

Fire protection ducts

Building Connections

Digitalisation, the Energiewende (energy transition), mobility – the future is gathering speed. At OBO Bettermann, we're proud to be a driving force. And as a facilitator, we make connections. Today, we are already developing the innovative electrical infrastructure systems and solutions of tomorrow. Reliably, flexibly, sustainably.

Already today, OBO is one of the leading manufacturers of installation systems for the electrical infrastructure in buildings and plants. When it comes to the friction-free flow of power, energy and data, engineers and tradespeople worldwide rely on the comprehensive range from OBO.



Schutzstationen | Brandschutzkanäle | en / 2023/05/11 07:41:56 | 41:36 (LLExpert_03284) / 2023/05/11 07:41:56 07:41:56

OBO applies its slogan "Building Connections" to around 30,000 high-quality branded electrical products and services, which are used in application solutions for projects in industry, business and infrastructure.

OBO operates a global network and employs more than 4,200 people in more than 60 countries. The headquarters of the family company, which was founded in 1911, is located in Menden, Germany. In addition, more than 40 subsidiaries are present in markets on all continents.



Improved structure, sharpened profile



Each of our products carries a benefit which only the OBO brand can offer. Products are developed, manufactured and tested with a high level of competence – from the idea through to the final check. From flawless logistics through to practical information – we can provide support at every level. We can offer additional security through certificates on the conformity of our products with the most important standards and directives. In a nutshell – OBO helps you more. In every location and in every phase of a project.

To maintain this, we continually challenge ourselves. Not as an end in itself but for the better processing of each customer's requests – fast, reliably and future-oriented. That is the reason we have not only established our three central application areas, but also reworked our catalogue structure. In this way, we can display our service offers more clearly, highlight the product benefits more effectively and illustrate the respective application areas more tangibly.

OBO Product Worlds



Industrial installations

- Cable support systems
- Connection and routing systems
- Fastening material



Building installations

- Cable routing systems
- Device installation ducts, trunking and poles
- Floor installation systems and underfloor applications
- Installation systems



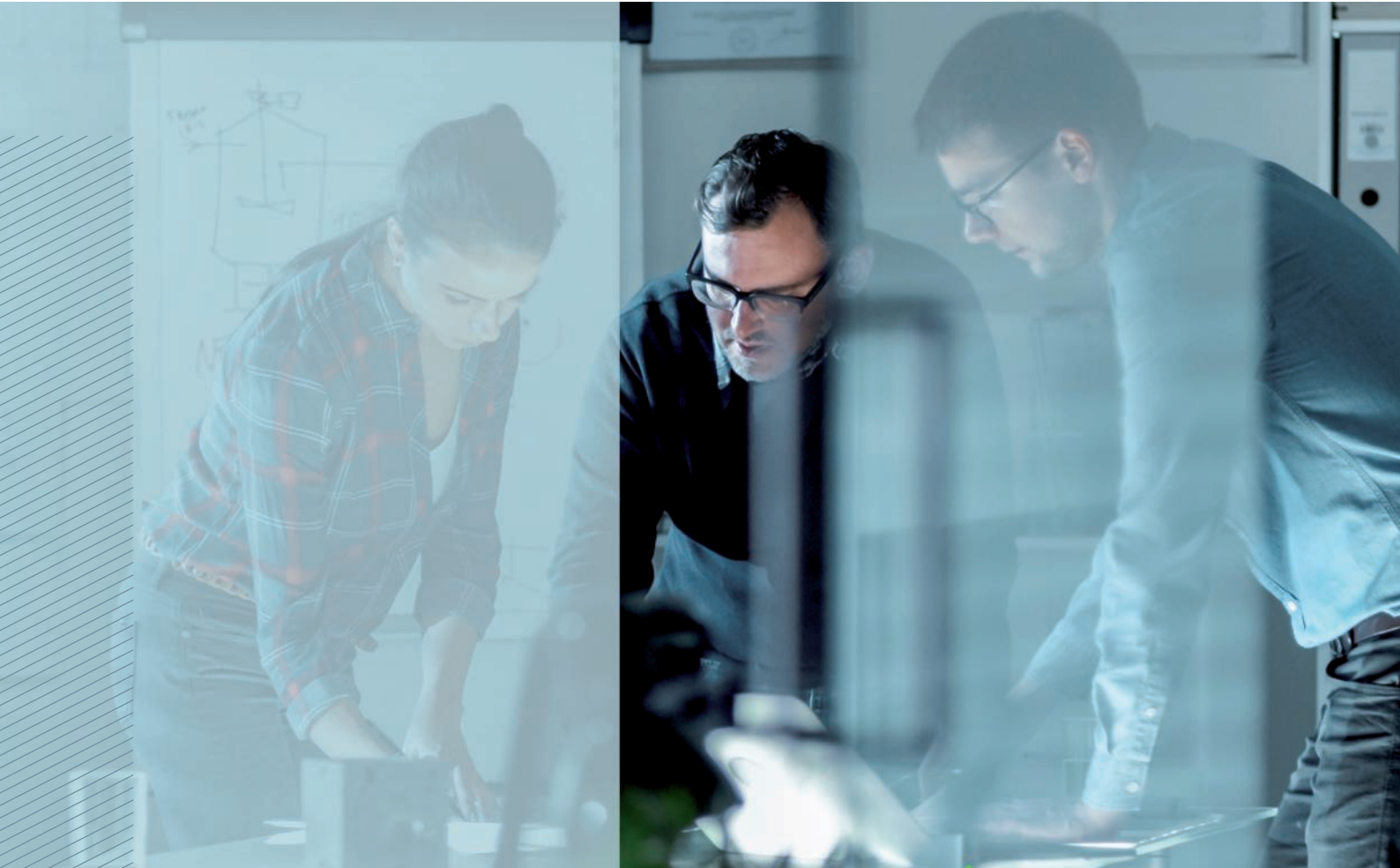
Safety and protection installations

- Surge protection
- External lightning protection
- Equipotential bonding and earthing
- Insulation and cable bandages
- Fire-tested support and routing systems
- Fire protection ducts



It's your choice – from now on there's a catalogue for each OBO product category. Simply select the catalogues and order together with a collection case.

OBO Support & *contact*



***You have a
problem?
We have the
solution!***

OBO Bettermann is more than the sum of its products. In any situation, we are the reliable partner right by your side. You have a problem? We have the solution!

It doesn't matter in which area of industry our support is needed – from industrial and plant engineering to private, public and administrative buildings, as well as in the areas of mobility and renewable energies – we have everything that you need.

OBO can not only provide the entire electro-technical infrastructure with the best possible products. We can also support you with sound expert knowledge and more than 100 years of experience, right from the planning phase through to the realisation of your projects. OBO – solutions you can rely on.

Customer Service

Tel.: +49 23 73 89 - 17 00

Monday–Thursday
07.30–17.00

Friday
07.30–15.00

export@obo.de

What is OBO Support?

Every OBO product carries a plus inside it, which only a branded product can offer. It is developed, manufactured and tested with a high level of competence, from the idea right through to the final check. In addition, our specialists are available for consultation and can offer you assistance and training courses for products at any time.

Together with you, we plan your project and help you choose the right products, and are also available to you at any time should you need us. From flawless logistics through to practical information – we can provide support at every level. We can offer security through certificates on the conformity of our products with the most important standards and directives.

We are as flexible as you are – because we know how practical people work and what is important to them. Each step is a plus – that is the OBO Support concept.



Service



Training



Handling



Certification

Service – OBO can help

Everywhere and in every project phase:

- Highly competent hotline
- Product and system information, digitally or printed
- Selection and planning aids on the web, as an app, as a CAD application or in printed form
- 2D and 3D product data for planning
- Field service, branch offices and subsidiaries in 60 countries
- Engineering services for major projects

Training courses from OBO

- Seminars and workshops
- Local consultation and training courses
- Planner days

Handling – OBO delivers reliably

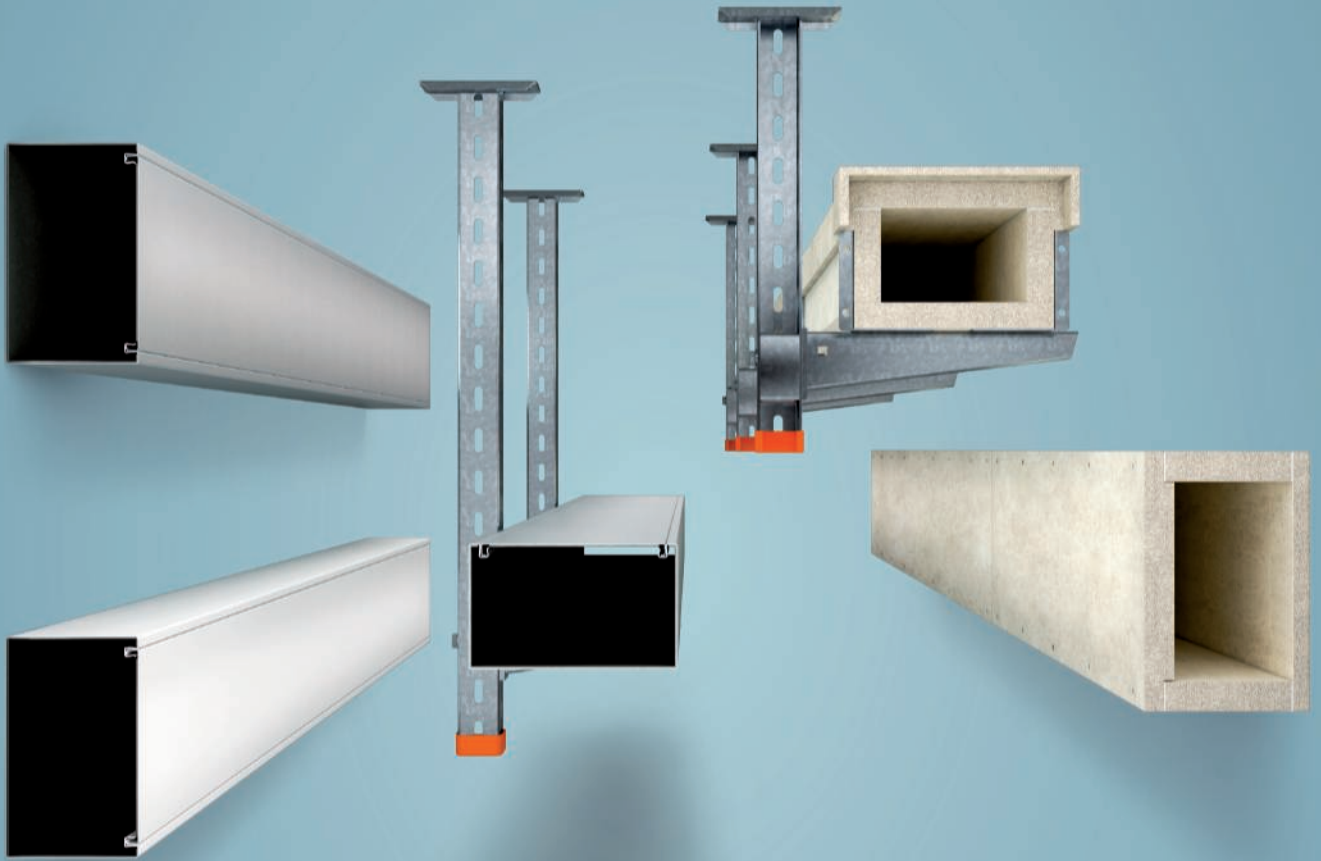
With optimised delivery processes:

- Reliable logistics
- Practical transport systems and packaging
- Loading gear handling and disposal concepts

Certification and guarantee

OBO offers safety. Our products fulfil the most important country-specific regulations:

- Conformity (e.g. IEC, VDE, CE, KEMA, KEUR, UL)
- Certification (e.g. DIN EN, DGNB)
- 5-year guarantee for surge protection products
- Guarantee management



Planning aids

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PYROLINE® Rapid PLM

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Planning aids

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First protection aim: Maintenance of the fire sections



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

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 firewalls

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

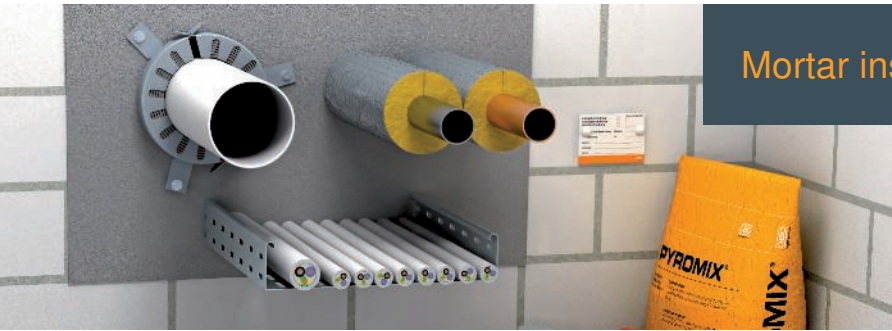
Electrical cables and pipes may only be run through walls and ceilings at the ends of rooms when there is a guarantee that they do not present an opportunity for fire and smoke to spread. Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.

Special requirements

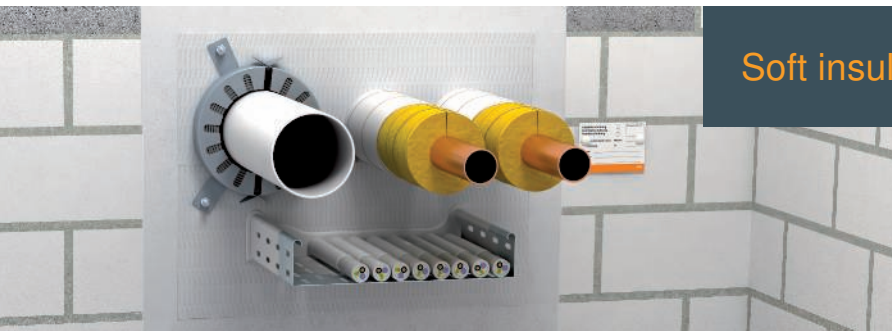
The following requirements apply to cable penetrations with cable insulation:

- 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 and cable bandages



Mortar insulation systems



Soft insulation systems



Foam systems



Pipe shell systems



Cable bandages

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Second protection aim: Protection of escape routes



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.

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:

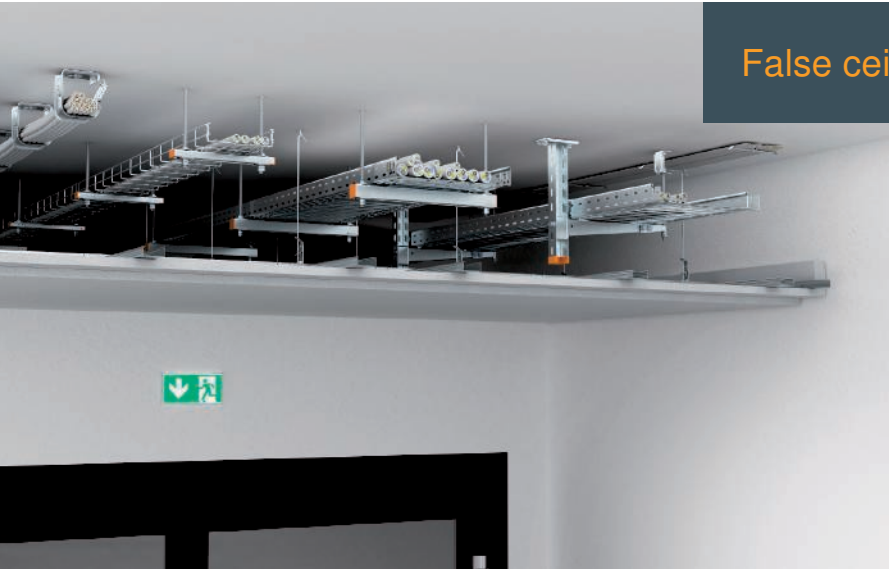
- Necessary staircases (vertical access)
- Connecting rooms between the necessary stairwells and exits to the outside
- Necessary corridors (horizontal access)

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.

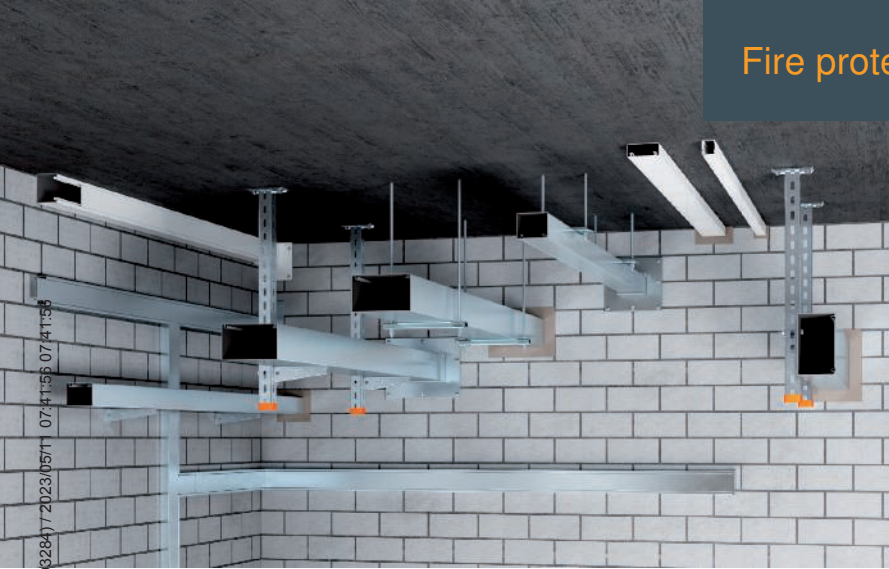
In the area of emergency and escape routes, an installation may not pose an additional fire load. This requirement can be fulfilled using an appropriate type of installation:

- 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

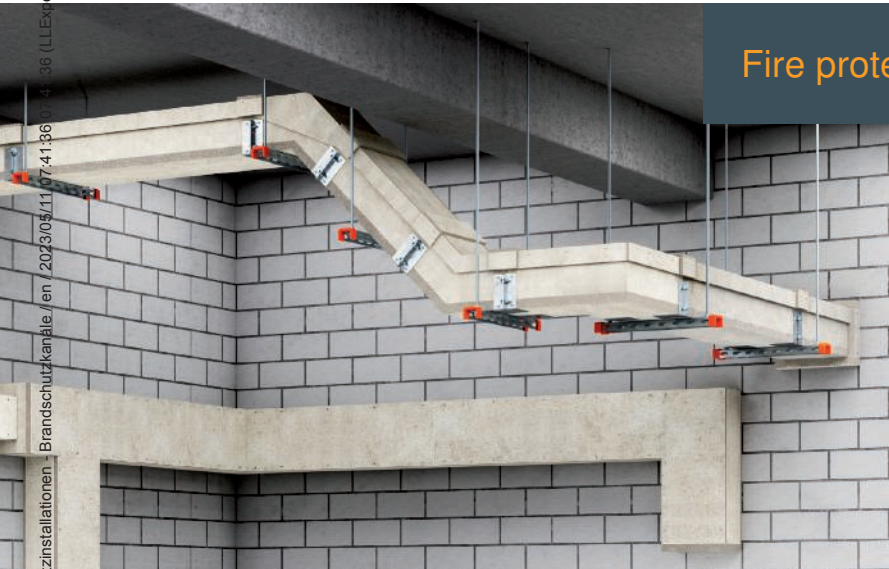
Escape route installations



False ceiling mounting



Fire protection ducts, metal



Fire protection ducts, concrete

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Third protection aim: Maintaining the functionality of electrical systems



3

E30

E90

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, must 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 with maintenance of 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, which creates an increased safety risk for gatherings of people. However, with certain systems, property and the environment must also be protected.

30 minutes: Maintenance of electrical function for 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

90 minutes: Maintenance of electrical function for effective firefighting

To support firefighting 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



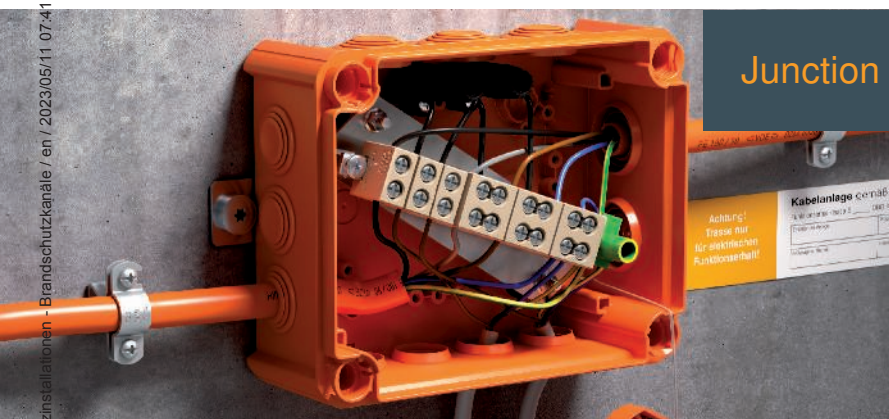
Cable trays and cable ladders



Vertical ladders



Individual routing



Junction boxes

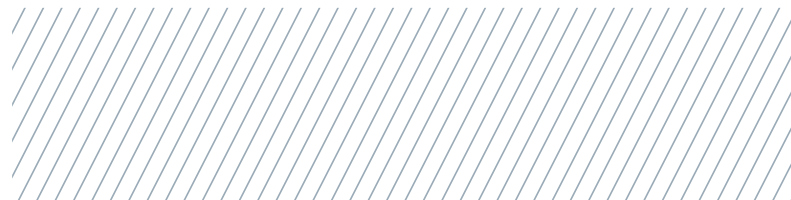
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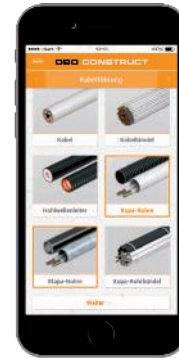
Technical support



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.





The OBO construct BSS online Tool

It 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 any 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.

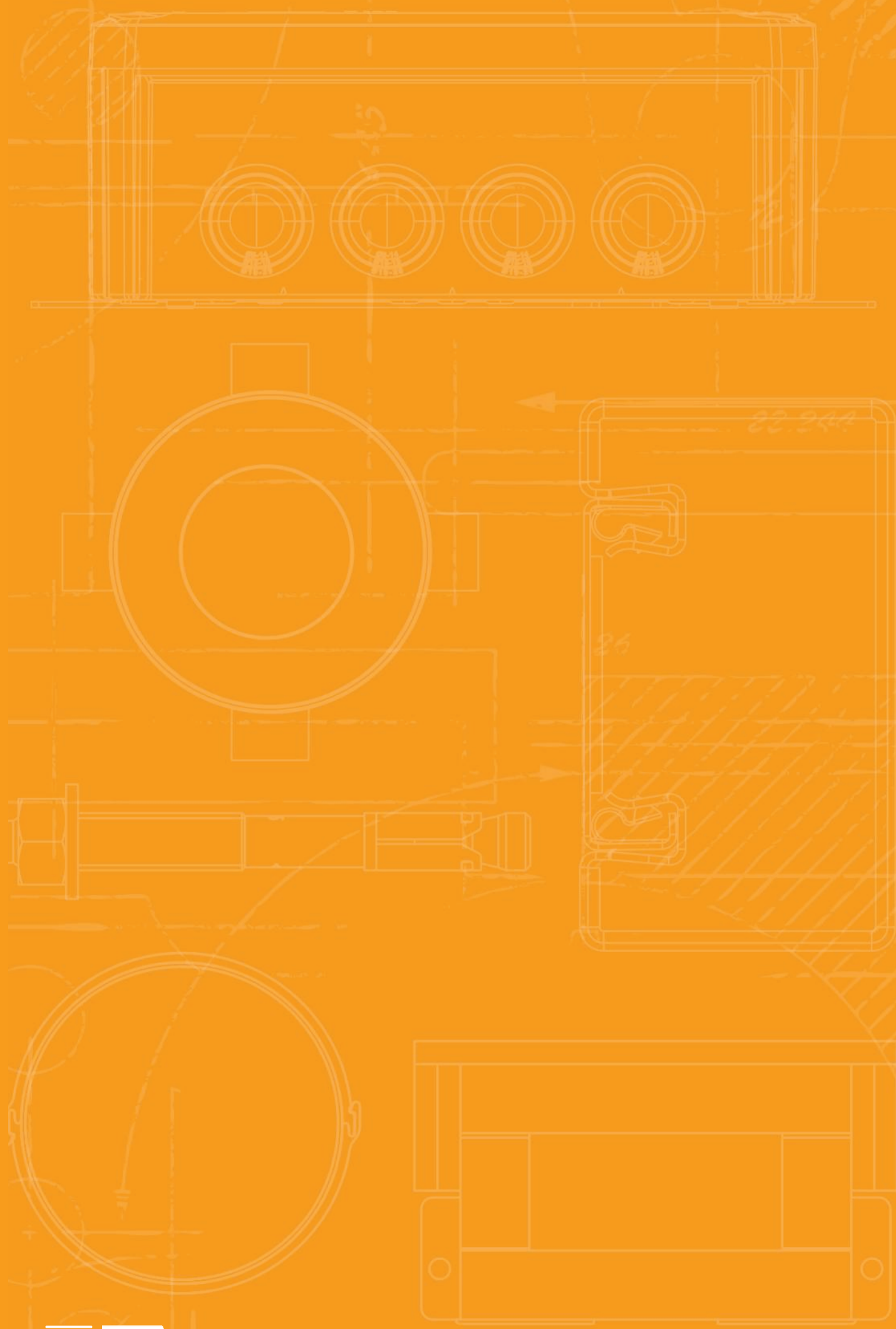
BSS app

The OBO 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. It's extremely practical, as the parts list can be sent directly by e-mail. The app is available for Android and Apple devices from Google Play Store and the iTunes App Store.



Fire protection guide for electrical installations

In the second edition of the fire protection guide, we have again compiled lots of useful information. The interconnections of fire protection between different types of technical building equipment are now explained in even more detail. Perhaps you will find some new information in this edition which can help you in the planning and implementation of fire protection systems.



PYROLINE® Con D



PYROLINE® Con D concrete fire protection duct

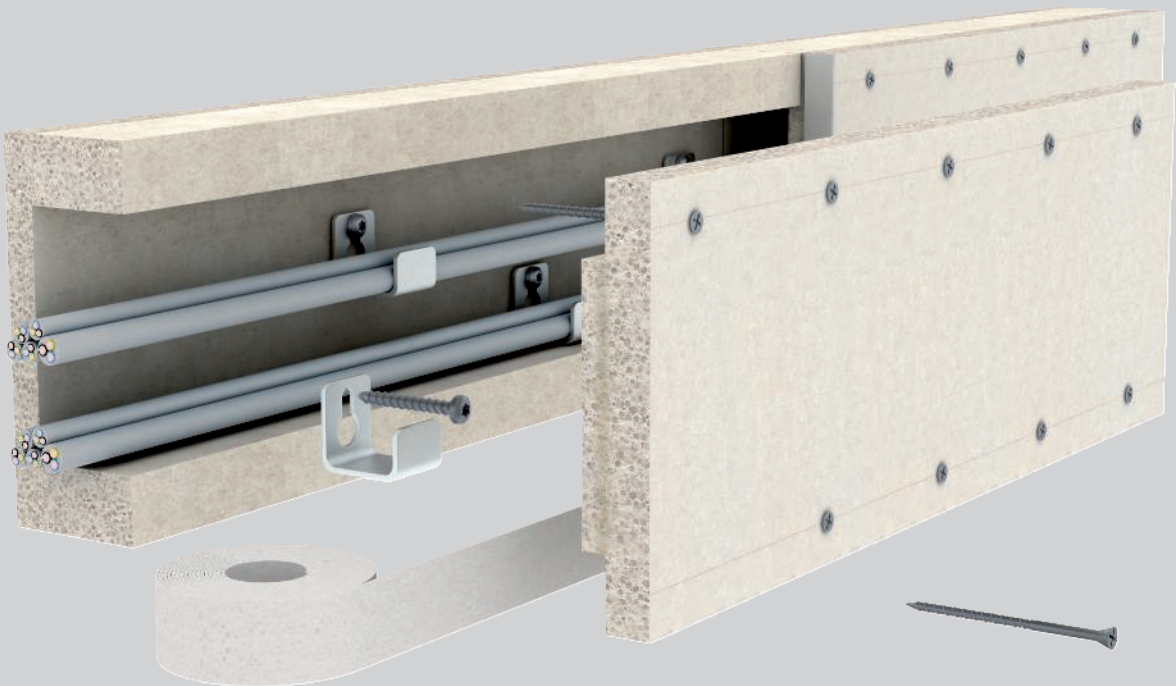
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PYROLINE® Con D PLC

concrete fire protection duct for suspended mounting

System description



With the PYROLINE® Con D PLC made from water- and frost-resistant fibreglass light concrete, OBO covers all demands of European classified ducts. With two different wall thicknesses, the OBO PYROLINE® Con D PLC fire protection ducts achieve the fire resistance classes of EI30-EI60 and EI90. The PYROLINE® Con D PLC is mounted

directly on wall or ceilings. Should other fittings be required, then they can be created easily on-site. The primed fire protection ducts can be painted or papered over, as required. The duct can be integrated discreetly into the building and fits perfectly in existing cable paths.

PYROLINE® Con D PLC

concrete fire protection duct for suspended mounting

Installation principle



Flexible duct routing



Mounted fire protection duct on wall and ceiling



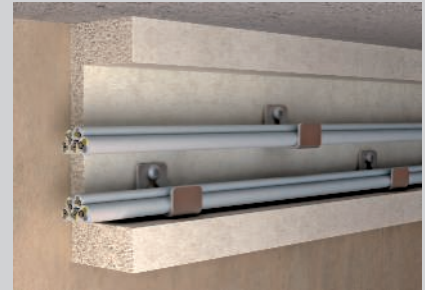
Mounted fire protection duct with cable outlets



Vertical cable routing using cable brackets



Wall connection with wall connection collar



Cable mounting with separating bracket and separating clamp



Combination of suspended fire protection duct and wall duct



Discreet installation

Classification according EN 13501-2



Installation duct from fibreglass reinforced light concrete

Fire resistance class	EI30, EI60, EI90
Proof of application	Classification report K-2400/150/15-MPA BS ETA certification: ETA-21/0755 Declaration of performance FC-0003
Testing standard	EN 1366-5
Classification standard	EN 13501-2

The data in the named proofs of applicability applies.

For the maintenance of electrical function of cable systems in the event of a fire, the PYROLINE® Con BSK fire protection duct should be used according to DIN 4102-12.

PYROLINE® Con D fire protection duct EI30 - EI60

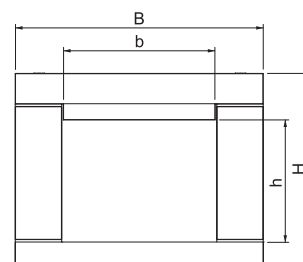


Type	Pack	Weight	Item no.
	m	kg/100 m	
PLCD D060810	1	1,000.000	7215800
PLCD D061220	1	1,570.000	7215804

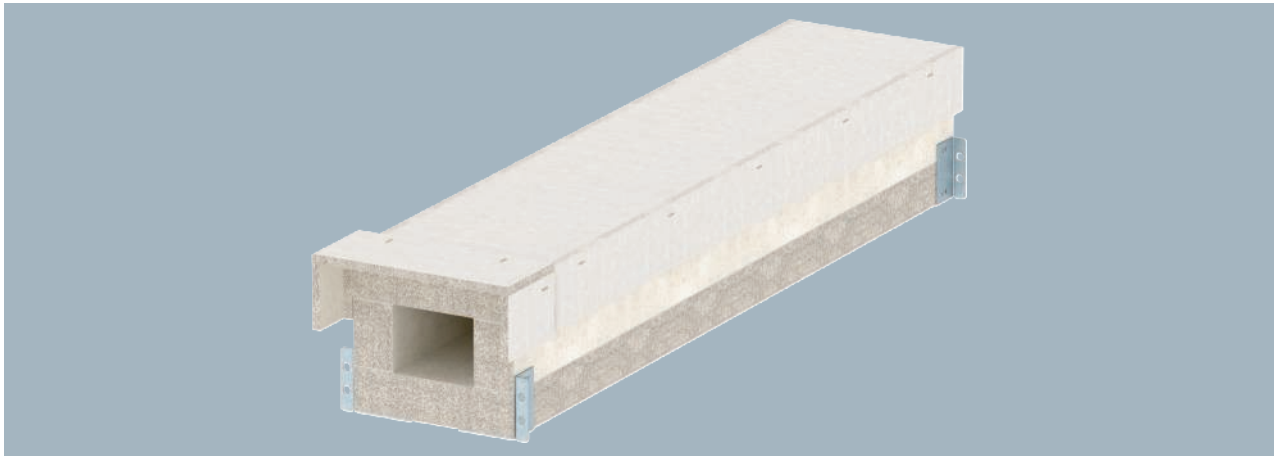
Fire protection duct made of water and frost-resistant fibreglass lightweight concrete of material class A1 according to EN 13501-1 for fireproof routing of cables in escape and rescue routes. EI30 - EI60 classification as installation duct according to EN 13501-2 on the basis of tests in accordance with EN 1366-5. When there is an internal fire load (cable fire), the duct prevents the spread of fire from one fire section to another.
Mounting of the duct directly on walls or under ceilings. Including countersunk head screws and sealing strip.

Type	Dim.	Dim.	Dim.	Dim.
	h	b	H	B
	mm	mm	mm	mm
PLCD D060810	80	100	125	160
PLCD D061220	120	200	165	260

Dimensions



PYROLINE® Con S fire protection duct EI90



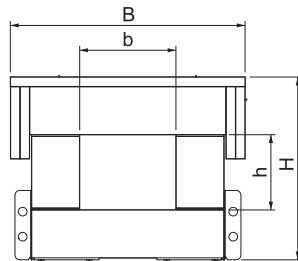
Fire protection duct made of water and frost-resistant fibreglass lightweight concrete of material class A1 according to EN 13501-1 for fireproof routing of cables in escape and rescue routes. EI60 classification as installation duct according to EN 13501-2 on the basis of tests according to EN 1366-5. When there is an internal fire load (cable fire), the duct prevents the spread of fire from one fire section to another.

Mounting of the duct on wall brackets or as ceiling mounting with suspended supports and brackets or on a U transverse profile suspended with threaded rods. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment.

Including connection screws and sealing strips.

Type	Pack	Weight	Item no.
	m	kg/100 m	
PLCS D090810	1	2,460.000	7217870
PLCS D091220	1	3,780.000	7217874

Dimensions



Type	Dim.	Dim.	Dim.	Dim.
	h	b	H	B
PLCS D090810	80	100	190	248
PLCS D091220	120	200	230	348



PYROLINE® Con D fire protection duct EI90

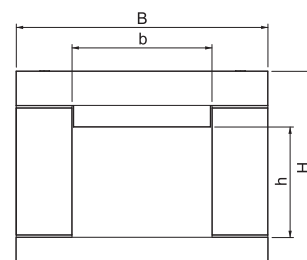


Type	Pack m	Weight kg/100 m	Item no.
PLCD D090810	1	1,370.000	7215810
PLCD D091220	1	2,100.000	7215814

Fire protection duct made of water and frost-resistant fibreglass lightweight concrete of material class A1 according to EN 13501-1 for fireproof routing of cables in escape and rescue routes. EI60 classification as installation duct according to EN 13501-2 on the basis of tests according to EN 1366-5. When there is an internal fire load (cable fire), the duct prevents the spread of fire from one fire section to another.
Mounting of the duct directly on walls or under ceilings.
Including countersunk head screws and sealing strip.

Type	Dim. h mm	Dim. b mm	Dim. H mm	Dim. B mm
PLCD D090810	80	100	140	180
PLCD D091220	120	200	180	280

Dimensions



EI60 wall connection collar for PLCD D060810 fire protection duct



Type	Pack Piece	Weight kg/100 pc.	Item no.
PLCD W060810	1	100.000	7215820
PLCD W061220	1	140.000	7215824

Wall connection collar for PYROLINE® Con D EI30 - EI60 fire protection duct, consisting of fibreglass light concrete, which is resistant to water and frost, for mounting on the fire protection duct in the area of wall and ceiling connections and wall and ceiling penetrations. Consists of 3 single plates (width 100 mm, depth 30 mm). Including countersunk head screws.

EI90 wall connection collar for PLCD D090810 fire protection duct



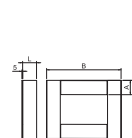
Type	Pack Piece	Weight kg/100 pc.	Item no.
PLCD W090810	1	160.000	7215830
PLCD W091220	1	210.000	7215834

Wall connection collar for PYROLINE® Con D EI90 fire protection duct, consisting of fibreglass light concrete, which is resistant to water and frost, for mounting on the fire protection duct in the area of wall and ceiling connections and wall and ceiling penetrations. Consists of 3 single plates (width 100 mm, depth 40 mm). Including countersunk head screws.



EI60 end piece for PLCD D060810 fire protection duct

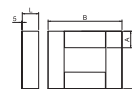
Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	L mm	A mm			
PLCD E060810	160	127	30	30	1	48.000	7215840
PLCD E061220	260	167	30	30	1	105.000	7215844



End piece for PYROLINE® Con D EI30 - EI60 fire protection duct, consisting of water and frost-resistant fibreglass light concrete to close off the duct ends. Including countersunk head screws and stuck-on sealing strip.

EI90 end piece for PLCD D090810 fire protection duct

Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	L mm	A mm			
PLCD E090810	180	142	40	40	1	78.000	7215850
PLCD E091220	280	182	40	40	1	156.000	7215854



End piece for PYROLINE® Con D EI90 fire protection duct, consisting of fibre glass light concrete which is resistant to water and frost for closing the duct ends. Including countersunk head screws and stuck-on sealing strip.

Sealing strip

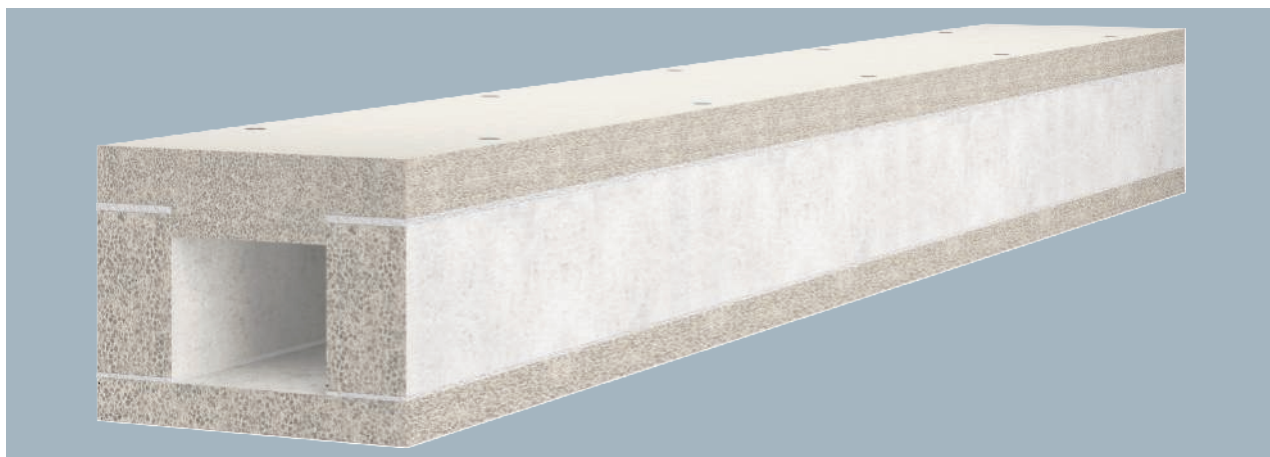
Type	Dimension	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
	mm				
KDS-40	5x40x7500	7500	1	18.100	7215436



Self-adhesive sealing strip for mounting in the joints of the individual duct sections and for the seal between the base and cover of the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.



Fire protection duct I120/E90



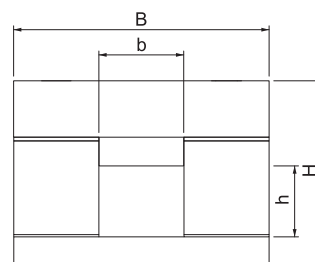
Type	Length mm	Pack m	Weight kg/100 m	Item no.
BSKD12-K0506	1000	1	1,668.000	7215210
BSKD12-K0511	1000	1	1,996.000	7215216
BSKD12-K0521	1000	1	2,642.000	7215222

Fire protection duct made from water and frost-proof fibreglass lightweight concrete of building material class A1 according to EN 13501-1 for fireproof laying of cables in rescue and emergency routes, and for the maintenance of electrical functionality of safety-relevant systems. Classification I120 as I duct according to DIN 4102 Part 11 and classification E90 as E duct according to DIN 4102 Part 12.

Mounting of the duct directly on walls or under ceilings. Including countersunk head screws and sealing strip.

Type	Dim. h mm	Dim. b mm	Dim. H mm	Dim. B mm
BSKD12-K0506	50	60	130	180
BSKD12-K0511	50	110	130	230
BSKD12-K0521	50	210	130	330

Dimensions



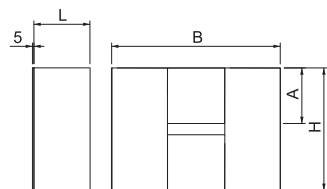
End piece for PYROLINE® Con D I120/E90



Type	Pack Piece	Weight kg/100 pc.	Item no.
BSKD12-E0506	1	104.000	7215270
BSKD12-E0511	1	133.000	7215272
BSKD12-E0521	1	194.000	7215274

End piece for PYROLINE® Con D I120/EI90 fire protection duct, consisting of fibreglass lightweight concrete which is resistant to water and frost for closing the duct ends. Including countersunk head screws and a stick-on sealing strip.

Dimensions



Type	Dim. H mm	Dim. B mm	Dim. A mm	Dim. L mm
BSKD12-E0506	133	180	60	60
BSKD12-E0511	133	230	60	60
BSKD12-E0521	133	330	60	60

Sealing strip

Type	Dimension mm	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
KDS-60	5x60x7500	7500	1	27.300	7215438
KDS-30	5x30x7500	7500	1	13.500	7215434



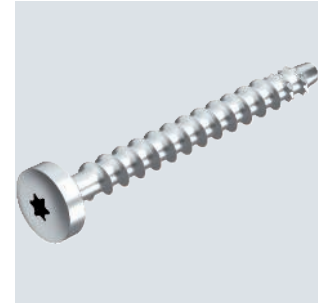
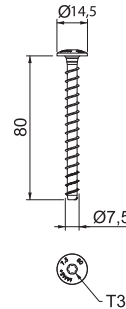
Self-adhesive sealing strip for mounting in the joints of the individual duct sections and for the seal between the base and cover of the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.

Accessories

MMS-plus P round head tie, with panhead

Type	Dimension mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
MMS+ P 7.5x80	7,5x80	6	14,5	Torx	50	1.600	3498272

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With round head for universal fastenings. Torx drive T30. Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities under fire loads proven up to fire resistance class R120.

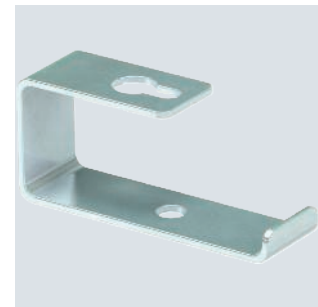


FS

Separating clamp for ceiling mounting

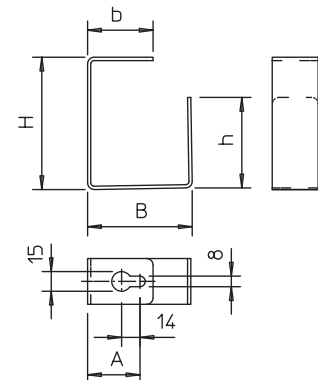
Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
BSKD-B0511	46x55	25	7.500	7215356
BSKD-B0521	46x105	25	14.500	7215362

Separating clamp as installation aid when mounting the PYROLINE® Con D BSK fire protection duct on the ceiling. Mounting of the clamp directly on the fastening anchors of the fire protection duct.



Type	Dim. H mm	Dim. h mm	Dim. B mm	Dim. b mm	Dim. A mm
BSKD-B0511	46	18	55	37,5	27,5
BSKD-B0521	46	18	105	62,5	52,5

Dimensions



Separating bracket for wall mounting

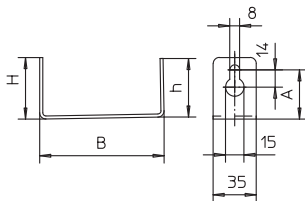
FS



Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
BSKD-W0511	46x37,5x35	25	5.000	7215312
BSKD-W0521	46x72,5x35	25	9.000	7215318

Separating bracket as installation aid when mounting the PYROLINE® Con D BSK fire production duct. Mounting of the bracket directly on the fastening anchors of the fire protection duct.

Dimensions



Type	Dim. H mm	Dim. h mm	Dim. B mm	Dim. A mm
BSKD-W0511	37.5	22.5	46	27.5
BSKD-W0521	62.5	72.5	46	52.5

Cable bracket, vertical, for PYROLINE® fire protection ducts

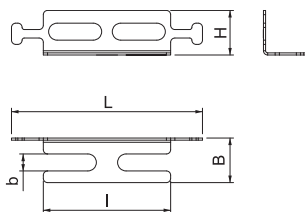
FS



Type	Dim. H mm	Dim. B mm	Dim. L mm	Dim. l mm	Dim. b mm	Pack Piece	Weight kg/100 pc.	Item no.
LHS 20	21	21	90	60	8	10	1.345	7215288
LHS 40	41	21	90	60	8	10	2.426	7215290
LHS 60	61	21	90	60	8	10	3.507	7215292

Universal cable bracket for the vertical installation of cables in PYROLINE® Con fire protection ducts made of fiberglass-reinforced, lightweight concrete, as well as PYROLINE® Rapid made of sheet steel with an internal coating. The holders are plugged over the head of the loosened fastening screw and then screwed tight to it. The cables can be fastened using cable ties on the lugs or in the slots of the holder. This safely supports the cable weight. Plan at least two cable brackets per metre during installation.

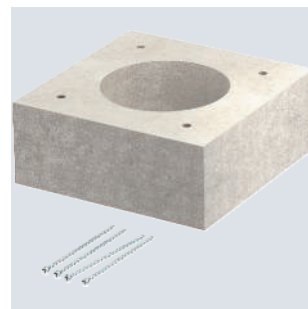
Dimensions



Doubler for PYROLINE® Con fire protection duct

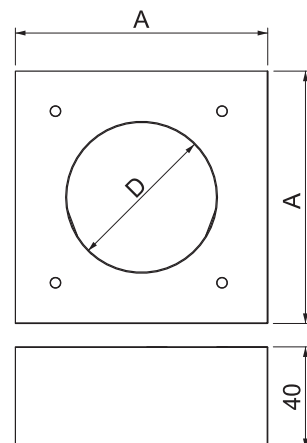
Type	Pack Piece	Weight kg/100 pc.	Item no.
KAD-8040	1	28.000	7215464
KAD-10040	1	44.000	7215462

Doubler for running individual cables and cable bundles out of the side wall of the PYROLINE® Con D and PYROLINE® Con S fire protection duct.



Type	Dim. A mm	Dim. D mm
KAD-8040	80	40
KAD-10040	100	60

Dimensions



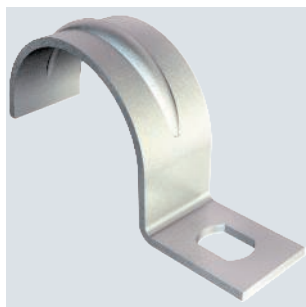
Insulation layer creator in a cartridge

Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
DSX-K	300	1	50.000	7202300

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for the closing of core drill holes when feeding through single cables and for closing the annular gap when exiting cables from the PYROLINE® Con PLC fire protection duct. 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.



Fastening clip 604, light duty



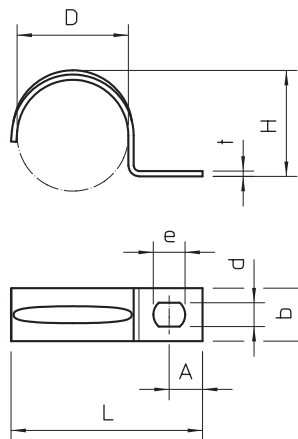
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
604 3 G	3	4,5x6	0,7	100	0.052	1003038
604 4 G	4	4,5x6	0,7	100	0.067	1003046
604 5 G	5	4,5x6	0,7	100	0.084	1003054
604 6 G	6	4,5x6	0,7	100	0.099	1003062
604 7 G	7	4,5x6	0,7	100	0.120	1003070
604 8 G	8	4,5x6	0,7	100	0.123	1003089
604 9 G	9	4,5x6	0,7	100	0.139	1003097
604 10 G	10	4,5x6	0,7	100	0.150	1003100
604 11 G	11	4,5x6	1	100	0.270	1003119
604 12 G	12	4,5x6	0,7	100	0.240	1003127
604 13 G	13	4,5x6	1	100	0.280	1003135
604 16 G	16	4,5x6	1	100	0.348	1003178
604 19 G	19	4,5x6	1	100	0.411	1003194
604 20 G	20	4,5x6	1	100	0.431	1003208
604 21 G	21	4,5x6	1	100	0.447	1003216
604 23 G	23	4,5x6	1	100	0.490	1003232
604 25 G	25	4,5x6	1	100	0.900	1003259
604 28 G	28	4,5x6	1	100	0.874	1003283
604 32 G	32	5,5x7	1,5	100	1.462	1003321
604 35 G	35	5,5x7	1,5	100	1.355	1003356
604 37 G	37	5,5x7	1,5	100	1.567	1003372
604 40 G	40	5,5x7	1,5	100	1.860	1003402
604 47 G	47	5,5x7	1,5	50	2.484	1003461

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

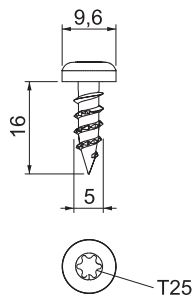
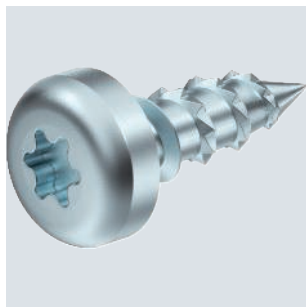
Dimensions



Type	Dim. L mm	Dim. A mm	Dim. e mm	Dim. d mm	Dim. b mm	Dim. D mm	Dim. t mm	Dim. H mm
604 3 G	12	4	6	4,5	7	3	0,7	2,4
604 4 G	14	4	6	4,5	7	4	0,7	3,3
604 5 G	16,5	5	6	4,5	7	5	0,7	4,5
604 6 G	17,5	5	6	4,5	8	6	0,7	5,2
604 7 G	19,5	5	6	4,5	8	7	0,7	6,5
604 8 G	21	5,5	6	4,5	8	8	0,7	7
604 9 G	21,5	5,75	6	4,5	8	9	0,7	8
604 10 G	22	5	6	4,5	8	10	0,7	9
604 11 G	24	5,5	6	4,5	10	11	1	10
604 12 G	27	6,5	6	4,5	10	12	0,7	11
604 13 G	27	6	6	4,5	10	13	1	11,5
604 16 G	31	6,5	6	4,5	10	16	1	14,5
604 19 G	33	6,5	6	4,5	10	19	1	17
604 20 G	35	6,3	6	4,5	10	20	1	18
604 21 G	36	6,3	6	4,5	10	21	1	19
604 23 G	39	7	6	4,5	10	23	1	21,5
604 25 G	41	7	6	4,5	15	25	1	23
604 28 G	45	7	6	4,5	15	28	1	24,8
604 32 G	49	8	7	5,5	15	32	1,5	30
604 35 G	54	8,75	7	5,5	14	35	1,5	30
604 37 G	56	7,5	7	5,5	14	37	1,5	34
604 40 G	63	10,5	7	5,5	14	40	1,5	38
604 47 G	69	10	7	5,5	14	47	1,5	43,8

Bolt for cable fastening

GTP



Type	Dimension mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
KRS 5x16	5x16	Torx	100	0.240	3498096

Bolt with special milling ribs for PYROLINE® Con D and PYROLINE® Con S fire protection ducts, to fasten cable clips in the duct. Required plate thickness: At least 15 mm.

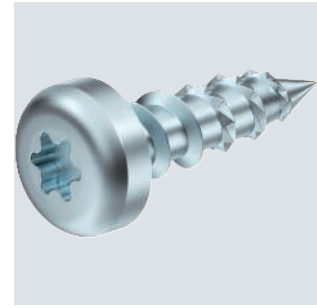
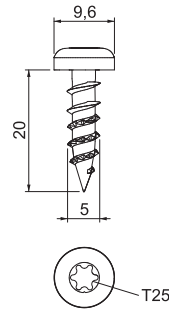


GTP

Bolt for cable fastening

Type	Dimension	Dim. L	Dim. D	Dim. d	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
KRS 5x20	5x20	20	9.6	5	Torx	100	0.260	3498098

Bolt with special milling ribs for PYROLINE® Con D and PYROLINE® Con S fire protection ducts, to fasten cable clips in the duct. Required plate thickness: At least 20 mm.



Fire protection duct mortar

Type	Contents kg	Pack Piece	Weight kg/100 pc.	Item no.
KTM	3.5	1	350.000	7215500

Dried mortar in a bucket for filling joints and small cracks when mounting the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.

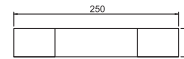


PVC

Identification plate for installation duct

Type	Language	Pack Piece	Weight kg/100 pc.	Item no.
KS-K DE	German	10	0.600	7214734

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

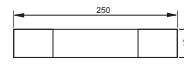


PVC

Identification plate for maintenance of electrical function

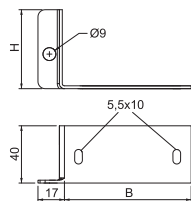
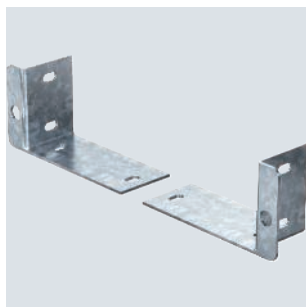
Type	Language	Pack Piece	Weight kg/100 pc.	Item no.
KS-E DE	German	10	0.600	7205423

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



KVS-2 connection set

FS

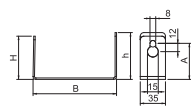
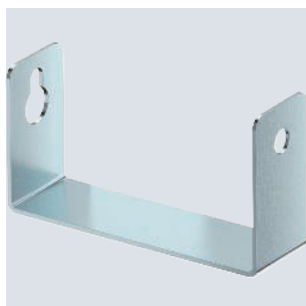


Type	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm			
KVS-2	70	72	1	2.000	7215383

Connection set as spare part for the PYROLINE® Con S fire protection duct, type BSKH09-K0521, along with the matching fittings, consisting of one connection plate on the left and one on the right.

Separating bracket for wall mounting

FS

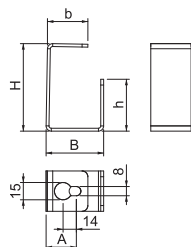


Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	H mm	h mm	B mm	A mm			
PLCD-SB0810	35	20	76	25	25	6.900	7215480
PLCD-SB1220	60	65	116	50	25	13.300	7215484

Separating bracket as installation aid for cable routing when mounting the PYROLINE® Con D fire protection duct on the wall. Mounting of the bracket directly on the fastening anchors of the fire protection duct.

Separating clamp for ceiling mounting

FS



Type	Dim.	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	H mm	h mm	B mm	b mm	A mm			
PLCD-SC0810	76	45	50	35	25	25	12.600	7215490
PLCD-SC1220	116	80	100	60	50	25	22.800	7215494

Separating clamp as installation aid for cable routing during ceiling mounting of the PYROLINE® Con D fire protection duct. Mounting of the clamp directly on the fastening anchors of the fire protection duct.





PYROLINE® Con S



PYROLINE® Con S concrete fire protection duct

38



PYROLINE® Con S PLC

concrete fire protection duct for suspended mounting

Installation principle



Suspended ceiling mounting



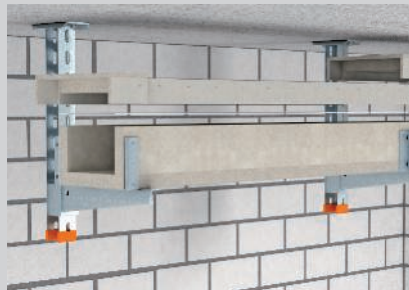
Wall mounting on brackets



Pre-mounted connection fastenings



Mounted T piece



Loose-fitting cover for quick inspection and retro-assignment



Jump



Wall connection with wall connection collar



Cables routed as individual cables or cable bundles

Classification according EN 13501-2

EI30

E30

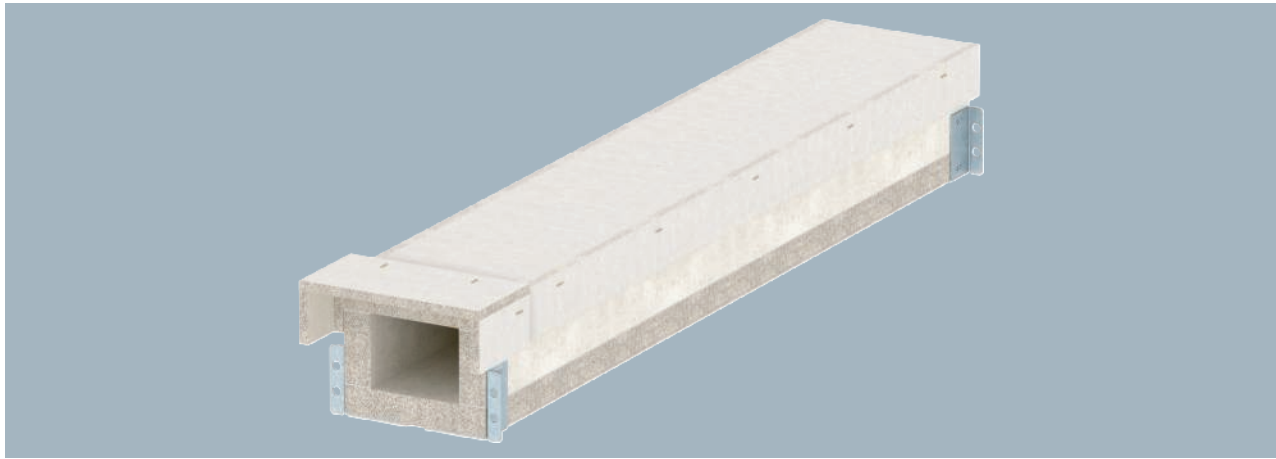
EI90

Installation duct from fibreglass reinforced light concrete

Fire resistance class	EI30, EI60, EI90
Proof of application	Classification report K-2400/150/15-MPA BS ETA certification: ETA-21/0755 Declaration of performance FC-0003
Testing standard	EN 1366-5
Classification standard	EN 13501-2

The data in the named proofs of applicability applies.

PYROLINE® Con S fire protection duct EI30 - EI60



Type	Pack	Weight	Item no.
	m	kg/100 m	
PLCS D060810	1	1,370.000	7217860
PLCS D061220	1	1,990.000	7217864

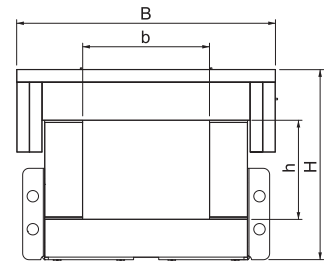
Fire protection duct made of water and frost-resistant fiberglass lightweight concrete of material class A1 according to EN 13501-1 for fireproof routing of cables in escape and rescue routes. EI30 - EI60 classification as installation duct according to EN 13501-2 on the basis of tests in accordance with EN 1366-5. When there is an internal fire load (cable fire), the duct prevents the spread of fire from one fire section to another.

Mounting of the duct on wall brackets or as ceiling mounting with suspended supports and brackets or on a U transverse profile suspended with threaded rods. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment.

Including connection screws and sealing strips.

Type	Dim. h	Dim. b	Dim. H	Dim. B
	mm	mm	mm	mm
PLCS D060810	80	100	150	208
PLCS D061220	120	200	190	308

Dimensions



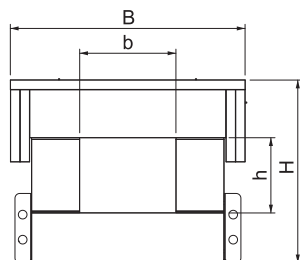
PYROLINE® Con S fire protection duct EI90



Fire protection duct made of water and frost-resistant fibreglass lightweight concrete of material class A1 according to EN 13501-1 for fireproof routing of cables in escape and rescue routes. EI60 classification as installation duct according to EN 13501-2 on the basis of tests according to EN 1366-5. When there is an internal fire load (cable fire), the duct prevents the spread of fire from one fire section to another. Mounting of the duct on wall brackets or as ceiling mounting with suspended supports and brackets or on a U transverse profile suspended with threaded rods. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.

Type	Pack	Weight	Item no.
	m	kg/100 m	
PLCS D090810	1	2,460.000	7217870
PLCS D091220	1	3,780.000	7217874

Dimensions

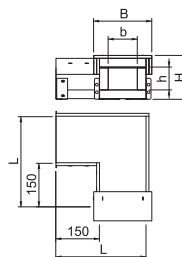


Type	Dim. h	Dim. b	Dim. H	Dim. B
	mm	mm	mm	mm
PLCS D090810	80	100	190	248
PLCS D091220	120	200	230	348

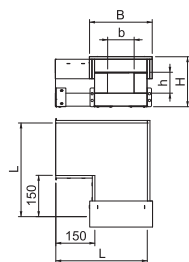
EI60 90° bend for PLCS D060810 fire protection duct

Type	Dim. b	Dim. h	Dim. B	Dim. H	Dim. L	Pack Piece	Weight kg/100 pc.	Item no.
	mm	mm	mm	mm	mm			
PLCS B060810	100	80	208	150	310	1	690.000	7217880
PLCS B061220	200	120	308	190	410	1	1,180.000	7217884

90° bend for PYROLINE® Con S EI30 - EI60 fire protection duct, consisting of water and frost-resistant fibreglass light concrete, for the creation of horizontal direction changes in the duct route. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.



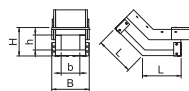
EI90 90° bend for PLCS D090810 fire protection duct



Type	Dim. b mm	Dim. h mm	Dim. B mm	Dim. H mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
PLCS B090810	100	80	248	190	350	1	1,010.000	7217890
PLCS B091220	200	120	348	230	450	1	2,120.000	7217894

90° bend for PYROLINE® Con S EI60 fire protection duct, consisting of fibre glass light concrete which is resistant to water and frost for the creation of horizontal changes of direction of the duct. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.

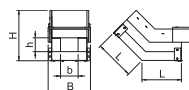
Rising vertical bend EI60 for PLCS D060810 fire protection duct



Type	Dim. b mm	Dim. h mm	Dim. B mm	Dim. H mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
PLCS VR060810	100	80	208	150	208	1	540.000	7217920
PLCS VR061220	200	120	308	190	225	1	820.000	7217924

Vertical bend, rising, for PYROLINE® Con S EI30 - EI60 fire protection duct, consisting of fibreglass light concrete which is resistant to water and frost for the creation of vertical changes of direction (45°) of the duct. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.

Rising vertical bend EI90 for PLCS D090810 fire protection duct



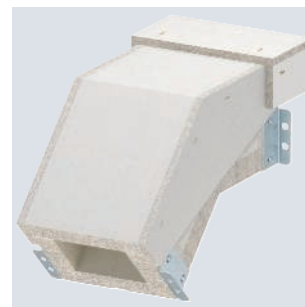
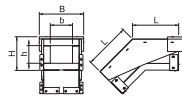
Type	Dim. b mm	Dim. h mm	Dim. B mm	Dim. H mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
PLCS VR090810	100	80	248	190	225	1	950.000	7217930
PLCS VR091220	200	120	348	230	241	1	1,450.000	7217934

Vertical bend, rising, for PYROLINE® Con S EI90 fire protection duct, consisting of fibre-glass light concrete which is resistant to water and frost for the creation of vertical changes of direction (45°) of the duct. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.

Falling vertical bend EI60 for PLCS D060810 fire protection duct

Type	Dim.	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	b mm	h mm	B mm	H mm	L mm			
PLCS VF060810	100	80	208	150	207	1	560.000	7217940
PLCS VF061220	200	120	308	190	224	1	860.000	7217944

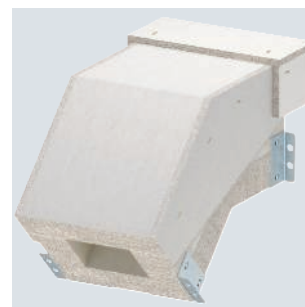
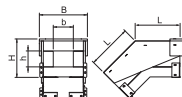
Falling vertical bend for PYROLINE® Con S EI30 - EI60 fire protection duct consisting of fibreglass light concrete which is resistant to water and frost for the creation of vertical changes of direction (45°) in the duct. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.



Falling vertical bend EI90 for PLCS D090810 fire protection duct

Type	Dim.	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	b mm	h mm	B mm	H mm	L mm			
PLCS VF090810	100	80	248	190	224	1	970.000	7217950
PLCS VF091220	200	120	348	230	240	1	1,470.000	7217954

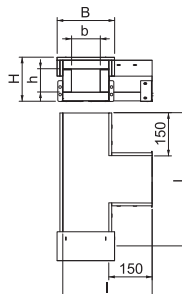
Vertical bend, falling, for PYROLINE® Con S EI90 fire protection duct, consisting of fibreglass light concrete which is resistant to water and frost for the creation of vertical changes of direction (45°) of the duct. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.



EI60 T piece for PLCS D060810 fire protection duct

Type	Dim.	Dim.	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	b mm	h mm	B mm	H mm	L mm	I mm			
PLCS T060810	100	80	208	150	460	310	1	870.000	7217900
PLCS T061220	200	80	308	190	560	410	1	1,390.000	7217904

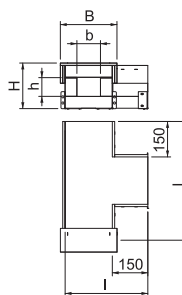
T piece for PYROLINE® Con S EI30 - EI60 fire protection duct, consisting of water and frost-resistant fibreglass light concrete, for the creation of T branches in the duct route. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.



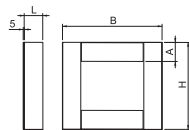
EI90 T piece for PLCS D090810 fire protection duct

Type	Dim.	Dim.	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	b mm	h mm	B mm	H mm	L mm	I mm			
PLCS T090810	100	80	248	190	500	350	1	1,600.000	7217910
PLCS T091220	200	120	348	230	600	450	1	2,550.000	7217914

T piece for PYROLINE® Con S EI90 fire protection duct, consisting of fibreglass light concrete which is resistant to water and frost, for the creation of T branches in the duct route. Mounted connectors ensure quick mounting in situ, whilst loosely placed covers ensure quick inspection and reassignment. Including connection screws and sealing strips.



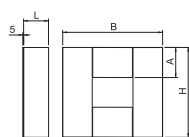
EI60 end piece for PLCS D060810 fire protection duct



Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	H	B	L	A			
PLCS E060810	143	160	30	30	1	80.000	7217980
PLCS E061220	183	260	30	30	1	90.000	7217984

End piece for PYROLINE® Con S EI30 - EI60 fire protection duct, consisting of water and frost-resistant fibreglass light concrete to close off the duct ends. Including countersunk head screws and stuck-on sealing strip.

EI90 end piece for PLCS D090810 fire protection duct



Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	H	B	L	A			
PLCS E090810	183	200	50	60	1	110.000	7217990
PLCS E091220	223	300	50	60	1	130.000	7217994

End piece for PYROLINE® Con S EI90 fire protection duct, consisting of fibreglass light concrete which is resistant to water and frost for closing the duct ends. Including countersunk head screws and stuck-on sealing strip.

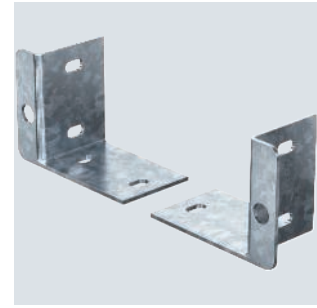
FS

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
KVS-1	58x58x40	1	22.000	7215381

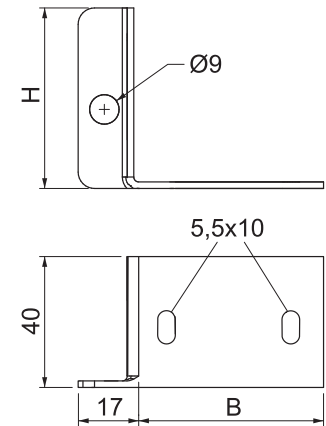
Connection set as spare part for the PYROLINE® Con S fire protection duct, type BSKH09-K0506 and BSKH09-K0511, along with the matching fittings, consisting of one connection plate on the left and one on the right.

Type	Dim. B mm	Dim. H mm
KVS-1	58	55

KVS-1 connection set



Dimensions

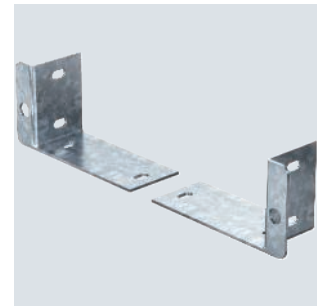


FS

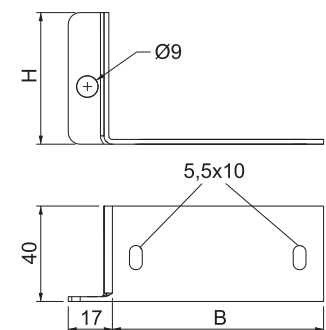
Type	Dim. B mm	Dim. H mm	Pack Piece	Weight kg/100 pc.	Item no.
KVS-3	90	55	1	26.000	7215385

Connection set as spare part for the PYROLINE® Con S fire protection duct, type BSKH09-K0521, along with the matching fittings, consisting of one connection plate on the left and one on the right.

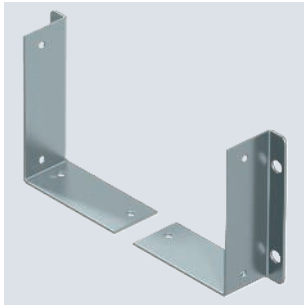
KVS-3 connection set



Dimensions



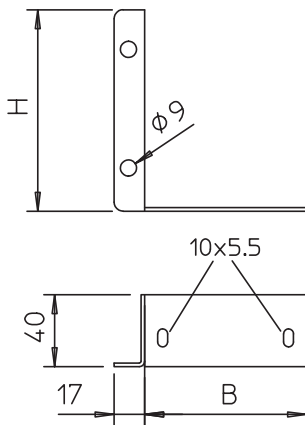
KVS-4 connection set



Type	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm			
KVS-4	90	112	1	40.000	7215389

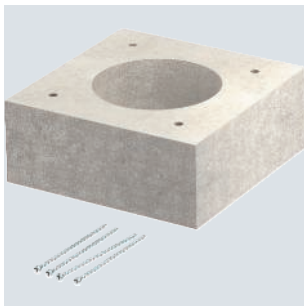
Connection set as spare part for the PYROLINE® Con S fire protection duct, type BSKH09-K1021, type PLCS D061220 and type PLCS D091220, along with the matching fittings, consisting of one connection plate on the left and one on the right.

Dimensions



Type	Dim.	
	B mm	H mm
KVS-4	90	112

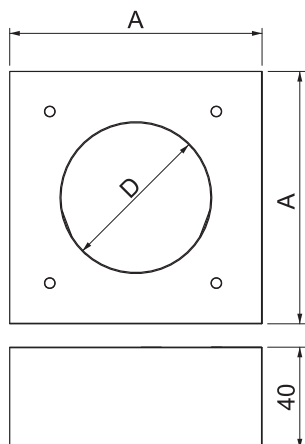
Doubler for PYROLINE® Con fire protection duct



Type	Pack Piece	Weight kg/100 pc.	Item no.
KAD-10040	1	44.000	7215462

Doubler for running individual cables and cable bundles out of the side wall of the PYROLINE® Con D and PYROLINE® Con S fire protection duct.

Dimensions



Type	Dim.	
	A mm	D mm
KAD-8040	80	40
KAD-10040	100	60

Insulation layer creator in a cartridge

Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
DSX-K	300	1	50.000	7202300

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for the closing of core drill holes when feeding through single cables and for closing the annular gap when exiting cables from the PYROLINE® Con PLC fire protection duct. 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.



Type	Dimension mm	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
KDS-40	5x40x7500	7500	1	18.100	7215436

Self-adhesive sealing strip for mounting in the joints of the individual duct sections and for the seal between the base and cover of the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.

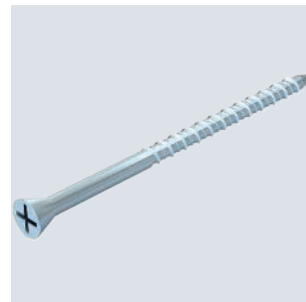
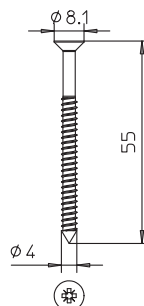
Sealing strip



Countersunk head screw for PYROLINE® Con fire protection ducts

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
KSS 4.0x55	4,0x55	50	0.340	7215400

Countersunk head screw as spare part for PYROLINE® Con fire protection ducts, to fasten lids, end pieces, wall connection collars and doublers with a plate thickness of 30 mm maximum.



Fire protection duct mortar

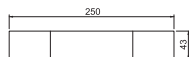
Type	Contents kg	Pack Piece	Weight kg/100 pc.	Item no.
KTM	3.5	1	350.000	7215500

Dried mortar in a bucket for filling joints and small cracks when mounting the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.



Identification plate for installation duct

PVC

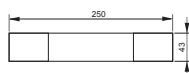


Type	Language	Pack	Weight	Item no.
		Piece	kg/100 pc.	
KS-K DE	German	10	0.600	7214734

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

Identification plate for maintenance of electrical function

PVC



Type	Language	Pack	Weight	Item no.
		Piece	kg/100 pc.	
KS-E DE	German	10	0.600	7205423

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

Wall connection collar I90 for internal height 50 mm



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

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

EI60 wall connection collar for PLCS D060810 fire protection duct



Type	Pack	Weight	Item no.
	Piece	kg/100 pc.	
PLCS W060810	1	80.000	7217960
PLCS W061220	1	116.000	7217964

Wall connection collar for PYROLINE® Con S EI30 - EI60 fire protection duct, consisting of fibreglass light concrete, which is resistant to water and frost, for mounting on the fire protection duct in the area of wall connections and wall penetrations. Consists of 4 single plates (width 50 mm, depth 30 mm). Including countersunk head screws.

EI90 wall connection collar for PLCS D090810 fire protection duct

Type	Pack Piece	Weight kg/100 pc.	Item no.
PLCS W090810	1	100.000	7217970
PLCS W091220	1	134.000	7217974

Wall connection collar for PYROLINE® Con S EI90 fire protection duct, consisting of fibre-glass light concrete, which is resistant to water and frost, for mounting on the fire protection duct in the area of wall connections and wall penetrations. Consists of 4 single plates (width 50 mm, depth 30 mm). Including countersunk head screws.



Mounting systems

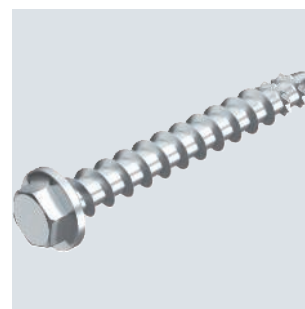
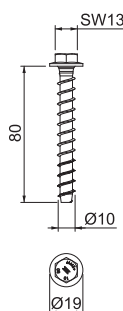


MMS-plus SS hexagonal tie, with pressed washer

Type	Dimension mm	Dim. L mm	Drill hole Ø mm	Drill hole SW mm	Pack Piece	Weight kg/100 pc.	Item no.
MMS+ SS 10x80	10x80	80	8	13	25	4.000	3498124

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With hex head drive and pressed washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets.

Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities under fire loads proven up to fire resistance class R120.



Type	Thread	Drill hole mm	Drill hole depth mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	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	3.180	3498372
BZ-IG M 10-0	M10	12	90	70	20	5.550	3498374
BZ-IG M 12-0	M12	16	105	86	20	11.700	3498376

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.

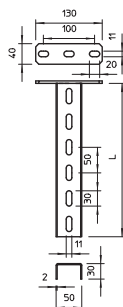


Bolt tie BZ-IG



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

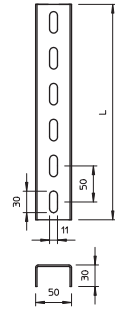
Suspended support (U profile) of dimensions 50 x 30 mm with welded head plate.



US 3 support

US 3 support

FS

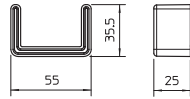


Type	Length mm	Material thickness mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
US 3 20 FS	200	2		1	27.000	6342302
US 3 30 FS	300	2		1	40.000	6342304
US 3 40 FS	400	2		1	53.000	6342306

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

Protective cap

PE

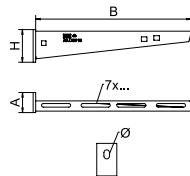


Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
US 3 KS OR	Pastel orange	20	1.068	6338458

Protective cap to cover the ends of US 3 supports.

Wall and support bracket AW 15

FT

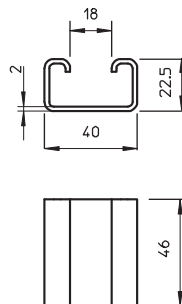


Type	Width mm	Dim. H mm	Dim. A mm	Dim. B mm	Hole Ø mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
AW 15 16 FT	160	55	40	160	11		1	20.000	6420664
AW 15 21 FT	210	60	40	210	11		1	24.000	6420680
AW 15 31 FT	310	65	40	310	11		1	38.400	6420710

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

DSK 25 spacer

FT



Type	Pack Piece	Weight kg/100 pc.	Item no.
DSK 25 FT	20	7.500	6416446

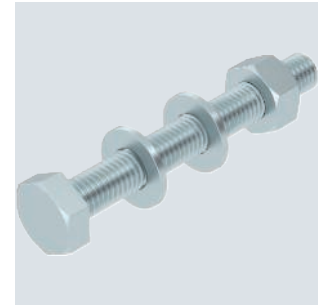
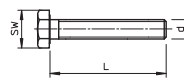
Spacer for use in US 3 supports.

F

Hexagonal bolt M10

Type	Dimen- sion mm	Dim. L mm	Dim. d mm	SW mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x80 F	M 10x80	80	10	17	8.8	20	6.900	6418250

Hexagonal bolt for universal fastening of construction components. With hexagonal nut and 2 washers.

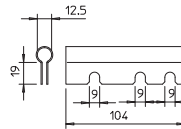


FS

Threaded rod adapter E30

Type	Pack Piece	Weight kg/100 pc.	Item no.
KGA	1	5.700	7215395

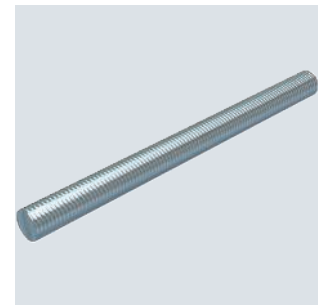
Adapter to accept threaded rods for the PYROLINE® Con S BSKH application as an E duct for the maintenance of electrical function. The adapter is fastened to the duct connectors.



Threaded rod

Type	Thread	Dim. d mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
TR M10 1M G	M10	10	1000	10	49.000	3141209

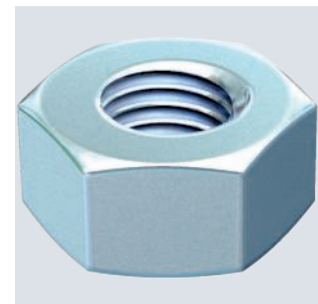
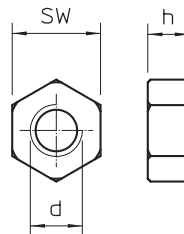
Threaded rod to DIN 976.



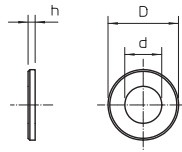
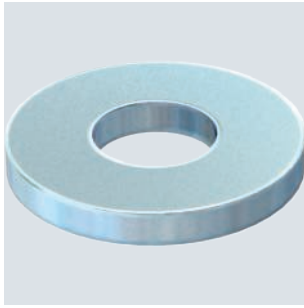
Hexagonal nut DIN 934

Type	Thread	SW mm	Dim. h mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
HN M10 G	M10	17	8.4	10	100	1.014	3400107

Hexagonal nut to DIN 934 with metric thread.



Washer

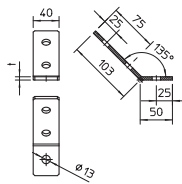
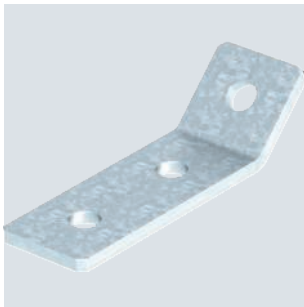


Type	Thread	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		d mm	D mm	h mm			
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096

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

Mounting bracket, 45° with 3 holes

FT

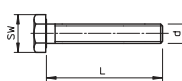


Type	Version	Shipping box	Pack Piece	Weight kg/100 pc.	Item no.
		Piece			
GMS 3 VW 45 FT	45° angle	40	10	24.010	1124667

Mounting bracket with three holes to connect profile rails 41 x 41 mm and 41 x 21 mm at an angle of 45°.

Hexagonal bolt DIN 933

ZL

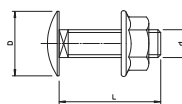
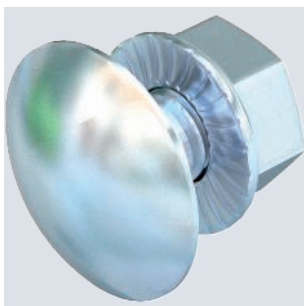


Type	Thread	Dimen-	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		sion mm	L mm	d mm			
SKS M6x30 ZL	M6	M6x30	30	6	10	0.780	3156710

Hexagonal bolt according to DIN 933 with metric thread. Resistance grade at least 8.8.

Truss-head bolt with flange nut

F



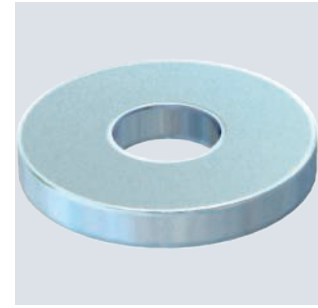
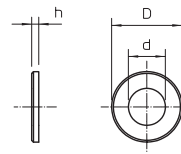
Type	Dimen-	Dim.	Dim.	Dim.	Resist-	Pack Piece	Weight kg/100 pc.	Item no.
FRSB 6x16 F	M6 x 16	16	6	13.5	5.6	100	0.890	6406157

Truss-head bolt with square neck including flange nut.

Washer ISO 7093

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M6 D28 G	M6	6.5	28	2.5	100	1.104	3402207
WS M10 D28 G	M10	11	28	2.5	100	1.020	3402223

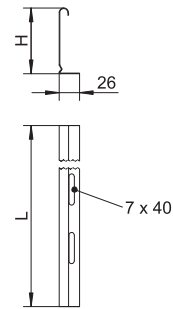
Washer of large outer diameter for universal use.



FS

Type	Dim. H mm	Metal thick-ness mm	Dim. L mm	Pack m	Weight kg/100 m	Item no.
TSG 45 FS	45	0.75	3000	3	46.700	6062033

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



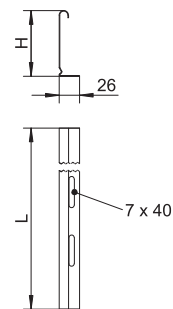
Separating retainer 45



FS

Type	Dim. H mm	Metal thick-ness mm	Dim. L mm	Pack m	Weight kg/100 m	Item no.
TSG 85 FS	85	0.75	3000	3	70.233	6062114

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



Separating retainer 85

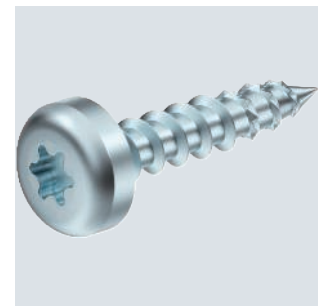
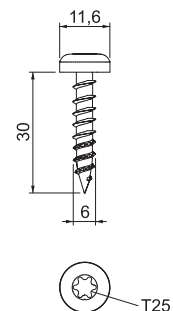


GTP

Type	Dimen-sion mm	Dim. L mm	Dim. D mm	Dim. d mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
KRS 6x30	6x30	30	11.6	6	Torx	200	0.276	3498100

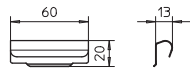
Bolt with special milling ribs for PYROLINE® Con S fire protection ducts, to fasten separating retainers in the duct.

Bolt for separating retainer fastening



Separating retainer connector

VA 2B

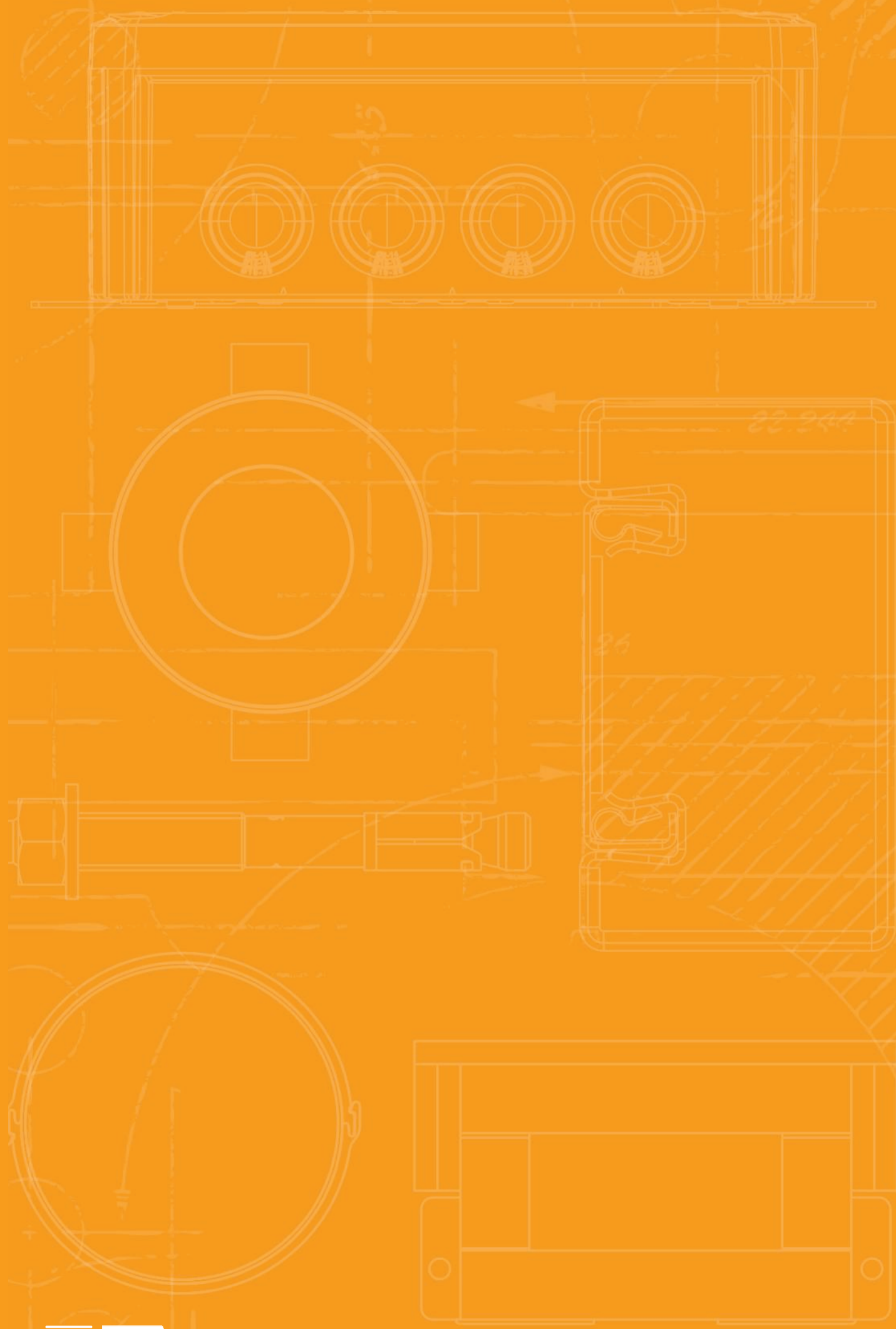


Type	Pack Piece	Weight kg/100 pc.	Item no.
TSGV A2	10	0.899	6067970

Separating retainer connector for screwless connection of the TSG separating retainer in all side heights.







PYROLINE® Sun PV



PYROLINE® Sun PV concrete fire protection duct

58



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 fibreglass 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

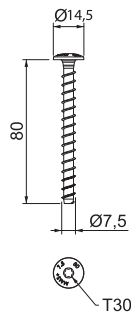
I30

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.

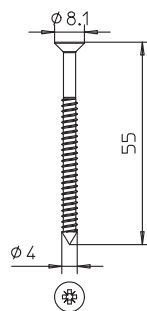
MMS-plus P round head tie, with panhead



Type	Dimension mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With round head for universal fastenings. Torx drive T30. Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities under fire loads proven up to fire resistance class R120.

Countersunk head screw for PYROLINE® Con fire protection ducts

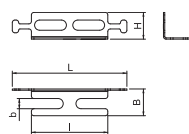


Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.

Countersunk head screw as spare part for PYROLINE® Con fire protection ducts, to fasten lids, end pieces, wall connection collars and doublers with a plate thickness of 30 mm maximum.

Cable bracket, vertical, for PYROLINE® fire protection ducts

FS

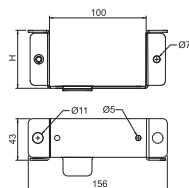
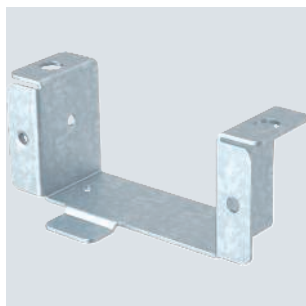


Type	Dim. H mm	Dim. B mm	Dim. L mm	Dim. I mm	Dim. b mm	Pack Piece	Weight kg/100 pc.	Item no.

Universal cable bracket for the vertical installation of cables in PYROLINE® Con fire protection ducts made of fiberglass-reinforced, lightweight concrete, as well as PYROLINE® Rapid made of sheet steel with an internal coating. The holders are plugged over the head of the loosened fastening screw and then screwed tight to it. The cables can be fastened using cable ties on the lugs or in the slots of the holder. This safely supports the cable weight. Plan at least two cable brackets per metre during installation.

Connector for suspended mounting

FS



Type	Dim. H mm	Pack Piece	Weight kg/100 pc.	Item no.

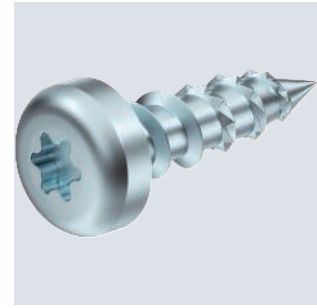
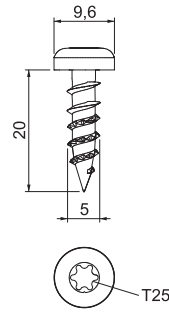
Connector for use of the fire protection duct BSKP 0406, as suspended variant. The set contains 2 connectors and the appropriate quantity of fastening and connection screws.

GTP

Bolt for cable fastening

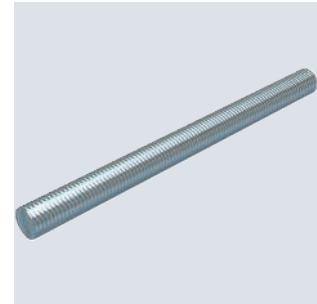
Type	Dimension mm	Dim. L mm	Dim. D mm	Dim. d mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
KRS 5x20	5x20	20	9.6	5	Torx	100	0.260	3498098

Bolt with special milling ribs for PYROLINE® Con D and PYROLINE® Con S fire protection ducts, to fasten cable clips in the duct. Required plate thickness: At least 20 mm.



Type	Thread	Dim. d mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
TR M10 1M G	M10	10	1000	10	49.000	3141209

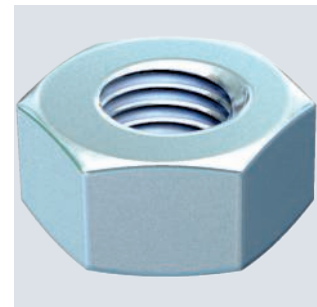
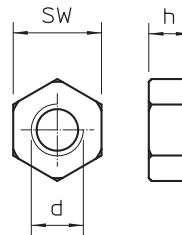
Threaded rod to DIN 976.



Threaded rod

Type	Thread	SW mm	Dim. h mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
HN M10 G	M10	17	8.4	10	100	1.014	3400107

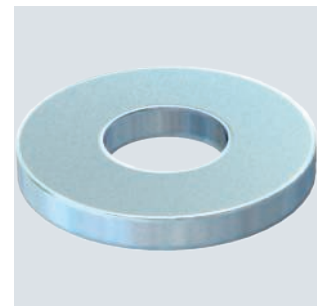
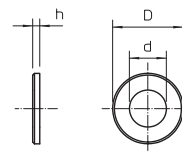
Hexagonal nut to DIN 934 with metric thread.



Hexagonal nut DIN 934

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096

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



Washer

Fire protection duct mortar



Type	Contents		Pack	Weight	Item no.
	kg		Piece	kg/100 pc.	
KTM	3,5		1	350.000	7215500

Dried mortar in a bucket for filling joints and small cracks when mounting the PYROLINE® Con D and PYROLINE® Con S fire protection ducts.

Identification plate

PVC



Type	Language		Pack	Weight	Item no.
			Piece	kg/100 pc.	
KS-BSKP DE	German		1	2.400	7214725

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

Identification plate for installation duct

PVC

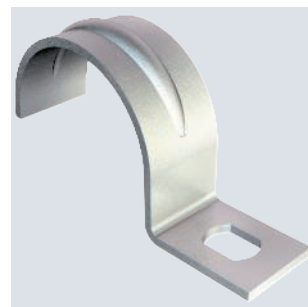


Type	Language		Pack	Weight	Item no.
			Piece	kg/100 pc.	
KS-K DE	German		10	0.600	7214734

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

Fastening clip 604, light duty

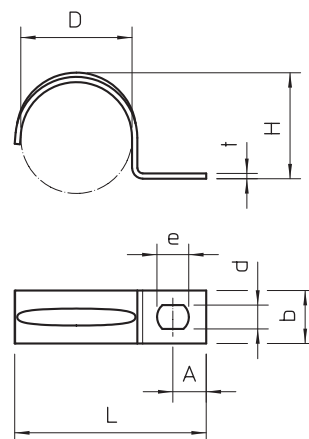
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
604 3 G	3	4,5x6	0.7	100	0.052	1003038
604 4 G	4	4,5x6	0.7	100	0.067	1003046
604 5 G	5	4,5x6	0.7	100	0.084	1003054
604 6 G	6	4,5x6	0.7	100	0.099	1003062
604 7 G	7	4,5x6	0.7	100	0.120	1003070
604 8 G	8	4,5x6	0.7	100	0.123	1003089
604 9 G	9	4,5x6	0.7	100	0.139	1003097
604 10 G	10	4,5x6	0.7	100	0.150	1003100



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

Type	Dim. L mm	Dim. A mm	Dim. e mm	Dim. d mm	Dim. b mm	Dim. D mm	Dim. t mm	Dim. H mm
604 3 G	12	4	6	4.5	7	3	0.7	2.4
604 4 G	14	4	6	4.5	7	4	0.7	3.3
604 5 G	16.5	5	6	4.5	7	5	0.7	4.5
604 6 G	17.5	5	6	4.5	8	6	0.7	5.2
604 7 G	19.5	5	6	4.5	8	7	0.7	6.5
604 8 G	21	5.5	6	4.5	8	8	0.7	7
604 9 G	21.5	5.75	6	4.5	8	9	0.7	8
604 10 G	22	5	6	4.5	8	10	0.7	9

Dimensions

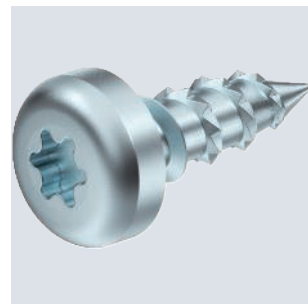
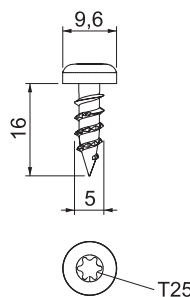


GTP

Type	Dimension mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
KRS 5x16	5x16	Torx	100	0.240	3498096

Bolt with special milling ribs for PYROLINE® Con D and PYROLINE® Con S fire protection ducts, to fasten cable clips in the duct. Required plate thickness: At least 15 mm.

Bolt for cable fastening





PYROLINE® Rapid PLM



Fire protection duct PYROLINE Rapid LKM, metal duct

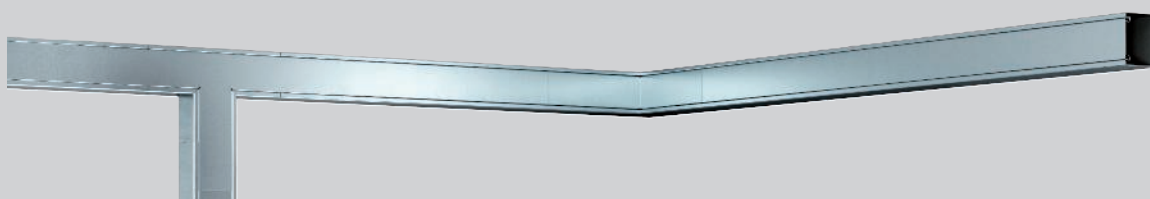
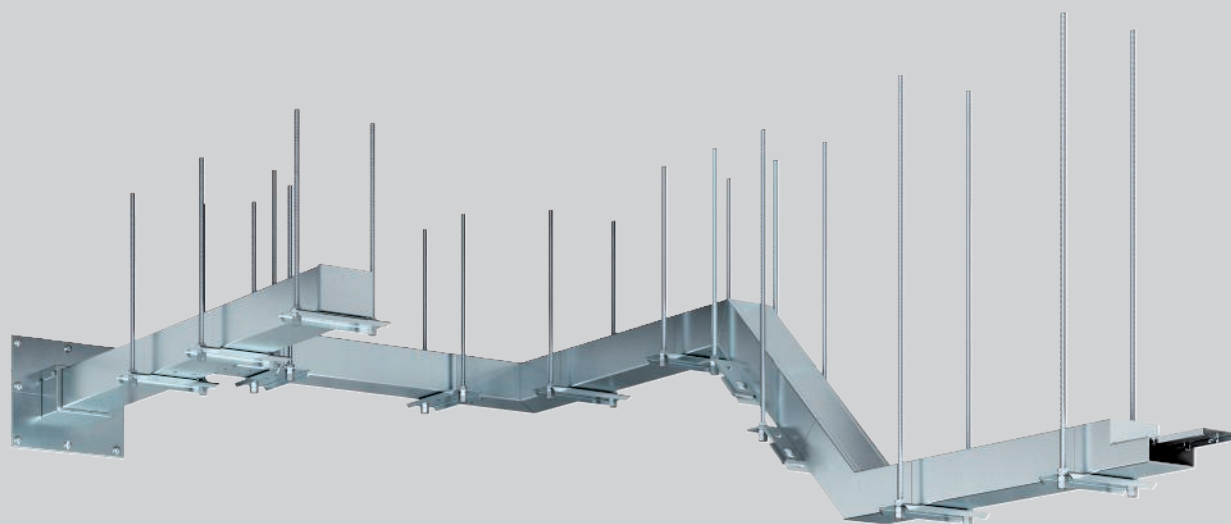
66



PYROLINE® Rapid PLM

Fire protection duct system made from metal

System description



The PYROLINE® Rapid PLM fire protection duct system is a closed system, made of sheet steel with a profiled cover closure contour, which, if there is an electrical cable fire, helps to protect the surrounding area by intumescence of the internal fire protection mesh. In the event of a fire, the fire protection mesh provides active fire load encapsulation and prevents the spread of the fire. The PYROLINE® Rapid PLM is tested as a fire-resistant electrical installation duct and fulfils the classification according to EN 13501-2 EI30 (ho

i→o) to E120 (ho i→o). The fire protection duct system can be installed directly on the wall or ceiling. Suspended mounting on different cable tray systems is also possible. Thanks to the innovative connection technology with the internal connector, the installation duct is sealed on the inside. This means that no external impacts at joints are visible. The connection technology also enables you to offset the duct trough and duct cover. By doing so the installation is made more stable mechanically.

PYROLINE® Rapid PLM

Fire protection duct system made from metal

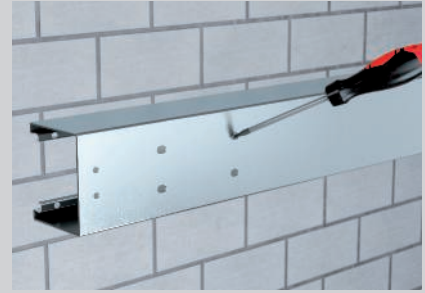
Installation principle



Direct wall mounting.



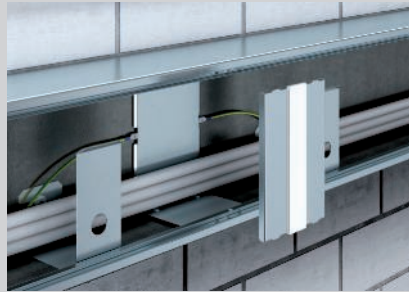
Suspended mounting on cable support systems.



Piercing of the fire protection mesh in the area of the base perforation.



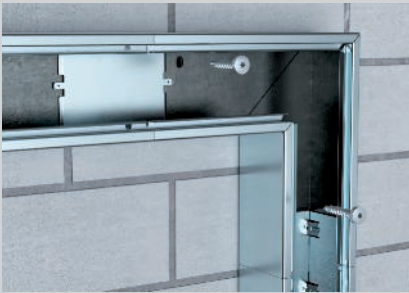
Internal connector for duct trough.



Cover support for duct cover sealing.



Offset between duct trough and duct cover.



Direct wall mounting with flat angle.



Suspended mounting with flat angle.



Room corner mounting.

Classification according EN 13501-2

EI30

EI60

EI90

E120

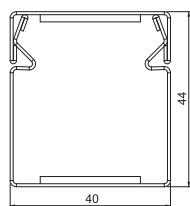
Installation duct made from metal with active fire behaviour

Fire resistance class	EI30 (ho i→o), EI60 (ho i→o), EI90 (ho i→o), E120 (ho i→o)
Proof of application	European Technical Assessment, ETA-Danmark
Testing standard	EN 1366-5

PYROLINE Rapid PLM metal duct, duct width 40 mm, duct height 44 mm

FS P

Installation duct with PYROLINE® Rapid PLM fire protection mesh, duct height 44 mm

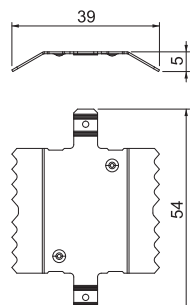
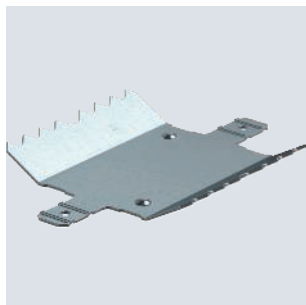


Type	Colour	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		B	H	L			
PLM D 0404 FS	–	40	44	2000	2	143.000	7218000
PLM D 0404 RW	Pure white	40	44	2000	2	143.000	7218002

Metal installation duct with intumescent fire protection mesh for fireproof routing of cables. Classified as an installation duct EI30, EI60 and EI90 according to EN 13501-2, tested according to EN 1366-5. The duct prevents the fire spread for the classified period of time, offering protection against the effects of a cable fire. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. Only approved pre-terminated fittings may be used. The cover is snapped on without tools, allowing rapid inspection and retroassignment. Offset cover mounting for continuous equipotential bonding of the entire duct section.

Joint connector, duct height 44 mm

VA BK



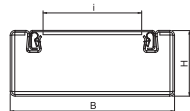
Type	Pack	Weight	Item no.
PLM SI 0404	5	0.270	7218027

Joint connector for toolless mounting of PYROLINE® Rapid PLM installation duct.

PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 40 mm

FS P

Installation duct with PYROLINE® Rapid PLM fire protection mesh, duct height 40 mm



Type	Dim. B	Dim. H	Dim. i	Dim. L	Colour	Pack	Weight	Item no.
PLM D 0410 FS	100	40	62	2000	–	2	297.500	7218004
PLM D 0410 RW	100	40	62	2000	Pure white	2	297.500	7218006

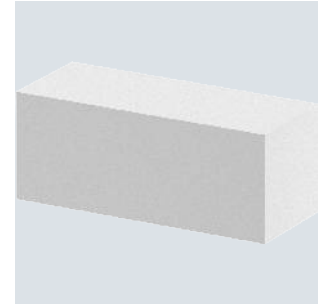
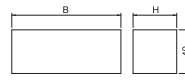
Metal installation duct with intumescent fire protection mesh for fireproof routing of cables. Classified as an installation duct EI30, EI60 and EI90 according to EN 13501-2, tested according to EN 1366-5. The duct prevents the fire spread for the classified period of time, offering protection against the effects of a cable fire. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. Only approved pre-terminated fittings may be used. The cover is snapped on without tools, allowing rapid inspection and retroassignment. Offset cover mounting for continuous equipotential bonding of the entire duct section.

PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 40 mm

Foam seal, duct height 40 mm

Type	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm			
PLM CO 0410	100	40	1	0.310	7218158

Flexibly adjustable foam seal for PYROLINE® Rapid PLM installation duct to seal cable bundles or cables with a large external diameter for cable exits from the installation duct. The surface must be additionally sealed with the ASX ablation coating.

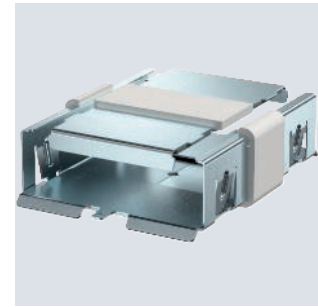
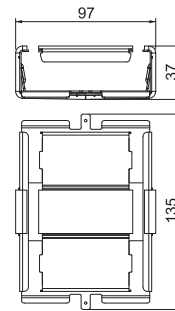


FS

Joint connector set, duct height 40 mm

Type	Pack Piece	Weight kg/100 pc.	Item no.
PLM SI 0410	1	22.000	7218028

Joint connector set, consisting of a connector for the duct base and cover support. With integrated seal for toolless connection of the PYROLINE® Rapid PLM installation duct and fittings. Allows continuous connection of the protective conductors.

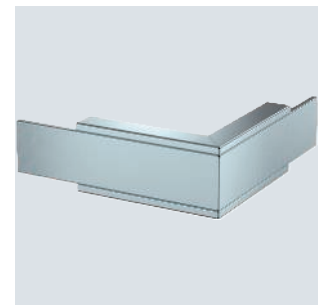
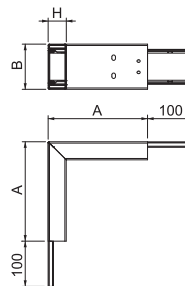


FS P

External corner, duct height 40 mm

Type	Colour	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM EC 0410 FS	—	220	100	40	1	135.000	7218038
PLM EC 0410 RW	Pure white	220	100	40	1	142.100	7218040

External corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

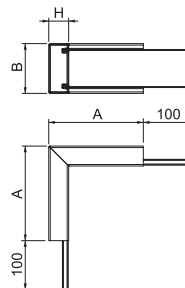


FS P

Internal corner, duct height 40 mm

Type	Colour	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM IC 0410 FS	—	190	100	40	1	116.000	7218050
PLM IC 0410 RW	Pure white	190	100	40	1	116.000	7218052

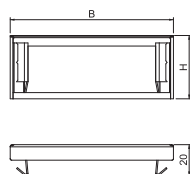
Internal corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.



PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 40 mm

End piece, duct height 40 mm

FS P

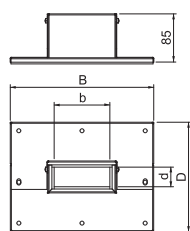


Type	Colour	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		B mm	H mm			
PLM EP 0410 FS	—	105	41	1	5.550	7218086
PLM EP 0410 RW	Pure white	105	41	1	5.550	7218088

End piece with intumescent fire protection mesh to close the PYROLINE® Rapid PLM installation duct.

Wall connection collar, 4-sided, duct height 40 mm

FS P

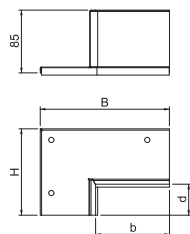
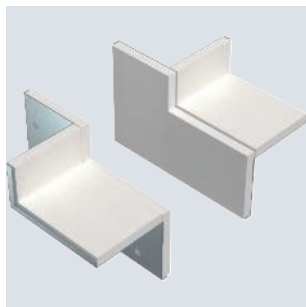


Type	Colour	Dim.				Pack Piece	Weight kg/100 pc.	Item no.
		B mm	b mm	D mm	d mm			
PLM WC 0410 FS	—	252	100	192	40	1	55.300	7218122
PLM WC 0410 RW	Pure white	252	100	192	40	1	55.300	7218124

Wall connection collar, 4-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Can also be used as 3-sided wall connection collar for direct wall or ceiling mounting of the duct.

Wall connection set, 2-sided, for corner mounting, duct height 40 mm

FS P

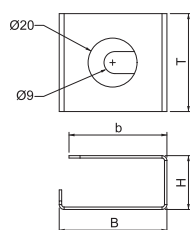
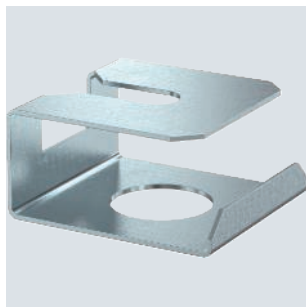


Type	Colour	Dim.				Pack Piece	Weight kg/100 pc.	Item no.
		B mm	H mm	b mm	d mm			
PLM CC 0410 FS	—	175	117	100	42	1	41.920	7218134
PLM CC 0410 RW	Pure white	175	117	100	42	1	41.920	7218136

Wall connection collar, 2-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Set consisting of 2 opposing components, suitable for ceiling or wall mounting of the installation duct.

Pressure clip for ceiling mounting, duct height 40 mm

FS



Type	Colour	Dim.				Pack Piece	Weight kg/100 pc.	Item no.
		B mm	H mm	T mm	b mm			
PLM CB 0410 FS	—	44	22	40	40	10	2.800	7218146

Installation aid against cables falling out for ceiling mounting of the PLM D 0410 installation duct.

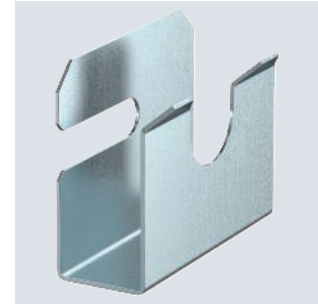
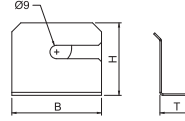
PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 40 mm

FS

Pressure clip for wall mounting, duct height 40 mm

Type	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	T mm			
PLM WB 0410 FS	60	49	22	10	4.600	7218152

Installation aid against cables falling out for wall mounting of the PLM D 0410 installation duct.



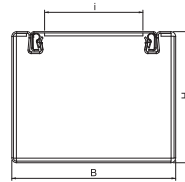
PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 80 mm

FS P

Installation duct with PYROLINE® Rapid PLM fire protection mesh, duct height 80 mm

Type	Dim.		Dim. i	Dim. L	Colour	Pack m	Weight kg/100 m	Item no.
	B mm	H mm						
PLM D 0810 FS	100	80	62	2000	—	2	379.500	7218008
PLM D 0810 RW	100	80	62	2000	Pure white	2	379.500	7218010

Metal installation duct with intumescent fire protection mesh for fireproof routing of cables. Classified as an installation duct EI30, EI60 and EI90 according to EN 13501-2, tested according to EN 1366-5. The duct prevents the fire spread for the classified period of time, offering protection against the effects of a cable fire. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. Only approved pre-terminated fittings may be used. The cover is snapped on without tools, allowing rapid inspection and retroassignment. Offset cover mounting for continuous equipotential bonding of the entire duct section.

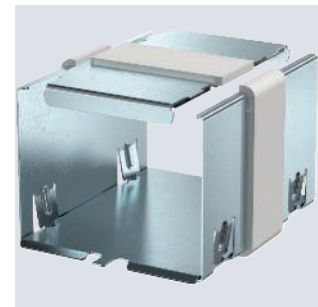
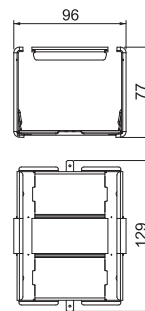


FS

Joint connector set, duct height 80 mm

Type	Pack Piece	Weight kg/100 pc.	Item no.
PLM SI 0810	1	27.000	7218030

Joint connector set, consisting of a connector for the duct base and cover support. With integrated seal for toolless connection of the PYROLINE® Rapid PLM installation duct and fittings. Allows continuous connection of the protective conductors.

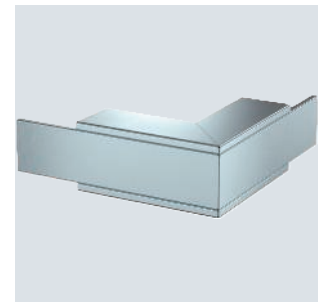
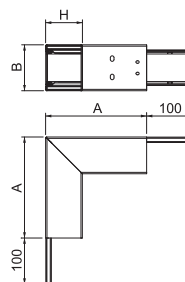


FS P

External corner, duct height 80 mm

Type	Colour	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM EC 0810 FS	—	220	100	80	1	152.000	7218042
PLM EC 0810 RW	Pure white	220	100	80	1	158.800	7218044

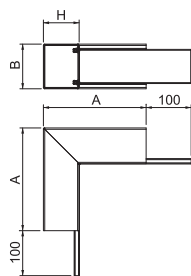
External corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.



PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 80 mm

Internal corner, duct height 80 mm

FS P

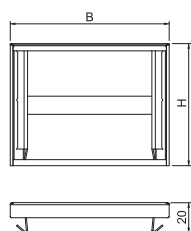


Type	Colour	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		A	B	H			
PLM IC 0810 FS	—	230	100	80	1	156.000	7218054
PLM IC 0810 RW	Pure white	230	100	80	1	156.000	7218056

Internal corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

End piece, duct height 80 mm

FS P

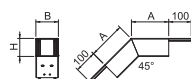


Type	Colour	Dim.	Dim.	Pack	Weight	Item no.
		B	H			
PLM EP 0810 FS	—	105	81	1	10.840	7218090
PLM EP 0810 RW	Pure white	105	81	1	10.840	7218092

End piece with intumescent fire protection mesh to close the PYROLINE® Rapid PLM installation duct.

Vertical bend, falling, duct height 80 mm

FS P

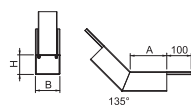


Type	Colour	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		A	B	H			
PLM BF 0810 FS	—	165	100	80	1	129.000	7218106
PLM BF 0810 RW	Pure white	165	100	80	1	129.000	7218108

45° vertical bend, falling version, with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

Vertical bend, rising, duct height 80 mm

FS P



Type	Colour	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		A	B	H			
PLM BR 0810 FS	—	150	100	80	1	138.000	7218114
PLM BR 0810 RW	Pure white	150	100	80	1	138.000	7218116

45° vertical bend, rising version, with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

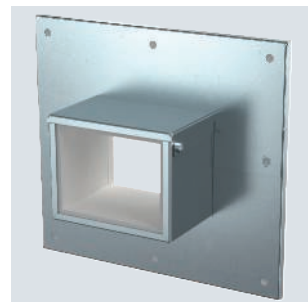
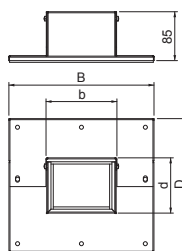
PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 80 mm

FS P

Wall connection collar, 4-sided, duct height 80 mm

Type	Colour	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		B mm	b mm	D mm	d mm			
PLM WC 0810 FS	–	252	100	232	80	1	65.300	7218126
PLM WC 0810 RW	Pure white	252	100	232	80	1	64.300	7218128

Wall connection collar, 4-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Can also be used as 3-sided wall connection collar for direct wall or ceiling mounting of the duct.

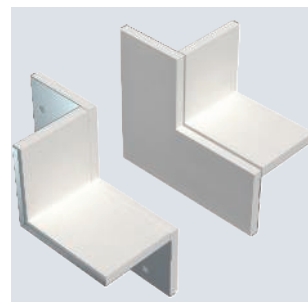
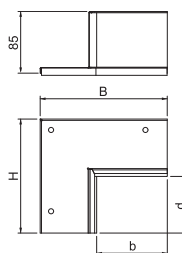


FS P

Wall connection set, double-sided, for corner mounting, duct height 80 mm

Type	Colour	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		B mm	H mm	b mm	d mm			
PLM CC 0810 FS	–	175	157	100	82	1	49.780	7218138
PLM CC 0810 RW	Pure white	175	157	100	82	1	49.780	7218140

Wall connection collar, 2-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Set consisting of 2 opposing components, suitable for ceiling or wall mounting of the installation duct.

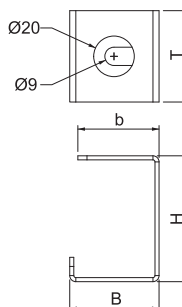


FS

Pressure clip for ceiling mounting, duct height 80 mm

Type	Dim.	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	T mm	b mm			
PLM CB 0810 FS	44	62	45	40	10	9.300	7218148

Installation aid against cables falling out during ceiling mounting of the PLM D 0810 installation duct.

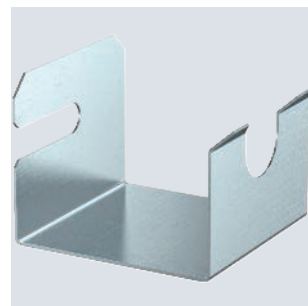
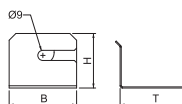


FS

Pressure clip for wall mounting, duct height 80 mm

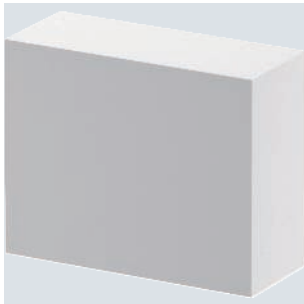
Type	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	T mm			
PLM WB 0810 FS	60	49	62	10	6.400	7218154

Installation aid against cables falling out during wall mounting of the PLM D 0810 installation duct.



PYROLINE Rapid PLM metal duct, duct width 100 mm, duct height 80 mm

Foam seal, duct height 80 mm



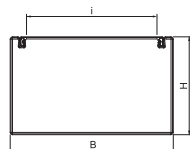
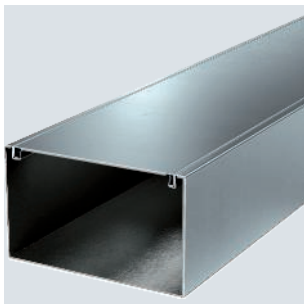
Type	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm			
PLM CO 0810	100	80	1	0.482	7218160

Flexibly adjustable foam seal for PYROLINE® Rapid PLM installation duct to seal cable bundles or cables with a large external diameter for cable exits from the installation duct. The surface must be additionally sealed with the ASX ablation coating.

PYROLINE Rapid PL metal duct, duct width 200 mm, duct height 120 mm

Installation duct with PYROLINE® Rapid PLM fire protection mesh, duct height 120 mm

FS P

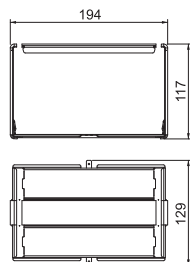
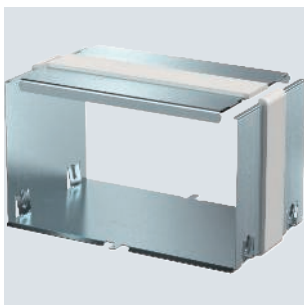


Type	Dim.		Dim.		Dim. i	Colour	Pack m	Weight kg/100 m	Item no.
	B mm	H mm	mm	mm					
PLM D 1220 FS	200	120	162	2000	—	2	642.500	7218012	
PLM D 1220 RW	200	120	162	2000	Pure white	2	642.500	7218014	

Metal installation duct with intumescent fire protection mesh for fireproof routing of cables. Classified as an installation duct EI30, EI60 and EI90 according to EN 13501-2, tested according to EN 1366-5. The duct prevents the fire spread for the classified period of time, offering protection against the effects of a cable fire. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. Only approved pre-terminated fittings may be used. The cover is snapped on without tools, allowing rapid inspection and reassignment. Offset cover mounting for continuous equipotential bonding of the entire duct section.

Joint connector set, duct height 120 mm

FS



Type	Pack Piece	Weight kg/100 pc.	Item no.
PLM SI 1220	1	42.000	7218032

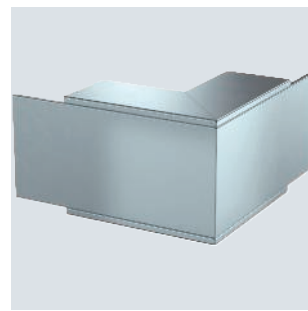
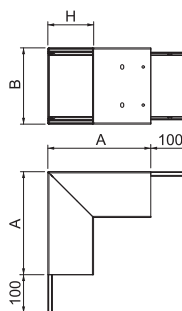
Joint connector set, consisting of a connector for the duct base and cover support. With integrated seal for toolless connection of the PYROLINE® Rapid PLM installation duct and fittings. Allows continuous connection of the protective conductors.

FS P

External corner, duct height 120 mm

Type	Colour	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM EC 1220 FS	—	270	200	120	1	300.000	7218046
PLM EC 1220 RW	Pure white	270	200	120	1	300.000	7218048

External corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

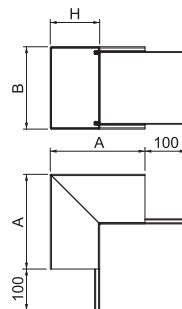


FS P

Internal corner, duct height 120 mm

Type	Colour	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM IC 1220 FS	—	230	200	120	1	246.000	7218058
PLM IC 1220 RW	Pure white	230	200	120	1	246.000	7218060

Internal corner with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

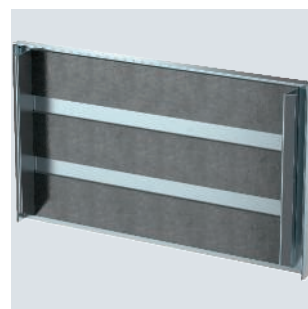
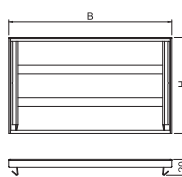


FS P

End piece, duct height 120 mm

Type	Colour	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		B mm	H mm			
PLM EP 1220 FS	—	205	121	1	25.670	7218094
PLM EP 1220 RW	Pure white	205	121	1	25.670	7218096

End piece with intumescent fire protection mesh to close the PYROLINE® Rapid PLM installation duct.

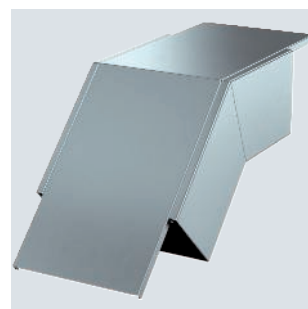
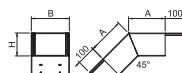


FS P

Vertical bend, falling, duct height 120 mm

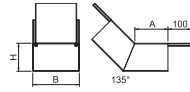
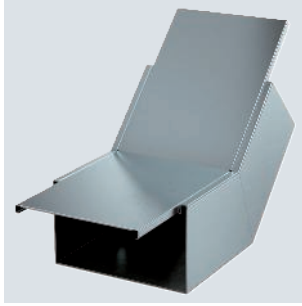
Type	Colour	Dim.	Dim.	Dim.	Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm	H mm			
PLM BF 1220 FS	—	190	200	120	1	243.000	7218110
PLM BF 1220 RW	Pure white	190	200	120	1	243.000	7218112

45° vertical bend, falling version, with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.



Vertical bend, rising, duct height 120 mm

FS P

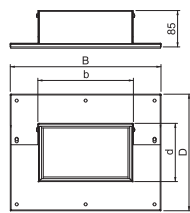
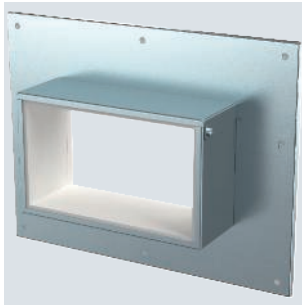


Type	Colour	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		A	B	H			
PLM BR 1220 FS	—	142	200	120	1	242.000	7218118
PLM BR 1220 RW	Pure white	142	200	120	1	242.000	7218120

45° vertical bend, rising version, with intumescent fire protection mesh for PYROLINE® Rapid PLM installation duct. Suitable for direct wall and ceiling mounting, mounting below system floors and on support systems. Tool-free joint mounting with PLM SI joint connector. The cover is snapped on without tools, allowing rapid inspection and retroassignment. The cover overhang allows offset cover mounting for continuous equipotential bonding of the entire duct section.

Wall connection collar, 4-sided, duct height 120 mm

FS P

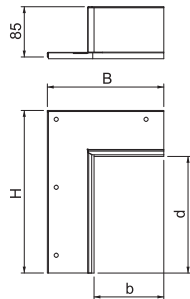
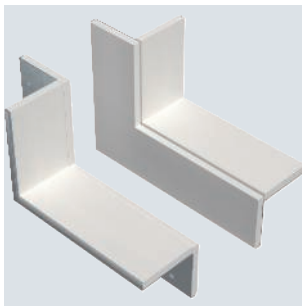


Type	Colour	Dim.	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		B	b	D	d			
PLM WC 1220 FS	—	352	200	272	120	1	94.600	7218130
PLM WC 1220 RW	Pure white	352	200	272	120	1	94.600	7218132

Wall connection collar, 4-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Can also be used as 3-sided wall connection collar for direct wall or ceiling mounting of the duct.

Wall connection set, double-sided, for corner mounting, duct height 120 mm

FS P

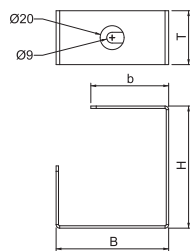


Type	Colour	Dim.	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		B	b	H	d			
PLM CC 1220 FS	—	275	200	197	122	1	77.160	7218142
PLM CC 1220 RW	Pure white	275	200	197	122	1	77.160	7218144

Wall connection collar, 2-sided, with integrated seal for PYROLINE® Rapid PLM installation duct. For mounting in the area of wall and ceiling connections as well as wall penetrations in room corners. Set consisting of 2 opposing components, suitable for ceiling or wall mounting of the installation duct.

Pressure clip for ceiling mounting, duct height 120 mm

FS



Type	Colour	Dim.	Dim.	Dim.	Dim.	Pack	Weight	Item no.
		B	H	T	b			
PLM CB 1220 FS	—	94	102	45	65	10	20.000	7218150

Installation aid against cables falling out during ceiling mounting of the PLM D 1220 installation duct.

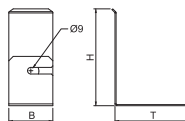
PYROLINE Rapid PL metal duct, duct width 200 mm, duct height 120 mm

FS

Pressure clip for wall mounting, duct height 120 mm

Type	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm	T mm			
PLM WB 1220 FS	60	132	102	10	20.000	7218156

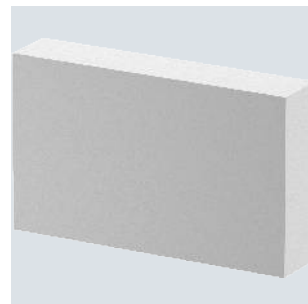
Installation aid against cables falling out during wall mounting of the PLM D 1220 installation duct.



Foam seal, duct height 120 mm

Type	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
	B mm	H mm			
PLM CO 1220	200	120	1	1.240	7218162

Flexibly adjustable foam seal for PYROLINE® Rapid PLM installation duct to seal cable bundles or cables with a large external diameter for cable exits from the installation duct. The surface must be additionally sealed with the ASX ablation coating.



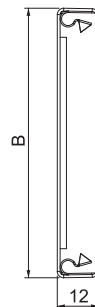
PYROLINE Rapid PLM metal duct, system accessories

FS P

Installation duct cover, duct width 100 mm

Type	Colour	Dim.	Pack m	Weight kg/100 m	Item no.
		B mm			
PLM LI 100 FS	—	76	2	73.500	7218020
PLM LI 100 RW	Pure white	76	2	73.500	7218022

Cover for PYROLINE® Rapid PLM installation duct. Pre-mounted locking brackets for tool-less mounting and continuous equipotential bonding. Additional locking brackets may be required for shortened covers. These are available separately.

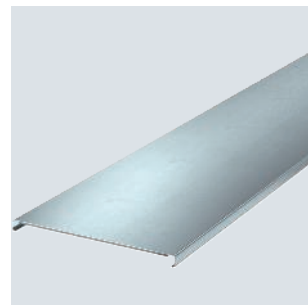
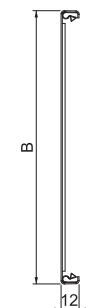


FS P

Installation duct cover, duct width 200 mm

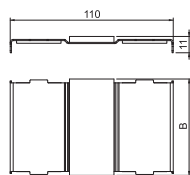
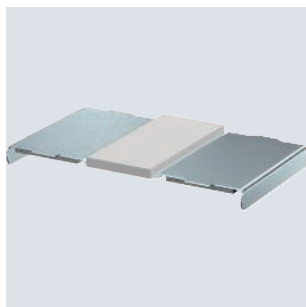
Type	Colour	Dim.	Pack m	Weight kg/100 m	Item no.
		B mm			
PLM LI 200 FS	—	176	2	156.700	7218024
PLM LI 200 RW	Pure white	176	2	160.000	7218026

Cover for PYROLINE® Rapid PLM installation duct. Pre-mounted locking brackets for tool-less mounting and continuous equipotential bonding. Additional locking brackets may be required for shortened covers. These are available separately.



FS

Cover support

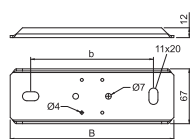


Type	For duct width mm	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		B mm	B mm			
PLM LS 100	100	65		1	5.500	7218034
PLM LS 200	200	165		1	14.000	7218036

For internal sealing in the area of cover joints and for mechanical cover support in the wall penetration area of the PYROLINE® Rapid PLM.

Support, duct width 100 mm

FS

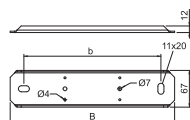


Type	Colour	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		B mm	b mm			
PLM SU 100 FS	—	200	150	1	32.000	7218164
PLM SU 100 RW	Pure white	200	150	1	32.000	7218166

Support for suspended mounting of the PYROLINE® Rapid PLM installation duct. Suspension point for accepting two M10 threaded rods and suitable as a support at joints of ducts and fittings.

Support, duct width 200 mm

FS

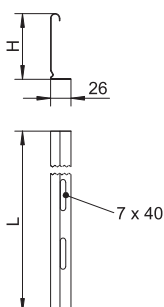


Type	Colour	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		B mm	b mm			
PLM SU 200 FS	—	300	250	1	48.000	7218168
PLM SU 200 RW	Pure white	300	250	1	48.000	7218170

Support for suspended mounting of the PYROLINE® Rapid PLM installation duct. Suspension point for accepting two M10 threaded rods and suitable as a support at joints of ducts and fittings.

Separating retainer 30

FS



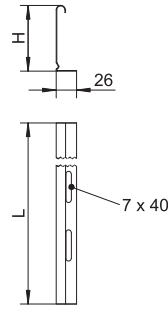
Type	Metal			Pack m	Weight kg/100 m	Item no.
	Dim. H mm	thick- ness mm	Dim. L mm			
TSG 30 FS	30	0.75	3000	3	38.000	6062050

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

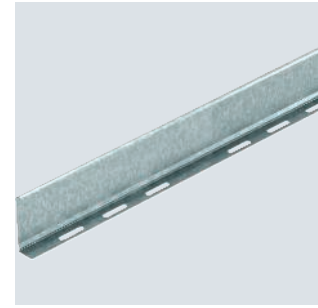
FS

Type	Dim. H mm	Metal thick- ness mm	Dim. L mm	Pack m	Weight kg/100 m	Item no.

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



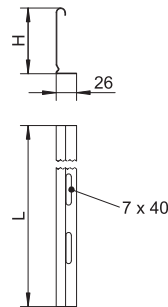
Separating retainer 60



FS

Type	Dim. H mm	Metal thick- ness mm	Dim. L mm	Pack m	Weight kg/100 m	Item no.

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



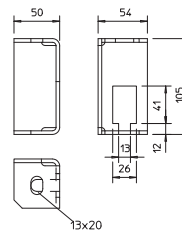
Separating retainer 110



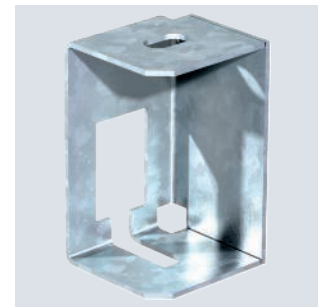
FT

Type	Pack Piece	Weight kg/100 pc.	Item no.
BSB FT	20	42.400	6418198

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.



Fire protection clamp

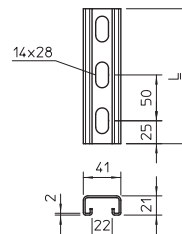


FT

MS4121 mounting rail, slot 22 mm, perforated

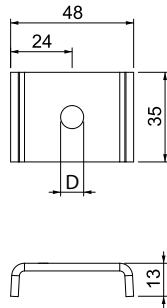
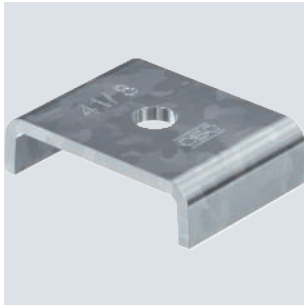
Type	Length mm	Dimension W x H mm	Material thickness mm	Dim. L mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
MS4121P0300FT	300	41x21	2	300		1	53.000	1122934

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.



Connection component for mounting rails MS41

FT

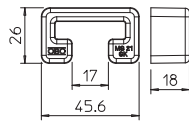
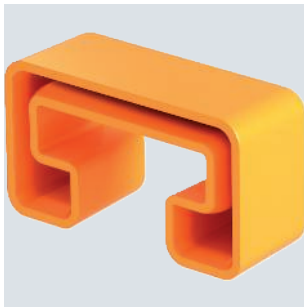


Type	Version	Dim. D Ø mm	Pack	Weight	Item no.
			Piece	kg/100 pc.	
PLF 41 8 FT	M8	9	20	5.200	7207052
PLF 41 10 FT	M10	11	20	5.100	7207054

Component for mounting threaded rods on mounting rails MSL4141P, MS4141P and MS4121P. For mounting cable tray and mesh cable tray systems above suspended fire protection ceilings in escape and rescue routes. If there is a fire, this prevents bending of the mounting rails. Suitable for threaded rods M8, M10 and M12. No additional washer necessary.

End cap MS4121

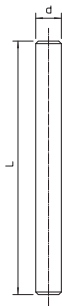
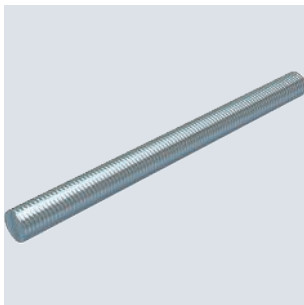
PE



Type	Colour	Pack	Weight	Item no.
		Piece	kg/100 pc.	
MS4121 SK	Pastel orange	25	0.611	1122902

End cap for profile rail, type MS4121.

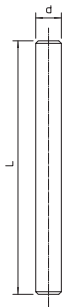
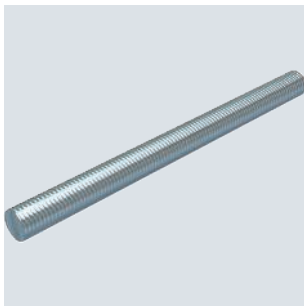
Threaded rod



Type	Thread	Dim. d mm	Dim. L mm	Pack	Weight	Item no.
				Piece	kg/100 pc.	
TR M8 1M G	M8	8	1000	10	30.000	3141128

Threaded rod to DIN 976.

Threaded rod



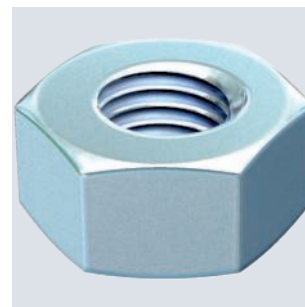
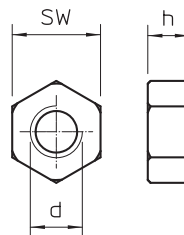
Type	Thread	Dim. d mm	Dim. L mm	Pack	Weight	Item no.
				Piece	kg/100 pc.	
TR M10 1M G	M10	10	1000	10	49.000	3141209

Threaded rod to DIN 976.

Hexagonal nut DIN 934

Type	Thread	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
HN M8 G	M8	13	6.8	8	100	0.500	3400085
HN M10 G	M10	17	8.4	10	100	1.014	3400107

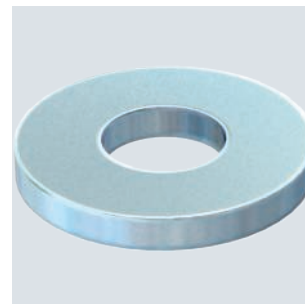
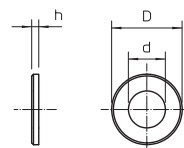
Hexagonal nut to DIN 934 with metric thread.



Washer

Type	Thread	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		d mm	D mm	h mm			
WS M8 D16 G	M8	8.4	16	1.6	100	0.156	3402088
WS M10 D20 G	M10	10.5	20	2	100	0.408	3402096

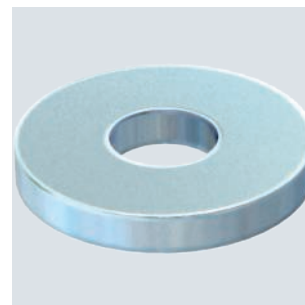
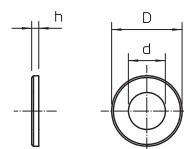
Washer according to DIN 125, shape A, for universal use.



Washer ISO 7093

Type	Thread	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		d mm	D mm	h mm			
WS M8 D28 G	M8	8.5	28	2.5	100	1.100	3402215
WS M10 D28 G	M10	11	28	2.5	100	1.020	3402223

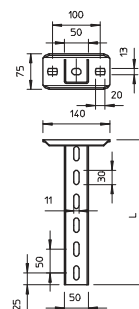
Washer of large outer diameter for universal use.



FT

Type	Length mm	Material thickness mm	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
			L mm	BS			
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

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



US 5 support



US 5 support

FT

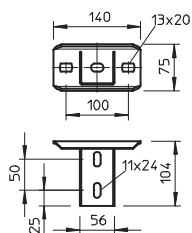


Type	Length mm	Material thickness mm	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
			L mm	BS			
US 5 40 FT	400	2.5	400	🔥	1	106.000	6340911
US 5 50 FT	500	2.5	500	🔥	1	133.000	6340938
US 5 60 FT	600	2.5	600	🔥	1	160.000	6340946
US 5 70 FT	700	2.5	700	🔥	1	175.000	6340950
US 5 80 FT	800	2.5	800	🔥	1	200.000	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

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

Head plate US 5

FT

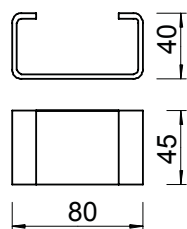


Type	Pack Piece	Weight kg/100 pc.	Item no.
KUS 5 FT	1	61.900	6348904

Head plate for installation in US 5 support.

Spacer DSK 45

FT

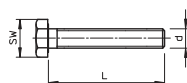


Type	Pack Piece	Weight kg/100 pc.	Item no.
DSK 45 FT	20	18.000	6416500

For static reasons, the spacer is always used to increase stability to prevent the support from deforming when the bracket is tightened with the hexagonal bolts.
Spacer for use in US 5 support and in the head plate, type KU 7 VQP.

Hexagonal bolt M10

F



Type	Dimen- sion mm	Dim. L mm	Dim. d mm	SW mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x80 F	M 10x80	80	10	17	8.8	20	6.900	6418250

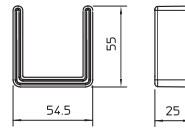
Hexagonal bolt for universal fastening of construction components. With hexagonal nut and 2 washers.

PE

Protective cap

Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
US 5 KS OR	Pastel orange	20	1.300	6338462

Protective cap to cover the ends of US 5 supports.

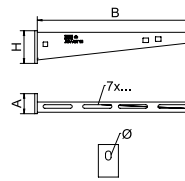


FT

Wall and support bracket AW 15

Type	Width mm	Dim. H mm	Dim. A mm	Dim. B mm	Hole Ø mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
AW 15 11 FT	110	50	40	110	11		1	13.100	6420656
AW 15 21 FT	210	60	40	210	11		1	24.000	6420680

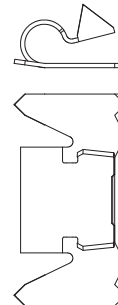
Fastening of the bracket to the U support of width 400 mm or greater using a hexagonal bolt through both sides of the support. Please insert suitable spacers.
Light-duty wall and support bracket with welded head plate.



Locking bracket RKV3V

Type	Pack Piece	Weight kg/100 pc.	Item no.
RKV3V	20	0.085	6288700

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.



Cap nut cable gland, metric thread, silver grey, nickel-plated

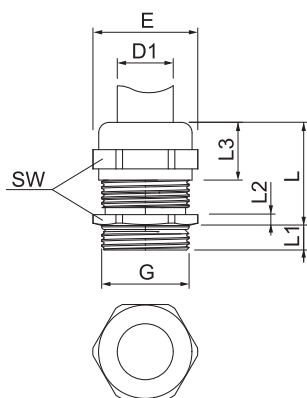


Type	Thread	Material	Pack Piece	Weight kg/100 pc.	Item no.
V-TEC VM12 MS	M12 x 1,5	Brass	50	1.305	2086018
V-TEC VM16 MS	M16 x 1,5	Brass	50	1.640	2086024
V-TEC VM20 MS	M20 x 1,5	Brass	25	3.140	2086030
V-TEC VM25 MS	M25 x 1,5	Brass	25	4.260	2086036
V-TEC VM32 MS	M32 x 1,5	Brass	20	8.457	2086042

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 to +100°C.

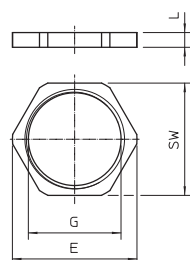
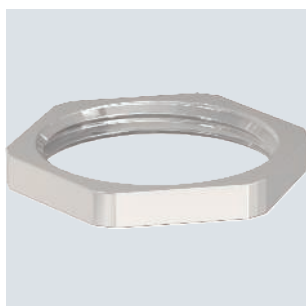
* Prices according to DEL notation.

Dimensions



Type	Sealing range		Dim.				
	D mm	SW mm	Dim. E mm	Dim. L max. mm	Dim. L1 mm	Dim. L2 mm	Dim. L3 mm
V-TEC VM12 MS	3-6	14	15.5	20	5	3	11.5
V-TEC VM16 MS	5-9	17	19	24	5	3	15
V-TEC VM20 MS	9-13	22	24	27	6	3.5	16.5
V-TEC VM25 MS	11-16	27	30	29.5	7	4	17
V-TEC VM32 MS	14-21	34	36	30	8	4.5	18.5

Locknut, metric thread



Type	Thread	SW mm	Dim. E mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
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	1.016	2091658

Locknut to DIN 46319 with metric thread IEC 423.

* Prices according to DEL notation.

PA



Cap nut cable gland, metric thread, silver grey

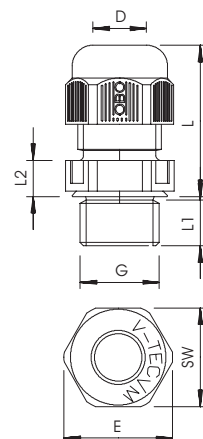
Type	Thread	Colour	Pack Piece	Weight kg/100 pc.	Item no.
V-TEC VM12 SGR	M12 x 1,5	Silver grey	50	0.318	2022843
V-TEC VM16 SGR	M16 x 1,5	Silver grey	50	0.638	2022845
V-TEC VM20 SGR	M20 x 1,5	Silver grey	50	0.856	2022847
V-TEC VM25 SGR	M25 x 1,5	Silver grey	25	1.360	2022849
V-TEC VM32 SGR	M32 x 1,5	Silver grey	20	2.230	2022851



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 lamella 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.

Type	Sealing range D mm	SW mm	Dim. E mm	Dim. L min. mm	Dim. L max. mm	Dim. L1 mm	Dim. L2 mm	In-stal-lation torque Nm
V-TEC VM12 SGR	3.5-7	15	16.5	18.5	23.5	8	5	2
V-TEC VM16 SGR	4.5-10	20	22	21.5	29	8	5	2.5
V-TEC VM20 SGR	6-13	24	27	23.5	30.5	10	6	3.8
V-TEC VM25 SGR	9-17	29	32	26	35	10	6	5
V-TEC VM32 SGR	15-21	36	41	29	40	11	6	7.5

Dimensions



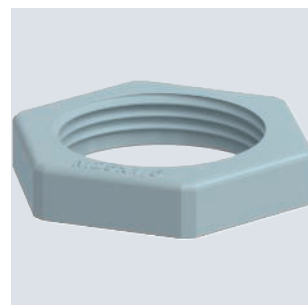
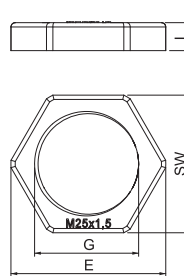
PA



Cable outlet, plastic locknut

Type	Thread	Colour	SW mm	Dim. E mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
116 M12 SGR PA	M12 x 1,5	Silver grey	17	19	5	100	0.078	2048752
116 M16 SGR PA	M16 x 1,5	Silver grey	22	25	5	100	0.125	2048760
116 M20 SGR PA	M20 x 1,5	Silver grey	26	29	6	100	0.177	2048779
116 M25 SGR PA	M25 x 1,5	Silver grey	32	36	6.5	100	0.266	2048787
116 M32 SGR PA	M32 x 1,5	Silver grey	41	46	7	50	0.503	2048795

Locknut to DIN 46319, with metric thread IEC 423.

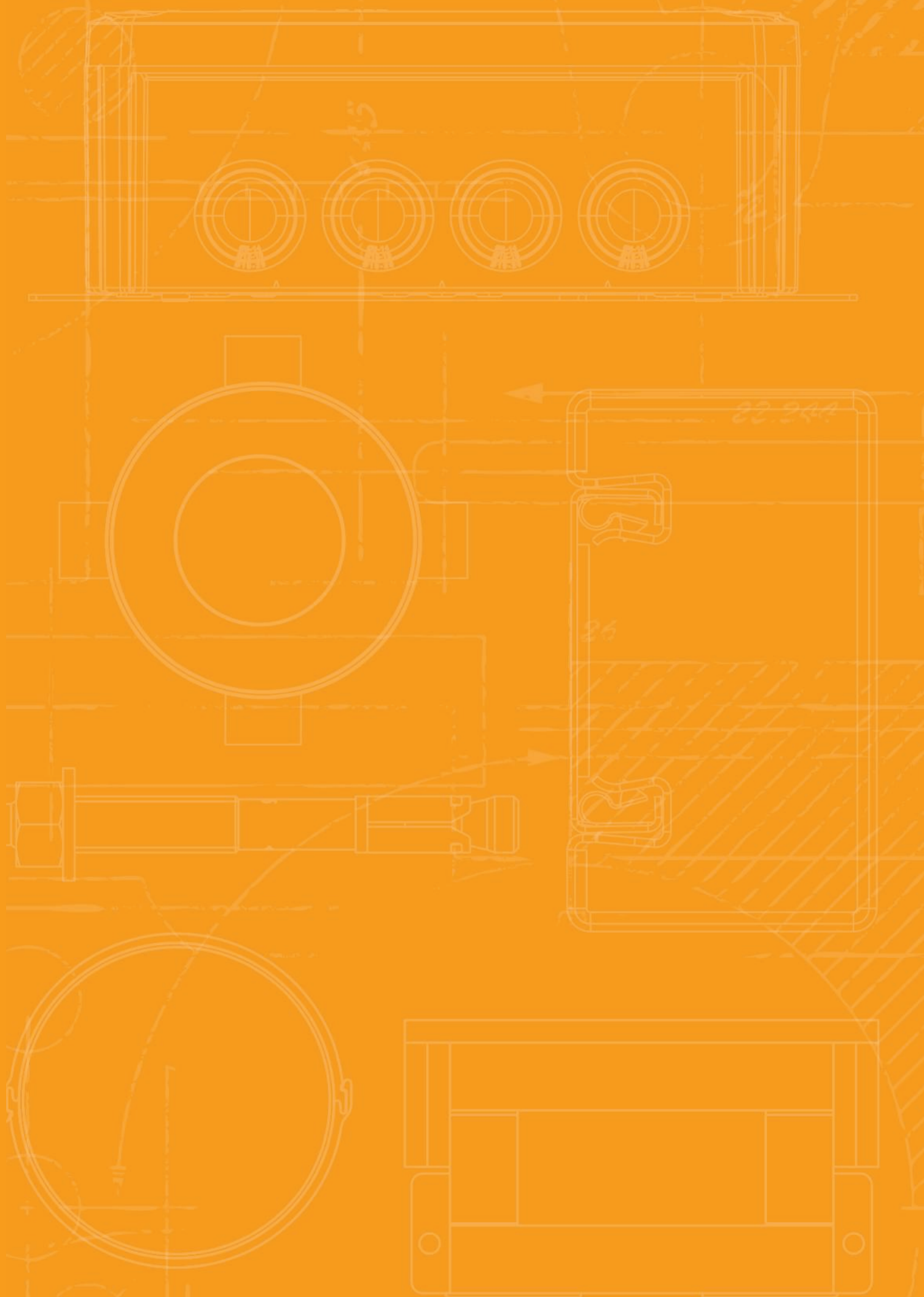


Ablation coating PYROCOAT® in a cartridge







Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
ASX-K	310	1	50.000	7202310

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.












































Directories

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	Pictogram explanation	90
	Alphabetical table of contents	94
	Type listing	96
	Numeric directory	100
	For the latest general conditions of sale and delivery please see www.obo.global/general-purchasing-conditions/	

























Test marks

	American Bureau of Shipping, USA		Underwriters Laboratories Inc., USA + CSA, Canada
	AENOR, Producto Certificado, Spain		Österreichischer Verband für Elektrotechnik, Austria
	STOWARZYSZENIE ELEKTRYKÓW POLSKICH, Poland		ISTITUTO ITALIANO DEL MARCHO DI QUALITÀ, Italy
	Lightning current-tested		RINA 1861, Ship Classification, Certification and Services
	Lightning current-tested, Class H (100 kA)		Underwriters Laboratories Inc., USA
	CEBEC, Belgium		SEMKO An Inchcape Testing Services Company, Sweden
	Canadian Standards Association, Canada		Eidgenössisches Starkstrominspektorat, Switzerland
	DEMKO, Danmarks Elektriske Materielkontrol, Denmark		South African Bureau of Standards
	Deutsches Institut für Bautechnik Berlin, Germany		Shock-tested, Bundesamt für Zivilschutz, Germany
	Det Norske Veritas		Sähkötarkastuskeskus Elinspektionscentralen Electrical Inspectorate, Finland
	ENEC Austria		Underwriters Laboratories Inc., USA
	ATEX certificate for explosive areas		Underwriters Laboratories Inc., USA
	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, Czech Republic		Verband der Elektrotechnik, Elektronik, Informationstechnik e.V., Germany
	FIMKO, Finland		German Association of Electricians, tested safety
	Forschungs- und Materialprüfungsanstalt, Germany		5-year warranty
	Russia, GOST The State Committee for Standards		
	Test marks for technical resources, VDE Prüf- und Zertifizierungsinstitut Offenbach, Germany		
	Halogen-free; without chlorine, fluorine and bromine		
	INMETRO, Brazil		
	KEMA-KEUR, Netherlands		
	Indication of metric products		
	MAGYAR ELEKTROTECHNIKAI ELLENŐRZŐ INTÉZET Budapest, Hungary		
	NEMKO, Norway		
	AFNOR Quality symbol of the French standardisation institute		





Pictogram explanation






Surfaces

 FS	Strip galvanised
 FSK	Strip galvanised/plastic-coated
 DD	Strip galvanised zinc/aluminium, double dip
 BK	Bright
 2B	Bright, reworked
 EL	Anodised
 F	Hot-dip galvanised
	Electrogalvanised
 GK	Electrogalvanised/plastic-coated
 GCL	Electrogalvanised, yellow-chromatised
 GGP	Electrogalvanised, yellow passivated
 GTP	Electrogalvanised, transparently passivated
 GR	Primed
 L	Painted
 SG	Welding primed
 FT	Hot-dip galvanised
 FT SO	Hot-dip galvanised 85 µm
 Cu	Copper-plated
 N	Nickel-plated
 ZD	Galvanised, Deltatone 500
 ZDM	Galvanised, MAGNI 565
 GA	Zinc-aluminium coated, Galfan
 ZL	Zinc scale






Conformity symbol

 CE	Communautés Européennes, EC declaration of conformity according to EC directives
 RoHS	RoHS-conformant



















Quality marks

	Halogen-free; without chlorine, fluorine and bromine
	Flame resistant 650 °C
	Flame resistant 750 °C
	Flame resistant 960 °C
	UV-resistant




Specific product symbols

	Diameter 60 mm
	Diameter 68 mm
	Protection device to DIN EN 61643-11 or IEC 61643-11
	Transition from LPZ 2 to LPZ 3
	Acoustic signalling

Applications



	Remote signalling
	Acoustic signalling
	Integrated Service Digital Network, ISDN applications
	Digital Subscriber Line, DSL applications
	Analogue telecommunication
	Category 5 TwisterPair
	Channel Performance to American EIA/TIA standard
	Measuring, controlling and regulating systems
	TV applications
	SAT-TV applications
	MultiBase base
	LifeControl
	Intrinsically safe protection device for potentially explosive areas
	Channel Performance to ISO/IEC 11801
	Power over Ethernet
	230/400 V system
	Protection rating IP 54
	Protection rating IP 65

Lightning protection classes







	Protection device to DIN EN 61643-11 or IEC 61643-11
	Combination protection device made of type 1 and type 2
	Protection device to DIN EN 61643-11 or IEC 61643-11








Lightning protection classes

	Protection device to DIN EN 61643-11 or IEC 61643-11
	Protection device to DIN EN 61643-11 or IEC 61643-11



Lightning protection zone

	Transition from LPZ 0 to LPZ 1
	Transition from LPZ 0 to LPZ 2
	Transition from LPZ 0 to LPZ 3
	Transition from LPZ 1 to LPZ 2
	Transition from LPZ 1 to LPZ 3
	Transition from LPZ 2 to LPZ 3



BSS maintenance of electrical function installation

	Fire-tested systems
	Escape route ceiling mounting with pressure clip
	OBO Grip, wall routing type
	OBO Grip, ceiling routing type
	Pressure clip for maintenance of electrical function, ceiling mounting




BSS anchor

	Fire protection anchor
	Fire protection bolt tie

BSS test marks/material class

	Maintenance of electrical function class E30
	Maintenance of electrical function class E90














Clamp clip base shapes

	Clamp clip for C profile rail, slot width 11–12 mm
	Clamp clip for C profile rail, slot width 16–17 mm
	Clamp clip for C profile rail, slot width 18–22 mm



Diameter

	Diameter 60 mm
	Diameter 68 mm
	Diameter 70 mm
	Diameter 74 mm





Entries

	4 cable entries
	6 cable entries
	7 cable entries
	8 cable entries
	9 cable entries
	10 cable entries
	12 cable entries
	10 cable entries ECO
	12 cable entries ECO
	14 cable entries ECO
	16 cable entries
	18 cable entries ECO
	24 cable entries






Gland thread

	Thread metric
	Thread Pg





Entry size

	M20 entry
	M25 entry
	M32 entry
	M40 entry

KTS side heights










	Cable tray, side height 35 mm
	Cable tray, side height 60 mm
	Cable tray, side height 85 mm
	Mesh cable tray, side height 35 mm
	Mesh cable tray, side height 55 mm

Materials




	Flat steel
	Angular steel
	U steel
	Round material

Pictogram explanation







Nominal cross-section

	Nominal cross-section 1.5 mm ²
	Nominal cross-section 1.5–2.5 mm ²
	Nominal cross-section 2.5 mm ²
	Nominal cross-section 2.5–4 mm ²
	Nominal cross-section 4 mm ²
	Nominal cross-section 4–6 mm ²
	Nominal cross-section 6 mm ²
	Nominal cross-section 10 mm ²
	Nominal cross-section 16 mm ²













Nominal voltage

	Nominal voltage 400 V
	Nominal voltage 500 V
	Nominal voltage 660 V





Polarity

	3-pole
	5-pole
	7-pole
	8-pole
	10-pole
	12-pole



Slot widths

	Slot width 7.5 mm
	Slot width 11 mm
	Slot width 11–12 mm
	Slot width 12 mm
	Slot width 15 mm
	Slot width 16 mm
	Slot width 16.5 mm
	Slot width 16–17 mm
	Slot width 17 mm
	Slot width 18 mm
	Slot width 22 mm
	Slot width 35 mm











Screw heads

	Philips screw
	Torx screw
	Phillips screw
	Pozidriv










Firing devices

	Bolt-firing tool
	Nail device





Protection rating

	Protection rating IP 20
	Protection rating IP 30
	Protection rating IP 31
	Protection rating IP 44
	Protection rating IP 54
	Protection rating IP 55
	Protection rating IP 65
	Protection rating IP 66
	Protection rating IP 67
	Protection rating IP 68

Metals

	Aluminium
	Aluminium/steel
	Stainless steel, rustproof
	Stainless steel, rustproof
	Stainless steel, rustproof
	Copper
	Brass
	Steel
	Malleable iron
	Die-cast zinc

Plastics

	Acrylonitrile butadiene styrene
	Duroplast, Aminoplast, type 131.5
	Duroplast, melamine resin, type 150
	Ethylene vinyl acetate

Plastics

FA	Fibre-proof material DIN 28091
GFK	Fibreglass-reinforced plastic
NBR SBR	Rubber mixture
NBR	Nitrile rubber
PETR	Petrolatum
PA	Polyamide
PA/ GF	Polyamide, fibreglass reinforced
PBPT	Polybutylene terephthalate
PC	Polycarbonate
PE	Polyethylene
PP	Polypropylene
PP/GF	Polypropylene, fibreglass reinforced
PS	Polystyrene
PVC	Polyvinylchloride
ZELL PE	Cellular polyethylene



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PLCS T060810	6836741	7217900	43	PLM WC 0410 RW	7310325	7218124	70
PLCS T061220	6836758	7217904	43	PLM WC 0810 FS	7310585	7218126	73
PLCS T090810	6836765	7217910	43	PLM WC 0810 RW	7331603	7218128	73
PLCS T091220	6836772	7217914	43	PLM WC 1220 FS	7310608	7218130	76
PLCS VF060810	6836826	7217940	43	PLM WC 1220 RW	7310356	7218132	76
PLCS VF061220	6836840	7217944	43				
PLCS VF090810	6836857	7217950	43	RKV3V	5149088	6288700	83
PLCS VF091220	6836864	7217954	43			/pc.	
PLCS VR060810	6836789	7217920	42				
PLCS VR061220	6836796	7217924	42			/100 pc.	
PLCS VR090810	6836802	7217930	42	SKS 10x80 F	6437474	6418250	51
PLCS VR091220	6836819	7217934	42	SKS 10x80 F	6437474	6418250	82
PLCS W060810	6836871	7217960	48	SKS M6x30 ZL	6687350	3156710	52
PLCS W061220	6836888	7217964	48				
PLCS W090810	6836918	7217970	49			/100 pc.	
PLCS W091220	6836925	7217974	49	TR M10 1M G	5253396	3141209	51
				TR M10 1M G	5253396	3141209	61
PLF 41 10 FT	6675296	7207054	80	TR M10 1M G	5253396	3141209	80
PLF 41 8 FT	6675289	7207052	80	TR M8 1M G	5253334	3141128	80
						price/m	
PLM BF 0810 FS	7332136	7218106	72	TSG 110 FS	5694588	6062122	79
PLM BF 0810 RW	7357757	7218108	72	TSG 30 FS	5694496	6062050	78
PLM BF 1220 FS	7332150	7218110	75	TSG 45 FS	5694489	6062033	53
PLM BF 1220 RW	7357771	7218112	75	TSG 60 FS	5694540	6062068	79
PLM BR 0810 FS	7332174	7218114	72	TSG 85 FS	5694571	6062114	53
PLM BR 0810 RW	7357795	7218116	72				
PLM BR 1220 FS	7332198	7218118	76			/pc.	
PLM BR 1220 RW	7357818	7218120	76	TSGV A2	5694724	6067970	54
PLM CB 0410 FS	7310431	7218146	70				
PLM CB 0810 FS	7310455	7218148	73	US 3 20 FS	6221776	6342302	50
PLM CB 1220 FS	7310479	7218150	76	US 3 30 FS	6222018	6342304	50
PLM CC 0410 FS	7310622	7218134	70	US 3 40 FS	6222070	6342306	50
PLM CC 0410 RW	7310370	7218136	70	US 3 K 100 FT	6225132	6342368	49
PLM CC 0810 FS	7310646	7218138	73	US 3 K 110 FT	6225378	6342370	49
PLM CC 0810 RW	7310394	7218140	73	US 3 K 120 FT	6225439	6342372	49
PLM CC 1220 FS	7310660	7218142	76	US 3 K 20 FT	6224470	6342351	49
PLM CC 1220 RW	7310417	7218144	76	US 3 K 30 FT	6224531	6342353	49
PLM CO 0410	7273613	7218158	69	US 3 K 40 FT	6224593	6342355	49
PLM CO 0810	7273637	7218160	74	US 3 K 50 FT	6224654	6342357	49
PLM CO 1220	7273651	7218162	77	US 3 K 60 FT	6224715	6342359	49
PLM D 0404 FS	7351205	7218000	68	US 3 K 70 FT	6224777	6342362	49
PLM D 0404 RW	7351281	7218002	68	US 3 K 80 FT	6225019	6342364	49
PLM D 0410 FS	7351212	7218004	68	US 3 K 90 FT	6225071	6342366	49
PLM D 0410 RW	7351298	7218006	68	US 3 KS OR	5668039	6338458	50
PLM D 0810 FS	7351229	7218008	71				
PLM D 0810 RW	7351304	7218010	71	US 5 100 FT	6284177	6340962	82
PLM D 1220 FS	7351236	7218012	74	US 5 40 FT	6959129	6340911	82
PLM D 1220 RW	7351311	7218014	74	US 5 50 FT	6959181	6340938	82
PLM EC 0410 FS	7332013	7218038	69	US 5 60 FT	6601752	6340946	82
PLM EC 0410 RW	7358358	7218040	69	US 5 70 FT	6043927	6340950	82
PLM EC 0810 FS	7332037	7218042	71	US 5 80 FT	6044047	6340954	82
PLM EC 0810 RW	7358372	7218044	71	US 5 90 FT	6044160	6340958	82
PLM EC 1220 FS	7332051	7218046	75	US 5 K 100 FT	6536290	6341616	81
PLM EC 1220 RW	7358396	7218048	75	US 5 K 40 FT	6536658	6341543	81
PLM EP 0410 FS	7310202	7218086	70	US 5 K 50 FT	6536597	6341551	81
PLM EP 0410 RW	7310264	7218088	70	US 5 K 60 FT	6536535	6341578	81
PLM EP 0810 FS	7310226	7218090	72	US 5 K 70 FT	6536474	6341586	81
PLM EP 0810 RW	7310288	7218092	72	US 5 K 80 FT	6536412	6341594	81
PLM EP 1220 FS	7310240	7218094	75				



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Type	GTIN	Item no.	Page
US 5 K 90 FT	6536351	6341608	81
US 5 KS OR	5668046	6338462	83
		/pc.	
V-TEC VM12 MS	5808992	2086018	84
V-TEC VM12 SGR	5532637	2022843	85
V-TEC VM16 MS	5809234	2086024	84
V-TEC VM16 SGR	5532699	2022845	85
V-TEC VM20 MS	5809418	2086030	84
V-TEC VM20 SGR	5532750	2022847	85
V-TEC VM25 MS	5809593	2086036	84
V-TEC VM25 SGR	5532811	2022849	85
V-TEC VM32 MS	5809777	2086042	84
V-TEC VM32 SGR	5532934	2022851	85
		/100 pc.	
WS M10 D20 G	5300137	3402096	52
WS M10 D20 G	5300137	3402096	61
WS M10 D20 G	5300137	3402096	81
WS M10 D28 G	5300434	3402223	53
WS M10 D28 G	5300434	3402223	81
WS M6 D28 G	5300311	3402207	53
WS M8 D16 G	5300076	3402088	81
WS M8 D28 G	5300373	3402215	81





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	/100 pc.			price/m		6839612	7215290	30	7351342	7218026	77
5000792	1003038	32	5694571	6062114	53	6839629	7215292	30	7304966	7218027	68
5000853	1003046	32	5694588	6062122	79		/100 pc.		7348175	7218028	69
5000914	1003054	32				6896110	7215312	30	7348199	7218030	71
5000976	1003062	32		/pc.		6896172	7215318	30	7348212	7218032	74
5001034	1003070	32	5694724	6067970	54	6896356	7215356	29	7348236	7218034	78
5001096	1003089	32				6896417	7215362	29	7348250	7218036	78
5001157	1003097	32	5149088	6288700	83		/pc.		7332013	7218038	69
5001218	1003100	32				5077879	7215381	45	7358358	7218040	69
5001270	1003119	32	5668039	6338458	50	6834952	7215383	34	7332037	7218042	71
5001331	1003127	32	5668046	6338462	83		/pc.		7358372	7218044	71
5001393	1003135	32				5077886	7215385	45	7332051	7218046	75
5001454	1003178	32	6959129	6340911	82	5077916	7215389	46	7358396	7218048	75
5001515	1003194	32	6959181	6340938	82	5077923	7215395	51	7332075	7218050	69
5001577	1003208	32	6601752	6340946	82		/100 pc.		7358419	7218052	69
5001638	1003216	32	6043927	6340950	82	6887651	7215400	47	7332099	7218054	72
5001690	1003232	32	6044047	6340954	82	6887774	7215412	31	7368005	7218056	72
5566892	1003259	32	6044160	6340958	82	6817177	7215434	29	7332112	7218058	75
5001751	1003283	32	6284177	6340962	82	6817184	7215436	27	7358440	7218060	75
5566953	1003321	32				6817191	7215438	29	7310202	7218086	70
5001812	1003356	32	6536658	6341543	81	6834938	7215462	31	7310264	7218088	70
5001874	1003372	32	6536597	6341551	81	6834945	7215464	31	7310226	7218090	72
5001935	1003402	32	6536535	6341578	81	6835386	7215480	34	7310288	7218092	72
5002055	1003461	32	6536474	6341586	81	6835416	7215484	34	7310240	7218094	75
			6536412	6341594	81	6835423	7215490	34	7310301	7218096	75
5686217	1122902	80	6536351	6341608	81	6835430	7215494	34	7332136	7218106	72
5697626	1122933	79	6536290	6341616	81		/pc.		7357757	7218108	72
5697664	1122934	79				6888214	7215500	33	7332150	7218110	75
			6221776	6342302	50	6461639	7215571	48	7357771	7218112	75
5486138	1124667	52	6222018	6342304	50	6461646	7215575	48	7332174	7218114	72
			6222070	6342306	50	6461677	7215579	48	7357795	7218116	72
5532637	2022843	85	6224470	6342351	49	6836390	7215800	24	7332198	7218118	76
5532699	2022845	85	6224531	6342353	49	6836406	7215804	24	7357818	7218120	76
5532750	2022847	85	6224593	6342355	49	6836444	7215810	26	7310561	7218122	70
5532811	2022849	85	6224654	6342357	49	6836451	7215814	26	7310325	7218124	70
5532934	2022851	85	6224715	6342359	49	6836468	7215820	26	7310585	7218126	73
			6224777	6342362	49	6836499	7215824	26	7331603	7218128	73
5446477	2048752	85	6225019	6342364	49	6836505	7215830	26	7310608	7218130	76
5446538	2048760	85	6225071	6342366	49	6836512	7215834	26	7310356	7218132	76
5446590	2048779	85	6225132	6342368	49	6836529	7215840	27	7310622	7218134	70
5446651	2048787	85	6225378	6342370	49	6836567	7215844	27	7310370	7218136	70
5446712	2048795	85	6225439	6342372	49	6836574	7215850	27	7310646	7218138	73
						6836581	7215854	27	7310394	7218140	73
5808992	2086018	84	6168910	6348904	82				7310660	7218142	76
5809234	2086024	84				6836628	7217860	40	7310417	7218144	76
5809418	2086030	84		/100 pc.		6836635	7217864	40	7310431	7218146	70
5809593	2086036	84	6199877	6406157	52	6836642	7217870	25	7310455	7218148	73
5809777	2086042	84				6836673	7217874	25	7310479	7218150	76
				/pc.		6836680	7217880	41	7310493	7218152	71
5474135	2091607	84	6229277	6416446	50	6836697	7217884	41	7310516	7218154	73
5931690	2091615	84	6202812	6416500	82	6836703	7217890	42	7310530	7218156	77
5931751	2091623	84				6836734	7217894	42	7273613	7218158	69
5931812	2091631	84	6204311	6418198	79	6836741	7217900	43	7273637	7218160	74
5931874	2091658	84		/100 pc.		6836758	7217904	43	7273651	7218162	77
			6437474	6418250	51	6836765	7217910	43	7274689	7218164	78
5253334	3141128	80				6836772	7217914	43	7274740	7218166	78
5253396	3141209	51		/pc.		6836789	7217920	42	7274719	7218168	78
			6207077	6420656	83	6836796	7217924	42	7274771	7218170	78
6687350	3156710	52	6207138	6420664	50	6836802	7217930	42			
			6207190	6420680	50	6836819	7217934	42			
	/100 pc.		6207251	6420710	50	6836826	7217940	43			
5298151	3400085	81				6836840	7217944	43			
5298212	3400107	51	5850137	7202300	31	6836857	7217950	43			
			5850182	7202310	85	6836864	7217954	43			
5300076	3402088	81				6836871	7217960	48			
5300137	3402096	52	5847830	7205423	33	6836888	7217964	48			
5300311	3402207	53				6836918	7217970	49			
5300373	3402215	81	6675289	7207052	80	6836925	7217974	49			
5300434	3402223	53	6675296	7207054	80	6836932	7217980	44			
						6836949	7217984	44			
5918905	3498096	32		/pc.		6836970	7217990	44			
5918912	3498098	33	5918882	7214715	60	6836987	7217994	44			
5850069	3498100	53	5918899	7214725	62						
6559626	3498124	49	6591398	7214734	33	7351205	7218000	68			
6559640	3498272	29				7351281	7218002	68			
6429493	3498370	49		price/m		7351212	7218004	68			
6429509	3498372	49	6645794	7215210	28	7351298	7218006	68			
6429516	3498374	49	6645855	7215216	28	7351229	7218008	71			
6429523	3498376	49	6887477	7215222	28	7351304	7218010	71			
				/pc.		7351236	7218012	74			
	price/m		5430421	7215270	28	7351311	7218014	74			
5694489	6062033	53	5430438	7215272	28	7351243	7218020	77			
5694496	6062050	78	5430445	7215274	28	7351328	7218022	77			
5694540	6062068	79	6839582	7215288	30	7351267	7218024	77			





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