation layer creator DSX.



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.

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



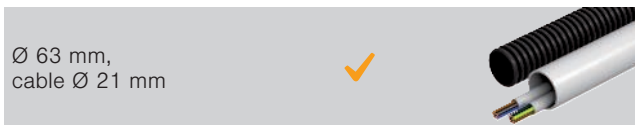
Electrical installation pipe made of plastic, rigid



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

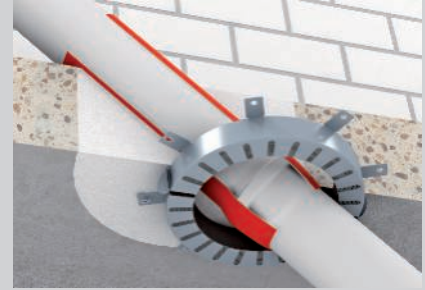
Installation principle



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



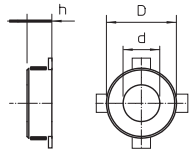
Plastic pipes



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



Pipe sleeve with 2 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-032	32 - 34	26	50	36	1	6.500	7202200
TCX-040	40 - 42	26	58	44	1	7.000	7202201
TCX-050	50 - 52	26	68	54	1	8.000	7202203

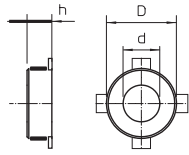
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

Pipe sleeve with 4 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-063	63 - 65	26	94	67	1	15.500	7202204
TCX-075	75 - 77	26	106	79	1	19.000	7202205
TCX-090	92	26.6	132	94	1	37.000	7202206
TCX-110	110 - 112	26.6	155	114	1	46.000	7202207
TCX-125	125 - 127	40	172	129	1	70.000	7202208

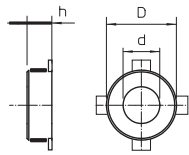
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

Pipe sleeve with 6 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-140	140 - 142	40	200	144	1	106.000	7202209
TCX-160	160 - 162	40	220	164	1	107.000	7202210

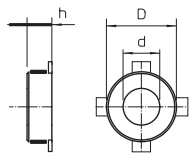
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

Pipe sleeve with 8 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-180	180 - 182	40	264	184	1	175.000	7202212
TCX-200	200 - 202	40	284	204	1	242.000	7202214

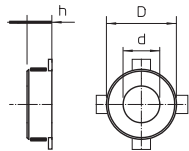
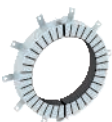
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

Pipe sleeve with 10 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-225	225 - 227	51.5	328	239	1	306.000	7202213
TCX-250	250 - 252	51.5	353	264	1	346.000	7202215

Intumescent material

FS Strip-galvanised

Pipe sleeve for combustible pipes.

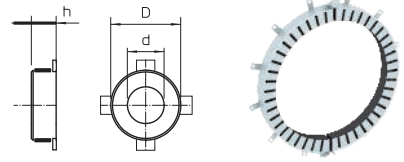
If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.



Pipe sleeve with 12 fastening straps

Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TCX-280	280 - 282	51.5	378	289	1	398.000	7202216
TCX-300	300 - 302	51.5	403	314	1	405.000	7202217
TCX-315	315 - 317	51.5	417	328	1	425.000	7202218
TCX-355	355 - 357	51.5	459	370	1	460.000	7202219
TCX-400	400 - 402	51.5	504	415	1	520.000	7202220



Intumescent material

FS Strip-galvanised

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

Insulation layer creator in a cartridge

Type	Contents ml	Pack. pcs	Weight kg/100 pcs.	Item No.
DSX-K	300	1	50.000	7202300

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.



Mineral wool

Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MIW-S	25 litre	1	250.000	7202306

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point ≥ 1.000 °C.



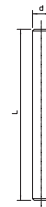
Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M6 1M G	M6	6	1000	10	18.300	3141047
TR M8 1M G	M8	8	1000	10	30.000	3141128

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



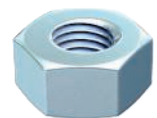
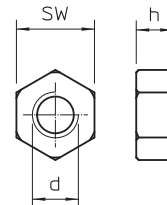
Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M6 G	M6	10	5.2	6	100	0.225	3400069
HN M8 G	M8	13	6.8	8	100	0.474	3400085

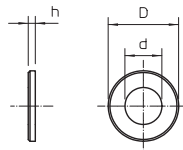
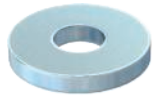
St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



Washer ISO 7093

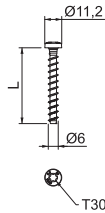


Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M6 D28 G	M6	6.5	28	2.5	100	1.150	3402207
WS M8 D28 G	M8	8.5	28	2.5	100	1.100	3402215

- St** Steel
- G** Electrogalvanised

Washer of large outer diameter for universal use.

Fire protection screw tie

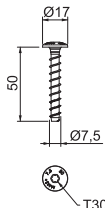


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 6X50	6 x 50	50	5	11.2	Torx	100	1.000	3498108

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with pan head for direct installation without additional anchors. Drive T30, drill hole 5 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Fire protection screw tie

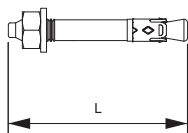


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Nail anchor N with thread

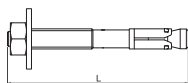


Type	Thread	Bore hole Ø mm	Clamping depth mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.	
N 6-5-10/49	M6	6	40	5 - 10	49	100	1.160	3498396

- St** Steel
- G** Electrogalvanised

The nail anchor N can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting. The nail tie only needs to be hammered into the drill hole. It is not necessary to apply torque subsequently. When the load occurs, the nail tie spreads itself and bolts itself in the drill hole.

Bolt tie BZ-U



Type	Thread	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BZ-U 8-10-21/75	M8	75	50	3.460	3498320

- St** Steel
- G** Electrogalvanised

Bolt tie BZ for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings.

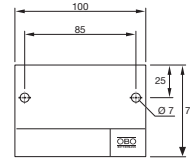


Identification plate

Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-S DE	German	1	2.400	7205425
KS-S SE	Swedish	1	2.400	7205426
KS-S ES	Spanisch	1	2.400	7205427
KS-S EN	English	1	2.400	7205429
KS-S HR	Croatian	1	2.400	7205438

PS Polystyrene

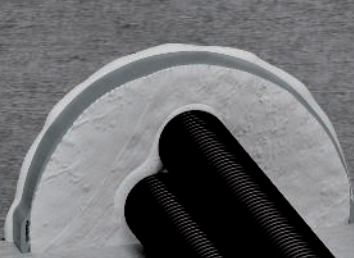
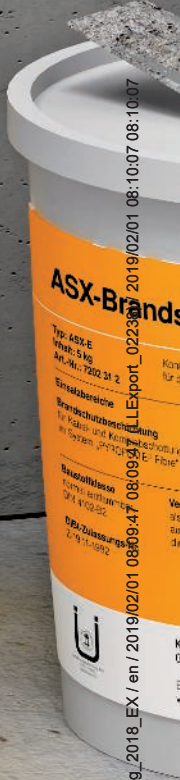
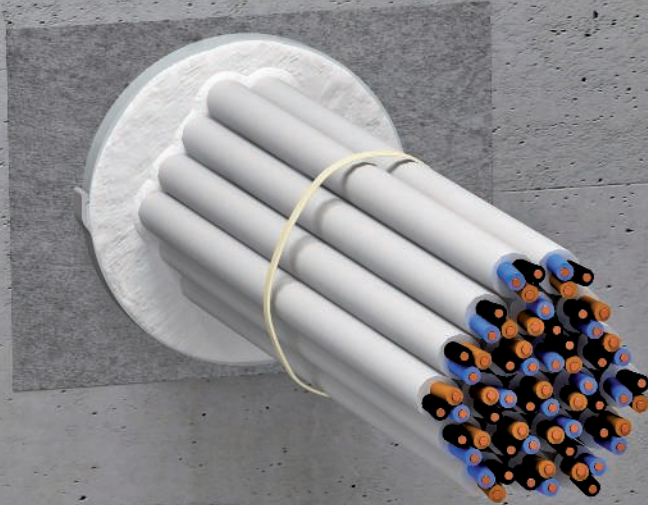
Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.



Kabelabschottung
 Kombiabschottung
 Rohrabschottung

Entwurf / LM. Nr. _____
 Widerstandsklasse: _____ Minuten
 Zulassung Nr.: _____
 System: _____
 Erichter: _____
 Datum: _____

OBO



PYROCOMB® Intube pipe shell



System description

92



Products

96



PYROCOMB® Intube pipe shell

System description

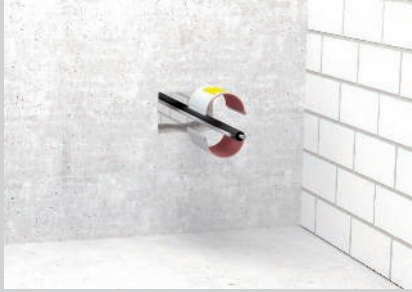


The PYROCOMB® Intube system is used to create cable insulation with pipe shells or half shells. The pipe shell is particularly suitable for core drill holes and can very easily be installed in solid ceilings or walls and also light-duty partitions. For this, two half pipe sleeves are clicked together 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.



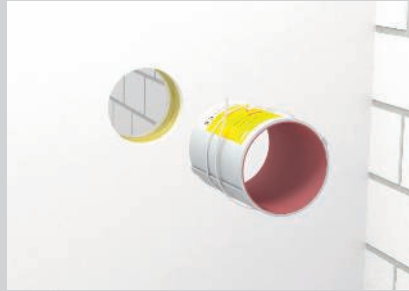
Closing of the opening with PYROMIX® mortar.



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

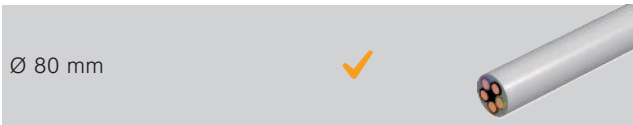
Installation locations

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
Min. insulation thickness		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
		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
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

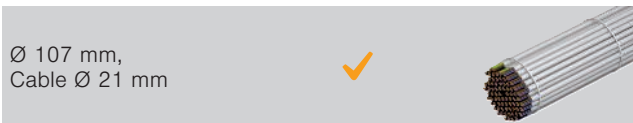
Cable



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



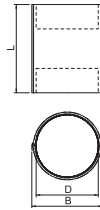
Plastic pipes



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



Pipe shell PYROCOMB® Intube



Type	Dimen- sion D mm	Dimen- sion L mm	Dimen- sion B mm	For opening Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CTS-150	106	150	120	125 - 165	1	35.200	7204300
CTS-300	106	300	120	125 - 165	1	70.000	7204304

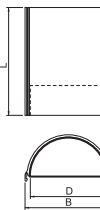
PVC Polyvinylchloride

Internally coated pipe shells with click lock. The inner space can be fitted with cables and electrical installation pipes completely. Approved in Europe with ETA-13/0904. Fire resistance classes to EI120.

Closing with 2 foam plugs included in the delivery. The surface seal is created with the ASX coating.

In some applications, the use of metallic tightening strips is prescribed to secure the pipe shells in light-duty partitions. Details can be found in the mounting instructions/approval.

PYROCOMB® Intube half shell



Type	Diameter mm	Length mm	For opening Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CTS-HP200	120	200	125 - 165	1	20.000	7204306

PVC Polyvinylchloride

Internally coated half shell, the inner space of which can be fully assigned with cables and electrical installation pipes. Approved in Europe with ETA-13/0904. Fire resistance classes to EI120.

Closing with foam plug included in the delivery. The surface seal is done with ASX coating. The system is particularly suitable for underfloor areas.

Details can be found in the mounting instructions/approval.

Ablation coating in a cartridge



Type	Contents ml	Pack. pcs	Weight kg/100 pcs.	Item No.
ASX-K	310	1	50.000	7202310

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Ablation coating in a bucket



Type	Contents kg	Pack. pcs	Weight kg/100 pcs.	Item No.
ASX-E	5	1	500.000	7202312

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred. Sufficient for an area of 4 m².

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

PYROMIX® dry mortar in bucket



Type	Contents kg	Pack. pcs	Weight kg/100 pcs.	Item No.
MSX-E1	10	1	1,000.000	7206058

Special mortar

Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 3 litres of water to 10 kg of dry mortar produces about 10 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.

PYROMIX® dry mortar in paper sack

Type	Contents	Pack. pcs	Weight		Item No.
	kg		kg/100 pcs.	pcs.	
MSX-S1	20	1	2,000.000		7206104

Special mortar

Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 6 litres of water to 20 kg of dry mortar produces about 20 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.



Metal strip clips, narrow

Type	Length	Width	Pack. pcs	Weight		Item No.
	mm	mm		kg/100 pcs.	pcs.	
MBS 045	450	7	50	0.602		7203104

V2A Stainless steel, grade 304

Metal strip clip in ladder form with single lock. For high-temperature and weatherproof fixing.

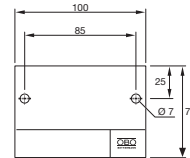


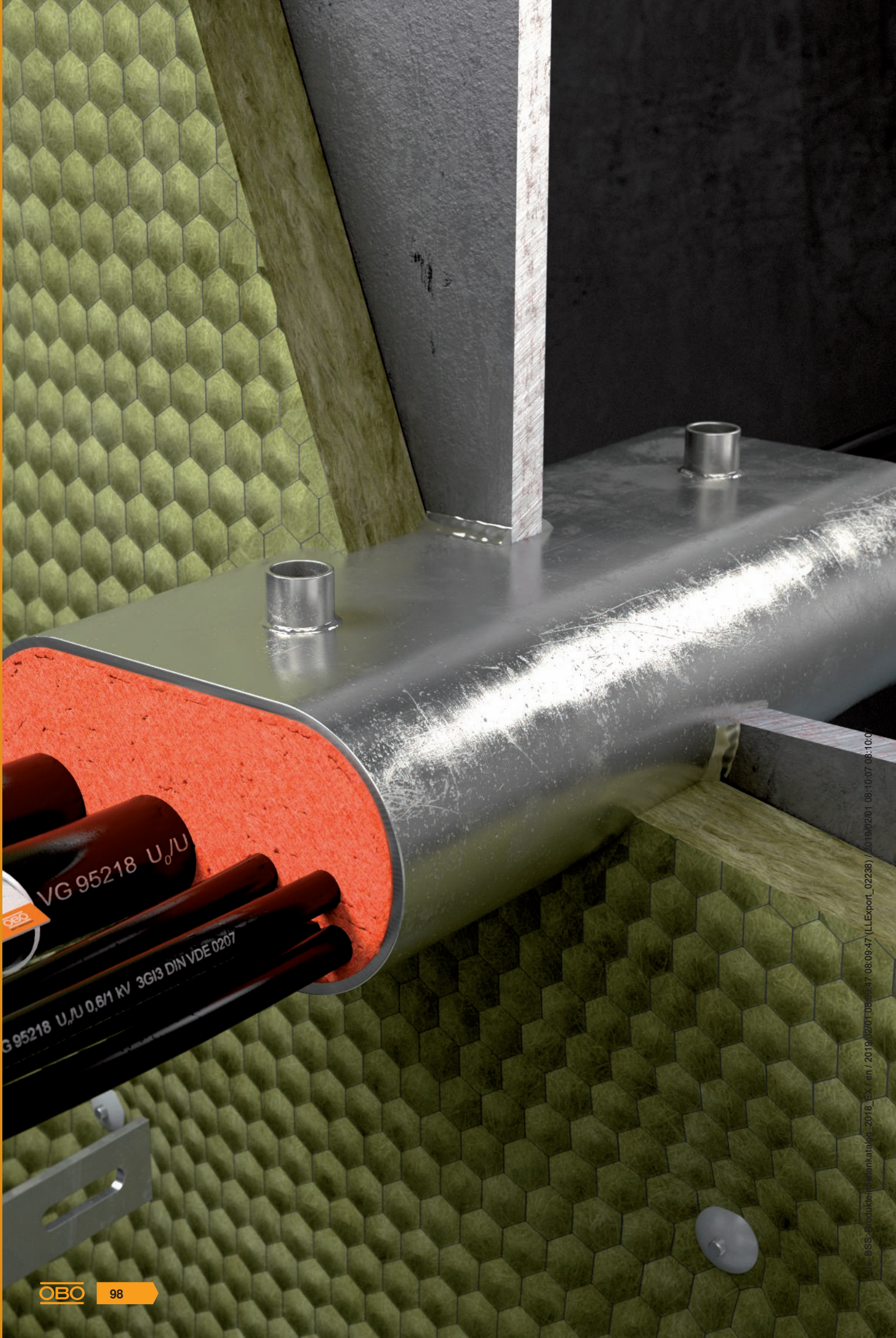
Identification plate

Type	Language	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
KS-S DE	German	1	2.400		7205425
KS-S SE	Swedish	1	2.400		7205426
KS-S ES	Spanisch	1	2.400		7205427
KS-S EN	English	1	2.400		7205429
KS-S HR	Croatian	1	2.400		7205438

PS Polystyrene







Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





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Casting compound PYROLIQ®

	Sealing compound	100
	Expanding module	100
	Impregnation fluid	100
	Sealing compound	100
	Pipe insulating strip	101
	Identification plate	101

Sealing compound



Type	Contents kg	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-TE 1	2.5	1	250.000		7203840
VMS-TE 2	12.5	1	1,250.000		7203843

Special mortar

Dry compound in plastic container to mix with tap water. Makes a gas-tight and watertight seal of fire resistance class A60 to IMO resolution A.754(18). Including measuring cup.

The mixing ratio of water to powder is 1:2. The mixed compound is pumpable for approx. 45 minutes. The mixture is chemically hardened after 72 hours.

Stored in a dry and frost-free environment, the dry compound will keep for 3 years.

Expanding module, small



Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-QMK 1	120x25x6	20	0.600		7203846

Foam

Expanding foam modules to replace a casing in the sealing compound system if part of the casing has been lost. The modules expand by a factor of 10 when sprinkled with the impregnating fluid, closing gaps and joints between the cables installed.

After the cables have been impregnated they are hardly flammable, fire-retardant and self-extinguishing.

Stored in a dry environment, the expanding modules have an unlimited lifespan.

Expanding module, large



Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-QMG 1	800x25x6	15	5.200		7203849

Foam

Expanding foam modules to replace a casing in the sealing compound system if part of the casing has been lost. The modules expand by a factor of 10 when sprinkled with the impregnating fluid, closing gaps and joints between the cables installed.

After the cables have been impregnated they are hardly flammable, fire-retardant and self-extinguishing.

Stored in a dry environment, the expanding modules have an unlimited lifespan.

Impregnation fluid



Type	Contents ml	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-IF 1	1000	1	104.500		7203852

Fluid to sprinkle the expanding module.

When 5 long expanding modules are used, approx. 1 l of impregnation fluid is required.

Stored in a frost-free environment it has a lifespan of 2 years.

Sealing compound for external use



Type	Contents kg	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-VA 1	1	1	100.000		7203858

Special mortar

Flame-retardant sealing compound for insulations in sealing compound systems. Watertight and resistant against common technical oils as well as weak/diluted acids. Halogen-free and cold-hardening.

2 components (hardener and resin) in tin with lid to push through. Lifespan of 12 months in original and closed packaging at temperature between +10 and +40 °C.

Sealing compound, water-repellent

Type	Contents kg	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-VW 1	1	1	100.000		7203864

Special mortar

Flame-retardant sealing compound for insulations in sealing compound systems for application in water-filled openings.

Watertight and resistant against common technical oils as well as weak/diluted acids. Halogen-free and cold-hardening.

2 components (hardener and resin) in tin with lid to push through. Lifespan of 6 months in original and closed packaging at temperature between +10 and +40 °C.



Sealing compound, conductive

Type	Contents kg	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-VL 1	1	1	100.000		7203867

Special mortar

Electrically conductive sealing compound for insulations in sealing compound systems and for the integration of the woven cable shield in EMV-compliant installations. 2 components (hardener and resin) in tin with lid to push through. Lifespan of 6 months when stored in frost-free storage.



Pipe insulating strip

Type	Dimension mm	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-RS	1000 x 100 x 3	3	47.000		7203870

Intumescent material

Insulation forming strip for the application in sealing compound system when feeding through flammable pipes.

Please protect against sunlight. When stored in a dry environment it has an unlimited lifespan.



Identification plate

Type	Language	Pack. pcs	Weight		Item No.
			kg/100	pcs.	
VMS-KS DE	German	1	2.400		7203874
VMS-KS EN	English	1	2.400		7203878

PVC Polyvinylchloride

Identification plate for self-labelling of the insulation of the sealing compound system to the IMO A.754(18) with a waterproof and lightproof felt tip pen.

Including 2 cable ties for fastening onto the cable or onto the cable tray system in the area of the insulation.





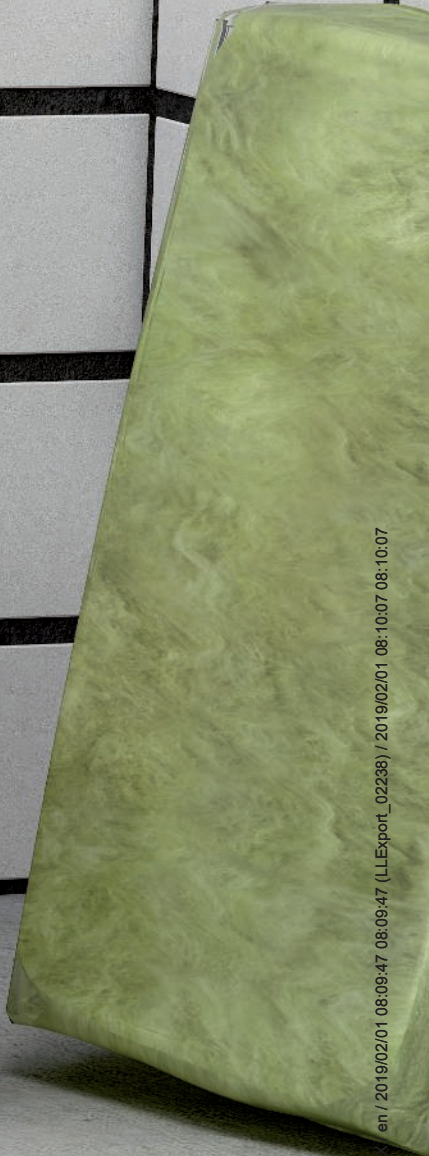
Kabelabschottung
 Kombiabschottung
 Rohrabschottung

Einbauplatz / L.S. Nr. _____

Einbaustandortklasse Mischort





Zuerstzug Nr. _____

System: _____
 Hersteller: _____
 Datum: _____





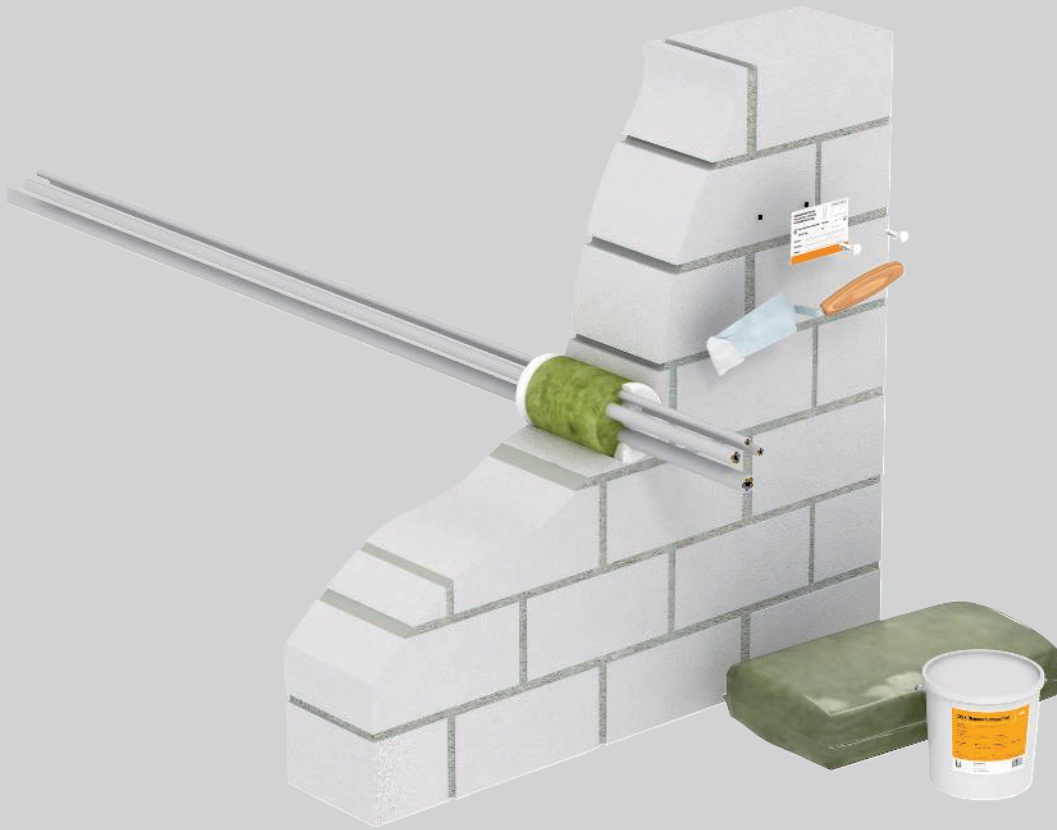
Bandage, small insulation and individual cables acc. to MLAR

	System description, PYROMIX® Screed small insulation	104
	System description, Conlit® Bandage cable insulation	108
	System description, insulation layer creator for single cables	112
	Products	114



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



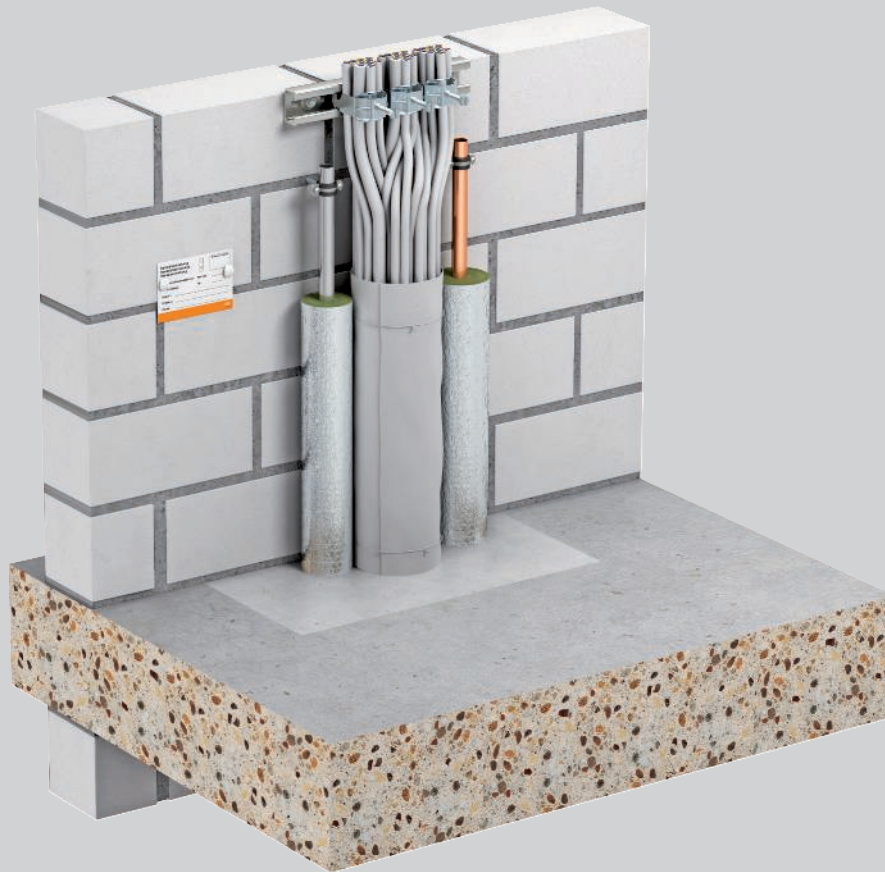
Plastic pipes



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

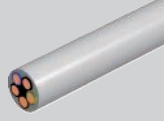
≤ Ø 10 cm



Cable insulation Conlit® Bandage Installations

Cable

all Ø



Pipe bundle of electrical installation pipes

Ø 100 mm



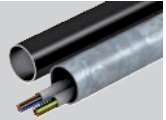
Cable bundle

Ø 100 mm,
cable all Ø



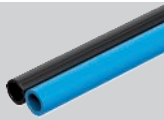
Electrical installation pipe made of steel

Ø 50 mm,
cable all Ø

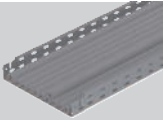


Individual lines for control purposes

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

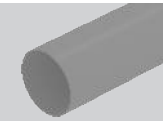


Electrical installation pipe made of plastic, flexible

Ø 40 mm,
cable Ø 22 mm



Plastic pipes

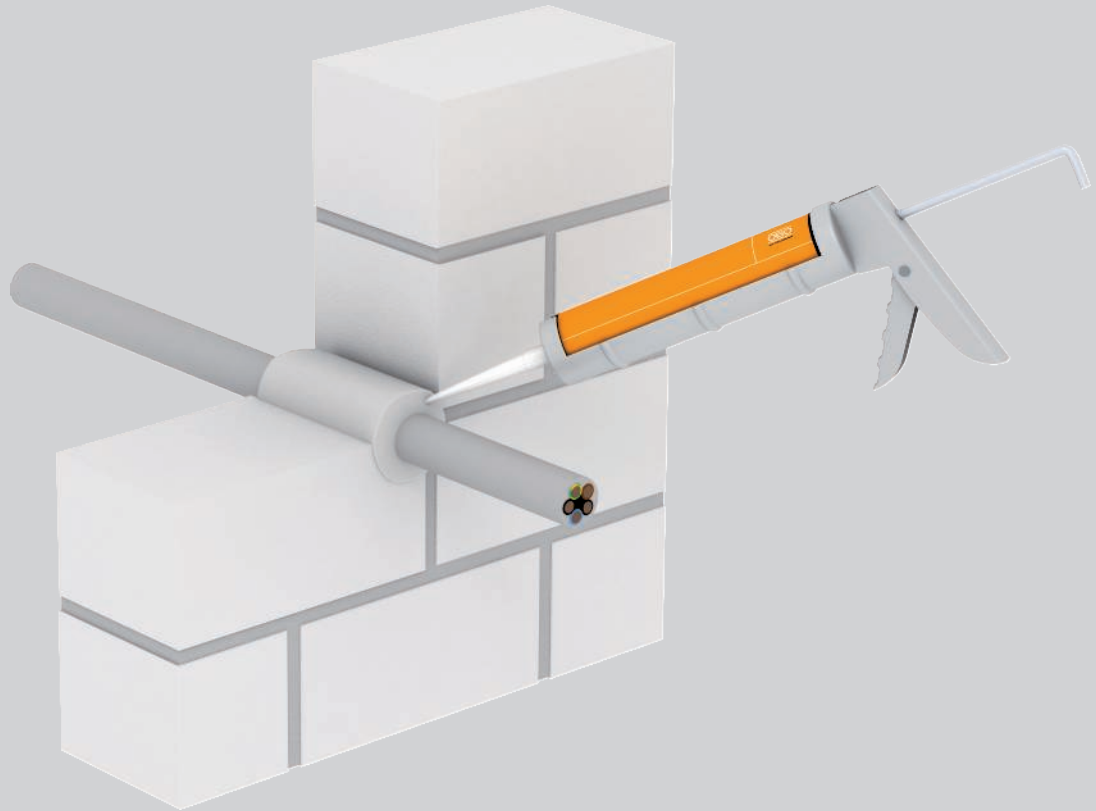


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



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,

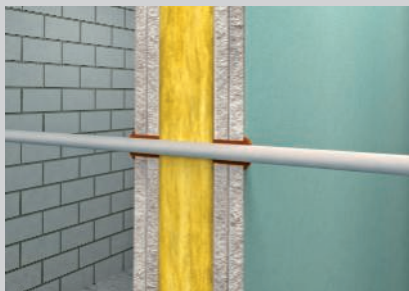
preventing penetration by fire and smoke. When the material foams up, heat is also drawn from the cables, thus considerably reducing the transfer of heat via the copper cores.



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.

Insulation layer creator in a cartridge



Type	Contents ml	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
DSX-K	300	1	50.000		7202300

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Insulation layer creator in a bucket



Type	Contents kg	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
DSX-E	5	1	500.000		7202302

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Mineral wool



Type	Dimension 25 litre	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
MIW-S		1	250.000		7202306

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point ≥ 1.000 °C.

Fire protection bandage



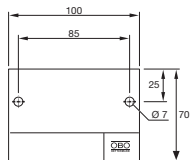
Type	Length mm	Width mm	Pack. pcs	Weight		Item No.
				kg/100 pcs.	pcs.	
CL-KS	1000	380	1	50.000		7202316

Intumescent material

The fire protection bandage is used as cable insulation for individual cables, cable- and electrical installation pipe bundles (EIR). The insulation consists of a flexible bandage, fixed using wire.

When surrounding the cables, take account of how often the appropriate medium must be surrounded. Refer to the approval for details. The bandage can be used directly next to Rockwool pipe insulation. Winding wire is included.

Identification plate

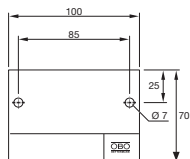


Type	Language	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
KS-S DE	German	1	2.400		7205425
KS-S SE	Swedish	1	2.400		7205426
KS-S ES	Spanisch	1	2.400		7205427
KS-S EN	English	1	2.400		7205429
KS-S HR	Croatian	1	2.400		7205438

PS Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.

Identification plate for single cable



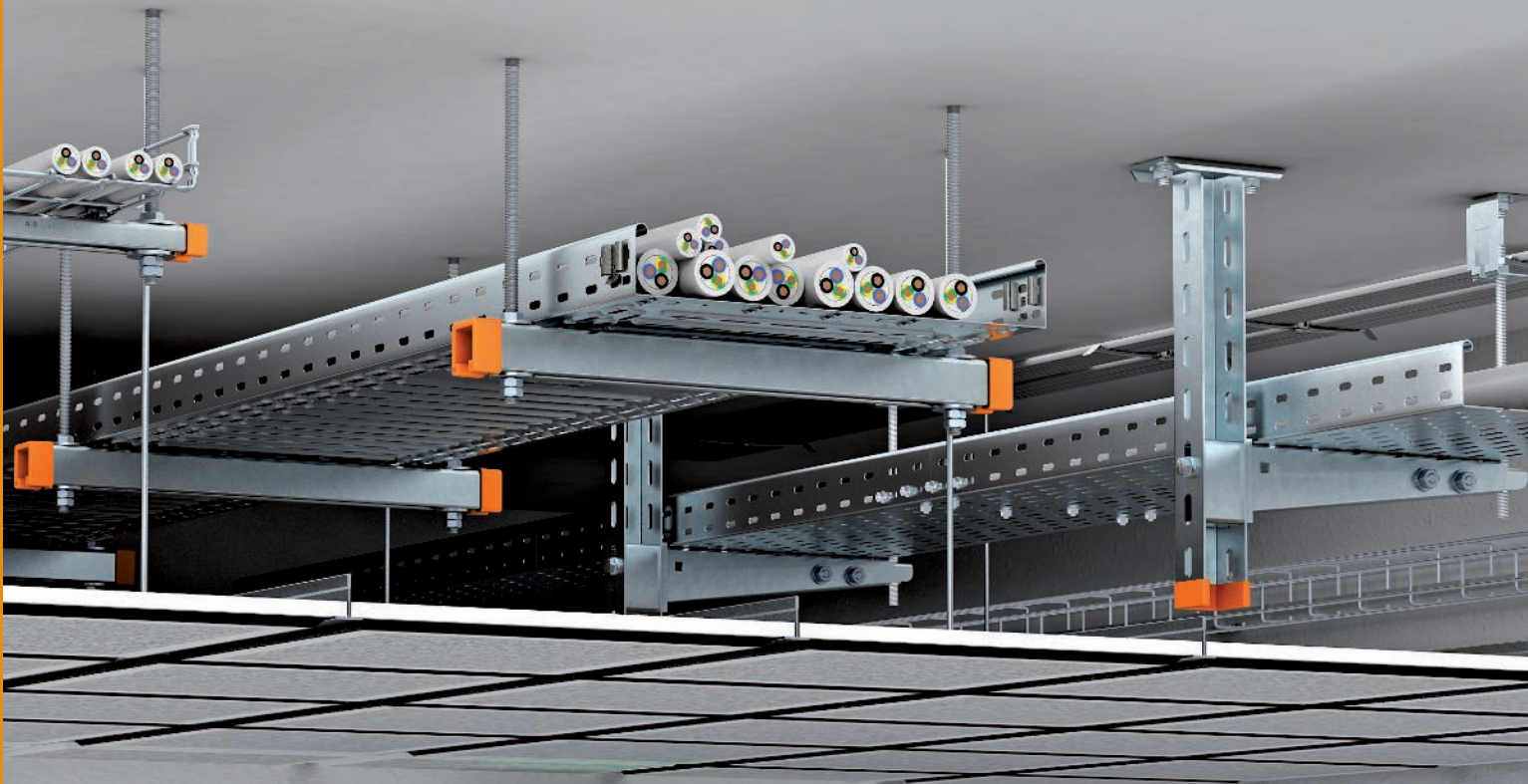
Type	Pack. pcs	Weight		Item No.
		kg/100 pcs.	pcs.	
KS-LAR DE	1	2.400		7205420

PVC Polyvinylchloride

Identification plate to be written on with waterproof and light-resistant felt-tip pen for fire-safe cable glands according to the cable systems directive (M)LAR, including 2 push-fit anchors.



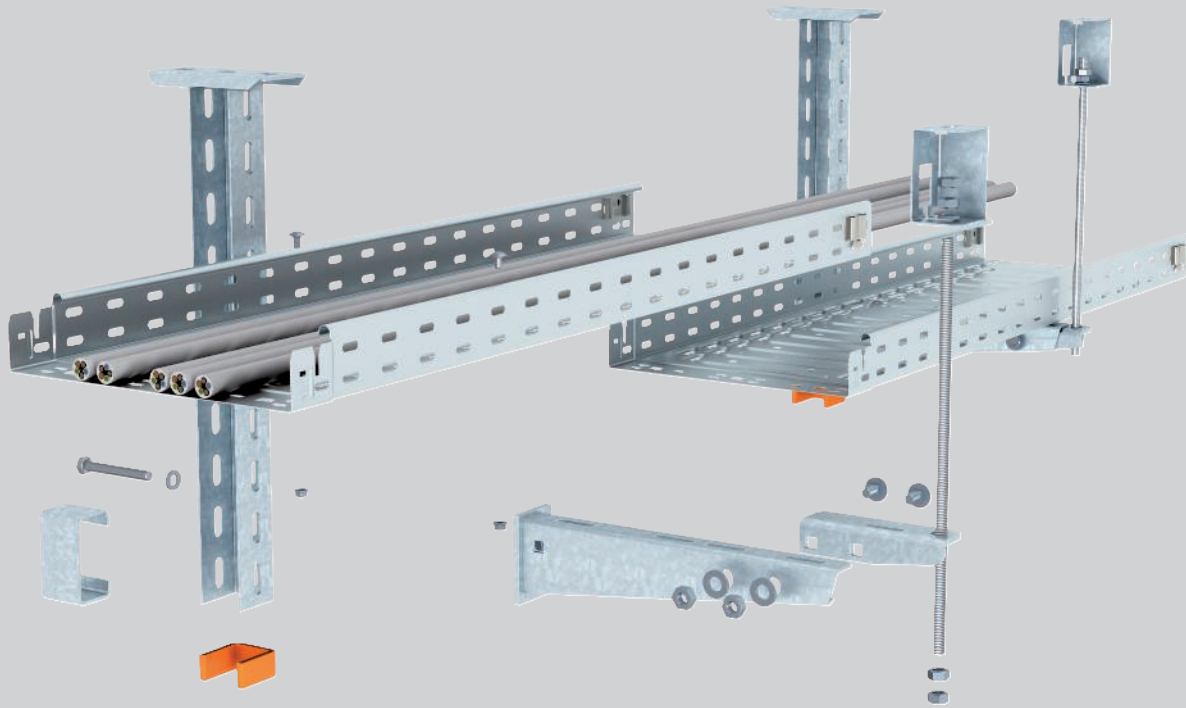




Escape route installations for hollow ceilings

	System description, RKS-Magic® cable tray	118
	System description, MKS-Magic® cable tray	122
	System description, SKS-Magic® cable tray	126
	System description, mesh cable tray GR-Magic®	130
	Products cable trays, mesh cable trays and mounting components	134
	System description, Grip M grouped support	143
	Products	145
	System description, metal pressure clip	146
	Products	149

Cable tray RKS-Magic® 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 bending in cases of 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 cases 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 multilayer variants can also be implemented.

Cable tray RKS-Magic®

Installation principle



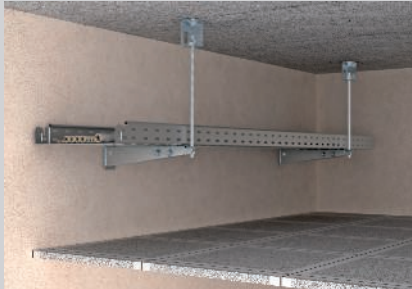
Single-layer ceiling suspension.



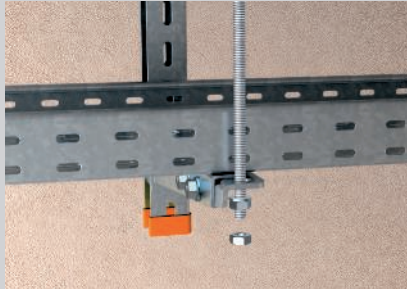
Two-layer ceiling suspension with bracket arrangement on one side.



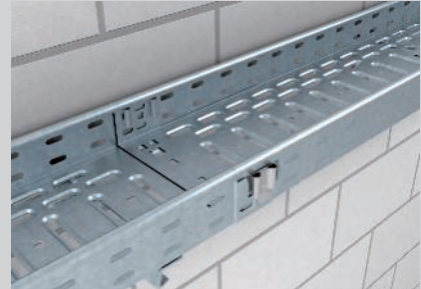
Two-layer ceiling suspension with bracket arrangement on both sides.



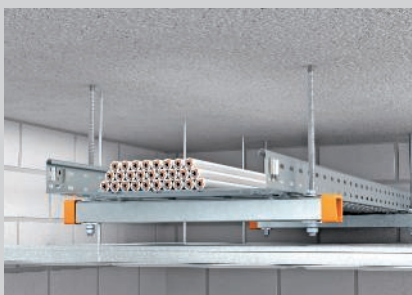
Wall mounting, one and two-layer possible.



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



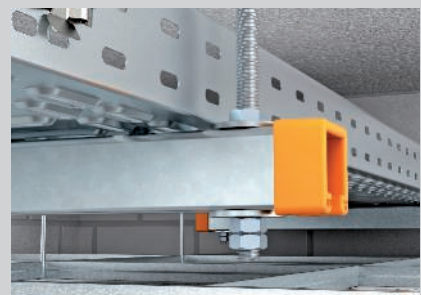
Complete screwless joint connection.



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 function according to DIN 4102 Part 12!

Always indicate the item number when ordering.

Cable tray RKS-Magic®

Proof

Fireproof 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

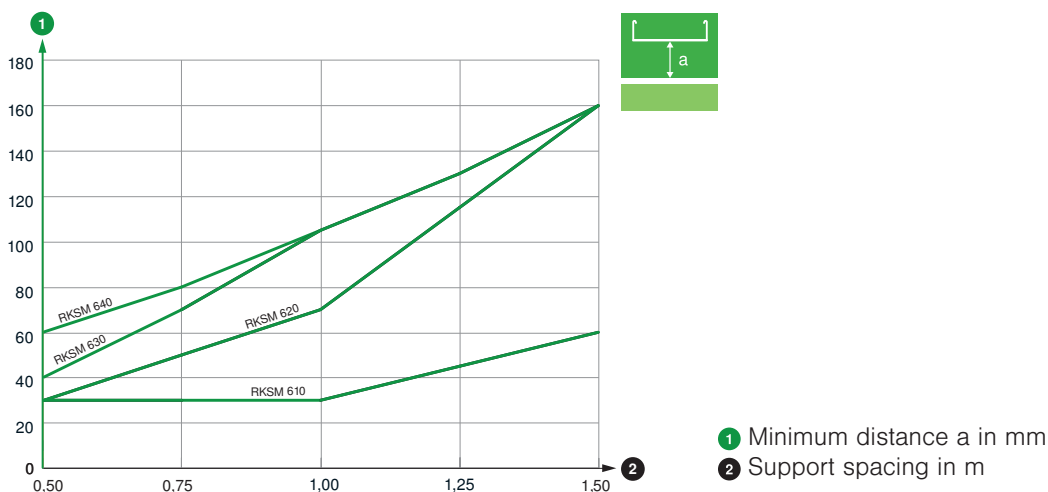
Required minimum spacing "a" under fire load at different support spacings

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



Cable tray RKS-Magic®



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

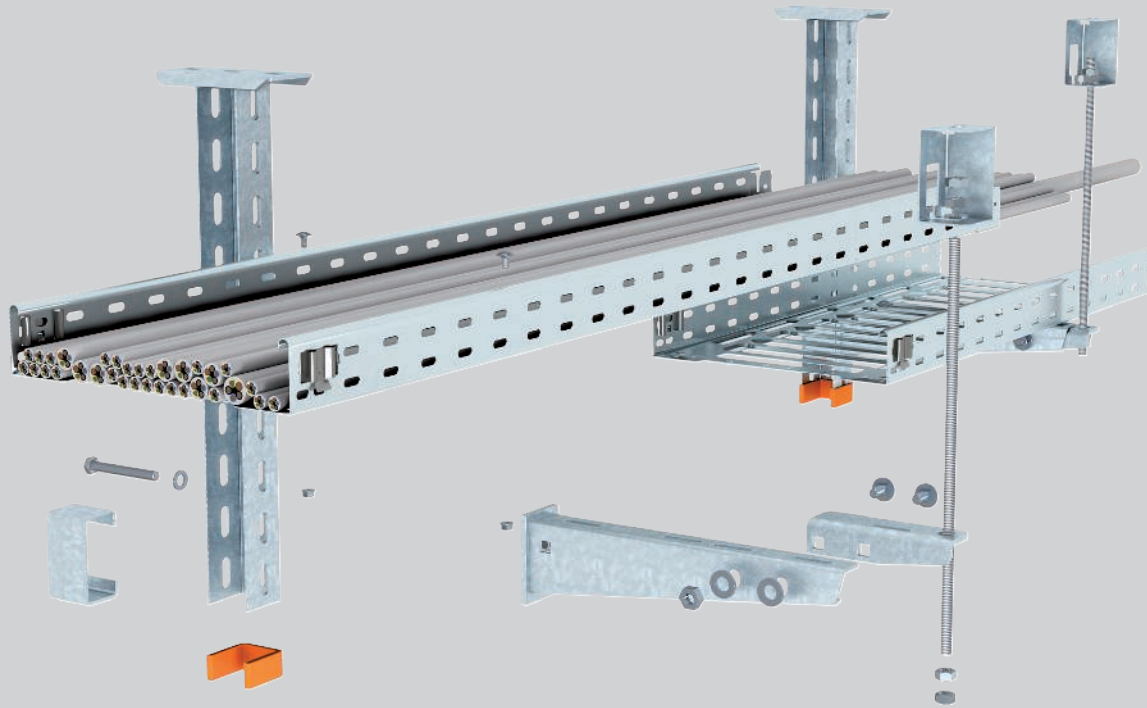
Choose the fastening anchors according to the substrate

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



Cable tray MKS-Magic® 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 bending in cases of fire. As the cable trays deform in cases of 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 multilayer 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. Even 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 maintained in the event of fire.

Cable tray MKS-Magic®

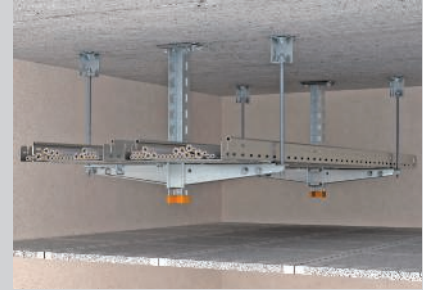
Installation principle



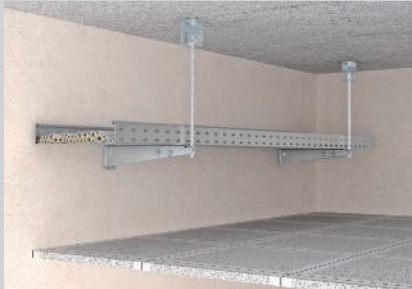
Single-layer ceiling suspension.



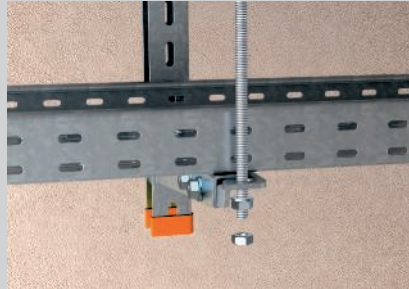
Two-layer ceiling suspension with bracket arrangement on one side.



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



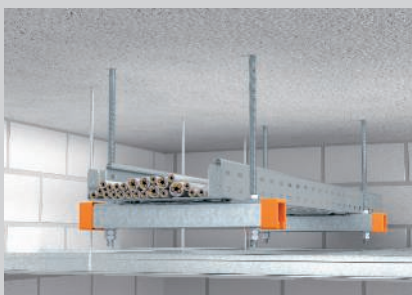
Wall mounting, single and double-layer possible.



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



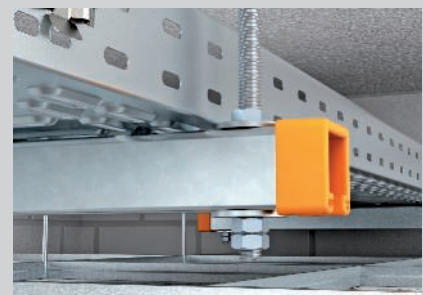
Screwless joint connection, only the base lugs need to be bent.



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 function according to DIN 4102 Part 12!

Always indicate the item number when ordering.

Cable tray MKS-Magic®






Proof

Fireproof 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.

Cable tray MKS-Magic®



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

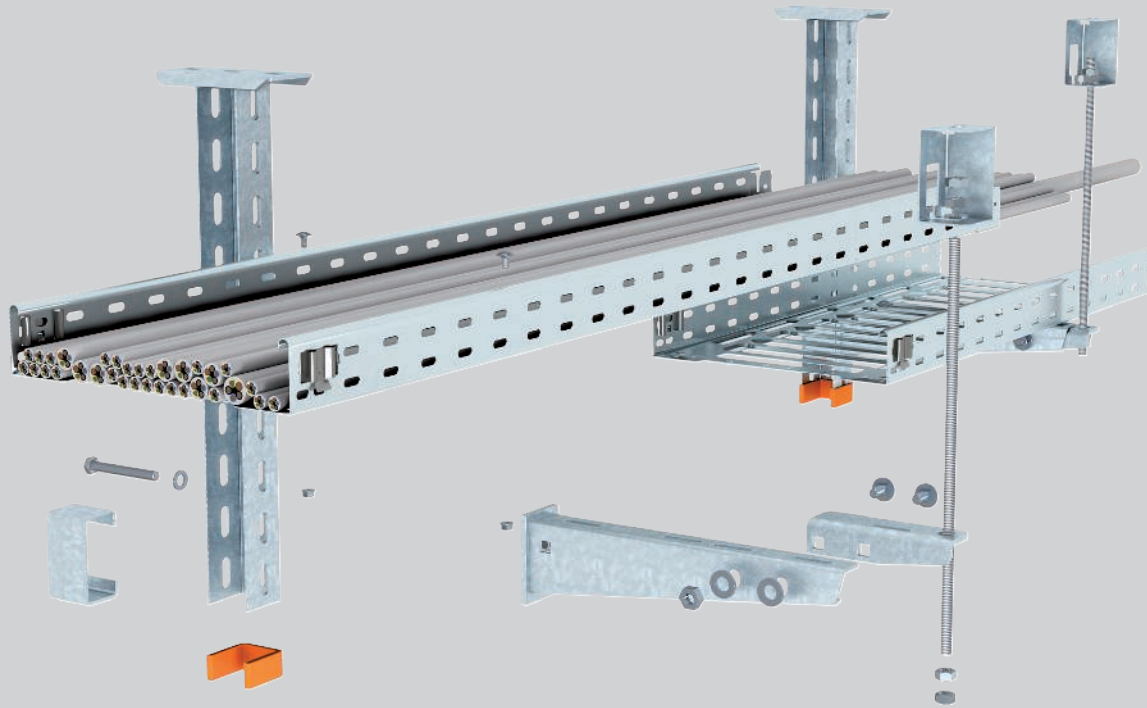
Choose the fastening anchors according to the substrate

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



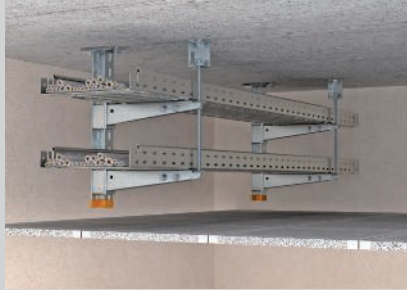
The tested SKS-Magic® cable tray system is suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the system has a proven mechanical stability of 30 minutes. The SKS-Magic® cable trays can be mounted under the ceiling or on the wall with brackets. The brackets are additionally secured on the ceiling with a threaded rod to prevent them bending in cases of fire. As the cable trays deform in cases of 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 testing are maintained and the minimum spacings to the false ceiling taken into account, then multilayer 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. Even 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 maintained in the event of fire.

Cable tray SKS-Magic® Installation principle



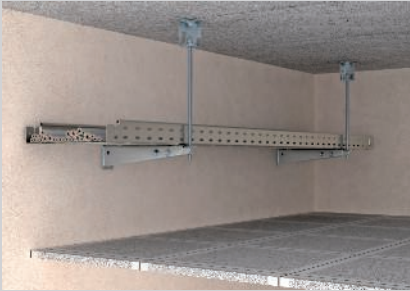
Single-layer ceiling suspension.



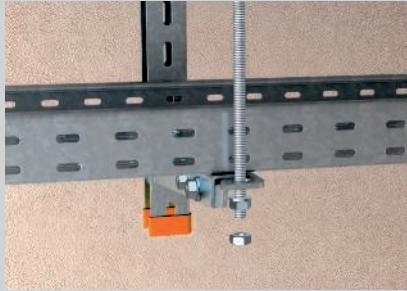
Two-layer ceiling suspension with bracket arrangement on one side.



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



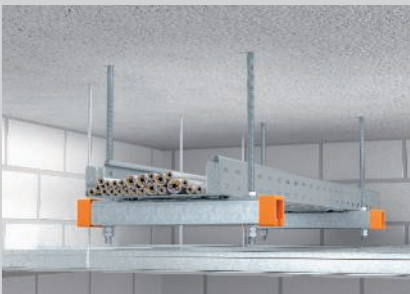
Wall mounting, one and two-layer possible.



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



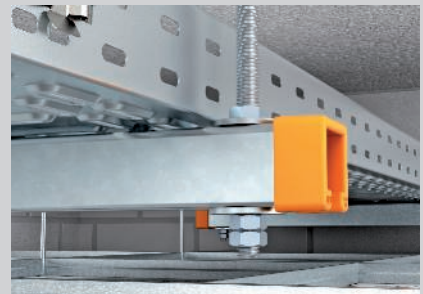
Screwless joint connection, only the base lugs need to be bent.



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 function according to DIN 4102 Part 12!

Always indicate the item number when ordering.

Cable tray SKS-Magic®






Proof

Fireproof 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

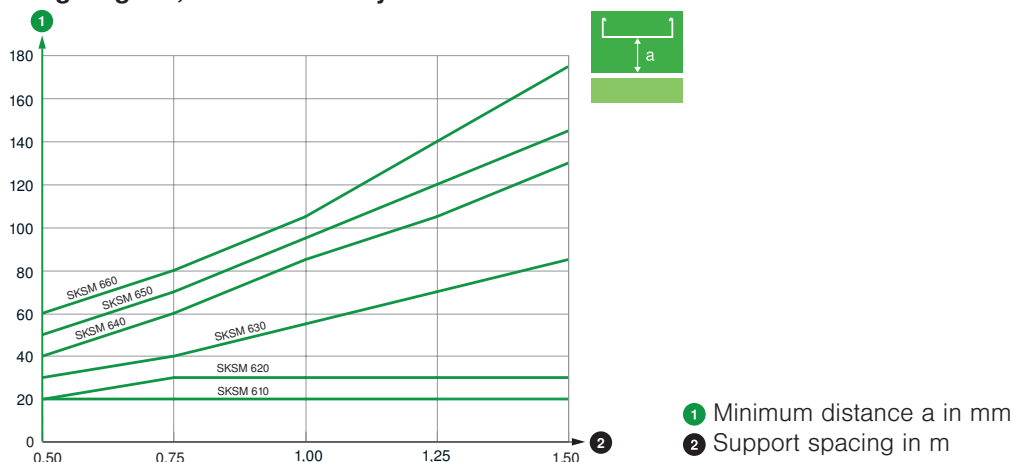
Required minimum spacing "a" under fire load at different support spacings

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



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

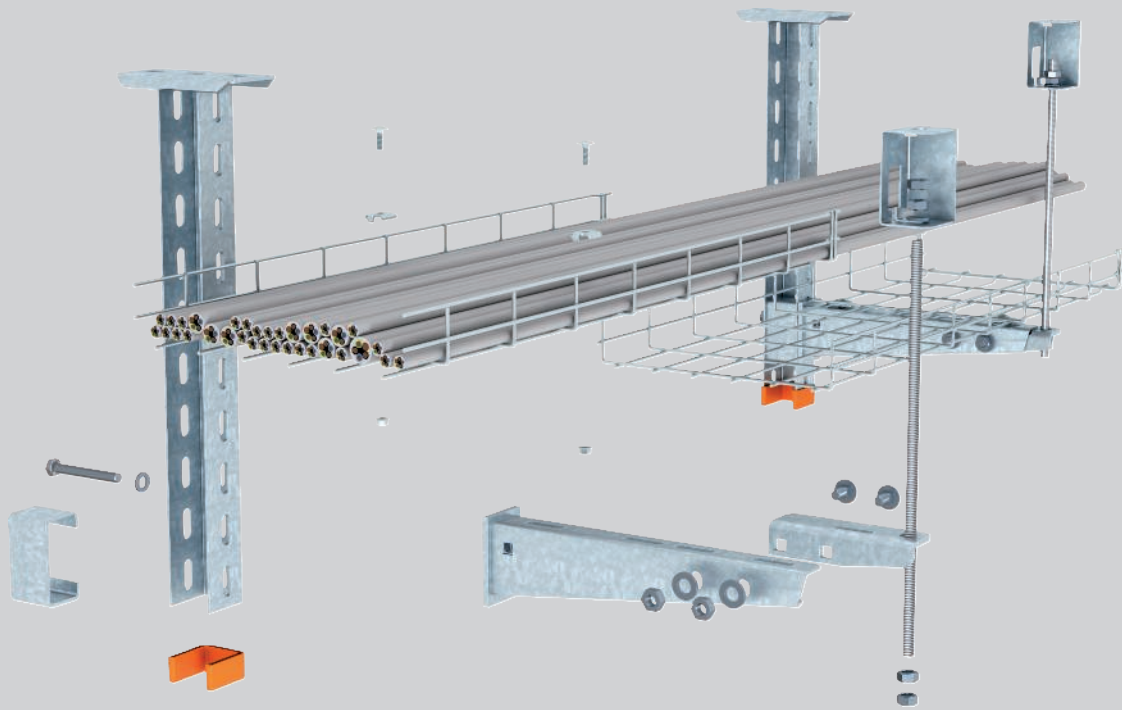
Mounting rails to be used according to support spacing

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 trays

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 bending in cases of fire. As the mesh cable tray deforms in cases 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 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 multilayer 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. Even 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 maintained in the event of fire.

GR-Magic® mesh cable trays

Installation principle



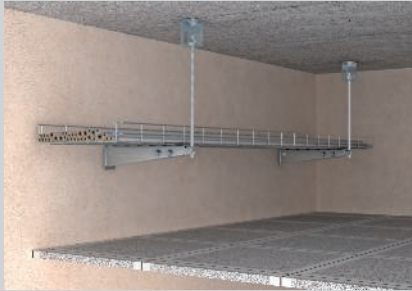
Single-layer ceiling suspension with suspended support and bracket.



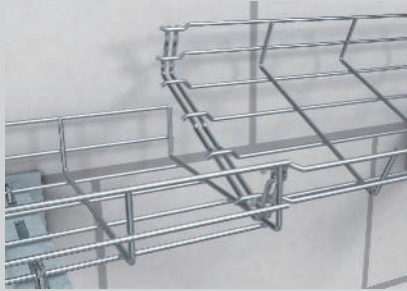
Two-layer ceiling suspension with bracket arrangement on one side.



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.



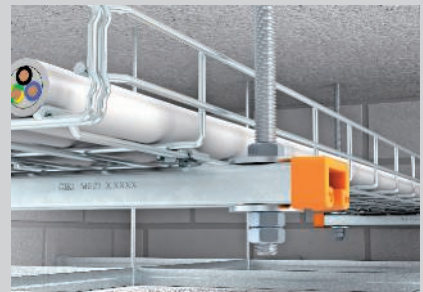
Screwless joint connection.



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 function according to DIN 4102 Part 12!

Always indicate the item number when ordering.








GR-Magic® mesh cable trays

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 trays



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

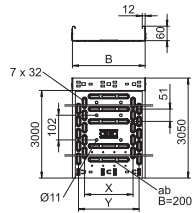
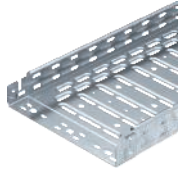
Choose the fastening anchors according to the substrate

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



Cable tray RKS-Magic® 60



Type	Width mm	Plate thickness mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Pack. m	Weight kg/100 m	Item No.
RKSM 610 FS	100	0.75	100	—	50	3	132.131	6047611
RKSM 620 FS	200	0.75	200	100	150	3	183.000	6047638
RKSM 630 FS	300	0.75	300	200	250	3	235.080	6047654
RKSM 640 FS	400	0.90	400	300	350	3	331.340	6047689

St Steel

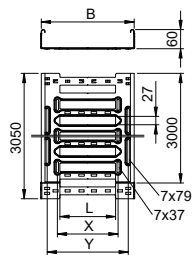
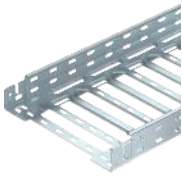
FS Strip-galvanised

Cable tray with integrated quick fastening system. The usable length of the cable tray is 3,000 mm.

The cable tray possesses continuous side perforations of 7 x 20 mm for the installation of additional connection and mounting components.

The perforation for direct threaded rod suspension has a diameter of 11 mm.

Cable tray MKS-Magic® 60



Type	Width mm	Plate thickness mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
MKSM 610 FS	100	1.00	100	—	62	30	3	165.000	6059000
MKSM 620 FS	200	1.00	200	96	162	80	3	219.340	6059004
MKSM 630 FS	300	1.00	300	196	262	180	3	256.720	6059006
MKSM 640 FS	400	1.00	400	296	362	280	3	294.000	6059008

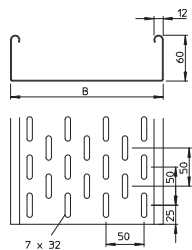
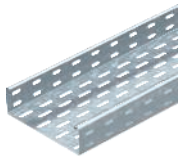
St Steel

FS Strip-galvanised

Cable tray with integrated quick fastening system. The usable length of the cable tray is 3,000 mm.

The cable tray possesses continuous side perforations of 7 x 20 mm for the installation of additional connection and mounting components.

Cable tray MKS 60



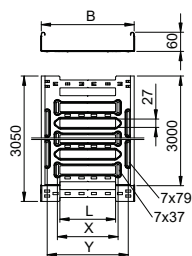
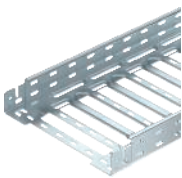
Type	Width mm	Plate thickness mm	Dimen- sion B mm	Pack. m	Weight kg/100 m	Item No.
MKS 610 FS	100	1.00	100	3	173.000	6055109
MKS 620 FS	200	1.00	200	3	246.700	6055206
MKS 630 FS	300	1.00	300	3	312.667	6055303
MKS 640 FS	400	1.00	400	3	380.000	6055400

St Steel

FS Strip-galvanised

MKS 60 = medium-duty cable tray system with a side height of 60 mm. FS version includes RV 60 straight connector set.

Cable tray SKS-Magic® 60



Type	Width mm	Plate thickness mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
SKSM 610 FS	100	1.50	100	—	62	30	6	247.540	6059456
SKSM 620 FS	200	1.50	200	96	162	80	3	329.180	6059460
SKSM 630 FS	300	1.50	300	196	262	180	3	385.250	6059462
SKSM 640 FS	400	1.50	400	296	362	280	3	441.320	6059464
SKSM 650 FS	500	1.50	500	396	462	380	3	497.370	6059466
SKSM 660 FS	600	1.50	600	496	562	480	3	553.440	6059468

St Steel

FS Strip-galvanised

Cable tray with integrated quick fastening system. The usable length of the cable tray is 3,000 mm.

The cable tray possesses continuous side perforations of 7 x 20 mm for the installation of additional connection and mounting components.



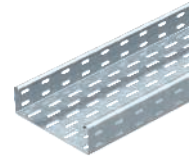
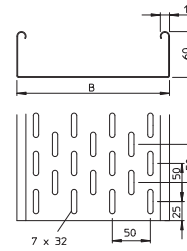
Cable tray SKS 60

Type	Width mm	Plate thickness mm	Dimen- sion B mm	Pack. Weight		Item No.
				m	kg/100 m	
SKS 610 FS	100	1.50	100	3	239.400	6056105
SKS 620 FS	200	1.50	200	3	364.000	6056202
SKS 630 FS	300	1.50	300	3	463.670	6056296
SKS 640 FS	400	1.50	400	3	564.340	6056407
SKS 650 FS	500	1.50	500	3	663.340	6056504
SKS 660 FS	600	1.50	600	3	762.340	6056601

St Steel

FS Strip-galvanised

SKS 60 = Heavy-duty cable tray system with 60 mm side height.



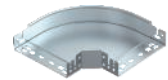
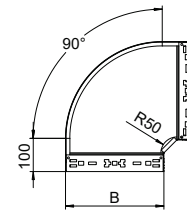
90° Magic bend

Type	Width mm	Dimen- sion B mm	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
RBM 90 610 FS	100	100	1	65.700	6041130
RBM 90 620 FS	200	200	1	122.100	6041134
RBM 90 630 FS	300	300	1	192.800	6041136
RBM 90 640 FS	400	400	1	275.400	6041138
RBM 90 650 FS	500	500	1	376.300	6041140
RBM 90 660 FS	600	600	1	493.000	6041142

St Steel

FS Strip-galvanised

90° bend with quick connector system. For all cable tray types of 60 mm side height.



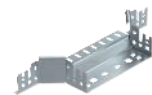
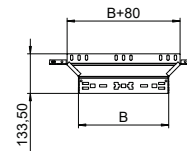
Magic add-on tee

Type	Width mm	Dimen- sion B mm	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
RAAM 610 FS	100	100	1	37.700	6041230
RAAM 620 FS	200	200	1	50.600	6041234
RAAM 630 FS	300	300	1	63.500	6041236
RAAM 640 FS	400	400	1	75.700	6041238
RAAM 650 FS	500	500	1	89.300	6041240
RAAM 660 FS	600	600	1	102.700	6041242

St Steel

FS Strip-galvanised

Magic add-on tee with quick connector system. For all cable tray types of 60 mm side height.



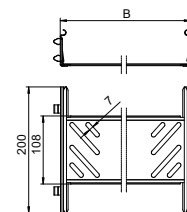
Magic straight connector set FS

Type	Side height mm	Dimen- sion B mm	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
KTSMV 610 FS	60	100	1	30.500	6068914
KTSMV 620 FS	60	200	1	37.200	6068918
KTSMV 630 FS	60	300	1	44.000	6068920
KTSMV 640 FS	60	400	1	50.700	6068922
KTSMV 650 FS	60	500	1	57.400	6068924
KTSMV 660 FS	60	600	1	64.200	6068926

St Steel

FS Strip-galvanised

Cable tray connector with quick fastening for the screwless connection of perforated cable trays with a side height of 60 mm.



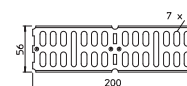
Straight and angle connector 60

Type	Dimension mm	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
RWVL 60 FS	200 x 56	10	16.400	6067115

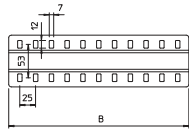
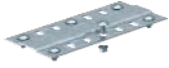
St Steel

FS Strip-galvanised

Straight and angle connector for cable trays and fittings with a side height of 60 mm.



Joint plate



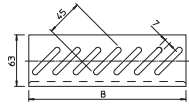
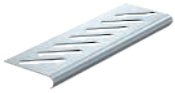
Type	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SSLB 100 FS	100	20	7.700	7070205
SSLB 200 FS	200	20	16.700	7070213
SSLB 300 FS	300	20	25.700	7070217
SSLB 400 FS	400	20	34.700	7070221
SSLB 500 FS	500	20	43.700	7070225
SSLB 600 FS	600	20	52.700	7070233

Sl Steel

FS Strip-galvanised

Wide joint plate for use in all cable trays and wide span cable trays.

Bottom end plate



Type	Width mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BEB 100 FS	100	100	100	5.400	7083106
BEB 200 FS	200	200	100	11.400	7083203
BEB 300 FS	300	300	100	17.200	7083300
BEB 400 FS	400	400	100	23.100	7083408
BEB 500 FS	500	500	50	29.000	7083505
BEB 600 FS	600	600	50	35.000	7083602

Sl Steel

FS Strip-galvanised

Bottom end plate for floor reinforcement at the ends of the cable tray and as cable protection.

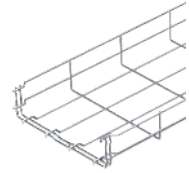
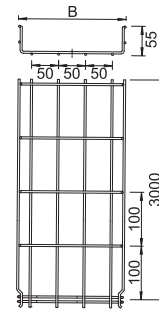
Mesh cable tray GRM 55

Type	Width mm	Wire Ø mm	Dimen- sion B mm	Pack. Weight		Item No.
				m	kg/100 m	
GRM 55 100 G	100	3.9	100	3	72.400	6001442
GRM 55 200 G	200	3.9	200	3	100.667	6001446
GRM 55 300 G	300	4.8	300	3	194.900	6001448
GRM 55 400 G	400	4.8	400	3	236.700	6001450

St Steel

G Electrogalvanised

Mesh cable tray with shaped connector of side height 55 mm.

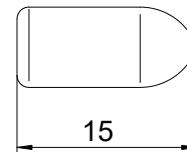


End cap

Type	Colour	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
GR KS 3.9 OR	Pure orange	500	0.025	6003750
GR KS 4.8 OR	Pure orange	500	0.030	6003754

PVC Polyvinylchloride

End cap to cover cut wire ends of mesh cable trays.



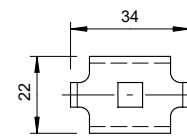
Clamping piece

Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
GKS 34 G	20	2.000	6016855

St Steel

G Electrogalvanised

Clamp for fixing mesh cable trays to wall or support brackets.



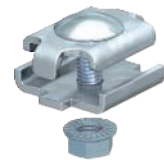
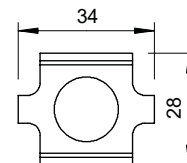
Connector

Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
GSV 34 G	20	3.000	6016596

St Steel

G Electrogalvanised

Screwed version of joint connector for mesh cable trays.



Bolt cutter

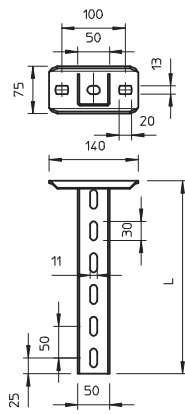
Type	Length mm	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
GR BS	450	1	160.000	6017700

St Steel

Bolt cutter for cutting mesh cable trays.



US 5 support



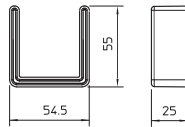
Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 K 20 FT	200	2.5	200	1	85.000	6341527
US 5 K 30 FT	300	2.5	300	1	110.000	6341535
US 5 K 40 FT	400	2.5	400	1	136.000	6341543
US 5 K 50 FT	500	2.5	500	1	161.000	6341551
US 5 K 60 FT	600	2.5	600	1	185.000	6341578
US 5 K 70 FT	700	2.5	700	1	210.000	6341586
US 5 K 80 FT	800	2.5	800	1	236.000	6341594
US 5 K 90 FT	900	2.5	900	1	261.000	6341608
US 5 K 100 FT	1000	2.5	1000	1	286.000	6341616
US 5 K 110 FT	1100	2.5	1100	1	311.000	6341624
US 5 K 120 FT	1200	2.5	1200	1	337.000	6341632

SI Steel

FT Hot-dip galvanised

U support of dimensions 50 x 50 mm with welded head plate.

End cap

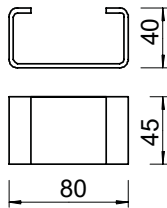


Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 KS OR	Pastel orange	20	1.300	6338462

PE Polyethylene

End cap to cover the ends of US 5 supports.

Spacer



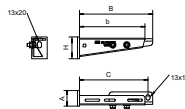
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 45 FT	20	18.000	6416500

SI Steel

FT Hot-dip galvanised

Spacer for use in U 5 support and in the head plate, type KU 7 VQP.

Wall and support bracket AW 30 F



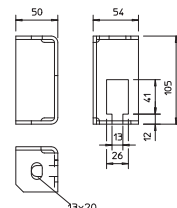
Type	Dimen- sion b mm	Dimen- sion B mm	Dimen- sion C mm	Dimen- sion H mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW30F21 FT	210	235	220	70	50	1	79.000	6417027
AW30F31 FT	310	335	320	80	50	1	100.000	6417043
AW30F41 FT	410	435	420	80	50	1	127.000	6417078
AW30F51 FT	510	535	520	90	50	1	170.000	6417094
AW30F61 FT	610	635	620	100	50	1	200.000	6417116

SI Steel

FT Hot-dip galvanised

Bracket for mounting on suspended supports or as wall bracket for cable tray routing type above fire protection ceilings and for routing types with cable ladders and cable trays for the maintenance of electrical function according to DIN 4102 Part 12. The brackets are supplied ready-mounted.

Fire protection clamp



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSB FT	20	42.400	6418198

SI Steel

FT Hot-dip galvanised

Fire protection clamp for ceiling fastening of the threaded rod lock for routing types with cable ladders and cable trays for the maintenance of electrical function to DIN 4102 Part 12.

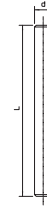
Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M12 1M G	M12	12	1000	10	62.000	3141306

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



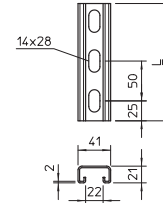
MS4121 mounting rail, slot width 22 mm, perforated

Type	Length mm	Dimension W x H mm	Material thickness mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4121P0200FT	200	41x21	2	200	1	35.100	1122933
MS4121P0300FT	300	41x21	2	300	1	53.000	1122934
MS4121P0400FT	400	41x21	2	400	1	70.000	1122935
MS4121P0500FT	500	41x21	2	500	1	87.000	1122936

St Steel

FT Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.



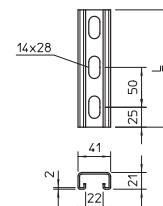
MS4121 mounting rail, slot width 22 mm, perforated

Type	Length mm	Dimension W x H mm	Material thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
MS4121P2000FS	2000	41x21	2	2000	2	175.000	1122918
MS4121P3000FS	3000	41x21	2	3000	3	141.900	1122920
MS4121P2000FT	2000	41x21	2	2000	2	183.000	1122923
MS4121P3000FT	3000	41x21	2	3000	3	151.300	1122924

St Steel

FS Strip-galvanised FT Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

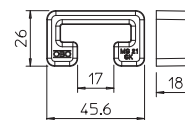


Protective cap MS4121

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4121 SK	Pastel orange	25	0.650	1122902

PE Polyethylene

Protective caps for profile rail, type MS4121.

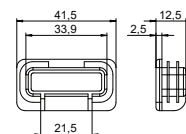


End cap MS4121

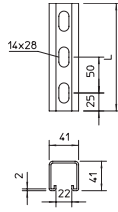
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4121 EK	Pastel orange	50	0.645	1122904

PE Polyethylene

End cap for profile rail, type MS4121.



MS4141 mounting rail, slot width 22 mm, perforated



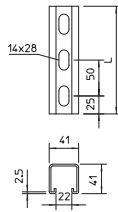
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
MSL4141P1000FS	1000	41x41	2	1000	1	201.100	1122970
MSL4141P3000FS	3000	41x41	2	3000	3	201.100	1122972
MSL4141P1000FT	1000	41x41	2	1000	1	214.700	1122962
MSL4141P3000FT	3000	41x41	2	3000	3	214.700	1122964

St Steel

FS Strip-galvanised **FT** Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

MS4141 mounting rail, slot width 22 mm, perforated



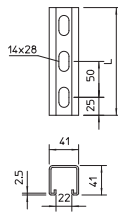
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4141P0400FT	400	41x41	2.5	400	1	104.700	1122525
MS4141P0500FT	500	41x41	2.5	500	1	130.800	1122533
MS4141P0600FT	600	41x41	2.5	600	1	156.900	1122541
MS4141P0700FT	700	41x41	2.5	700	1	183.000	1122568

St Steel

FT Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

MS4141 mounting rail, slot width 22 mm, perforated



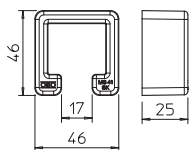
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
MS4141P1000FS	1000	41x41	2.5	1000	1	247.500	1122908
MS4141P3000FS	3000	41x41	2.5	3000	3	247.500	1122910
MS4141P1000FT	1000	41x41	2.5	1000	1	261.400	1122606
MS4141P3000FT	3000	41x41	2.5	3000	3	261.400	1122622

St Steel

FS Strip-galvanised **FT** Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

Protective cap MS4141

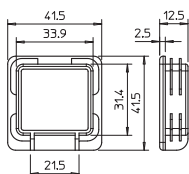


Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4141 SK	Pastel orange	25	1.320	1122900

PE Polyethylene

Protective caps for profile rail, type MS4141.

End cap MS4141



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
MS4141 EK	Pastel orange	50	0.670	1122906

PE Polyethylene

End cap for profile rail, type MS4141.

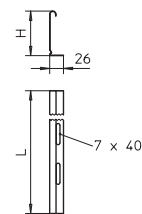
Barrier strip 45

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 45 FS	45	0.75	3000	3	46.700	6062033

St Steel

FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.



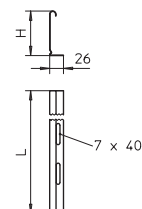
Barrier strip 60

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 60 FS	60	0.75	3000	3	55.700	6062068

St Steel

FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.

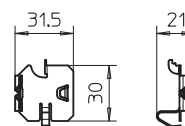


Hold-down clamp for separating retainer fastening in RKSM

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS KR A2	30	0.537	6062280

V2A Stainless steel, A2

Clamping piece for screwless fastening of separating retainer in the cable tray types RKSM, MKS and SKS.

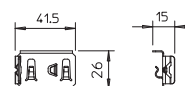


Hold-down clamp for separating retainer fastening

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS GR A2	30	0.830	6062282

V2A Stainless steel, A2

Hold-down clamp for fastening separating retainer in mesh cable trays.



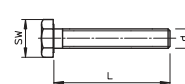
Hexagonal bolt with nut and washer

Type	Dimension mm	Dimension L mm	Dimension d mm	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SKS 10x90 F	M10 x 90	90	10	17	20	7.800	6418252

St Steel

F Hot-dip galvanised

Hexagonal bolt for universal fixing of structure components.



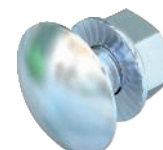
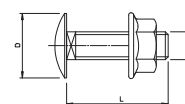
Truss-head bolt with flange nut

Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRSB 6x12 F	M 6 x 12	12	13.5	6	100	0.990	6406122
FRSB 6x16 F	M 6 x 16	16	13.5	6	100	0.800	6406157
FRSB 6x20 F	M 6 x 20	20	13.5	6	100	1.000	6406203

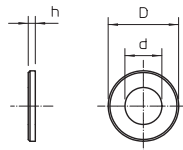
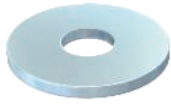
St Steel

F Hot-dip galvanised

Truss-head bolt with square neck including flange nut.



Large washer

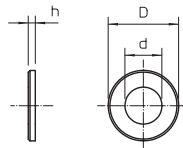
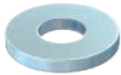


Type	Dimension D mm	Dimension d mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DIN440 7 F	22	6.6	2	100	0.550	6408702
DIN440 14 F	44	13.5	4	50	4.736	6408737

- St** Steel
- F** Hot-dip galvanised

Washer of particularly large outer diameter.

Washer

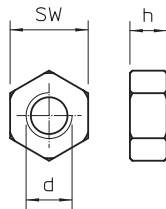


Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M12 D24 G	M12	13	24	2.5	100	0.627	3402126

- St** Steel
- G** Electrogalvanised

Washer according to DIN 125, shape A, for universal use.

Hexagonal nut DIN 934

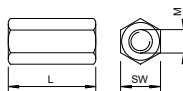


Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M12 G	M12	19	10.8	12	100	1.730	3400123

- St** Steel
- G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.

Connection sleeve



Type	Thread	Dimension L mm	SW mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CSTR M12 G	M12	40	19		25	7.000	6410111

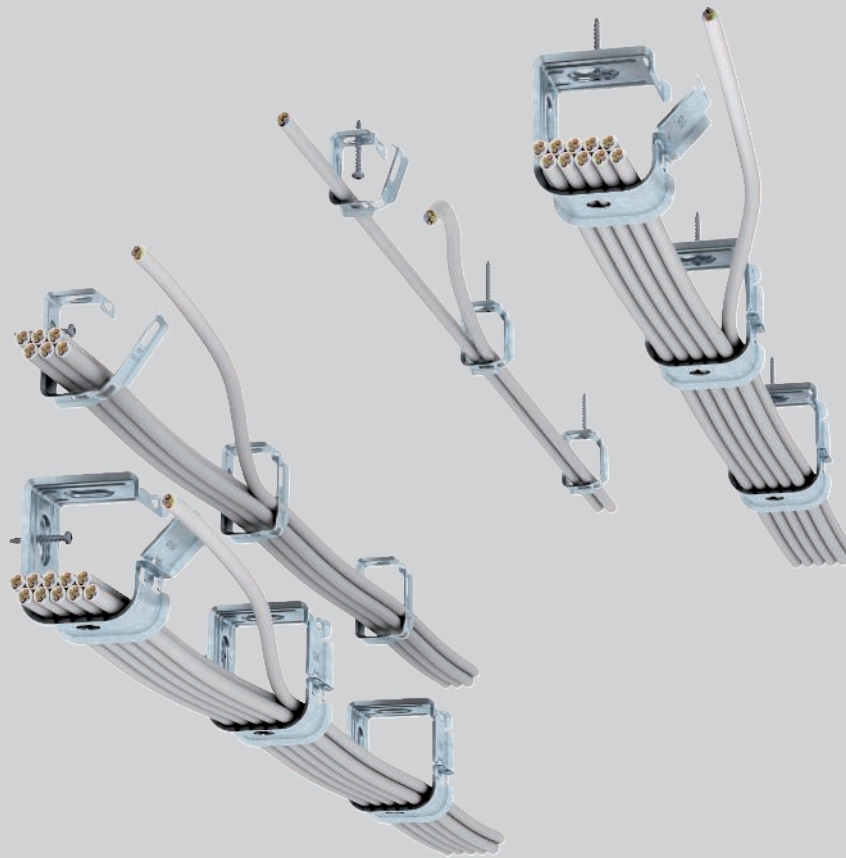
- St** Steel
- G** Electrogalvanised

Connection sleeve with continuous internal thread.



Grip M grouped support

System description

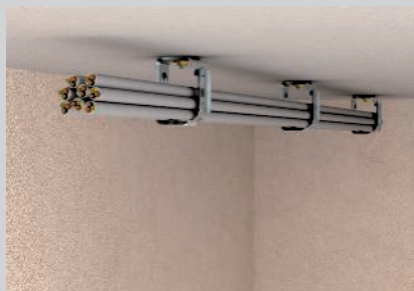


The tested Grip M grouped supports are suitable for installation in the false ceiling area of escape and rescue routes. In the event of fire, the grouped supports have a proven mechanical stability of 30 to 90 minutes. They can be mounted under the ceiling or on the wall. The grouped supports are made 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 function according to DIN 4102 Part 12!

Grip M grouped support Proof



Fireproof 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"

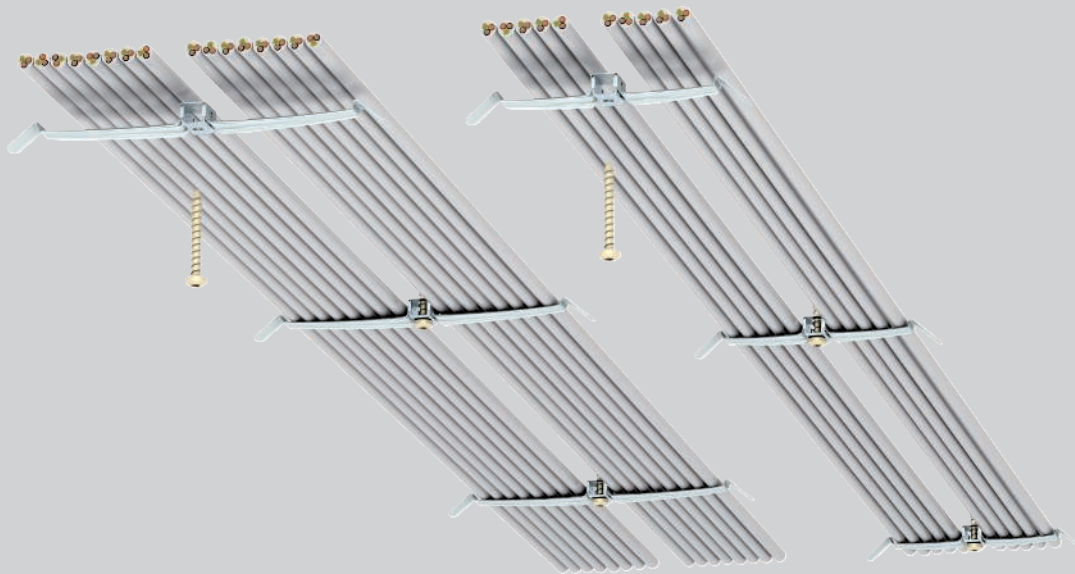
Fire load	Fastening spacing	Cable assignment		
30 minutes	max. 0.6 m	max. 20.0 kg/m	80 mm	120 mm
30 minutes	max. 0.8 m	max. 15.0 kg/m	100 mm	140 mm
90 minutes	max. 0.6 m	max. 13.0 kg/m	100 mm	140 mm
90 minutes	max. 0.8 m	max. 10.0 kg/m	120 mm	160 mm

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 function according to DIN 4102 Part 12!

Always indicate the item number when ordering.




Metal pressure clip Proof


Fireproof 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

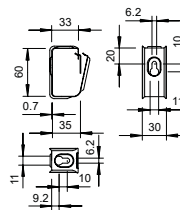


Type	No. of conductors	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 15 FS	15	50	50	3.700	2207028

St Steel
FS Strip-galvanised

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 15

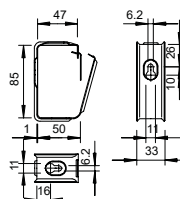


Type	No. of conductors	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 30 FS	30	25	25	6.200	2207036

St Steel
FS Strip-galvanised

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 30

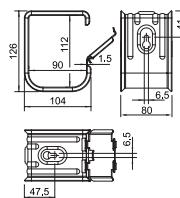


Type	No. of conductors	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 70 FS	70	10	10	34.500	2207060

St Steel
FS Strip-galvanised

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 70

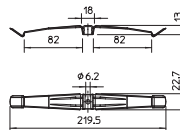


Pressure clip for 16 cables

Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2033 M A2	25	25	2.310	2204000

V2A Stainless steel, A2

The metal pressure clip is halogen- and fire load-free, and maintains a good mechanical stability even in fires. The pressure clip is also approved as a cable-specific variant for electrical function maintenance to DIN 4102 Part 12. In pressure clips with larger cross-sections, the spacer 2033 D 15 x 3 G (must be ordered separately) increases the clamping height from 10 to 13 mm. The pressure clips are suitable for fireproof mounting above suspended fire protection ceilings in accordance with DIN 4102.

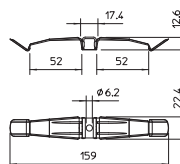


Pressure clip for 10 cables

Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2034 M A2	50	50	1.860	2204010

V2A Stainless steel, A2

The metal pressure clip is halogen- and fire load-free, and maintains a good mechanical stability even in fires. The pressure clip is also approved as a cable-specific variant for electrical function maintenance to DIN 4102 Part 12. In pressure clips with larger cross-sections, the spacer 2033 D 15 x 3 G (must be ordered separately) increases the clamping height from 10 to 13 mm. The pressure clips are suitable for fireproof mounting above suspended fire protection ceilings in accordance with DIN 4102.








Achtung!
Trayträger
Gründische
Fehlbesatz!

Kabeltrage gemäß DIN 4532 Teil 2
Kabeltrage ... OBO-Systeme 02/2018 10
OBO
SYSTEME

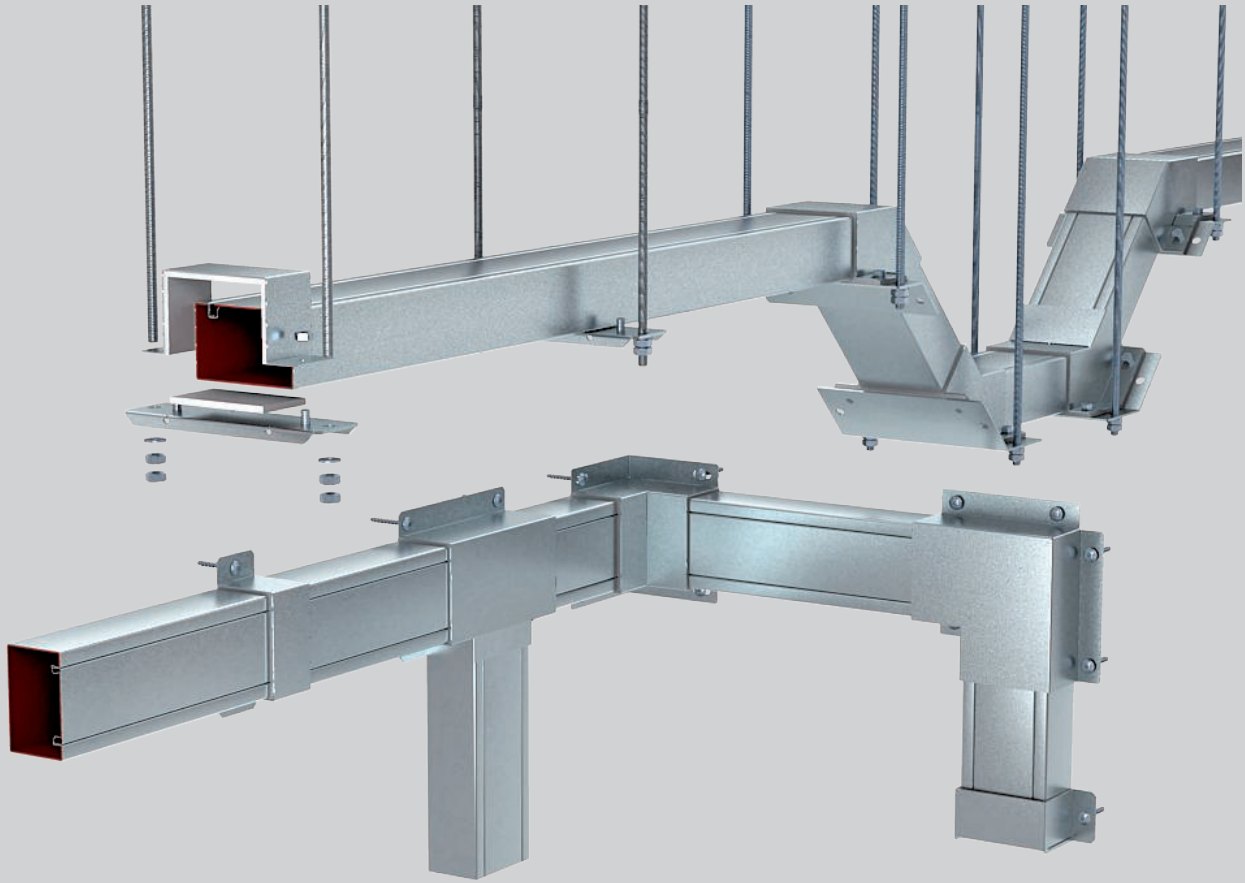
05_BSS_Produnkteilheitenkatalog_2018_EX / en / 2019/02/01 08:09:47 (LLExpert_02238) / 2019/02/01 08:10:07 08-10:07

Fire protection ducts

	System description, PYROLINE® Rapid	152
	Products	154
	System description, PYROLINE® Con D	172
	Products	174
	System description, PYROLINE® Con S	180
	Products	182
	System description, PYROLINE® Fibre Optics	188
	Products	190
	System description, PYROLINE® Sun PV	192
	Products	194

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.



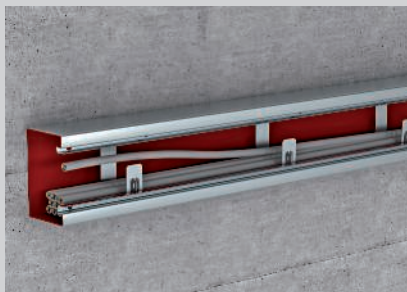
Mounting on raw concrete in system base.



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.

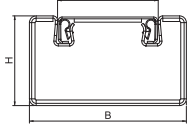
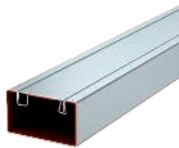
Note: For this metal installation duct with intumescent inner coating, only a general construction approval of the DIBt, Berlin, is available. In countries where a European Technical Assessment (ETA/ETB) is required, the possible use of these components must be agreed with the local fire protection authorities!

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Fire protection ducts



Metal fire protection duct, I30 to I120



Type	Dimension B mm	Dimension H mm	Dimension i mm	Length mm	Colour	Pack. m	Weight kg/100 m	Item No.
BSKM 0407	70	40	30	2000	—	2	254.650	7216500
BSKM 0407 RW	70	40	30	2000	Pure white	2	254.650	7216501

St Steel

FS Strip-galvanised **L** Painted

Sheet steel duct with intumescent inner coating.

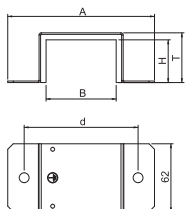
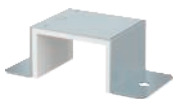
In case of fire, actively prevents the spread of fire in the duct and protects emergency and escape routes against the impacts of a cable fire. The cover and base are securely interconnected using the self-contacting patented locking brackets. This also creates the equipotential bonding.

Fire resistance classes I30 to I120 according to DIN 4102 Part 11.

Mounting options: directly on the wall or under the ceiling, beneath system floors on the raw floor, or suspended on support systems or using connector elements (support spacing, max. 1 m).

Included in the delivery: Cover and base as a unit, complete.

Connector



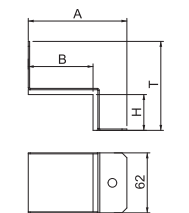
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VD 0407	70	40	—	1	24.000	7216510
BSKM-VD 0407 RW	70	40	Pure white	1	24.000	7216511

St Steel

FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 0407, for connection and smoke-proof sealing of duct joints. Usable at min. 30 mm side distance of the duct to the ceiling or wall. Including loose seal for combination with support profile.

Connector for corner mounting



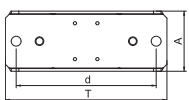
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VE 0407	70	40	—	5	17.000	7216512
BSKM-VE 0407 RW	70	40	Pure white	5	17.000	7216513

St Steel

FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 0407, for smoke-proof sealing of duct joints in the case of corner mounting without duct spacing to the ceiling or wall.

Support



Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-AD 0407	180	67	156	—	1	35.700	7216515
BSKM-AD 0407 RW	180	67	156	Pure white	1	35.700	7216516

St Steel

FS Strip-galvanised **L** Painted

Support profile for suspended mounting of BSKM 0407, suitable as a suspension point to accept two M10 threaded rods and as the counter bearing to seal the joint, including nuts.

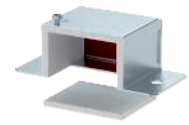
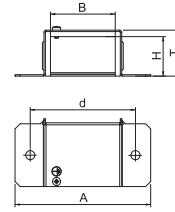
End piece

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VK 0407	70	40	—	1	30.500	7216560
BSKM-VK 0407 RW	70	40	Pure white	1	30.500	7216561

St Steel

FS Strip-galvanised **L** Painted

For smoke-tight end closure of the BSKM 0407 duct for direct wall and ceiling mounting, in connection with the support profile BSKM-AD 0407, even for suspended mounting. Including glued-in seals to close the joints and loose seal when combined with a support; screw for equipotential bonding also included.

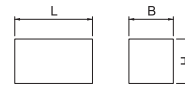


Foam seal for BSKM 0407 cable exit

Type	Dimension L mm	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-KA 0407	70	40	40	1	0.200	7216590

Foam

Flexible adjustable foam seal for the sealing of cable bundles or cables with a large outer diameter when conducting them out of the cable end or a BSKM 0407 T branch. To seal the surface ASX ablation coating is required.



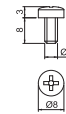
Connector screw

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-S4008	M4x8	100	0.160	3498092

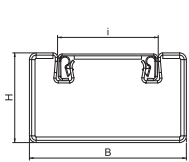
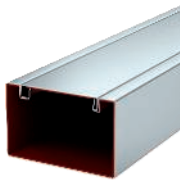
St Steel

G Electro-galvanised

Self-tapping screw for the fastening of BSKM fire protection ducts on supports and all lock plates with suspended mounting.



Metal fire protection duct, I30 to I120



Type	Dimension B mm	Dimension H mm	Dimension i mm	Length mm	Colour	Pack. m	Weight kg/100 m	Item No.
BSKM 0711	110	70	60	2000	—	2	387.000	7216300
BSKM 0711RW	110	70	60	2000	Pure white	2	387.000	7216600

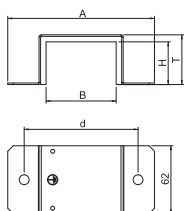
St Steel
FS Strip-galvanised **L** Painted

Sheet steel duct with intumescent inner coating.
 In case of fire, actively prevents the spread of fire in the duct and protects emergency and escape routes against the impacts of a cable fire. The cover and base are securely interconnected using the self-contacting patented locking brackets. This also creates the equipotential bonding.
 Fire resistance classes I30 to I120 according to DIN 4102 Part 11.

Mounting options: directly on the wall or under the ceiling, beneath system floors on the raw floor, or suspended on support systems or using connector elements (support spacing, max. 1 m).

Included in the delivery: Cover and base as a unit, complete.

Connector

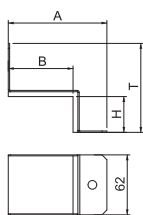


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VD 0711	110	70	—	1	37.800	7216310
BSKM-VD 0711RW	110	70	Pure white	1	37.800	7216601

St Steel
FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 0711, for connection and smoke-proof sealing of duct joints. Usable at min. 30 mm side distance of the duct to the ceiling or wall. Including loose seal for combination with support profile.

Connector for corner mounting

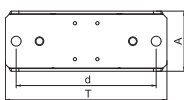


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VE 0711	110	70	—	5	25.500	7216312
BSKM-VE 0711RW	110	70	Pure white	5	25.500	7216602

St Steel
FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 0711, for smoke-proof sealing of duct joints in the case of corner mounting without duct spacing to the ceiling or wall.

Support



Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-AD 0711	220	67	196	—	1	43.500	7216315
BSKM-AD 0711RW	220	67	196	Pure white	1	43.500	7216603

St Steel
FS Strip-galvanised **L** Painted

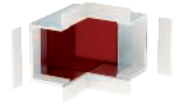
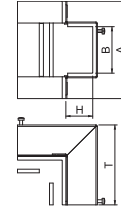
Support profile for suspended mounting of BSKM 0711, suitable as a suspension point to accept two M10 threaded rods and as the counter bearing to seal the joint, including nuts.

External corner

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-AE 0711	110	70	—	1	128.500	7216320
BSKM-AE 0711RW	110	70	Pure white	1	128.500	7216604

- Sl** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 0711 duct ends as external cover for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate.



Lock plate for external corner

Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GA 0711	220	95	196	—	1	99.600	7216325
BSKM-GA 0711RW	220	95	196	Pure white	1	99.600	7216605

- Sl** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the external corner hood BSKM-AE 0711, with acceptance option for M10 threaded rods, including nuts.

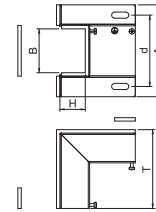


Internal corner

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-IE 0711	110	70	—	1	94.000	7216340
BSKM-IE 0711RW	110	70	Pure white	1	94.000	7216608

- Sl** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 0711 duct ends as internal cover for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

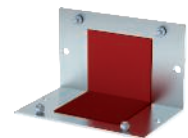
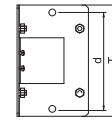


Lock plate for internal corner

Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GI 0711	220	135	196	—	1	145.800	7216345
BSKM-GI 0711RW	220	135	196	Pure white	1	145.800	7216609

- Sl** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the internal corner hood BSKM-IE 0711, with acceptance option for M10 threaded rods, including nuts.

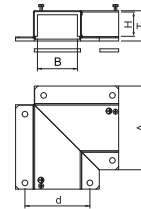


Flat angle

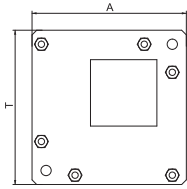
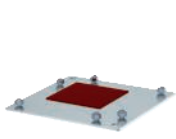
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-FW 0711	110	70	—	1	116.300	7216330
BSKM-FW 0711RW	110	70	Pure white	1	116.300	7216606

- Sl** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 0711 duct ends as flat angle for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.



Lock plate for flat angle

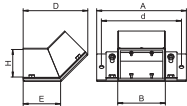
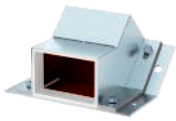


Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GF 0711	210	210	—	1	122.400	7216335
BSKM-GF 0711RW	210	210	Pure white	1	122.400	7216607

St Steel
FS Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the flat angle hood BSKM-FW 0711, with acceptance option for M10 threaded rods, including nuts.

45° vertical bend, rising

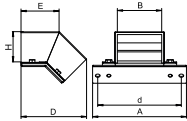


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-ES 0711	110	70	—	1	180.900	7216350
BSKM-ES 0711RW	110	70	Pure white	1	180.900	7216610

St Steel
FS Strip-galvanised **L** Painted

Rising vertical bend for creation of vertical jumps for suspended mounting of the BSKM 0711, with acceptance option for M10 threaded rods, including seals and nuts as well as screws for equipotential bonding.

45° vertical bend, falling

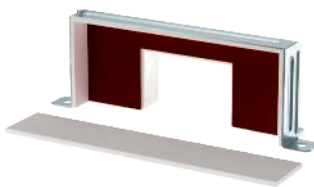


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-EF 0711	110	70	—	1	139.400	7216355
BSKM-EF 0711RW	110	70	Pure white	1	139.400	7216611

St Steel
FS Strip-galvanised **L** Painted

Falling vertical bend for creation of vertical jumps for suspended mounting of the BSKM 0711, with acceptance option for M10 threaded rods, including seals and nuts as well as screws for equipotential bonding.

Reducing piece

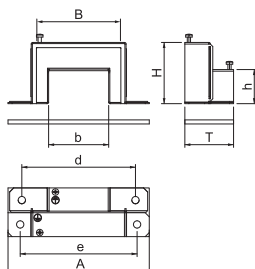


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-RE 1025	250	100	—	1	73.200	7216404
BSKM-RE 1025RW	250	100	Pure white	1	73.200	7216631

St Steel
FS Strip-galvanised **L** Painted

Fitting hood to cover a symmetrical reduction on a straight stretch of BSKM 1025 to BSKM 0711. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

Dimensions

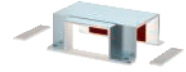
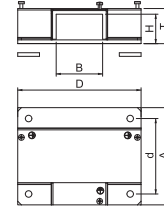


T branch hood

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-TA 0711	110	70	—	1	110.000	7216362
BSKM-TA 0711RW	110	70	Pure white	1	110.800	7216613

- St** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover three BSKM 0711 duct ends running towards each other in a T shape. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

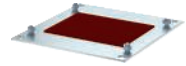
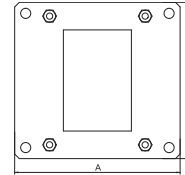


Lock plate, T branch piece

Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GT 0711	220	170	—	1	114.900	7216364
BSKM-GT 0711RW	220	170	Pure white	1	114.900	7216614

- St** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of a BSKM-TA 0711 T branch, with acceptance option for M10 threaded rods, including nuts.

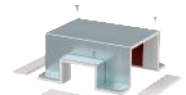
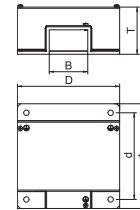


T reducing branch piece

Type	Dimension B mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-TR 0711	70	—	1	118.000	7216366
BSKM-TR 0711RW	70	Pure white	1	118.000	7216616

- St** Steel
- FS** Strip-galvanised **L** Painted

Hood for the covering of three duct ends running towards each other in a T shape. Straight stretch, twice BSKM 0711, branch reduced to BSKM 0407. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

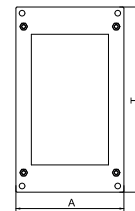


Lock plate, T reducing branch piece

Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GR 0711	220	170	—	1	94.000	7216368
BSKM-GR 0711RW	220	170	Pure white	1	94.000	7216617

- St** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of a BSKM-TR 0711 T reducing branch, with acceptance option for M10 threaded rods, including nuts.

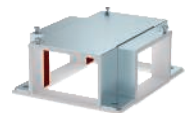
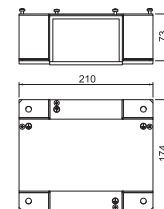


BSKM intersection, duct height 110

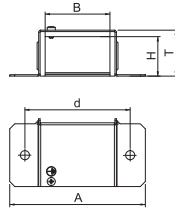
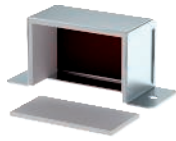
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-KR 0711RW	Pure white	1	116.000	7216615

- St** Steel
- L** Painted

Intersection as a cover of intersecting cable ends BSKM 0711. Wall and ceiling mounting is intended. Including seals for closing the joints.



End piece

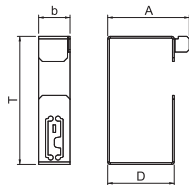


Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VK 0711	110	70	—	1	51.300	7216360
BSKM-VK 0711RW	110	70	Pure white	1	51.300	7216612

St Steel
FS Strip-galvanised **L** Painted

For smoke-tight end closure of the BSKM 0711 duct for direct wall and ceiling mounting, in connection with the support profile BSKM-AD 0711, even for suspended mounting. Including glued-in seals to close the joints and loose seal when combined with a support; screw for equipotential bonding also included.

Cable clamp for wall mounting

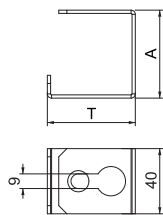


Type	Dimension A mm	Dimension T mm	Dimension D mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-BW 0711	65	102	53	25	10	7.400	7216370

St Steel
FS Strip-galvanised

Installation aid to prevent the cables from falling out for wall mounting of the BSKM 0711.

Cable clamp for ceiling mounting

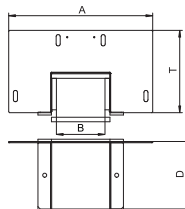


Type	Dimension A mm	Dimension T mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-BD 0711	54	54	10	9.200	7216372

St Steel
FS Strip-galvanised

Installation aid to prevent the cables from falling out for ceiling mounting of the BSKM 0711.

Wall connection I120



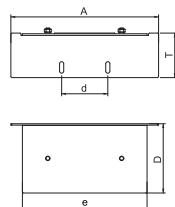
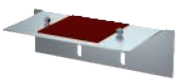
Type	Dimension B mm	Dimension T mm	Dimension A mm	Dimension D mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-WA 0711	110	183	320	150	—	1	252.000	7216380
BSKM-WA 0711RW	110	183	320	150	Pure white	1	252.000	7216620

St Steel
FS Strip-galvanised **L** Painted

Frame as additional insulation in the area of the wall transition for direct wall and ceiling mounting of the BSKM 0711. Including screen and glued-in seals to close the joints, loose seal when combined with a support and with screw for equipotential bonding.

Only needed for I120 requirements.

Lock plate for wall connection I120



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GW 0711	—	1	169.300	7216385
BSKM-GW 0711RW	Pure white	1	169.300	7216621

St Steel
FS Strip-galvanised **L** Painted

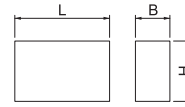
Adapter plate for suspended mounting of the wall connection BSKM-WA 0711, with acceptance option for M10 threaded rods, including nuts.

Foam seal for BSKM 0711 cable exit

Type	Dimension L	Dimension B	Dimension H	Pack. pcs	Weight		Item No.
	mm	mm	mm		kg/100 pcs.	pcs.	
BSKM-KA 0711	110	40	70	1	0.300		7216390

Foam

Flexible adjustable foam seal for the sealing of cable bundles or cables with a large outer diameter when conducting them out of the cable end or a BSKM 0711 T branch. To seal the surface ASX ablation coating is required.



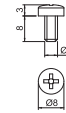
Connector screw

Type	Dimension	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
BSKM-S4008	M4x8	100	0.160		3498092

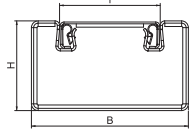
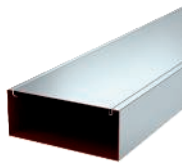
S Steel

G Electrogalvanised

Self-tapping screw for the fastening of BSKM fire protection ducts on supports and all lock plates with suspended mounting.



Metal fire protection duct, I30 to I120



Type	Dimension B mm	Dimension H mm	Dimension i mm	Length mm	Colour	Pack. m	Weight kg/100 m	Item No.
BSKM 1025	250	100	200	2000	—	2	710.600	7216400
BSKM 1025RW	250	100	200	2000	Pure white	2	638.750	7216630

St Steel

FS Strip-galvanised **L** Painted

Sheet steel duct with intumescent inner coating.

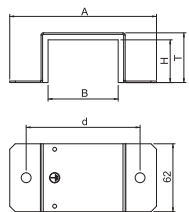
In case of fire, actively prevents the spread of fire in the duct and protects emergency and escape routes against the impacts of a cable fire. The cover and base are securely interconnected using the self-contacting patented locking brackets. This also creates the equipotential bonding.

Fire resistance classes I30 to I120 according to DIN 4102 Part 11.

Mounting options: directly on the wall or under the ceiling, beneath system floors on the raw floor, or suspended on support systems or using connector elements (support spacing, max. 1 m).

Included in the delivery: Cover and base as a unit, complete.

Connector



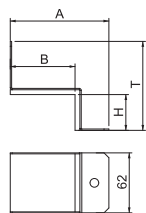
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VD 1025	250	100	—	1	67.200	7216410
BSKM-VD 1025RW	250	100	Pure white	1	67.200	7216633

St Steel

FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 1025, for connection and smoke-proof sealing of duct joints. Usable at min. 30 mm side distance of the duct to the ceiling or wall. Including loose seal for combination with support profile.

Connector for corner mounting



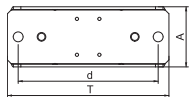
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-VE 1025	250	100	—	5	45.200	7216412
BSKM-VE 1025RW	250	100	Pure white	5	45.200	7216634

St Steel

FS Strip-galvanised **L** Painted

Clamp with integrated seal for BSKM 1025, for smoke-proof sealing of duct joints in the case of corner mounting without duct spacing to the ceiling or wall.

Support



Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-AD 1025	360	67	336	—	1	70.100	7216415
BSKM-AD 1025RW	360	67	336	Pure white	1	70.100	7216635

St Steel

FS Strip-galvanised **L** Painted

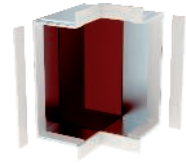
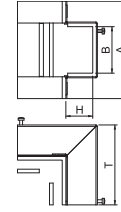
Support profile for suspended mounting of BSKM 1025, suitable as a suspension point to accept two M10 threaded rods and as the counter bearing to seal the joint, including nuts.

External corner

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-AE 1025	250	100	—	1	245.300	7216420
BSKM-AE 1025RW	250	100	Pure white	1	214.700	7216636

- St** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 1025 duct ends as external cover for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate.

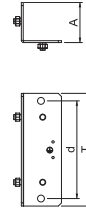


Lock plate for external corner

Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GA 1025	360	95	336	—	1	160.800	7216425
BSKM-GA 1025RW	360	95	336	Pure white	1	160.800	7216637

- St** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the external corner hood BSKM-AE 1025, with acceptance option for M10 threaded rods, including nuts.

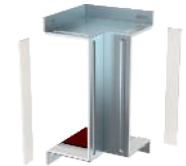
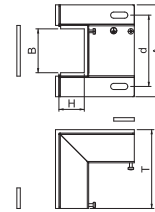


Internal corner

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-IE 1025	250	100	—	1	157.600	7216440
BSKM-IE 1025RW	250	100	Pure white	1	157.600	7216640

- St** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 1025 duct ends as internal cover for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

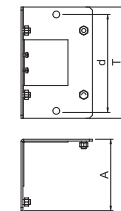


Lock plate for internal corner

Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GI 1025	360	165	336	—	1	275.800	7216445
BSKM-GI 1025RW	360	165	336	Pure white	1	275.800	7216641

- St** Steel
- FS** Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the internal corner hood BSKM-IE 1025, with acceptance option for M10 threaded rods, including nuts.

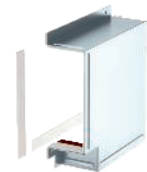
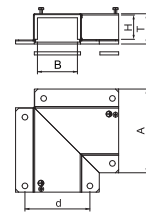


Flat angle

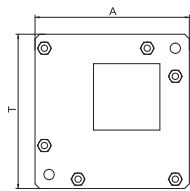
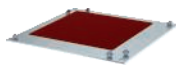
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-FW 1025	250	100	—	1	289.800	7216430
BSKM-FW 1025RW	250	100	Pure white	1	289.800	7216638

- St** Steel
- FS** Strip-galvanised **L** Painted

Fitting hood to cover two BSKM 1025 duct ends as flat angle for direct wall and ceiling mountings. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.



Lock plate for flat angle



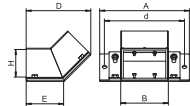
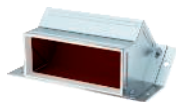
Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GF 1025	350	350	—	1	307.700	7216435
BSKM-GF 1025RW	350	350	Pure white	1	307.700	7216639

St Steel

FS Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the flat angle hood BSKM-FW 1025, with acceptance option for M10 threaded rods, including nuts.

45° vertical bend, rising



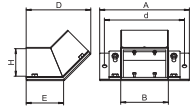
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-ES 1025	250	100	—	1	282.900	7216450
BSKM-ES 1025RW	250	100	Pure white	1	282.900	7216642

St Steel

FS Strip-galvanised **L** Painted

Rising vertical bend for creation of vertical jumps for suspended mounting of the BSKM 1025, with acceptance option for M10 threaded rods, including seals and nuts as well as screws for equipotential bonding.

45° vertical bend, falling



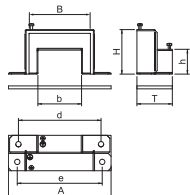
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-EF 1025	250	100	—	1	242.400	7216455
BSKM-EF 1025RW	250	100	Pure white	1	242.400	7216643

St Steel

FS Strip-galvanised **L** Painted

Falling vertical bend for creation of vertical jumps for suspended mounting of the BSKM 1025, with acceptance option for M10 threaded rods, including seals and nuts as well as screws for equipotential bonding.

Reducing piece



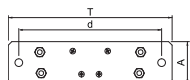
Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-RE 1025	250	100	—	1	73.200	7216404
BSKM-RE 1025RW	250	100	Pure white	1	73.200	7216631

St Steel

FS Strip-galvanised **L** Painted

Fitting hood to cover a symmetrical reduction on a straight stretch of BSKM 1025 to BSKM 0711. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.

Lock plate reducing piece



Type	Dimension T mm	Dimension A mm	Dimension d mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-RG 1025	360	67	336	—	1	73.200	7216406
BSKM-RG 1025RW	360	67	336	Pure white	1	73.200	7216632

St Steel

FS Strip-galvanised **L** Painted

Adapter plate for suspended mounting of a symmetrical BSKM-RE 1025 reducing piece, with acceptance option for M10 threaded rods, including nuts.

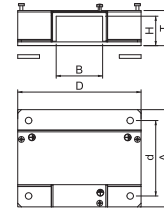
T branch hood

Type	Dimension B mm	Dimension H mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-TA 1025	250	100	—	1	263.100	7216462
BSKM-TA 1025RW	250	100	Pure white	1	263.100	7216645

Sl Steel

FS Strip-galvanised L Painted

Hood for covering of three BSKM 1025 duct ends running towards each other in a T shape. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.



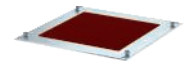
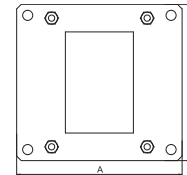
Lock plate, T branch piece

Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GT 1025	360	350	—	1	313.000	7216464
BSKM-GT 1025RW	360	350	Pure white	1	313.000	7216646

Sl Steel

FS Strip-galvanised L Painted

Adapter plate for suspended mounting of a BSKM-TA 1025 T branch, with acceptance option for M10 threaded rods, including nuts.



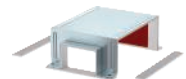
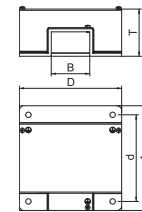
T reducing branch piece

Type	Dimension B mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-TR 1025	110	—	1	153.200	7216466
BSKM-TR 1025RW	110	Pure white	1	153.200	7216647

Sl Steel

FS Strip-galvanised L Painted

Hood for the covering of three duct ends running towards each other in a T shape. Straight stretch, twice BSKM 1025, branch reduced to BSKM 0711. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.



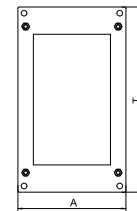
Lock plate, T reducing branch piece

Type	Dimension T mm	Dimension A mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GR 1025	360	210	—	1	189.000	7216468
BSKM-GR 1025RW	360	210	Pure white	1	189.000	7216649

Sl Steel

FS Strip-galvanised L Painted

Adapter plate for suspended mounting of a BSKM-TR 1025 T reducing branch, with acceptance option for M10 threaded rods, including nuts.



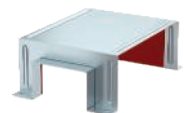
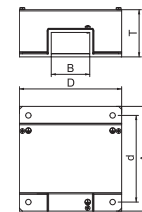
T reducing branch piece

Type	Dimension B mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-TRK 1025	70	—	1	198.000	7216467
BSKM-TRK 1025RW	70	Pure white	1	196.000	7216648

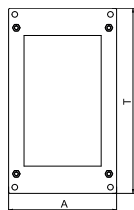
Sl Steel

FS Strip-galvanised L Painted

Hood for the covering of three duct ends running towards each other in a T shape. Straight stretch, twice BSKM 1025, branch reduced to BSKM 0407. Including glued-in seals for closing the joints and loose seals when combining with lock plate; screws for equipotential bonding also included.



Lock plate, T reducing branch piece

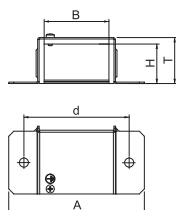
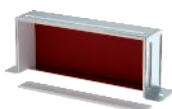


Type	Dimension	Dimension	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
	T mm	A mm				
BSKM-GRK 1025	360	170	—	1	153.000	7216469
BSKM-GRK 1025RW	360	170	Pure white	1	153.000	7216650

St Steel
FS Strip-galvanised **L** Painted

Adapter plate for suspended mounting of a BSKM-TRK 1025 T reducing branch, with acceptance option for M10 threaded rods, including nuts.

End piece

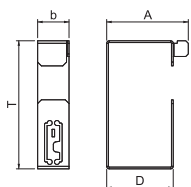


Type	Dimension	Dimension	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
	B mm	H mm				
BSKM-VK 1025	250	100	—	1	106.400	7216460
BSKM-VK 1025RW	250	100	Pure white	1	106.400	7216644

St Steel
FS Strip-galvanised **L** Painted

For smoke-tight end closure of the BSKM 1025 duct for direct wall and ceiling mounting, in connection with the support profile BSKM-AD 1025, even for suspended mounting. Including glued-in seals to close the joints and loose seal when combined with a support; screw for equipotential bonding also included.

Cable clamp for wall mounting

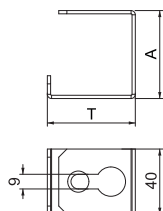


Type	Dimension	Dimension	Dimension	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
	A mm	T mm	Dimension D mm	Dimension b mm			
BSKM-BW 1025	95	243	83	30	10	28.000	7216470

St Steel
FS Strip-galvanised

Installation aid to prevent the cables from falling out for wall mounting of the BSKM 1025.

Cable clamp for ceiling mounting

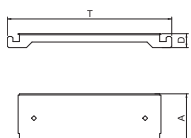


Type	Dimension	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
	A mm	T mm			
BSKM-BD 1025	84	124	10	19.200	7216472

St Steel
FS Strip-galvanised

Installation aid to prevent the cables from falling out for ceiling mounting of the BSKM 1025.

Lid support



Type	Dimension	Dimension	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
	A mm	T mm	Dimension D mm			
BSKM-DS 1025	70	237	20	10	16.400	7216474

St Steel
FS Strip-galvanised

Stiffener with intumescent coating (one-sided) for lid support in the joint area of the BSKM 1025. Arrangement: 2 pieces on each side of the pre-marked breaking point in the wall penetration, in the case of duct connections, 1 piece centrally over the joint.

Wall connection I120

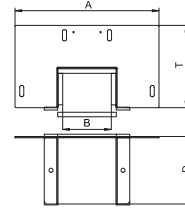
Type	Dimension B mm	Dimension T mm	Dimension A mm	Dimension D mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-WA 1025	250	213	460	150	—	1	408.500	7216480
BSKM-WA 1025RW	250	213	460	150	Pure white	1	408.500	7216654

St Steel

FS Strip-galvanised **L** Painted

Frame as additional insulation in the area of the wall transition for direct wall and ceiling mounting of the BSKM 1025. Including screen and glued-in seals to close the joints and loose seal when combined with a support; with screw for equipotential bonding.

Only needed for I120 requirements.



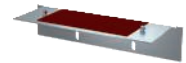
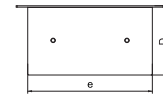
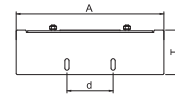
Lock plate for wall connection I120

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-GW 1025	—	1	259.500	7216485
BSKM-GW 1025RW	Pure white	1	259.500	7216655

St Steel

FS Strip-galvanised **L** Painted

Adapter plate for suspended mounting of the wall connection BSKM-WA 1025, with acceptance option for M10 threaded rods, including nuts.

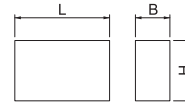


Foam seal for BSKM 1025 cable exit

Type	Dimension L mm	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-KA 1025	250	40	110	1	1.000	7216490

Foam

Flexible adjustable foam seal for the sealing of cable bundles or cables with a large outer diameter when conducting them out of the cable end or a BSKM 1025 T branch. To seal the surface ASX ablation coating is required.



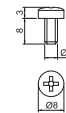
Connector screw

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-S4008	M4x8	100	0.160	3498092

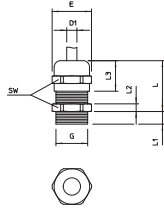
St Steel

G Electrogalvanised

Self-tapping screw for the fastening of BSKM fire protection ducts on supports and all lock plates with suspended mounting.



Cable gland, metric thread



Type	Thread	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
V-TEC VM12 MS	M12 x 1,5	50	1.200	2086018
V-TEC VM16 MS	M16 x 1,5	50	1.640	2086024
V-TEC VM20 MS	M20 x 1,5	25	3.140	2086030
V-TEC VM25 MS	M25 x 1,5	25	4.260	2086036
V-TEC VM32 MS	M32 x 1,5	20	7.160	2086042
V-TEC VM40 MS	M40 x 1,5	5	12.240	2086048
V-TEC VM50 MS	M50 x 1,5	5	22.700	2086054

CuZn Brass

N Nickel-plated

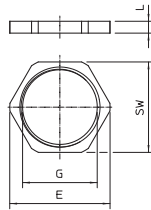
With metric connecting thread to IEC 423, robust cap-nut cable gland with large sealing area. Strain relief, wringing protection and tightness over the whole clamping area. Neoprene sealing ring. Polyamide terminal insert. With pre-mounted O sealing ring on connection thread, VDE-tested to DIN EN 50262, protection rating IP68 at 5 bar for 1 hr, max. permitted ambient temperature -20 - 100°C.

* Prices according to DEL notation.

Dimensions

G	D1 mm	SW mm	E mm	L max. mm	L1 mm	L2 mm	L3 mm
M12 x 1.5	3-6	14	15.5	20	5	11.5	3
M16 x 1.5	5-9	17	19	24	5	15	3
M20 x 1.5	9-13	22	24	27	6	16.5	3.5
M25 x 1.5	11-16	27	30	29.5	7		
M32 x 1.5	14-21	34	36	30	8	18.5	4.5
M40 x 1.5	19-27	43	46	33	8	21	4.5
M50 x 1.5	24-35	55	60	38.5	9	25	4.5

Locknut, metric thread



Type	Thread	SW mm	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
			E mm	L mm			
169 MS M12	M12 x 1,5	15	16.6	3	100	0.220	2091607
169 MS M16	M16 x 1,5	20	22.1	2.8	100	0.310	2091615
169 MS M20	M20 x 1,5	24	25.6	3	100	0.580	2091623
169 MS M25	M25 x 1,5	30	33.2	3.5	100	0.880	2091631
169 MS M32	M32 x 1,5	35	38.7	4	100	1.120	2091658
169 MS M40	M40 x 1,5	45	49.8	4.5	50	1.920	2091666
169 MS M50	M50 x 1,5	55	60.4	5.5	50	3.070	2091674

CuZn Brass

N Nickel-plated

Locknuts DIN 46319 with metric thread IEC 423.

* Prices according to DEL notation.

Cable gland, metric thread, silver grey

Type	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
V-TEC VM12 SGR	M12 x 1,5	50	0.318	2022843
V-TEC VM16 SGR	M16 x 1,5	50	0.638	2022845
V-TEC VM20 SGR	M20 x 1,5	50	0.856	2022847
V-TEC VM25 SGR	M25 x 1,5	25	1.360	2022849
V-TEC VM32 SGR	M32 x 1,5	20	2.230	2022851
V-TEC VM40 SGR	M40 x 1,5	10	3.467	2022853
V-TEC VM50 SGR	M50 x 1,5	5	5.466	2022855

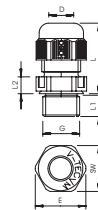
PA Polyamide

The quickest and most convenient way of providing strain relief and tightness with cable glands on junction boxes and housings is with the tried-and-trusted V-TEC VM cable glands from OBO. With the integrated sealing lip and the special OBO slat technology, protection class IP68 is achieved. Strain relief and tightness have been tested to DIN EN 62444.

The connecting threads of the cable glands are metric or PG and are therefore suitable for universal use. Once screwed in place, the installation is there forever, as the optimum thread adjustment with the right pitch ensures permanent resistance to shaking.

Applications: From private housing with junction boxes up to industrial applications in the distributor cabinet.

Temperature range: -20 °C to +65 °C.



G	D	WAF	E	L min. mm	L max. mm	L1 mm	L2 mm
M12 x 1.5	3.5-7	15	16.5	18.5	23.5	8	5
M16 x 1.5	4.5-10	20	22	21.5	29	8	5
M20 x 1.5	6-13	24	27	23.5	30.5	10	6
M25 x 1.5	9-17	29	32	26	35	10	6
M32 x 1.5	15-21	36	41	29	40	11	6
M40 x 1.5	16-28	44	50	36	46	11	7
M50 x 1.5	23-35	54	60	43	52	12	8

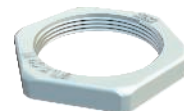
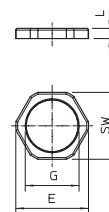
Dimensions

Cable outlet, plastic locknut

Type	Thread	Colour	SW mm	Dimension E mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
116 M12 SGR PA	M12x1,5	Silver grey	17	19	5	100	0.078	2048752
116 M16 SGR PA	M16x1,5	Silver grey	22	25	5	100	0.160	2048760
116 M20 SGR PA	M20x1,5	Silver grey	26	29	6	100	0.177	2048779
116 M25 SGR PA	M25x1,5	Silver grey	32	36	6.5	100	0.266	2048787
116 M32 SGR PA	M32x1,5	Silver grey	41	46	7	50	0.610	2048795
116 M40 SGR PA	M40x1,5	Silver grey	50	56	7	25	0.466	2048809
116 M50 SGR PA	M50x1,5	Silver grey	60	68	8	25	1.756	2048817

PA Polyamide

Locknut DIN 46319, with metric thread IEC 423.

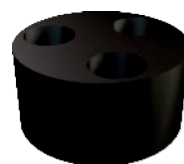
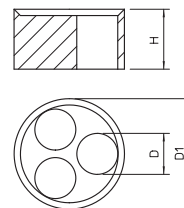


Multiple sealing insert, metric

Type	Size mm	Dimension D mm	Dimension H mm	Dimension D1 mm	Number of drill holes	Pack. pcs	Weight kg/100 pcs.	Item No.
107 C VM 20 2x4	M20	4	8.1	15.1	2	50	0.130	2029672
107 C VM 20 4x5	M20	5	8.1	15.1	4	50	0.080	2029675
107 C VM 20 2x6	M20	6	8.1	15.1	2	50	0.100	2029677
107 C VM 25 5x4	M25	4	10	19.8	5	50	0.180	2029679
107 C VM 25 3x6	M25	6	10	19.8	3	50	0.210	2029682
107 C VM 25 2x6	M25	6	10	19.8	2	50	0.260	2029685
107 C VM 25 3x7	M25	7	10	19.8	3	50	0.180	2029688
107 C VM 25 2x8	M25	8	10	19.8	2	50	0.200	2029690
107 C VM 32 2x8	M32	8	13.4	25.1	2	25	0.530	2029693
107 C VM 32 4x8	M32	8	13.4	25.1	4	25	0.400	2029696

NBR-SBR Rubber mixture

Use to insert multiple thin cables in the V-TEC VM cable glands, is replaced with the simple sealing ring of the cable gland.



Ablation coating in a cartridge



Type	Contents	Pack. pcs	Weight		Item No.
	ml		kg/100 pcs.	pcs.	
ASX-K	310	1	50.000		7202310

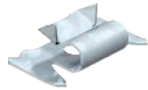
Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Locking bracket

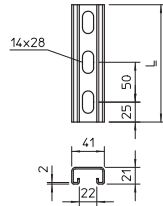


Type	Material	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
RKV3V	Steel	20	0.085		6288700

Steel

Locking bracket for the mechanical and electrical connection of trunking covers and trunking bases. Suitable for covers of Rapid 45, Rapid 80 and ISS systems.

MS4121 mounting rail, slot width 22 mm, perforated



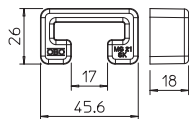
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimension L mm	Pack. pcs	Weight		Item No.
						kg/100 pcs.	pcs.	
MS4121P0200FT	200	41x21	2	200	1	35.100		1122933
MS4121P0400FT	400	41x21	2	400	1	70.000		1122935

Steel

Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

Protective cap MS4121

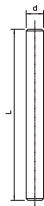


Type	Colour	Pack. pcs	Weight		Item No.
			kg/100 pcs.	pcs.	
MS4121 SK	Pastel orange	25	0.650		1122902

Polyethylene

Protective caps for profile rail, type MS4121.

Threaded rod



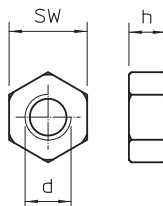
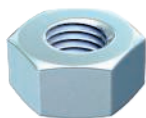
Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight		Item No.
					kg/100 pcs.	pcs.	
TR M10 1M G	M10	10	1000	10	49.000		3141209

Steel

Electrogalvanised

Threaded rod to DIN 976.

Hexagonal nut DIN 934



Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight		Item No.
						kg/100 pcs.	pcs.	
HN M10 G	M10	17	8.4	10	100	1.084		3400107

Steel

Electrogalvanised

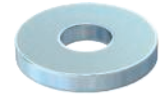
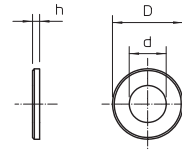
Hexagonal nut to DIN 934 with metric thread.

Washer ISO 7093

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M10 D28 G	M10	11	28	2.5	100	1.020	3402223

- St** Steel
- G** Electrogalvanised

Washer of large outer diameter for universal use.

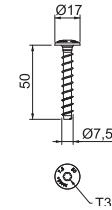


Fire protection screw tie

Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

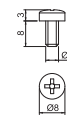


Connector screw

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKM-S4008	M4x8	100	0.160	3498092

- St** Steel
- G** Electrogalvanised

Self-tapping screw for the fastening of BSKM fire protection ducts on supports and all lock plates with suspended mounting.

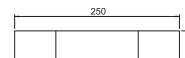


Identification plate

Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-K DE	German	10	0.600	7214734

- PVC** Polyvinylchloride

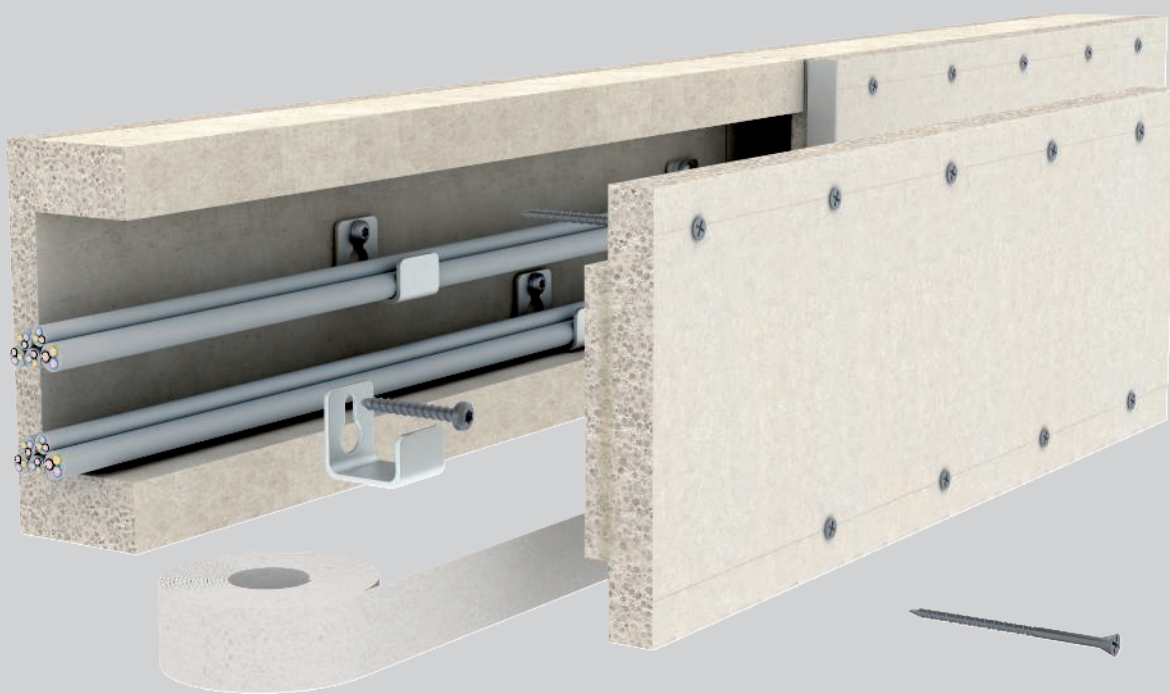
Self-adhesive identification plate for approved cable duct labelling as an installation duct as required by DIN 4102 Part 11.



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 res-

cue 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

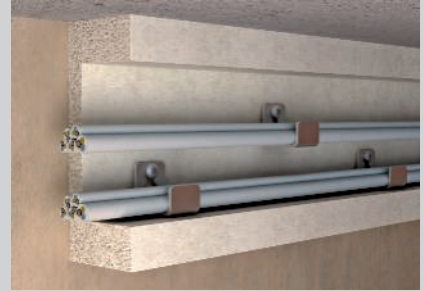
Installation principle



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



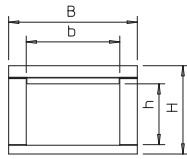
Installation duct made of fibreglass reinforced lightweight concrete

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.



Fire protection duct I90/E30, internal height 50 mm

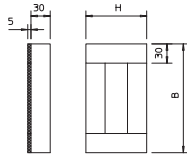


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSK 090506	50	60	95	120	1000	1	730.000	7215150
BSK 090511	50	110	95	170	1000	1	940.000	7215154
BSK 090521	50	210	95	270	1000	1	1,350.000	7215158

Glass-fibre lightweight concrete

Fire protection duct I90/E30, to DIN 4102 part 11 and part 12, including 12 x countersunk head screws and 3 x 1 m sealing strip.

End piece I90/E30 for internal height 50 mm

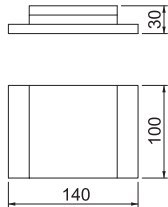


Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-E090506	120	95	1	38.000	7215250
BSK-E090511	170	95	1	51.000	7215252
BSK-E090521	270	95	1	78.000	7215254

Glass-fibre lightweight concrete

End piece for fire protection duct BSK I90/E30, including bolts and sealing strip.

Wall connection collar I90 for internal height 50 mm

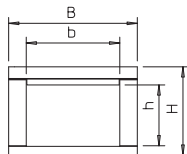


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-K0506	1	40.000	7215533
BSK-K0511	1	45.000	7215537
BSK-K0521	1	55.000	7215541

Glass-fibre lightweight concrete

Wall connection collar for BSK, consisting of three single plates, to double the insulation for wall penetrations. Including fastening material. Only for I90 classification.

Fire protection duct I90/E30, internal height 50 mm

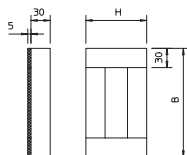


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSK 091016	105	160	150	220	1000	1	1,430.000	7215162
BSK 091026	105	260	150	320	1000	1	1,830.000	7215166

Glass-fibre lightweight concrete

Fire protection duct I90/E30, to DIN 4102 part 11 and part 12, including 12 x countersunk head screws and 3 x 1 m sealing strip.

End piece I90/E30 for internal height 105 mm



Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-E091016	220	150	1	93.000	7215256
BSK-E091026	320	150	1	131.000	7215258

Glass-fibre lightweight concrete

End piece for fire protection duct BSK I90/E30, including bolts and sealing strip.

Wall connection collar I90 for internal height 105 mm



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-K1016	1	65.000	7215545
BSK-K1026	1	75.000	7215549

Glass-fibre lightweight concrete

Wall connection collar for BSK, consisting of three single plates, to double the insulation for wall penetrations. Including fastening material. Only for I90 classification.

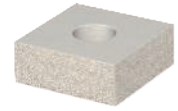
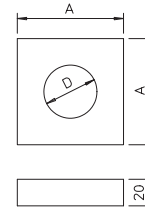
Type	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
	A mm	Dimension D mm			
BSK-A0908	80	40	1	10.000	7215452
BSK-A0910	100	60	1	14.000	7215458

Glass-fibre lightweight concrete

Doubler for cable routing for BSK I90 and for BSKH I90.

BSK-A0908 for duct heights to 95 mm, BSK-A0910 for duct heights from 110 mm. Including fastening screws.

Doubler I90



Sealing strip I90/E30

Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.

Foam

Self-adhesive sealing strip for BSK I90/E30 and BSKH I90/E30



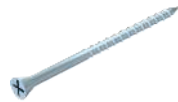
Lid screws

Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.

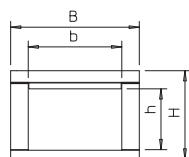
St Steel

G Electrogalvanised

Countersunk head screw for fire protection duct I90/E30, for lid and doubler fastening.



Fire protection duct I120/E90, internal height 50 mm

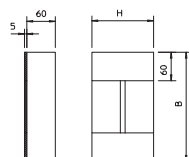


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSK 120506	50	60	130	180	1000	1	1,490.000	7215210
BSK 120511	50	110	130	230	1000	1	1,800.000	7215216
BSK 120521	50	210	130	330	1000	1	2,420.000	7215222

Glass-fibre lightweight concrete

Fire protection duct I120/E90, to DIN 4102 part 11 and part 12, including 12 x countersunk head screws and 3 x 1 m sealing strip.

End piece I120/E90 for internal height 50 mm

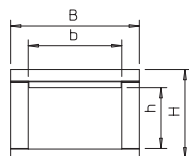


Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-E120506	180	130	1	124.000	7215270
BSK-E120511	230	130	1	156.000	7215272
BSK-E120521	330	130	1	221.000	7215274

Glass-fibre lightweight concrete

End piece for fire protection duct BSK I120/E90, including bolts and sealing strip.

Fire protection duct I120/E90, internal height 105 mm

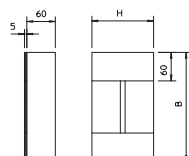


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSK 121016	105	160	185	280	1000	1	2,570.000	7215228
BSK 121026	105	260	185	380	1000	1	3,190.000	7215234

Glass-fibre lightweight concrete

Fire protection duct I120/E90, to DIN 4102 part 11 and part 12, including 12 x countersunk head screws and 3 x 1 m sealing strip.

End piece I 120/E 90 for internal height 105 mm



Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-E121016	280	185	1	256.000	7215276
BSK-E121026	380	185	1	342.000	7215278

Glass-fibre lightweight concrete

End piece for fire protection duct BSK I120/E90, including bolts and sealing strip.

Sealing strip I120/E90



Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-D1260	5 x 60	1	74.200	7215432

Foam

Self-adhesive sealing strip for BSK I120/E90.

Counter-sunk head screw I120/E90



Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-S1280	4,5 x 80	50	0.500	7215412

S Steel

G Electrogalvanised

Countersunk head screw for BSK I120/E90, for cover fastening.

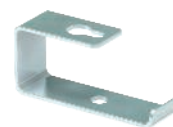
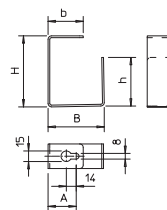
Separating clamp for ceiling mounting

Type	Dimension H mm	Dimension h mm	Dimension B mm	Dimension b mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-B0511	46	18	55	37.5	36.5	25	7.500	7215356
BSK-B0521	46	18	105	62.5	52.5	25	14.500	7215362
BSK-B1016	101	69	80	50	40	25	19.000	7215368
BSK-B1026	101	69	130	75	65	25	29.000	7215374

St Steel

FS Strip-galvanised

Separating clamp for BSK fire protection duct, as installation aid for ceiling mounting. Fastening by clamping under the fire protection bolt tie.



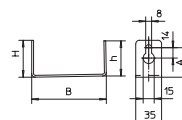
Separating bracket for wall mounting

Type	Dimension H mm	Dimension h mm	Dimension B mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-W0511	37.5	22.5	46	37.5	25	5.000	7215312
BSK-W0521	62.5	52.5	46	52.5	25	9.000	7215318
BSK-W1016	50	40	101	40	25	12.500	7215324
BSK-W1026	75	97.5	101	65	25	17.500	7215330

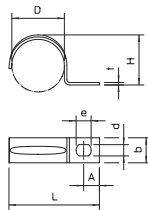
St Steel

FS Strip-galvanised

Separating bracket for BSK fire protection duct, as installation aid for wall mounting. Fastening by clamping under the fire protection bolt tie.



Fastening clip 604, light-duty



Type	For Ø mm	Hole size mm	Material thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
604 3 G	3	4,5 x 6	0.7	100	0.052	1003038
604 4 G	4	4,5 x 6	0.7	100	0.067	1003046
604 5 G	5	4,5 x 6	0.7	100	0.084	1003054
604 6 G	6	4,5 x 6	0.7	100	0.099	1003062
604 7 G	7	4,5 x 6	0.7	100	0.120	1003070
604 8 G	8	4,5 x 6	0.7	100	0.123	1003089
604 9 G	9	4,5 x 6	0.7	100	0.139	1003097
604 10 G	10	4,5 x 6	0.7	100	0.150	1003100
604 11 G	11	4,5 x 6	1	100	0.270	1003119
604 12 G	12	4,5 x 6	0.7	100	0.240	1003127
604 13 G	13	4,5 x 6	1	100	0.280	1003135
604 16 G	16	4,5 x 6	1	100	0.348	1003178
604 19 G	19	4,5 x 6	1	100	0.411	1003194
604 20 G	20	4,5 x 6	1	100	0.431	1003208
604 21 G	21	4,5 x 6	1	100	0.447	1003216
604 23 G	23	4,5 x 6	1	100	0.490	1003232
604 25 G	25	4,5 x 6	1	100	0.900	1003259
604 28 G	28	4,5 x 6	1	100	0.874	1003283
604 32 G	32	4,5 x 6	1	100	1.462	1003321
604 35 G	35	5,5 x 7	1.5	100	1.355	1003356
604 37 G	37	5,5 x 7	1.5	100	1.567	1003372
604 40 G	40	5,5 x 7	1.5	100	1.860	1003402
604 47 G	47	5,5 x 7	1.5	50	2.484	1003461

St Steel

G Electrogalvanised

Single-lobe fastening clip for cables and pipes.

* Sizes 3 and 4 are not suitable for nail device

* Sizes 3 to 21 are not suitable for bolt-firing tool

Dimensions

D mm	L mm	H mm	b mm	t mm	d mm	e mm	A mm
3	12	2.4	7	0.7	4.5	6	4
4	14	3.3	7	0.7	4.5	6	4
5	16.5	4.5	7	0.7	4.5	6	5
6	17.5	5.2	8	0.7	4.5	6	5
7	19.5	6.5	8	0.7	4.5	6	5
8	21	7	8	0.7	4.5	6	5.5
9	21.5	8	8	0.7	4.5	6	5.75
10	22	9	8	0.7	4.5	6	5
11	24	10	10	1	4.5	6	5.5
12	27	11	10	0.7	4.5	6	6.5
13	27	11.5	10	1	4.5	6	6
16	31	14.5	10	1	4.5	6	6.5
19	33	17	10	1	4.5	6	6.5
20	35	18	10	1	4.5	6	6.3
21	36	19	10	1	4.5	6	6.3
23	39	21.5	10	1	4.5	6	7
25	41.3	23	15	1	4.5	6	7
28	45	24.8	15	1	4.5	6	7
32	48.8	30	15	1.5	5.5	7	8
35	54	30	14	1.5	5.5	7	8.75
37	56	34	14	1.5	5.5	7	7.5
40	63	38	14	1.5	5.5	7	10.5
47	69	43.8	14	1.5	5.5	7	10

Bolt for cable fastening



Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-S5016	5x16	100	0.240	3498096
BSKP-S5020	5x20	100	0.260	3498098

St Steel

GTP Electrogalvanised, transparently passivated

Bolt with special milled ribs for universal fastening of cable clips, connector elements and separating retainers in fibre glass light-weight concrete of the BSK fire protection ducts.

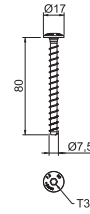
Bolt tie

Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X80	7,5 x 80	80	6	13.2	Torx	50	1.600	3498272

St Steel

G Electrogalvanised

Fire protection bolt tie with pan head for direct mounting without anchors. Drive T40, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.



Mortar

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-M	1	350.000	7215500

Special mortar

Fire protection duct mortar, dried ready-to-use mortar in a bucket for filling joints and small cracks when mounting the fire protection ducts BSK and BSKH.

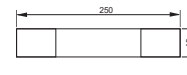


Identification plate for function maintenance

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E SE	10	0.600	7205424
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.

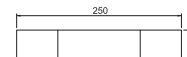


Identification plate

Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-K DE	German	10	0.600	7214734

PVC Polyvinylchloride

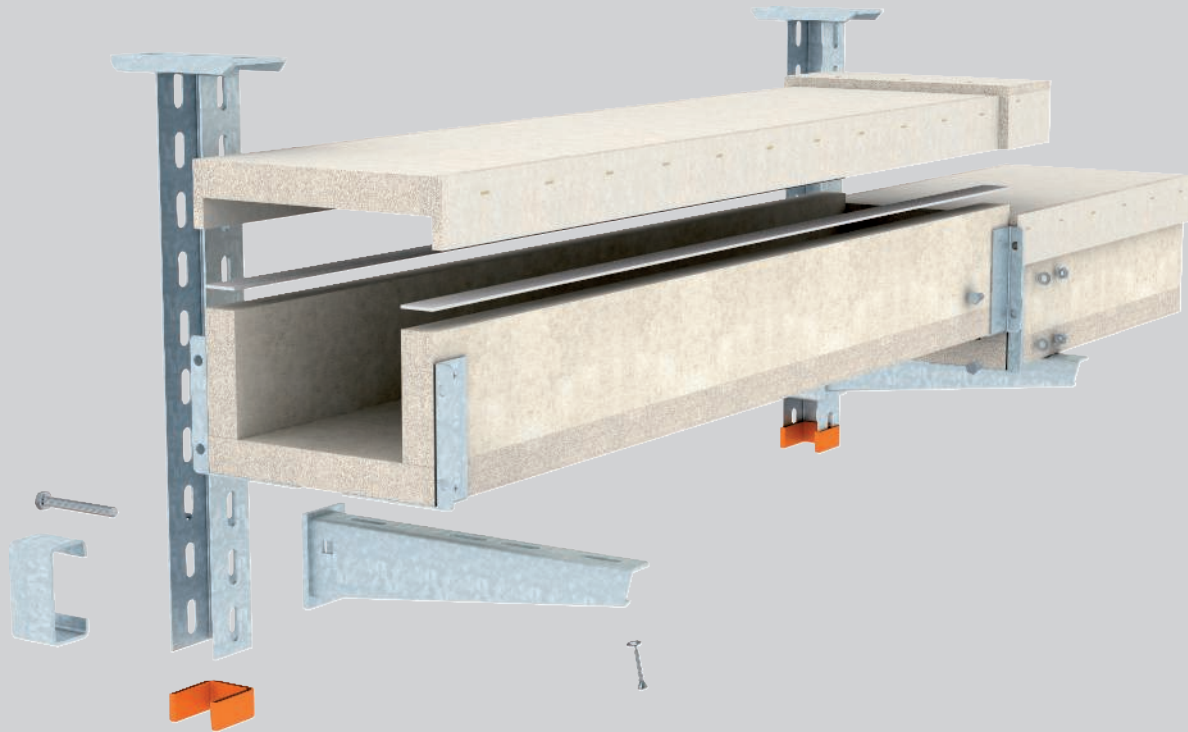
Self-adhesive identification plate for approved cable duct labelling as an installation duct as required by DIN 4102 Part 11.



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



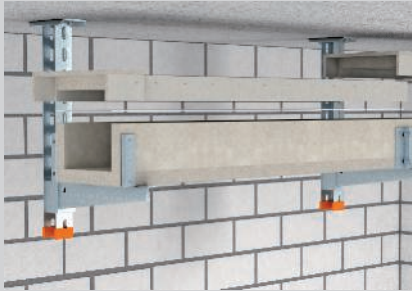
Suspended ceiling mounting as I duct.



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



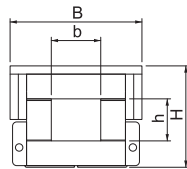
Installation duct made of fibreglass reinforced lightweight concrete

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.



Fire protection duct, internal height 50 mm



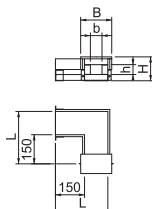
Type	Dimension B mm	Dimension H mm	Dimension b mm	Dimension h mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSKH 090506	160	120	60	50	1000	1	970.000	7215174
BSKH 090511	210	120	110	50	1000	1	1,200.000	7215178
BSKH 090521	310	120	210	50	1000	1	1,720.000	7215182

Glass-fibre lightweight concrete

The fibre glass light-duty concrete ducts, which can be flamed on four sides, can be mounted on OBO mounting systems, thus offering the greatest possible flexibility in cable routing in emergency and escape routes (installation duct to DIN 4102 Part 11) or in the maintenance of electrical function (to DIN 4102 Part 12). This allows elegant avoidance of objects from other areas such as heating, ventilation and sanitary applications.

Mounting under the ceiling is simple, using U-shaped suspended supports and a bracket, or on a U transverse profile suspended with threaded rods. The OBO BSKH is simply attached loosely. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment.

90° bend I90/E30, internal height 50 mm

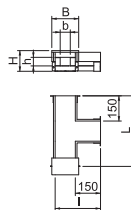


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-FB090506	50	60	120	160	280	1	460.000	7215603
BSKH-FB090511	50	110	120	210	330	1	630.000	7215607
BSKH-FB090521	50	210	120	310	430	1	1,040.000	7215611

Glass-fibre lightweight concrete

90° bend for BSKH I90/E30, to DIN 4102 Part 11 and Part 12, for installation on OBO mounting systems. Fittings must be supported by additional brackets. Including mounted connector on both duct ends, 3x 1 m self-adhesive sealing strips and connecting bolts.

T piece I90/E30, internal height 50 mm

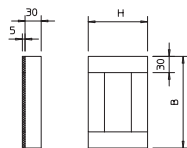


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Dimension l mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-FT090506	50	60	120	160	420	280	1	610.000	7215632
BSKH-FT090511	50	110	120	210	470	330	1	780.000	7215636
BSKH-FT090521	50	210	120	310	570	430	1	1,250.000	7215640

Glass-fibre lightweight concrete

T piece for BSKH I90/E30, to DIN 4102 Part 11 and Part 12, for installation on OBO mounting systems. Fittings must be supported by additional brackets. Including mounted connector on all duct ends, 3x 1 m self-adhesive sealing strips and connecting bolts.

End piece I90/E30 for internal height 50 mm



Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-E090506	120	110	1	42.000	7215590
BSKH-E090511	170	110	1	57.000	7215592
BSKH-E090521	270	110	1	87.000	7215594

Glass-fibre lightweight concrete

End piece for fire protection duct BSKH I90/E30
Including bolts and sealing strip.

Wall connection collar I90 for internal height 50 mm



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-K0506	1	40.000	7215571
BSKH-K0511	1	50.000	7215575
BSKH-K0521	1	68.000	7215579

Glass-fibre lightweight concrete

Wall connection collar for BSKH, consisting of four single plates, to double the insulation for wall penetrations. Incl. fastening material Only for I90 classification.

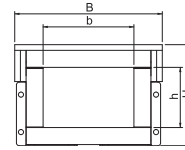
Fire protection duct I90/E30, internal height 105 mm

Type	Dimen- sion B mm	Dimen- sion H mm	Dimen- sion b mm	Dimen- sion h mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSKH 091016	260	175	160	105	1000	1	1,720.000	7215186
BSKH 091026	360	175	260	105	1000	1	2,240.000	7215190

Glass-fibre lightweight concrete

The fibre glass light-duty concrete ducts, which can be flamed on four sides, can be mounted on OBO mounting systems, thus offering the greatest possible flexibility in cable routing in emergency and escape routes (installation duct to DIN 4102 Part 11) or in the maintenance of electrical function (to DIN 4102 Part 12). This allows elegant avoidance of objects from other areas such as heating, ventilation and sanitary applications.

Mounting under the ceiling is simple, using U-shaped suspended supports and a bracket, or on a U transverse profile suspended with threaded rods. The OBO BSKH is simply attached loosely. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment.

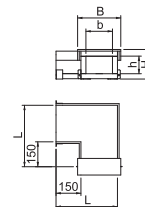


90° bend I90/E30, internal height 105 mm

Type	Dimen- sion h mm	Dimen- sion b mm	Dimen- sion H mm	Dimen- sion B mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-FB091016	105	160	175	260	380	1	1,010.000	7215615
BSKH-FB091026	105	260	175	360	480	1	1,390.000	7215619

Glass-fibre lightweight concrete

90° bend for BSKH I90/E30, to DIN 4102 Part 11 and Part 12, for installation on OBO mounting systems. Fittings must be supported by additional brackets. Including mounted connector on both duct ends, 3x 1 m self-adhesive sealing strips and connecting bolts.

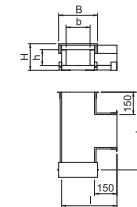


T piece I90/E30, internal height 105 mm

Type	Dimen- sion h mm	Dimen- sion b mm	Dimen- sion H mm	Dimen- sion B mm	Dimen- sion L mm	Dimen- sion l mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-FT091016	105	160	175	260	520	380	1	1,180.000	7215644
BSKH-FT091026	105	260	175	360	620	480	1	1,650.000	7215648

Glass-fibre lightweight concrete

T piece for BSKH I90/E30, to DIN 4102 Part 11 and Part 12, for installation on OBO mounting systems. Fittings must be supported by additional brackets. Including mounted connector on all duct ends, 3x 1 m self-adhesive sealing strips and connecting bolts.

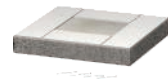
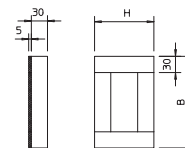


End piece I90/E30 for internal height 105 mm

Type	Dimen- sion B mm	Dimen- sion H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-E091016	220	165	1	101.000	7215596
BSKH-E091026	320	165	1	142.000	7215598

Glass-fibre lightweight concrete

End piece for fire protection duct BSKH I90/E30
Including bolts and sealing strip.



Wall connection collar I90 for internal height 105 mm

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-K1016	1	68.000	7215583
BSKH-K1026	1	88.000	7215587

Glass-fibre lightweight concrete

Wall connection collar for BSKH, consisting of four single plates, to double the insulation for wall penetrations. Incl. fastening material Only for I90 classification.



Sealing strip I90/E30

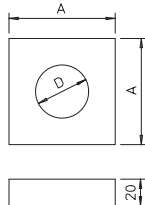
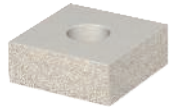


Type	Dimension mm		Pack.	Weight		Item No.
	A	D	pcs	kg/100	pcs.	
BSK-D0930	5	30	1	37.500		7215423

Foam

Self-adhesive sealing strip for BSK I90/E30 and BSKH I90/E30

Doubler I90



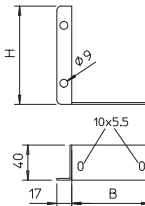
Type	Dimension mm		Pack.	Weight		Item No.
	A	D	pcs	kg/100	pcs.	
BSK-A0908	80	40	1	10.000		7215452
BSK-A0910	100	60	1	14.000		7215458

Glass-fibre lightweight concrete

Doubler for cable routing for BSK I90 and for BSKH I90.

BSK-A0908 for duct heights to 95 mm, BSK-A0910 for duct heights from 110 mm. Including fastening screws.

Connector set



Type	Dimension B	Dimension H	Pack.	Weight		Item No.
	mm	mm		pcs	kg/100	
BSKH-V050	58	55	1	22.000		7215381
BSKH-V052	90	55	1	26.000		7215385
BSKH-V101	90	112	1	40.000		7215389

SI Steel

FS Strip-galvanised

Connection set as replacement, consisting of a pair of connection plates, left/right, bolts for fastening the connectors to the duct and bolts with nuts to connect the individual duct lengths.

BSKH-V050 for BSKH 090506 and BSKH 090511

BSKH-V052 for BSKH 090521

BSKH-V101 for BSKH 091016, BSKH 091026 and BSKHF-0808

Mortar



Type	Pack.	Weight		Item No.
	pcs	kg/100	pcs.	
BSK-M	1	350.000		7215500

Special mortar

Fire protection duct mortar, dried ready-to-use mortar in a bucket for filling joints and small cracks when mounting the fire protection ducts BSK and BSKH.

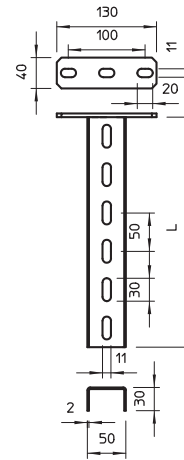
US 3 support

Type	Length mm	Material thickness mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 K 20 FT	200	2	200	1	50.500	6342351
US 3 K 30 FT	300	2	300	1	64.400	6342353
US 3 K 40 FT	400	2	400	1	78.300	6342355
US 3 K 50 FT	500	2	500	1	92.300	6342357
US 3 K 60 FT	600	2	600	1	106.200	6342359
US 3 K 70 FT	700	2	700	1	120.200	6342362
US 3 K 80 FT	800	2	800	1	134.100	6342364
US 3 K 90 FT	900	2	900	1	147.800	6342366
US 3 K 100 FT	1000	2	1000	1	162.000	6342368
US 3 K 110 FT	1100	2	1100	1	175.900	6342370
US 3 K 120 FT	1200	2	1200	1	189.900	6342372

St Steel

FT Hot-dip galvanised

Suspended support (U profile) of dimensions 50 x 30 mm with welded head plate.



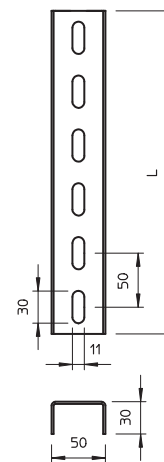
US 3 support

Type	Dimension L mm	Material thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 20 FS	200	2	1	27.000	6342302
US 3 30 FS	300	2	1	40.000	6342304
US 3 40 FS	400	2	1	53.000	6342306

St Steel

FS Strip-galvanised

U support in fixed lengths. Dimensions 30 x 50 mm.

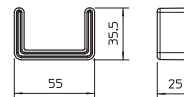


End cap

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 KS OR	Pastel orange	20	1.068	6338458

PE Polyethylene

End cap to cover the ends of US 3 supports.



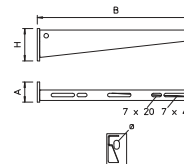
Wall and support bracket AW 15

Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 15 16 FT	160	55	40	160	11	30	20.000	6420664
AW 15 21 FT	210	60	40	210	11	30	24.700	6420680
AW 15 31 FT	310	65	40	310	11	30	39.900	6420710
AW 15 41 FT	410	70	40	410	11	30	54.000	6420745

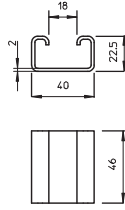
St Steel

FT Hot-dip galvanised

Light-duty wall and support bracket with welded head plate.



Spacer



Type

DSK 25 FT

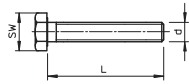
St Steel

FT Hot-dip galvanised

Spacer for use in U 3 supports.

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
20	7.500		6416446

Hexagonal bolt with nut and washer



Type

SKS 10x80 F

St Steel

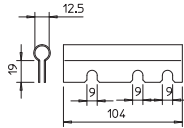
F Hot-dip galvanised

Hexagonal bolt for universal fixing of structure components.

Type	Dimension mm	Dimension L mm	Dimension d mm	SW mm
SKS 10x80 F	M10 x 80	80	10	17

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
20	7.700		6418250

Threaded rod adapter E30



Type

BSKH-G

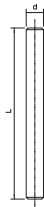
St Steel

FS Strip-galvanised

Adapter to accept threaded rods for the E duct application for the maintenance of electrical function. The adapter is clamped between the connectors.

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
1	5.700		7215395

Threaded rod



Type

TR M10 1M G

St Steel

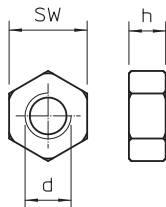
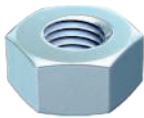
G Electrogalvanised

Threaded rod to DIN 976.

Type	Thread	Dimension d mm	Dimension L mm
TR M10 1M G	M10	10	1000

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
10	49.000		3141209

Hexagonal nut DIN 934



Type

HN M10 G

St Steel

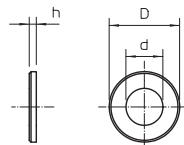
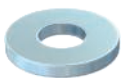
G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.

Type	Thread	SW mm	Dimension h mm	Dimension d mm
HN M10 G	M10	17	8.4	10

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
100	1.084		3400107

Washer



Type

WS M10 D20 G

St Steel

G Electrogalvanised

Washer according to DIN 125, shape A, for universal use.

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm
WS M10 D20 G	M10	10.5	20	2

Pack. pcs	Weight		Item No.
	kg/100	pcs.	
100	0.408		3402096

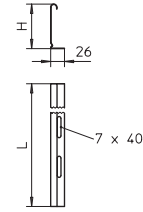
Barrier strip 45

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 45 FS	45	0.75	3000	3	46.700	6062033

St Steel

FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.



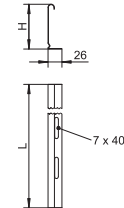
Barrier strip 85

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 85 FS	85	0.75	3000	3	70.300	6062114

St Steel

FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.



Bolt for separating retainer and fittings

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKH-S6030	6x30	200	0.276	3498100

St Steel

GTP Electrogalvanised, transparently passivated

Bolt with special milled ribs for universal fastening of cable clips, connector elements and separating retainers in fibre glass light-weight concrete of the BSK fire protection ducts.

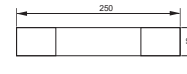


Identification plate for function maintenance

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E SE	10	0.600	7205424
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.

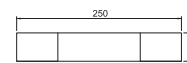


Identification plate

Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-K DE	German	10	0.600	7214734

PVC Polyvinylchloride

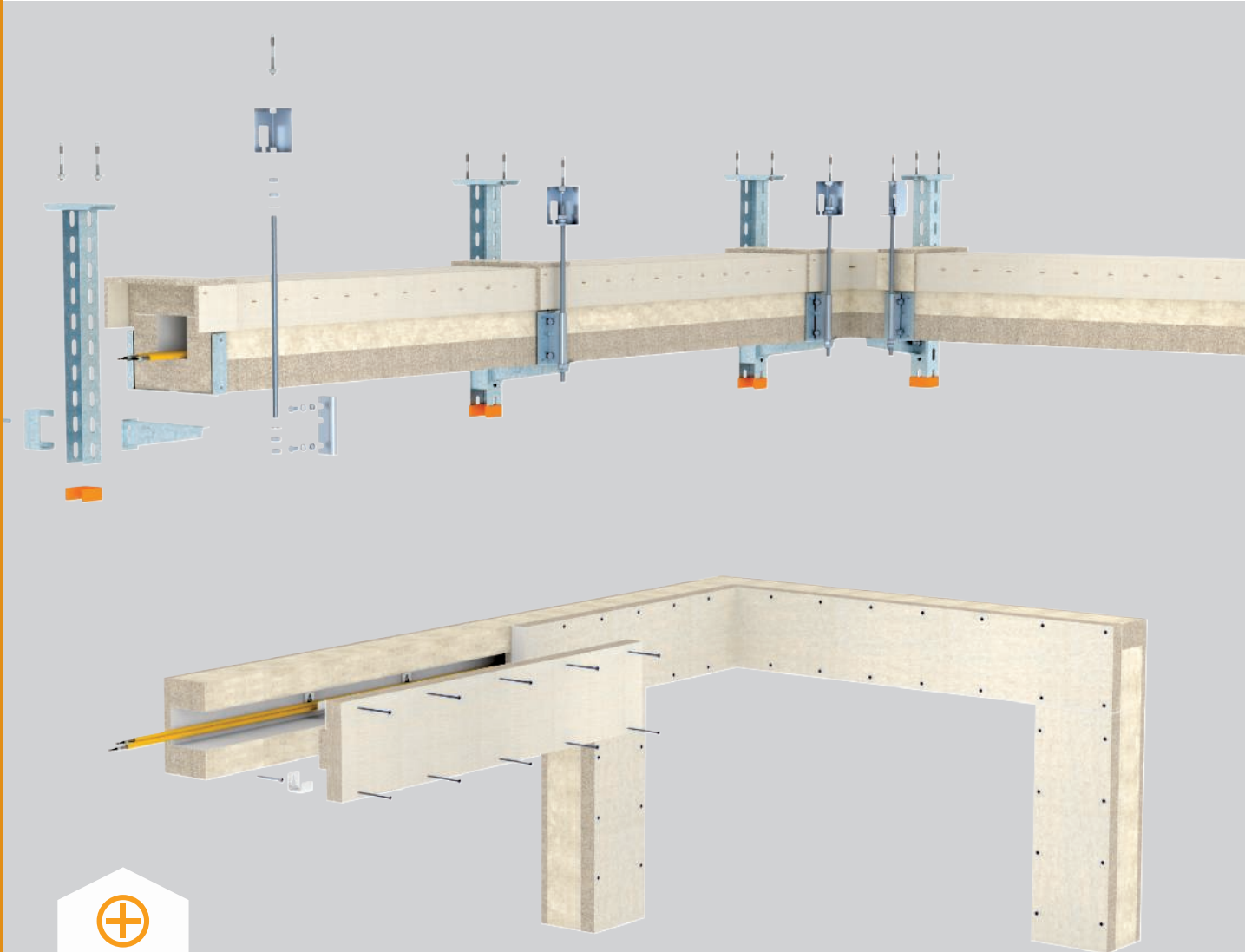
Self-adhesive identification plate for approved cable duct labelling as an installation duct as required by DIN 4102 Part 11.



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



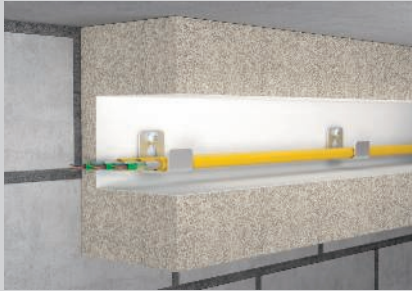
Direct wall and ceiling mounting.



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

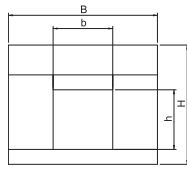
E30 **E60** **E90**

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

Fire protection duct E90, internal height 80 mm

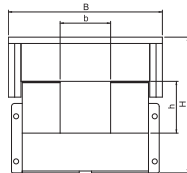


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSKF-0808	80	80	160	200	1000	1	2,050.000	7214800

Glass-fibre lightweight concrete

Fire protection duct for direct wall and ceiling mounting, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 in accordance with EN 13501 Part 1 for fireproof routing of fibre optic cables according to the maintenance of electrical function to DIN 4102 Part 12, classified for E30 and E90. Including 10 counter-sunk head screws and 3 x 1 m of sealing strips.

Fire-proofing duct E90, internal height 80 mm

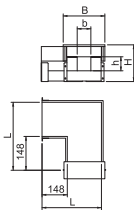


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSKHF-0808	80	80	200	200	1000	1	2,920.000	7214840

Glass-fibre lightweight concrete

Fire protection duct for suspended ceiling mounting consists of fibreglass light concrete according to EN 13501 part 1 (material class A1) which is resistant to water and frost. The fireproof duct serves to install fibre optic cables, classified for electrical the maintenance of electrical function according to DIN 4102 part 12 class E30 and E90. Including 12 x countersunk head screws and 3 x 1 m sealing strips.

90° bend, E90, internal height 80 mm

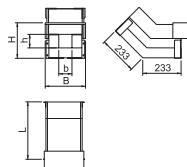


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-FB0808	80	80	200	248	352	1	1,520.000	7214852

Glass-fibre lightweight concrete

90° bend in horizontal direction for fire protection duct BSKHF-0808, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 according to EN 13501 Part 1, for installation on OBO mounting systems. Including mounted connector on both duct ends, connecting bolts and sealing strip. Fittings must be supported by additional brackets.

45° vertical bend, rising, E90, internal height 80 mm

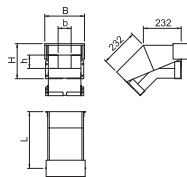


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-ES0808	80	80	200	248	398	1	1,200.000	7214856

Glass-fibre lightweight concrete

Vertical bend, 45° rising, for fire protection duct BSKHF-0808, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 according to EN 13501 Part 1, for installation on OBO mounting systems. Including mounted connector on both duct ends, connecting bolts and sealing strip. Fittings must be supported by additional brackets.

45° vertical bend, falling, E90, internal height 80 mm



Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-EF0808	80	80	200	248	276	1	1,250.000	7214858

Glass-fibre lightweight concrete

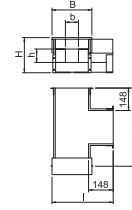
Vertical bend, 45° falling, for fire protection duct BSKHF-0808, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 according to EN 13501 Part 1, for installation on OBO mounting systems. Including mounted connector on both duct ends, connecting bolts and sealing strip. Fittings must be supported by additional brackets.

T piece E90, internal height 80 mm

Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Dimension L mm	Dimension I mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-FT0808	80	80	200	248	500	352	1	1,930.000	7214854

Glass-fibre lightweight concrete

T piece for fire protection duct BSKHF-0808, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 according to EN 13501 Part 1, for installation on OBO mounting systems. Including mounted connector on all duct ends, connecting bolts and sealing strip. Fittings must be supplied by additional brackets.



Wall connection collar BSKHF, E90, internal height 80 mm

Type	Length mm	Width mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-WA0808	1250	70	60	1	400.000	7214862

Glass-fibre lightweight concrete

Wall connection collar for fire protection duct BSKHF-0808, consisting of water and frost-resistant fibre glass lightweight concrete of material class A1 according to EN 13501 Part 1, for doubling insulation on wall connections. Including counter-sunk head screws and sealing strip.

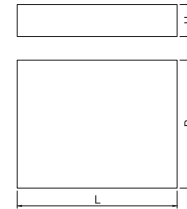


End piece BSKF, E90, internal height 80 mm

Type	Dimension L mm	Dimension H mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKF-E0808	200	60	160	1	150.000	7214810

Glass-fibre lightweight concrete

End piece for fire protection duct BSKF-0808 consists of fibreglass light concrete according to EN 13501 part 1 (material class A1). Including countersunk head screws and sealing strips.

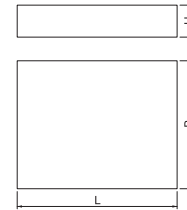


End piece BSKHF, E90, internal height 80 mm

Type	Dimension L mm	Dimension H mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKHF-E0808	200	60	200	1	180.000	7214860

Glass-fibre lightweight concrete

End piece for fire protection duct BSKHF-0808 consists of fibreglass light concrete according to EN 13501 part 1 (material class A1). Including countersunk head screws and sealing strips.



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

I30

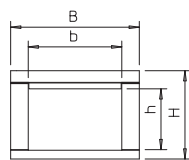
Installation duct made of fibreglass reinforced lightweight concrete

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.



Fire protection duct

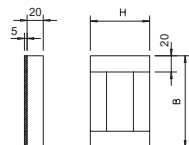


Type	Dimension h mm	Dimension b mm	Dimension H mm	Dimension B mm	Length mm	Pack. m	Weight kg/100 m	Item No.
BSKP 0406	40	60	80	100	1000	1	480.000	7214700

BET Concrete

Fire protection duct for fireproof routing of photovoltaic cables and inside and outside buildings. Consists of non-conductive, frost-resistant fibre glass lightweight concrete and fulfils the requirements for the contact protection of rescue services in case of fire. Tested and approved to DIN 4102 Part 11, as an I30 duct, may therefore be used in emergency and escape routes. Including lid screws and 3 m of sealing strip.

End piece



Type	Dimension B mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-E0406	100	80	1	14.000	7214705

BET Concrete

End piece for fire protection duct BSKP I30, including bolts and sealing strip.

Sealing strip

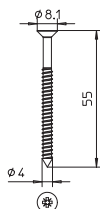


Type	Dimension mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-D0320	20x5	1000	1	16.000	7214710

Foam

Self-adhesive sealing strip for BSKP 0406

Lid screws



Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-S0955	4,0 x 55	50	0.340	7215400

St Steel

G Electrogalvanised

Countersunk head screw for fire protection duct I90/E30, for lid and doubler fastening.

Connector for suspended mounting



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-V 0406	1	22.000	7214715

St Steel

FS Strip-galvanised

Connection shackle for use of the fire protection duct BSKP 0406, as suspended variant. The set contains 2 connectors and the appropriate quantity of fastening and connection screws.

Bolt for cable fastening



Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-S5020	5x20	100	0.260	3498098

St Steel

GTP Electrogalvanised, transparently passivated

Bolt with special milled ribs for universal fastening of cable clips, connector elements and separating retainers in fibre glass light-weight concrete of the BSK fire protection ducts.

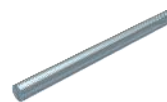
Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M10 1M G	M10	10	1000	10	49.000	3141209

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



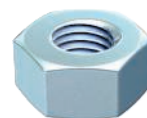
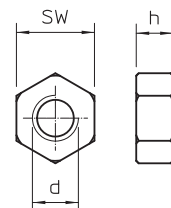
Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M10 G	M10	17	8.4	10	100	1.084	3400107

St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



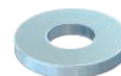
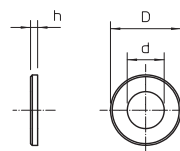
Washer

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096

St Steel

G Electrogalvanised

Washer according to DIN 125, shape A, for universal use.



Fastening clip 604, light-duty

Type	For Ø mm	Hole size mm	Material thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
604 4 G	4	4,5 x 6	0.7	100	0.067	1003046
604 5 G	5	4,5 x 6	0.7	100	0.084	1003054
604 6 G	6	4,5 x 6	0.7	100	0.099	1003062
604 7 G	7	4,5 x 6	0.7	100	0.120	1003070
604 8 G	8	4,5 x 6	0.7	100	0.123	1003089
604 9 G	9	4,5 x 6	0.7	100	0.139	1003097
604 10 G	10	4,5 x 6	0.7	100	0.150	1003100

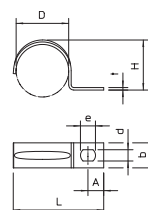
St Steel

G Electrogalvanised

Single-lobe fastening clip for cables and pipes.

* Sizes 3 and 4 are not suitable for nail device

* Sizes 3 to 21 are not suitable for bolt-firing tool



D mm	L mm	H mm	b mm	t mm	d mm	e mm	A mm
4	14	3.3	7	0.7	4.5	6	4
5	16.5	4.5	7	0.7	4.5	6	5
6	17.5	5.2	8	0.7	4.5	6	5
7	19.5	6.5	8	0.7	4.5	6	5
8	21	7	8	0.7	4.5	6	5.5
9	21.5	8	8	0.7	4.5	6	5.75
10	22	9	8	0.7	4.5	6	5

Dimensions

Bolt for cable fastening

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
BSKP-S5016	5x16	100	0.240	3498096

St Steel

GTP Electrogalvanised, transparently passivated

Bolt with special milled ribs for universal fastening of cable clips, connector elements and separating retainers in fibre glass light-weight concrete of the BSK fire protection ducts.



Bolt tie



Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X80	7,5 x 80	80	6	13.2	Torx	50	1.600	3498272

St Steel

G Electrogalvanised

Fire protection bolt tie with pan head for direct mounting without anchors. Drive T40, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Mortar



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSK-M	1	350.000	7215500

Special mortar

Fire protection duct mortar, dried ready-to-use mortar in a bucket for filling joints and small cracks when mounting the fire protection ducts BSK and BSKH.

Identification plate

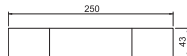


Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-BSKP DE	German	1	2.400	7214725

PVC Polyvinylchloride

Information panel to label the fire protection duct as a photovoltaic duct according to the VDE application rule. Incl. two push-fit anchors.

Identification plate



Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-K DE	German	10	0.600	7214734

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable duct labelling as an installation duct as required by DIN 4102 Part 11.








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Cable bandages

	System description, PYROWRAP® Wet FSB-WLS	200
	System description, PYROWRAP® Wet FSB-WB	202
	Products	204

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.



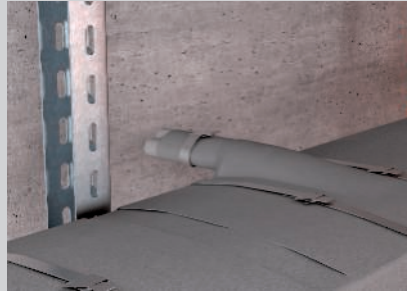
Complete encasement of the cables in a cable run as wall mounting.



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

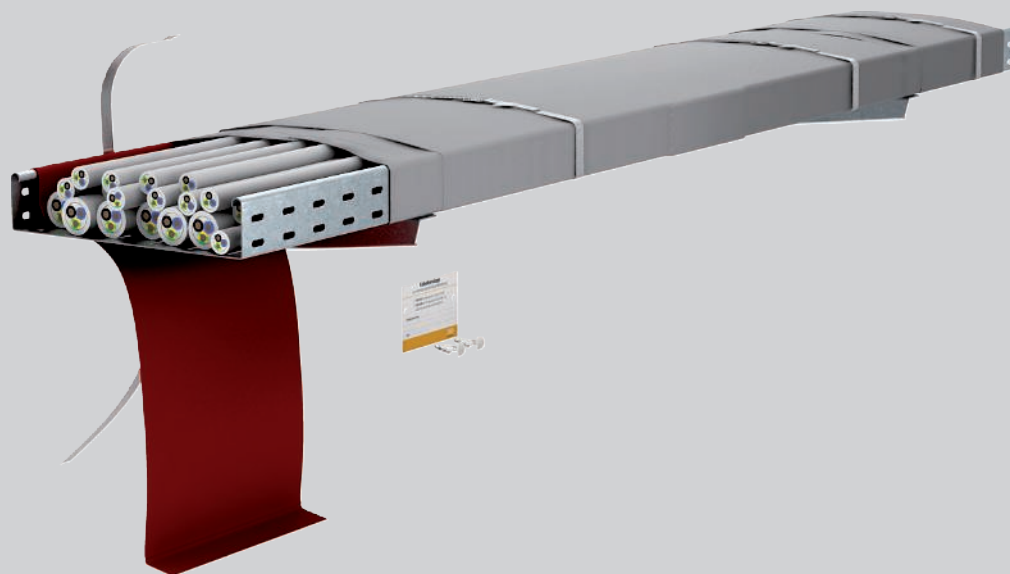
Caution!

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.



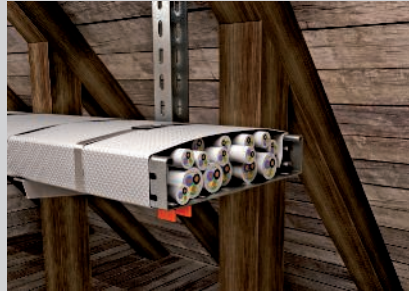
Bandaged rising section in the tower of a wind power plant.



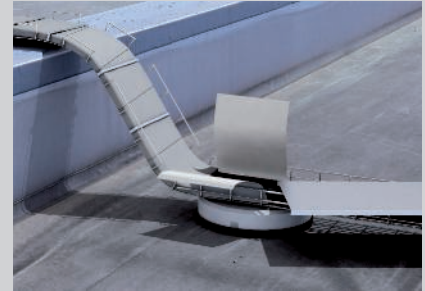
Use on support systems in supply rooms or production halls.



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 bandage for dry areas



Type	Width	Length	Pack.	Weight	Item No.
	mm	mm		pcs	
FSB-WLS	1100	10000	1	1,000.000	7203170

Intumescent material

Fire protection jacketing made of flexible mesh with fire protection coating to prevent fire spreading via cables and cable support systems. If there is a fire, the bandage only creates very little smoke, and is thus approved by the MBO building regulations as a measure for improved behaviour in case of fire in building classes 1 to 3. Hardly-flammable substance, according to EN 13501-1 - Class C-s2, d0). External side grey, internal side light grey. Can be moist wiped, use in interiors and wet rooms. One roll contains 11 m², nominal thickness 0.7 mm.

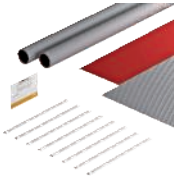
Cable bandage for wet areas



Type	Width	Length	Pack.	Weight	Item No.
	mm	mm		pcs	
FSB-WB	1100	20000	1	2,200.000	7203160

Waterproof fire protection jacketing made of flexible mesh with fire protection coating to prevent fire spreading via cables and cable support systems. External side grey, internal side red. One roll contains 22 m².

Complete set



Type	Length	Width	Pack.	Weight	Item No.
	mm	mm		pcs	
FSB-K32	550	380	1	96.000	7203150
FSB-K82	550	880	1	213.000	7203154

Intumescent material

Complete set for covering cable bundles or cable support systems without lid to prevent fire spreading. Application in outdoor areas. Each of the sets contains 4 sections of the weather-resistant cable bandage FSB-WB, 8 metal strip clips and an identification plate. Sufficient for approx. 2 m length.

Dimension data: sections of the bandage FSB-WB

Scope of the surrounding cable support systems:
 FSB-K32 maximum 320 mm
 FSB-K82 maximum 820 mm
 (including min. 5 cm bandage overlap)

Metal strip clips, narrow



Type	Length	Width	Pack.	Weight	Item No.
	mm	mm		pcs	
MBS 015	150	7	100	0.230	7203100
MBS 030	300	7	100	0.399	7203102
MBS 045	450	7	50	0.602	7203104
MBS 061	610	7	50	0.806	7203106

V2A Stainless steel, grade 304

Metal strip clip in ladder form with single lock. For high-temperature and weatherproof fixing.

Metal strip clips, wide



Type	Length	Width	Pack.	Weight	Item No.
	mm	mm		pcs	
MBS 075	750	12	25	2.300	7203108
MBS 100	1000	12	25	3.000	7203110
MBS 120	1200	12	25	3.600	7203112
MBS 150	1500	12	25	4.400	7203114

V2A Stainless steel, grade 304

Metal strip clip in ladder form with single lock. For high-temperature and weatherproof fixing.

Pliers for metal strip clips

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
MBS-Z	1	55.500	7203120

St Steel

High-quality spring chuck with cutting tool for metal strip clips, type MBS.

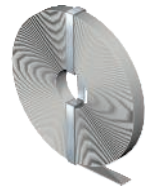


Tightening strap for fastening of cable bandages

Type	Width mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FSB-SB 100	15	1	220.000	7203131

St Steel

100 m roll of lightweight, galvanised tightening strap, for universal fastening.

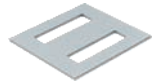


Tightening strap lock

Type	Length mm	Width mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FSB-SV	26	24	50	0.340	7203132

St Steel

Tightening strap lock with buckle, for simple fixing of the tightening straps FSB-SB.



Securing clip

Type	Width mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FSB-SC	16	34	50	0.180	7203134

V2A Stainless steel, grade 304

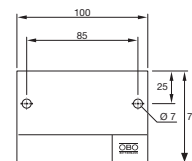
Stainless steel clip to secure the bend tightening strap. Provides prevention of removal from the lock.

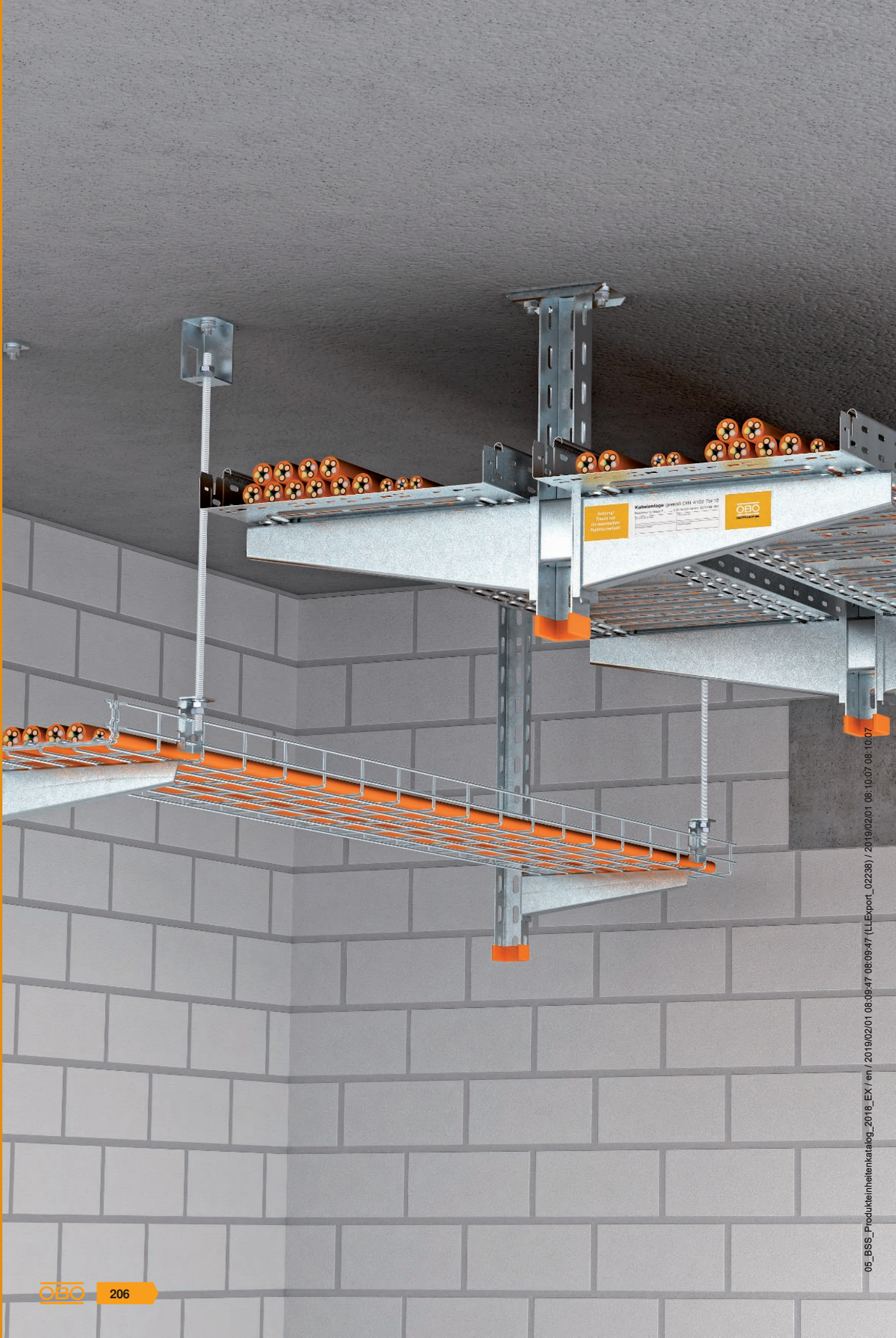


Identification plate

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-FSB DE	1	2.400	7203140

PVC Polyvinylchloride











Kabeltrage gemäß DIN 4109 Teil 10
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10.10.1.10.3
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10.10.1.10.6
10.10.1.10.7
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10.10.1.10.95
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10.10.1.10.98
10.10.1.10.99
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Maintaining electrical function– cable-specific support structures

	System description, RKS-Magic® cable tray	208
	System description, mesh cable tray GR-Magic®	212
	Products cable trays, mesh cable trays and mounting components	216
	System description, cable tray RKS-Magic® VA	228
	System description, mesh cable tray GR-Magic® VA	232
	Products cable trays, mesh cable trays and mounting components VA	236

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.



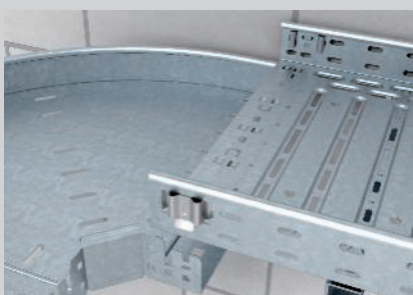
Creation of a straight connector through interconnection of the cable trays.



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

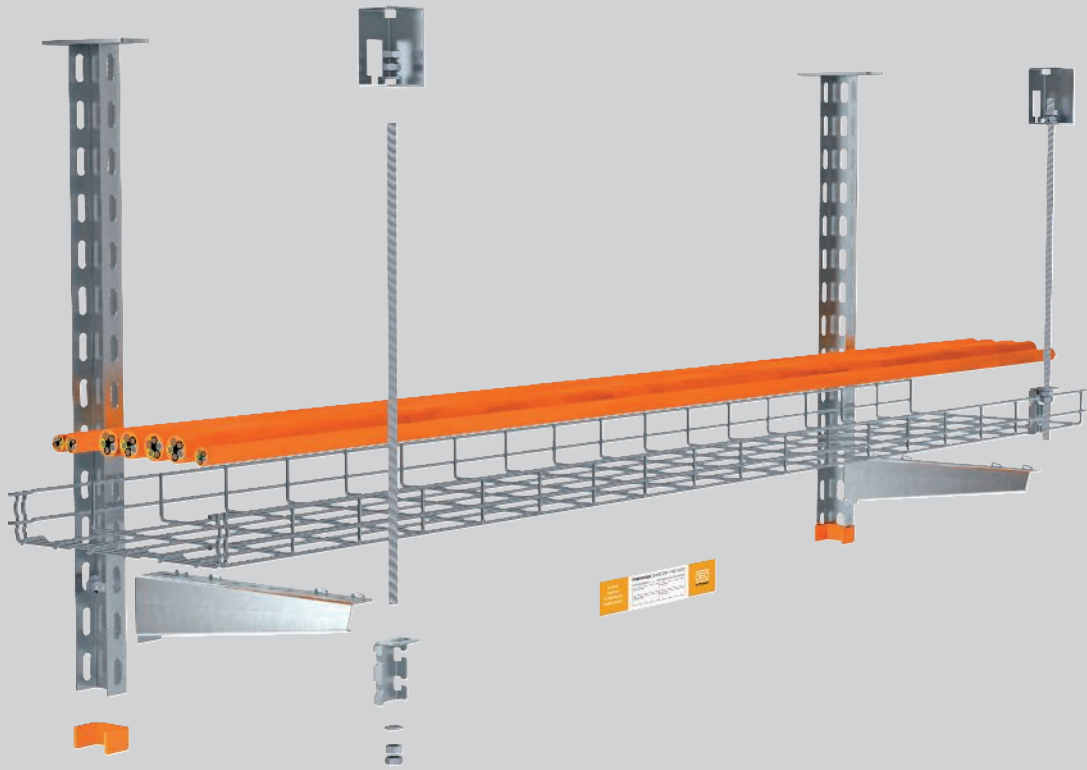
Component	Type	
Cable tray	RKSM 6... FS	1
Wall and support brackets	AW 30 11 FT, AW 55 21 FT, ... 31 FT, ... 41 FT	1
Truss-head bolt	FRSB 6x 15 F	2

Choose the fastening anchors according to the substrate



GR-Magic® mesh cable trays

System description

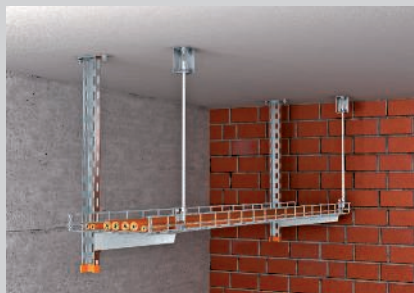


The GR-Magic® mesh cable tray has been tested as a cable-specific support construction for the maintenance of electrical functionality according to DIN 4102 Part 12 and approved for the maintenance of electrical functionality classes E 30 to E 90. The threaded rod lock is mounted directly on the tray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

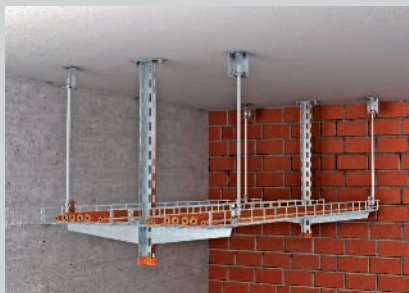
the side lengthwise wires of the mesh cable tray. When the threaded rod has been mounted, the component is secured against unintentional release. The screwless connection system of the GR-Magic® mesh cable trays ensures toolless, and thus particularly rapid and economic, mounting.

GR-Magic® mesh cable trays

Installation principle



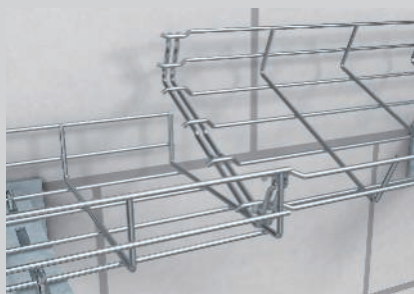
Ceiling mounting with brackets mounted on one side.



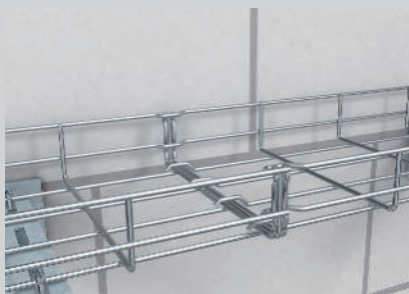
Ceiling mounting with brackets arranged on both sides.



Multi-layer wall mounting.



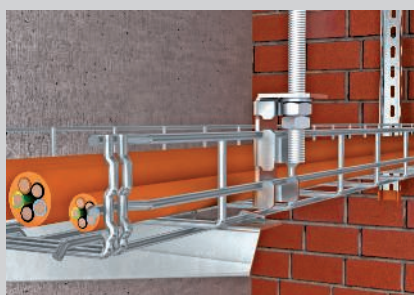
Interconnecting of two stock lengths of the mesh cable tray.



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

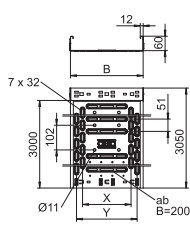
Wall mounting with bracket

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 tray RKS-Magic® 60



Type	Width mm	Plate thickness mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Pack. m	Weight kg/100 m	Item No.
RKSM 610 FS	100	0.75	100	—	50	3	132.131	6047611
RKSM 620 FS	200	0.75	200	100	150	3	183.000	6047638
RKSM 630 FS	300	0.75	300	200	250	3	235.080	6047654
RKSM 640 FS	400	0.90	400	300	350	3	331.340	6047689
RKSM 610 FT	100	1.00	100	—	50	3	172.460	6047612
RKSM 620 FT	200	1.00	200	100	150	3	241.640	6047639
RKSM 630 FT	300	1.00	300	200	250	3	311.800	6047655
RKSM 640 FT	400	1.00	400	300	350	3	419.350	6047690

St Steel

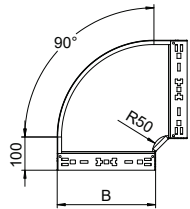
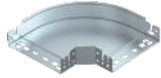
FS Strip-galvanised **FT** Hot-dip galvanised

Cable tray with integrated quick fastening system. The usable length of the cable tray is 3,000 mm.

The cable tray possesses continuous side perforations of 7 x 20 mm for the installation of additional connection and mounting components.

The perforation for direct threaded rod suspension has a diameter of 11 mm.

90° Magic bend



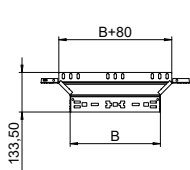
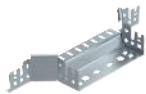
Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RBM 90 610 FS	100	100	1	65.700	6041130
RBM 90 620 FS	200	200	1	122.100	6041134
RBM 90 630 FS	300	300	1	192.800	6041136
RBM 90 640 FS	400	400	1	275.400	6041138
RBM 90 610 FT	100	100	1	70.500	6041150
RBM 90 620 FT	200	200	1	130.900	6041154
RBM 90 630 FT	300	300	1	206.800	6041156
RBM 90 640 FT	400	400	1	295.300	6041158

St Steel

FS Strip-galvanised **FT** Hot-dip galvanised

90° bend with quick connector system. For all cable tray types of 60 mm side height.

Magic add-on tee



Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RAAM 610 FS	100	100	1	37.700	6041230
RAAM 620 FS	200	200	1	50.600	6041234
RAAM 630 FS	300	300	1	63.500	6041236
RAAM 640 FS	400	400	1	75.700	6041238
RAAM 610 FT	100	100	1	40.800	6041250
RAAM 620 FT	200	200	1	54.300	6041254
RAAM 630 FT	300	300	1	68.100	6041257
RAAM 640 FT	400	400	1	81.800	6041259

St Steel

FS Strip-galvanised **FT** Hot-dip galvanised

Magic add-on tee with quick connector system. For all cable tray types of 60 mm side height.

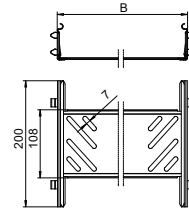
Magic straight connector set FS

Type	Side height mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KTSMV 610 FS	60	100	1	30.500	6068914
KTSMV 620 FS	60	200	1	37.200	6068918
KTSMV 630 FS	60	300	1	44.000	6068920
KTSMV 640 FS	60	400	1	50.700	6068922
KTSMV 610 DD	60	100	1	30.500	6068936
KTSMV 620 DD	60	200	1	37.200	6068940
KTSMV 630 DD	60	300	1	44.000	6068942
KTSMV 640 DD	60	400	1	50.700	6068944

St Steel

FS Strip-galvanised **DD** Strip galvanised zinc/aluminium, Double Dip

Cable tray connector with quick fastening for the screwless connection of perforated cable trays with a side height of 60 mm.



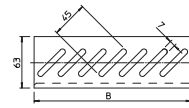
Bottom end plate

Type	Width mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BEB 100 FS	100	100	100	5.400	7083106
BEB 200 FS	200	200	100	11.400	7083203
BEB 300 FS	300	300	100	17.200	7083300
BEB 400 FS	400	400	100	23.100	7083408
BEB 100 DD	100	100	100	5.400	7083618
BEB 200 DD	200	200	100	11.400	7083626
BEB 300 DD	300	300	100	17.200	7083630
BEB 400 DD	400	400	100	23.100	7083634

St Steel

FS Strip-galvanised **DD** Strip galvanised zinc/aluminium, Double Dip

Bottom end plate for floor reinforcement at the ends of the cable tray and as cable protection.

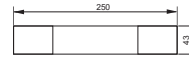


Identification plate for function maintenance

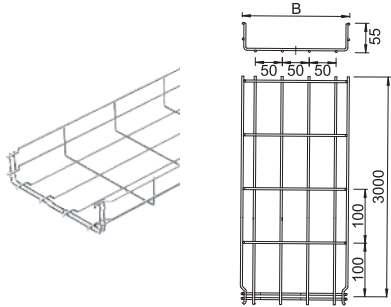
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



Mesh cable tray GRM 55



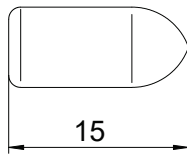
Type	Wire Dimension			Pack. m	Weight kg/100 m	Item No.
	Width mm	Ø mm	Dimension B mm			
GRM 55 200 4.8 G	200	4.8	200	3	151.000	6001447
GRM 55 300 G	300	4.8	300	3	194.900	6001448
GRM 55 400 G	400	4.8	400	3	236.700	6001450

St Steel

G Electrogalvanised

Mesh cable tray with shaped connector of side height 55 mm.

End cap

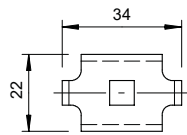


Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

PVC Polyvinylchloride

End cap to cover cut wire ends of mesh cable trays.

Clamping piece



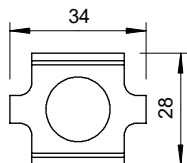
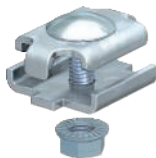
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

G Electrogalvanised

Clamp for fixing mesh cable trays to wall or support brackets.

Connector



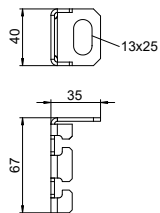
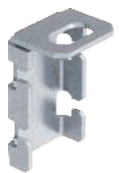
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

G Electrogalvanised

Screwed version of joint connector for mesh cable trays.

Connection component



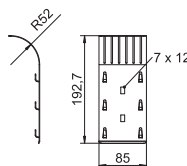
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

FT Hot-dip galvanised

Seat for threaded rod on mesh cable tray.

Drop-out plate



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

FS Strip-galvanised

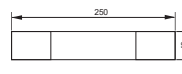
Drop-out plate for mesh cable trays.

Identification plate for function maintenance

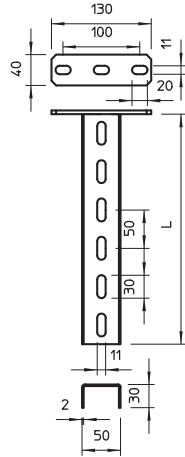
Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



US 3 support



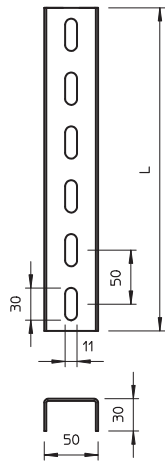
Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 K 20 FT	200	2	200	1	50.500	6342351
US 3 K 30 FT	300	2	300	1	64.400	6342353
US 3 K 40 FT	400	2	400	1	78.300	6342355
US 3 K 50 FT	500	2	500	1	92.300	6342357
US 3 K 60 FT	600	2	600	1	106.200	6342359
US 3 K 70 FT	700	2	700	1	120.200	6342362
US 3 K 80 FT	800	2	800	1	134.100	6342364
US 3 K 90 FT	900	2	900	1	147.800	6342366
US 3 K 100 FT	1000	2	1000	1	162.000	6342368
US 3 K 110 FT	1100	2	1100	1	175.900	6342370
US 3 K 120 FT	1200	2	1200	1	189.900	6342372

SI Steel

FT Hot-dip galvanised

Suspended support (U profile) of dimensions 50 x 30 mm with welded head plate.

US 3 support



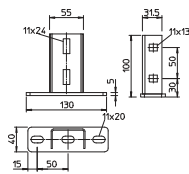
Type	Dimen- sion L mm	Material thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 20 FS	200	2	1	27.000	6342302
US 3 30 FS	300	2	1	40.000	6342304
US 3 40 FS	400	2	1	53.000	6342306
US 3 50 FS	500	2	1	67.000	6342308
US 3 60 FS	600	2	1	80.000	6342310
US 3 70 FS	700	2	1	93.000	6342312
US 3 80 FS	800	2	1	107.000	6342314
US 3 90 FS	900	2	1	120.000	6342316
US 3 100 FS	1000	2	1	133.000	6342318

SI Steel

FS Strip-galvanised

U support in fixed lengths. Dimensions 30 x 50 mm.

Head plate



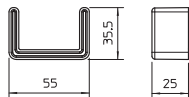
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 3 FT	10	46.800	6348874

SI Steel

FT Hot-dip galvanised

Head plate for mounting on US 3 supports.

End cap



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 KS OR	Pastel orange	20	1.068	6338458

PE Polyethylene

End cap to cover the ends of US 3 supports.

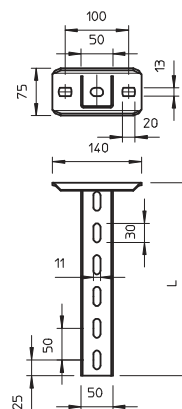
US 5 support

Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 K 20 FT	200	2.5	200	1	85.000	6341527
US 5 K 30 FT	300	2.5	300	1	110.000	6341535
US 5 K 40 FT	400	2.5	400	1	136.000	6341543
US 5 K 50 FT	500	2.5	500	1	161.000	6341551
US 5 K 60 FT	600	2.5	600	1	185.000	6341578
US 5 K 70 FT	700	2.5	700	1	210.000	6341586
US 5 K 80 FT	800	2.5	800	1	236.000	6341594
US 5 K 90 FT	900	2.5	900	1	261.000	6341608
US 5 K 100 FT	1000	2.5	1000	1	286.000	6341616
US 5 K 110 FT	1100	2.5	1100	1	311.000	6341624
US 5 K 120 FT	1200	2.5	1200	1	337.000	6341632

St Steel

FT Hot-dip galvanised

U support of dimensions 50 x 50 mm with welded head plate.



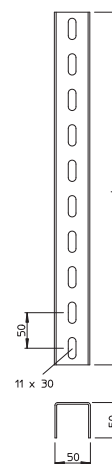
US 5 support

Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 20 FT	200	2.5	200	1	51.000	6340881
US 5 30 FT	300	2.5	300	1	79.000	6340903
US 5 40 FT	400	2.5	400	1	106.000	6340911
US 5 50 FT	500	2.5	500	1	133.000	6340938
US 5 60 FT	600	2.5	600	1	160.000	6340946
US 5 70 FT	700	2.5	700	1	175.000	6340950
US 5 80 FT	800	2.5	800	1	200.000	6340954
US 5 90 FT	900	2.5	900	1	227.000	6340958
US 5 100 FT	1000	2.5	1000	1	265.000	6340962
US 5 150 FT	1500	2.5	1500	1	395.000	6340966
US 5 200 FT	2000	2.5	2000	1	506.000	6340970

St Steel

FT Hot-dip galvanised

U support in fixed lengths. Dimensions 50 x 50 mm.



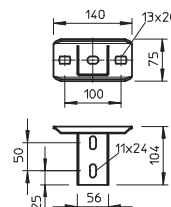
Head plate US 5

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KUS 5 FT	10	61.000	6348904

St Steel

FT Hot-dip galvanised

Head plate for installation in US 5 support.



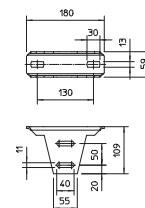
Head plate, variable FT

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 5 V FT	4	82.000	6348920

St Steel

FT Hot-dip galvanised

Variable head plate for installation on US 5 support.

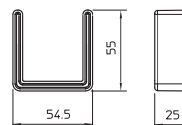


End cap

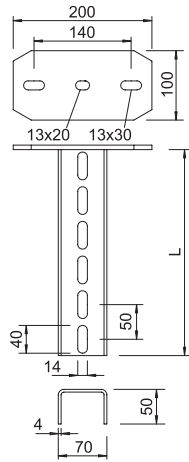
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 KS OR	Pastel orange	20	1.300	6338462

PE Polyethylene

End cap to cover the ends of US 5 supports.



US 7 support



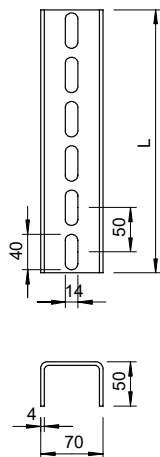
Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 7 K 20 FT	200	4	200	1	177.000	6339018
US 7 K 30 FT	300	4	300	1	218.000	6339034
US 7 K 40 FT	400	4	400	1	261.000	6339050
US 7 K 50 FT	500	4	500	1	302.000	6339077
US 7 K 60 FT	600	4	600	1	344.000	6339093
US 7 K 70 FT	700	4	700	1	387.000	6339115
US 7 K 80 FT	800	4	800	1	418.000	6339131
US 7 K 90 FT	900	4	900	1	470.000	6339166
US 7 K 100 FT	1000	4	1000	1	499.000	6339182
US 7 K 110 FT	1100	4	1100	1	550.000	6339190
US 7 K 120 FT	1200	4	1200	1	591.000	6339204
US 7 K 130 FT	1300	4	1300	1	636.000	6339212
US 7 K 140 FT	1400	4	1400	1	675.000	6339220
US 7 K 150 FT	1500	4	1500	1	718.000	6339239
US 7 K 160 FT	1600	4	1600	1	760.000	6339247
US 7 K 170 FT	1700	4	1700	1	802.000	6339255
US 7 K 180 FT	1800	4	1800	1	843.000	6339263
US 7 K 190 FT	1900	4	1900	1	884.000	6339271
US 7 K 200 FT	2000	4	2000	1	927.000	6339298

St Steel

FT Hot-dip galvanised

Suspended support (U profile) of dimensions 70 x 50 mm with welded head plate.

US 7 support



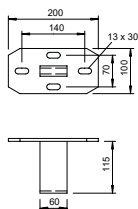
Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 7 20 FT	200	4	200	1	81.000	6340016
US 7 30 FT	300	4	300	1	121.000	6340032
US 7 40 FT	400	4	400	1	166.000	6340059
US 7 50 FT	500	4	500	1	208.000	6340075
US 7 60 FT	600	4	600	1	249.000	6340091
US 7 70 FT	700	4	700	1	290.000	6340113
US 7 80 FT	800	4	800	1	323.000	6340148
US 7 90 FT	900	4	900	1	370.000	6340164
US 7 100 FT	1000	4	1000	1	416.000	6340180
US 7 110 FT	1100	4	1100	1	457.000	6340199
US 7 120 FT	1200	4	1200	1	484.000	6340202
US 7 130 FT	1300	4	1300	1	540.000	6340210
US 7 140 FT	1400	4	1400	1	580.000	6340229
US 7 150 FT	1500	4	1500	1	620.000	6340237
US 7 160 FT	1600	4	1600	1	660.000	6340245
US 7 180 FT	1800	4	1800	1	750.000	6340261
US 7 190 FT	1900	4	1900	1	790.000	6340288
US 7 200 FT	2000	4	2000	1	803.700	6340296

St Steel

FT Hot-dip galvanised

U support in fixed lengths. Dimensions 70 x 50 mm.

Head plate for US 7 support



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 7 FT	10	148.000	6349102

St Steel

FT Hot-dip galvanised

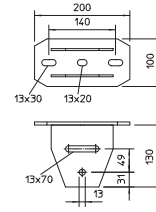
Light-duty head plate for mounting on US 7 support.

Head plate, variable

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 7 VQP FT	10	181.600	6349153

- St Steel
- FT Hot-dip galvanised

Variable head plate for installation on US 7 support.

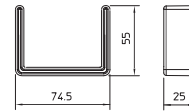


End cap

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 7 KS OR	Pastel orange	20	1.806	6338497

- PE Polyethylene

End cap to cover the ends of US 7 supports.

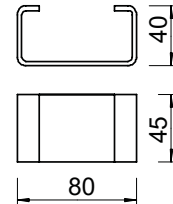


Spacer

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 45 FT	20	18.000	6416500

- St Steel
- FT Hot-dip galvanised

Spacer for use in U 5 support and in the head plate, type KU 7 VQP.

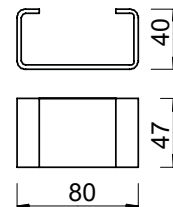


Spacer

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 47 FT	20	19.000	6416504

- St Steel
- FT Hot-dip galvanised

Spacer for use in head plate, type KU 5 V.

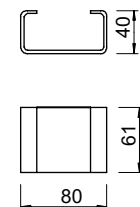


Spacer

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 61 FT	20	25.000	6416519

- St Steel
- FT Hot-dip galvanised

Spacer for use in U 7 supports.

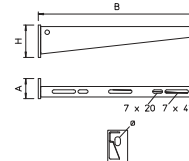


Wall and support bracket AW 15

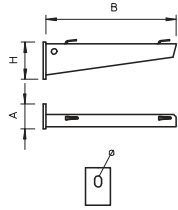
Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 15 21 FT	210	60	40	210	11	30	24.700	6420680
AW 15 31 FT	310	65	40	310	11	30	39.900	6420710
AW 15 41 FT	410	70	40	410	11	30	54.000	6420745

- St Steel
- FT Hot-dip galvanised

Light-duty wall and support bracket with welded head plate.



Wall and support bracket AWG 15



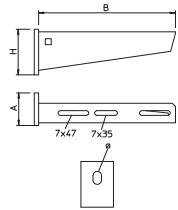
Type	Width mm	Dimen- sion H mm	Di- men- sion A mm	Dimen- sion B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW G 15 21 FT	210	60	40	210	11	30	26.000	6420608
AW G 15 31 FT	310	65	40	310	11	30	35.000	6420610
AW G 15 41 FT	410	70	40	410	11	30	56.000	6420612

St Steel

FT Hot-dip galvanised

Light-duty wall and support bracket with welded head plate for screwless mesh cable tray fastening.

Wall and support bracket AW 30



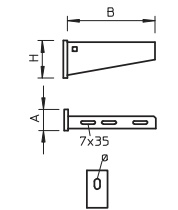
Type	Width mm	Dimen- sion H mm	Di- men- sion A mm	Dimen- sion B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 30 11 FT	110	60	50	110	11	1	22.000	6419704

St Steel

FT Hot-dip galvanised

Medium-duty wall and support bracket with welded head plate.

Wall and support bracket AW 55



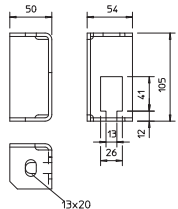
Type	Width mm	Dimen- sion H mm	Di- men- sion A mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 55 21 FT	210	90	50	13.5	1	77.000	6418554
AW 55 31 FT	310	110	50	13.5	1	123.000	6418570
AW 55 41 FT	410	130	50	13.5	1	167.000	6418597

St Steel

FT Hot-dip galvanised

Heavy-duty wall and support bracket with welded head plate.

Fire protection clamp



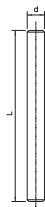
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSB FT	20	42.400	6418198

St Steel

FT Hot-dip galvanised

Fire protection clamp for ceiling fastening of the threaded rod lock for routing types with cable ladders and cable trays for the maintenance of electrical function to DIN 4102 Part 12.

Threaded rod



Type	Thread	Dimen- sion d mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M10 1M G	M10	10	1000	10	49.000	3141209
TR M12 1M G	M12	12	1000	10	62.000	3141306

St Steel

G Electrogalvanised

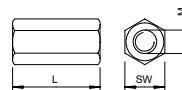
Threaded rod to DIN 976.

Connection sleeve

Type	Thread	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
		L mm	SW mm			
CSTR M10 G	M10	40	17	50	6.000	6410103
CSTR M12 G	M12	40	19	25	7.000	6410111

- Sl Steel
- G Electrogalvanised

Connection sleeve with continuous internal thread.

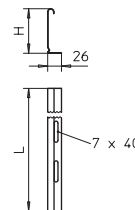


Barrier strip 45

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.

- Sl Steel
- FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.

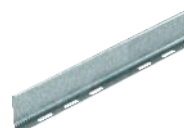
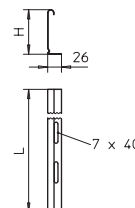


Barrier strip 60

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.

- Sl Steel
- FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.

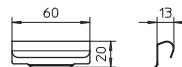


Separating retainer connector

Type	Pack. pcs	Weight kg/100 pcs.	Item No.

- V2A Stainless steel, A2

Separating retainer connector for screwless connection of the TSG separating retainer in all side heights.

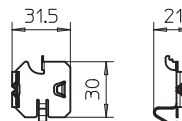


Hold-down clamp for separating retainer fastening in RKSM

Type	Pack. pcs	Weight kg/100 pcs.	Item No.

- V2A Stainless steel, A2

Clamping piece for screwless fastening of separating retainer in the cable tray types RKSM, MKS and SKS.

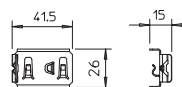


Hold-down clamp for separating retainer fastening

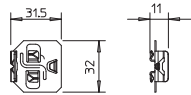
Type	Pack. pcs	Weight kg/100 pcs.	Item No.

- V2A Stainless steel, A2

Hold-down clamp for fastening separating retainer in mesh cable trays.



Hold-down clamp for separating retainer fastening VA



Type

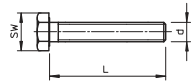
KS KL A2

V2A Stainless steel, A2

Hold-down clamp for screwless fastening of separating retainer in cable ladders.

Pack. pcs	Weight kg/100 pcs.	Item No.
30	0.512	6062284

Hexagonal bolt with nut and washer



Type

SKS 10x80 F

SKS 10x90 F

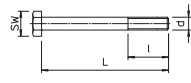
St Steel

F Hot-dip galvanised

Hexagonal bolt for universal fixing of structure components.

Type	Dimension mm	Dimension L mm	Dimension d mm	Dimension SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SKS 10x80 F	M10 x 80	80	10	17	20	7.700	6418250
SKS 10x90 F	M10 x 90	90	10	17	20	7.800	6418252

Hexagonal bolt with hexagonal nut, washer and tooth lock washer



Type

SKS 12x80 F

SKS 12x100 F

SKS 12x110 F

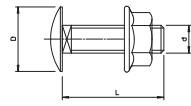
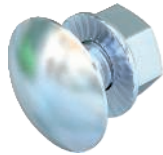
St Steel

F Hot-dip galvanised

Hexagonal bolt with hexagonal nut, washer and tooth lock washer.

Type	Dimension mm	Dimension L mm	Dimension d mm	Dimension SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SKS 12x80 F	M12 x 80	80	30	12	19	11.800	6418287
SKS 12x100 F	M12 x 100	100	30	12	19	12.600	6418295
SKS 12x110 F	M12 x 110	110	30	12	19	14.500	6418317

Truss-head bolt with flange nut



Type

FRSB 6x12 F

FRSB 6x16 F

FRSB 6x20 F

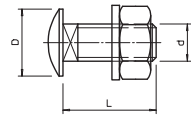
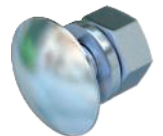
St Steel

F Hot-dip galvanised

Truss-head bolt with square neck including flange nut.

Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRSB 6x12 F	M 6 x 12	12	13.5	6	100	0.990	6406122
FRSB 6x16 F	M 6 x 16	16	13.5	6	100	0.800	6406157
FRSB 6x20 F	M 6 x 20	20	13.5	6	100	1.000	6406203

Truss-head bolt with nut and washer



Type

FRS 10x25 F

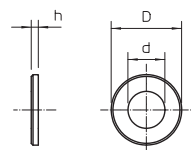
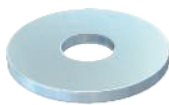
St Steel

F Hot-dip galvanised

Truss-head bolt with square neck. With washer and hexagonal nut.

Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRS 10x25 F	M 10 x 25	25	24	10	50	4.500	6407528

Large washer



Type

DIN440 11 F

DIN440 14 F

St Steel

F Hot-dip galvanised

Washer of particularly large outer diameter.

Type	Dimension D mm	Dimension d mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DIN440 11 F	34	11	3	100	1.985	6408729
DIN440 14 F	44	13.5	4	50	4.736	6408737

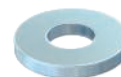
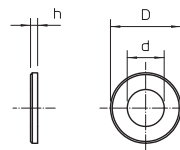
Washer

Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096
WS M12 D24 G	M12	13	24	2.5	100	0.627	3402126

St Steel

G Electrogalvanised

Washer according to DIN 125, shape A, for universal use.



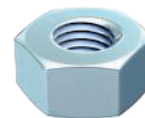
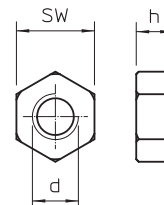
Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M10 G	M10	17	8.4	10	100	1.084	3400107
HN M12 G	M12	19	10.8	12	100	1.730	3400123

St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



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

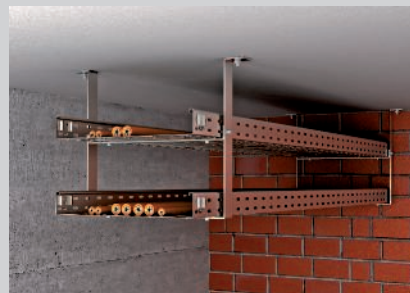
Installation principle



Single-layer ceiling mounting with suspension clamp.



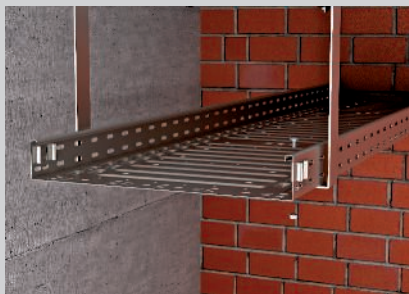
Mounting under sloping ceiling with individually adapted suspension clamp.



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

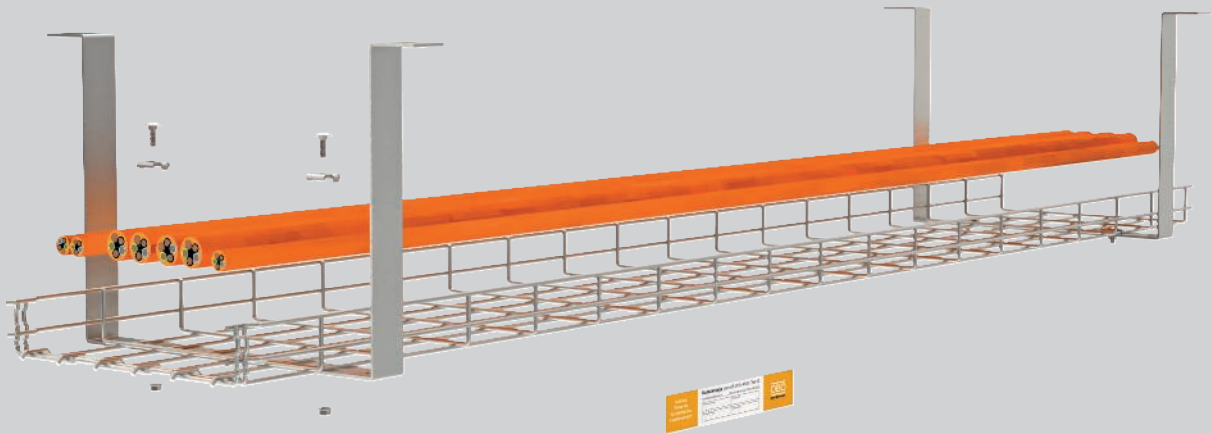
Component	Type		
Cable tray	RKSM 6... VA4571	1	2
Suspension clamp	AHB-T	1	1
Truss-head bolt	FRSB 6x12 A4	2	4
Intermediate clamp	AHB-TZ	0	1
Truss-head bolt	FRSB 6x16 A4	0	2

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



GR-Magic® mesh cable trays VA

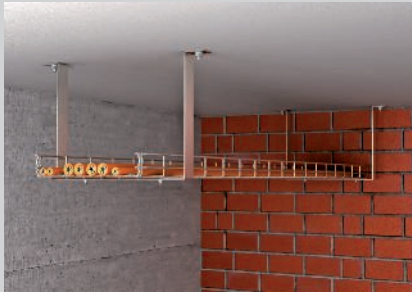
System description



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.

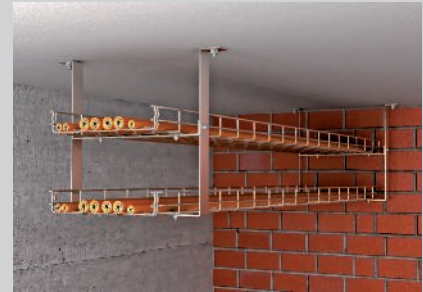
GR-Magic® mesh cable trays VA Installation principle



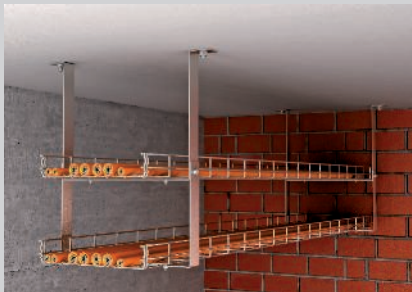
Single-layer ceiling mounting with suspension clamp.



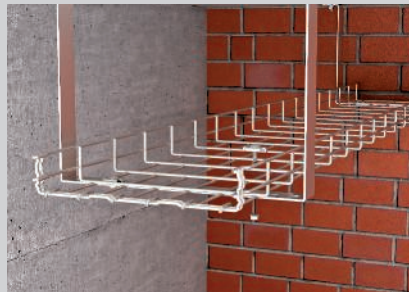
Mounting under sloping ceiling with individually adapted suspension clamp.



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

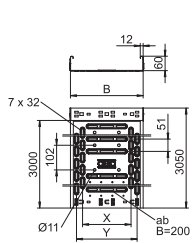
Ceiling mounting with suspension clamp

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 tray RKS-Magic® 60



Type	Width mm	Plate thickness mm	Dimen- sion B mm	Dimen- sion x mm	Dimen- sion y mm	Pack. m	Weight kg/100 m	Item No.
RKSM 610 A2	100	0.75	100	—	50	3	132.130	6047613
RKSM 620 A2	200	0.75	200	100	150	3	180.000	6047640
RKSM 630 A2	300	0.75	300	200	250	3	237.700	6047656
RKSM 610 A4	100	0.75	100	—	50	3	132.130	6047614
RKSM 620 A4	200	0.75	200	100	150	3	180.000	6047641
RKSM 630 A4	300	0.75	300	200	250	3	237.700	6047657

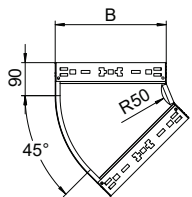
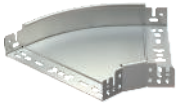
V2A Stainless steel, A2 V4A Stainless steel, A4

Cable tray with integrated quick fastening system. The usable length of the cable tray is 3,000 mm.

The cable tray possesses continuous side perforations of 7 x 20 mm for the installation of additional connection and mounting components.

The perforation for direct threaded rod suspension has a diameter of 11 mm.

45° Magic bend

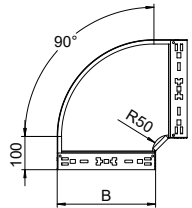
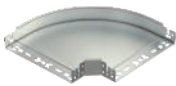


Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RBM 45 610 A2	100	100	1	50.400	6041080
RBM 45 620 A2	200	200	1	86.000	6041084
RBM 45 630 A2	300	300	1	128.300	6041086

V2A Stainless steel, A2

45° bend with quick connector system. For all cable tray types of 60 mm side height.

90° Magic bend

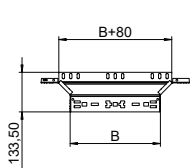


Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RBM 90 610 A2	100	100	1	65.700	6041180
RBM 90 620 A2	200	200	1	122.100	6041184
RBM 90 630 A2	300	300	1	192.800	6041186
RBM 90 610 A4	100	100	1	65.700	6041200
RBM 90 620 A4	200	200	1	122.100	6041204
RBM 90 630 A4	300	300	1	192.800	6041206

V2A Stainless steel, A2 V4A Stainless steel, A4

90° bend with quick connector system. For all cable tray types of 60 mm side height.

Magic add-on tee



Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RAAM 610 A2	100	100	1	37.700	6041270
RAAM 620 A2	200	200	1	50.600	6041275
RAAM 630 A2	300	300	1	63.500	6041277
RAAM 610 A4	100	100	1	37.700	6041290
RAAM 620 A4	200	200	1	50.600	6041294
RAAM 630 A4	300	300	1	63.500	6041296

V2A Stainless steel, A2 V4A Stainless steel, A4

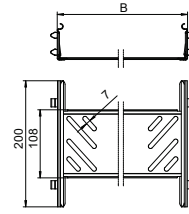
Add-on tee with quick connector system. For all cable tray types of 60 mm side height.

Magic straight connector set

Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KTSMV 610 A2	100	100	1	30.500	6068958
KTSMV 620 A2	200	200	1	37.200	6068962
KTSMV 630 A2	300	300	1	44.000	6068964
KTSMV 610 A4	100	100	1	30.500	6068980
KTSMV 620 A4	200	200	1	37.200	6068984
KTSMV 630 A4	300	300	1	44.000	6068986

V2A Stainless steel, A2 V4A Stainless steel, A4

Cable tray connector with quick fastening for the screwless connection of perforated cable trays with a side height of 60 mm.

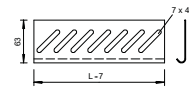


Bottom end plate

Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BEB 100 A2	100	100	100	5.400	7084013
BEB 200 A2	200	200	100	11.400	7084048
BEB 300 A2	300	300	100	17.200	7084064
BEB 100 A4	100	100	100	5.400	7084141
BEB 200 A4	200	200	100	11.400	7084143
BEB 300 A4	300	300	100	17.200	7084145

V2A Stainless steel, A2 V4A Stainless steel, A4

For base reinforcement at the ends of the tray and as cable protection.

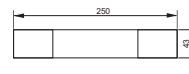


Identification plate for function maintenance

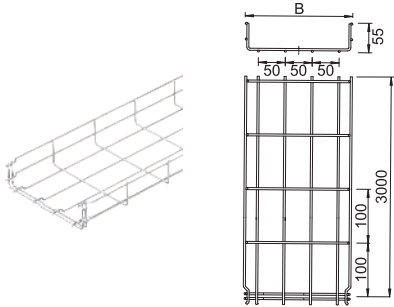
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



Mesh cable tray GR-Magic® 55

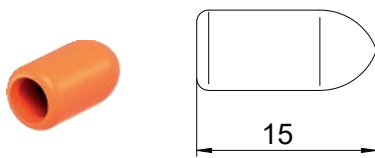


Type	Width mm	Wire Ø mm	Dimen- sion B mm	Pack. m	Weight kg/100 m	Item No.
GRM 55 300 A2	300	4.8	300	3	191.100	6001078
GRM 55 300 A4	300	4.8	300	3	191.100	6001093

V2A Stainless steel, A2 V4A Stainless steel, A4
GB Stained

Mesh cable tray with shaped connector of side height 55 mm.

End cap

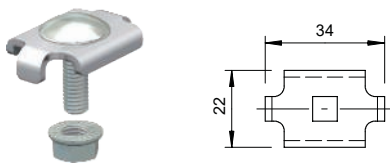


Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
GR KS 4.8 OR	Pure orange	500	0.030	6003754

PVC Polyvinylchloride

End cap to cover cut wire ends of mesh cable trays.

Clamping piece

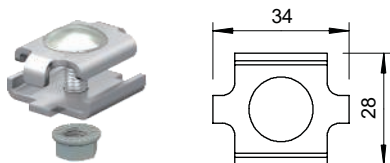


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
GKS 34 A2	20	2.000	6016839
GKS 34 A4	10	2.000	6016859

V2A Stainless steel, A2 V4A Stainless steel, A4

Hold-down clamp for fixing mesh cable trays to wall or support brackets.

Joint connector

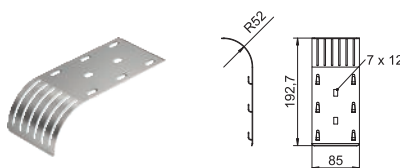


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
GSV 34 A2	20	3.000	6016642
GSV 34 A4	20	3.000	6016648

V2A Stainless steel, A2 V4A Stainless steel, A4

Screwed version of joint connector for mesh cable trays.

Drop-out plate



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KAB GR A2	10	14.100	6220145

V2A Stainless steel, A2

Drop-out plate for mesh cable trays.

Identification plate for function maintenance



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

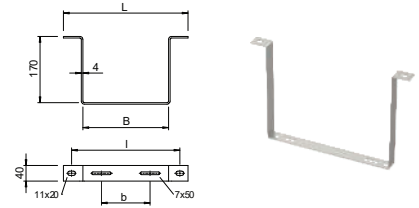
Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.

Suspension clamp for tunnel

Type	Dimension B mm	Dimension L mm	Dimension b mm	Dimension l mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AHB-T1712 VA4547	120	220	25	180	16	67.000	6363997
AHB-T1722 VA4547	220	320	125	280	14	78.000	6364007
AHB-T1732 VA4547	320	420	225	380	11	91.000	6364017

V5A Stainless steel, S31254

Special suspension clamp for cable support systems in tunnels. Additional variants, such as adapter or connection clamps, as well as various head shapes, on request.



Barrier strip 45

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 45 A2	45	0.75	3000	3	47.000	6062025
TSG 45 A4	45	0.75	3000	3	48.000	6062028

V2A Stainless steel, A2 V4A Stainless steel, A4

Separating retainer for separation of cables of different voltages or functions.



Barrier strip 60

Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 60 A2	60	0.75	3000	3	55.000	6062084
TSG 60 A4	60	0.75	3000	3	56.670	6062086

V2A Stainless steel, A2 V4A Stainless steel, A4

Separating retainer for separation of cables of different voltages or functions.

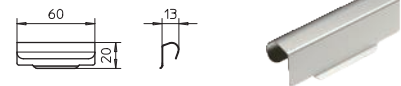


Separating retainer connector

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
TSGV A2	10	0.923	6067970

V2A Stainless steel, A2

Separating retainer connector for screwless connection of the TSG separating retainer in all side heights.

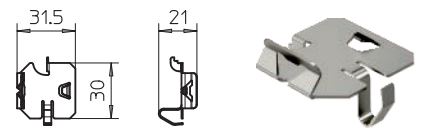


Hold-down clamp for separating retainer fastening in RKSM

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS KR A2	30	0.537	6062280

V2A Stainless steel, A2

Clamping piece for screwless fastening of separating retainer in the cable tray types RKSM, MKS and SKS.

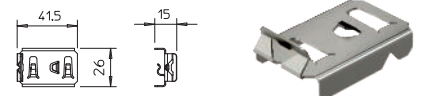


Hold-down clamp for separating retainer fastening

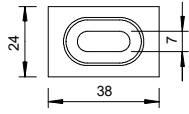
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS GR A2	30	0.830	6062282

V2A Stainless steel, A2

Hold-down clamp for fastening separating retainer in mesh cable trays.



Hold-down clamp



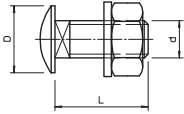
Type

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
GKT 38 A2	20	2.200	6017045
GKT 38 A4	10	2.200	6017092

V2A Stainless steel, A2 V4A Stainless steel, A4

Clamp for fastening barrier strip in mesh cable trays.

Truss-head bolt with nut and washer

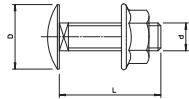
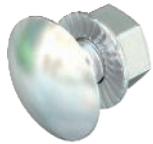


Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRS 6x12 A2	M 6 x 12	12	13.5	6	100	0.760	6406521
FRS 6x16 A2	M 6 x 16	15	13.5	6	100	0.900	6406556

V2A Stainless steel, A2

Truss-head bolt with square neck including washer and hexagonal nut.

Truss-head bolt with flange nut



Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRSB 6x12 A4	M 6 x 12	12	13.5	6	100	0.796	6406142
FRSB 6x16 A4	M 6 x 16	16	13.5	6	100	0.800	6406193

V4A Stainless steel, A4










Truss-head bolt with square neck including flange nut.





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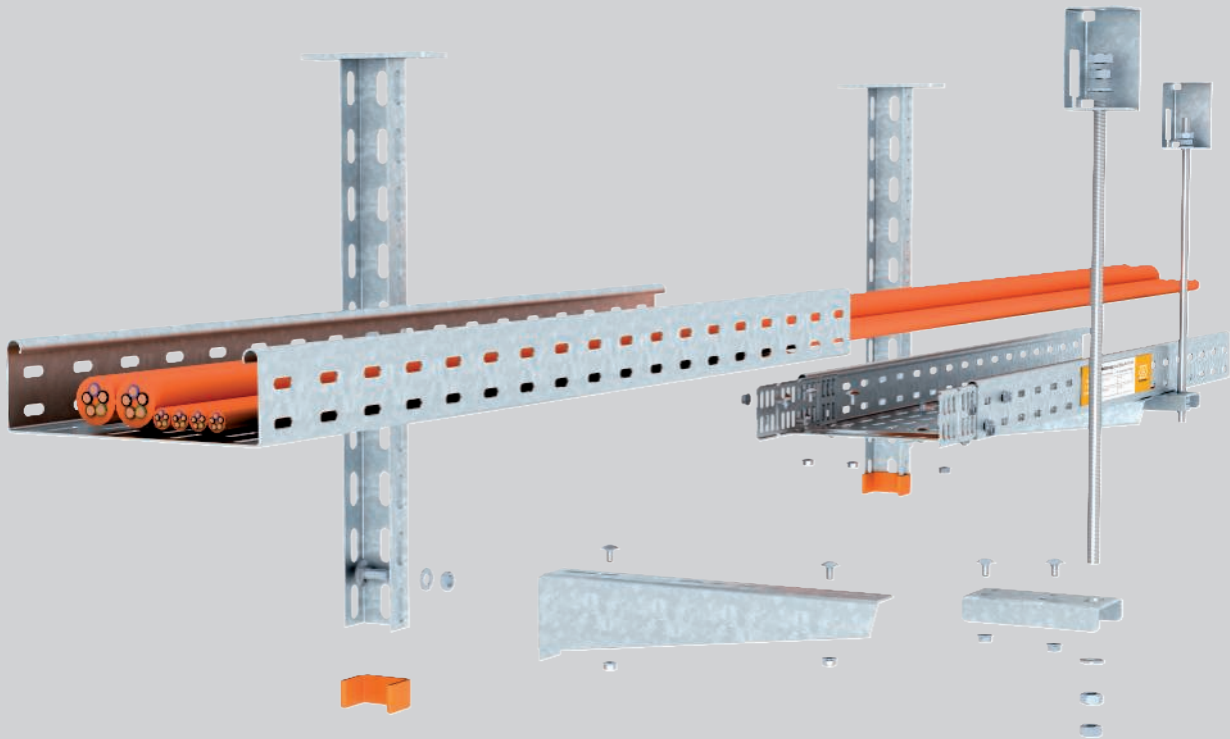
Maintaining electrical function – standard support structures, vertical ladders – strain relief

	System description, cable tray SKS	244
	System description, SKS cable tray, wall mounting	248
	System description, cable ladder LG, ceiling mounting	252
	System description, cable ladder LG, wall mounting	256
	Products cable trays, mesh cable trays and mounting components	260
	System description, vertical ladders	271
	Products	274
	System description, strain relief	278
	Products	281



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.

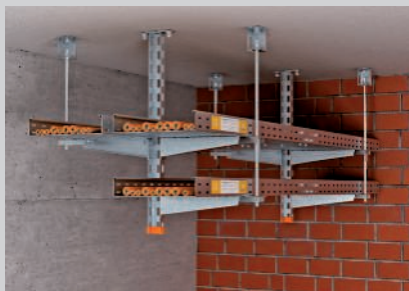


Cable trays SKS6..., ceiling mounting

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

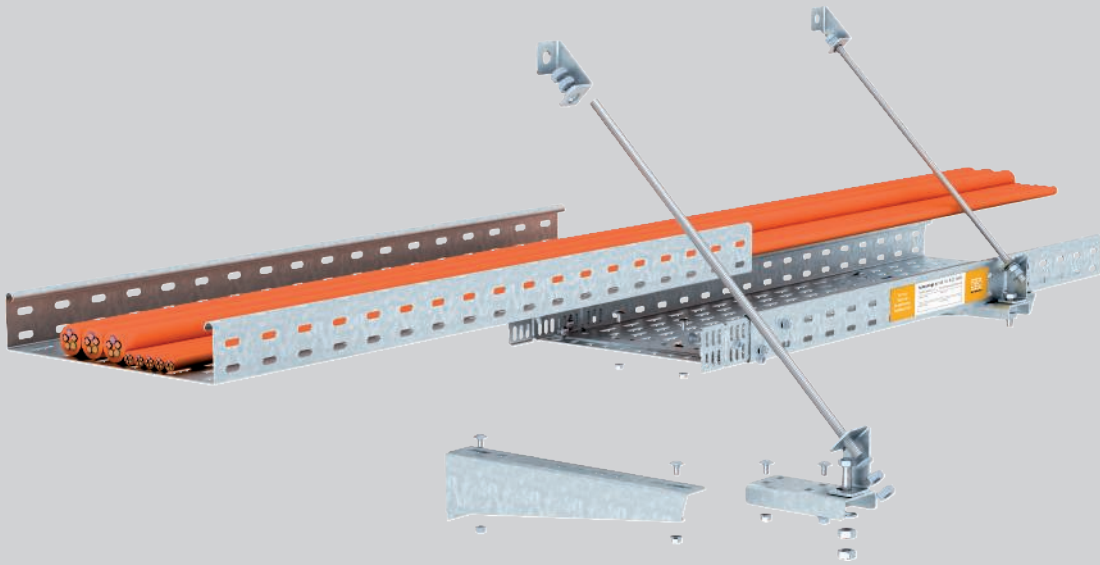
Component	Type		
Cable tray	SKS 6... FS	1	2
Connector	RWVL 60 FS	2	4
Joint plate	SSLB ... FS	1	2
Support	US 3 ... FS	1	2
Protective cap	US 3 KS OR	2	4
Threaded rod	2078 M10 G	2	4
Hexagonal nut	DIN 934 M10 G	6	10
Large washer	DIN440 11 F	4	8
Connection sleeve	12005 M10 G	0	2
Truss-head bolt	FRSB 6x 20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

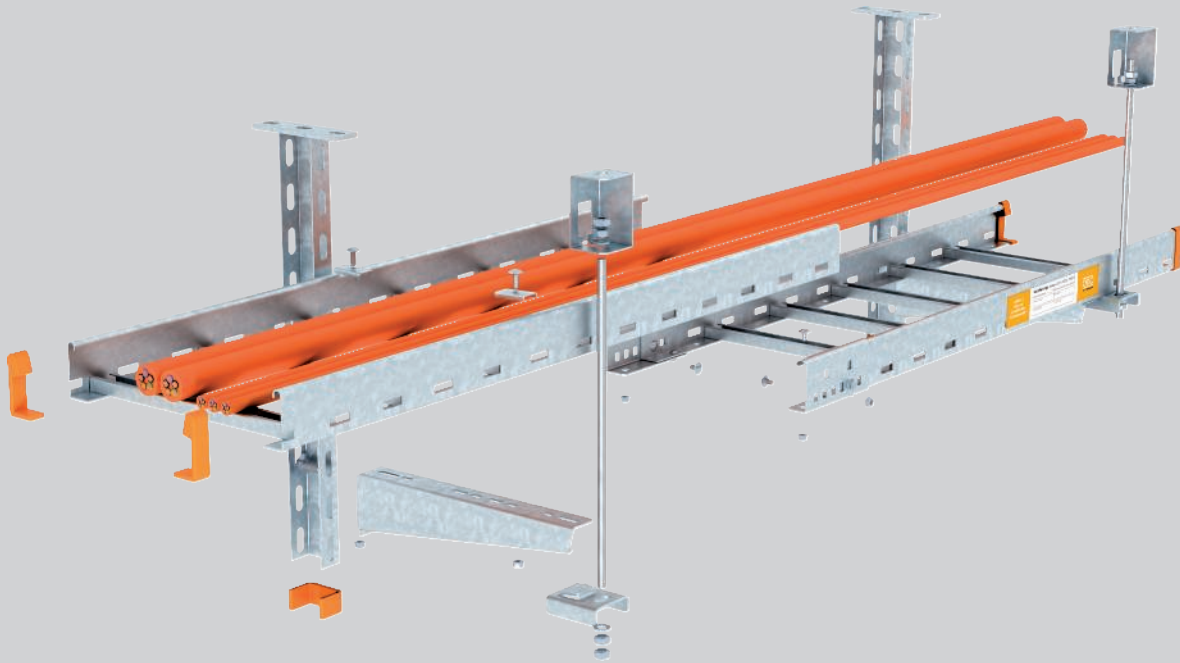
Component	Type	
Cable tray	SKS 6... FS	1
Connector	RWVL 60 FS	2
Joint plate	SSLB ... FS	1
Wall and support brackets	MWA12... FS	1
Truss-head bolt	FRSB 6x 15 F	2
Connection component	ABR FT	1
Connection component	ABS FS	2
Hexagonal bolt	SKS M10x40 F	1
Threaded rod	2078 M10 G	1
Hexagonal nut	DIN 934 M10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



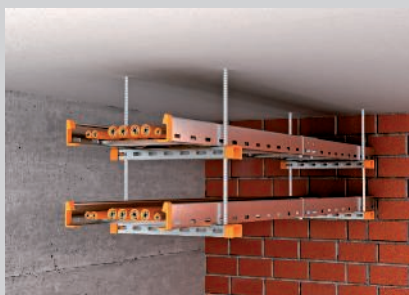
Attachment of the connection component on the lower flange of the ladder rail.



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

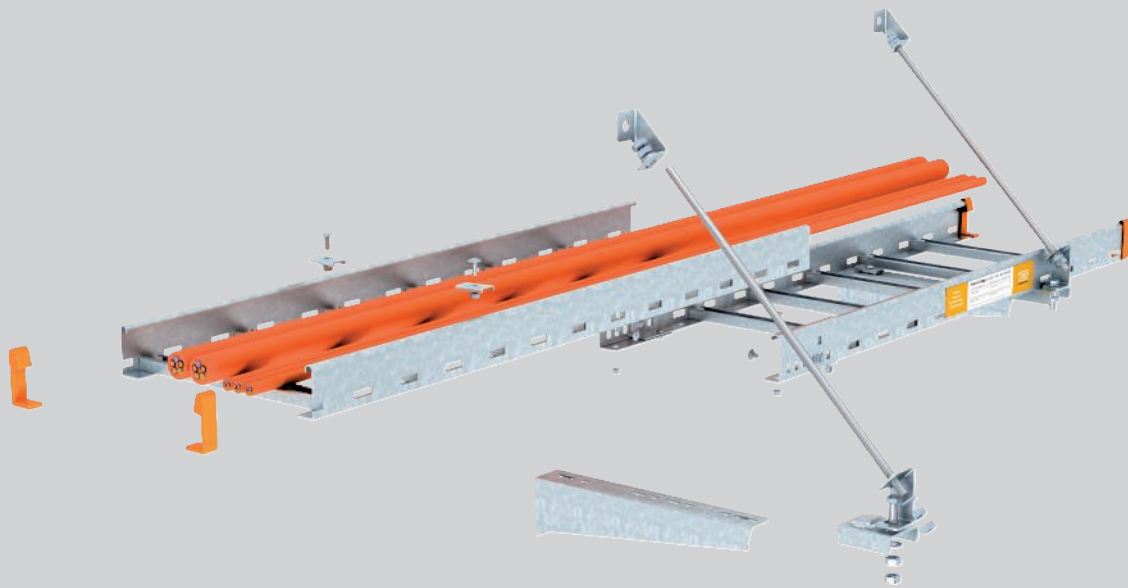
Component	Type		
Cable ladder	LG 6... VSF FS	1	2
External connector	AVL 60 FS	2	4
Support	US 3 ... FS	1	2
Protective cap	US 3 KS OR	2	4
Threaded rod	2078 M10 G	2	4
Hexagonal nut	DIN 934 M10 G	6	10
Large washer	DIN440 11 F	4	8
Connection sleeve	12005 M10 G	0	2
Clamping piece	LKS 40 FS	2	4
Large washer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

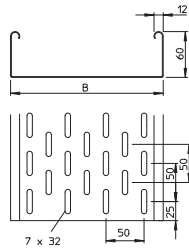
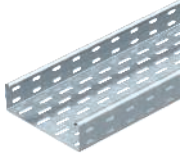
Component	Type	
Cable ladder	LG 6...VSF FS	1
External connector	AVL 60 FS	2
Wall and support brackets	MWA12... FS	1
Clamping piece	LKS 40 FS	2
Connection component	ABR FT	1
Connection component	ABS FS	2
Hexagonal bolt	SKS M10x40 F	1
Threaded rod	2078 M10 G	1
Hexagonal nut	DIN 934 M10 G	5
Washer	966 M10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

Choose the fastening anchors according to the substrate



Cable tray SKS

Cable tray SKS 60



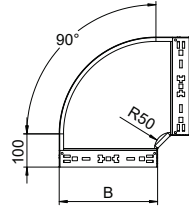
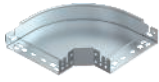
Type	Width mm	Plate thickness mm	Dimen- sion B mm	Pack. m	Weight kg/100 m	Item No.
SKS 610 FS	100	1.50	100	3	239.400	6056105
SKS 620 FS	200	1.50	200	3	364.000	6056202
SKS 630 FS	300	1.50	300	3	463.670	6056296

St Steel

FS Strip-galvanised

SKS 60 = Heavy-duty cable tray system with 60 mm side height.

90° Magic bend



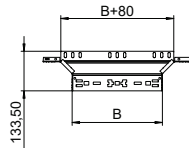
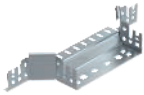
Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RBM 90 610 FS	100	100	1	65.700	6041130
RBM 90 620 FS	200	200	1	122.100	6041134
RBM 90 630 FS	300	300	1	192.800	6041136

St Steel

FS Strip-galvanised

90° bend with quick connector system. For all cable tray types of 60 mm side height.

Magic add-on tee



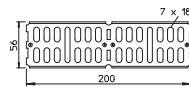
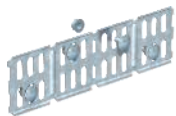
Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RAAM 610 FS	100	100	1	37.700	6041230
RAAM 620 FS	200	200	1	50.600	6041234
RAAM 630 FS	300	300	1	63.500	6041236

St Steel

FS Strip-galvanised

Magic add-on tee with quick connector system. For all cable tray types of 60 mm side height.

Straight and angle connector 60



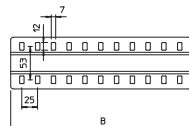
Type	Dimension mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RWVL 60 FS	200 x 56	10	16.400	6067115

St Steel

FS Strip-galvanised

Straight and angle connector for cable trays and fittings with a side height of 60 mm.

Joint plate



Type	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SSLB 100 FS	100	20	7.700	7070205
SSLB 200 FS	200	20	16.700	7070213
SSLB 300 FS	300	20	25.700	7070217

St Steel

FS Strip-galvanised

Wide joint plate for use in all cable trays and wide span cable trays.



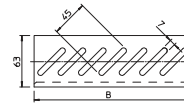
Bottom end plate

Type	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
	Width mm	B mm			
BEB 100 FS	100	100	100	5.400	7083106
BEB 200 FS	200	200	100	11.400	7083203
BEB 300 FS	300	300	100	17.200	7083300

St Steel

FS Strip-galvanised

Bottom end plate for floor reinforcement at the ends of the cable tray and as cable protection.



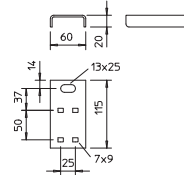
Connection component

Type	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

FT Hot-dip galvanised

The connection component is the connection between the threaded rod lock and the suspension system for the routing types with cable trays for the maintenance of electrical function to DIN 4102 Part 12. Including bolts and nuts.



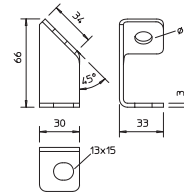
Connection component, sloping

Type	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel

FS Strip-galvanised

The connection component is the connecting element for the sloping arrangement of the threaded rod locking for wall mounting of the standard routing types with cable ladders and cable trays for the maintenance of electrical function to DIN 4102 Part 12.

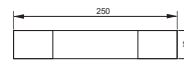


Identification plate for function maintenance

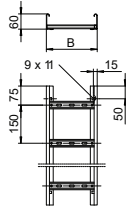
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



Cable ladder

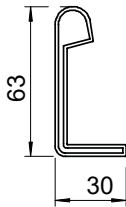


Type	Width mm	Length mm	Rung spacing mm	Dimen- sion B mm	Pack. m	Weight kg/100 m	Item No.
LG 620 VSF6000FS	200	6000	150	200	6	324.700	6207501
LG 630 VSF6000FS	300	6000	150	300	6	373.300	6207505
LG 640 VSF6000FS	400	6000	150	400	6	422.000	6207509
LG 620 VSF FT	200	6000	150	200	6	351.700	6207523
LG 630 VSF FT	300	6000	150	300	6	403.300	6207527
LG 640 VSF FT	400	6000	150	400	6	455.000	6207531

St Steel
FS Strip-galvanised **FT** Hot-dip galvanised

Maintenance of electrical function class E30 to E90
 Standard routing system DIN 4102 Part 12
 For the cable ladder routing type, a cable ladder is used with a rail height of 60 mm, a material thickness of 1.5 mm and a rung distance of 150 mm.
 Cable ladder with riveted C profile rungs which are open in an upwards direction. Rolled side rail for reinforcement and as edge protection.

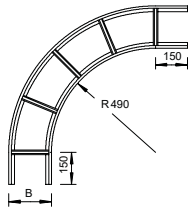
End cap



Type	Colour	Pack. pair	Weight kg/100 pairs	Item No.
SKH 60 OR	Pastel orange	40	1.072	6222537

PE Polyethylene
 End cap to cover cable ladder ends of side height 60 mm.

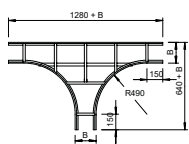
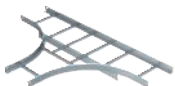
90° bend VS



Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LBI 90 620 VS FS	200	200	1	358.000	6211224
LBI 90 630 VS FS	300	300	1	412.000	6211232
LBI 90 640 VS FS	400	400	1	497.000	6211240

St Steel
FS Strip-galvanised
 90° bend, horizontal, for cable ladders with medium-duty rungs (VS) and a side height of 60 mm.

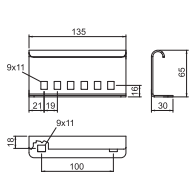
T piece, VS



Type	Width mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LT 620 VS FS	200	200	1	677.000	6213723
LT 630 VS FS	300	300	1	789.000	6213731
LT 640 VS FS	400	400	1	871.000	6213758

St Steel
FS Strip-galvanised
 Tee, VS rung, side height 60 mm, horizontal, for cable ladders with medium-duty rungs (VS) and a side height of 60 mm.

External connector



Type	Width mm	Side height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AVL 60 FS	135	65	10	23.200	6208770

St Steel
FS Strip-galvanised

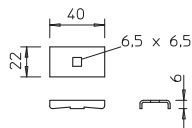
External connector for mechanical connection of cable ladder sections for routing types with cable ladders for the maintenance of electrical function to DIN 4102 Part 12. Including bolts.

Clamping piece

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LKS 40 FS	10	3.400	6221076

- St** Steel
- FS** Strip-galvanised

Hold-down clamp for fastening cable ladders.

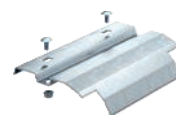
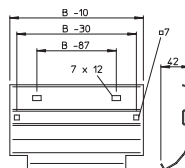


Drop-out plate

Type	Width mm	Side height mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LAB 20 FT	200	45	200	20	37.000	6220436
LAB 30 FT	300	45	300	25	58.000	6220444
LAB 40 FT	400	45	400	25	78.000	6220452

- St** Steel
- FT** Hot-dip galvanised

Exit plate for installation on the rung for vertically exiting cables.

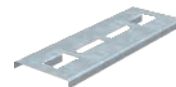
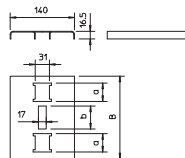


Rung support plate for function maintenance

Type	Dimension B mm	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SAB20 FS	180	40	50	25	31.000	6222943
SAB30 FS	280	60	80	25	50.000	6222951
SAB40 FS	380	60	75	25	65.000	6222978

- St** Steel
- FS** Strip-galvanised

Rung support plates to increase the support area for the cables in the fittings for routing types with cable ladders for function maintenance to DIN 4102 Part 12. Use the support plates to ensure the largest possible support surface in the cable ladder fittings for cables that maintain electrical function in the event of fire. The rung support plates are just laid loosely on the rungs of the cable ladder fittings. The lugs pointing down prevent slippage.



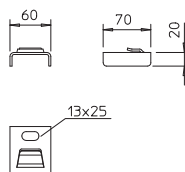
Connection component

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
ABL FT	20	14.300	6221467

- St** Steel
- FT** Hot-dip galvanised

The connection component is the connection between the threaded rod lock and the suspension system for the routing types with cable ladders for that maintain electrical function to DIN 4102 Part 12.

It is attached to the under-belt of the ladder rail at a distance of max. 100 mm from the bracket. When the threaded rod has been mounted, the connection component is secured against slipping.

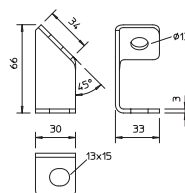


Connection component, sloping

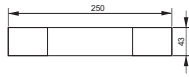
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
ABS FS	20	7.200	6365027

- St** Steel
- FS** Strip-galvanised

The connection component is the connecting element for the sloping arrangement of the threaded rod locking for wall mounting of the standard routing types with cable ladders and cable trays for the maintenance of electrical function to DIN 4102 Part 12.



Identification plate for function maintenance



Type

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



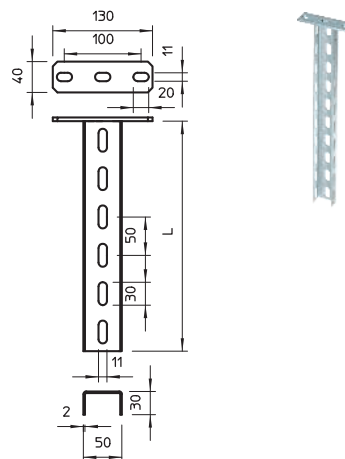
US 3 support

Type	Length mm	Material thickness mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 K 20 FT	200	2	200	1	50.500	6342351
US 3 K 30 FT	300	2	300	1	64.400	6342353
US 3 K 40 FT	400	2	400	1	78.300	6342355
US 3 K 50 FT	500	2	500	1	92.300	6342357
US 3 K 60 FT	600	2	600	1	106.200	6342359
US 3 K 70 FT	700	2	700	1	120.200	6342362
US 3 K 80 FT	800	2	800	1	134.100	6342364
US 3 K 90 FT	900	2	900	1	147.800	6342366
US 3 K 100 FT	1000	2	1000	1	162.000	6342368
US 3 K 110 FT	1100	2	1100	1	175.900	6342370
US 3 K 120 FT	1200	2	1200	1	189.900	6342372

St Steel

FT Hot-dip galvanised

Suspended support (U profile) of dimensions 50 x 30 mm with welded head plate.



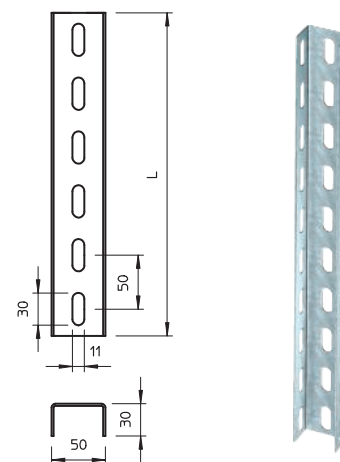
US 3 support

Type	Dimension L mm	Material thickness mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 20 FS	200	2	1	27.000	6342302
US 3 30 FS	300	2	1	40.000	6342304
US 3 40 FS	400	2	1	53.000	6342306
US 3 50 FS	500	2	1	67.000	6342308
US 3 60 FS	600	2	1	80.000	6342310
US 3 70 FS	700	2	1	93.000	6342312
US 3 80 FS	800	2	1	107.000	6342314
US 3 90 FS	900	2	1	120.000	6342316
US 3 100 FS	1000	2	1	133.000	6342318
US 3 150 FS	1500	2	1	200.000	6342328
US 3 200 FS	2000	2	1	266.000	6342338

St Steel

FS Strip-galvanised

U support in fixed lengths. Dimensions 30 x 50 mm.



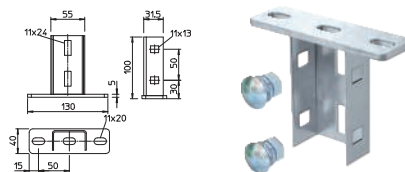
Head plate

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 3 FT	10	46.800	6348874

St Steel

FT Hot-dip galvanised

Head plate for mounting on US 3 supports.

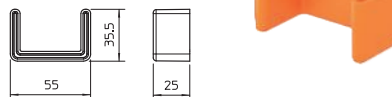


End cap

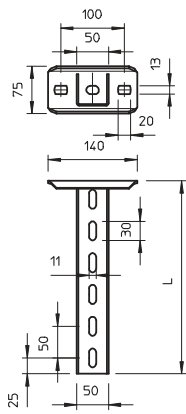
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 3 KS OR	Pastel orange	20	1.068	6338458

PE Polyethylene

End cap to cover the ends of US 3 supports.



US 5 support



Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 K 20 FT	200	2.5	200	1	85.000	6341527
US 5 K 30 FT	300	2.5	300	1	110.000	6341535
US 5 K 40 FT	400	2.5	400	1	136.000	6341543
US 5 K 50 FT	500	2.5	500	1	161.000	6341551
US 5 K 60 FT	600	2.5	600	1	185.000	6341578
US 5 K 70 FT	700	2.5	700	1	210.000	6341586
US 5 K 80 FT	800	2.5	800	1	236.000	6341594
US 5 K 90 FT	900	2.5	900	1	261.000	6341608
US 5 K 100 FT	1000	2.5	1000	1	286.000	6341616
US 5 K 110 FT	1100	2.5	1100	1	311.000	6341624
US 5 K 120 FT	1200	2.5	1200	1	337.000	6341632

SI Steel

FT Hot-dip galvanised

U support of dimensions 50 x 50 mm with welded head plate.

US 5 support



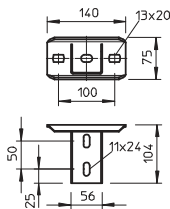
Type	Length mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 30 FT	300	2.5	300	1	79.000	6340903
US 5 40 FT	400	2.5	400	1	106.000	6340911
US 5 50 FT	500	2.5	500	1	133.000	6340938
US 5 60 FT	600	2.5	600	1	160.000	6340946
US 5 70 FT	700	2.5	700	1	175.000	6340950
US 5 80 FT	800	2.5	800	1	200.000	6340954
US 5 90 FT	900	2.5	900	1	227.000	6340958
US 5 100 FT	1000	2.5	1000	1	265.000	6340962
US 5 150 FT	1500	2.5	1500	1	395.000	6340966
US 5 200 FT	2000	2.5	2000	1	506.000	6340970

SI Steel

FT Hot-dip galvanised

U support in fixed lengths. Dimensions 50 x 50 mm.

Head plate US 5



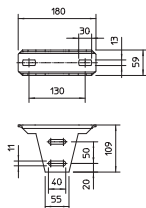
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KUS 5 FT	10	61.000	6348904

SI Steel

FT Hot-dip galvanised

Head plate for installation in US 5 support.

Head plate, variable FT



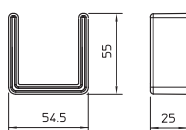
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KU 5 V FT	4	82.000	6348920

SI Steel

FT Hot-dip galvanised

Variable head plate for installation on US 5 support.

End cap



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
US 5 KS OR	Pastel orange	20	1.300	6338462

PE Polyethylene

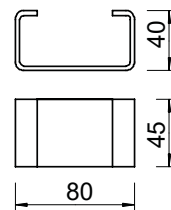
End cap to cover the ends of US 5 supports.

Spacer

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 45 FT	20	18.000	6416500

- St Steel
- FT Hot-dip galvanised

Spacer for use in U 5 support and in the head plate, type KU 7 VQP.

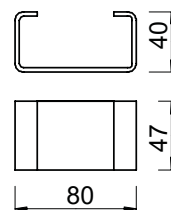


Spacer

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
DSK 47 FT	20	19.000	6416504

- St Steel
- FT Hot-dip galvanised

Spacer for use in head plate, type KU 5 V.

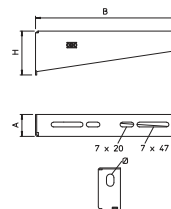


Wall and support bracket MWA 12

Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MWA 12 11S FS	110	53	32.5	110	11	30	17.200	6424716
MWA 12 21S FS	210	65	32.5	210	11	30	29.000	6424732
MWA 12 31S FS	310	75	38	310	11	30	50.300	6424740
MWA 12 41S FS	410	83	38	410	11	30	68.000	6424759

- St Steel
- FS Strip-galvanised

Light-duty wall and support bracket.

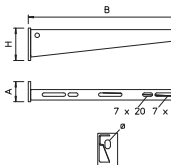


Wall and support bracket AW 15

Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 15 11 FT	110	50	40	110	11	30	14.000	6420656
AW 15 21 FT	210	60	40	210	11	30	24.700	6420680
AW 15 31 FT	310	65	40	310	11	30	39.900	6420710
AW 15 41 FT	410	70	40	410	11	30	54.000	6420745

- St Steel
- FT Hot-dip galvanised

Light-duty wall and support bracket with welded head plate.

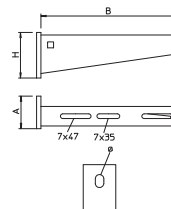


Wall and support bracket AW 30

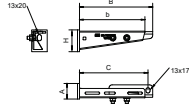
Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW 30 21 FT	210	70	50	210	13	1	39.300	6419720
AW 30 31 FT	310	80	50	310	13	1	63.000	6419747
AW 30 41 FT	410	80	50	410	13	1	89.000	6419763

- St Steel
- FT Hot-dip galvanised

Medium-duty wall and support bracket with welded head plate.



Wall and support bracket AW 30 F

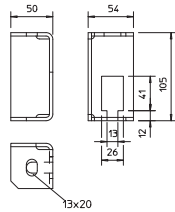


Type	Dimension b mm	Dimension B mm	Dimension C mm	Dimension H mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
AW30F21 FT	210	235	220	70	50	1	79.000	6417027
AW30F31 FT	310	335	320	80	50	1	100.000	6417043
AW30F41 FT	410	435	420	80	50	1	127.000	6417078

- St** Steel
- FT** Hot-dip galvanised

Bracket for mounting on suspended supports or as wall bracket for cable tray routing type above fire protection ceilings and for routing types with cable ladders and cable trays for the maintenance of electrical function according to DIN 4102 Part 12. The brackets are supplied ready-mounted.

Fire protection clamp

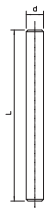


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
BSB FT	20	42.400	6418198

- St** Steel
- FT** Hot-dip galvanised

Fire protection clamp for ceiling fastening of the threaded rod lock for routing types with cable ladders and cable trays for the maintenance of electrical function to DIN 4102 Part 12.

Threaded rod

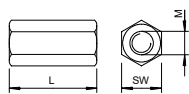
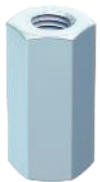


Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M8 1M G	M8	8	1000	10	30.000	3141128
TR M10 1M G	M10	10	1000	10	49.000	3141209
TR M12 1M G	M12	12	1000	10	62.000	3141306

- St** Steel
- G** Electrogalvanised

Threaded rod to DIN 976.

Connection sleeve

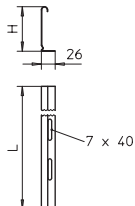


Type	Thread	Dimension L mm	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CSTR M8 G	M8	30	13	50	2.000	6410081
CSTR M10 G	M10	40	17	50	6.000	6410103
CSTR M12 G	M12	40	19	25	7.000	6410111

- St** Steel
- G** Electrogalvanised

Connection sleeve with continuous internal thread.

Barrier strip 45



Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 45 FS	45	0.75	3000	3	46.700	6062033

- St** Steel
- FS** Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.



Barrier strip 60

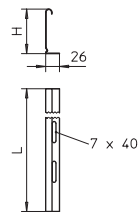


Type	Dimension H mm	Plate thickness mm	Dimension L mm	Pack. m	Weight kg/100 m	Item No.
TSG 60 FS	60	0.75	3000	3	55.700	6062068

Sl Steel

FS Strip-galvanised

Separating retainer for separation of cables of different voltages or functions.

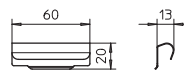


Separating retainer connector

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
TSGV A2	10	0.923	6067970

V2A Stainless steel, A2

Separating retainer connector for screwless connection of the TSG separating retainer in all side heights.

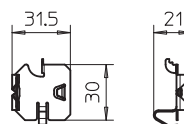


Hold-down clamp for separating retainer fastening in RKSM

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS KR A2	30	0.537	6062280

V2A Stainless steel, A2

Clamping piece for screwless fastening of separating retainer in the cable tray types RKSM, MKS and SKS.

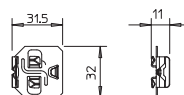


Hold-down clamp for separating retainer fastening VA

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS KL A2	30	0.512	6062284

V2A Stainless steel, A2

Hold-down clamp for screwless fastening of separating retainer in cable ladders.



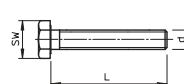
Hexagonal bolt with nut and washer

Type	Dimension mm	Dimension L mm	Dimension d mm	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SKS 10x40 F	M10 x 40	40	10	17	50	4.900	3160750
SKS 10x60 F	M10 x 60	60	10	17	20	6.000	6408516
SKS 10x80 F	M10 x 80	80	10	17	20	7.700	6418250

Sl Steel

F Hot-dip galvanised

Hexagonal bolt for universal fixing of structure components.



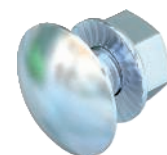
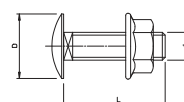
Truss-head bolt with flange nut

Type	Dimension mm	Dimension L mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRSB 6x12 F	M 6 x 12	12	13.5	6	100	0.990	6406122
FRSB 6x16 F	M 6 x 16	16	13.5	6	100	0.800	6406157
FRSB 6x20 F	M 6 x 20	20	13.5	6	100	1.000	6406203

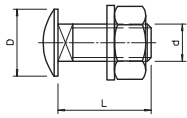
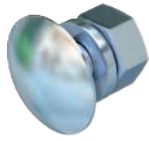
Sl Steel

F Hot-dip galvanised

Truss-head bolt with square neck including flange nut.



Truss-head bolt with nut and washer



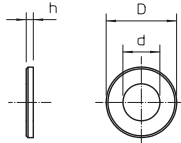
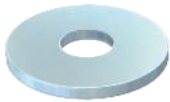
Type	Dimension mm	Dimen- sion L mm	Dimen- sion D mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
FRS 10x25 F	M 10 x 25	25	24	10	50	4.500	6407528
FRS 10x25 TPS F	M10 x 25	25	18	10	50	4.300	6407536
FRS 12x25 F	M12 x 25	25	30	12	10	6.400	6406254

St Steel

F Hot-dip galvanised

Truss-head bolt with square neck. With washer and hexagonal nut.

Large washer



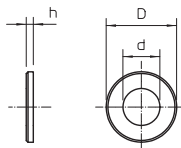
Type	Dimen- sion D mm	Dimen- sion d mm	Dimen- sion h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DIN440 7 F	22	6.6	2	100	0.550	6408702
DIN440 11 F	34	11	3	100	1.985	6408729

St Steel

F Hot-dip galvanised

Washer of particularly large outer diameter.

Washer



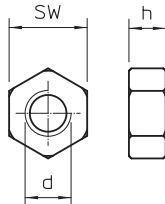
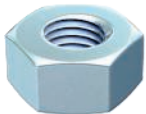
Type	Thread	Dimen- sion d mm	Dimen- sion D mm	Dimen- sion h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M8 D16 G	M8	8.4	16	1.6	100	0.214	3402088
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096
WS M12 D24 G	M12	13	24	2.5	100	0.627	3402126

St Steel

G Electrogalvanised

Washer according to DIN 125, shape A, for universal use.

Hexagonal nut DIN 934



Type	Thread	SW mm	Dimen- sion h mm	Dimen- sion d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M8 G	M8	13	6.8	8	100	0.474	3400085
HN M10 G	M10	17	8.4	10	100	1.084	3400107
HN M12 G	M12	19	10.8	12	100	1.730	3400123

St Steel

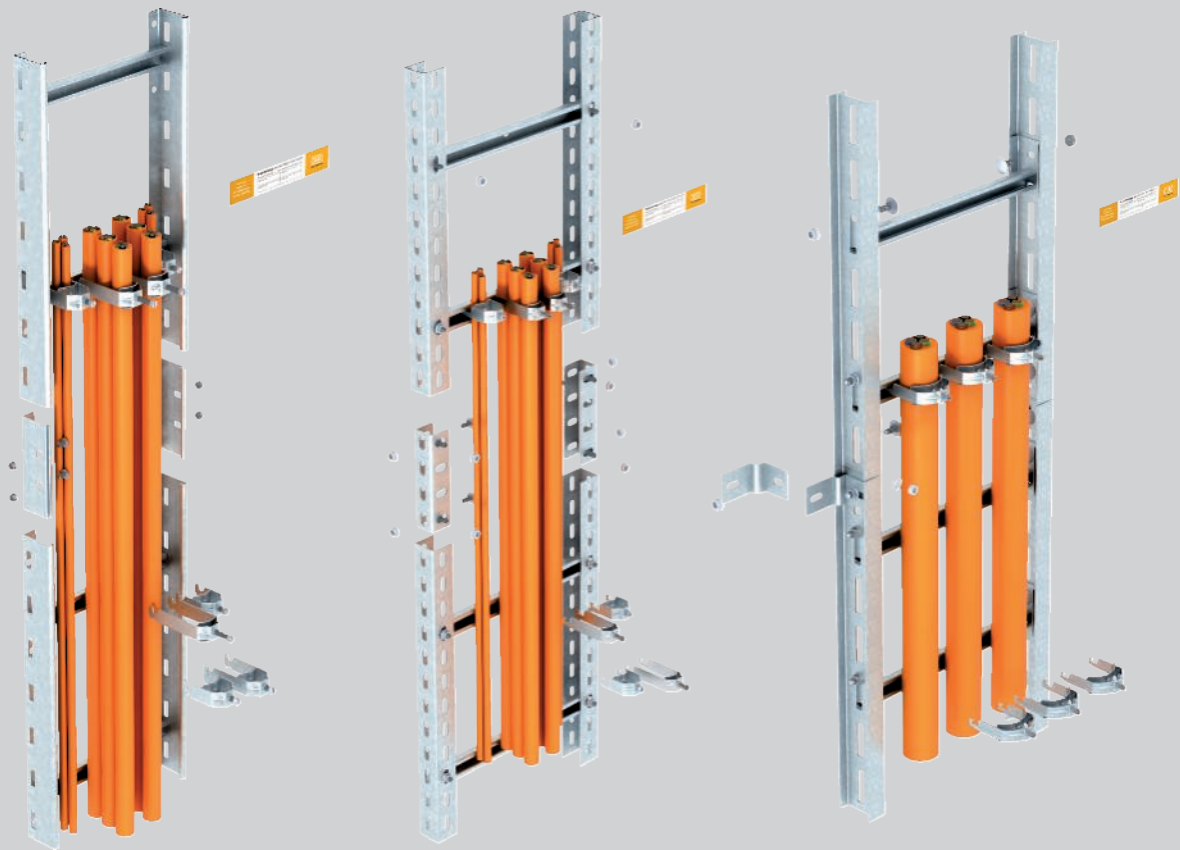
G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



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

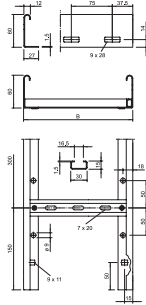
Mounting parameters, industrial vertical ladder (type SLS)

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



Vertical ladders

Cable ladder LG 60, 3 m VS



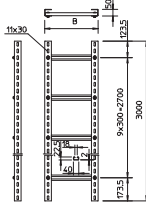
Type	Width mm	Rail thickness mm	Length mm	Rung spacing mm	Dimen- sion B mm	Pack. m	Weight kg/100 m	Item No.
LG 620 VS 3 FS	200	1.5	3000	300	200	3	281.700	6208538
LG 630 VS 3 FS	300	1.5	3000	300	300	3	306.000	6208541
LG 640 VS 3 FS	400	1.5	3000	300	400	3	330.000	6208544
LG 620 VS 6 FS	200	1.5	6000	300	200	6	269.750	6208627
LG 630 VS 6 FS	300	1.5	6000	300	300	6	293.380	6208630
LG 640 VS 6 FS	400	1.5	6000	300	400	6	317.083	6208633

St Steel

FS Strip-galvanised

Cable ladder with perforated side rail of side height 60 mm with riveted C profile frames, open in an upwards direction (VS version).

Vertical ladder, SLM50



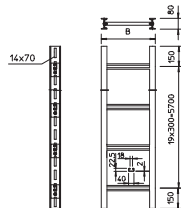
Type	Dimen- sion B mm	Rung spacing mm	Length mm	Weight kg/100 m	Item No.
SLM50C40F 40 FT	400	300	3000	766.000	6010008
SLM50C40F 50 FT	500	300	3000	821.000	6010016
SLM50C40F 60 FT	600	300	3000	876.000	6010024

St Steel

FT Hot-dip galvanised

Heavyweight vertical ladder system for the maintenance of electrical function to DIN 4102 Part 12. Approved clips, type 2056 U/M. Supplied unmounted.

Vertical ladder, SLS80



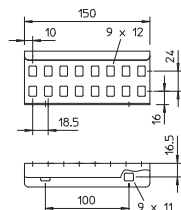
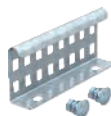
Type	Dimen- sion B mm	Rung spacing mm	Length mm	Weight kg/100 m	Item No.
SLS80C40F 40 FT	400	300	3000	1,487.000	6010105
SLS80C40F 50 FT	500	300	3000	1,542.000	6010113
SLS80C40F 60 FT	600	300	3000	1,597.000	6010121

St Steel

FT Hot-dip galvanised

Industrial vertical ladder system for the maintenance of electrical function to DIN 4102 Part 12. Approved clips, type 2056 U/M. Supplied unmounted.

Straight connector



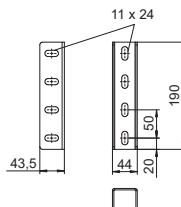
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LVG 60 FS	10	22.000	6208840

St Steel

FS Strip-galvanised

Straight connector as external connector to connect cable ladders and fittings with a side height of 60 mm and continuous rail perforation.

U support connector



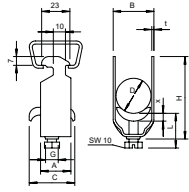
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VUS 5 FT	10	44.000	6018505

St Steel

FT Hot-dip galvanised

U support connector to connect US 5 supports.

Clamp clip, double, metal pressure trough



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056 M2 12 FT	8 - 12	50	3.980	1156179
2056 M2 16 FT	12 - 16	50	4.750	1156187
2056 M2 22 FT	16 - 22	50	6.900	1156195
2056 M2 28 FT	22 - 28	50	7.800	1156209

St Steel

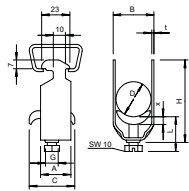
FT Hot-dip galvanised

Suitable for all C profile rails with slot width 16–17 mm.
Clip, bolt and pressure trough made of hot-dip galvanised steel.

Dimensions

D mm	A mm	B mm	C mm	G	t mm	x mm	H mm	L mm
8-12	23	16	34	M6	1.5	5	52	34
12-16	23	20	34	M6	1.5	5	61	34
16-22	23	27	34	M6	1.5	5	73	47
22-28	23	33	34	M6	2	5	87	47

Clamp clip, triple, metal pressure trough



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056 M3 12 FT	8 - 12	50	4.050	1156241
2056 M3 16 FT	12 - 16	50	5.800	1156268
2056 M3 22 FT	16 - 22	50	6.500	1156276
2056 M3 28 FT	22 - 28	50	9.500	1156284

St Steel

FT Hot-dip galvanised

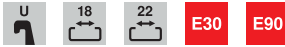
Suitable for all C profile rails with slot width 16–17 mm.
Clip, bolt and pressure trough made of hot-dip galvanised steel.

Dimensions

D mm	A mm	B mm	C mm	G	t mm	x mm	H mm	L mm
8-12	23	16	34	M6	1.2	5	70	47
12-16	23	20	34	M6	1.5	5	82	47
16-22	23	27	34	M6	1.5	5	101	47
22-28	23	33	34	M6	2	5	121	47



Clamp clip, single, metal pressure trough

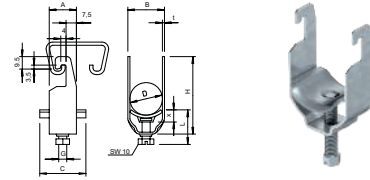


Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056U M 12 FT	8 - 12	100	3.300	1158007
2056U M 16 FT	12 - 16	100	3.520	1158015
2056U M 22 FT	16 - 22	100	3.960	1158023
2056U M 28 FT	22 - 28	100	5.890	1158031
2056U M 34 FT	28 - 34	100	7.650	1158058
2056U M 40 FT	34 - 40	100	8.360	1158066
2056U M 46 FT	40 - 46	100	10.890	1158074
2056U M 52 FT	46 - 52	100	11.660	1158082
2056U M 58 FT	52 - 58	100	14.740	1158090
2056U M 64 FT	58 - 64	100	15.730	1158104
2056U M 70 FT	64 - 70	50	18.200	1158112
2056U M 76 FT	70 - 76	25	20.600	1158120

St Steel

FT Hot-dip galvanized

Suitable for all C profile rails with slot width 18 mm and 22 mm.



Dimensions

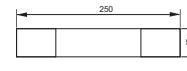
D mm	A mm	B mm	C mm	G	t mm	x mm	H mm	L mm
8-12	20	16	34	M6	1.5	5	42	34
12-16	20	20	34	M6	1.5	5	46	34
16-22	20	27	34	M6	1.5	5	53	34
22-28	20	33	34	M6	2	5	59	34
28-34	20	39	34	M8	2	5.5	67	37.5
34-40	20	45	34	M8	2	5.5	73	37.5
40-46	20	51	40	M8	2	5.5	79	37.5
46-52	20	57	40	M8	2	6.5	85	38.5
52-58	23	64	40	M8	2.5	6.5	91	38.5
58-64	23	70	40	M8	2.5	6.5	97	38.5
64-70	23	76	40	M8	2.5	6.5	103	38.5
70-76	25	82	40	M8	2.5	6.5	110	45.5

Identification plate for function maintenance

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

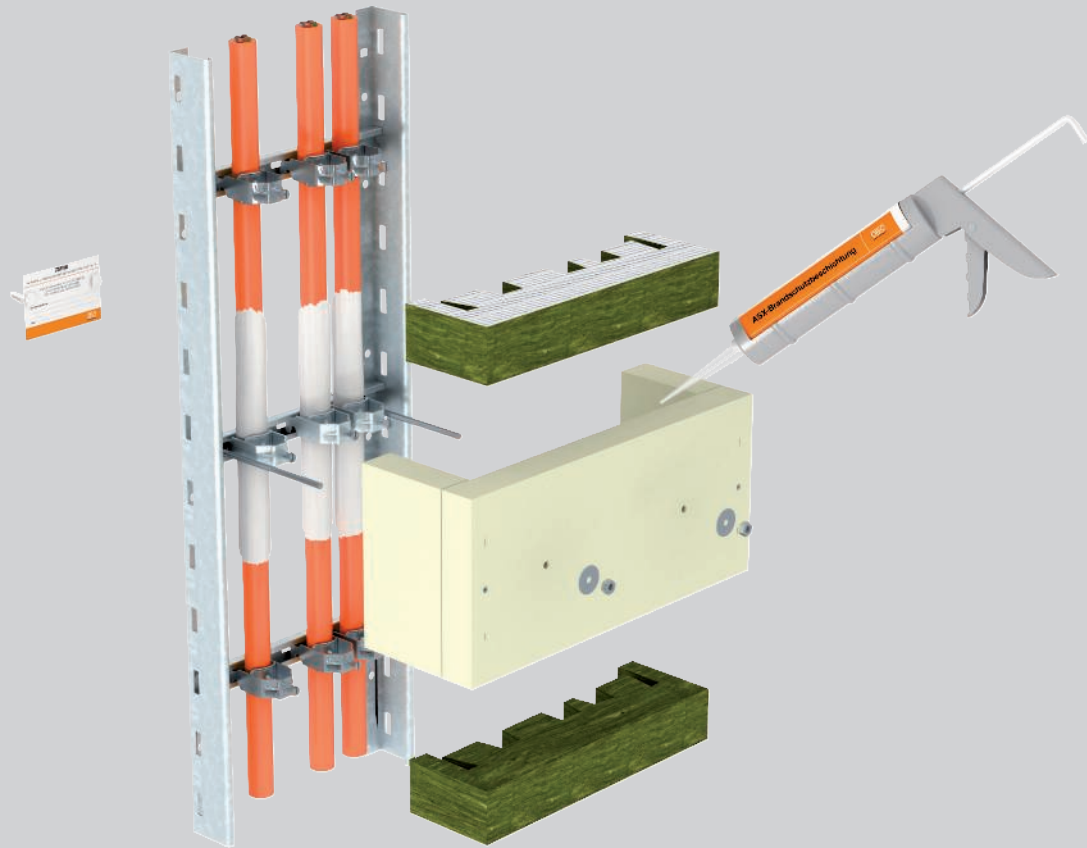
PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



Strain relief ZSE90

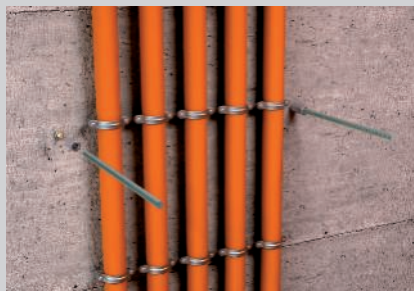
System description



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.

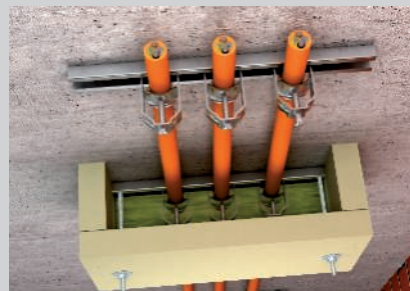
Strain relief ZSE90 Installation principle



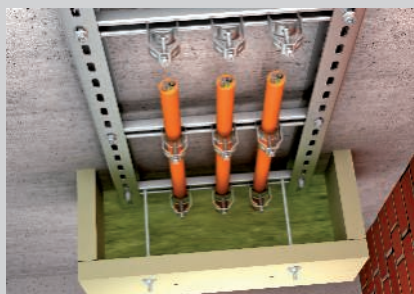
Fastening points next to the cables directly on the wall.



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

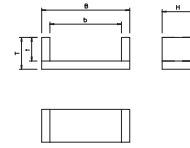
Combination options of strain relief with vertical cable installations

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	✓	✓	✗	✓	✓



Strain relief, internal height 115 mm

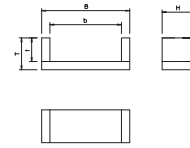
Type	Dimension b mm	Dimension t mm	Dimension H mm	Dimension B mm	Dimension T mm	Pack. pcs	Weight kg/100 pcs.	Item No.
ZSE90-25-11	250	115	140	340	160	1	199.500	7215702
ZSE90-35-11	350	115	140	440	160	1	252.000	7215706
ZSE90-45-11	450	115	140	540	160	1	273.000	7215709



Strain relief as an effective support measure for vertical cable routing, according to DIN 4102 part 12, approved for all cable types and all vertical routing systems. Maintenance of electrical function classes E30 to E90. Housing including mineral fibre panels, fastening material, ASX fire protection coating in cartridge and identification plate.

Strain relief, internal height 175 mm

Type	Dimension b mm	Dimension t mm	Dimension H mm	Dimension B mm	Dimension T mm	Pack. pcs	Weight kg/100 pcs.	Item No.
ZSE90-25-17	250	175	160	340	220	1	500.000	7215713
ZSE90-35-17	350	175	160	440	220	1	600.000	7215716
ZSE90-45-17	450	175	160	540	220	1	700.000	7215719
ZSE90-55-17	550	175	160	640	220	1	722.000	7215726
ZSE90-65-17	650	175	160	740	220	1	441.000	7215730



Strain relief as an effective support measure for vertical cable routing, according to DIN 4102 part 12, approved for all cable types and all vertical routing systems. Maintenance of electrical function classes E30 to E90. Housing including mineral fibre panels, fastening material, ASX fire protection coating in cartridge and identification plate.

Ablation coating in a cartridge

Type	Contents ml	Pack. pcs	Weight kg/100 pcs.	Item No.
ASX-K	310	1	50.000	7202310

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.



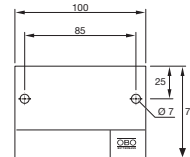
Identification plate for strain relief

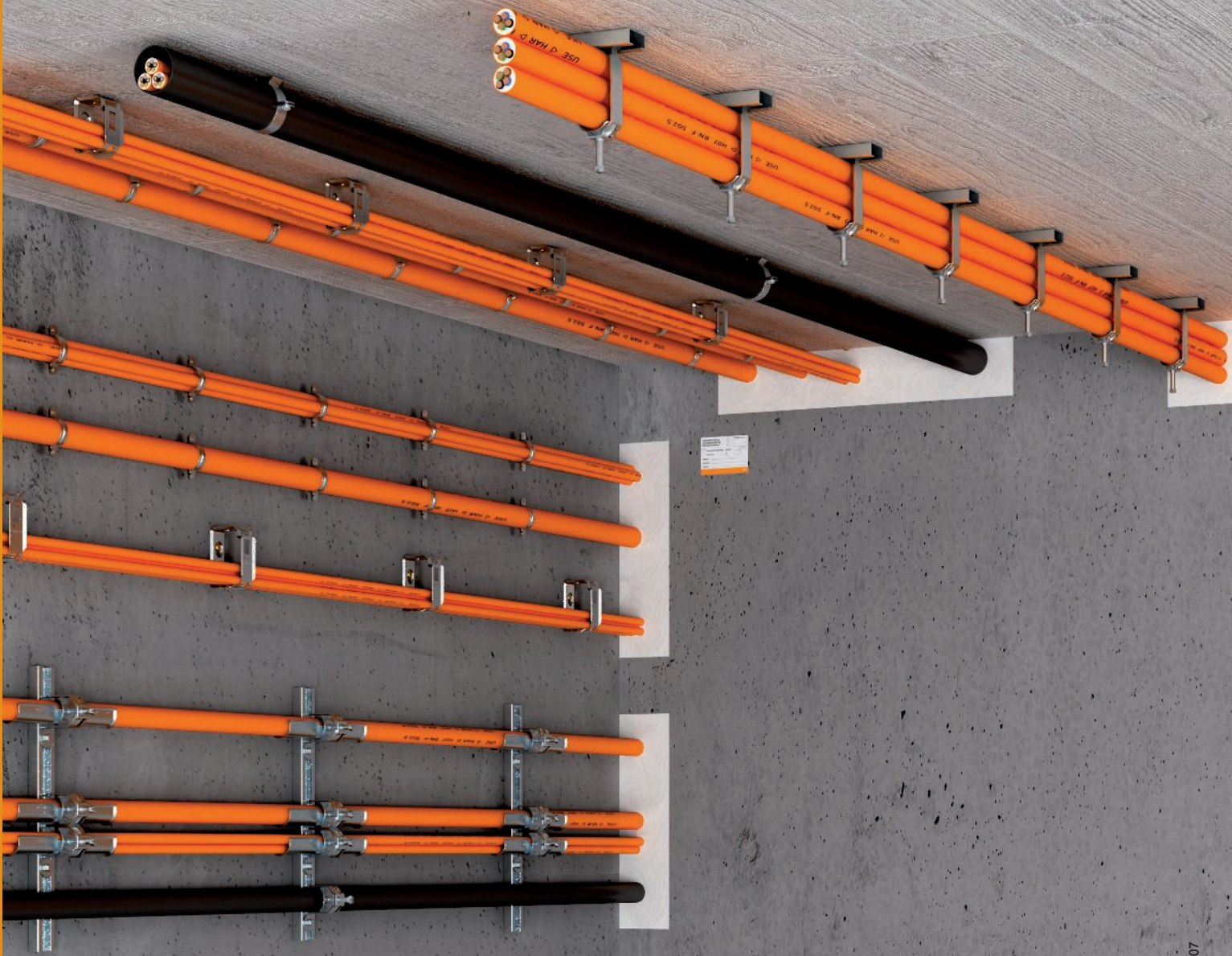


Type	Language	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-ZSE DE	German	1	2.400	7215750
KS-ZSE SE	Swedish	1	2.400	7215751

PVC Polyvinylchloride

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for the ZSE90 strain relief. For approved identification, according to DIN 4102 Part 12. Incl. two push-fit anchors.

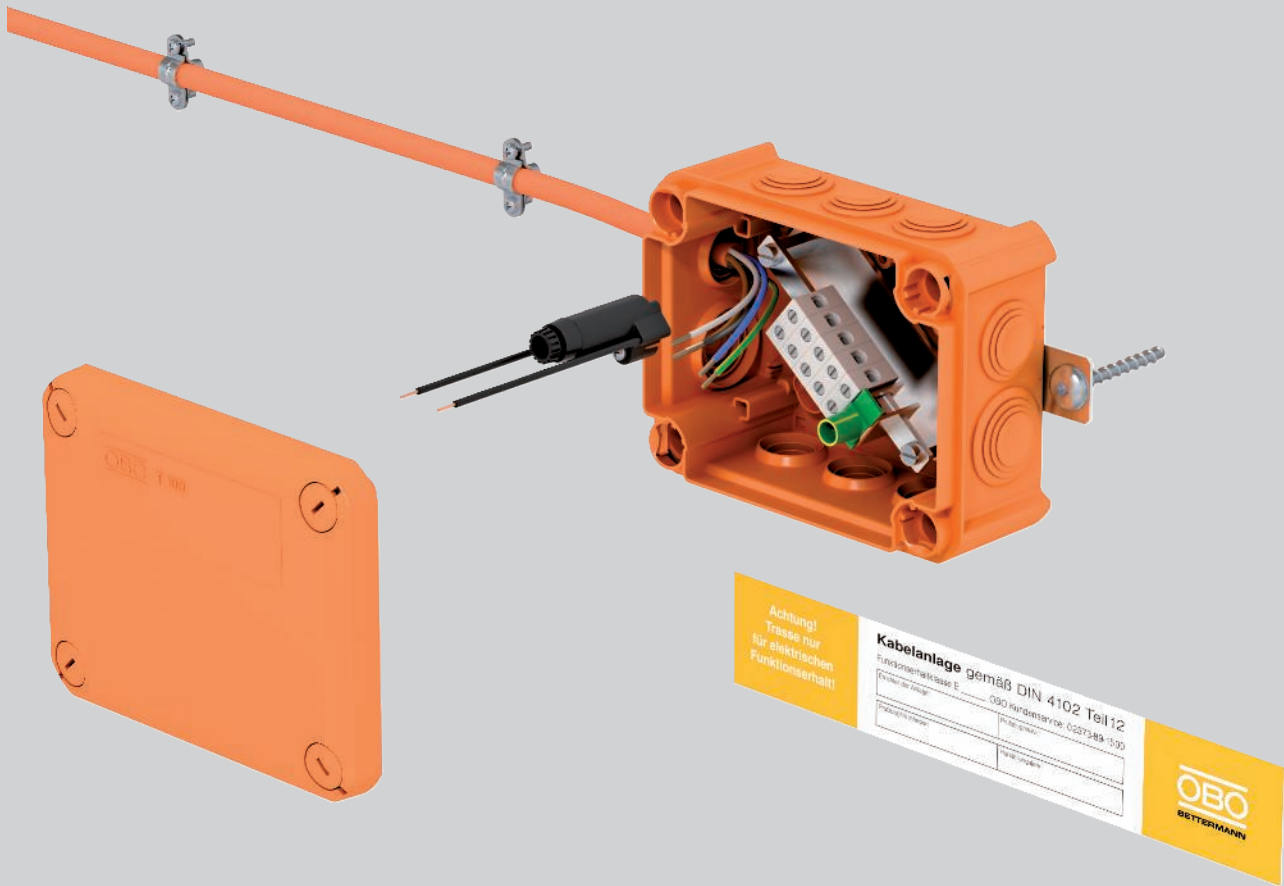




Maintaining electrical function - Junction boxes, individual routing, pipes and metal duct

	System description, junction boxes of the Firebox T series	284
	Products	286
	System description, Grip M grouped support	298
	Products	300
	System description, rail and clamp clips	304
	Products	306
	System description, screw-in spacer clips	312
	Products	314
	System description, steel pipes	320
	Products	322
	System overview, metal cable ducts	326
	Products	328

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.

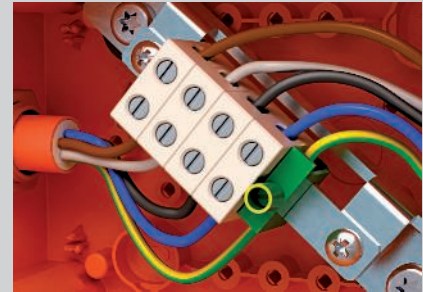
Junction box, FireBox Installation principle



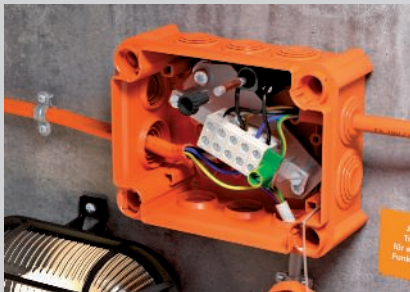
Fully installed FireBox with identification plate.



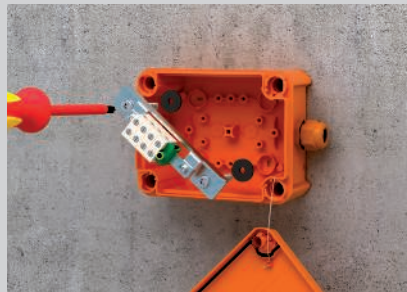
FireBox mounting with mounting plate on cable tray.



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

E30

E60






















E90

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

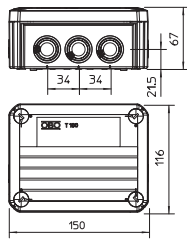
Clamping capacity of the ceramic terminals

	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.

FireBox T100ED with plug-in seal and internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-5	6	5	8 x M25 2 x M32	1	34.000	7205530
T 100 ED 10-5	10	5	8 x M25 2 x M32	1	35.900	7205533

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

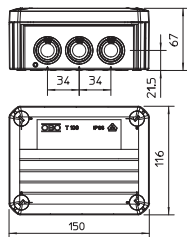
Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T100ED with internal fastening and fuse holder



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-6 F	6	6	8 x M25 2 x M32	1	38.650	7205550
T 100 ED 10-6 F	10	6	8 x M25 2 x M32	1	38.650	7205553

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fuse holder TE-FH 520 for VDE-conformant, reaction-free protection of consumers and 2 fire protection screw ties MMS 6x50 for anchorless fastening.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T160ED with internal fastening and fuse holder

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-6 F	16	6	7 x M25 5 x M32	1	64.000	7205556

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

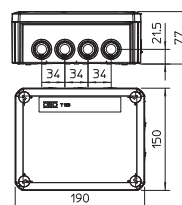
Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fuse holder TE-FH 520 for VDE-conformant, reaction-free protection of consumers and 2 fire protection screw ties MMS 6x50 for anchorless fastening.

Power cable nominal cross-sections: Up to 16 mm². Several rigid copper wires with smaller cross-sections per terminal possible.

High protection rating IP66, impact resistance class IK05.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T160ED with internal fastening

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-5	16	5	7 x M25 5 x M32	1	62.500	7205536

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

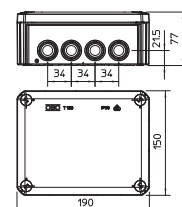
Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening.

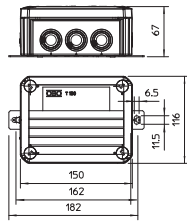
Power cable nominal cross-sections: Up to 16 mm². Several rigid copper wires with smaller cross-sections per terminal possible.

High protection rating IP66, impact resistance class IK05.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T100ED with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-5 A	6	5	8 x M25 2 x M32	1	38.500	7205540
T 100 ED 10-5 A	10	5	8 x M25 2 x M32	1	40.600	7205543

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

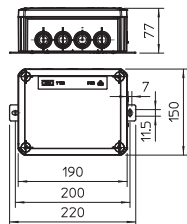
Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T160ED with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-5 A	16	5	7 x M25 5 x M32	1	60.000	7205546

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

Power cable nominal cross-sections: Up to 16 mm². Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK05.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T100ED external fastening with fuse holder

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 6-6 AF	6	6	8 x M25 2 x M32	1	43.330	7205560
T 100 ED 10-6 AF	10	6	8 x M25 2 x M32	1	43.340	7205563

PP Polypropylene

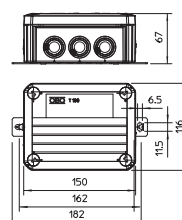
Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fuse holder TE-FH 520 for VDE-conformant, reaction-free protection of consumers and 2 fire protection screw ties MMS 6x50 for anchorless fastening on the external shackles.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T160ED with external fastening and fuse holder

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 160 ED 16-6 AF	16	6	7 x M25 5 x M32	1	60.000	7205566

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

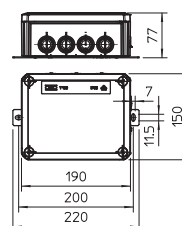
Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fuse holder TE-FH 520 for VDE-conformant, reaction-free protection of consumers and 2 fire protection screw ties MMS 6x50 for anchorless fastening on the external shackles.

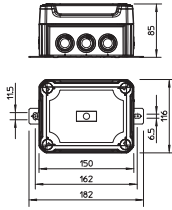
Power cable nominal cross-sections: Up to 16 mm². Several rigid copper wires with smaller cross-sections per terminal possible.

High protection rating IP66, impact resistance class IK05.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T100ED with external fastening and impact-proof cover



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T100ED 6-5 AS	6	5	8 x M25 2 x M32	1	44.500	7205620
T100ED 10-5 AS	10	5	8 x M25 2 x M32	1	46.600	7205623

PP/PC Polypropylene / polycarbonate

Halogen-free junction box with impact-proof cover and pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

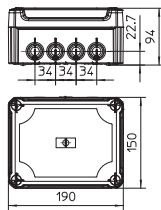
Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK09.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T160ED with external fastening and impact-proof cover



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T160ED 16-5 AS	16	5	7 x M25 5 x M32	1	65.000	7205626

PP/PC Polypropylene / polycarbonate

Halogen-free junction box with impact-proof cover and pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

Power cable nominal cross-sections: Up to 16 mm². Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK10.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T100ED with external fastening, fuse holder and impact-proof cover

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T100ED 6-6 AFS	6	6	8 x M25 2 x M32	1	49.200	7205630
T100ED 10-6 AFS	10	6	8 x M25 2 x M32	1	49.300	7205633

PP/PC Polypropylene / polycarbonate

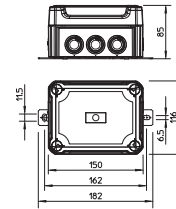
Halogen-free junction box with impact-proof cover and pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

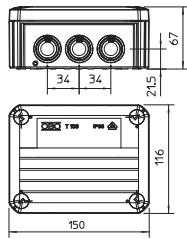
Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fuse holder TE-FH 520 for VDE-conformant, reaction-free protection of consumers and 2 fire protection screw ties MMS 6x50 for anchorless fastening on the external shackles.

Power cable nominal cross-sections: 1.5 to 10 mm² depending on the type, data cables with 0.8 mm wire Ø. Several rigid copper wires with smaller cross-sections per terminal possible. High protection rating IP66, impact resistance class IK09.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T100ED for data technology with internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 4-10 D	4	10	8 x M25 2 x M32	1	38.300	7205580

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

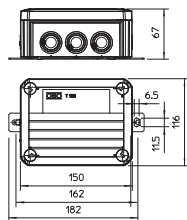
Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminals. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

For data cables with wire Ø 0.8 mm. Up to 6 rigid copper wires (0.5 mm²) possible on each terminal. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T100ED for data technology with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 100 ED 4-10 AD	4	10	8 x M25 2 x M32	1	45.600	7205583

PP Polypropylene

Halogen-free junction box with pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

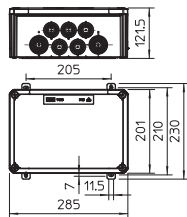
Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminals. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

For data cables with wire Ø 0.8 mm. Up to 6 rigid copper wires (0.5 mm²) possible on each terminal. High protection rating IP66, impact resistance class IK08.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T350ED for data technology with external fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T 350 ED 4-28 AD	4	28	16 x M32 8 x M40	1	163.000	7205590

PP Polypropylene

Halogen-free junction box as small data distributor with pre-mounted, soft plug-in seals, approved for Maintenance of electrical functionality according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminals. Supplied with 4 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

For data cables with wire Ø 0.8 mm. Up to 6 rigid copper wires (0.5 mm²) possible on each terminal. High protection rating IP66, impact resistance class IK06.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T100ED for data equipment, external fastening and impact-proof cover

Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack. pcs	Weight kg/100 pcs.	Item No.
T100ED 4-10 ADS	4	10	8 x M25 2 x M32	1	51.600	7205640

PP/PC Polypropylene / polycarbonate

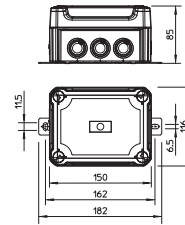
Halogen-free junction box with impact-proof cover and pre-mounted, soft plug-in seals, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

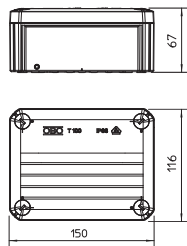
Fully mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminals. Supplied with 2 MMS 6x50 fire protection screw ties for anchorless fastening on the external straps.

For data cables with wire Ø 0.8 mm. Up to 6 rigid copper wires (0.5 mm²) possible on each terminal. High protection rating IP66, impact resistance class IK09.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.



FireBox T100E with internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack.	Weight	Item No.
				pcs	kg/100 pcs.	
T 100 E 4-5	4	5	—	1	27.400	7205510

PP Polypropylene

Halogen-free junction box, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

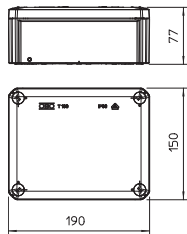
Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fire protection screw ties for anchorless fastening.

Power cable nominal cross-sections: 1.5 to 4 mm², data cables with 0.8 mm wire Ø. Maximum of two 1.5 mm² rigid copper cables per terminal (remove wire protection).

High protection rating IP66, impact resistance class IK07.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T160E with internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack.	Weight	Item No.
				pcs	kg/100 pcs.	
T 160 E 10-5	10	5	—	1	48.700	7205524
T 160 E 16-5	16	5	—	1	53.800	7205528

PP Polypropylene

Halogen-free junction box, approved for the maintenance of electrical function according to DIN 4102 Part 12.

Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic and labelled protective conductor terminal. Supplied with fire protection screw ties for anchorless fastening.

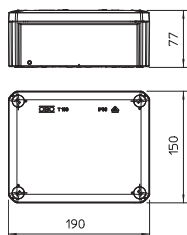
Nominal cross-sections of the power cable: 10 or 16 mm²

A maximum of 2 rigid copper cables of 2.5 mm² or 4 mm² per terminal (remove wire protection).

High protection rating IP66, impact resistance class IK06.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

FireBox T160E for data technology with internal fastening



Type	Nominal cross-section mm ²	Number of terminals	Entries	Pack.	Weight	Item No.
				pcs	kg/100 pcs.	
T 160 E 4-8D	4	8	—	1	46.500	7205520

PP Polypropylene

Halogen-free junction box, approved for the maintenance of electrical function according to DIN 4102 Part 12. Maintenance of electrical function classes E30 to E90.

Colour: Pastel orange.

Including pre-mounted connection unit made of high temperature-resistant special ceramic with fire protection screw ties for anchorless fastening.

Nominal cross-section: data cables with 0.8 mm wire Ø.

High protection rating IP66, impact resistance class IK06.

Details on the cable types and manufacturers can be found in the general construction test certificate of the material testing institute NRW, Erwitte.

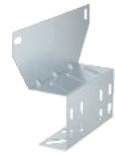
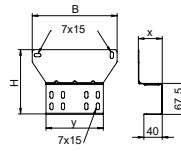
Mounting plate for FireBox T series

Type	Dimension H mm	Dimension B mm	Dimension x mm	Dimension y mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MP T610	141	185	52	125	1	23.600	7205480
MP T616	159	220	63	165	1	34.500	7205484

Sl Steel

DD Strip galvanised zinc/aluminium, Double Dip

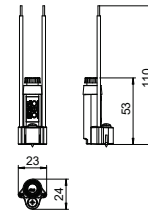
Mounting plate for the fastening of junction boxes of the FireBox T series (with external fastening) onto cable trays or cable ladders with a side height of 60 mm. The angled construction from sheet steel reinforced through crimps enables the secure mounting of cables that maintain electrical function, without having to bend the cable over the side rail. Including fastening material.



Fuse holder for FireBox T series

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
TE-FH 520	1	1.800	7205570

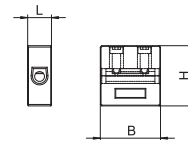
Fuse holder with bayonet lock for fine-wire fuse for dimensions $\varnothing 5 \times 20$ mm. Connection wires to maintain electrical function with nominal cross-section 2.5 mm^2 , ready-stripped. For mounting on one of the exposed domes in the junction box of the FireBox T series using the supplied screw.



Ceramic terminal

Type	Nominal cross-section mm^2	Dimension B mm	Dimension H mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TK 04	0.5 - 4	21.5	21.5	8.5	5	0.880	7205700
TK 06	6	21.5	21.5	8.5	5	0.880	7205702
TK 10	10	24	24	12.5	5	1.840	7205704
TK 16	16	28	28	15	5	3.160	7205706

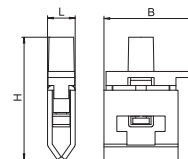
High temperature-resistant ceramic terminal for refitting of the FireBox T series.



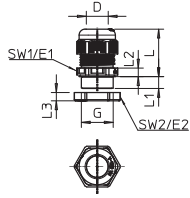
Protective conductor terminal

Type	Nominal cross-section mm^2	Dimension B mm	Dimension H mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TPE 04	4	19	26	6	5	0.400	7205708
TPE 25	25	23	42	12	5	1.440	7205710

Productive conductor terminal for retro-fitting the FireBox T series with green-yellow identification.



Cable gland with locknut as a set



Type	Thread	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
V-TEC VM20+ OR	M20 x 1,5	100	10	1.106	7205660
V-TEC VM25+ OR	M25 x 1,5	100	10	1.710	7205663
V-TEC VM32+ OR	M32 x 1,5	100	10	2.840	7205666
V-TEC VM40+ OR	M40 x 1,5	120	10	5.150	7205669

PA Polyamide

Robust cap nut cable gland with metric connecting thread to IEC 423, including pre-mounted locknut.

For high tightness requirements. Strain relief, wringing protection and tightness over the whole clamping area. Sealing ring made of polychloroprene/acrylonitrile butadiene rubber. Moulded shaped sealing lip on intermediate support, no connection thread sealing ring required.

VDE-tested according to DIN EN 50262, protection rating IP68 at 5 bar for 1 hr.

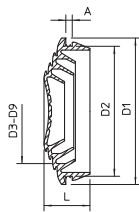
For the maintenance of electrical function according to DIN 4102 Part 12 in connection with the junction boxes of the FireBox T series.

Colour: Pastel orange.

Dimensions

G	D mm	SW1 mm	E1 mm	SW2 mm	E2 mm	L min. mm	L max. mm	L1 mm	L2 mm	L3 mm
M20 x 1.5	6-13	24	27	24	27	23.5	30.5	9	5	6
M25 x 1.5	9-17	29	32	32	36	26	35	10	6	6.5
M32 x 1.5	15-21	36	41	41	46	29	40	11	6	7
M40 x 1.5	16-28	44	50	50	56	36	46	11	7	7.5

Plug-in seal for FireBox T series



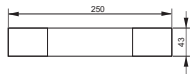
Type	Size	For Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
EDK 25 OR	M25	0 - 22	10	0.165	7205675
EDK 32 OR	M32	0 - 27	10	0.274	7205677
EDK 40 OR	M40	0 - 34	10	0.420	7205679

TPE Thermoplastic elastomer

The soft plug-in seal can be cut back step by step to suit the relevant cable diameter.

Colour: Pastel orange.

Identification plate for function maintenance



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



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

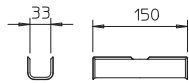
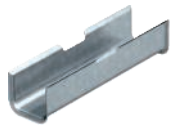
With regard to the fastening distance and cable assignment, deviating values are possible, depending on the test certificates of the cable manufacturers.

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

Always indicate the item number when ordering.



Long trough for grouped support GRIP "M" 15



Type

2031 LW15

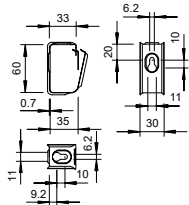
St Steel

FS Strip-galvanised

Long trough for grouped support type 2031/M15, for the maintenance of electrical function as cable-specific mounting variant.

Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
2031 LW15	25	8.200	2207184

GRIP "M" 15



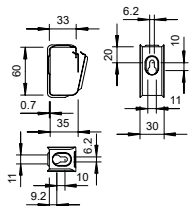
Type	No. of conductors	Shipping box pcs	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
2031 M 15 FS	15	50	50	3.700	2207028

St Steel

FS Strip-galvanised

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 15

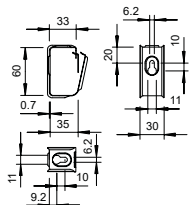


Type	No. of conductors	Shipping box pcs	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
2031 M 15 A2	15	50	50	3.000	2207080

V2A Stainless steel, A2

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for secure mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 15

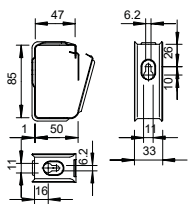


Type	No. of conductors	Shipping box pcs	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
2031 M 15 A4	15	50	50	3.000	2207132

V4A Stainless steel, A4

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 30



Type	No. of conductors	Shipping box pcs	Pack. Weight		Item No.
			pcs	kg/100 pcs.	
2031 M 30 FS	30	25	25	6.200	2207036

St Steel

FS Strip-galvanised

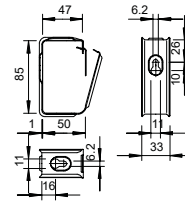
Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

Type	No. of conductors	Shipping box	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 30 A2	30	25	25	6.500	2207088

V2A Stainless steel, A2

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 30

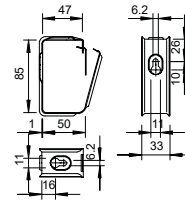


Type	No. of conductors	Shipping box	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 30 A4	30	25	25	6.500	2207140

V4A Stainless steel, A4

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 30



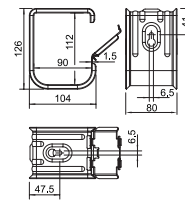
Type	No. of conductors	Shipping box	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 70 FS	70	10	10	34.500	2207060

St Steel

FS Strip-galvanised

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 70

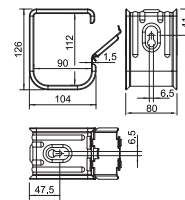


Type	No. of conductors	Shipping box	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 70 A2	70	10	10	37.000	2207112

V2A Stainless steel, A2

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

GRIP "M" 70

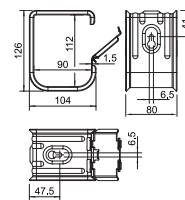


Type	No. of conductors	Shipping box	Pack. pcs	Weight kg/100 pcs.	Item No.
2031 M 70 A4	70	10	10	37.000	2207164

V4A Stainless steel, A4

Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed information on the approved routing variants can be found in the appropriate testing documentation.

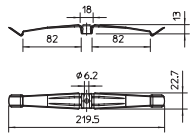
GRIP "M" 70



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Maintaining electrical function - Junction boxes, individual routing, pipes and metal duct

Pressure clip for 16 cables

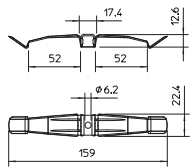


Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2033 M A2	25	25	2.310	2204000

V2A Stainless steel, A2

The metal pressure clip is halogen- and fire load-free, and maintains a good mechanical stability even in fires. The pressure clip is also approved as a cable-specific variant for electrical function maintenance to DIN 4102 Part 12. In pressure clips with larger cross-sections, the spacer 2033 D 15 x 3 G (must be ordered separately) increases the clamping height from 10 to 13 mm. The pressure clips are suitable for fireproof mounting above suspended fire protection ceilings in accordance with DIN 4102.

Pressure clip for 10 cables

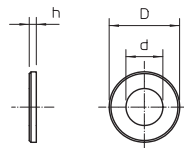
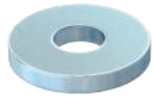


Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2034 M A2	50	50	1.860	2204010

V2A Stainless steel, A2

The metal pressure clip is halogen- and fire load-free, and maintains a good mechanical stability even in fires. The pressure clip is also approved as a cable-specific variant for electrical function maintenance to DIN 4102 Part 12. In pressure clips with larger cross-sections, the spacer 2033 D 15 x 3 G (must be ordered separately) increases the clamping height from 10 to 13 mm. The pressure clips are suitable for fireproof mounting above suspended fire protection ceilings in accordance with DIN 4102.

Spacer



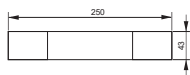
Type	Dimension D mm	Dimension d mm	Dimension h mm	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
2033 D 15x3 G	15	6.4	3	3000	50	0.340	2205097

St Steel

G Electrogalvanised

To increase the clamping height of pressure clips from 10 to 13 mm for large cable cross-sections.

Identification plate for function maintenance



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

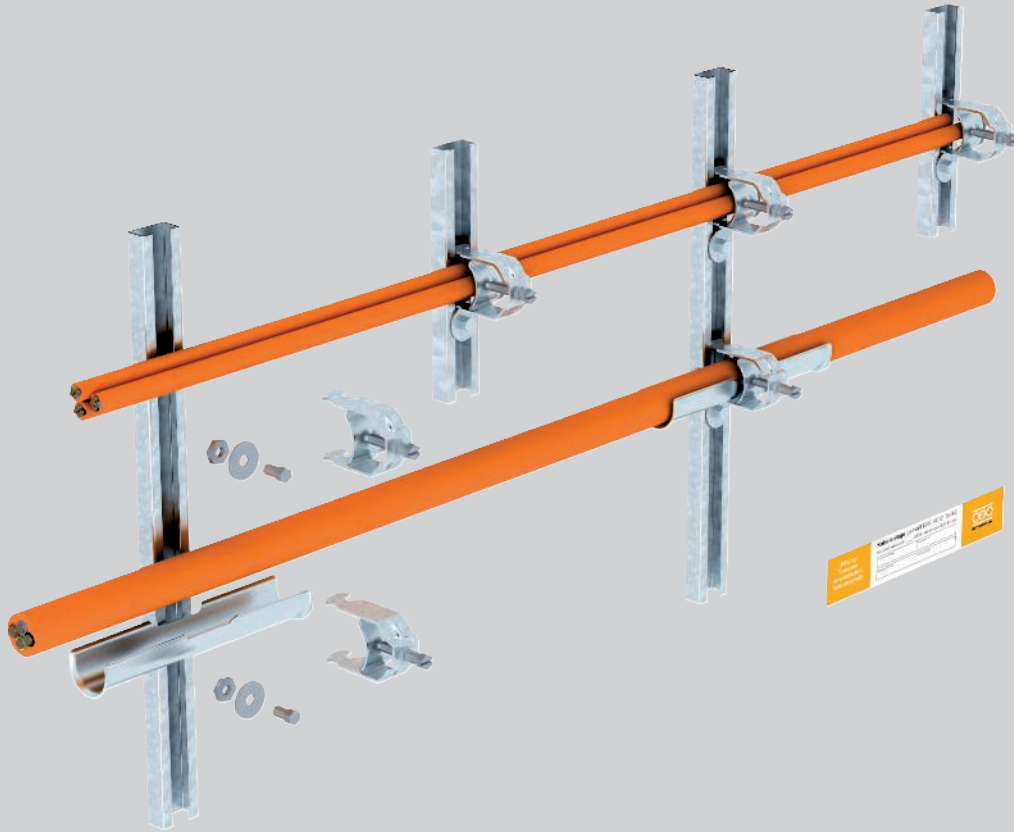
PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



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



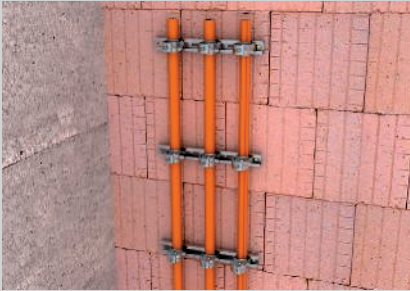
Horizontal mounting with clamp clips and long troughs on the wall and under the ceiling.



Horizontal cable mounting with clamp clips on the wall.



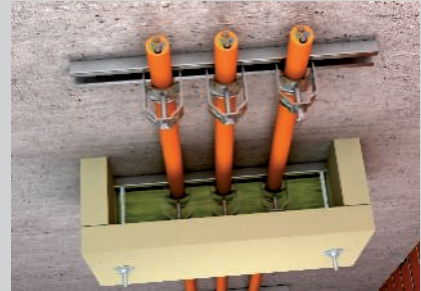
Horizontal cable mounting with clamp clips under the ceiling.



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:

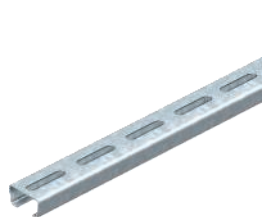
The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

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.

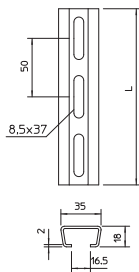
Profile rail 2068, slot width 16.5, perforated



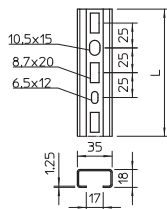
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
AML3518P2000FT	2000	35 x 18	1.5	2000	20	89.000	1119656

St Steel
FT Hot-dip galvanised

Central C profile rail for cable routing, in conjunction with clamp clips with a hammerhead foot. Can also be used as suspension construction for cable support systems.



CM3518 profile rail, slot width 17 mm, perforated



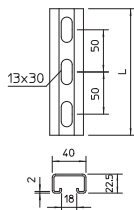
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CML3518P0150FS	150	35 x 18	1.25	150	25	10.600	1104241
CML3518P0200FS	200	35 x 18	1.25	200	25	14.200	1104268
CML3518P0300FS	300	35 x 18	1.25	300	25	21.300	1104284
CML3518P0400FS	400	35 x 18	1.25	400	10	28.400	1104292
CML3518P0500FS	500	35 x 18	1.25	500	10	35.500	1104306
CML3518P0600FS	600	35 x 18	1.25	600	10	42.600	1104310
CML3518P0700FS	700	35 x 18	1.25	700	10	49.700	1104315
CML3518P0800FS	800	35 x 18	1.25	800	10	56.800	1104320
CML3518P0900FS	900	35 x 18	1.25	900	10	63.900	1104325
CML3518P1000FS	1000	35 x 18	1.25	1000	1	71.000	1104497
CML3518P2000FS	2000	35 x 18	1.25	2000	2	71.000	1104500

St Steel
FS Strip-galvanised

Light-duty profile rail, perforated, slot width 17 mm.

Dimensions

MS4022 mounting rail, heavy-duty, slot width 18 mm, perforated



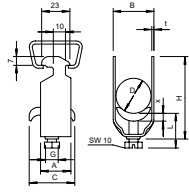
Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack. m	Weight kg/100 m	Item No.
MS4022P2000FT	2000	40 x 22,5	2	2000	10	152.500	1121979

St Steel
FT Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.

Dimensions

Clamp clip, triple, metal pressure trough



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056 M3 12 FT	8 - 12	50	4.050	1156241
2056 M3 16 FT	12 - 16	50	5.800	1156268
2056 M3 22 FT	16 - 22	50	6.500	1156276
2056 M3 28 FT	22 - 28	50	9.500	1156284

SI Steel

FT Hot-dip galvanised

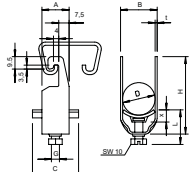
Suitable for all C profile rails with slot width 16–17 mm.

Clip, bolt and pressure trough made of hot-dip galvanised steel.

Dimensions

D mm	A mm	B mm	C mm	G	t mm	x mm	H mm	L mm
8-12	23	16	34	M6	1.2	5	70	47
12-16	23	20	34	M6	1.5	5	82	47
16-22	23	27	34	M6	1.5	5	101	47
22-28	23	33	34	M6	2	5	121	47

Clamp clip, single, metal pressure trough



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056U M 12 FT	8 - 12	100	3.300	1158007
2056U M 16 FT	12 - 16	100	3.520	1158015
2056U M 22 FT	16 - 22	100	3.960	1158023
2056U M 28 FT	22 - 28	100	5.890	1158031
2056U M 34 FT	28 - 34	100	7.650	1158058
2056U M 40 FT	34 - 40	100	8.360	1158066
2056U M 46 FT	40 - 46	100	10.890	1158074
2056U M 52 FT	46 - 52	100	11.660	1158082
2056U M 58 FT	52 - 58	100	14.740	1158090
2056U M 64 FT	58 - 64	100	15.730	1158104
2056U M 70 FT	64 - 70	50	18.200	1158112
2056U M 76 FT	70 - 76	25	20.600	1158120

SI Steel

FT Hot-dip galvanised

Suitable for all C profile rails with slot width 18 mm and 22 mm.

Dimensions

D mm	A mm	B mm	C mm	G	t mm	x mm	H mm	L mm
8-12	20	16	34	M6	1.5	5	42	34
12-16	20	20	34	M6	1.5	5	46	34
16-22	20	27	34	M6	1.5	5	53	34
22-28	20	33	34	M6	2	5	59	34
28-34	20	39	34	M8	2	5.5	67	37.5
34-40	20	45	34	M8	2	5.5	73	37.5
40-46	20	51	40	M8	2	5.5	79	37.5
46-52	20	57	40	M8	2	6.5	85	38.5
52-58	23	64	40	M8	2.5	6.5	91	38.5
58-64	23	70	40	M8	2.5	6.5	97	38.5
64-70	23	76	40	M8	2.5	6.5	103	38.5
70-76	25	82	40	M8	2.5	6.5	110	45.5

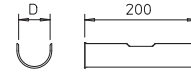
Long trough

Type	Clamping range		Pack. pcs	Weight kg/100 pcs.	Item No.
	D mm	for clip 2056/M			
2058 LW 10	6 - 10	8 - 12	50	4.000	1195794
2058 LW 14	10 - 14	12 - 16	50	5.340	1195808
2058 LW 20	14 - 20	16 - 22	50	7.380	1195816
2058 LW 26	20 - 26	22 - 28	25	9.000	1195824
2058 LW 32	26 - 32	28 - 34	25	11.000	1195832
2058 LW 38	32 - 38	34 - 40	25	12.500	1195840
2058 LW 44	38 - 44	40 - 46	25	14.300	1195859
2058 LW 50	44 - 50	46 - 52	25	16.200	1195867
2058 LW 56	50 - 56	52 - 58	25	17.800	1195875
2058 LW 62	56 - 62	58 - 64	25	19.700	1195883

St Steel

FS Strip-galvanised

In addition to the clamp clip, to increase the support area for cables with integrated maintenance of electrical function, a long trough (L = 200 mm) is mounted.



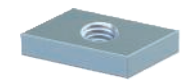
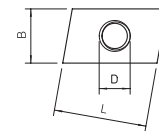
Slide nut

Type	Dimen-	Dimen-	Dimen-	Pack. pcs	Weight kg/100 pcs.	Item No.
	sion L mm	sion B mm	sion H mm			
ACMSN M6 ZL	26	16.5	4	100	1.740	1147056

St Steel

ZL Zinc scale

Slide nut for use with CM3015, CM3518 and AM3518 profile rails



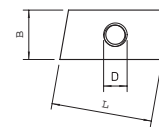
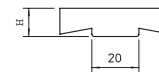
Slide nut

Type	Dimen-	Dimen-	Dimen-	Pack. pcs	Weight kg/100 pcs.	Item No.
	sion L mm	sion B mm	sion H mm			
MS40SN M6 ZL	35	17	10	50	3.750	1147106

St Steel

ZL Zinc scale

Slide nut for use with MS4022 profile rail



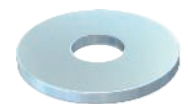
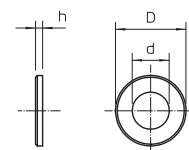
Large washer

Type	Dimen-	Dimen-	Dimen-	Pack. pcs	Weight kg/100 pcs.	Item No.
	sion D mm	sion d mm	sion h mm			
DIN440 7 F	22	6.6	2	100	0.550	6408702

St Steel

F Hot-dip galvanised

Washer of particularly large outer diameter.



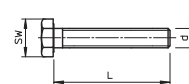
Hexagonal bolt ISO 4017

Type	Thread	Dimen-	Dimen-	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
		sion L mm	sion d mm				
HHS M6x16 G	M6	M6 x 16	16	6	100	0.494	3156141

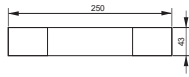
St Steel

G Electrogalvanised

Hexagonal bolt to ISO 4017 with metric thread



Identification plate for function maintenance



Type

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

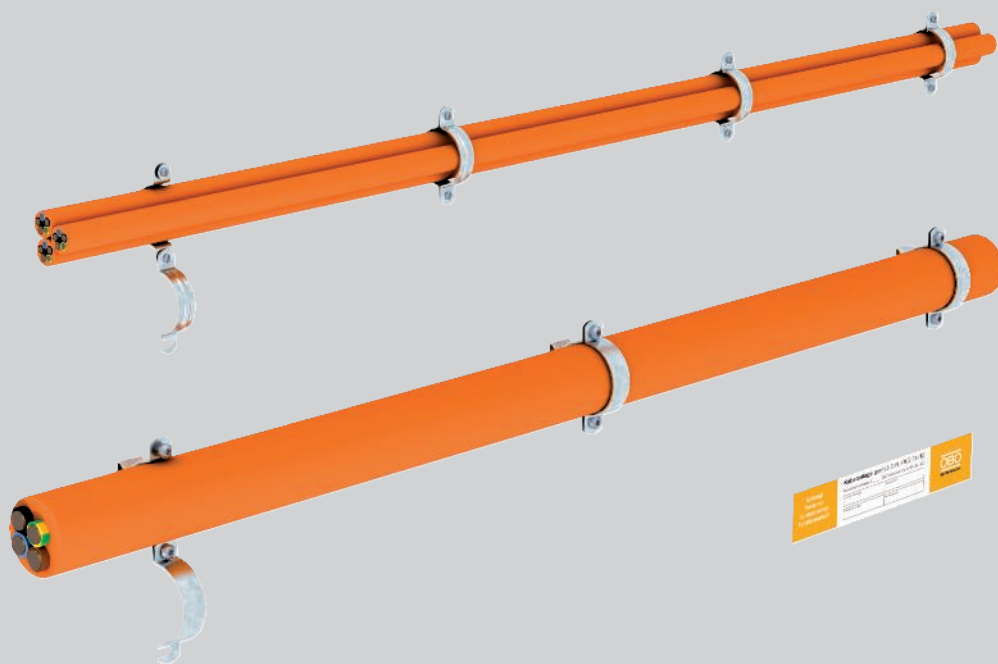
Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.





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

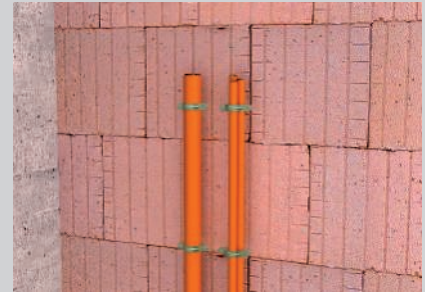
Installation principle



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



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:

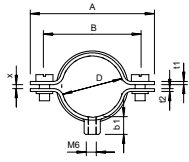
The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

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 and pipe spacer clip 732 with threaded connection



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
732 6 GTP	5 - 6	100	1.160	1360051
732 8 GTP	7 - 8	100	1.310	1360086
732 10 GTP	9 - 10	100	1.360	1360108
732 12 GTP	10.5 - 12	100	1.460	1360124
732 14 GTP	12.5 - 14	100	1.480	1360140
732 15 GTP	13.5 - 15	100	1.530	1360159
732 16 GTP	14.5 - 16	100	1.590	1360167
732 18 GTP	16.5 - 18	100	1.620	1360183
732 20 GTP	18.5 - 20	50	1.730	1360205
732 22 GTP	20 - 22	50	1.780	1360221
732 24 GTP	22 - 24	50	1.840	1360248
732 26 GTP	24 - 26	50	1.920	1360264
732 28 GTP	26 - 28	50	2.840	1360280
732 30 GTP	28 - 30	50	3.040	1360302
732 33 GTP	31 - 33	25	3.120	1360337
732 35 GTP	33 - 35	25	3.280	1360353
732 38 GTP	36 - 38	25	3.490	1360388
732 40 GTP	38 - 40	25	3.600	1360396
732 42 GTP	40 - 42	25	3.840	1360426
732 45 GTP	43 - 45	25	3.990	1360450
732 48 GTP	46 - 48	25	4.040	1360485
732 50 GTP	48 - 50	25	4.160	1360507
732 60 GTP	58 - 60	25	4.960	1360604
732 63 GTP	61 - 63	25	5.000	1360639

Sl Steel

GTP Electrogalvanised, transparently passivated

Mounting with screw-in spacer clips. Spacer clips and screw-in spacer clips are available in various materials: in V2A stainless steel, in electrogalvanised, hot-dip galvanised steel or in aluminium. Fastening can take place with bolt ties or angler anchors and Sprint screws. Depending on the design, the clips can be "shot" using a bolt-firing tool or nail device.

Dimensions

D mm	A mm	B mm	x mm	b1 mm	t1 mm	t2 mm	M
5-6	35	23	1	8	1	1.25	M5 x 10
7-8	34	22	1	8	1	1.25	M5 x 10
9-10	36	24	1	8	1	1.25	M5 x 12
10.5-12	38	26	1.5	8	1	1.25	M5 x 12
12.5-14	40	28	1.5	8	1	1.25	M5 x 12
13.5-15	41	29	1.5	8	1	1.25	M5 x 12
14.5-16	42	30	1.5	8	1	1.25	M5 x 12
16.5-18	44	32	1	8	1	1.25	M5 x 12
18.5-20	46	34	1.5	8	1	1.25	M5 x 12
20-22	48	36	2	8	1	1.25	M5 x 12
22-24	50	38	2	8	1	1.25	M5 x 12
24-26	52	40	2	8	1	1.25	M5 x 12
26-28	59	45	2	8.5	1.5	1.5	M5 x 12
28-30	61	47	2	8.5	1.5	1.5	M5 x 12
31-33	64	50	2	8.5	1.5	1.5	M5 x 12
33-35	66	52	2	8.5	1.5	1.5	M5 x 12
36-38	69	55	2	8.5	1.5	1.5	M5 x 12
38-40	71	57	2	8.5	1.5	1.5	M5 x 12
40-42	73	59	2	8.5	1.5	1.5	M5 x 12
43-45	76	62	2	8.5	1.5	1.5	M5 x 12
46-48	79	65	2	8.5	1.5	1.5	M5 x 12
48-50	81	67	2	8.5	1.5	1.5	M5 x 14
58-60	91	77	2	8.5	1.5	1.5	M5 x 14
61-63	94	80	2	9.2	1.5	1.5	M5 x 14

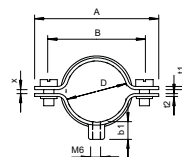


Cable and pipe spacer clip 732 with threaded connection V4A

Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
732 6 A4	5 - 6	100	1.364	1360644
732 8 A4	7 - 8	100	1.376	1360646
732 10 A4	9 - 10	100	1.467	1360648
732 12 A4	10.5 - 12	100	1.622	1360650
732 14 A4	12.5 - 14	100	1.710	1360652
732 15 A4	13.5 - 15	100	1.791	1360654
732 16 A4	14.5 - 16	100	1.845	1360656
732 18 A4	16.5 - 18	100	1.889	1360658
732 20 A4	18.5 - 20	50	1.960	1360660
732 22 A4	20 - 22	50	1.999	1360662
732 24 A4	22 - 24	50	2.062	1360664
732 26 A4	24 - 26	50	2.083	1360666
732 28 A4	26 - 28	50	2.923	1360668
732 30 A4	28 - 30	50	3.047	1360670
732 33 A4	31 - 33	25	3.186	1360672
732 38 A4	36 - 38	25	3.453	1360676
732 40 A4	38 - 40	25	3.554	1360678
732 42 A4	40 - 42	25	3.650	1360680
732 45 A4	43 - 45	25	3.810	1360682
732 48 A4	46 - 48	25	3.972	1360684
732 50 A4	48 - 50	25	4.045	1360686
732 60 A4	58 - 60	25	4.582	1360688
732 63 A4	61 - 63	25	4.712	1360690

V4A Stainless steel, A4

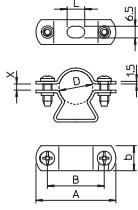
Mounting with screw-in spacer clips. Spacer clips and screw-in spacer clips are available in various materials: in V2A stainless steel, in electrogalvanised, hot-dip galvanised steel or in aluminium. Fastening can be take place with bolt ties or Angler anchors and Sprint screws. Depending on the design, the clips can be "shot" using a bolt-firing tool or nail device.



D mm	A mm	B mm	x mm	b1 mm	t1 mm	t2 mm	M
5-6	35	23	1	9.8	1	1.25	M5 x 10
7-8	34	22	1	9.8	1	1.25	M5 x 10
9-10	36	24	1	9.8	1	1.25	M5 x 12
10.5-12	38	26	1.5	9.8	1	1.25	M5 x 12
12.5-14	40	28	1.5	9.8	1	1.25	M5 x 12
13.5-15	41	29	1.5	9.8	1	1.25	M5 x 12
14.5-16	42	30	1.5	9.8	1	1.25	M5 x 12
16.5-18	44	22	1.5	9.8	1	1.25	M5 x 12
18.5-20	46	34	1.5	9.8	1	1.25	M5 x 12
20-22	48	36	2	9.8	1	1.25	M5 x 12
22-24	50	38	2	9.8	1	1.25	M5 x 12
24-26	52	40	2	10	1	1.25	M5 x 12
26-28	59	45	2	10	1.5	1.5	M5 x 12
28-30	61	47	2	10	1.5	1.5	M5 x 12
31-33	64	50	2	10	1.5	1.5	M5 x 12
36-38	69	55	2	10	1.5	1.5	M5 x 12
38-40	71	57	2	10	1.5	1.5	M5 x 12
40-42	73	59	2	10	1.5	1.5	M5 x 12
43-45	76	62	2	10	1.5	1.5	M5 x 12
46-48	79	65	2	10	1.5	1.5	M5 x 12
48-50	81	67	2	10	1.5	1.5	M5 x 14
58-60	91	77	2	10	1.5	1.5	M5 x 14
61-63	94	80	2	10	1.5	1.5	M5 x 14

Dimensions

Cable and pipe spacer clip 733



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
733 21 G	19 - 21	50	2.730	1361201
733 23 G	21 - 23	50	2.870	1361236
733 29 G	24 - 29	50	3.480	1361295
733 38 G	30 - 38	25	4.040	1361384
733 48 G	39 - 48	25	4.810	1361481
733 54 G	48 - 54	25	5.800	1361511
733 61 G	53 - 61	20	6.370	1361619
733 63 G	63	20	6.940	1361635
733 19 FT	17 - 19	50	2.500	1361097
733 21 FT	19 - 21	50	2.730	1361100
733 23 FT	21 - 23	50	2.870	1361103
733 29 FT	24 - 29	50	3.480	1361106
733 38 FT	30 - 38	25	4.040	1361109
733 48 FT	39 - 48	25	4.810	1361112
733 54 FT	48 - 54	25	5.400	1361117
733 61 FT	53 - 61	20	6.100	1361115
733 63 FT	63	20	7.250	1361118

St Steel

G Electrogalvanised FT Hot-dip galvanised

* Size M16 is not suitable for nail device

* Sizes M16 - PG16 are not suitable for bolt-firing tool

Dimensions

D mm	A mm	B mm	L mm	b mm	x mm
19-21	50	37	10	14	2
21-23	52	39	10	14	2.5
24-29	58	42	10	16	7
30-38	70	54	10	16	10
39-48	80	64	14	16	12.5
48-54	86	68	14	18	7.5
53-61	96	78	14	18	10
63	101	83	18	16	3
17-19	45	32	10	14	3.5
19-21	50	37	10	14	2
21-23	52	39	10	14	2.5
24-29	58	42	10	16	7
30-38	70	54	10	16	10
39-48	80	64	14	16	12.5
48-54	86	68	14	18	7.5
53-61	96	78	14	18	10
63	101	83	18	16	3



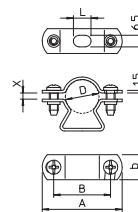
Cable and pipe spacer clip 733 V2A

Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
733 19 A2	17 - 19	50	2.800	1362038
733 21 A2	19 - 21	50	2.740	1362046
733 23 A2	21 - 23	50	2.800	1362054
733 29 A2	24 - 29	50	3.475	1362062
733 38 A2	30 - 38	25	4.500	1362070
733 48 A2	39 - 48	25	5.200	1362089
733 54 A2	48 - 54	25	5.800	1362097
733 61 A2	53 - 61	20	6.800	1362100
733 19 A4	17 - 19	50	2.500	1361651
733 21 A4	19 - 21	50	2.730	1361655
733 23 A4	21 - 23	50	2.710	1361659
733 29 A4	24 - 29	50	3.420	1361663
733 38 A4	30 - 38	25	4.040	1361667
733 48 A4	39 - 48	25	4.810	1361671
733 54 A4	48 - 54	25	5.800	1361675
733 61 A4	53 - 61	20	6.370	1361679
733 63 A4	63	20	6.940	1361683

V2A Stainless steel, A2 V4A Stainless steel, A4

* Size M16 is not suitable for nail device

* Sizes M16 - PG16 are not suitable for bolt-firing tool



Dimensions

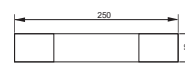
D mm	A mm	B mm	L mm	b mm	x mm
17-19	45	32	10	14	3.5
19-21	50	37	10	14	2
21-23	52	39	10	14	2.5
24-29	58	42	10	16	7
30-38	70	54	10	16	10
39-48	80	64	14	16	12.5
48-54	86	68	14	18	7.5
53-61	96	78	14	18	10
17-19	45	32	10	14	3.5
19-21	50	37	10	14	2
21-23	52	39	10	14	2.5
24-29	58	42	10	16	7
30-38	70	54	10	16	10
39-48	80	64	14	16	12.5
48-54	86	68	14	18	7.5
53-61	96	78	14	18	10
63	101	83	18	16	3

Identification plate for function maintenance

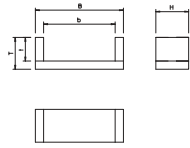
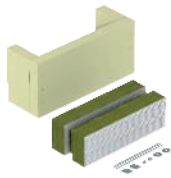
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.



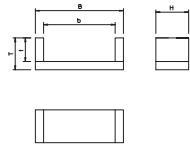
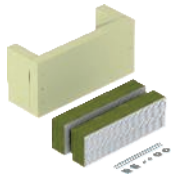
Strain relief, internal height 115 mm



Type	Dimen-	Dimen-	Dimen-	Dimen-	Dimen-	Pack.	Weight	Item No.
	sion b	sion t	sion H	sion B	sion T			
	mm	mm	mm	mm	mm	pcs	kg/100 pcs.	
ZSE90-25-11	250	115	140	340	160	1	199.500	7215702
ZSE90-35-11	350	115	140	440	160	1	252.000	7215706
ZSE90-45-11	450	115	140	540	160	1	273.000	7215709

Strain relief as an effective support measure for vertical cable routing, according to DIN 4102 part 12, approved for all cable types and all vertical routing systems. Maintenance of electrical function classes E30 to E90. Housing including mineral fibre panels, fastening material, ASX fire protection coating in cartridge and identification plate.

Strain relief, internal height 175 mm



Type	Dimen-	Dimen-	Dimen-	Dimen-	Dimen-	Pack.	Weight	Item No.
	sion b	sion t	sion H	sion B	sion T			
	mm	mm	mm	mm	mm	pcs	kg/100 pcs.	
ZSE90-25-17	250	175	160	340	220	1	500.000	7215713
ZSE90-35-17	350	175	160	440	220	1	600.000	7215716
ZSE90-45-17	450	175	160	540	220	1	700.000	7215719
ZSE90-55-17	550	175	160	640	220	1	722.000	7215726
ZSE90-65-17	650	175	160	740	220	1	441.000	7215730

Strain relief as an effective support measure for vertical cable routing, according to DIN 4102 part 12, approved for all cable types and all vertical routing systems. Maintenance of electrical function classes E30 to E90. Housing including mineral fibre panels, fastening material, ASX fire protection coating in cartridge and identification plate.

Ablation coating in a cartridge



Type	Contents	Pack.	Weight	Item No.
	ml	pcs	kg/100 pcs.	
ASX-K	310	1	50.000	7202310

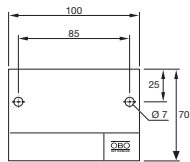
Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

Identification plate for strain relief



Type	Language	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
KS-ZSE DE	German	1	2.400	7215750
KS-ZSE SE	Swedish	1	2.400	7215751

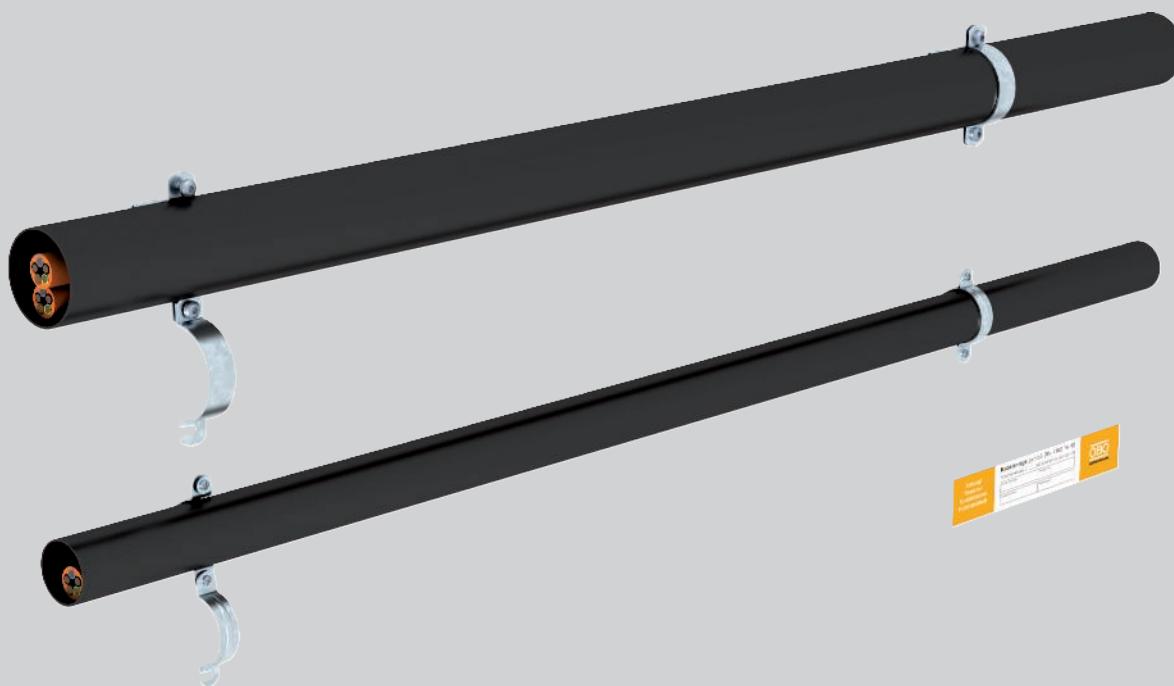
PVC Polyvinylchloride

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for the ZSE90 strain relief. For approved identification, according to DIN 4102 Part 12. Incl. two push-fit anchors.



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

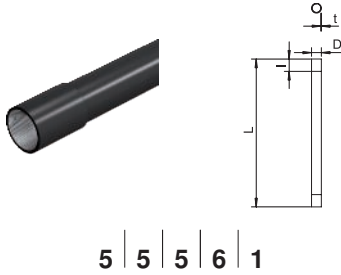
Approved data

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.



Armoured steel pipe with thread, black



Type	Thread	Dimension D mm	Dimension L mm	Dimension I mm	Dimension t mm	Colour	Pack. m	Weight kg/100 m	Item No.
SM16W SW	M16x1,5	16	3000	13	1.3	Jet black	30	50.000	2046500
SM20W SW	M20x1,5	20	3000	13	1.5	Jet black	30	73.000	2046501
SM25W SW	M25x1,5	25	3000	18	1.5	Jet black	30	92.000	2046502
SM32W SW	M32x1,5	32	3000	18	1.5	Jet black	21	120.000	2046503
SM40W SW	M40x1,5	40	3000	20.5	1.5	Jet black	15	152.000	2046505
SM50W SW	M50x1,5	50	3000	25	1.5	Jet black	15	190.700	2046506
SM63W SW	M63x1,5	63	3000	25	1.7	Jet black	9	287.700	2046507

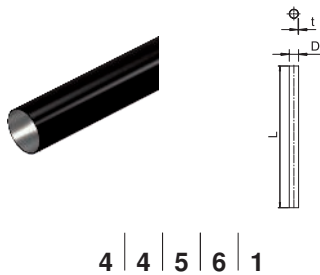
Si Steel

PE50 PES50 - Polyester/epoxy

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. One coupling is already screwed onto each pipe.

Armoured steel pipe without thread, black



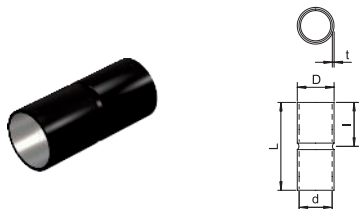
Type	Dimension D mm	Dimension L mm	Dimension t mm	Colour	Pack. m	Weight kg/100 m	Item No.
S16W SW	16	3000	1	Jet black	30	37.000	2046565
S20W SW	20	3000	1	Jet black	30	44.700	2046566
S25W SW	25	3000	1.2	Jet black	30	70.400	2046567
S32W SW	32	3000	1.2	Jet black	21	91.200	2046568
S40W SW	40	3000	1.2	Jet black	15	139.700	2046569
S50W SW	50	3000	1.2	Jet black	15	176.000	2046570
S63W SW	63	3000	1.2	Jet black	9	223.000	2046571

Si Steel

PE50 PES50 - Polyester/epoxy

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall.

Armoured steel pipe connection sleeve without thread, black



Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
SV16W SW	18.6	16.6	50	25	1	Jet black	25	2.400	2046582
SV20W SW	23.1	20.7	60	30	1.2	Jet black	50	3.200	2046583
SV25W SW	28.1	25.7	60	30	1.2	Jet black	50	5.200	2046584
SV32W SW	35.2	32.8	70	35	1.2	Jet black	50	7.200	2046585
SV40W SW	43.8	40.8	80	40	1.5	Jet black	25	13.200	2046586
SV50W SW	54	51	100	50	1.5	Jet black	10	20.000	2046587
SV63W SW	67	64	100	50	1.5	Jet black	5	28.000	2046588

Si Steel

PE50 PES50 - Polyester/epoxy

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.

Electrogalvanised steel pipe, with thread



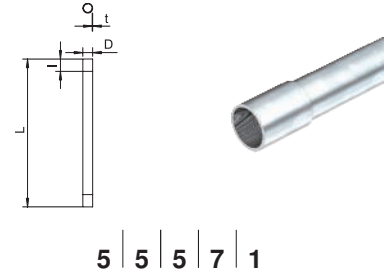
Type	Thread	Dimension D mm	Dimension L mm	Dimension l mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
SM16W G	M16x1,5	16	3000	13	1.3	30	50.390	2046861
SM20W G	M20x1,5	20	3000	13	1.5	30	66.667	2046862
SM25W G	M25x1,5	25	3000	18	1.5	30	92.290	2046863
SM32W G	M32x1,5	32	3000	18	1.5	21	120.000	2046864
SM40W G	M40x1,5	40	3000	20.5	1.5	15	151.450	2046865
SM50W G	M50x1,5	50	3000	25	1.5	15	190.000	2046866
SM63W G	M63x1,5	63	3000	25	1.7	9	287.700	2046867

St Steel

G Electrogalvanised

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. One coupling is already screwed onto each pipe.



5 | 5 | 5 | 7 | 1

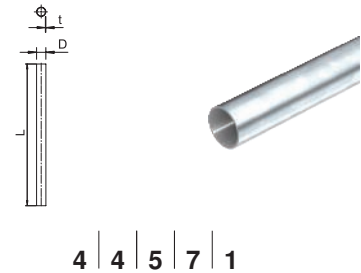
Armoured steel pipe without thread, electrogalvanised

Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
S16W G	16	3000	1	30	37.000	2046840
S20W G	20	3000	1	30	44.700	2046841
S25W G	25	3000	1.2	30	70.400	2046842
S32W G	32	3000	1.2	21	91.200	2046843
S40W G	40	3000	1.2	15	139.700	2046844
S50W G	50	3000	1.2	15	176.000	2046845
S63W G	63	3000	1.2	9	223.000	2046846

St Steel

G Electrogalvanised

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall.



4 | 4 | 5 | 7 | 1

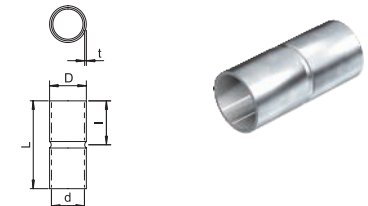
Armoured steel pipe connection sleeve without thread, electrogalvanised

Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension l mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SV16W G	18.6	16.6	50	25	1	25	2.400	2046854
SV20W G	23.1	20.7	60	30	1.2	50	4.000	2046855
SV25W G	28.1	25.7	60	30	1.2	50	5.200	2046856
SV32W G	35.2	32.8	70	35	1.2	50	7.200	2046857
SV40W G	43.8	43.8	80	40	1.5	25	13.200	2046858
SV50W G	54	51	100	50	1.5	10	20.000	2046859
SV63W G	67	64	100	50	1.5	5	28.000	2046860

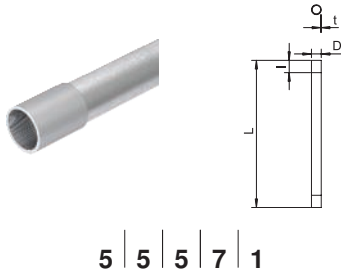
St Steel

G Electrogalvanised

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



Hot-dip galvanised steel pipe, with thread



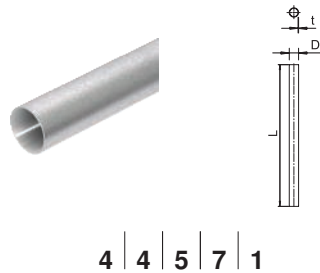
Type	Thread	Dimension D mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
SM16W FT	M16x1,5	16	3000	13	1.3	30	54.000	2046533
SM20W FT	M20x1,5	20	3000	13	1.5	30	79.000	2046534
SM25W FT	M25x1,5	25	3000	18	1.5	30	99.000	2046535
SM32W FT	M32x1,5	32	3000	18	1.5	21	130.000	2046536
SM40W FT	M40x1,5	40	3000	20.5	1.5	15	164.000	2046537
SM50W FT	M50x1,5	50	3000	25	1.5	15	206.000	2046538
SM63W FT	M63x1,5	63	3000	26	1.8	9	324.700	2046540

St Steel
FT Hot-dip galvanised

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. Corrosion protection class 4 (high). One coupling is already screwed onto each pipe.

Hot-dip galvanised steel pipe, without thread



Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
S16W FT	16	3000	1	30	37.000	2046593
S20W FT	20	3000	1	30	44.700	2046594
S25W FT	25	3000	1.2	30	70.400	2046595
S32W FT	32	3000	1.2	21	91.200	2046596
S40W FT	40	3000	1.2	15	139.700	2046597
S50W FT	50	3000	1.2	15	176.000	2046598
S63W FT	63	3000	1.2	9	223.000	2046599

St Steel
FT Hot-dip galvanised

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall. Corrosion protection class 4 (high).

Hot-dip galvanised steel sleeve, without thread



Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SV16W FT	18.6	16.6	50	25	1	25	2.200	2046620
SV20W FT	23.1	20.7	60	30	1.2	50	3.200	2046621
SV25W FT	28.1	25.7	60	30	1.2	50	5.600	2046622
SV32W FT	35.2	32.8	70	35	1.2	50	7.800	2046623
SV40W FT	43.8	40.8	80	40	1.5	25	14.400	2046624
SV50W FT	54	51	100	50	1.5	10	22.000	2046625
SV63W FT	67	63	100	50	1.5	5	28.000	2046626

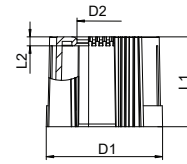
St Steel
FT Hot-dip galvanised

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.

Pipe end cap, splittable, light grey



Type	Size	Dimension D1 mm	Dimension D2 mm	Dimension L1 mm	Dimension L2 mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
129 TB M16	M16	20	10	30	3	Light grey	50	0.400	2047812
129 TB M20	M20	24	13.4	30	3	Light grey	50	0.440	2047831
129 TB M25	M25	30	18.4	30	3	Light grey	50	0.500	2047839
129 TB M32	M32	36	25.4	30	3	Light grey	50	0.656	2047855
129 TB M40	M40	44	33.4	30	3	Light grey	30	0.790	2047863
129 TB M50	M50	53	43	30	3	Light grey	30	0.935	2047890
129 TB M63	M63	67	56	30	3	Light grey	20	1.140	2047898



PE Polyethylene

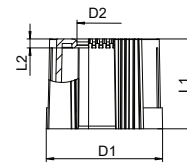
Separable pipe end cap to slot onto metric electrical installation pipes.

The separable pipe end cap can be used for repairs on existing installations according to regulations. It is not necessary to disconnect the cables, allowing quick mounting.

Pipe end cap, splittable, black



Type	Size	Dimension D1 mm	Dimension D2 mm	Dimension L1 mm	Dimension L2 mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
129 TB M16 SW	M16	20	10	30	3	Black	50	0.400	2047936
129 TB M20 SW	M20	24	13.4	30	3	Black	50	0.440	2047944
129 TB M25 SW	M25	30	18.4	30	3	Black	50	0.500	2047952
129 TB M32 SW	M32	36	25.4	30	3	Black	50	0.656	2047971
129 TB M40 SW	M40	44	33.4	30	3	Black	30	0.790	2047979
129 TB M50 SW	M50	53	43	30	3	Black	30	0.935	2047987
129 TB M63 SW	M63	67	56	30	3	Black	20	1.140	2047995



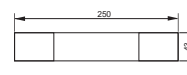
PE Polyethylene

Separable pipe end cap to slot onto metric electrical installation pipes.

The separable pipe end cap can be used for repairs on existing installations according to regulations. It is not necessary to disconnect the cables, allowing quick mounting.

Identification plate for function maintenance

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424



PVC Polyvinylchloride

Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.

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



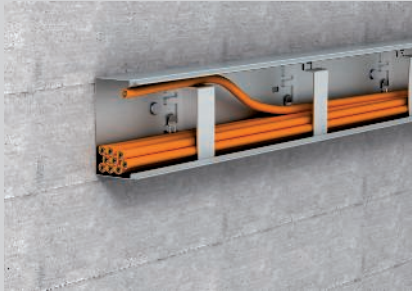
Horizontal wall and ceiling mounting.



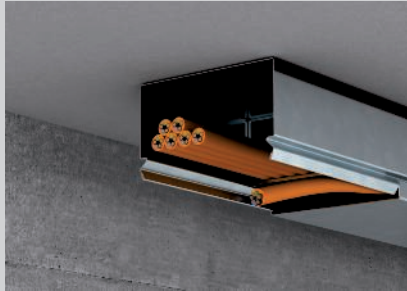
Routing of power, data or fire alarm cables in the trunking, type LKM60100.



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

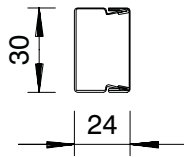
Routing type	Cable-specific support construction
Test certificate no.	P-MPA-E-11-008
Maintenance of electrical functionality classes	E30 and E90
Testing standard	DIN 4102 Part 12

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.

Trunking, type LKM 20030



Type	Colour	Length mm	Pack. m	Weight kg/100 m	Item No.
LKM20030FS	—	2000	24	58.000	6246974
LKM20030RW	Pure white	2000	22	58.000	6248470

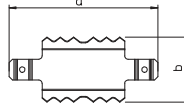
St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

Trunking cover and base with base perforation.

Equipotential bonding is guaranteed between the cover and the base without any additional aids.

Joint connector

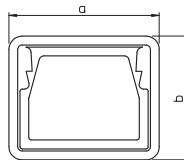


Type	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM SV30	53.8	29.5	10	0.400	6247434

V2A Stainless steel, A2

Joint connector to connect the bases. This creates the equipotential bonding between the duct bases.

Edge protection ring

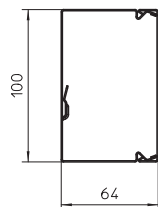
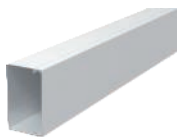


Type	Colour	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KSR20030	Grey	34	28	5	1.100	6249844

PVC Polyvinylchloride

Edge protection ring for the open ends of LKM cable trunking.

Trunking, type LKM 60100



Type	Colour	Length mm	Pack. m	Weight kg/100 m	Item No.
LKM60100FS	—	2000	8	221.700	6247113
LKM60100RW	Pure white	2000	8	221.700	6248624

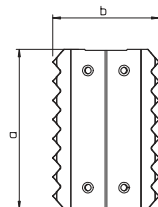
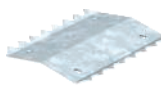
St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

Trunking cover and base with base perforation.

Equipotential bonding is guaranteed between the cover and the base without any additional aids.

Joint connector

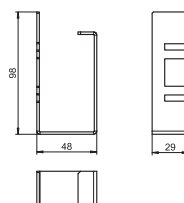


Type	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM SV60	75	50	10	1.600	6247466

V2A Stainless steel, grade 301

Joint connector to connect the bases. This creates the equipotential bonding between the duct bases.

Duct clamp for the maintenance of electrical function E30–E90



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM KF 60100	10	9.800	6249881

St Steel

FS Strip-galvanised

Duct clamp for the metal cable routing trunking type LKM 60100FS, prevents the cables falling out during installation. The duct clamp is essential if the trunking is used in cable systems with integrated maintenance of electrical function to DIN 4102, Part 12. Easy mounting through insertion into the loop perforation in the side wall.

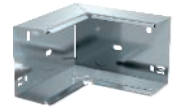
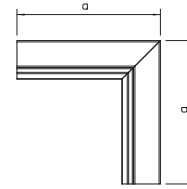
Internal corner

Type	Colour	Dimension a mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM I60100FS	—	180	1	39.400	6248144
LKM I60100RW	Pure white	180	1	39.400	6249639

St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

Internal corner for changing the direction of the LKM trunking.



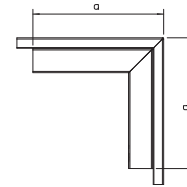
External corner

Type	Colour	Dimension a mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM A60100FS	—	180	1	73.100	6248063
LKM A60100RW	Pure white	180	1	73.100	6249574

St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

External corner, including cover, for changing the direction of the LKM trunking.



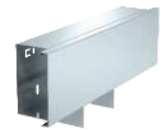
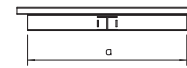
T-piece

Type	Colour	Dimension a mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM T60100FS	—	340	1	69.200	6248209
LKM T60100RW	Pure white	340	1	69.200	6249701

St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

T piece, including cover, for changing the direction of the LKM trunking.



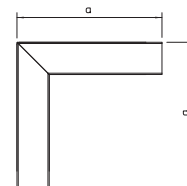
Flat angle

Type	Colour	Dimension a mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM F60100FS	—	220	1	63.400	6248004
LKM F60100RW	Pure white	220	1	63.400	6249507

St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

Flat angle, including cover, for changing the direction of LKM trunking.



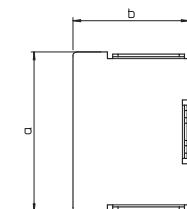
End piece

Type	Colour	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LKM E60100FS	—	100	63	10	6.200	6248306
LKM E60100RW	Pure white	100	63	10	6.500	6249817

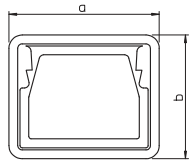
St Steel

FS Strip-galvanised FSK Strip galvanised/plastic-coated

End piece for closing the LKM trunking.



Edge protection ring

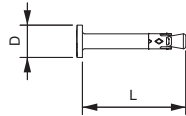


Type	Colour	Dimension a mm	Dimension b mm	Pack. pcs	Weight kg/100 pcs.	Item No.
KSR60100	Grey	104	67.7	5	3.400	6249852

PVC Polyvinylchloride

Edge protection ring for the open ends of LKM cable trunking.

Nail anchor N-K with nail head

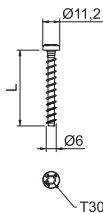


Type	Bore hole Ø mm	Bore hole depth mm	Clamping range mm	Dimension L mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
N-K 6-5-10/44	6	40	5 - 10	44	13	100	1.135	3498390

St Steel
G Electrogalvanised

The nail anchor N-K can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting. The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

Fire protection screw tie

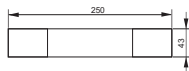


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 6X50	6 x 50	50	5	11.2	Torx	100	1.000	3498108

St Steel
G Electrogalvanised

Fire protection bolt tie with pan head for direct installation without additional anchors. Drive T30, drill hole 5 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Identification plate for function maintenance

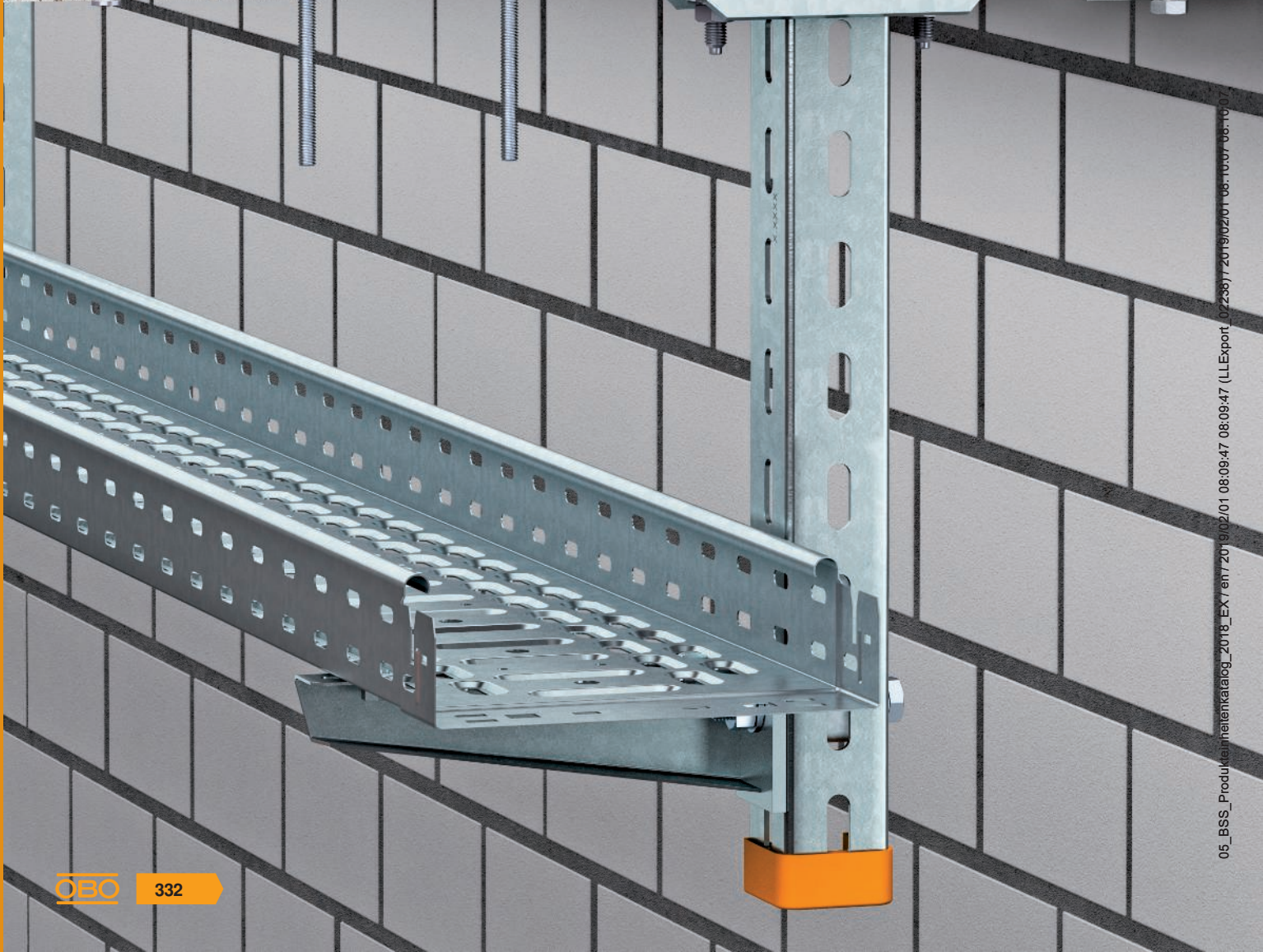
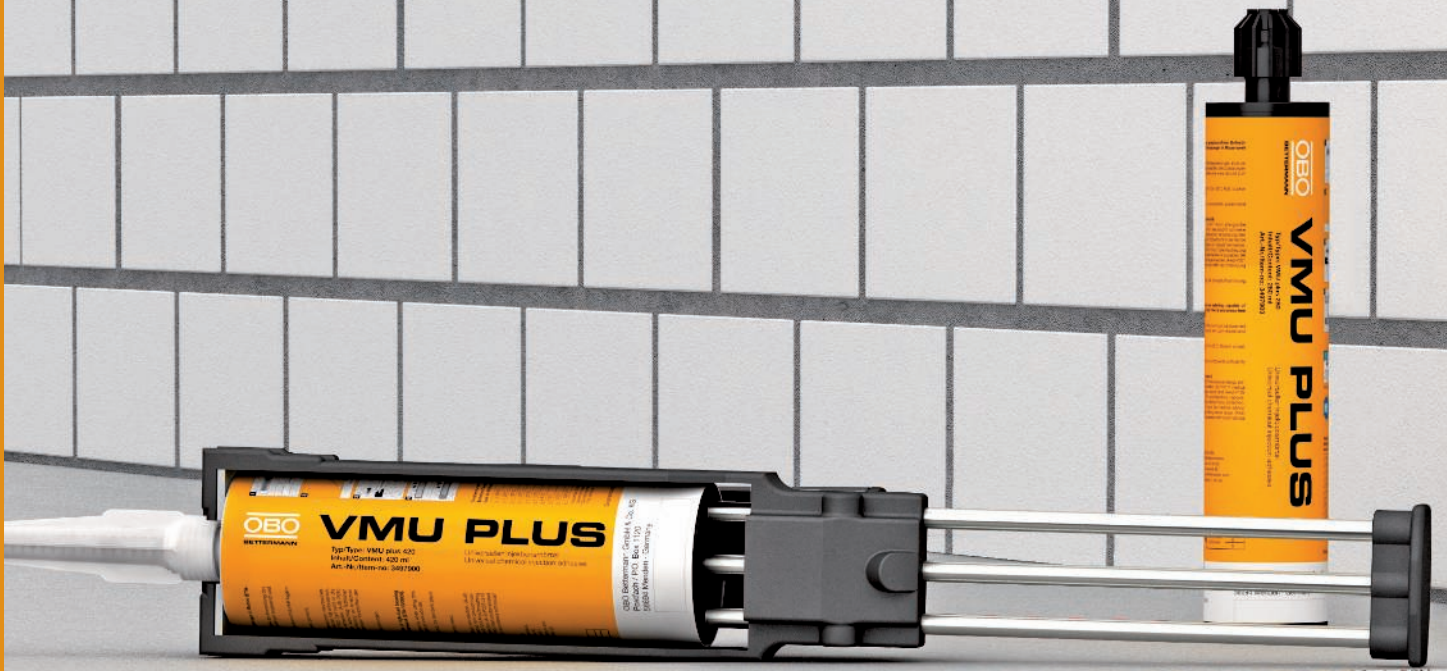


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
KS-E DE	10	0.600	7205423
KS-E EN	10	0.600	7205432
KS-E HU	10	0.600	7205434
KS-E PL	10	0.600	7205436
KS-E FI	10	0.600	7205437
KS-E SE	10	0.600	7205424

PVC Polyvinylchloride







Self-adhesive identification plate for approved cable system labelling for the maintenance of electrical function as required by DIN 4102 part 12.





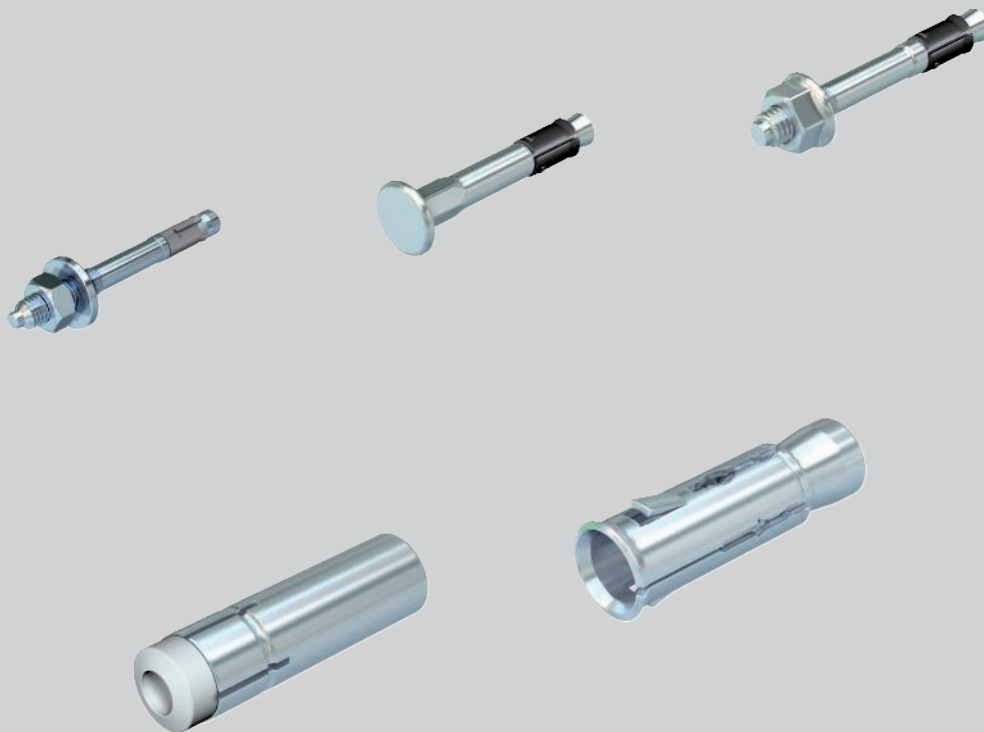
05_BSS_Produlteknikreihenatalog_2018_EX-r ein/72019/02/01 08:09:47 (LLEExport_0723897-2019/02/01 08:10:07 06-10)

Anchoring

	System description, metal spreading anchor	334
	Products	336
	System description, injection anchor	342
	Products	344
	System description, bolt tie	348
	Products	350
	System description, wood screws	352
	Products	354
	Mounting material for insulated ceilings	355

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 Tech-

nical 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

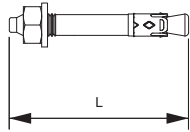
System description

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



Nail anchor N with thread

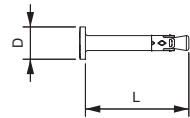


Type	Thread	Bore hole Ø mm	Bore hole depth mm	Clamping range mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
N 6-5-10/49	M6	6	40	5 - 10	49	100	1.160	3498396

- St** Steel
- G** Electrogalvanised

The nail anchor N can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting. The nail tie only needs to be hammered into the drill hole. It is not necessary to apply torque subsequently. When the load occurs, the nail tie spreads itself and bolts itself in the drill hole.

Nail anchor N-K with nail head

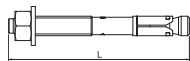


Type	Bore hole Ø mm	Bore hole depth mm	Clamping range mm	Dimension L mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
N-K 6-5-10/44	6	40	5 - 10	44	13	100	1.135	3498390

- St** Steel
- G** Electrogalvanised

The nail anchor N-K can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting. The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

Bolt tie BZ



Type	Thread	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BZ10-100-120/180	M10	180	25	10.320	3498342
BZ 12-15-35/110	M12	110	25	10.320	3498350

- St** Steel
- G** Electrogalvanised

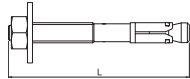
Wedge anchor BZ for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings.

European technical approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120.

Proof of suitability in the case of seismic impacts, categories C1 and C2.

Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.

Bolt tie BZ-U



Type	Thread	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BZ-U 8-10-21/75	M8	75	50	3.460	3498320
BZ-U 8-30-41/95	M8	95	50	4.010	3498326
BZ-U 10-10-30/90	M10	90	50	6.720	3498334
BZ-U10-30-50/110	M10	110	25	7.900	3498340

- St** Steel
- G** Electrogalvanised

Bolt tie BZ for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings.

European technical approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120.

Proof of suitability in the case of seismic impacts, categories C1 and C2.

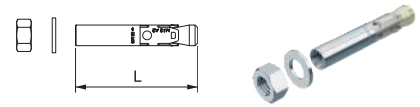
Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.



Bolt tie BZ-IG

Type	Thread	Bore hole Ø mm	Bore hole depth mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
BZ-IG M 6-0	M6	8	60	50	20	1.830	3498370
BZ-IG M 8-0	M8	10	75	62	20	3.333	3498372
BZ-IG M 10-0	M10	12	90	70	20	5.700	3498374
BZ-IG M 12-0	M12	16	105	86	20	12.000	3498376

- St** Steel
- G** Electrogalvanised



Bolt tie BZ-IG with internal thread for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings. Undercutting the drill holes is not necessary.

The fastening of the component is possible with hexagonal screws or with countersunk head screws as well as with a system of nut and washer and a standard threaded rod.

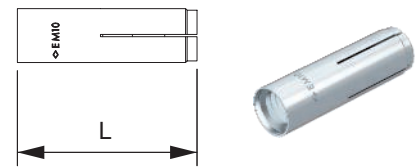
European technical approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120.

Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.

Drop-in anchor E

Type	Thread	Bore hole Ø mm	Bore hole depth mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
E M 6x30	M6	8	30	30	100	0.840	3492900
E M 8x40	M8	10	40	40	100	1.490	3492910
E M 10x40	M10	12	40	40	50	2.140	3492920
E M 12x50	M12	15	50	50	50	4.420	3492930

- St** Steel
- G** Electrogalvanised



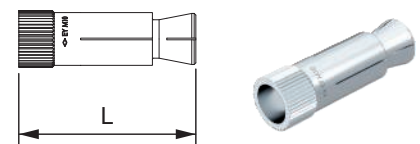
The drop-in anchor E can be used for single fixings in non-cracked concrete as well as for multiple fixings in cracked concrete of non-load-bearing systems.

The setting tool is placed onto the anchor sleeve thereby creating a visible mark which confirms the correct installation. Through the controlled expansion, the necessary axial spacings and edge distances are decreased significantly.

Hollow core anchor Easy

Type	Thread	Bore hole Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
Easy M8	M8	12	44	25	1.500	3498770
Easy M10	M10	16	53	25	3.320	3498774

- St** Steel
- G** Electrogalvanised



Hollow core anchor "Easy" for mounting in prestressed hollow concrete slabs. When the screw or the nut is tightened, the cone is released from the anchor sleeve and pulled into it. This makes the anchor expand in the hollow space, thereby creating form lock. The hollow core anchor can also be used when the expansion area is not located in the cavity.

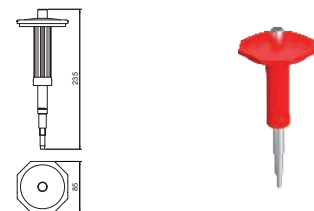
The fastening of the component can be done with standard screws and threaded rods.

Setting tool for drop-in anchor

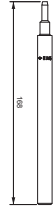
Type	Length mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
E-MSH 8x40	235	M8	1	38.000	3492970
E-MSH 10x40	235	M10	1	45.000	3492974
E-MSH 12x50	235	M12	1	47.000	3492978

- St** Steel
- G** Electrogalvanised

Setting tool with hand protection for drop-in anchor of the type E.



Setting tool for drop-in anchor



Type	Length		Thread	Pack. Weight		Item No.
	mm			pcs	kg/100 pcs.	
E-SW 6x30	168		M6	1	51.000	3492990

- St** Steel
- G** Electrogalvanised

Setting tool for drop-in anchor of the type E. With the standard version there is no marking made on the anchor sleeve.

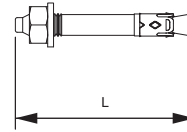


Nail anchor N with thread, V4A

Type	Thread	Bore hole		Fixture thickness	Dimension L	Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm					
N 6-5/49 A4	M6	6	40	5	49	50	1.200	3498399

V4A Stainless steel, A4

The nail anchor N can be used for multiple fastenings of non-load-bearing systems, indoors and outdoors, in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting. The nail anchor only needs to be hammered into the drill hole. It is not necessary to apply torque subsequently. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

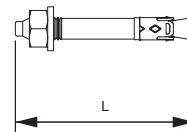


Nail anchor N with thread, A5

Type	Thread	Bore hole		Fixture thickness	Dimension L	Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm					
N 6-5/49 HCR	M6	6	40	5	49	50	1.200	3498398

V5A Stainless steel, A5

The nail anchor N can be used for multiple fastenings of non-load-bearing systems in areas with highly corrosive impacts in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting. The nail anchor only needs to be hammered into the drill hole. It is not necessary to apply torque subsequently. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

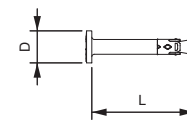


Nail anchor N-K with nail head, V4A

Type	Bore hole	Bore hole Ø	Fixture depth	Thickness	Dimension L	Dimension D	Pack. pcs	Weight kg/100 pcs.	Item No.
N-K 6-5/44 A4	6	40	5	44	13	50	1.140	3498393	

V4A Stainless steel, A4

The nail anchor N can be used for multiple fastenings of non-load-bearing systems, indoors and outdoors, in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting. The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.



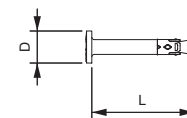
Nail anchor N-K with nail head, A5

Type	Bore hole	Bore hole Ø	Fixture depth	Thickness	Dimension L	Dimension D	Pack. pcs	Weight kg/100 pcs.	Item No.
N-K 6-5/44 HCR	6	40	5	44	13	50	1.135	3498392	

V5A Stainless steel, A5

The nail anchor N can be used for multiple fastenings of non-load-bearing systems in areas with highly corrosive impacts in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with an even easier mounting.

The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.



Bolt tie BZ

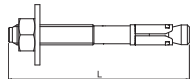
Type	Thread	Dimension L	Pack. pcs	Weight kg/100 pcs.	Item No.
BZ 8-10-21/75HCR	M8	75	100	3.080	3498516
BZ10-10-30/90HCR	M10	90	50	6.040	3498556

V5A Stainless steel, A5

Wedge anchor BZ for the anchoring of medium-duty to heavy-duty loads in areas with highly corrosive impacts, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings.



Bolt tie BZ-U

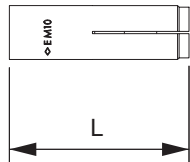


Type	Thread	Dimension L		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
BZ-U8-10-21/75A4	M8	75		50	3.460	3498322
BZU10-10-30/90A4	M10	90		50	6.740	3498336

V4A Stainless steel, A4

Wedge anchor BZ for the anchoring of medium-duty to heavy-duty loads, indoors and outdoors, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings.

Drop-in anchor E A4



Type	Thread	Bore hole		Dimension L	Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	depth mm				
E M 8x40 A4	M8	10	40	40	50	1.490	3492912
E M 10x40 A4	M10	12	40	40	50	2.160	3492922
E M 12x50 A4	M12	15	50	50	50	4.380	3492932

V4A Stainless steel, A4

The drop-in anchor E can be used for single fixings in non-cracked concrete as well as for multiple fixings in cracked concrete of non-load-bearing systems.

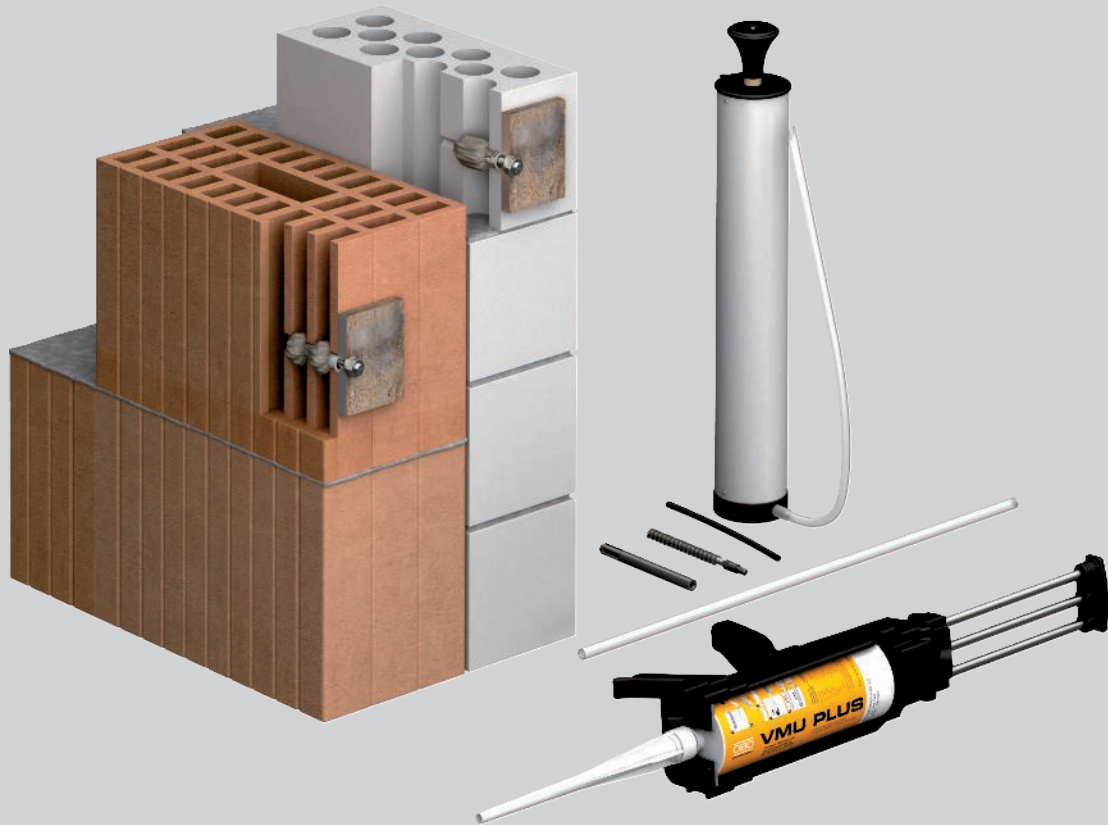
The setting tool is placed onto the anchor sleeve thereby creating a visible mark which confirms the correct installation. Through the controlled expansion, the necessary axial spacings and edge distances are decreased significantly.





Injection tie VMU Plus

System description

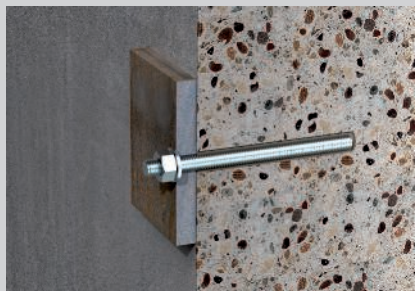


The VMS Plus injection mortar system is particularly suitable for fire protection fastening in hollow brick, concrete and porous concrete, calcareous limestone, sand-lime brick and masonry. The connection is free from spreading pressure and is created through the form fitting of the injection mortar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

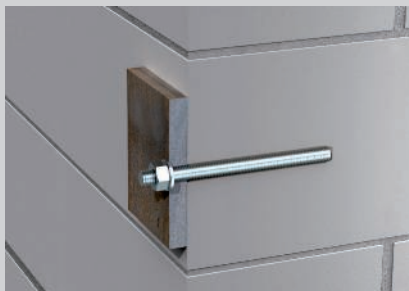
The maximum load capacity depending on the fire resistance period and the fastening substrate is documented accordingly in the available fire protection certificate. Although the load capacity of the injection mortar system is below the load capacity when cold, this load capacity is completely sufficient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



Injection tie VMU Plus Installation principle



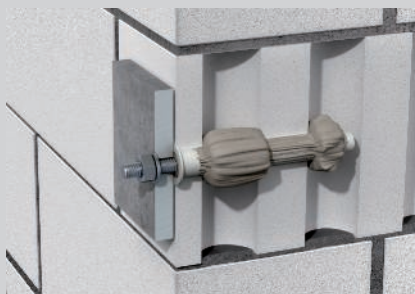
Anchor rod mounted in concrete without wire sleeve.



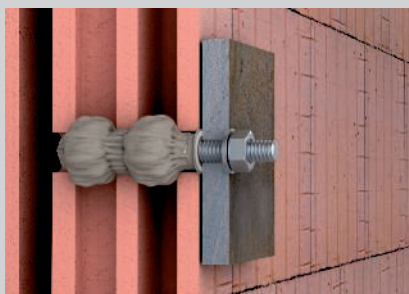
Anchor rod mounted in calcareous limestone full brick without wire sleeve.



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



Injection mortar in cartridge, 280 ml



Type	Contents ml	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
VMU plus 280	280	1	56.000	3497800

The injection mortar VMU is a 2-component mortar, which sticks the anchor rods and internal thread sleeves in concrete or masonry without any spreading pressure. Depending on the size of the means of fastening, loads of different magnitudes can be fastened to the anchor rods or internal thread sleeves.

Injection mortar in cartridge, 420 ml



Type	Contents ml	Pack. Weight		Item No.
		pcs	kg/100 pcs.	
VMU plus 420	420	1	83.000	3497800

Styrene-free, vinyl ester composite mortar for spread-free anchoring of high loads with threaded anchor rods. Coaxial cartridge, including one mixing tube, to be worked with the pressing gun, type VM-P 380 Profi.

European Technical Assessment for cracked and uncracked concrete, as well as for masonry of full and hollow brick. Earthquake-proof in concrete according to Category C1. Fire protection approval for concrete and masonry with fire resistance classes up to 120 minutes.

Substrate temperature during processing $-10\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ (concrete), ambient temperature after complete hardening $-40\text{ }^{\circ}\text{C}$ to $+120\text{ }^{\circ}\text{C}$ (in concrete). If stored in a dark, cool and dry place, will keep for at least 18 months.

Pressing gun for 280 ml and side-by-side cartridges



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
VM-P 345 Profi	1	100.000	3497906

Plastic

Side-by-side cartridge pistol for the use of standard cartridges or side-by-side cartridges. The cartridge pistol is suitable for the injection mortar VMU plus 280 and can also be used with normal 300 ml cartridges.

Pressing gun for 10:1 coaxial cartridges



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
VM-P 380 Profi	1	110.000	3497909

Plastic

High-quality 2-component cartridge pistol. The parallel movement of the outlet to the holding grip ensures easy working. Suitable for the injection mortar type VMU plus 420.

Anchor rod



Type	Dimen- sion L mm	Dimen- sion d mm	SW		Pack. Weight		Item No.
			Thread	mm	pcs	kg/100 pcs.	
VMU-A 8-110vz	110	6.5	M8	13	10	4.350	3497820
VMU-A 10-130vz	130	8.2	M10	17	10	8.150	3497822
VMU-A 10-150vz	150	8.2	M10	17	10	9.150	3497824
VMU-A 12-155vz	155	9.9	M12	19	10	13.850	3497826

St Steel

G Electrogalvanised

With the anchor rod and matching plastic wire sleeve, loads are fastened without spreading pressure in masonry walls using the VMS plus injection mortar. The system is also used for fastening in concrete ceilings. On concrete and full brick walls, the anchor rod is only mounted with the injection mortar VMU plus, without a wire sleeve.

Use the wire sleeve VMU-SH 12x50 for the anchor rods M6 (L=65 mm) and M8 (L=65 mm). Should the anchor rods M8 (L=120 mm), M10 (L=140 mm), M10 (L=160 mm) and M12 (L=165 mm) be used, then use the wire sleeve VMU-SH 18x95.



Anchor rod

Type	Dimension L mm	Dimension d mm	Thread	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
VMU-A 8-110A4	110	6.5	M8	13	10	4.350	3497830
VMU-A 10-130A4	130	8.2	M10	17	10	8.150	3497832
VMU-A 12-155A4	155	9.9	M12	19	10	13.850	3497834

With the anchor rod and matching plastic wire sleeve, loads are fastened without spreading pressure in masonry walls using the VMS plus injection mortar. The system is also used for fastening in concrete ceilings. On concrete and full brick walls, the anchor rod is only mounted with the injection mortar VMU plus, without a wire sleeve.

Use the wire sleeve VMU-SH 12x50 for the anchor rods M6 (L=65 mm) and M8 (L=65 mm). Should the anchor rods M8 (L=120 mm), M10 (L=140 mm), M10 (L=160 mm) and M12 (L=165 mm) be used, then use the wire sleeve VMU-SH 18x95.

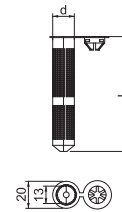


Plastic wire sleeve

Type	Dimension L mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
VMU-SH 12x80	80	12	10	0.200	3497860
VMU-SH 16x85	85	16	10	0.300	3497862
VMU-SH 16x130	130	16	10	0.400	3497864
VMU-SH 20x85	85	20	10	0.400	3497866

PA Polyamide

The plastic wire sleeve is a supplement to the anchor rod or internal thread sleeve and is used to mount loads on masonry.



Perforated sleeve, metal

Type	Dimension L mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
VM-SH 12x1000	1000	12	1	6.000	3497972
VM-SH 16x1000	1000	16	1	7.000	3497975
VM-SH 22x1000	1000	22	1	10.000	3497978

St Steel

Metal wire sleeve for use in hollow brick and stones in combination with injection mortar system VMU plus.



Metallic internal thread sleeve

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VMU-IG M6x80vz	10	3.350	3497840
VMU-IG M8x80vz	10	4.650	3497842
VMU-IG M10x80vz	10	8.750	3497844
VMU-IG M6x80A4	10	3.350	3497850
VMU-IG M8x80A4	10	4.650	3497852
VMU-IG M10x80A4	10	8.750	3497854

St Steel

G Electrogalvanised

With the internal thread sleeve and matching plastic wire sleeve, loads are fastened without spreading pressure in concrete and masonry walls and ceilings using the VMS plus injection mortar.



Blow pump for drill holes

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VM-AP 360	1	27.000	3497912

Plastic

Manual pump with 750 ml air volume to blowing out drill holes according to anchor approval.



Steel cleaning brush for drill holes



Type	Diameter		Length		Thread	Pack. pcs	Weight		Item No.
	mm	mm	mm	mm			kg/100 pcs.	pcs.	
RB 10 M 6	10		130		M6	1	5.000		3497870
RB 12 M 6	12		140		M6	1	5.000		3497872
RB 14 M 6	14		180		M6	1	5.000		3497874
RB 18 M 6	18		200		M6	1	5.000		3497876
RB 16 M 6	16		190		M6	1	5.000		3497875
RB 20 M 6	20		220		M6	1	5.000		3497878

St Steel

G Electrogalvanised

Using the steel wire brush, drill holes must be mechanically cleaned according to the anchor approval, in order to obtain a clean adhesion substrate for the injection mortar.

SDS adapter



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
RBL M6 SDS	1	6.000	3497915

St Steel

Adapter for accepting steel wire brushes for mechanical cleaning of drill holes according to the anchor approval. Suitable for drills with SDS seat.

SDS extension



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RB-L 150 M6	150	1	9.700	3497932

St Steel

Extension with internal and external M6 thread for the connection of the SDS adapter with steel wire brush in difficult to access drill holes.

Mixer pipe for mortar cartridge



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VM-X	12	1.000	3497981

PA Polyamide

Mixing tubes for attachment to the cartridges of the VMU plus injection mortar system.

Extension pipe



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
VM-XE 10/200	200	12	1.000	3497984
VM-XE 10/500	500	10	2.000	3497987

PA Polyamide

Fixed length extension tube for use on the mixing tube tips in the VMU plus injection mortar system.





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

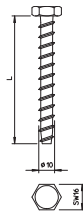
System description

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



MMS hex

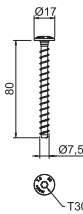


Type	Dimension mm	Dimension L mm	Anchor hole Ø mm	Bore hole Ø mm	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 10x80	10 x 80	80	8	13		25	4.000	3498124
MMS-plus 10x100	10 x 100	100	8	13		25	4.800	3498159

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with hexagonal head for direct mounting without additional anchor. WAF 13, drill hole 8 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Bolt tie

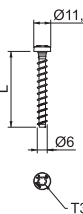


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X80	7,5 x 80	80	6	13.2	Torx	50	1.600	3498272

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with pan head for direct mounting without anchors. Drive T40, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Fire protection screw tie

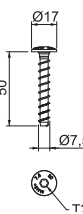


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 6X50	6 x 50	50	5	11.2	Torx	100	1.000	3498108

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with pan head for direct installation without additional anchors. Drive T30, drill hole 5 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

Fire protection screw tie

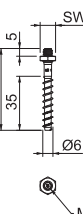


Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus 7.5X50	7,5 x 50	50	6	17	Torx	100	1.500	3498261

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with large pan head for direct mounting without additional anchors. Drive T30, drill hole 6 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.

MMS-ST with thread



Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Thread	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus ST 6x55	6x55	60	5	M6	10	100	1.030	3498264

- St** Steel
- G** Electrogalvanised

Fire protection bolt tie with M6 thread and hexagonal head for direct mounting without additional anchors. WAF 10, drill hole 5 mm. Tested anchor according to ETAG 001 - Part 3. Fire resistance class to R120 for concrete and masonry.



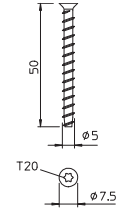
Screw anchor

Type	Dimension mm	Anchor length mm	Bore hole Ø mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
MMS-plus KS 5x50	5 x 50	50	4	7.5	Torx	200	0.460	3498204

St Steel

G Electrogalvanised

Screw anchor with countersunk cone head for mounting without additional anchors. Drive T20, drill hole 4 mm. Fire protection-tested according to DIN 4102 for concrete and masonry. Fire resistance class to F90.



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 paneling 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



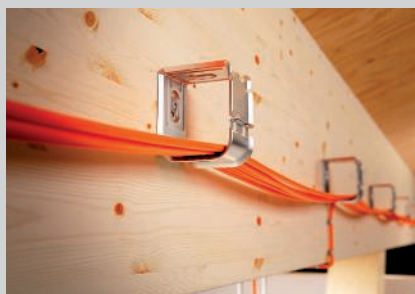
Bracket mounting on the side of the wooden beam with rear fire protection plate.



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



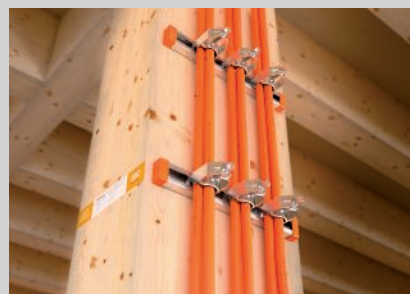
Cable routing with single clips and in the pipe, at the side on the wooden beam.



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

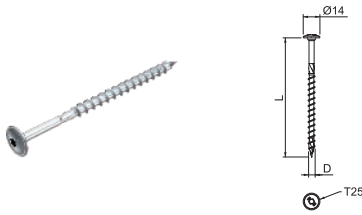
System description

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



Flange head-screw HT 6

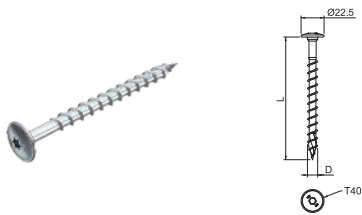


Type	Dimension D mm	Dimension L mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
HT 6x60 TD	6	60	14	Torx	200	0.850	3498130
HT 6x80 TD	6	80	14	Torx	100	0.110	3498132
HT 6x100 TD	6	100	14	Torx	100	0.130	3498134
HT 6x120 TD	6	120	14	Torx	100	0.150	3498136

- St** Steel
- G** Electrogalvanised

Self-tapping wood screw for fireproof fastening of cable systems for the maintenance of electrical function according to DIN 4102 Part 12 on supporting wooden structures. The flange head shape allows installation without an additional washer.

Flange head-screw HT 10

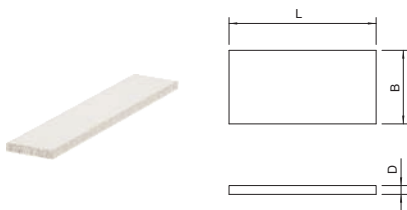


Type	Dimension D mm	Dimension L mm	Head Ø mm	Screw system	Pack. pcs	Weight kg/100 pcs.	Item No.
HT 10x80 TD	10	80	22.5	Torx	50	0.310	3498140
HT 10x100 TD	10	100	22.5	Torx	50	0.370	3498142
HT 10x120 TD	10	120	22.5	Torx	50	0.430	3498144
HT 10x140 TD	10	140	22.5	Torx	50	0.490	3498146

- St** Steel
- G** Electrogalvanised

Self-tapping wood screw for fireproof fastening of cable systems for the maintenance of electrical function according to DIN 4102 Part 12 on supporting wooden structures. The flange head shape allows installation without an additional washer.

Fire protection plate



Type	Dimension L mm	Dimension B mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
GLB-P1	600	120	20	1	100.000	7205470
GLB-P2	600	120	30	1	150.000	7205472

Glass-fibre lightweight concrete

Fire protection plate (material class A1) as effective panelling measure for fastening on supporting wooden components for the maintenance of electrical function according to DIN 4102 Part 12. Made of fibreglass light concrete which is resistant to water and frost.



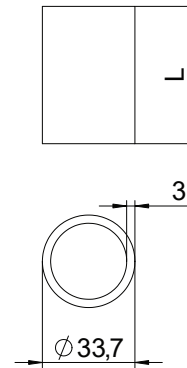
Spacer sleeve for insulated ceilings

Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DHI 050	50	30	11.600	7205900
DHI 060	60	24	14.000	7205901
DHI 070	70	20	16.200	7205902
DHI 080	80	20	18.200	7205903
DHI 090	90	14	20.800	7205904
DHI 100	100	14	23.400	7205905
DHI 110	110	12	24.600	7205906
DHI 120	120	12	27.600	7205907
DHI 130	130	12	30.400	7205908
DHI 140	140	12	32.800	7205909
DHI 150	150	12	35.000	7205910

St Steel

FT Hot-dip galvanised

Spacer sleeve for mounting suspension components under insulated ceilings. They prevent the insulation from pushing in when the fastening screws are tightened.
Burr arm, galvanised internally and externally.



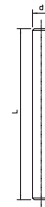
Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
TR M8 1M G	M8	8	1000	10	30.000	3141128
TR M10 1M G	M10	10	1000	10	49.000	3141209
TR M12 1M G	M12	12	1000	10	62.000	3141306

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



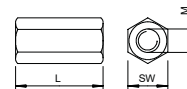
Connection sleeve

Type	Thread	Dimension L mm	SW mm	Pack. pcs	Weight kg/100 pcs.	Item No.
CSTR M8 G	M8	30	13	50	2.000	6410081
CSTR M10 G	M10	40	17	50	6.000	6410103
CSTR M12 G	M12	40	19	25	7.000	6410111

St Steel

G Electrogalvanised

Connection sleeve with continuous internal thread.



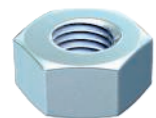
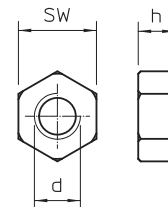
Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack. pcs	Weight kg/100 pcs.	Item No.
HN M8 G	M8	13	6.8	8		100	0.474	3400085
HN M10 G	M10	17	8.4	10		100	1.084	3400107
HN M12 G	M12	19	10.8	12		100	1.730	3400123

St Steel

G Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



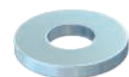
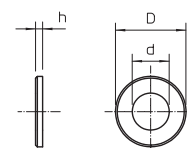
Washer

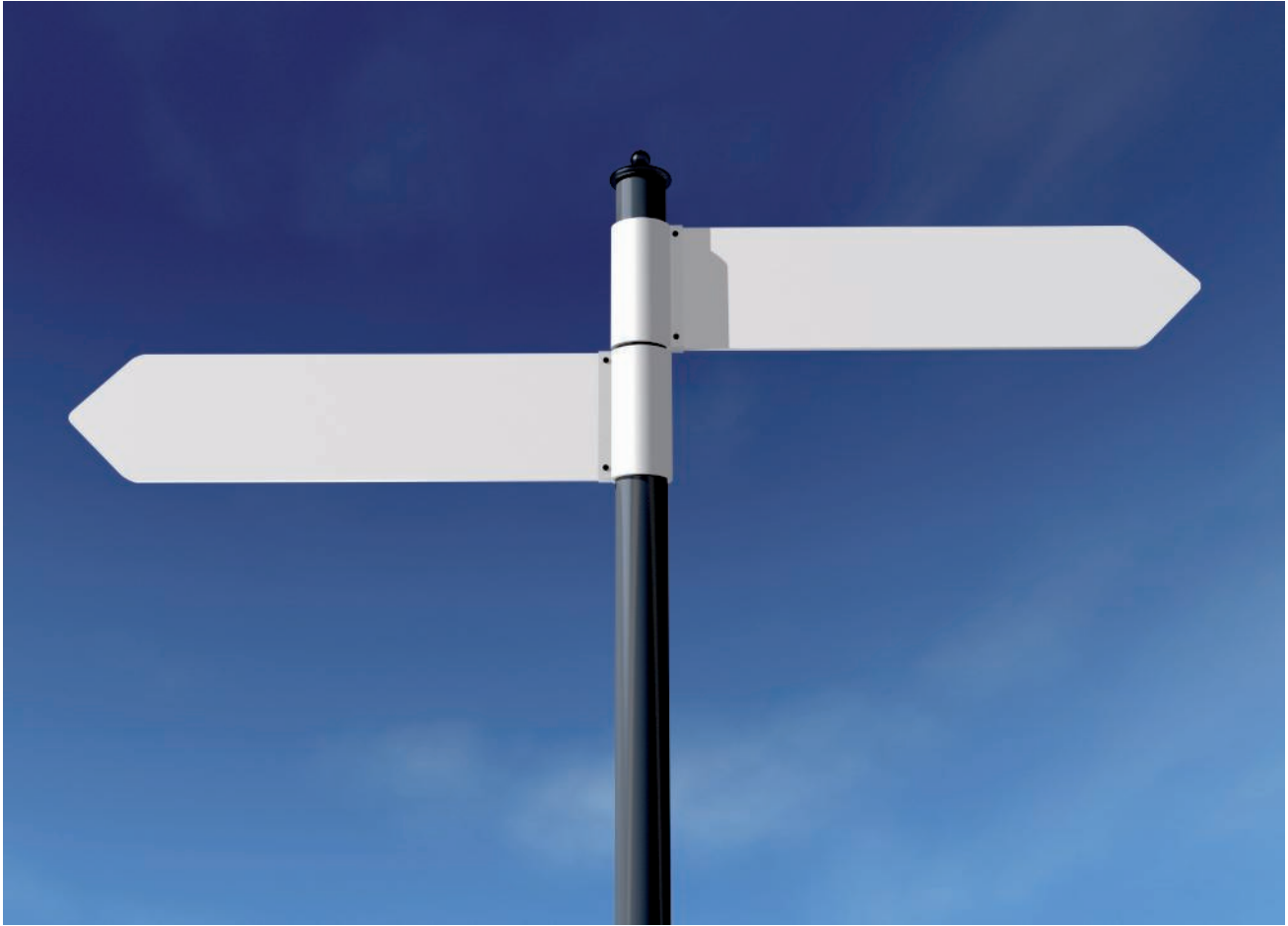
Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack. pcs	Weight kg/100 pcs.	Item No.
WS M8 D16 G	M8	8.4	16	1.6	100	0.214	3402088
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096
WS M12 D24 G	M12	13	24	2.5	100	0.627	3402126

St Steel



G Electrogalvanised

Washer according to DIN 125, shape A, for universal use.





Directories

 1 2	Numeric directory	358
 903 904	Type listing	362
	Terms and conditions of sale and delivery	374

GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page
5000792	/100 pc. 1003038	178	5063193	/100 pc. 1156098	275	5912637	/100 pc. 1360686	315	5781790	/100 pc. 2046584	322	5474791	/100 pc. 2091674	168
5000853	1003046	178	5063254	1156101	275	5912644	1360688	315	5781806	2046585	322	5036616	2204000	149
5000914	1003054	178	5063315	1156128	275	5912651	1360690	315	5781844	2046586	322	5210672	2204010	149
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GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page
6464913	/100 pc. 3497975	345	6446896	/pc. 6018505	274	5694564	/m 6062086	239	6119059	/m 6248470	328	6222315	/pc. 6342308	220
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GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page	GTIN	Art. no.	Page
6206599	6419704	224	6434626	7202577	72	5993124	7205546	288	6887538	7215228	176	5917328	7216350	158
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58														

GTIN	Art. no.	Page
	/pc.	
6532261	7216636	163
6532278	7216637	163
6532285	7216638	163
6532292	7216639	164
6532308	7216640	163
6532315	7216641	163
6532322	7216642	164
6532339	7216643	164
6532346	7216644	166
6532353	7216645	165
6532360	7216646	165
6532377	7216647	165
6532384	7216648	165
6532391	7216649	165
6532407	7216650	166
6532445	7216654	167
6532452	7216655	167

05_BSS_Produnkteinheitenkatalog_2018_EX / en / 2019/02/01 08:09:47 08:09:47 (LLExpert_02238) / 2019/02/01 08:10:07 08:10:07



Type	GTIN	Art. no.	Page
		/100 pc.	
107 C VM 20 2x4	5035831	2029672	169
107 C VM 20 2x6	5035954	2029677	169
107 C VM 20 4x5	5035893	2029675	169
107 C VM 25 2x6	5036135	2029685	169
107 C VM 25 2x8	5036258	2029690	169
107 C VM 25 3x6	5036074	2029682	169
107 C VM 25 3x7	5036197	2029688	169
107 C VM 25 5x4	5036012	2029679	169
107 C VM 32 2x8	5036319	2029693	169
107 C VM 32 4x8	5036371	2029696	169
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116 M16 SGR PA	5446538	2048760	169
116 M20 SGR PA	5446590	2048779	169
116 M25 SGR PA	5446651	2048787	169
116 M32 SGR PA	5446712	2048795	169
116 M40 SGR PA	5088752	2048809	169
116 M50 SGR PA	5088875	2048817	169
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129 TB M16 SW	6332335	2047936	325
129 TB M20	6332250	2047831	325
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129 TB M25	6332267	2047839	325
129 TB M25 SW	6332373	2047952	325
129 TB M32	6332274	2047855	325
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129 TB M50 SW	6332403	2047987	325
129 TB M63	6332328	2047898	325
129 TB M63 SW	6332434	2047995	325
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169 MS M16	5931690	2091615	168
169 MS M20	5931751	2091623	168
169 MS M25	5931812	2091631	168
169 MS M32	5931874	2091658	168
169 MS M40	5474197	2091666	168
169 MS M50	5474791	2091674	168
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2031 M 15 A2	5809395	2207080	300
2031 M 15 A4	5809456	2207132	300
2031 M 15 FS	5863953	2207028	149
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2031 M 30 A2	5809401	2207088	301
2031 M 30 A4	5809463	2207140	301
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2031 M 70 A4	5809470	2207164	301
2031 M 70 FS	5022497	2207060	149
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2033 D 15x3 G	5044970	2205097	302
2033 M A2	5036616	2204000	149
2033 M A2	5036616	2204000	302
2034 M A2	5210672	2204010	149
2034 M A2	5210672	2204010	302
2056 M 100 FT	5063551	1156160	275
2056 M 100 FT	5063551	1156160	307
2056 M 12 FT	5062714	1156004	275
2056 M 12 FT	5062714	1156004	307
2056 M 16 FT	5062776	1156012	275
2056 M 16 FT	5062776	1156012	307
2056 M 22 FT	5062837	1156020	275
2056 M 22 FT	5062837	1156020	307
2056 M 28 FT	5062899	1156039	275
2056 M 28 FT	5062899	1156039	307
2056 M 34 FT	5062950	1156047	275
2056 M 34 FT	5062950	1156047	307
2056 M 40 FT	5063018	1156055	275
2056 M 40 FT	5063018	1156055	307
2056 M 46 FT	5063070	1156063	275
2056 M 46 FT	5063070	1156063	307
2056 M 52 FT	5063131	1156071	275
2056 M 52 FT	5063131	1156071	307
2056 M 58 FT	5063193	1156098	275
2056 M 58 FT	5063193	1156098	307
2056 M 64 FT	5063254	1156101	275

Type	GTIN	Art. no.	Page
		/100 pc.	
2056 M 64 FT	5063254	1156101	307
2056 M 70 FT	5063315	1156128	275
2056 M 70 FT	5063315	1156128	307
2056 M 76 FT	5063377	1156136	275
2056 M 76 FT	5063377	1156136	307
2056 M 82 FT	5063438	1156144	275
2056 M 82 FT	5063438	1156144	307
2056 M 90 FT	5063490	1156152	275
2056 M 90 FT	5063490	1156152	307
2056 M2 12 FT	5494836	1156179	276
2056 M2 12 FT	5494836	1156179	307
2056 M2 16 FT	5494898	1156187	276
2056 M2 16 FT	5494898	1156187	307
2056 M2 22 FT	5494959	1156195	276
2056 M2 22 FT	5494959	1156195	307
2056 M2 28 FT	5958703	1156209	276
2056 M2 28 FT	5958703	1156209	307
2056 M3 12 FT	5958765	1156241	276
2056 M3 12 FT	5958765	1156241	308
2056 M3 16 FT	5958826	1156268	276
2056 M3 16 FT	5958826	1156268	308
2056 M3 22 FT	5958888	1156276	276
2056 M3 22 FT	5958888	1156276	308
2056 M3 28 FT	5958949	1156284	276
2056 M3 28 FT	5958949	1156284	308
2056U M 12 FT	5498254	1158007	277
2056U M 12 FT	5498254	1158007	308
2056U M 16 FT	5498315	1158015	277
2056U M 16 FT	5498315	1158015	308
2056U M 22 FT	5498377	1158023	277
2056U M 22 FT	5498377	1158023	308
2056U M 28 FT	5498438	1158031	277
2056U M 28 FT	5498438	1158031	308
2056U M 34 FT	5498490	1158058	277
2056U M 34 FT	5498490	1158058	308
2056U M 40 FT	5498551	1158066	277
2056U M 40 FT	5498551	1158066	308
2056U M 46 FT	5498612	1158074	277
2056U M 46 FT	5498612	1158074	308
2056U M 52 FT	5498674	1158082	277
2056U M 52 FT	5498674	1158082	308
2056U M 58 FT	5498735	1158090	277
2056U M 58 FT	5498735	1158090	308
2058 LW 10	5082033	1195794	309
2058 LW 14	5082095	1195808	309
2058 LW 20	5082156	1195816	309
2058 LW 26	5082217	1195824	309
2058 LW 32	5082279	1195832	309
2058 LW 38	5082330	1195840	309
2058 LW 44	5082392	1195859	309
2058 LW 50	5082453	1195867	309
2058 LW 56	5082514	1195875	309
2058 LW 62	5237853	1195883	309
604 10 G	5001218	1003100	195
604 10 G	5001218	1003100	178
604 11 G	5001270	1003119	178
604 12 G	5001331	1003127	178
604 13 G	5001393	1003135	178
604 16 G	5001454	1003178	178
604 19 G	5001515	1003194	178
604 20 G	5001577	1003208	178
604 21 G	5001638	1003216	178
604 23 G	5001690	1003232	178
604 25 G	5566892	1003259	178
604 28 G	5001751	1003283	178
604 3 G	5000792	1003038	178
604 32 G	5566953	1003321	178
604 35 G	5001812	1003356	178
604 37 G	5001874	1003372	178
604 4 G	5000853	1003046	195
604 4 G	5000853	1003046	178
604 40 G	5001935	1003402	178
604 47 G	5002055	1003461	178
604 5 G	5000914	1003054	195
604 5 G	5000914	1003054	178
604 6 G	5000976	1003062	195



Type	GTIN	Art. no.	Page
		/100 pc.	
604 6 G	5000976	1003062	178
604 7 G	5001034	1003070	195
604 7 G	5001034	1003070	178
604 8 G	5001096	1003089	195
604 8 G	5001096	1003089	178
604 9 G	5001157	1003097	195
604 9 G	5001157	1003097	178
732 10 A4	5912392	1360648	315
732 10 GTP	5114611	1360108	314
732 12 A4	5912408	1360650	315
732 12 GTP	5114673	1360124	314
732 14 A4	5912415	1360652	315
732 14 GTP	5114734	1360140	314
732 15 A4	5912422	1360654	315
732 15 GTP	5114796	1360159	314
732 16 A4	5912439	1360656	315
732 16 GTP	5114857	1360167	314
732 18 A4	5912446	1360658	315
732 18 GTP	5114918	1360183	314
732 20 A4	5912453	1360660	315
732 20 GTP	5114970	1360205	314
732 22 A4	5912460	1360662	315
732 22 GTP	5115038	1360221	314
732 24 A4	5912477	1360664	315
732 24 GTP	5115090	1360248	314
732 26 A4	5912484	1360666	315
732 26 GTP	5115151	1360264	314
732 28 A4	5912491	1360668	315
732 28 GTP	5115212	1360280	314
732 30 A4	5912507	1360670	315
732 30 GTP	5115274	1360302	314
732 33 A4	5912514	1360672	315
732 33 GTP	5115335	1360337	314
732 35 GTP	5115397	1360353	314
732 38 A4	5912538	1360676	315
732 38 GTP	5115458	1360388	314
732 40 A4	5912545	1360678	315
732 40 GTP	5115519	1360396	314
732 42 A4	5912583	1360680	315
732 42 GTP	5115571	1360426	314
732 45 A4	5912590	1360682	315
732 45 GTP	5115632	1360450	314
732 48 A4	5912606	1360684	315
732 48 GTP	5115694	1360485	314
732 50 A4	5912637	1360686	315
732 50 GTP	5115755	1360507	314
732 6 A4	5912378	1360644	315
732 6 GTP	5114499	1360051	314
732 60 A4	5912644	1360688	315
732 60 GTP	5115878	1360604	314
732 63 A4	5912651	1360690	315
732 63 GTP	5569114	1360639	314
732 8 A4	5912385	1360646	315
732 8 GTP	5114550	1360086	314
733 19 A2	5116776	1362038	317
733 19 A4	5912712	1361651	317
733 19 FT	5029809	1361097	316
733 21 A2	5116837	1362046	317
733 21 A4	5912729	1361655	317
733 21 FT	5029816	1361100	316
733 21 G	5116110	1361201	316
733 23 A2	5116899	1362054	317
733 23 A4	5912750	1361659	317
733 23 FT	5029823	1361103	316
733 23 G	5116172	1361236	316
733 29 A2	5116950	1362062	317
733 29 A4	5912767	1361663	317
733 29 FT	5029861	1361106	316
733 29 G	5116233	1361295	316
733 38 A2	5117018	1362070	317
733 38 A4	5912774	1361667	317
733 38 FT	5029878	1361109	316
733 38 G	5116295	1361384	316
733 48 A2	5117070	1362089	317
733 48 A4	5912781	1361671	317
733 48 FT	5029885	1361112	316
733 48 G	5116356	1361481	316
733 54 A2	5117131	1362097	317
733 54 A4	5912828	1361675	317
733 54 FT	5615651	1361117	316
733 54 G	5116417	1361511	316
733 61 A2	5117193	1362100	317

Type	GTIN	Art. no.	Page
		/100 pc.	
733 61 A4	5912835	1361679	317
733 61 FT	5254348	1361115	316
733 61 G	5116479	1361619	316
733 63 A4	5912842	1361683	317
733 63 FT	5254386	1361118	316
733 63 G	5116530	1361635	316
		/pc.	
ABG FT	5938682	6015345	218
ABL FT	6976881	6221467	263
ABR FT	6501731	6364942	261
ABS FS	6469819	6365027	261
ABS FS	6469819	6365027	263
		/100 pc.	
ACMSN M6 ZL	6488810	1147056	309
		/pc.	
AHB-T1712 VA4547	5924456	6363997	239
AHB-T1722 VA4547	5924463	6364007	239
AHB-T1732 VA4547	5924470	6364017	239
		price/100	
AML3518P2000FT	5047599	1119656	306
		/pc.	
ASX-E	5850199	7202312	28
ASX-E	5850199	7202312	96
ASX-K	5850182	7202310	28
ASX-K	5850182	7202310	96
ASX-K	5850182	7202310	170
ASX-K	5850182	7202310	281
ASX-K	5850182	7202310	318
AVL 60 FS	6960262	6208770	262
AW 15 11 FT	6207077	6420656	267
AW 15 16 FT	6207138	6420664	185
AW 15 21 FT	6207190	6420680	223
AW 15 21 FT	6207190	6420680	185
AW 15 21 FT	6207190	6420680	267
AW 15 31 FT	6207251	6420710	223
AW 15 31 FT	6207251	6420710	185
AW 15 31 FT	6207251	6420710	267
AW 15 41 FT	6207312	6420745	223
AW 15 41 FT	6207312	6420745	185
AW 15 41 FT	6207312	6420745	267
AW 30 11 FT	6206599	6419704	224
AW 30 21 FT	6206711	6419720	267
AW 30 31 FT	6206773	6419747	267
AW 30 41 FT	6206834	6419763	267
AW 55 21 FT	6204731	6418554	224
AW 55 31 FT	6204793	6418570	224
AW 55 41 FT	6204854	6418597	224
AW G 15 21 FT	6662531	6420608	224
AW G 15 31 FT	6662593	6420610	224
AW G 15 41 FT	6662654	6420612	224
AW30F21 FT	6650590	6417027	138
AW30F21 FT	6650590	6417027	268
AW30F31 FT	6650651	6417043	138
AW30F31 FT	6650651	6417043	268
AW30F41 FT	6650712	6417078	138
AW30F41 FT	6650712	6417078	268
AW30F51 FT	6650774	6417094	138
AW30F61 FT	6650835	6417116	138
BEB 100 A2	6232031	7084013	237
BEB 100 A4	5866336	7084141	237
BEB 100 DD	6983728	7083618	217
BEB 100 FS	6231072	7083106	136
BEB 100 FS	6231072	7083106	217
BEB 100 FS	6231072	7083106	261
BEB 200 A2	6232093	7084048	237
BEB 200 A4	5866343	7084143	237
BEB 200 DD	6982943	7083626	217
BEB 200 FS	6231195	7083203	136
BEB 200 FS	6231195	7083203	217

Type	GTIN	Art. no.	Page
		/pc.	
BEB 200 FS	6231195	7083203	261
BEB 300 A2	6232154	7084064	237
BEB 300 A4	5866350	7084145	237
BEB 300 DD	6982882	7083630	217
BEB 300 FS	6231256	7083300	136
BEB 300 FS	6231256	7083300	217
BEB 300 FS	6231256	7083300	261
BEB 400 DD	6024254	7083634	217
BEB 400 FS	6231317	7083408	136
BEB 400 FS	6231317	7083408	217
BEB 500 FS	6231379	7083505	136
BEB 600 FS	6231492	7083602	136
BSB FT	6204311	6418198	138
BSB FT	6204311	6418198	224
BSB FT	6204311	6418198	268
		/m	
BSK 090506	6024834	7215150	174
BSK 090511	6024957	7215154	174
BSK 090521	6025077	7215158	174
BSK 091016	6025190	7215162	174
BSK 091026	6025312	7215166	174
BSK 120506	6645794	7215210	176
BSK 120511	6645855	7215216	176
BSK 120521	6887477	7215222	176
BSK 121016	6887538	7215228	176
BSK 121026	6887590	7215234	176
		/pc.	
BSK-A0908	6779055	7215452	175
BSK-A0908	6779055	7215452	184
BSK-A0910	6779116	7215458	175
BSK-A0910	6779116	7215458	184
		/100 pc.	
BSK-B0511	6896356	7215356	177
BSK-B0521	6896417	7215362	177
BSK-B1016	6896479	7215368	177
BSK-B1026	6896530	7215374	177
		/pc.	
BSK-D0930	6025558	7215423	175
BSK-D0930	6025558	7215423	184
BSK-D1260	6645978	7215432	176
BSK-E090506	5430360	7215250	174
BSK-E090511	5430384	7215252	174
BSK-E090521	5430391	7215254	174
BSK-E091016	5430407	7215256	174
BSK-E091026	5430414	7215258	174
BSK-E120506	5430421	7215270	176
BSK-E120511	5430438	7215272	176
BSK-E120521	5430445	7215274	176
BSK-E121016	5430476	7215276	176
BSK-E121026	5430483	7215278	176
		/m	
BSKF-0808	6576227	7214800	190
		/pc.	
BSKF-E0808	6576234	7214810	191
		/m	
BSKH 090506	6461493	7215174	182
BSKH 090511	6461509	7215178	182
BSKH 090521	6461516	7215182	182
BSKH 091016	6461684	7215186	183
BSKH 091026	6461691	7215190	183
		/pc.	
BSKH-E090506	5430490	7215590	182
BSKH-E090511	5430506	7215592	182
BSKH-E090521	5430537	7215594	182
BSKH-E091016	5430544	7215596	183
BSKH-E091026	5430551	7215598	183
		/m	
BSKHF-0808	6577071	7214840	190
		/pc.	
BSKH-FB090506	6461523	7215603	182
BSKH-FB090511	6461561	7215607	182
BSKH-FB090521	6461578	7215611	182
BSKH-FB091016	6461707	7215615	183
BSKH-FB091026	6461738	7215619	183
BSKHF-E0808	6577187	7214860	191
BSKHF-EF0808	6577149	7214858	190
BSKHF-ES0808	6577132	7214856	190
BSKHF-FB0808	6577088	7214852	190
BSKHF-FT0808	6577125	7214854	191

Type	GTIN	Art. no.	Page
		/pc.	
BSKH-FT090506	6461585	7215632	182
BSKH-FT090511	6461615	7215636	182
BSKH-FT090521	6461622	7215640	182
BSKH-FT091016	6461745	7215644	183
BSKH-FT091026	6461752	7215648	183
BSKHF-WA0808	6577194	7214862	191
BSKH-G	5077923	7215395	186
BSKH-K0506	6461639	7215571	182
BSKH-K0511	6461646	7215575	182
BSKH-K0521	6461677	7215579	182
BSKH-K1016	6461769	7215583	183
BSKH-K1026	6461790	7215587	183
		/100 pc.	
BSKH-S6030	5850069	3498100	187
		/pc.	
BSKH-V050	5077879	7215381	184
BSKH-V052	5077886	7215385	184
BSKH-V101	5077916	7215389	184
		/m	
BSK-K0506	6025923	7215533	174
BSK-K0511	6026043	7215537	174
BSK-K0521	6026166	7215541	174
BSK-K1016	6026289	7215545	174
BSK-K1026	6026401	7215549	174
BSK-M	6888214	7215500	179
BSK-M	6888214	7215500	184
BSK-M	6888214	7215500	196
		/m	
BSKM 0407	6462087	7216500	154
BSKM 0407 RW	6532469	7216501	154
BSKM 0711	5917229	7216300	156
BSKM 0711RW	6532513	7216600	156
BSKM 1025	5917236	7216400	162
BSKM 1025RW	6532209	7216630	162
		/pc.	
BSKM-AD 0407	6462117	7216515	154
BSKM-AD 0407 RW	6532490	7216516	154
BSKM-AD 0711	5917250	7216315	156
BSKM-AD 0711RW	6532551	7216603	156
BSKM-AD 1025	5917458	7216415	162
BSKM-AD 1025RW	6532254	7216635	162
BSKM-AE 0711	5917274	7216320	157
BSKM-AE 0711RW	6532568	7216604	157
BSKM-AE 1025	5917465	7216420	163
BSKM-AE 1025RW	6532261	7216636	163
BSKM-BD 0711	5917397	7216372	160
BSKM-BD 1025	5917656	7216472	166
BSKM-BW 0711	5917380	7216370	160
BSKM-BW 1025	5917649	7216470	166
BSKM-DS 1025	5917663	7216474	166
BSKM-EF 0711	5917335	7216355	158
BSKM-EF 0711RW	6532629	7216611	158
BSKM-EF 1025	5917625	7216455	164
BSKM-EF 1025RW	6532339	7216643	164
BSKM-ES 0711	5917328	7216350	158
BSKM-ES 0711RW	6532612	7216610	158
BSKM-ES 1025	5917588	7216450	164
BSKM-ES 1025RW	6532322	7216642	164
BSKM-FW 0711	5917281	7216330	157
BSKM-FW 0711RW	6532575	7216606	157
BSKM-FW 1025	5917540	7216430	163
BSKM-FW 1025RW	6532285	7216638	163
BSKM-GA 0711	5917267	7216325	157
BSKM-GA 0711RW	6532544	7216605	157
BSKM-GA 1025	5917496	7216425	163
BSKM-GA 1025RW	6532278	7216637	163
BSKM-GF 0711	5917298	7216335	158
BSKM-GF 0711RW	6532582	7216607	158
BSKM-GF 1025	5917557	7216435	164
BSKM-GF 1025RW	6532292	7216639	164
BSKM-GI 0711	5917311	7216345	157
BSKM-GI 0711RW	6532605	7216609	157
BSKM-GI 1025	5917571	7216445	163
BSKM-GI 1025RW	6532315	7216641	163
BSKM-GR 0711	6462186	7216368	159
BSKM-GR 0711RW	6532681	7216617	159
BSKM-GR 1025	5989141	7216468	165
BSKM-GR 1025RW	6532391	7216649	165
BSKM-GRK 1025	6462223	7216469	166
BSKM-GRK 1025RW	6532407	7216650	166
BSKM-GT 0711	5989103	7216364	159
BSKM-GT 0711RW	6532650	7216614	159
BSKM-GT 1025	5989127	7216464	165



Type	GTIN	Art. no.	Page
		/pc.	
BSKM-GT 1025RW	6532360	7216646	165
BSKM-GW 0711	5917434	7216385	160
BSKM-GW 0711RW	6532728	7216621	160
BSKM-GW 1025	5917687	7216485	167
BSKM-GW 1025RW	6532452	7216655	167
BSKM-IE 0711	5917304	7216340	157
BSKM-IE 0711RW	6532599	7216608	157
BSKM-IE 1025	5917564	7216440	163
BSKM-IE 1025RW	6532308	7216640	163
BSKM-KA 0407	6462162	7216590	155
BSKM-KA 0711	6090327	7216390	161
BSKM-KA 1025	6090358	7216490	167
BSKM-KR 0711RW	6532667	7216615	159
BSKM-RE 1025	6093632	7216404	158
BSKM-RE 1025RW	6093632	7216404	164
BSKM-RE 1025RW	6532216	7216631	158
BSKM-RE 1025RW	6532216	7216631	164
BSKM-RG 1025	6093649	7216406	164
BSKM-RG 1025RW	6532223	7216632	164
		/100 pc.	
BSKM-S4008	6029099	3498092	155
BSKM-S4008	6029099	3498092	161
BSKM-S4008	6029099	3498092	167
BSKM-S4008	6029099	3498092	171
		/pc.	
BSKM-TA 0711	5989097	7216362	159
BSKM-TA 0711RW	6532643	7216613	159
BSKM-TA 1025	5989110	7216462	165
BSKM-TA 1025RW	6532353	7216645	165
BSKM-TR 0711	6462179	7216366	159
BSKM-TR 0711RW	6532674	7216616	159
BSKM-TR 1025	5989134	7216466	165
BSKM-TR 1025RW	6532377	7216647	165
BSKM-TRK 1025	6462216	7216467	165
BSKM-TRK 1025RW	6532384	7216648	165
BSKM-VD 0407	6462094	7216510	154
BSKM-VD 0407 RW	6532476	7216511	154
BSKM-VD 0711	5917243	7216310	156
BSKM-VD 0711RW	6532520	7216601	156
BSKM-VD 1025	5917441	7216410	162
BSKM-VD 1025RW	6532230	7216633	162
BSKM-VE 0407	6462100	7216512	154
BSKM-VE 0407 RW	6532483	7216513	154
BSKM-VE 0711	5925613	7216312	156
BSKM-VE 0711RW	6532537	7216602	156
BSKM-VE 1025	5925620	7216412	162
BSKM-VE 1025RW	6532247	7216634	162
BSKM-VK 0407	6462124	7216560	155
BSKM-VK 0407 RW	6532506	7216561	155
BSKM-VK 0711	5917342	7216360	160
BSKM-VK 0711RW	6532636	7216612	160
BSKM-VK 1025	5917632	7216460	166
BSKM-VK 1025RW	6532346	7216644	166
BSKM-WA 0711	5917403	7216380	160
BSKM-WA 0711RW	6532711	7216620	160
BSKM-WA 1025	5917670	7216480	167
BSKM-WA 1025RW	6532445	7216654	167
		/m	
BSKP 0406	5918868	7214700	194
		/pc.	
BSKP-D0320	5918875	7214710	194
BSKP-E0406	5953937	7214705	194
		/100 pc.	
BSKP-S5016	5918905	3498096	178
BSKP-S5016	5918905	3498096	195
BSKP-S5020	5918912	3498098	194
BSKP-S5020	5918912	3498098	178
		/pc.	
BSKP-V 0406	5918882	7214715	194
		/100 pc.	
BSK-S0955	6887651	7215400	175
BSK-S0955	6887651	7215400	194
BSK-S1280	6887774	7215412	176
BSK-W0511	6896110	7215312	177
BSK-W0521	6896172	7215318	177
BSK-W1016	6896233	7215324	177
BSK-W1026	6896295	7215330	177
		/pc.	
BW 80 55 FT	6014538	6019528	275

Type	GTIN	Art. no.	Page
		/100 pc.	
BZ 12-15-35/110	6411894	3498350	336
BZ 8-10-21/75HCR	5940128	3498516	339
BZ10-100-120/180	6411887	3498342	336
BZ10-10-30/90HCR	5940142	3498556	339
BZ-IG M 10-0	6429516	3498374	337
BZ-IG M 12-0	6429523	3498376	337
BZ-IG M 6-0	6429493	3498370	337
BZ-IG M 8-0	6429509	3498372	337
BZ-U 10-10-30/90	6411856	3498334	336
BZ-U 8-10-21/75	6411818	3498320	88
BZ-U 8-10-21/75	6411818	3498320	336
BZ-U 8-30-41/95	6411832	3498326	336
BZU10-10-30/90A4	6411863	3498336	340
BZ-U10-30-50/110	6411870	3498340	336
BZ-U8-10-21/75A4	6411825	3498322	340
		/pc.	
CL-KS	6447169	7202316	114
		/100 pc.	
CML3518P0150FS	5038238	1104241	306
CML3518P0200FS	5038290	1104268	306
CML3518P0300FS	5038351	1104284	306
CML3518P0400FS	5836353	1104292	306
CML3518P0500FS	5038412	1104306	306
CML3518P0600FS	5036678	1104310	306
CML3518P0700FS	5036739	1104315	306
CML3518P0800FS	5036791	1104320	306
CML3518P0900FS	5036852	1104325	306
		price/100	
CML3518P1000FS	5694458	1104497	306
CML3518P2000FS	5038771	1104500	306
		/100 pc.	
CSTR M10 G	6202270	6410103	225
CSTR M10 G	6202270	6410103	268
CSTR M10 G	6202270	6410103	355
CSTR M12 G	6202331	6410111	142
CSTR M12 G	6202331	6410111	225
CSTR M12 G	6202331	6410111	268
CSTR M12 G	6202331	6410111	355
CSTR M8 G	6202218	6410081	268
CSTR M8 G	6202218	6410081	355
		/pc.	
CTS-150	6135752	7204300	96
CTS-300	6135769	7204304	96
CTS-HP200	6448081	7204306	96
		/100 pc.	
DHI 050	6397228	7205900	355
DHI 060	6397235	7205901	355
DHI 070	6397242	7205902	355
DHI 080	6397266	7205903	355
DHI 090	6397297	7205904	355
DHI 100	6397303	7205905	355
DHI 110	6397310	7205906	355
DHI 120	6397327	7205907	355
DHI 130	6397358	7205908	355
DHI 140	6397365	7205909	355
DHI 150	6397372	7205910	355
DIN440 11 F	6480074	6408729	226
DIN440 11 F	6480074	6408729	270
DIN440 14 F	6480135	6408737	142
DIN440 14 F	6480135	6408737	226
DIN440 7 F	6479955	6408702	142
DIN440 7 F	6479955	6408702	270
DIN440 7 F	6479955	6408702	309
		/pc.	
DSK 25 FT	6229277	6416446	186
DSK 45 FT	6202812	6416500	138
DSK 45 FT	6202812	6416500	223
DSK 45 FT	6202812	6416500	267
DSK 47 FT	6894253	6416504	223
DSK 47 FT	6894253	6416504	267
DSK 61 FT	6202874	6416519	223

Type	GTIN	Art. no.	Page
DSX-E	5850144	7202302	18
DSX-E	5850144	7202302	114
DSX-K	5850137	7202300	18
DSX-K	5850137	7202300	87
DSX-K	5850137	7202300	114
E M 10x40	6411993	3492920	337
E M 10x40 A4	6412006	3492922	340
E M 12x50	6412013	3492930	337
E M 12x50 A4	6412020	3492932	340
E M 6x30	6411962	3492900	337
E M 8x40	6411979	3492910	337
E M 8x40 A4	6411986	3492912	340
Easy M10	6412082	3498774	337
Easy M8	6412075	3498770	337
EDK 25 OR	6280551	7205675	296
EDK 32 OR	6280568	7205677	296
EDK 40 OR	6280582	7205679	296
E-MSH 10x40	6412044	3492974	337
E-MSH 12x50	6412051	3492978	337
E-MSH 8x40	6412037	3492970	337
E-SW 6x30	6412068	3492990	338
FBA-B200-14	6434459	7202505	47
FBA-B200-14	6434459	7202505	72
FBA-BV200-14	6434466	7202515	72
FBA-D100	6142811	7202624	73
FBA-D150	6142934	7202628	73
FBA-DR100	5428336	7202613	73
FBA-DR150	5428343	7202617	73
FBA-F	6144013	7202660	72
FBA-SN107	6434527	7202561	72
FBA-SN122	6434565	7202565	72
FBA-SN134	6434572	7202569	72
FBA-SN165	6434589	7202573	72
FBA-SN200	6434626	7202577	72
FBA-SN250	6434633	7202581	72
FBA-SN65	6434503	7202553	72
FBA-SN78	6434510	7202557	72
FBA-SP	5428190	7202322	73
FBA-WI	5428275	7202510	47
FBA-WI	5428275	7202510	74
FBS-K	5817543	7203809	46
FBS-M	5817505	7203803	46
FBS-PH	5817536	7203806	46
FBS-S	5817499	7203800	46
FBS-S	5817499	7203800	72
FBS-TB	6436354	7203818	46
FRS 10x25 F	6201792	6407528	226
FRS 10x25 F	6201792	6407528	270
FRS 10x25 F 8.8	6201914	6407560	275
FRS 10x25 TPS F	6201853	6407536	270
FRS 12x25 F	6200054	6406254	270
FRS 12x25 F	6200054	6406254	275
FRS 6x12 A2	6200238	6406521	240
FRS 6x16 A2	6200290	6406556	240
FRS 8x16 F 8.8	6201259	6406963	275
FRS 8x25 F	6201372	6406998	275
FRSB 6x12 A4	6078370	6406142	240
FRSB 6x12 F	6199815	6406122	141
FRSB 6x12 F	6199815	6406122	226
FRSB 6x12 F	6199815	6406122	269
FRSB 6x16 A4	6078431	6406193	240
FRSB 6x16 F	6199877	6406157	141
FRSB 6x16 F	6199877	6406157	226
FRSB 6x16 F	6199877	6406157	269
FRSB 6x20 F	6199990	6406203	141
FRSB 6x20 F	6199990	6406203	226
FRSB 6x20 F	6199990	6406203	269
FSB-K32	5921851	7203150	204

Type	GTIN	Art. no.	Page
FSB-K82	5921868	7203154	204
FSB-SB 100	5993056	7203131	205
FSB-SC	5726425	7203134	205
FSB-SV	5693444	7203132	205
FSB-WB	5706434	7203160	204
FSB-WLS	6475513	7203170	204
GKS 34 A2	6013456	6016839	238
GKS 34 A4	6120437	6016859	238
GKS 34 G	7261436	6016855	137
GKS 34 G	7261436	6016855	218
GKT 38 A2	6013579	6017045	240
GKT 38 A4	6120499	6017092	240
GLB-P1	6564002	7205470	354
GLB-P2	6564019	7205472	354
GR BS	6931330	6017700	137
GR KS 3.9 OR	5872887	6003750	137
GR KS 4.8 OR	5872894	6003754	218
GR KS 4.8 OR	5872894	6003754	238
GR KS 4.8 OR	5872894	6003754	137
GRM 55 100 G	6858552	6001442	137
GRM 55 200 4.8 G	5045274	6001447	218
GRM 55 200 G	6858613	6001446	137
GRM 55 300 A2	6101771	6001078	238
GRM 55 300 A4	5166078	6001093	238
GRM 55 300 G	6858675	6001448	218
GRM 55 300 G	6858675	6001448	137
GRM 55 400 G	6858736	6001450	218
GRM 55 400 G	6858736	6001450	137
GSV 34 A2	6013210	6016642	238
GSV 34 A4	6120079	6016648	238
GSV 34 G	6520510	6016596	137
GSV 34 G	6520510	6016596	218
HHS M6x16 G	5255437	3156141	309
HN M10 G	5298212	3400107	170
HN M10 G	5298212	3400107	186
HN M10 G	5298212	3400107	195
HN M10 G	5298212	3400107	227
HN M10 G	5298212	3400107	270
HN M10 G	5298212	3400107	355
HN M12 G	5298274	3400123	142
HN M12 G	5298274	3400123	227
HN M12 G	5298274	3400123	270
HN M12 G	5298274	3400123	355
HN M6 G	5298090	3400069	19
HN M6 G	5298090	3400069	29
HN M6 G	5298090	3400069	87
HN M8 G	5298151	3400085	270
HN M8 G	5298151	3400085	355
HN M8 G	5298151	3400085	19
HN M8 G	5298151	3400085	29
HN M8 G	5298151	3400085	87
HT 10x100 TD	6563975	3498142	354
HT 10x120 TD	6563982	3498144	354
HT 10x140 TD	6563999	3498146	354
HT 10x80 TD	6563968	3498140	354
HT 6x100 TD	6563944	3498134	354
HT 6x120 TD	6563951	3498136	354
HT 6x60 TD	6563920	3498130	354
HT 6x80 TD	6563937	3498132	354
KAB GR A2	5807155	6220145	238
KAB GR FS	5677932	6220139	218
KBK-1	6460991	7202709	38
KBK-2	6460878	7202725	38
KBK-3	6460755	7202741	38



Type	GTIN	Art. no.	Page
		/100 pc.	
KS GR A2	5694625	6062282	141
KS GR A2	5694625	6062282	225
KS GR A2	5694625	6062282	239
KS KL A2	5694656	6062284	226
KS KL A2	5694656	6062284	269
KS KR A2	5694618	6062280	141
KS KR A2	5694618	6062280	225
KS KR A2	5694618	6062280	239
KS KR A2	5694618	6062280	269
		/pc.	
KS-BSKP DE	5918899	7214725	196
KS-E DE	5847830	7205423	179
KS-E DE	5847830	7205423	187
KS-E DE	5847830	7205423	217
KS-E DE	5847830	7205423	219
KS-E DE	5847830	7205423	237
KS-E DE	5847830	7205423	238
KS-E DE	5847830	7205423	261
KS-E DE	5847830	7205423	264
KS-E DE	5847830	7205423	277
KS-E DE	5847830	7205423	296
KS-E DE	5847830	7205423	302
KS-E DE	5847830	7205423	310
KS-E DE	5847830	7205423	317
KS-E DE	5847830	7205423	325
KS-E DE	5847830	7205423	330
KS-E EN	5811688	7205432	179
KS-E EN	5811688	7205432	187
KS-E EN	5811688	7205432	217
KS-E EN	5811688	7205432	219
KS-E EN	5811688	7205432	237
KS-E EN	5811688	7205432	238
KS-E EN	5811688	7205432	261
KS-E EN	5811688	7205432	264
KS-E EN	5811688	7205432	277
KS-E EN	5811688	7205432	296
KS-E EN	5811688	7205432	302
KS-E EN	5811688	7205432	310
KS-E EN	5811688	7205432	317
KS-E EN	5811688	7205432	325
KS-E EN	5811688	7205432	330
KS-E FI	6429592	7205437	217
KS-E FI	6429592	7205437	219
KS-E FI	6429592	7205437	237
KS-E FI	6429592	7205437	238
KS-E FI	6429592	7205437	261
KS-E FI	6429592	7205437	264
KS-E FI	6429592	7205437	277
KS-E FI	6429592	7205437	296
KS-E FI	6429592	7205437	302
KS-E FI	6429592	7205437	310
KS-E FI	6429592	7205437	317
KS-E FI	6429592	7205437	325
KS-E FI	6429592	7205437	330
KS-E FI	6429592	7205437	179
KS-E FI	6429592	7205437	187
KS-E HU	5883753	7205434	179
KS-E HU	5883753	7205434	187
KS-E HU	5883753	7205434	217
KS-E HU	5883753	7205434	219
KS-E HU	5883753	7205434	237
KS-E HU	5883753	7205434	238
KS-E HU	5883753	7205434	261
KS-E HU	5883753	7205434	264
KS-E HU	5883753	7205434	277
KS-E HU	5883753	7205434	296
KS-E HU	5883753	7205434	302
KS-E HU	5883753	7205434	310
KS-E HU	5883753	7205434	317
KS-E HU	5883753	7205434	325
KS-E HU	5883753	7205434	330
KS-E PL	5980124	7205436	217
KS-E PL	5980124	7205436	219
KS-E PL	5980124	7205436	237
KS-E PL	5980124	7205436	238
KS-E PL	5980124	7205436	261
KS-E PL	5980124	7205436	264
KS-E PL	5980124	7205436	277
KS-E PL	5980124	7205436	296
KS-E PL	5980124	7205436	302
KS-E PL	5980124	7205436	310

Type	GTIN	Art. no.	Page
		/pc.	
KS-E PL	5980124	7205436	317
KS-E PL	5980124	7205436	325
KS-E PL	5980124	7205436	330
KS-E PL	5980124	7205436	179
KS-E PL	5980124	7205436	187
KS-E SE	6461981	7205424	179
KS-E SE	6461981	7205424	187
KS-E SE	6461981	7205424	217
KS-E SE	6461981	7205424	219
KS-E SE	6461981	7205424	237
KS-E SE	6461981	7205424	238
KS-E SE	6461981	7205424	261
KS-E SE	6461981	7205424	264
KS-E SE	6461981	7205424	277
KS-E SE	6461981	7205424	296
KS-E SE	6461981	7205424	302
KS-E SE	6461981	7205424	310
KS-E SE	6461981	7205424	317
KS-E SE	6461981	7205424	325
KS-E SE	6461981	7205424	330
KS-FSB DE	5811671	7203140	205
KSI-P1	5847854	7202283	21
KSI-P1	5847854	7202283	30
KSI-P1	5847854	7202283	38
KSI-P1	5847854	7202283	47
KSI-P1	5847854	7202283	74
KSI-P2	5847861	7202904	21
KSI-P2	5847861	7202904	30
KSI-P2	5847861	7202904	38
KSI-P2	5847861	7202904	47
KSI-P2	5847861	7202904	74
KSI-P3	5847878	7202912	21
KSI-P3	5847878	7202912	30
KSI-P3	5847878	7202912	38
KSI-P3	5847878	7202912	47
KSI-P3	5847878	7202912	74
KS-K DE	6591398	7214734	171
KS-K DE	6591398	7214734	179
KS-K DE	6591398	7214734	187
KS-K DE	6591398	7214734	196
KS-LAR DE	5809647	7205420	114
KSR20030	6018710	6249844	328
KSR60100	5020325	6249852	330
KS-S DE	5448259	7205425	21
KS-S DE	5448259	7205425	30
KS-S DE	5448259	7205425	38
KS-S DE	5448259	7205425	48
KS-S DE	5448259	7205425	74
KS-S DE	5448259	7205425	89
KS-S DE	5448259	7205425	97
KS-S DE	5448259	7205425	114
KS-S EN	5725695	7205429	21
KS-S EN	5725695	7205429	30
KS-S EN	5725695	7205429	38
KS-S EN	5725695	7205429	48
KS-S EN	5725695	7205429	74
KS-S EN	5725695	7205429	89
KS-S EN	5725695	7205429	97
KS-S EN	5725695	7205429	114
KS-S ES	5703808	7205427	21
KS-S ES	5703808	7205427	30
KS-S ES	5703808	7205427	38
KS-S ES	5703808	7205427	48
KS-S ES	5703808	7205427	74
KS-S ES	5703808	7205427	89
KS-S ES	5703808	7205427	97
KS-S ES	5703808	7205427	114
KS-S HR	6446872	7205438	21
KS-S HR	6446872	7205438	30
KS-S HR	6446872	7205438	38
KS-S HR	6446872	7205438	48
KS-S HR	6446872	7205438	74
KS-S HR	6446872	7205438	89
KS-S HR	6446872	7205438	97
KS-S HR	6446872	7205438	114
KS-S SE	6461974	7205426	21
KS-S SE	6461974	7205426	30

Type	GTIN	Art. no.	Page
KS-S SE	6461974	7205426	38
KS-S SE	6461974	7205426	48
KS-S SE	6461974	7205426	74
KS-S SE	6461974	7205426	89
KS-S SE	6461974	7205426	97
KS-S SE	6461974	7205426	114
KS-ZSE DE	5809654	7215750	281
KS-ZSE DE	5809654	7215750	318
KS-ZSE SE	6461998	7215751	281
KS-ZSE SE	6461998	7215751	318
KTSMV 610 A2	5889571	6068958	237
KTSMV 610 A4	5889649	6068980	237
KTSMV 610 DD	5890492	6068936	217
KTSMV 610 FS	5889502	6068914	135
KTSMV 610 FS	5889502	6068914	217
KTSMV 620 A2	5889595	6068962	237
KTSMV 620 A4	5889663	6068984	237
KTSMV 620 DD	5890515	6068940	217
KTSMV 620 FS	5889526	6068918	135
KTSMV 620 FS	5889526	6068918	217
KTSMV 630 A2	5889601	6068964	237
KTSMV 630 A4	5889670	6068986	237
KTSMV 630 DD	5890522	6068942	217
KTSMV 630 FS	5889533	6068920	135
KTSMV 630 FS	5889533	6068920	217
KTSMV 640 DD	5890560	6068944	217
KTSMV 640 FS	5889540	6068922	135
KTSMV 640 FS	5889540	6068922	217
KTSMV 650 FS	5889557	6068924	135
KTSMV 660 FS	5889564	6068926	135
KU 3 FT	6340217	6348874	220
KU 3 FT	6340217	6348874	265
KU 5 V FT	6901456	6348920	221
KU 5 V FT	6901456	6348920	266
KU 7 FT	6191413	6349102	222
KU 7 VQP FT	6191475	6349153	223
KUS 5 FT	6168910	6348904	221
KUS 5 FT	6168910	6348904	266
LAB 20 FT	6163397	6220436	263
LAB 30 FT	6163458	6220444	263
LAB 40 FT	6163519	6220452	263
LBI 90 620 VS FS	6143719	6211224	262
LBI 90 630 VS FS	6143771	6211232	262
LBI 90 640 VS FS	6143832	6211240	262
LG 620 VS 3 FS	5064022	6208538	274
LG 620 VS 6 FS	5064251	6208627	274
LG 620 VSF FT	5299691	6207523	262
LG 620 VSF6000FS	5299639	6207501	262
LG 630 VS 3 FS	5064053	6208541	274
LG 630 VS 6 FS	5064268	6208630	274
LG 630 VSF FT	5299707	6207527	262
LG 630 VSF6000FS	5299646	6207505	262
LG 640 VS 3 FS	5064060	6208544	274
LG 640 VS 6 FS	5064299	6208633	274
LG 640 VSF FT	5299714	6207531	262
LG 640 VSF6000FS	5299684	6207509	262
LKM A60100FS	6312979	6248063	329
LKM A60100RW	6314898	6249574	329
LKM E60100FS	6575596	6248306	329
LKM E60100RW	6575770	6249817	329
LKM F60100FS	6312559	6248004	329
LKM F60100RW	6314713	6249507	329
LKM I60100FS	6313396	6248144	329
LKM I60100RW	6315079	6249639	329
LKM KF 60100	5685081	6249881	328
LKM SV30	6118991	6247434	328
LKM SV60	6315314	6247466	328
LKM T60100FS	6317837	6248209	329
LKM T60100RW	6318254	6249701	329
LKM20030FS	6118878	6246974	328

Type	GTIN	Art. no.	Page
LKM20030RW	6119059	6248470	328
LKM60100FS	6312139	6247113	328
LKM60100RW	6313815	6248624	328
LKS 40 FS	6164530	6221076	263
LT 620 VS FS	6150915	6213723	262
LT 630 VS FS	6150977	6213731	262
LT 640 VS FS	6151035	6213758	262
LVG 60 FS	5065555	6208840	274
MBS 015	5693345	7203100	204
MBS 030	5693352	7203102	204
MBS 045	5693369	7203104	97
MBS 045	5693369	7203104	204
MBS 061	5693376	7203106	204
MBS 075	5693383	7203108	204
MBS 100	5693390	7203110	204
MBS 120	5693406	7203112	204
MBS 150	5693413	7203114	204
MBS-Z	5693420	7203120	205
MIW-AT	6447138	7202305	20
MIW-AT	6447138	7202305	29
MIW-AT	6447138	7202305	47
MIW-AT	6447138	7202305	73
MIW-MA	6423125	7202308	20
MIW-MA	6423125	7202308	29
MIW-MA	6423125	7202308	46
MIW-MA	6423125	7202308	73
MIW-S	5918929	7202306	21
MIW-S	5918929	7202306	30
MIW-S	5918929	7202306	87
MIW-S	5918929	7202306	114
MIW-TD	6447152	7202309	20
MIW-TD	6447152	7202309	30
MIW-TD	6447152	7202309	47
MIW-TD	6447152	7202309	74
MKS 610 FS	6059652	6055109	134
MKS 620 FS	6059713	6055206	134
MKS 630 FS	6059775	6055303	134
MKS 640 FS	6059836	6055400	134
MKSM 610 FS	5829553	6059000	134
MKSM 620 FS	5829942	6059004	134
MKSM 630 FS	5829959	6059006	134
MKSM 640 FS	5829966	6059008	134
MMS-plus 10x100	6559633	3498159	350
MMS-plus 10x80	6559626	3498124	350
MMS-plus 6X50	6559657	3498108	20
MMS-plus 6X50	6559657	3498108	88
MMS-plus 6X50	6559657	3498108	330
MMS-plus 6X50	6559657	3498108	350
MMS-plus 7.5X50	6559664	3498261	20
MMS-plus 7.5X50	6559664	3498261	38
MMS-plus 7.5X50	6559664	3498261	74
MMS-plus 7.5X50	6559664	3498261	88
MMS-plus 7.5X50	6559664	3498261	171
MMS-plus 7.5X50	6559664	3498261	350
MMS-plus 7.5X80	6559640	3498272	179
MMS-plus 7.5X80	6559640	3498272	196
MMS-plus 7.5X80	6559640	3498272	350
MMS-plus KS 5x50	5964100	3498204	351
MMS-plus ST 6x55	6559671	3498264	350
MP T610	6134946	7205480	295
MP T616	6134977	7205484	295
MS4022P2000FT	5050230	price/100 1121979	306
MS40SN M6 ZL	6489398	1147106	309



Type	GTIN	Art. no.	Page
		/100 pc.	
MS4121 EK	6255726	1122904	139
MS4121 SK	5686217	1122902	139
MS4121 SK	5686217	1122902	170
MS4121P0200FT	5697626	1122933	139
MS4121P0200FT	5697626	1122933	170
MS4121P0300FT	5697664	1122934	139
MS4121P0400FT	5697671	1122935	170
MS4121P0400FT	5697671	1122935	139
MS4121P0500FT	5697688	1122936	139
		price/100	
MS4121P2000FS	5686262	1122918	139
MS4121P2000FT	5697541	1122923	139
MS4121P3000FS	5686279	1122920	139
MS4121P3000FT	5686293	1122924	139
		/100 pc.	
MS4141 EK	5894117	1122906	140
MS4141 SK	5686200	1122900	140
MS4141P0400FT	5486251	1122525	140
MS4141P0500FT	5486794	1122533	140
MS4141P0600FT	5486916	1122541	140
MS4141P0700FT	5487036	1122568	140
		price/100	
MS4141P1000FS	5697503	1122908	140
MS4141P1000FT	5487272	1122606	140
MS4141P3000FS	5686224	1122910	140
MS4141P3000FT	5487876	1122622	140
MSL4141P1000FS	5698142	1122970	140
MSL4141P1000FT	5698081	1122962	140
MSL4141P3000FS	5698159	1122972	140
MSL4141P3000FT	5698098	1122964	140
		/pc.	
MSX-E1	5850083	7206058	18
MSX-E1	5850083	7206058	96
MSX-S1	5850076	7206104	18
MSX-S1	5850076	7206104	97
MWA 12 11S FS	6636853	6424716	267
MWA 12 21S FS	6636976	6424732	267
MWA 12 31S FS	6637034	6424740	267
MWA 12 41S FS	6637096	6424759	267
		/100 pc.	
N 6-5/49 A4	6429585	3498399	339
N 6-5/49 HCR	6411955	3498398	339
N 6-5-10/49	6411948	3498396	88
N 6-5-10/49	6411948	3498396	336
		/pc.	
NIK-S	6126897	7206210	21
		/100 pc.	
N-K 6-5/44 A4	6429578	3498393	339
N-K 6-5/44 HCR	6411931	3498392	339
N-K 6-5-10/44	6411924	3498390	330
N-K 6-5-10/44	6411924	3498390	336
		/pc.	
RAAM 610 A2	5878797	6041270	236
RAAM 610 A4	5878865	6041290	236
RAAM 610 FS	5878568	6041230	135
RAAM 610 FS	5878568	6041230	216
RAAM 610 FS	5878568	6041230	260
RAAM 610 FT	5878698	6041250	216
RAAM 620 A2	5878810	6041275	236
RAAM 620 A4	5878889	6041294	236
RAAM 620 FS	5878582	6041234	135
RAAM 620 FS	5878582	6041234	216
RAAM 620 FS	5878582	6041234	260
RAAM 620 FT	5878742	6041254	216
RAAM 630 A2	5878827	6041277	236
RAAM 630 A4	5878926	6041296	236
RAAM 630 FS	5878629	6041236	135
RAAM 630 FS	5878629	6041236	216
RAAM 630 FS	5878629	6041236	260
RAAM 630 FT	5878759	6041257	216
RAAM 640 FS	5878636	6041238	135
RAAM 640 FS	5878636	6041238	216
RAAM 640 FT	5878766	6041259	216
RAAM 650 FS	5878643	6041240	135
RAAM 660 FS	5878681	6041242	135
RB 10 M 6	6606948	3497870	346

Type	GTIN	Art. no.	Page
		/pc.	
RB 12 M 6	6606955	3497872	346
RB 14 M 6	6606962	3497874	346
RB 16 M 6	6615384	3497875	346
RB 18 M 6	6606993	3497876	346
RB 20 M 6	6615391	3497878	346
RB-L 150 M6	6467884	3497932	346
RBL M6 SDS	6464708	3497915	346
RBM 45 610 A2	5881674	6041080	236
RBM 45 620 A2	5881698	6041084	236
RBM 45 630 A2	5881704	6041086	236
RBM 90 610 A2	5881957	6041180	236
RBM 90 610 A4	5878407	6041200	236
RBM 90 610 FS	5881810	6041130	135
RBM 90 610 FS	5881810	6041130	216
RBM 90 610 FS	5881810	6041130	260
RBM 90 610 FT	5881889	6041150	216
RBM 90 620 A2	5878322	6041184	236
RBM 90 620 A4	5878452	6041204	236
RBM 90 620 FS	5881834	6041134	135
RBM 90 620 FS	5881834	6041134	216
RBM 90 620 FS	5881834	6041134	260
RBM 90 620 FT	5881902	6041154	216
RBM 90 630 A2	5878339	6041186	236
RBM 90 630 A4	5878469	6041206	236
RBM 90 630 FS	5881841	6041136	135
RBM 90 630 FS	5881841	6041136	216
RBM 90 630 FS	5881841	6041136	260
RBM 90 630 FT	5881919	6041156	216
RBM 90 640 FS	5881858	6041138	135
RBM 90 640 FS	5881858	6041138	216
RBM 90 640 FT	5881926	6041158	216
RBM 90 650 FS	5881865	6041140	135
RBM 90 660 FS	5881872	6041142	135
		/m	
RKSM 610 A2	5706083	6047613	236
RKSM 610 A4	5706113	6047614	236
RKSM 610 FS	5390879	6047611	134
RKSM 610 FS	5390879	6047611	216
RKSM 610 FT	5903895	6047612	216
RKSM 620 A2	5706144	6047640	236
RKSM 620 A4	5706175	6047641	236
RKSM 620 FS	5391203	6047638	134
RKSM 620 FS	5391203	6047638	216
RKSM 620 FT	5903932	6047639	216
RKSM 630 A2	5706182	6047656	236
RKSM 630 A4	5706199	6047657	236
RKSM 630 FS	5391210	6047654	134
RKSM 630 FS	5391210	6047654	216
RKSM 630 FT	5903949	6047655	216
RKSM 640 FS	5391227	6047689	134
RKSM 640 FS	5391227	6047689	216
RKSM 640 FT	5903956	6047690	216
		/pc.	
RKV3V	5149088	6288700	170
RWVL 60 FS	6065530	6067115	135
RWVL 60 FS	6065530	6067115	260
		price/100	
S16W FT	5782148	2046593	324
S16W G	5924647	2046840	323
S16W SW	5782032	2046565	322
S20W FT	5782155	2046594	324
S20W G	5924654	2046841	323
S20W SW	5782049	2046566	322
S25W FT	5782162	2046595	324
S25W G	5924661	2046842	323
S25W SW	5782070	2046567	322
S32W FT	5782209	2046596	324
S32W G	5924678	2046843	323
S32W SW	5782087	2046568	322
S40W FT	5782216	2046597	324
S40W G	5924685	2046844	323
S40W SW	5782094	2046569	322

Type	GTIN	Art. no.	Page
S50W FT	5782223	price/100 2046598	324
S50W G	5924692	2046845	323
S50W SW	5782100	2046570	322
S63W FT	5782261	2046599	324
S63W G	5924708	2046846	323
S63W SW	5782131	2046571	322
SAB20 FS	6555857	/pc. 6222943	263
SAB30 FS	6555918	6222951	263
SAB40 FS	6555970	6222978	263
SDG-1	5847885	7202963	38
SDG-1	5847885	7202963	74
SDG-2	5847892	7202971	38
SDG-2	5847892	7202971	74
SHT	5847915	7202521	47
SKH 60 OR	5668008	/pair 6222537	262
SKS 10x40 F	5257356	/100 pc. 3160750	269
SKS 10x60 F	6202157	6408516	269
SKS 10x80 F	6437474	6418250	186
SKS 10x80 F	6437474	6418250	226
SKS 10x80 F	6437474	6418250	269
SKS 10x90 F	6518470	6418252	141
SKS 10x90 F	6518470	6418252	226
SKS 12x100 F	6204496	6418295	226
SKS 12x110 F	6204557	6418317	226
SKS 12x180 F	6204434	6418287	226
SKS 610 FS	6060191	/m 6056105	135
SKS 610 FS	6060191	6056105	260
SKS 620 FS	6060252	6056202	135
SKS 620 FS	6060252	6056202	260
SKS 630 FS	6060313	6056296	135
SKS 630 FS	6060313	6056296	260
SKS 640 FS	6060375	6056407	135
SKS 650 FS	6060436	6056504	135
SKS 660 FS	6060498	6056601	135
SKSM 610 FS	5832485	6059456	134
SKSM 620 FS	5832508	6059460	134
SKSM 630 FS	5832546	6059462	134
SKSM 640 FS	5832553	6059464	134
SKSM 650 FS	5832560	6059466	134
SKSM 660 FS	5832591	6059468	134
SLM50C40F 40 FT	6959723	6010008	274
SLM50C40F 50 FT	6959785	6010016	274
SLM50C40F 60 FT	6959846	6010024	274
SLS80C40F 40 FT	6959907	6010105	274
SLS80C40F 50 FT	6959969	6010113	274
SLS80C40F 60 FT	6960026	6010121	274
SM16W FT	5781424	price/100 2046533	324
SM16W G	5924852	2046861	323
SM16W SW	5781028	2046500	322
SM20W FT	5781431	2046534	324
SM20W G	5924869	2046862	323
SM20W SW	5781066	2046501	322
SM25W FT	5781448	2046535	324
SM25W G	5924876	2046863	323
SM25W SW	5781073	2046502	322
SM32W FT	5781486	2046536	324
SM32W G	5924883	2046864	323
SM32W SW	5781080	2046503	322
SM40W FT	5781493	2046537	324
SM40W G	5924890	2046865	323
SM40W SW	5781127	2046505	322
SM50W FT	5781509	2046538	324

Type	GTIN	Art. no.	Page
SM50W G	5924906	price/100 2046866	323
SM50W SW	5781134	2046506	322
SM63W FT	5781547	2046540	324
SM63W G	5924913	2046867	323
SM63W SW	5781141	2046507	322
SSLB 100 FS	6079971	/pc. 7070205	136
SSLB 100 FS	6079971	7070205	260
SSLB 200 FS	6094882	7070213	136
SSLB 200 FS	6094882	7070213	260
SSLB 300 FS	6094943	7070217	136
SSLB 300 FS	6094943	7070217	260
SSLB 400 FS	6095001	7070221	136
SSLB 400 FS	6095001	7070221	260
SSLB 500 FS	6095063	7070225	136
SSLB 500 FS	6095063	7070225	260
SSLB 600 FS	6095186	7070233	136
SSLB 600 FS	6095186	7070233	260
SV16W FT	5782384	/100 pc. 2046620	324
SV16W G	5924784	2046854	323
SV16W SW	5781776	2046582	322
SV20W FT	5782391	2046621	324
SV20W G	5924791	2046855	323
SV20W SW	5781783	2046583	322
SV25W FT	5782407	2046622	324
SV25W G	5924807	2046856	323
SV25W SW	5781790	2046584	322
SV32W FT	5782445	2046623	324
SV32W G	5924814	2046857	323
SV32W SW	5781806	2046585	322
SV40W FT	5782452	2046624	324
SV40W G	5924821	2046858	323
SV40W SW	5781844	2046586	322
SV50W FT	5782469	2046625	324
SV50W G	5924838	2046859	323
SV50W SW	5781851	2046587	322
SV63W FT	5782490	2046626	324
SV63W G	5924845	2046860	323
SV63W SW	5781868	2046588	322
T 100 E 4-5	5930143	/pc. 7205510	294
T 100 ED 10-5	5993087	7205533	286
T 100 ED 10-5 A	5993117	7205543	288
T 100 ED 10-6 AF	6002504	7205563	289
T 100 ED 10-6 F	6002375	7205553	286
T 100 ED 4-10 AD	5993148	7205583	292
T 100 ED 4-10 D	5993131	7205580	292
T 100 ED 6-5	5993070	7205530	286
T 100 ED 6-5 A	5993100	7205540	288
T 100 ED 6-6 AF	6002443	7205560	289
T 100 ED 6-6 F	6002313	7205550	286
T 160 E 10-5	5930167	7205524	294
T 160 E 16-5	5930174	7205528	294
T 160 E 4-8D	5930150	7205520	294
T 160 ED 16-5	5993094	7205536	287
T 160 ED 16-5 A	5993124	7205546	288
T 160 ED 16-6 AF	6111169	7205566	289
T 160 ED 16-6 F	6330904	7205556	287
T 350 ED 4-28 AD	6002528	7205590	292
T100ED 10-5 AS	6147908	7205623	290
T100ED 10-6 AFS	6147953	7205633	291
T100ED 4-10 ADS	6147960	7205640	293
T100ED 6-5 AS	6147892	7205620	290
T100ED 6-6 AFS	6147946	7205630	291
T160ED 16-5 AS	6147939	7205626	290
TCX-032	5856559	7202200	18
TCX-032	5856559	7202200	28
TCX-032	5856559	7202200	86
TCX-040	5856566	7202201	18
TCX-040	5856566	7202201	28
TCX-040	5856566	7202201	86



Type	GTIN	Art. no.	Page
TCX-050	5856597	7202203	18
TCX-050	5856597	7202203	28
TCX-050	5856597	7202203	86
TCX-063	5856603	7202204	19
TCX-063	5856603	7202204	28
TCX-063	5856603	7202204	86
TCX-075	5856610	7202205	19
TCX-075	5856610	7202205	28
TCX-075	5856610	7202205	86
TCX-090	5856627	7202206	19
TCX-090	5856627	7202206	28
TCX-090	5856627	7202206	86
TCX-110	5856665	7202207	19
TCX-110	5856665	7202207	28
TCX-110	5856665	7202207	86
TCX-125	5856672	7202208	19
TCX-125	5856672	7202208	28
TCX-125	5856672	7202208	86
TCX-140	5856689	7202209	19
TCX-140	5856689	7202209	28
TCX-140	5856689	7202209	86
TCX-160	5856719	7202210	19
TCX-160	5856719	7202210	28
TCX-160	5856719	7202210	86
TCX-180	6086917	7202212	86
TCX-200	6053674	7202214	86
TCX-225	6086924	7202213	86
TCX-250	6086931	7202215	86
TCX-280	6086948	7202216	87
TCX-300	6086979	7202217	87
TCX-315	6086986	7202218	87
TCX-355	6086993	7202219	87
TCX-400	6087006	7202220	87
TE-FH 520	5993162	7205570	295
TK 04	6396016	7205700	295
TK 06	6396023	7205702	295
TK 10	6396030	7205704	295
TK 16	6396047	7205706	295
TPE 04	6396054	7205708	295
TPE 25	6396061	7205710	295
TR M10 1M G	5253396	3141209	170
TR M10 1M G	5253396	3141209	186
TR M10 1M G	5253396	3141209	195
TR M10 1M G	5253396	3141209	224
TR M10 1M G	5253396	3141209	268
TR M10 1M G	5253396	3141209	355
TR M12 1M G	5253457	3141306	139
TR M12 1M G	5253457	3141306	224
TR M12 1M G	5253457	3141306	268
TR M12 1M G	5253457	3141306	355
TR M6 1M G	5253211	3141047	19
TR M6 1M G	5253211	3141047	29
TR M6 1M G	5253211	3141047	87
TR M8 1M G	5253334	3141128	268
TR M8 1M G	5253334	3141128	355
TR M8 1M G	5253334	3141128	19
TR M8 1M G	5253334	3141128	29
TR M8 1M G	5253334	3141128	87
TSG 45 A2	5694441	6062025	239
TSG 45 A4	5694472	6062028	239
TSG 45 FS	5694489	6062033	141
TSG 45 FS	5694489	6062033	187
TSG 45 FS	5694489	6062033	225
TSG 45 FS	5694489	6062033	268
TSG 60 A2	5694557	6062084	239
TSG 60 A4	5694564	6062086	239
TSG 60 FS	5694540	6062068	141
TSG 60 FS	5694540	6062068	225
TSG 60 FS	5694540	6062068	269
TSG 85 FS	5694571	6062114	187
TSGV A2	5694724	6067970	225
TSGV A2	5694724	6067970	239
TSGV A2	5694724	6067970	269

Type	GTIN	Art. no.	Page
US 3 100 FS	6223572	6342318	220
US 3 100 FS	6223572	6342318	265
US 3 150 FS	6223633	6342328	265
US 3 20 FS	6221776	6342302	185
US 3 20 FS	6221776	6342302	220
US 3 20 FS	6221776	6342302	265
US 3 200 FS	6224296	6342338	265
US 3 30 FS	6222018	6342304	185
US 3 30 FS	6222018	6342304	220
US 3 30 FS	6222018	6342304	265
US 3 40 FS	6222070	6342306	185
US 3 40 FS	6222070	6342306	220
US 3 40 FS	6222070	6342306	265
US 3 50 FS	6222315	6342308	220
US 3 50 FS	6222315	6342308	265
US 3 60 FS	6222377	6342310	220
US 3 60 FS	6222377	6342310	265
US 3 70 FS	6222438	6342312	220
US 3 70 FS	6222438	6342312	265
US 3 80 FS	6222490	6342314	220
US 3 80 FS	6222490	6342314	265
US 3 90 FS	6223510	6342316	220
US 3 90 FS	6223510	6342316	265
US 3 K 100 FT	6225132	6342368	185
US 3 K 100 FT	6225132	6342368	220
US 3 K 100 FT	6225132	6342368	265
US 3 K 110 FT	6225378	6342370	185
US 3 K 110 FT	6225378	6342370	220
US 3 K 110 FT	6225378	6342370	265
US 3 K 120 FT	6225439	6342372	185
US 3 K 120 FT	6225439	6342372	220
US 3 K 120 FT	6225439	6342372	265
US 3 K 20 FT	6224470	6342351	185
US 3 K 20 FT	6224470	6342351	220
US 3 K 20 FT	6224470	6342351	265
US 3 K 30 FT	6224531	6342353	185
US 3 K 30 FT	6224531	6342353	220
US 3 K 30 FT	6224531	6342353	265
US 3 K 40 FT	6224593	6342355	185
US 3 K 40 FT	6224593	6342355	220
US 3 K 40 FT	6224593	6342355	265
US 3 K 50 FT	6224654	6342357	185
US 3 K 50 FT	6224654	6342357	220
US 3 K 50 FT	6224654	6342357	265
US 3 K 60 FT	6224715	6342359	185
US 3 K 60 FT	6224715	6342359	220
US 3 K 60 FT	6224715	6342359	265
US 3 K 70 FT	6224777	6342362	185
US 3 K 70 FT	6224777	6342362	220
US 3 K 70 FT	6224777	6342362	265
US 3 K 80 FT	6225019	6342364	185
US 3 K 80 FT	6225019	6342364	220
US 3 K 80 FT	6225019	6342364	265
US 3 K 90 FT	6225071	6342366	185
US 3 K 90 FT	6225071	6342366	220
US 3 K 90 FT	6225071	6342366	265
US 3 KS OR	5668039	6338458	185
US 3 KS OR	5668039	6338458	220
US 3 KS OR	5668039	6338458	265
US 5 100 FT	6284177	6340962	266
US 5 100 FT	6284177	6340962	221
US 5 150 FT	6437597	6340966	266
US 5 150 FT	6437597	6340966	221
US 5 20 FT	6959006	6340881	221
US 5 200 FT	6437658	6340970	266
US 5 200 FT	6437658	6340970	221
US 5 30 FT	6959068	6340903	266
US 5 30 FT	6959068	6340903	221
US 5 40 FT	6959129	6340911	266
US 5 40 FT	6959129	6340911	221
US 5 50 FT	6959181	6340938	266
US 5 50 FT	6959181	6340938	221
US 5 60 FT	6601752	6340946	266
US 5 60 FT	6601752	6340946	221
US 5 70 FT	6043927	6340950	266
US 5 70 FT	6043927	6340950	221
US 5 80 FT	6044047	6340954	266
US 5 80 FT	6044047	6340954	221
US 5 90 FT	6044160	6340958	266
US 5 90 FT	6044160	6340958	221
US 5 K 100 FT	6536290	6341616	138
US 5 K 100 FT	6536290	6341616	221
US 5 K 100 FT	6536290	6341616	266

Type	GTIN	Art. no.	Page
US 5 K 110 FT	6536238	6341624	138
US 5 K 110 FT	6536238	6341624	221
US 5 K 110 FT	6536238	6341624	266
US 5 K 120 FT	6536177	6341632	138
US 5 K 120 FT	6536177	6341632	221
US 5 K 120 FT	6536177	6341632	266
US 5 K 20 FT	6536771	6341527	138
US 5 K 20 FT	6536771	6341527	221
US 5 K 20 FT	6536771	6341527	266
US 5 K 30 FT	6536719	6341535	138
US 5 K 30 FT	6536719	6341535	221
US 5 K 30 FT	6536719	6341535	266
US 5 K 40 FT	6536658	6341543	138
US 5 K 40 FT	6536658	6341543	221
US 5 K 40 FT	6536658	6341543	266
US 5 K 50 FT	6536597	6341551	138
US 5 K 50 FT	6536597	6341551	221
US 5 K 50 FT	6536597	6341551	266
US 5 K 60 FT	6536535	6341578	138
US 5 K 60 FT	6536535	6341578	221
US 5 K 60 FT	6536535	6341578	266
US 5 K 70 FT	6536474	6341586	138
US 5 K 70 FT	6536474	6341586	221
US 5 K 70 FT	6536474	6341586	266
US 5 K 80 FT	6536412	6341594	138
US 5 K 80 FT	6536412	6341594	221
US 5 K 80 FT	6536412	6341594	266
US 5 K 90 FT	6536351	6341608	138
US 5 K 90 FT	6536351	6341608	221
US 5 K 90 FT	6536351	6341608	266
US 5 KS OR	5668046	6338462	138
US 5 KS OR	5668046	6338462	221
US 5 KS OR	5668046	6338462	266
US 7 100 FT	6188178	6340180	222
US 7 110 FT	6188239	6340199	222
US 7 120 FT	6188291	6340202	222
US 7 130 FT	6188352	6340210	222
US 7 140 FT	6188413	6340229	222
US 7 150 FT	6188475	6340237	222
US 7 160 FT	6188536	6340245	222
US 7 180 FT	6188659	6340261	222
US 7 190 FT	6188710	6340288	222
US 7 20 FT	6187690	6340016	222
US 7 200 FT	6188772	6340296	222
US 7 30 FT	6187751	6340032	222
US 7 40 FT	6187812	6340059	222
US 7 50 FT	6187874	6340075	222
US 7 60 FT	6187935	6340091	222
US 7 70 FT	6187997	6340113	222
US 7 80 FT	6188055	6340148	222
US 7 90 FT	6188116	6340164	222
US 7 K 100 FT	6187034	6339182	222
US 7 K 110 FT	6187096	6339190	222
US 7 K 120 FT	6187157	6339204	222
US 7 K 130 FT	6187218	6339212	222
US 7 K 140 FT	6187270	6339220	222
US 7 K 150 FT	6187331	6339239	222
US 7 K 160 FT	6187393	6339247	222
US 7 K 170 FT	6187454	6339255	222
US 7 K 180 FT	6187515	6339263	222
US 7 K 190 FT	6187577	6339271	222
US 7 K 20 FT	6186556	6339018	222
US 7 K 200 FT	6187638	6339298	222
US 7 K 30 FT	6186617	6339034	222
US 7 K 40 FT	6186679	6339050	222
US 7 K 50 FT	6186730	6339077	222
US 7 K 60 FT	6186792	6339093	222
US 7 K 70 FT	6186853	6339115	222
US 7 K 80 FT	6186914	6339131	222
US 7 K 90 FT	6186976	6339166	222
US 7 KS OR	5668060	6338497	223
VM-AP 360	6464685	3497912	345
VM-P 345 Profi	6464661	3497906	344
VM-P 380 Profi	6464678	3497909	344
VM-SH 12x1000	6464906	3497972	345
VM-SH 16x1000	6464913	3497975	345
VM-SH 22x1000	6464920	3497978	345

Type	GTIN	Art. no.	Page
VMS-IF 1	6331437	7203852	100
VMS-KS DE	6331505	7203874	101
VMS-KS EN	6331536	7203878	101
VMS-QMG 1	6331420	7203849	100
VMS-QMK 1	6331413	7203846	100
VMS-RS	6331499	7203870	101
VMS-TE 1	6331376	7203840	100
VMS-TE 2	6331383	7203843	100
VMS-VA 1	6331444	7203858	100
VMS-VL 1	6331482	7203867	101
VMS-VW 1	6331475	7203864	101
VMU plus 280	6606979	3497800	344
VMU plus 420	6606986	3497803	344
VMU-A 10-130A4	6606825	3497832	345
VMU-A 10-130vz	6606764	3497822	344
VMU-A 10-150vz	6606771	3497824	344
VMU-A 12-155A4	6606832	3497834	345
VMU-A 12-155vz	6606788	3497826	344
VMU-A 8-110A4	6606818	3497830	345
VMU-A 8-110vz	6606757	3497820	344
VMU-IG M10x80A4	6606894	3497854	345
VMU-IG M10x80vz	6606863	3497844	345
VMU-IG M6x80A4	6606870	3497850	345
VMU-IG M6x80vz	6606849	3497840	345
VMU-IG M8x80A4	6606887	3497852	345
VMU-IG M8x80vz	6606856	3497842	345
VMU-SH 12x80	6606900	3497860	345
VMU-SH 16x130	6606924	3497864	345
VMU-SH 16x85	6606917	3497862	345
VMU-SH 20x85	6606931	3497866	345
VM-X	6464937	3497981	346
VM-XE 10/200	6464944	3497984	346
VM-XE 10/500	6464951	3497987	346
V-TEC VM12 MS	5808992	2086018	168
V-TEC VM12 SGR	5532637	2022843	169
V-TEC VM16 MS	5809234	2086024	168
V-TEC VM16 SGR	5532699	2022845	169
V-TEC VM20 MS	5809418	2086030	168
V-TEC VM20 SGR	5532750	2022847	169
V-TEC VM20+ OR	6028238	7205660	296
V-TEC VM25 MS	5809593	2086036	168
V-TEC VM25 SGR	5532811	2022849	169
V-TEC VM25+ OR	6028245	7205663	296
V-TEC VM32 MS	5809777	2086042	168
V-TEC VM32 SGR	5532934	2022851	169
V-TEC VM32+ OR	6028269	7205666	296
V-TEC VM40 MS	5809890	2086048	168
V-TEC VM40 SGR	5532996	2022853	169
V-TEC VM40+ OR	6028290	7205669	296
V-TEC VM50 MS	5810070	2086054	168
V-TEC VM50 SGR	5533054	2022855	169
VUS 5 FT	6446896	6018505	274
WS M10 D20 G	5300137	3402096	186
WS M10 D20 G	5300137	3402096	195
WS M10 D20 G	5300137	3402096	227
WS M10 D20 G	5300137	3402096	270
WS M10 D20 G	5300137	3402096	355
WS M10 D28 G	5300434	3402223	171
WS M12 D24 G	5300199	3402126	142
WS M12 D24 G	5300199	3402126	227
WS M12 D24 G	5300199	3402126	270
WS M12 D24 G	5300199	3402126	355
WS M6 D28 G	5300311	3402207	19
WS M6 D28 G	5300311	3402207	29
WS M6 D28 G	5300311	3402207	88
WS M8 D16 G	5300076	3402088	270
WS M8 D16 G	5300076	3402088	355
WS M8 D28 G	5300373	3402215	19
WS M8 D28 G	5300373	3402215	29
WS M8 D28 G	5300373	3402215	88
ZSE90-25-11	5958857	7215702	281
ZSE90-25-11	5958857	7215702	318
ZSE90-25-17	5958901	7215713	281



Type	GTIN	Art. no.	Page
ZSE90-25-17	5958901	7215713 /pc.	318
ZSE90-35-11	5958864	7215706	281
ZSE90-35-11	5958864	7215706	318
ZSE90-35-17	5958918	7215716	281
ZSE90-35-17	5958918	7215716	318
ZSE90-45-11	5958871	7215709	281
ZSE90-45-11	5958871	7215709	318
ZSE90-45-17	5958925	7215719	281
ZSE90-45-17	5958925	7215719	318
ZSE90-55-17	5958932	7215726	281
ZSE90-55-17	5958932	7215726	318
ZSE90-65-17	5958963	7215730	281
ZSE90-65-17	5958963	7215730	318



Sale and delivery conditions

of the companies **OBO Bettermann Vertrieb Deutschland GmbH & Co. KG, OBO Bettermann Projekt und Systemtechnik GmbH, OBO Bettermann Export GmbH & Co. KG, OBTEC GmbH, Flugplatzgesellschaft Arnsberg – Menden mbH, FAM Holding GmbH, OBO JET-CHARTER GmbH, Grundstücksverwaltung Bettermann GmbH & Co. KG, OBO Bettermann Produktion Deutschland GmbH & Co. KG as well as the OBO Bettermann Holding GmbH & Co. KG (hereinafter referred to as "sellers") and the respective (possibly future) contractual partners (hereinafter referred to as "Customers") regarding the sale and / or delivery of goods, as far as these are used against entrepreneurs, legal entities under public law and special assets governed by public law as defined in § 310 BGB.**

§ 1 General

(1.1) The general terms and conditions of business given below (hereinafter referred to as "AGB" or "VLB") are applicable in the respectively latest version for all contracts signed and to be signed in future between the OBO Bettermann Vertrieb Deutschland GmbH & Co. KG, OBO Bettermann Projekt und Systemtechnik GmbH, OBO Bettermann Export GmbH & Co. KG, OBTEC GmbH, Flugplatzgesellschaft Arnsberg – Menden mbH, FAM Holding GmbH, OBO JET-CHARTER GmbH, Grundstücksverwaltung Bettermann GmbH & Co. KG, OBO Bettermann Produktion Deutschland GmbH & Co. KG, as well as the OBO Bettermann Holding GmbH & Co. KG (hereinafter referred to as "sellers") and the respective (possibly future) contractual partners (hereinafter referred to as "Customers") regarding the sale and / or delivery of goods, as far as these are used against entrepreneurs, legal entities under public law and special assets governed by public law as defined in § 310 BGB.

(1.2) It is pointed out explicitly that the local conditions (e.g. building codes, technical specifications, etc.) are not applicable if the contract is / should be signed with the OBO Bettermann Projekt und Systemtechnik GmbH. The additional conditions for plant engineering in this case are attached with the offer and with the acceptance of the offer and can also be viewed and stored in the Internet at http://cdn.obo.de/mailings/downloads/AGB_PuS_Anlagenbau.pdf.

(1.3) It is pointed out explicitly that AGB of the customer is not an integral part of the contract only when these have been acknowledged in writing by the seller. In particular, an inclusion through a conclusive behaviour is not effected to the extent that the customer discernibly refers to his AGB and the seller does not contradict their validity.

(1.4) Insofar as the AGB of the customer have also become a part of the contract and contradict the AGB, the AGB of both parties forms a part of the contract only when they match (principle of congruency). Disagreement arising from the contradicting AGB is to be interpreted primarily under consideration of the interests of both parties and a solution satisfying the interests of both parties is to be found. If this is not possible, the legal regulations are applicable. Disagreements do not impact the effectiveness of the contract and of the AGB.

(1.5) Contracts or amendments of the contracts are effective only when they have been agreed upon in writing; to this extent, the written form not only serves the purpose of a proof, but is also a right-constitutive pre-requisite for effectiveness of the declaration of intent (constitutive written form). This also applies to the amendment of this written clause. Informally signed contracts and contractual amendments are effective only when they have been signed by means of individually negotiated terms as defined in § 305b BGB. It is clarified explicitly that the written form requirement is maintained by transmission through telecommunication (e-mail, fax) (see § 127 II, 31 BGB).

(1.6) These VLB can be amended at any time for adaptation to changes in law, changes in legislation or in the event of essential changes to the economic situation. The amendments shall become effective to the extent that seller has notified customer of the new version of the VLB in a textual form with clear emphasis of the changes, seller makes reference as early as the notification of the new version that the changes also become effective without customer's consent / customer does not contradict the changes in good time and a contradiction from customer is not made in good time within 2 weeks after receipt of the notification.

(1.7) The seller reserves the right to make technical changes in design, shape and material even during the delivery period, if the changes are reasonable for the customer and nothing on the contrary has been agreed upon.

§ 2 Offers

(2.1) Offers from the seller always are not binding and represent only a request for submitting a binding order from the interested parties.

(2.2) Offers of the seller are, in case they do not contain any deviating data - subject to an adequate assurance of the order sum (e.g. through credit insurance or bank guarantee) - valid four weeks starting from the day of the proposal submission.

(2.3) The documents being part of the offer such as drawings, data sheets, technical specifications, capacity values and weight data are subject to deviations, which are usual in the industry and / or lie in the framework of the normal production tolerances.

(2.4) Samples are non-binding approval samples. Deviations, which are customary to trade and/or lie in the framework of the normal production tolerances, are reserved. In case of a sample which is not made in a flawless state within four weeks, unless agreed upon otherwise, if the return is not done within this period or not in a proper way, the seller has the right to invoice the purchase price of the sample according to the latest price list.

§ 3 Protection rights

(3.1) The seller reserves the copyright for drawings and other design documents and data. These may not be made accessible to third parties, unless agreed upon otherwise, such as for the case that the data / drawings / images are also to be used for a web-shop.

(3.2) The customer guarantees vis-à-vis the seller that the manufacturer and delivery of the goods made according to his instructions do not violate any third party protection rights. In case third party protection rights are asserted vis-à-vis the seller, the seller shall be liable for the costs to withdraw from the corresponding contracts after hearing the customer, unless the third party declares the non-assertion of protection rights vis-à-vis the seller within eight days in writing.

(3.3) The customer shall indemnify the seller from the claims in the context of the assertion of third-party protection rights of third parties. Services and expenses of the seller already made are to be compensated or reimbursed in case of assertion of third-party protection rights regardless of their maturity.

§ 4 Prices and payment modalities, notification duties

(4.1) The prices mentioned in the offers and documents of the seller are the ex-factory or the ex-warehouse prices of the seller. The prices do not include the respectively applicable value-added tax, the cost of packaging, loading and unloading, freight, customs, insurance, dismantling, return and proper disposal of electrical and electronic old devices for commercial purposes as defined in the ordinance for waste electrical and electronic equipment, unless agreed upon otherwise. Freight, taxes or other expenses in the context of the delivery will be borne by the customer. Unless agreed upon otherwise, the delivery taken over from the seller does not include the unloading and bringing of the goods.

(4.2) The unit prices mentioned by the seller in an offer are valid only upon placing a purchase order for the complete delivery scope given in the respective offer or for a purchase order in case of a purchase order deviating in quantity or in scope from the offer of the seller, the prices listed in the offer are not applicable to the seller.

(4.3) Payments for invoices as well as credits, which are made within 10 (ten) days after receiving, with the exception of payments made by means of exchange are to be made with 2 (two) percent net cash discount; later incoming payments within 30 (thirty) days from the date of the invoice are to be made net without discount. Mounting services as well as all work to be paid without cash discount within 10 (ten) days. Incoming payments are credited at first against costs, then against interest and then against the longest due liability.

(4.4) All invoices and credits - subject to different written agreements in the individual case - are payable by 30 (thirty) days of the invoice without deduction; a cash discount of 2 (two) percent net is granted if the invoice is paid within 10 (ten) days. The seller reserves the right to agree upon currency by mentioning the account number. For payments of all kinds, fulfillment is said to occur on the day, on which the payment becomes available to the seller without restriction. The seller is not committed to accept bills of exchange or cheques. However, if these are acknowledged, they are accepted by the seller. Mounting services as well as all work to be paid without cash discount within 10 (ten) days. Incoming payments are credited at first against costs, then against interest and then against the longest due liability.

(4.5) The customer assumes the correctness of his sales tax identification number, which is to be informed immediately and without being asked. The customer is committed to inform immediately about each change in his company name, his address, the delivery address and his sales tax identification number to the seller.

(4.6) The seller has the right to adjust his prices, if needed, to the normal level in the market, if wages, material prices or taxes increase in the period between signing the contract and executing the order. In case of an increase in stock exchange listing for NE metals, the seller has the right to charge the difference to the customer as regards the price of a purchase order for products containing copper, silver, or brass.

(4.7) The prices of the products containing brass and copper are subject to certain fluctuations, which are based on the respective DEL quotations. The prices of brass and copper are based on the quotation of Euro 150.00 for ME 58, those of copper products are based on a DEL value of Euro 200.00 for electrolyte copper. In case of an upward or downward change of these rates by more than Euro 5.00, a five percent surcharge or deduction is credited for each 15 (fifteen) points. For calculating the surcharge or the deduction the respective DEL note of the date is taken as the basis, on which the seller received the offer.

(4.8) In case of payment by instalment, the seller has the right to charge default interest amounting to 9 (nine) percent points p.a. over and above the respective base interest rate as per § 247 BGB. The asserting of a further default interest according to 9 (nine) percent points p.a. over and above the respective base interest rate is not possible.

(4.9) The customer is entitled to the rights of set-off or rights of retention only when counter-claims have been recognised by declaratory judgment or are undisputed.

(4.10) If an application has been filed for initiating insolvency proceedings over the assets of the customer, the customer has initiated an out-of-court process for debt settlement, has stopped his payments or else the seller is aware of other circumstances, which essentially reduce the creditworthiness of the customer and which jeopardise the rendering of the services by the customer, the seller has the right to demand security through advance payment or other security. In case third party protection rights are asserted vis-à-vis the seller, the seller shall be liable for the costs to withdraw from the rendering of his services till the security is paid. After a suitable notice period has elapsed in vain, the seller further has the right to withdraw from the contract as well as to demand indemnity. Moreover, in this case, the seller can also demand the resale authorisation along with direct debit authorisation as well as to request the customer to pay the invoice sales tax and to return the already delivered goods according to §§ 8.4-8.5 as well as demand the return of the delivered goods according to §§ 8.8-8.9.

(4.11) If the legal situation at the time of the conclusion of the contract decisively changes or if control of customer or of a considerable part of its holdings passes to other natural or legal entities, the customer is obliged to notify seller immediately.

(4.12) In order to file a tax-free delivery and, alternatively, not having to include sales tax in all invoices and thereafter to pay the sales tax after receiving the papers, the customer must bring forth the proof of delivery. To do this, he has to demonstrate the delivery of goods by sending the corresponding original document within 4 (four) weeks to the seller after pick-up / dispatch of the goods. In case the seller does not receive this document within the above-mentioned period, he has the right to charge the customer the sales tax on the net goods value valid for this period.

(4.13) Invoice reductions, differences, debit advances or other disagreements do not change the original term of payment of the invoice. All indisputable receivables, not affected by disagreements, become due for payment according to the original invoice. All credit advances created by the seller for settling the differences do not change in any way the original term of payment of the invoice.

§ 5 Delivery

(5.1) Packaging, dispatch route and means of transportation are generally based on the graded lump-sum prices; the regulations of § 4.1 are applicable in addition. The seller charges the costs for packaging, dispatch route and means of transportation.

(5.2) A carriage-paid (with freight and packaging costs within Germany, is done for free starting with a net order value of Euro 2,500.00. It is made clear that a delivery is "free to the door" when the carrier opens his vehicle at the agreed upon unloading point and makes it available for unloading. The unloading as well as the on-site delivery of the goods is to be done by the customer.

(5.3) Unloaded returnable containers are taken back by the seller in case of freight-free provision. The pool pallets used for transportation are to be exchanged with the freight carrier or to be returned. Details of the processing are given in the respectively applicable equipment handling of the seller, which can be stored permanently in the Internet at http://cdn.obo.de/mailings/downloads/Packschema_Ladehilfsmittel.pdf as a part of this contract.

(5.4) The smallest selling units defined in the article master data are binding. Goods ordered below the smallest selling unit are rounded off automatically i.e. without consulting the buyer, to the next higher smallest selling unit.

(5.5) The seller reserves the over and under-deliveries, in particular in case of order-related production in the market-based scope or the as per the national or international standard. In case of a demand for achieving to precise quantity, an explicit instruction is necessary, which must be confirmed.

(5.6) The seller has the right to partial deliveries, but is not committed, if the partial deliveries are reasonable for the customer. Partial deliveries can be invoiced separately.

(5.7) The customer cannot reject excess or reduced services in a reasonable scope. The complaint of an excess or reduced service does not justify the rejection of further deliveries from the same or from another contract. In case of custom-made products the seller reserves an excess or under-delivery of 10% or more, unless otherwise specified. In case of a defect-free delivery, the customer is obliged to accept the goods.

(5.8) Blanket and call orders commit the customer for accepting the total quantity underlying the blanket and call orders. In case no specific call orders result from the contract or from any other agreement, the total quantity of the blanket or call order is to be called within 3 (three) months. If the customer does not adhere to the call dates, the seller has the right to completely deliver the total quantity to his house address and to invoice it 4 (four) weeks after written declaration by indicating the consequences of the omitted call. The rights of the seller default of the customer remain unaffected.

(5.9) The delivery commitment of the seller is subject to the provision of defect-free and on-time self-delivery, if the seller procures the goods as a whole or parts of product from a sub-contractor. This does not apply, if the seller is responsible for the non-delivery or for the delay.

(5.10) Events, such as those below, for which the seller is not responsible in the scope of the normal operating risk and which make the (partial) delivery essentially difficult or even impossible, entitle the seller to postpone the (partial) delivery by the duration of the hindrance together with suitable start-up time or alternatively to withdraw from the contract. In each case, the customer can demand a declaration from the seller, whether he will deliver within a suitable time period according to the circumstances or whether he will withdraw. The delivery periods gets extended in case of events such as industrial conflicts, strikes and lockouts, regulatory actions, material procurement difficulties, scrap or rework, business disruptions and lack of staff, lack of means of transportation as well as upon occurrence of other unforeseen events, on which the seller has no influence, by the duration of these events.

(5.11) Even in case of dispatch readiness, the customer comes in default of acceptance, if in case of delivery ex-factory/warehouse or agreed upon pick-up obligation the delivery is offered to him by the seller only in writing or else the customer has declared that he will final not accept the delivery.

(5.12) Products reported as ready for dispatch per the contract must be accepted immediately by the customer. Otherwise, the customer comes in default of acceptance so that the seller - his other rights notwithstanding - has the right either to dispatch the goods at the cost and risk of the customer or to store them and invoice them upon the expiry of a notice period of one week. The same applies, if the goods are not called or not called completely within the decisive call period (see § 5.8).

(5.13) For the case that the customer comes in default of acceptance or violates other service or participation duties, the seller has the right to demand the damages caused to him including possible extra expenses.

(5.14) If the customer is in default of fulfilment of the obligations arising from the aforesaid regulations by more than one month, the seller can further rights notwithstanding - demand from the customer a contractual penalty of 5 (five) percent of the invoice value instead of contract fulfillment and dispose of the stored goods in any other way under consideration of the interests of the customer or scrap the goods. The contractual penalty is charged at a reimbursement of damages or expenses to be paid by the customer. A bulk discount granted on earlier deliveries based on this contract is then to be paid back later by the customer.

§ 6 Delivery periods and dates

(6.1) Delivery periods and dates apply only approximately unless something to the contrary has been agreed upon.

(6.2) The adherence to the delivery periods and dates is not guaranteed if the customer, in writing or orally, has agreed to the delivery of the goods with the date of order confirmation by the seller, but not before clarifying all details of the execution of the order and receipt of all documents necessary for the order execution and other information to be made by the customer as well as the receipt of an advance payment agreed upon. If these requirements are not fulfilled, the delivery periods and dates are not applicable. If the delay is caused by the seller, the delivery period shall be deemed to have been met, if the goods leave the plant or the warehouse at the appointed time or the dispatch readiness of the customer is reported, but the goods cannot be dispatched on time without a fault of the seller. The aforesaid regulations apply accordingly to delivery dates.

(6.3) In case of a late fulfilment of the order desired by the customer, the seller can demand an appropriate extension of the delivery periods and dates. If the delivery is delayed upon request or by fault of the customer, the goods are then stored at the cost and risk of the customer, unless agreed upon otherwise.

(6.4) Regulatory and other third party approvals, necessary for executing the assets or deliveries e.g. for the purpose of import are to be obtained by the customer. If such approvals are not present at the right time (i.e. at the start of the fulfilment negotiations / acts by the seller) then the delivery period gets extended accordingly.

(6.5) The seller has the right to carry out partial deliveries as well as deliveries before the date and to settle them separately. If the delivery is agreed upon call, the goods are then considered as called latest by three months after placing the order, unless agreed upon otherwise. The customer may call the goods at any time.

seller then has an obligation to accept the delivery, upon whose violation the seller in particular has the right to store the goods with a third party at the cost and risk of the customer or to deliver them at the address of the customer.

(6.6) In case of articles manufactured by the seller on order, the customer is obliged to accept the same. It is agreed upon explicitly that in case of a withdrawal of the customer from the contract, the customer must bear the costs accruing till the time of the withdrawal.

(6.7) The seller is not liable for delays or for the performance hindrance mentioned above, unless already present before signing the contract, but were not known to the seller. The seller will inform the customer immediately about the hindrances of the aforesaid type.

(6.8) If the delivery delays cause by these factors last for more than two months, both sides have the right to withdraw from the contract. However, the customer can withdraw only under the condition of a request within a notice period of one week after the end of the withdrawal period, but within a suitable period. The same right of withdrawal arises independent of the aforesaid period, if the execution of the contract has become unreasonable for one of the parties under consideration of the delay that has occurred.

(7.1) A claim of the customer for return of the goods not needed arises - except for warranty cases or other return obligations resulting from the law - only after a prior written approval of the seller. Return requests, whose net goods value - before sales tax - is less than Euro 15.00 for each item, cannot be accepted and processed. Credit notes or charges resulting from returns can be maximum up to 70 (seventy) percent of the net goods value.

(7.2) In addition, the conditions and conditions set out below shall be complied with pursuant to §§ 7.3-7.6 and no case of § 7.7 shall exist.

(7.3) A return is permitted till maximum 12 (twelve) months after the date of delivery and only by specifying the delivery note or invoice number of the goods.

(7.4) A product currently in the catalogue is to be returned in a flawless state so that it can be resold. A product is to be returned unused, undamaged, in original packaging as well as in complete packaging units. The minimum value for accepting each item in the warehouse is Euro 15.00.

(7.5) The return must be reported and confirmed by the seller in writing with a return number. If needed, an inspection of the product is done by the seller at site, which the customer has to allow. The return confirmation of the seller is to be attached with the dispatch. The return is done free of charge. A remuneration is paid via credit note. Only approved articles in a flawless condition are credited. Debit notes of the customer are not permitted.

(7.6) For handling and checking in the scope of the quality management system ISO 9001, the seller charges a lump-sum processing fee of 30 (thirty) percent of the affected goods value. The seller bears the necessary costs for the new packing and cleaning of the goods.

(7.7) Custom-made products, not listed / inactive articles and discontinued types, packaging units with a shortfall and old executions are not taken back.

(7.8) If one of the points mentioned under § 7.7 is relevant, the returned product is scrapped after consulting with the customer and expiry of a suitable period set for the customer.

(8.1) Reservation of ownership / Reservation of proprietary rights and property relations

(8.1.1) The seller retains the ownership of the delivered objects till the receipt of all payments from the business relationship with the customer. The reservation of ownership also extends to the recognised balance, if the seller posts receivables vis-à-vis the customer in the current invoice (current account retention).

(8.1.2) The seller assigns documents and other similar objects delivered by the seller for executing the order also remain the property of the seller. In particular, no ownership rights follow from the fact that the customer has contributed towards the costs of manufacturing the dies, tools, design documents and other similar objects.

(8.1.3) The ownership of the goods on the ownership has not been transferred to him, to handle the purchased object properly and to identify it clearly and permanently as property of the seller. He is especially committed in case of high quality products to insure these at the new value adequately against theft, fire and water damages at his own cost. In case of doubt, the customer must obtain information from the seller. If maintenance and inspection work is to be done, the customer must carry these out on time at his cost.

(8.1.4) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.5) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.6) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.7) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.8) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.9) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.10) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.11) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.12) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.13) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.14) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.15) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.16) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.17) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.18) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.19) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.20) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.21) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.22) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.23) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.24) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.25) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.26) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.27) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.28) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.29) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause), but without committing him. If the delivered objects are processed with other objects not belonging to the seller, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or joined objects at the time of processing. The object arising from processing must be handed as the goods subject to retention of title.

(8.1.30) If the delivered objects are processed with other objects not belonging to the seller, are connected or joined inseparably, the seller then acquires the co-ownership of the new object in the ratio of the value of the delivered object to the other connected or mixed objects at the time of connecting or joining. If the connection or joining is done in a way that the product of the customer is to be considered as the main product, the customer then transfers the co-ownership to the seller proportionally. The offer directed towards this is accepted explicitly.

(8.1.31) The customer is committed to take charge of the (co-) ownership of the seller free of cost and with proper business care; it is to be treated like goods subject to retention of title. In doing so, the customer is committed to show the care over and above the one he shows in his own matter.

(8.1.32) Before the transfer of ownership, the product of the seller may neither be mortgaged nor pledged as security without a written permission. The assertion of third party rights on the product is to be informed immediately to the seller. In addition, all information necessary in this case for a possible defence of the seller is to be given and the documents and other correspondence necessary for this must be handed over. If the customer does not fulfil the requirements, the damages arising from this are charged to the customer. In this case, all claims against the customer become due immediately.

(8.1.33) As long as the customer goes according to the offer, i.e. fulfils his contractual payment obligations, the customer has the right to sell further delivered objects in the scope of proper business transaction and to collect the corresponding receivables after assignment of claim. Otherwise, the authorisation can be revoked. If the goods are sold before paying the receivables of the seller, the customer is then committed to preserve and secure the ownership rights of the seller till the complete repayment of the receivables. To do this, he surrenders all receivables arising from the sale of the delivered objects to the seller and the proceeds of the sale to the customer from the result and also possible indemnity claims owing to damage and destruction of the goods subject to retention of title, which also includes an insurance sum in place of the retention of title) amounting to the final invoice amount (including VAT), which accrue for the customer from the resale to his customers.

(8.1.34) The processing or restructuring of the delivered objects by the customer is done always for the seller as manufacturer as defined in § 950 BGB (manufacturer's clause),



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