



# Fastening materials



# 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.





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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

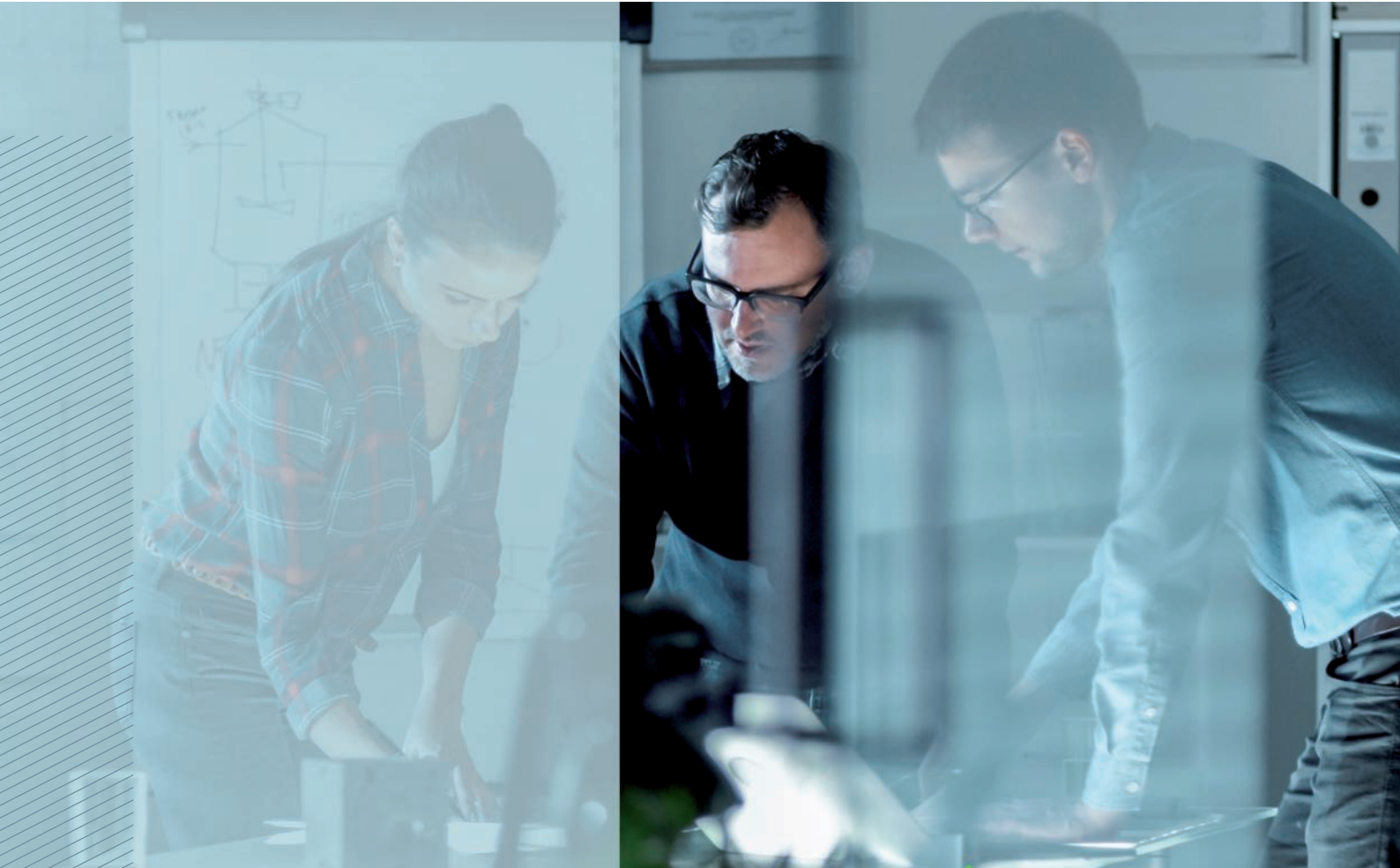
- Surge protection
- External lightning protection
- Equipotential bonding and earthing
- Insulation and cable bandages
- Fire-tested support and routing systems
- Fire protection ducts



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.



## 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.

You can contact our Customer Service department on:

**Customer Service**

**Tel.: +49 23 73 89 - 17 00**

**Monday–Thursday**  
07.30–17.00

**Friday**  
07.30–15.00

**export@obo.de**



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:

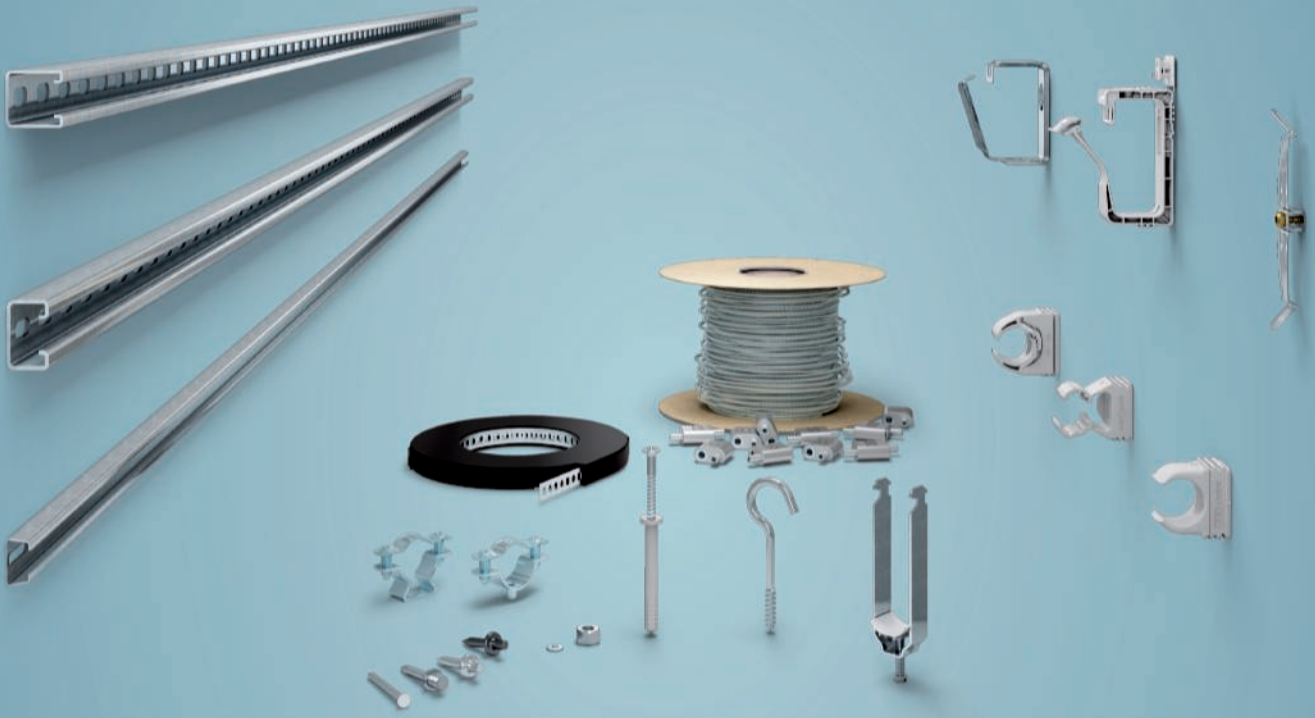
- Reliable logistics
- Practical transport systems and packaging
- Loading gear handling and disposal concepts

### 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







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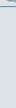
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# Planning aids

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# Metal: corrosion and corrosion protection



## Corrosion

(from the Latin *corrodere*, “to eat or gnaw to pieces”) in a technical context is a reaction between a material (generally a metal) and its surroundings, leading to a measurable change in the material and potentially impairing the functionality of a component or system.

A large number of products used in industrial installations are made of metal. Metals are much tougher than many other materials and are less sensitive to mechanical loading. The OBO metal products are made of aluminium, die-cast zinc, stainless steel or steel.

Steel (St), the most commonly used material, is very strong and has good elasticity and chemical resistance. However, steel is susceptible to corrosion and must therefore be protected accordingly.

Stainless steels consist mainly of alloyed, very hard and rustproof steels. The stainless steels are divided into quality classes according to the percentage of alloys. These are indicated by the material number according to DIN EN 10027.

Aluminium (Al), as a light metal, has comparatively low strength but good electrical conductivity and high corrosion resistance.

Die-cast zinc components (Zn) are very strong and hard. The manufacturing process enables the production of very precise components with good corrosion resistance.

## Corrosion protection

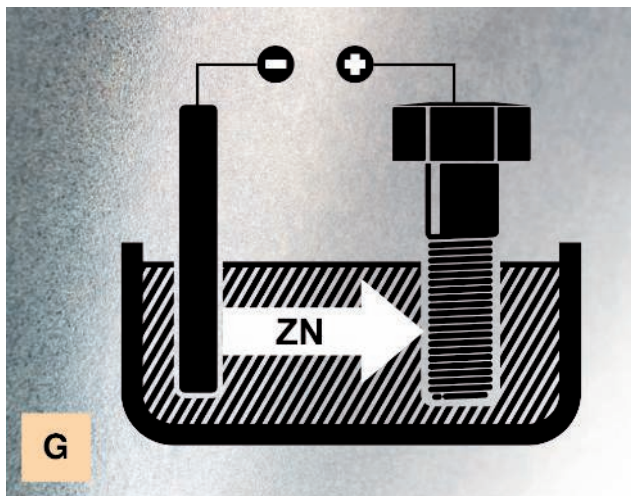
Corrosion protection means all steps taken to prevent corrosion damage to metallic components. It is impossible to prevent corrosion permanently, so corrosion protection measures generally aim to reduce the speed of corrosion so that the component is not damaged by corrosion for the duration of its service life. The term “passive corrosion protection” refers to all measures designed to shield products from corrosive media. Coatings are one way of achieving passive corrosion protection. At OBO, most steel products are protected from corrosion by a layer of zinc. Zinc coatings can be applied to components using a variety of methods.

## Zinc slat covering

Zinc slat coverings are coatings applied in a non-electrolytic manner. They offer cathodic protection and thus have excellent corrosion protection, while at the same time, there is no risk of hydrogen-induced breakage. Due to these properties, this coating type is used for connection components with a high strength classification or structural parts with high tensile strength. The low layer thickness of the zinc slat covering allows a thin, homogeneous coating, which is particularly important for maintaining the accuracy of screw threads. This coating achieves a resistance of 480 hours in the salt spray test for the connection elements.

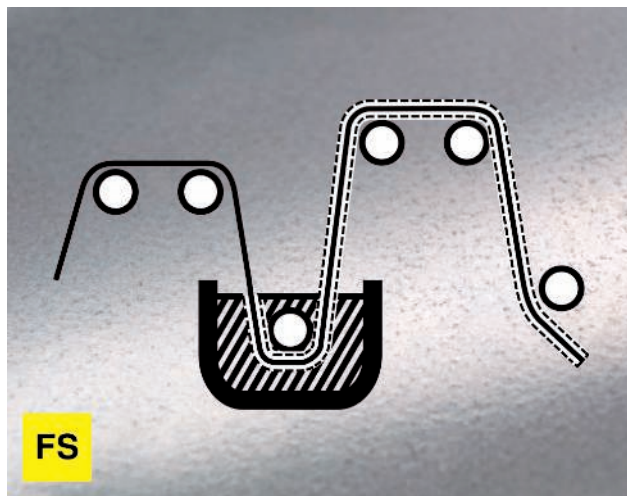


# Galvanisation types



## Electrogalvanisation – electrolytic galvanisation in accordance with DIN EN ISO 2081

In electrogalvanisation or electrolytic galvanisation, the component is coated by dipping it not in molten zinc, but in a zinc electrolyte, through which a direct electric current is passed.



## Strip galvanising – hot galvanised according to the strip-galvanising method in accordance with DIN EN 10346 (formerly DIN EN 10147 and DIN EN 10142)

Strip galvanisation or Sendzimir galvanisation is where a continuous ribbon of steel is galvanised in a continuous line.



## Hot-dip galvanisation – hot galvanisation using the dipping method according to DIN EN ISO 1461

Batch galvanisation is mainly used for galvanising prefabricated steel parts, by dipping them in molten zinc at a temperature of around 450 °C.



## Hot-dip coating – zinc-aluminium coating in accordance with DIN EN 10346

In contrast to conventional coating systems, the material being galvanised in the double-dip process passes through two baths in succession: the first contains pure zinc, the second a zinc-aluminium alloy.



# Surface testing and corrosion categories



### Classification of corrosion resistance

All the system components must show sufficient resistance against corrosion in agreement with the standard DIN EN 61537. The minimum zinc layer thicknesses are determined through a measurement. The grouping into the appropriate class is detailed in the table "Classification of corrosion resistance". The table "Corrosion categories according to DIN EN ISO 12944" shows the area of application and the zinc loss to be expected.

### Classification of corrosion resistance

All components, depending on the environment, must show sufficient resistance against corrosion in agreement with the standard DIN EN 61537. This is how corrosion categories are determined, e.g. with a salt spray test. In this procedure, components are sprayed with salt for a certain time period. The resulting level of red rust is the basis for allocation to a corrosion category, i.e. in which environment the component is resistant to corrosion.





### Classification of corrosion resistance according to EN 61537

Class	Reference material and surface treatment
0*	None
1	Electroplated to a minimum thickness of 5 µm
2	Electroplated to a minimum thickness of 12 µm
3	Pre-galvanised to grade 275 to EN 10327 and EN 10326
4	Pre-galvanised to grade 350 to EN 10327 and EN 10326
5	Post-galvanised to a zinc mean coating thickness (minimum) of 45 µm according to ISO 1461
6	Post-galvanised to a zinc mean coating thickness (minimum) of 55 µm according to ISO 1461
7	Post-galvanised to a zinc mean coating thickness (minimum) of 70 µm according to ISO 1461
8	Post-galvanised to a zinc mean coating thickness (minimum) of 85 µm according to ISO 1461 (usually high-silicon steel)
9A	Stainless steel manufactured to ASTM: A 240/A 240M – 95a designation S30400 or EN 10088 grade 1-4301 without a post-treatment *
9B	Stainless steel manufactured to ASTM: A 240/A 240M – 95a designation S31603 or EN 10088 grade 1-4404 without a post-treatment *
9C	Stainless steel manufactured to ASTM: A 240/A 240M – 95a designation S30400 or EN 10088 grade 1-4301 with a post-treatment **
9D	Stainless steel manufactured to ASTM: A 240/A 240M – 95a designation S31603 or EN 10088 grade 1-4404 with a post-treatment **

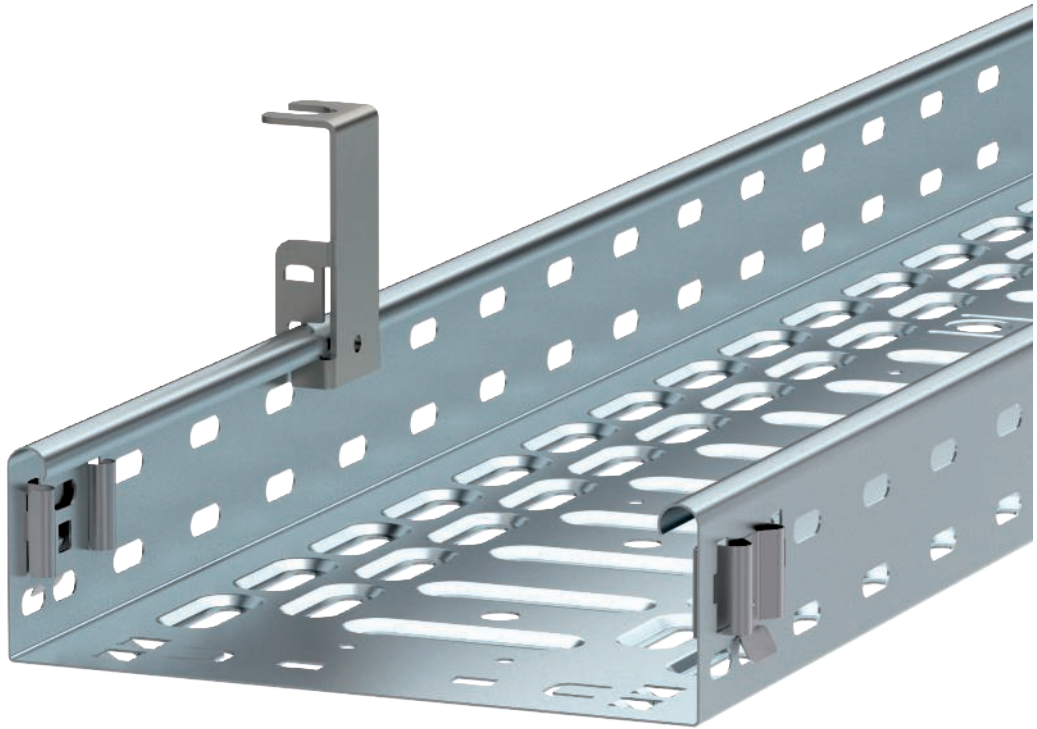
\* For materials which do not have a declared corrosion resistance classification

\*\* The end treatment process is used to improve the protection against crack corrosion and the contamination of other steels

### Corrosion categories to DIN EN ISO 12944

Corrosion category	Typical environment, inside	Typical environment, outside	Corrosion load	Average zinc removal
C 1	Heated buildings with neutral atmospheres, e.g. offices, shops, schools, hotels	-	Insignificant	<0.1 µm/a
C 2	Unheated buildings in which condensation can occur, e.g. warehouse, sports halls	Atmosphere with low level of impurities, often rural areas	Low	0.1 to 0.7 µm/a
C 3	Production facilities with a high level of humidity and some air impurities, e.g. plants for food production, laundries, breweries, dairies	City and industrial atmosphere, considerable impurities through sulphur dioxide, coastal areas with low salt load	Medium	0.7 to 2.1 µm/a
C 4	Chemical plants, swimming pools, boat sheds over seawater	Industrial areas and coastal areas with low salt load	Strong	2.1 to 4.2 µm/a
C 5-I	Buildings or areas with almost constant condensation and with high levels of impurities	Industrial areas with high levels of humidity and aggressive atmosphere	Very strong (industry)	4.2 to 8.4 µm/a
C 5-M	Buildings or areas with almost continuous condensation and with high levels of impurities	Coastal or offshore areas with salt load	Very strong (sea)	>4.2 to 8.4 µm/a

# Contact corrosion



If two different metals are conductively connected with each other, contact corrosion can occur. This poses a considerable risk to the load capacity and lifespan of the components used.

The level of contact corrosion is determined primarily by the level of the potential difference between the contact partners. Contact corrosion occurs at potential differences of 100 mV or greater and the anodic (electrically negative) partner is at risk of corrosion. Therefore, strongly non-precious metals should never be brought into contact with precious metals.

#### **Additional contact corrosion criteria:**

- Level of electrical resistance between the contact partners. The higher the resistance, the lower the contact corrosion. Positive on Al and Ti.
- Occurrence of an electrolyte. An electrolyte, such as perspiration or condensation, attacks the protective layers, increasing conductivity. Dirt increases this effect through released ions.
- Length of the impact of the electrolyte. The longer the electrolyte is active, the greater the corrosion will be.
- The surface ratios of the contact partners influence the current density. The best thing to have is a small surface ratio of the "precious" to the "less precious" contact partner.
- Different environments or atmospheres can increase or influence the risk of contact corrosion to varying degrees.








# Installation locations

Whether indoors or outdoors, in aggressive atmospheres or under special hygienic conditions, OBO can offer the perfect surface and materials for your installation, no matter what the requirements may be. OBO metal products are machined from high-quality sheet steel or

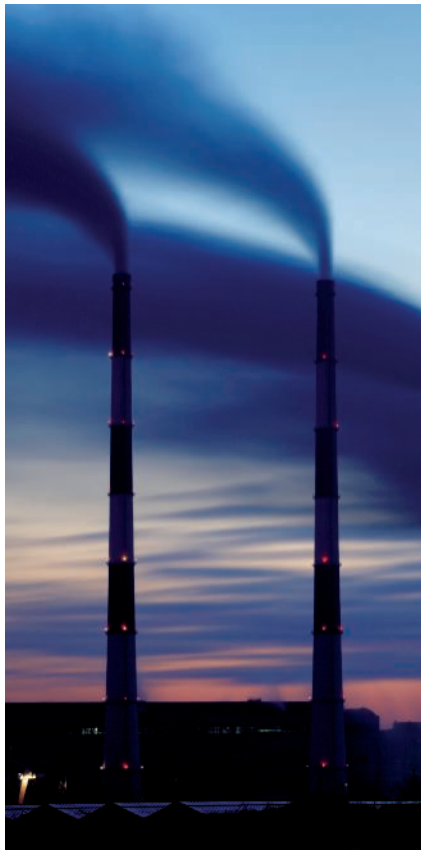
steel wire and are available with various surfaces. Different hardening and coating methods ensure tailor-made corrosion protection, specially tailored to the appropriate application:

Application	Material	Surface protection
<b>Indoors</b> 	<b>St</b> Steel	<b>L</b> Painted/powder-coated
	<b>St</b> Steel	<b>FS</b> Strip galvanised DIN EN 10346
	<b>St</b> Steel	<b>G</b> Electrogalvanised DIN EN ISO 2081
<b>Outdoors</b> 	<b>St</b> Steel	<b>FT</b> Hot galvanised DIN EN ISO 1461
	<b>St</b> Steel	<b>DD</b> Hot galvanised DIN EN ISO 1461
	<b>VA</b> Stainless steel A2	
	<b>VA</b> Stainless steel A4	
<b>Especially corrosive areas</b> 	<b>VA</b> Stainless steel A2	
	<b>VA</b> Stainless steel A4	

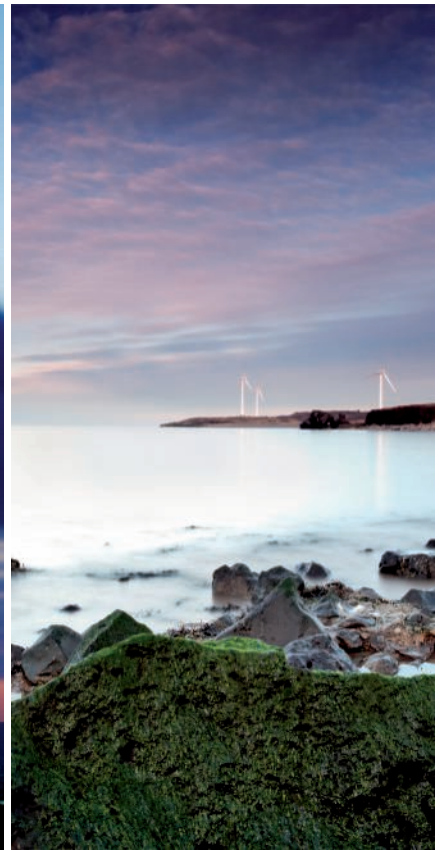
# Contact corrosion in different environments



Land climate



Industrial atmosphere



Sea climate

Small/large	Zn	FT	Al	Cu	VA	CuZn
Zn		✓	○	✗	✗	○
FT	✓		○	✗	✗	○
Al	✓	✓		✗	✗	○
Cu	✓	✓	✓		✓	✓
VA	✓	✓	✓	✓		✓
CuZn	✓	✓	✓	✓	✓	

✓ Little to no corrosion

○ Moderate corrosion

✗ Heavy corrosion

The precondition for corrosion is a conductive medium that connects the metal combination. The more damp and contaminated the atmosphere is, the more pronounced the contact corrosion.





# Surfaces for special visual requirements or special environmental loads



## Applications with specific optical requirements or special environmental conditions

Colour-coated products are becoming ever more popular. The coating may be required for optical reasons or for reasons of corrosion protection.

## Colour coatings for reasons of corrosion protection

- Products in FT (hot-dip galvanised version)
- All RAL colours available
- Coating of the visible surfaces or the complete system
- Suitable for the colour of the structure when routed openly
- Separation of different voltages/functions (e.g. blue 230/400 V power supply; red weak current such as telephone cables and IT)

Colour-coated systems are not specifically indicated in this Industrial installation product catalogue. You can obtain details of these systems by contacting our telephone hotline on +49 23 73 89 - 17 00.

# Plastic: materials and properties

Essentially plastics can be of one of three types: thermoplastics, elastomers and Duroplast.

## Thermoplastics

are plastics that can be shaped within a specific temperature range. This process is reversible, in other words, thermoplastics can theoretically be cooled and then melted down again any number of times. Another unique advantage of thermoplastics is that they can be welded.

## Elastomers

have a fixed shape, but can be elastically deformed. They can elastically deform under tensile and compressive stresses, but afterwards will return to their original shape. Elastomers are used for producing seals and membrane entries.

## Duroplast

or thermosetting polymers/plastics, are plastics that can no longer be deformed following curing. Duroplasts produce hard, glass-like (brittle) polymeric materials with a high thermo-mechanical strength.

## Properties

The area of application for which plastic OBO products are suitable depends mainly on the properties of the material being used. The most important material properties are:

- Temperature resistance
- Risk of stress cracks
- Chemical resistance
- Halogen freedom
- UV resistance
- Flame resistance

		Material	Max. temperature resistance Permanent	Max. temperature resistance Short-time	Min. temperature resistance Static
Thermoplast	ABS AVA	Acrylonitrile butadiene styrene	70 °C	85 °C	-25 °C
	EVA	Ethylene vinyl acetate	55 °C	70 °C	-15 °C
	PA	Polyamide	120 °C	150 °C	-25 °C
	PA GF	Polyamide, fibreglass reinforced	120 °C	160 °C	-25 °C
	PBPT	Polybutylene terephthalate	120 °C	140 °C	-25 °C
	PC	Polycarbonate	110 °C	125 °C	-25 °C
	PE	Polyethylene	70 °C	90 °C	-25 °C
	PP	Polypropylene	90 °C	110 °C	-25 °C
	PS	Polystyrene	70 °C	80 °C	-15 °C
	PVC	Polyvinyl chloride	65 °C	80 °C	-25 °C
Elastomers	NBR SBR	Rubber mixture	100 °C	110 °C	-25 °C
	NBR	Nitrile rubber	100 °C	110 °C	-25 °C
Duroplast	UF	Duroplast, aminoplast, type 131.5	65 °C	90 °C	-25 °C
	MF	Duroplast, melamine resin, type 150	80 °C	110 °C	-25 °C





# Plastic: stress crack risk and chemical resistance

## Risk of stress cracks

Medium	ABS/ASA	UF	MF	EVA	NBR SBR	NBR	PA	PA/GF	PBPT	PC	PE	PP	PS	PVC
Risk of stress cracks	✗	✓	✓	✓	✓	✓	✓	○	○	✓	!	✓	✗	○

Danger of tension cracks: ✓ Virtually negligible      ○ Low      ! High      ✗ Very high

## Chemical resistance

Medium	ABS/ASA	UF	MF	EVA	NBR SBR	NBR	PA	PA/GF	PBPT	PC	PE	PP	PS	PVC
Petroleum	✓	✓	✓	○	✓	○	✓	✓	✓		○	○	○	✓
Fat	✓	✓	✓	✓	✓	○	✓	✓	✓				○	✓
Benzole	!	✓	✓	○	✓	!	✓	✓	○	!	!	○	!	!
Solvents	!						✓	✓	○				!	!
Formic acid	✓	!									!	○		
Citric acid	✓	!		○							!			
Lactic acid	✓	!		○							!	○	!	!
Hydrochloric acid	○	!									✓			!
Sulphuric acid	○	!									✓			!
Acetone	!	✓					✓	✓	○	!	!	○	!	!
Petrol	!	✓	✓	○	○	!	✓	✓	✓	✓	!	○	!	✓
Butyric acid	!	!		○							!	○		!
Chlorine	!						!	!	!	!	!	!	!	
Acetic acid	!	!		○							!		!	
Nitric acid	!	!									✓		!	
Ester		✓	✓	○	!	!								
Alcohol		✓	✓	○			✓						✓	
Mild alkalis		✓	✓	✓	✓	✓	○	○	!		✓	✓		✓
Mild acids		○	○	✓	✓	✓	!	!	✓	✓	✓			✓
Ether		✓	✓	○									!	
Water		✓	✓	✓	✓	✓								
Strong acids		!	!	○					!	!	!			!
Strong alkalis		!	!	✓					!		✓	✓		✓
Hydrofluoric acid				○							✓			
Paraffin hydrocarbon				○								○		
Haloalkanes				!										
Ketones				!	!								!	
Aldehyde				✓										
Organic acids				○							!	○		
Seawater					✓	✓								
Diesel fuel							✓	✓	✓		○	○	!	
Ammoniac									○				!	

Resistance: ✓ Resistant      ○ Limited resistance      ! Not resistant

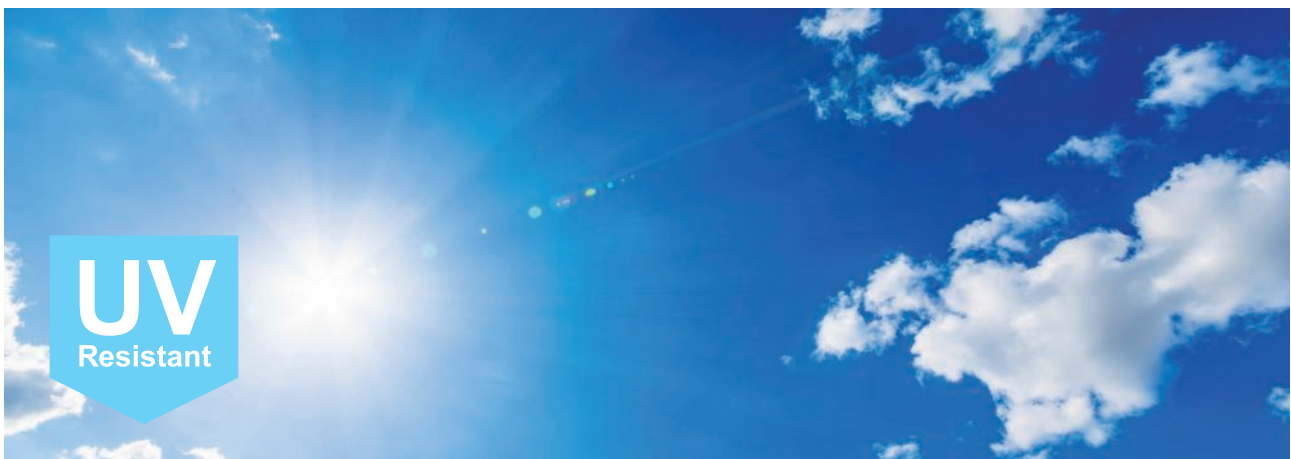
# Plastic: material properties



## Halogen freedom

Estimates suggest that around 95% of fire victims die not due to the immediate effects of the fire, but of poisoning from the smoke. In addition, the corrosive fire gases created during fires cause immense damage to property and can permanently damage the structure of a building. Therefore, halogen-free installation systems must, or should, always be used in public areas (emergency routes, lifts, etc.). The chemical composition of these halogen-free systems is designed in such a way that, in the event of fire, they produce less hazardous

(toxic/corrosive) gases, which could combine with extinguishing agents to form hydrochloric acid. In the sense of the standard DIN VDE 0472, this means that materials are considered halogen-free when "the proportions of the halogens chlorine, bromine and iodine are  $\leq 0.2\%$  for chlorine and  $\leq 0.1\%$  for fluorine". OBO Bettermann offers a wide range of halogen-free products that reduce the risk of harm to people and property to a minimum in case of fire.



## UV resistance

Outdoor installations should always be viewed particularly critically with regard to the mounting locations and the selection of the installation materials.

UV radiation is damaging to many plastics, causing them to turn yellow and/or brittle or lose their elasticity. However, plastics can be protected against UV damage through the addition of UV stabilisers. Products made

from UV-resistant materials are specially marked. In general, besides UV radiation, installations outdoors must also take other environmental influences into account. Factors such as maximum temperatures, regularity of (extreme) temperature changes, humidity and the location of use/mounting (housing, industry, town, region, continent) all have an important role to play here.



### Flame resistance/fire resistance

Materials are described as flame-resistant if they prevent the spread of fire or are sufficiently fire-resistant. According to DIN EN 60695-2-11 (VDE 0471 Part 2-11), electrical connection materials must be subjected to a glow wire test in order to evaluate the fire risk of the end product. When the glow wire test is being carried out, a

glowing wire (for temperature see table below) is inserted into the component to be tested for a period of 30 seconds and then removed. After a further 30 seconds at the latest, the object, if it has caught light, must have extinguished again, in order to specify the flame resistance.



### Types of installation systems

Types of samples Test temperatures in °C	Surface-mounted	Flush-mounted	In-plaster	Cavity wall/furniture	Concrete structure	Installation duct
Connection sockets	650	650	750	850	650	750
Device sockets and device connection sockets	750	650	-	850	650	750
Ceiling lights, connection sockets	750	650	-	850	650	750
Wall luminaire connection boxes	750	650	-	850	650	750
Device connection sockets	750	650	-	850	650	750
Connection sleeves	750	-	-	-	-	750
Insulation sections, which support active parts	960	-	-	-	-	-
Lid for installation sockets	750	-	-	-	-	-



# Protection ratings



## IP protection rating

The IP protection rating specifies how far a component is protected against contact and foreign bodies and the ingress of water. The IP protection ratings are controlled by the standard DIN EN 60529 (VDE 0470 Part 1). The IP is always made up of two digits.

The first digit designates the contact and foreign body protection. On the one hand, it specifies how far a housing prevents access to dangerous parts, by preventing or limiting the ingress of body parts or objects held by a person. On the other hand, it specifies how far the housing protects the installed resources against the ingress of solid foreign bodies.

## Protection rating

First code digit	...against access to the hazardous parts	...against solid foreign bodies
0	Protected against access to hazardous parts with the back of the hand	Non-protected
1	Protected against access to hazardous parts with a finger	Protected against solid foreign bodies of 50 mm diameter and larger
2	Protected against access to hazardous parts with a tool	Protected against solid foreign bodies of 12.5 mm diameter and larger
3	Protected against access to hazardous parts with a wire	Protected against solid foreign bodies of 2.5 mm diameter and larger
4	Protected against access to hazardous parts with a wire	Protected against solid foreign bodies of 1.0 mm diameter and larger
5	Protected against access to hazardous parts with a wire	Dust-protected
6	Protected against access to hazardous parts with a wire	Dust-proof



The second digit specifies the protection against water. It specifies how far the resource is protected against incoming water and the resulting damage.

**Protection rating against the entry of water with a damaging impact**

Second code digit	Short description	Definition
0	Non-protected	-
1	Protected against water droplets	Droplets falling vertically must not have a damaging impact.
2	Protected against drip water when enclosure tilted up to 15°	Vertically falling drops must not have harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical.
3	Protected against spray water	Water being sprayed at an angle of 60° on both sides of the vertical must not have any damaging impact.
4	Protected against spray water	Water spraying the housing from any direction must not have any damaging impact.
5	Protected against water jets	Jets of water pointing at the housing from any direction must not have any damaging impact.
6	Protected against strong water jets	Strong jets of water pointing at the housing from any direction must not have any damaging impact.
7	Protected against the effects of being temporarily immersed in water	If the housing is sometimes underwater under standard pressure and time conditions, then water may not enter in such volumes as would have a damaging impact.
8	Protected against the effects of being continuously immersed in water	Ingress of water in quantities causing harmful effects must not be possible when the housing is continuously immersed in water under conditions which shall be agreed between manufacturer and user. However, the conditions are more difficult to fulfil than for number 7.



**IK code**

The IK code to DIN EN 50102 indicates the protection rating of housings against external mechanical loads. It is made up of the code letters IK and a two-digit number from 00 to 10. Each group of numbers stands for a load energy value in joules (J). The IK code always applies to

the complete housing, which guarantees the protection of resources against the damaging effects of mechanical loads. The housings are tested by knocking them with different testing hammers.

IK code	00	01	02	03	04	05	06	07	08	09	10
Stress energy value [J]	-	0.15	0.20	0.35	0.50	0.70	1	2	5	10	20

# Nominal values of electrical equipment



When using junction boxes, connection sockets and connection terminals, the resources are assigned nominal values. In the designation, a distinction is made between the maximum approved voltage (nominal voltage), the

maximum approved current (nominal current) and the maximum approved cross-section (nominal cross-section of the cables to be connected).

**2,5  
mm<sup>2</sup>**

**Nominal cross-section**

Largest tested-approved cross-section of the cables to be connected.

**16  
A**

**Nominal current**

The nominal current is the highest permissible operating current that can be continuously passed through connections (e.g. terminals) marked with that value.

**660  
V**

**Nominal voltage**

Greatest approved voltage at the connection point.

In addition to the nominal values, the number of entries for junction boxes and the number of poles of clamp connectors are also possible labels.

**12**

**No. of poles**

Number of connection points of the clamp connector.

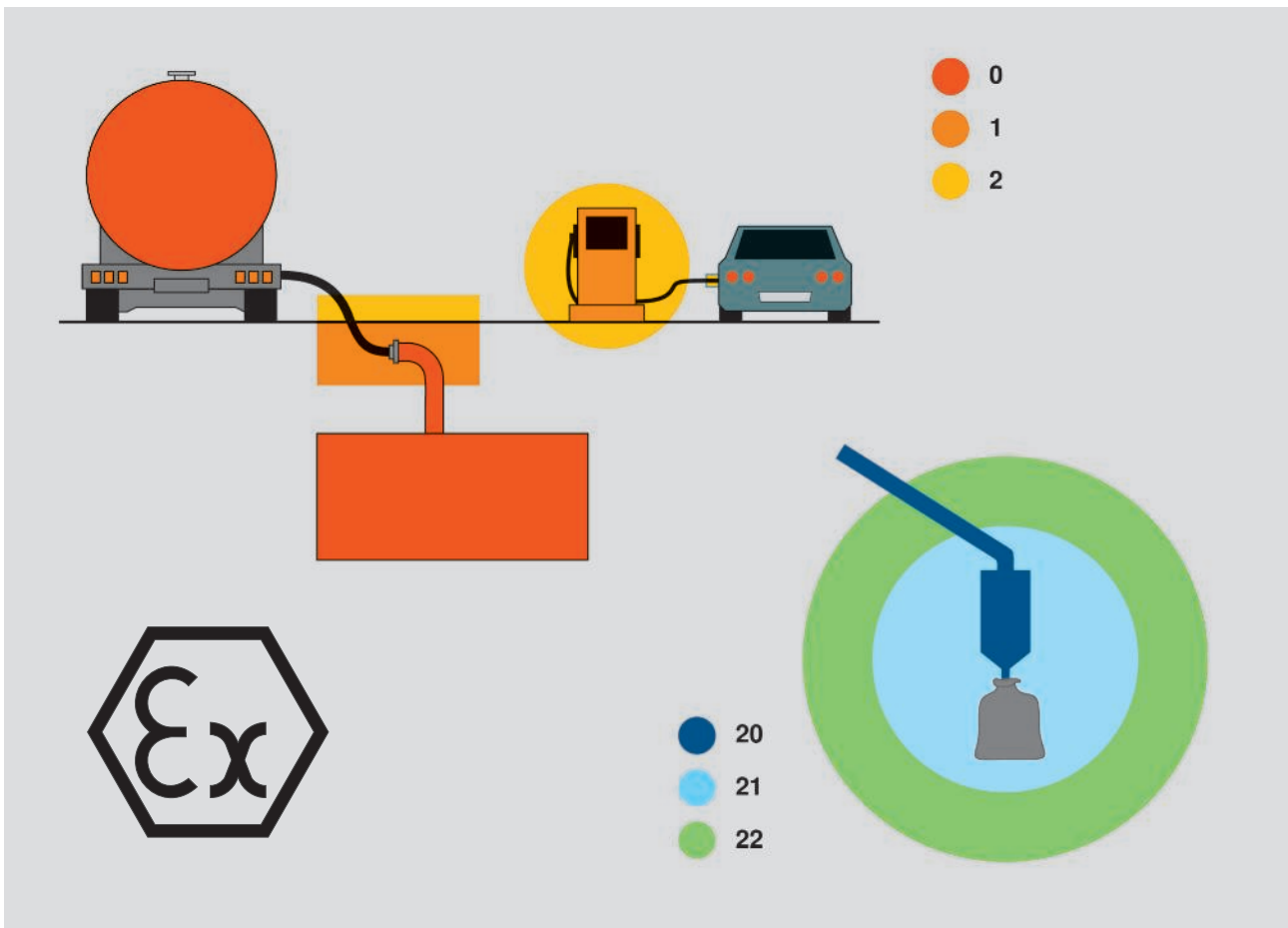
**7**

**Number of entries**

Number of entries in an electrical connection box or connection socket.



# Zone division for explosive areas



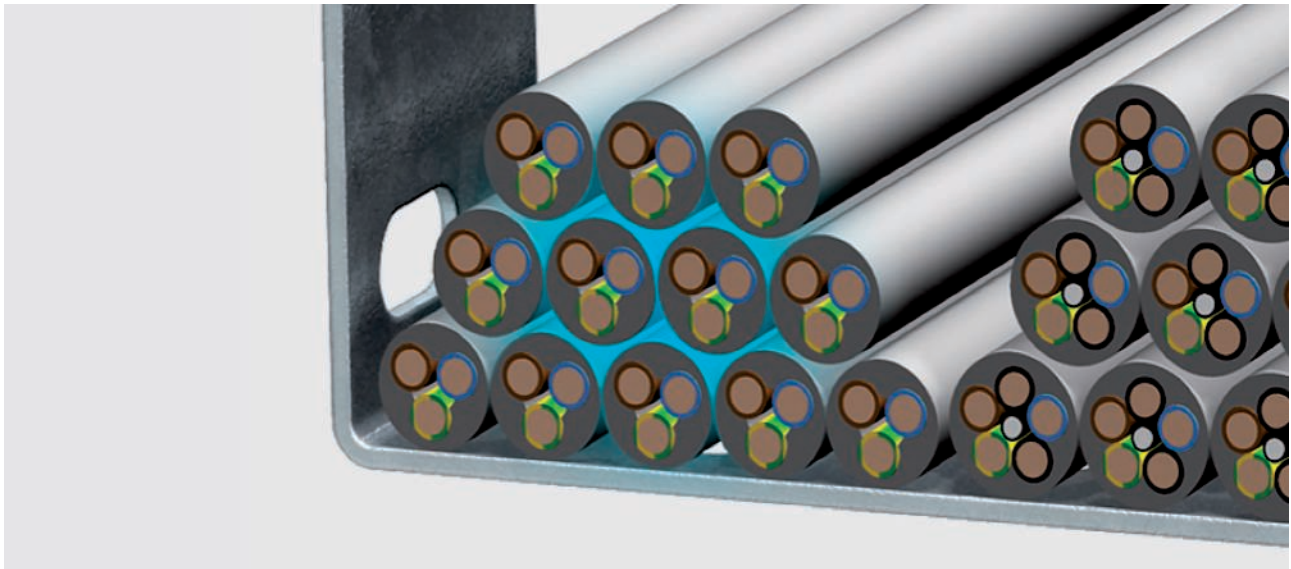
Products used in potentially explosive areas must comply with the ATEX directives. The ATEX workplace directive 1999/92/EC sets out the minimum requirements for improving the safety and health protection of workers at risk from potentially explosive atmospheres. The directive

divides areas with dangerous, potentially explosive atmospheres into zones. Ex-tested products may be used in the respective zones in accordance with their approval.

## Zone allocation of device group II (applied)

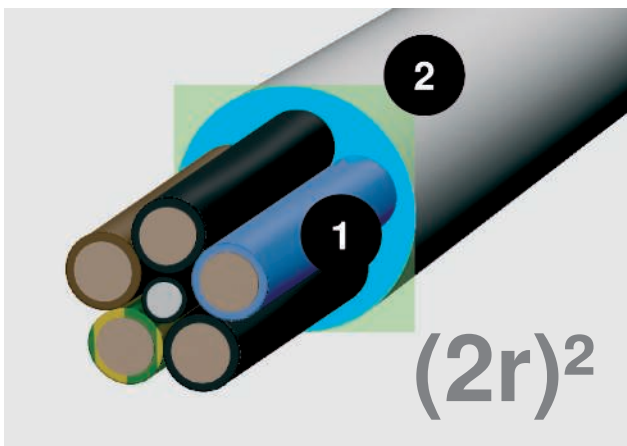
Gas	Dust
<b>Explosive gas atmosphere, zone division to DIN EN 60079-10</b>	<b>Explosive dust/air mixtures, zone division to DIN EN 61214-10</b>
Zone 0	Zone 20
An area in which it can be expected that, under normal conditions, an explosive atmosphere of gas occurs continuously or for long periods of time.	An area in which it can be expected that, under normal conditions, an explosive atmosphere of dust/air occurs continuously or for long periods of time.
Zone 1	Zone 21
An area in which it can be expected that, under normal conditions, an explosive atmosphere of gas occasionally occurs.	An area in which it can be expected that, under normal conditions, an explosive atmosphere of dust/air occasionally occurs.
Zone 2	Zone 22
Area, in which it can be expected that, under normal conditions, an explosive atmosphere of gas seldom or only briefly occurs.	Area, in which it can be expected that, under normal conditions, an explosive atmosphere of dust/air seldom or only briefly occurs.

# Cable sizes



The term “cable” means a jacketed electrical cable for the transmission of electrical energy and data. Cables are given according to their nominal cross-section. The external diameter and usable cross-section depend on their nominal cross-section and the number of individual wires contained in the cable. When fastening clips or

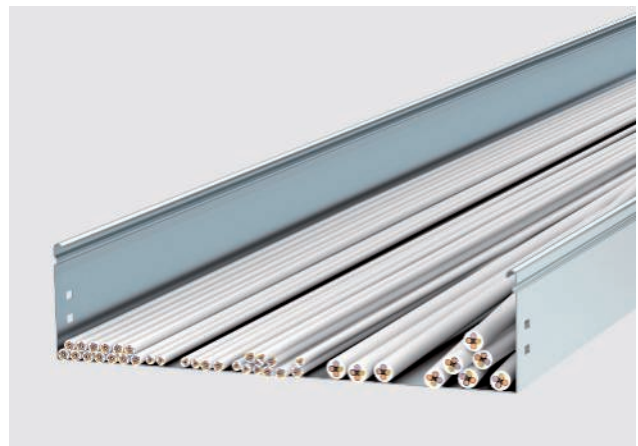
cable support systems are used, it is important to know the actual space requirements of the individual cables. It is not sufficient to take only the diameter as a basis for the calculation of the cable volume.



Circular area (1) and space required (2)

### Calculation with the formula $(2r)^2$

The diameter says little about the actual space required by a cable. Calculate:  $(2r)^2$ . This value reflects the realistic space requirements, including the compartments.



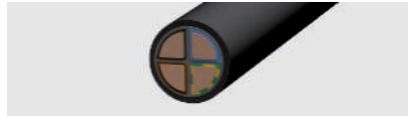
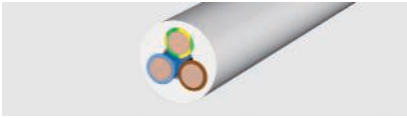
To save you work, we have listed the diameter and usable cross-section of the most important cable types below.

### Important:

These values are average values, which may vary from manufacturer to manufacturer. Please refer to the manufacturer's specifications for the exact values.



# Basic values for the calculation of the cable volume



## Insulated power cables

Type	Diameter mm	Usable cross-section cm <sup>2</sup>
1 x 4	6.5	0.42
1 x 6	7	0.49
1 x 10	8	0.64
1 x 16	9.5	0.9
1 x 25	12.5	1.56
3 x 1.5	8.5	0.72
3 x 2.5	9.5	0.9
3 x 4	11	1.21
4 x 1.5	9	0.81
4 x 2.5	10.5	1.1
4 x 4	12.5	1.56
4 x 6	13.5	1.82
4 x 10	16.5	2.72
4 x 16	19	3.61
4 x 25	23.5	5.52
4 x 35	26	6.76
5 x 1.5	9.5	0.9
5 x 2.5	11	1.21
5 x 4	13.5	1.82
5 x 6	14.5	2.1
5 x 10	18	3.24
5 x 16	21.5	4.62
5 x 25	26	6.76
7 x 1.5	10.5	1.1
7 x 2.5	13	1.69

## Insulated power cables

Type	Diameter mm	Usable cross-section cm <sup>2</sup>
1 x 10	10.5	1.1
1 x 16	11.5	1.32
1 x 25	12.5	1.56
1 x 35	13.5	1.82
1 x 50	15.5	2.4
1 x 70	16.5	2.72
1 x 95	18.5	3.42
1 x 120	20.5	4.2
1 x 150	22.5	5.06
1 x 185	25	6.25
1 x 240	28	7.84
1 x 300	30	9
3 x 1.5	11.5	1.32
3 x 2.5	12.5	1.56
3 x 10	17.5	3.06
3 x 16	19.5	3.8
3 x 50	26	6.76
3 x 70	30	9
3 x 120	36	12.96
4 x 1.5	12.5	1.56
4 x 2.5	13.5	1.82
4 x 6	16.5	2.72
4 x 10	18.5	3.42
4 x 16	21.5	4.62
4 x 25	25.5	6.5
4 x 35	28	7.84
4 x 50	30	9
4 x 70	34	11.56
4 x 95	39	15.21
4 x 120	42	17.64
4 x 150	47	22
4 x 185	52	27
4 x 240	58	33.6
5 x 1.5	13.5	1.82
5 x 2.5	14.5	2.1
5 x 6	18.5	3.42
5 x 10	20.5	4.2
5 x 16	22.5	5.06
5 x 25	27.5	7.56
5 x 35	34	11.56
5 x 50	40	16

## Telecommunications cables

Type	Diameter mm	Usable cross-section cm <sup>2</sup>
2 x 2 x 0.6	5	0.25
4 x 2 x 0.6	5.5	0.3
6 x 2 x 0.6	6.5	0.42
10 x 2 x 0.6	7.5	0.56
20 x 2 x 0.6	9	0.81
40 x 2 x 0.6	11	1.12
60 x 2 x 0.6	13	1.69
100 x 2 x 0.6	17	2.89
200 x 2 x 0.6	23	5.29
2 x 2 x 0.8	6	0.36
4 x 2 x 0.8	7	0.49
6 x 2 x 0.8	8.5	0.72
10 x 2 x 0.8	9.5	0.9
20 x 2 x 0.8	13	1.69
40 x 2 x 0.8	16.5	2.72
60 x 2 x 0.8	20	4
100 x 2 x 0.8	25.5	6.5
200 x 2 x 0.8	32	10.24



## IT cables type Cat...

Type	Diameter mm	Usable cross-section cm <sup>2</sup>
Cat. 5	8	0.64
Cat. 6	8	0.64



## Coax cable (Standard)

Type	Diameter mm	Usable cross-section cm <sup>2</sup>
SAT/BK cable	6.8	0.48



# Selection of the correct fastening clip



Fastening clips are given with their maximum span distance as a nominal size in mm. This makes it easy to determine the appropriate clip for the planned cable volume. If the necessary clamping range is between two nominal sizes, e.g. 16 mm, we recommend using the smaller nominal size.

If cables are not fastened directly in the clip, but routed through an installation pipe for example, the relationship between the external diameter and metric or PG sizes must be observed when selecting the correct fastening clip. You will find more information on this in the table below.

## Overview of external diameters, metric and PG sizes

External diameter in mm	Metric size	PG size
Up to 12	M12	PG 7
Up to 16	M16	PG 9/PG 11
Up to 20	M20	PG 13.5/PG 16
Up to 25	M25	PG 21
Up to 32	M32	PG 21
Up to 40	M40	PG 36
Up to 50	M50	PG 42/PG 48
Up to 63	M63	-



# Cable glands and the DIN EN 62444 standard

Cable glands are manufactured and tested according to DIN EN 62444. Amongst other things, this standard controls the retaining ability and strain relief of cables. The V-TEC cable glands from OBO Bettermann correspond to version "A". Table 2A indicates the extraction forces that these cable glands must withstand according to the standard. The V-TEC cable glands also fulfil the requirements of DIN EN 62444 with regard to the

twist protection of cables (see Table 3). To ensure the tested dust and moisture protection of the cable glands, continuous perforations should correspond to the mounting openings specified in the standard DIN EN 62444 according to Table 1. The on-site specialist must ensure that these parameters are complied with in order to hand over a functioning system.

**Table 1**

Size of the penetration hole	mm	6	8	10	12	16	20	25	32	40	50	63	75
Thread of the cable gland	M	M6	M8	M10	M12	M16	M20	M25	M32	M40	M50	M63	M75
Diameter of the mounting hole (+0.2/-0.4)	mm	6.5	8.5	10.5	12.5	16.5	20.5	25.5	32.5	40.5	50.5	63.5	75.5

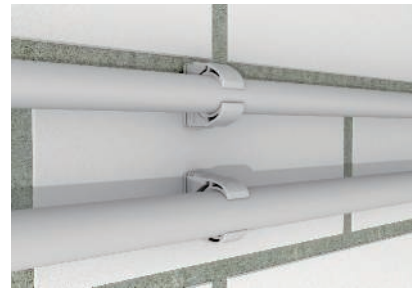
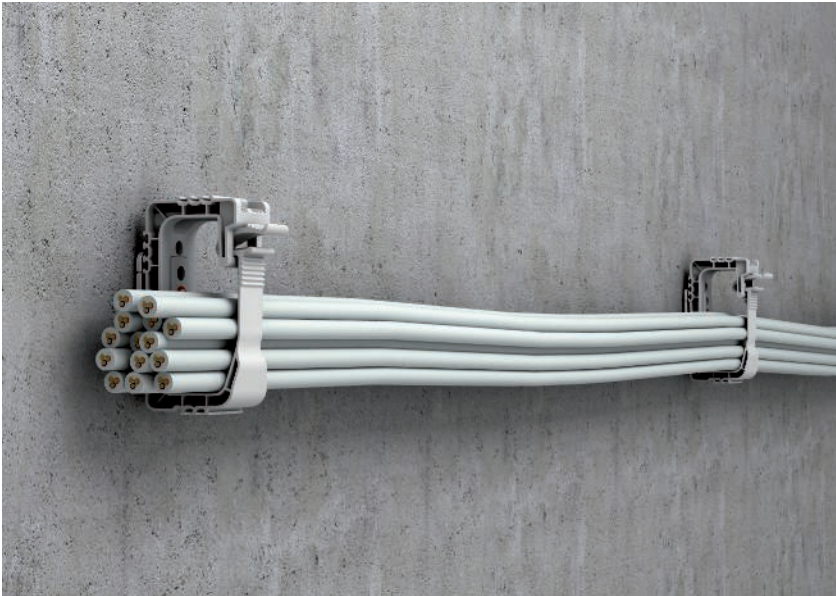
**Table 2 A**

Cable diameter	Retaining capacity	Strain relief, version A
mm	N	N
to 4	5	–
>4 to 8	10	30
>8 to 11	15	42
>11 to 16	20	55
>16 to 23	25	70
>23 to 31	30	80
>31 to 43	45	90
>43 to 55	55	100
>55	70	115

**Table 3**

Cable diameter	Torque Version A and B
mm	Nm
>4 to 8	0.10
>8 to 11	0.15
>11 to 16	0.35
>16 to 23	0.60
>23 to 31	0.80
>31 to 43	0.90
>43 to 55	1.00
>55	1.20

# Information on cable fastenings



## Cable fastening

The standard DIN EN 61914 "Cable holders for electrical installations" specifies that cable holders "must be able to accept cables or cable bundles of the diameter specified by the manufacturer or responsible retailer, without tearing or breaking or shearing off the threads of bolts".

During the installation of cables, the current national and international standard must be taken into account, such as DIN VDE 0100 520. "Suitable tools and methods, which prevent damage or changes to the shape" must be used for fastening.

In addition, with masses of cables, DIN VDE 0298 requires the appropriate "load capacities of cables for fixed laying in and on buildings..." to be taken into account when selecting the fastening systems.

Besides these standardising aspects, the end customer's or client's particular laying specifications can/must be taken into account.

The fastening spacing for cables is given in DIN VDE 0100-520, June 2013. For example, cables laid horizontally require a spacing of 20x the cable diameter. However, a spacing of 80 cm should not be exceeded. With vertical routing, the clip spacings may be increased but should not exceed 1.5 m.

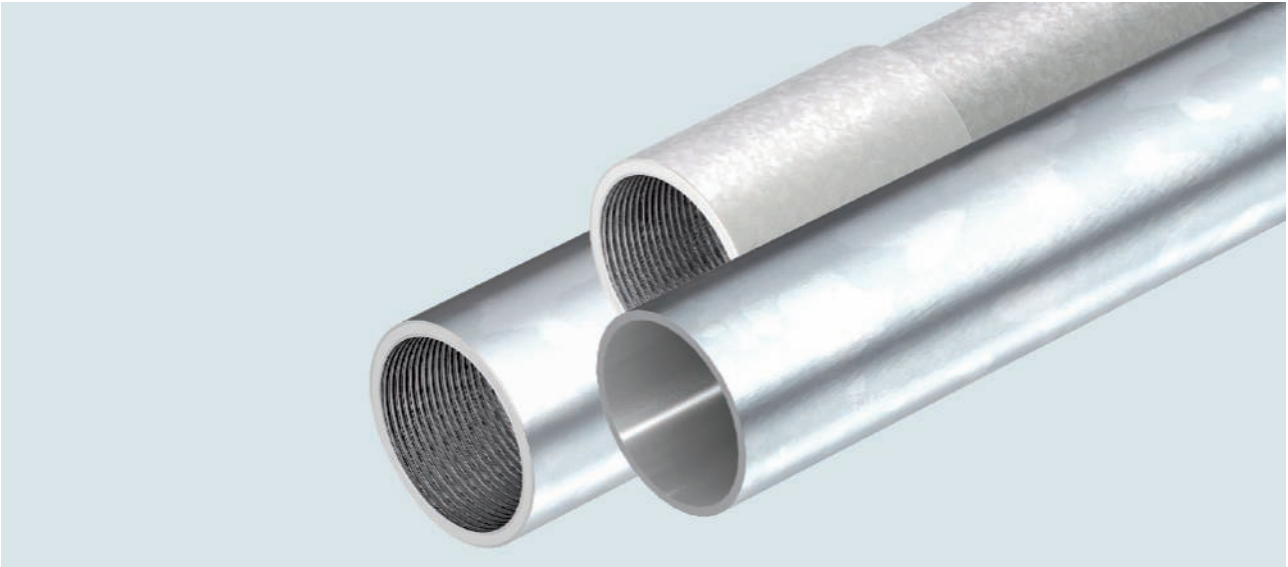
The table below shows the maximum fastening spacings for cables according to the cable diameter. The laying spacings given in the Industrial installation product catalogue, e.g. for bus holders or Quick clips, are guide values and can only be treated as such.

External diameter of the cables	Maximum spacing for horizontal fastening	Maximum spacing for vertical fastening
mm	mm	mm
$D \leq 9$	250	400
$9 < D \leq 15$	300	400
$15 < D \leq 20$	350	450
$20 < D \leq 40$	400	550





# IEC classification in accordance with DIN EN 61386-1

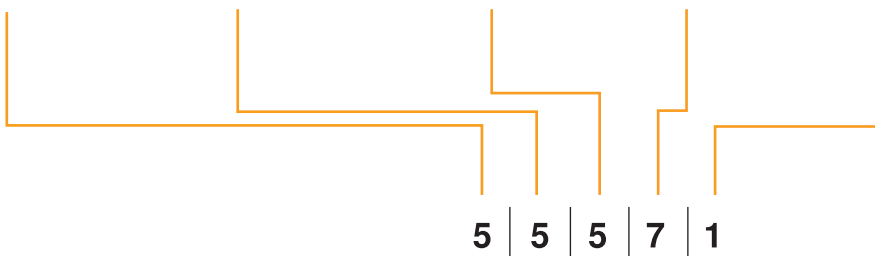


The OBO Bettermann pipe systems are machined and tested according to DIN EN 61386 (Electrical installation pipe systems for electrical energy and information) and DIN EN 60423 (External diameters of electrical installation pipes and thread for electrical installation pipes and their accessories).

### Numeric code

DIN EN 61386-1 classifies installation pipes using a 12-digit numeric code, which provides information on the pressure resistance, impact resistance or use temperatures. You can find the first five digits in the product descriptions of the pipe systems.

	First digit		Second digit		Third digit		Fourth digit		Fifth digit
	Pressure resistance		Impact resistance		Lower temperature range		Upper temperature range		Bending behaviour
1	Very light (125 N)	1	Very light (0.5 kg/100 mm)	1	+5 °C	1	+60 °C	1	Rigid
2	Light (320 N)	2	Light (1.0 kg/100 mm)	2	-5 °C	2	+90 °C	2	Bendable
3	Medium (750 N)	3	Medium (2.0 kg/100 mm)	3	-15 °C	3	+105 °C	3	Pliable, self-recovering
4	Heavy (1,250 N)	4	Heavy (2.0 kg/300 mm)	4	-25 °C	4	+120 °C	4	Flexible
5	Very heavy (4,000 N)	5	Very heavy (6.8 kg/300 mm)	5	-45 °C	5	+150 °C		
						6	+250 °C		
						7	+400 °C		



### Classification according to IEC EN 61386-1: Composition of the IP code

7th digit		8th digit	
	Ingress of solid bodies		Ingress of water
0		0	None declared
1		1	Protected against vertically falling water drops
2		2	Protected against vertically falling water drops, when the pipe system is tilted up to an angle of 15°
3	Protected against solid foreign objects of 2.5 mm Ø and greater	3	Protected against spraying water
4	Protected against solid foreign bodies of 1.0 mm Ø and larger	4	Protected against splashing water
5	Dust-protected	5	Protected against water jets
6	Dust-proof	6	Protection against powerful water jets
7		7	Protected against the effects of temporary immersion in water

### Classification according to IEC EN 61386-1: Corrosion protection

9th digit		Suitable surfaces
Resistance against corrosion		
1	Low protection, inside and outside	
2	Medium protection, inside and outside	<ul style="list-style-type: none"> <li>• Black coated (SW)</li> <li>• Electrogalvanised (G)</li> <li>• Strip galvanised (FS)</li> </ul>
3	Medium protection inside, high protection outside	
4	High protection inside and outside	<ul style="list-style-type: none"> <li>• Hot-dip galvanised (FT)</li> <li>• Stainless steel (V2A, V4A)</li> </ul>



#### Protection against mechanical loads

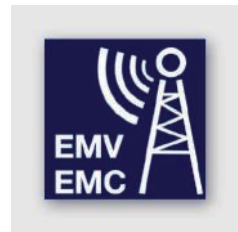
OBO metal pipes are particularly suited to use under tough industrial conditions. They provide reliable protection against very heavy mechanical loads during cable routing.

The different material and surface qualities, from galvanised to painted, allow perfect adaptation to the requirements of the appropriate environment.

#### Maintenance of electrical function to E30/E90

Our steel pipes guarantee the maintenance of electrical function to E30/E90. They are thus ideal for the connection of safety-relevant equipment, such as smoke extraction systems.

# Definition of electromagnetic compatibility (EMC)



Recent years have seen the use of electronic circuits increase continually. Whether in industrial systems, medicine, households, telecommunications systems or electrical building installations – we find powerful electrical equipment and systems everywhere, and these switch ever greater currents, achieve greater radio ranges and transport ever more power in smaller spaces.

However, the use of state-of-the-art technology means that the complexity of applications also increases. The consequence of this is that ever more opposing influences (electromagnetic interferences) can occur from system parts and cables, causing damage and economic losses.

**Here, we talk of electromagnetic compatibility:**

Electromagnetic compatibility (EMC) is the ability of an electrical unit to function satisfactorily in its electromagnetic environment, without inappropriately influencing this environment, to which other units also belong (VDE 0870-1). In terms of standardisation, electromagnetic compatibility is dealt with by the EMC Directive 2004/108/EC. This means that electrical resources emit electromagnetic interferences (emissions), which are picked up by other devices or units (immission) that act as receivers (interference sink). This in turn means that the function of an interference sink can be severely reduced and, in the worst-case scenario, result in total failure and economic losses. The interferences can then spread along cables or in the form of electromagnetic waves.

**Path of faults**

Fault source (transmitting emissions)	Coupling of interference variables (spreading of interference)	Fault sink (receiving emissions)
For example - Mobile telephones - Switching components - Ignition systems - Frequency converters - Lightning strike - Welding devices	- Galvanic - Inductive - Capacitive - Electromagnetic	- Process computer - Radio receiver systems - Controllers - Converters - Measuring units



# Guarantee of EMC



## Guaranteeing EMC

A systematic planning process is necessary to guarantee EMC. The interference sources must be identified and quantified. The coupling describes the spread of the interference from the interference source up to the device being influenced, the interference sink. The task of EMC planning is to ensure the compatibility at the source, coupling path and sink using suitable measures. During their daily work, planners and installation engineers are confronted with this subject on an increasingly regular basis. This means that EMC is a basic factor to be taken into consideration during the planning of installations and cabling systems.

Due to the high complexity of electromagnetic compatibility, the problems of EMC must be analysed and solved using simplifying hypotheses and models, as well as experiments and measurements.

## Cable support systems and their contribution to EMC

Cable support systems can make an important contribution to the improvement of EMC. They are passive and can thus make a safe, long-lasting

contribution to EMC through the fact that cables are run within cable support systems or are shielded by them. Routing cables inside cable support systems greatly reduces the galvanic decoupling and coupling due to electrical and magnetic fields in the cables. Thus, cable support systems can make a contribution to the reduction of coupling from the source to the sink. The shielding action of cable support systems can be quantified by the coupling resistance and the shield attenuation. This gives the planner important engineering parameters for cable support systems for EMC engineering.

## Lightning discharge

From the analysis of the effectiveness of EMC in buildings (EN 62305-4), we know that lightning discharge is one of the greatest sources of interference to be expected. This causes a direct current feed into the entire equipotential bonding system in the building and/or to magnetic decoupling of interference currents in electrical cables. With regard to these couplings, cable support systems can offer an effective contribution to the reduction of interference voltages.

# Standards, specifications and certifications



## Standards

OBO offers products for professionals, made by professionals. Our products are manufactured and tested according to the respective specifications of the standards. For example, DIN EN 61537 describes all the relevant parameters for cable support systems, such as the area of application, test conditions, corrosion resistance and temperature classification. As a highly competent manufacturer, OBO subjects itself to these requirements on a daily basis. Comprehensive test procedures guarantee that systems which conform to standards function safely.

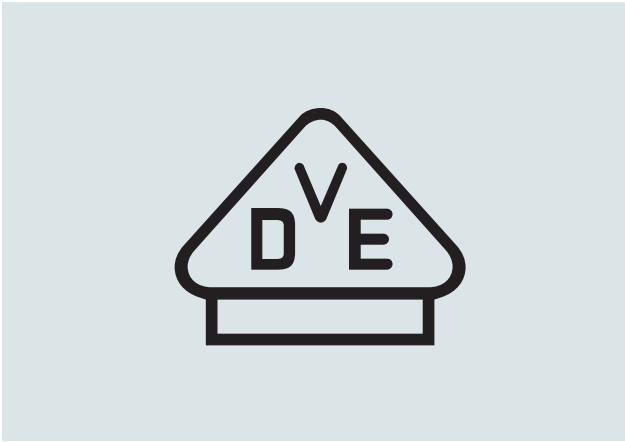
## Specifications

All the OBO products and systems are CE-compliant according to the appropriate EC guidelines. This also applies to standard parts such as bolts, washers and nuts that are components of various product systems. The appropriate EC declaration of conformity certifies agreement with the named directives or standards, but does not guarantee properties. The safety instructions in the product information and the general safety regulations must be complied with during installation and use.

## Certifications

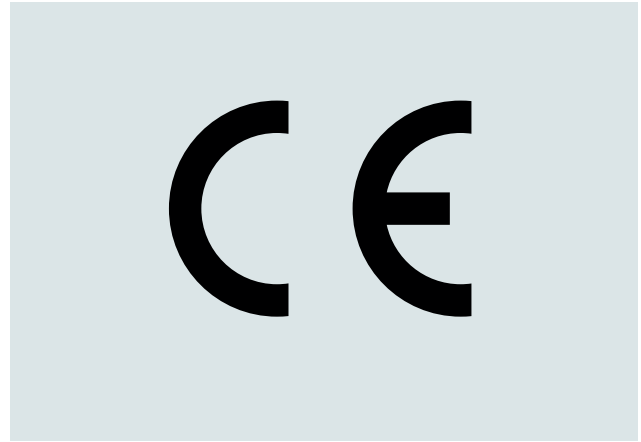
For OBO, product quality is closely connected to continuous testing and checking – which is why we manufacture almost all our products ourselves. This enormous depth of production is an expression of our demand for quality. From construction, and the materials used through production, right up to logistics, our employees personally guarantee the quality and availability of OBO products. The multitude of approvals emphasise our high demand for quality and product functionality. Our integrated quality management system forms the solid basis of our ISO 9001 certification, which we have held since 1994. The confirmation of suitability enables defined and workable processes in accordance with KTA 1401 and 10 CFR 50.

# Certificates and test marks



### VDE

VDE is the Association for Electrical, Electronic and Information Technologies, their study and the technologies and applications based upon them. The VDE mark on electrical equipment is proof that the equipment complies with VDE regulations and/or European or international harmonised standards, and meets the safety requirements of the applicable directives. The VDE mark indicates that a product is safe in relation to electrical, mechanical, thermal, toxic, radiological and other hazards.



### CE symbol

Technical resources included in a legal ordinance, i.e. electrical resources, machines and safety components, must have a CE symbol, with which the manufacturer confirms that the safety requirements of the ordinances are fulfilled. In addition, there must also be a declaration of conformity and technical documentation. The CE symbol is not a quality mark, but simply a declaration by the manufacturer that they have complied with the legal requirements and the codes of practice.



### UL

Underwriters Laboratories (UL) is an independent organisation that tests and certifies product safety. UL certification is generally required if a product is to be sold on the US market.

UL offers various certification options: The "UL Listed"



test mark indicates that UL has tested representative samples of a product and that it conforms to UL's safety requirements. The "UL Recognized" component test mark entitles a product to be used in a product or system bearing the "UL Listed" test mark.



# First-hand support and knowledge



## **OBO seminars: First-hand knowledge**

With a comprehensive programme of training courses and seminars, OBO supports its customers with first-hand specialist knowledge. Besides the theoretical principles, practical everyday implementation is also dealt with. Special calculation and application examples round off the comprehensive programme of knowledge transfer.

## **Invitations to tender, product information and data sheets**








































We can make life easier for you, with our comprehensive selection of materials designed for practical applications, which provide you with effective support with the planning and calculation of a project. These include:

- Invitations to tender
- Product information
- Data sheets

## **Invitations to tender on the Internet at [www.ausschreiben.de](http://www.ausschreiben.de)**

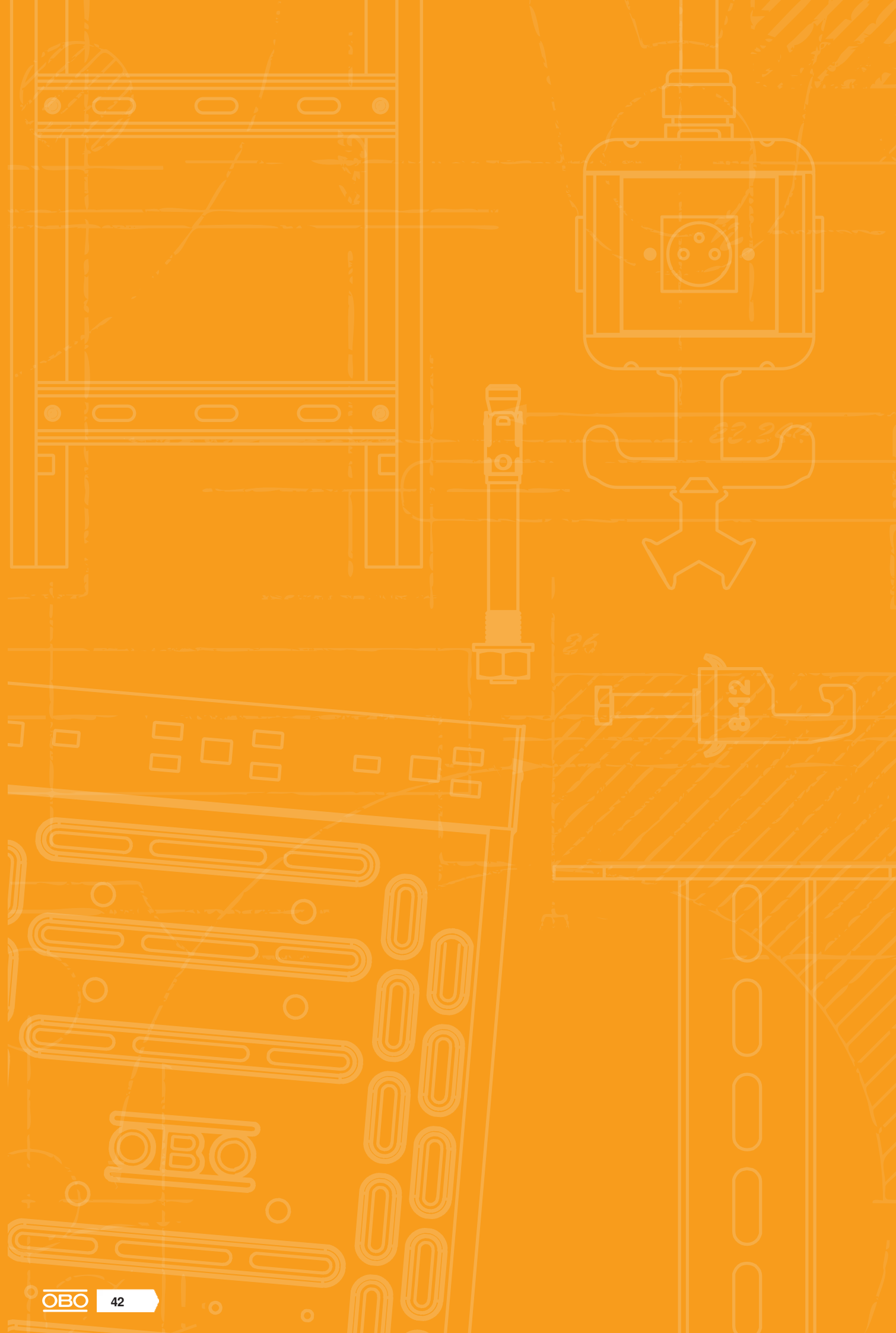
More than 10,000 entries from the different ranges can be called up free of charge. Regular updates and extensions mean that you always have a comprehensive overview of the OBO products. All the current file formats (PDF, DOC, GAEB, HTML, TEXT, XML, ÖNORM) are available. [www.ausschreiben.de](http://www.ausschreiben.de)

# 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		







# Anchor and tie



Plastic anchors

44



Metal anchors

50



Injection anchors

68



## Screw lock



The components listed below are now considered to be ineffective screw locks, as the corresponding standards have been withdrawn. They are therefore not permitted as the sole safety devices for strength classes  $\geq 8.8$ .

### Withdrawn standards:

- Spring lock washers (DIN 127, DIN 128 and DIN 6905)
- Wave spring washers (DIN 137 and DIN 6904)
- Toothed discs (DIN 6797)
- Serrated washers (DIN 6798)
- Locking plates (DIN 93, DIN 432 and DIN 463)
- Safety cups (DIN 526)
- Locking nuts (DIN 7967)
- Castle nuts with split pin (DIN 937)

All specified standards have now been withdrawn, however these components can often still be used as "captive prevention". Captive prevention devices prevent a screw connection from being completely unscrewed, but not from loosening.

At OBO Bettermann, individual products – such as hexagonal bolts with washer and nut – continue to be sold as a complete package, as these are used for electrical contact to surrounding metallic components.

Our systems are generally not exposed to dynamic loads that require screw locking.



## Tightening torques



Different tightening torques apply when mounting a cable support system. Please note that the specified torques are only intended as rough, non-binding guide values (see VDI 2230).

### Tightening torques of bolts with metric thread made of steel

Thread	Tightness class 5.6	Tightness class 8.8
Friction coefficient 0.14	Friction coefficient 0.14	Friction coefficient 0.14
<b>M6</b>	4.80 Nm	4.80 Nm
<b>M8</b>	11.60 Nm	27.30 Nm
<b>M10</b>	23.10 Nm	54.00 Nm
<b>M12</b>	40.40 Nm	93.00 Nm
<b>M14</b>	64.70 Nm	148.00 Nm
<b>M16</b>	11.60 Nm	230.00 Nm

### Tightening torques of bolts with metric thread made of stainless steel

Thread	Resistance grade 70	Resistance grade 80
Friction coefficient 0.14	Friction coefficient 0.14	Friction coefficient 0.14
<b>M6</b>	11.60 Nm	12.90 Nm
<b>M8</b>	23.60 Nm	31.50 Nm
<b>M10</b>	46.80 Nm	62.40 Nm
<b>M12</b>	81.00 Nm	108.00 Nm
<b>M14</b>	129.00 Nm	172.00 Nm
<b>M16</b>	201.00 Nm	269.00 Nm

## Angler spreading anchor

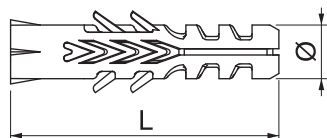
PA



Type	Dowel Ø mm	Dim. L mm	Wood screws Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
910 F 5x25	5	25	2,5-4	100	0.042	2349480
910 F 6x30	6	30	3,5-5	100	0.075	2349482
910 F 8x40	8	40	4,5-6	100	0.132	2349484
910 F 10x50	10	50	6-8	50	0.225	2349486
910 F 12x60	12	60	8-10	25	0.380	2349488

Required minimum screw length = anchor length + component thickness + 1 x screw Ø.  
 Withdrawal force applies to wood screws of the largest screw diameter, required safety values must be taken into account.

### Dimensions



Type	Concrete Frat N	Full brick Mz12 Frat N	Solid calcareous sandstone KSL12 Frat N	Porous concrete P2 Frat N	Porous concrete P4 Frat N	Hollow brick Hlz12 Frat N
910 F 5x25	230	240	330	40	40	90
910 F 6x30	310	380	370	50	60	120
910 F 8x40	340	460	430	70	70	130
910 F 10x50	770	790	780	100	100	220
910 F 12x60	1550	1570	1900	150	160	300

## Multipurpose anchors

### Universal anchor

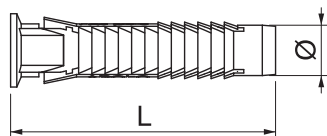
PE



Type	Dowel Ø mm	Dim. L mm	Wood screws Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
910 FX 5x25	5	25	2,5-4	100	0.037	2347580
910 FX 6x30	6	30	3,5-5	100	0.065	2347582
910 FX 8x40	8	40	4,5-6	100	0.150	2347584
910 FX 10x50	10	50	6-8	50	0.280	2347586
910 FX 12x60	12	60	8-10	25	0.400	2347588

Also suitable as a cavity anchor, with collars to prevent slipping. 3 tabs take up the torque.  
 Required minimum bolt length = anchor length + component thickness + 1 x bolt Ø.  
 Withdrawal force applies to wood screws of the largest bolt diameter in concrete of class B25.  
 Our safety value recommendation: 5x

### Dimensions



Type	Concrete Frat N	Full brick Mz12 Frat N	Solid calcareous sandstone KSL12 Frat N	Porous concrete P2 Frat N	Porous concrete P4 Frat N	Hollow brick Hlz12 Frat N	Porous calcareous sandstone KSL12 Frat N
910 FX 5x25	200	210	210	30	50	150	230
910 FX 6x30	470	420	420	50	100	200	390
910 FX 8x40	520	500	500	100	140	230	670
910 FX 10x50	1280	900	900	160	300	450	670
910 FX 12x60	1910	1100	1100	280	400	500	740

PA



### Multipurpose anchor

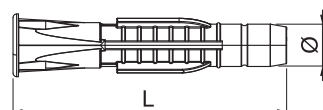
Type	Dowel Ø mm	Dim. L mm	Wood screws Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
910 AZK 5x31	5	31	34	100	0.036	2348120
910 AZK 6x38	6	38	45	100	0.063	2348122
910 AZK 8x51	8	51	56	100	0.106	2348124
910 AZK 10x61	10	61	7-8	50	0.260	2348126
910 AZK 12x71	12	71	8-10	25	0.370	2348128



Also suitable as a cavity anchor, with collar to prevent slipping. 3 tabs take up the torque.  
 Required minimum screw length = anchor length + component thickness + 1 x screw Ø.  
 Withdrawal force applies to wood screws of the largest bolt diameter in concrete of class B25.  
 Our safety value recommendation: 5x

Type	Solid			Porous		Plasterboard 12.5 mm	
	Concrete	Full brick calcaereous sandstone	calcaereous KSL12	Porous concrete P2	Hollow brick Hz12	calcaereous sandstone KSL12	Fempf.
	Frat N	Frat N	Frat N	Frat N	Frat N	Frat N	N
910 AZK 5x31	160	160	170	30	210	170	70
910 AZK 6x38	230	190	—	50	230	340	90
910 AZK 8x51	460	270	—	60	320	310	90
910 AZK 10x61	1250	860	—	110	310	520	90
910 AZK 12x71	1470	910	—	200	350	480	—

### Dimensions



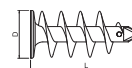
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### Insulation anchor

Type	Length mm	Dowel Ø mm	Wood screws Ø mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
DSDT 60	58	8	4.5-5	0.05	10	0.720	2347605

Insulation anchor for universal lightweight fastening in plastered heat composite systems. With self-tapping point.



### Knock-in anchor

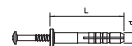
PA



### Knock-in anchor

Type	Dowel Ø mm	Length mm	Pull-out force N min/concrete	Pack Piece	Weight kg/100 pc.	Item no.
910 SD 5X35	5	35	220	100	0.360	2351021
910 SD 6X35	6	35	260	100	0.310	2351056
910 SD 6X40	6	40	260	100	0.555	2351064
910 SD 8X55	8	55	350	50	1.070	2351099

Knock-in anchor: steel, electrogalvanised and transparently passivated.



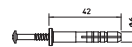
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### Knock-in anchor

Type	Dowel Ø mm	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
910 SD-Q 6x40	6	40	100	0.480	2351218

Knock-in anchor for Quick clips type 2955.  
 Knock-in anchor: steel, tempered, electrogalvanised and transparently passivated.

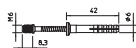




# Knock-in anchor

## Knock-in anchor

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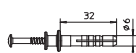


Type	Dowel		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Length mm			
910 SDM M6	6	40	100	0.480	2350807

With M6 thread.  
Knock-in anchor: steel, tempered, electrogalvanised and transparently passivated.

## Double-flange anchor

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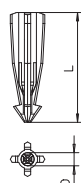
Type	Dowel		Drill hole depth mm	Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Length mm				
910 DF 6x35	6	35	40	100	0.425	2347407

Knock-in anchor: steel, tempered, electrogalvanised and transparently passivated.

# Gas concrete anchor

## Gas concrete anchor

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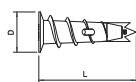
Type	Dim.		Colour	Pack Piece	Weight kg/100 pc.	Item no.
	D mm	L mm				
910 GD 6x35	6	35	Light grey	100	0.094	2347229
910 GD 8x50	8	50	Light grey	50	0.263	2347261

The anchor can be knocked directly into the porous concrete (gas concrete resistance class G2). With a resistance class of G4 or greater, a 5 or 6 mm hole should be pre-drilled.  
Screw length: Component thickness + 40 mm (6 mm) / 55 mm (8 mm).

# Plasterboard anchor

## Plasterboard anchor

Zn



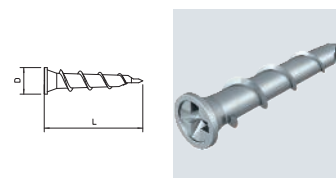
Type	Dim.		Perm. load range, tension zone kN	Pack Piece	Weight kg/100 pc.	Item no.
	D mm	L mm				
910 GKDM 12x30	12	30	0.04	100	0.400	3483214

To fasten components to plasterboard or fibre composite plates.  
Minimum plate thickness: 12 mm.  
For Ø 4.5 Golden Sprint or Sprint screws.

Zn

Plasterboard anchor

Type	Dim. D mm	Dim. L mm	Perm. load range, tension zone kN	Pack Piece	Weight kg/100 pc.	Item no.
910 GKSM 6x25	7.5	26.4	0.04	100	0.160	3483239



To fasten components to plasterboard or fibre composite plates.  
Min. plate thickness: 5 mm.



## System description



The majority of metal spreading anchors from OBO Bettermann have a European Technical Assessment ETA. Some versions have shock approval from the Federal Office for Civil Protection in Bern, Switzerland. Most metal spreading anchors have also been tested in terms of fire protection for a fire resistance time of up to 120 minutes. You can find detailed information regarding the permitted loads (also in the event of a fire) and the installation conditions that must be observed in the corresponding approvals.

### System benefits:

- Wide range of application areas thanks to the variety of versions, load classes and material qualities
- Quick and easy mounting
- High-tensile loads and shear loads
- Small edge and axis spacings
- Can be used indoors and outdoors (depending on material)



# Mounting aid



### Drilling an anchor hole

Drilling of the anchor hole according to the anchor approval information for the drill hole diameter and the drill hole depth.



### Blowing-out of the drill hole

Removing dust from the drill hole by blowing it out several times.



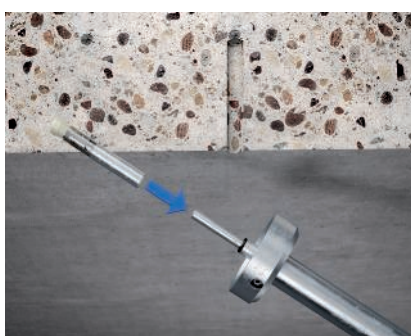
### Drilling an anchor hole in the ceiling

Drilling of the anchor hole in the ceiling according to the anchor approval information for the drill hole diameter and the drill hole depth.



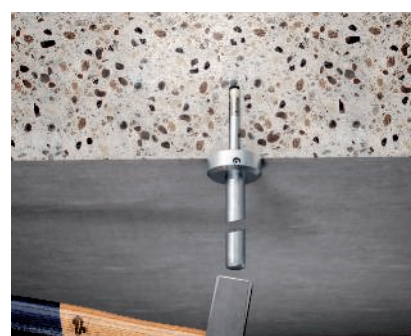
### Blowing-out of the drill hole in the ceiling

Removing dust from the drill hole by blowing it out several times.



### Placing the BZ-IG bolt tie

The bolt tie BZ-IG is placed on the BZ-IGS setting tool. It must be ensured that the thread size of the setting tool fits to the corresponding bolt tie.



### Knocking-in of the BZ-IG bolt tie

Knocking-in of the bolt tie BZ-IG with the appropriate setting tool. Then the component to be mounted can be fastened.



### Mounting of BZ-IG threaded rod

Mounting of a threaded rod into the BZ-IG bolt tie. The direct mounting of a component with a hexagonal bolt is also possible.



### Application of the BZ-IG torque

Fastening of the threaded rod by tightening the hexagonal nut with the torque specified in the approval.

## Mounting aid



**Nail tie, type N, with threaded connection**  
Nail tie, type N, with M6 threaded connection, usable in cracked or non-cracked standard concrete C20/25 to C50/60.



**Nail tie, type N-K, with drive-in head**  
Nail tie, type N-K with drive-in head, usable in cracked or non-cracked standard concrete C20/25 to C50/60.



**Bolt tie, type BZ**  
Bolt tie, type BZ, for fastening heavy-duty anchorings in cracked or non-cracked standard concrete C20/25 to C50/60, suitable for push-through mounting, with M8, M10, M12 or M16 thread.



**Drop-in anchor, type ES**  
Impact tie, type E, with M6, M8, M10, M12 internal thread. To accept small loads, approved for multiple fixings in cracked and non-cracked concrete of non-load-bearing systems.



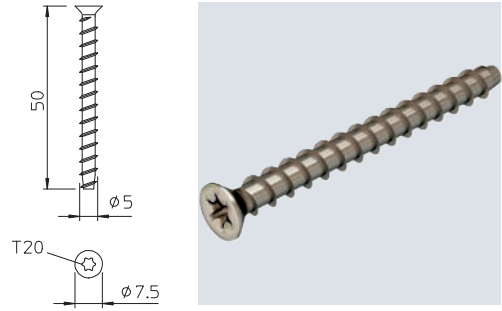
**Hollow core anchor, type Easy**  
Hollow core anchor, type Easy, with M6, M8 and M10 internal thread, for use in stressed concrete core slab ceilings.



### MMS-plus KS countersunk head tie, for cable clip

Type	Dimen- sion mm	Anchor length mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MMS+ KS 5x50</b>	5x50	50	4	7.5	Torx	200	0.460	<b>3498204</b>

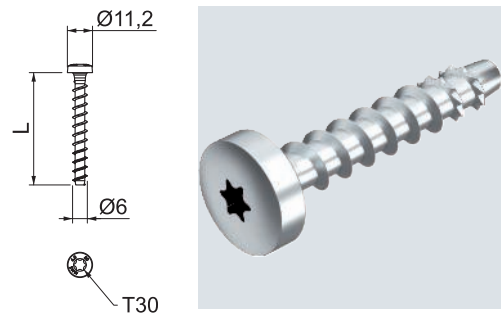
Bolt tie for direct mounting without additional anchors in concrete and masonry. With small countersunk head to fasten cable clips through the threaded foot. Load-bearing capacities under fire loads proven up to fire resistance class R120.



### MMS-plus P round head tie, with panhead

Type	Dimen- sion mm	Dim. L mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MMS+ P 6x35</b>	6x35	35	5	11.2	Torx	100	0.710	<b>3498103</b>
<b>MMS+ P 6x40</b>	6x40	40	5	11.2	Torx	100	1.000	<b>3498105</b>
<b>MMS+ P 6x50</b>	6x50	50	5	11.2	Torx	100	1.000	<b>3498108</b>

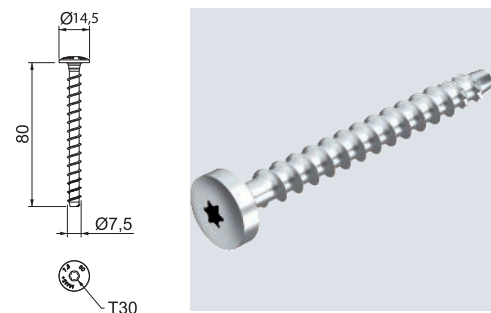
Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With round head for universal fastenings. Torx drive T30. Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities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



### MMS-plus P round head tie, with panhead

Type	Dimen- sion mm	Anchor length mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MMS+ P 7.5x80</b>	7,5x80	80	6	14.5	Torx	50	1.600	<b>3498272</b>

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.



### MMS-plus P round head tie, with panhead, made of A4 stainless steel

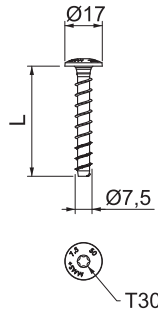
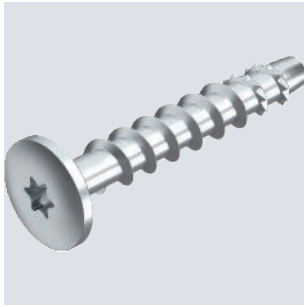
Type	Dimen- sion mm	Drill hole Ø mm	Head Ø mm	Screw system	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>MMS+ P 7.5x75 A4</b>	7,5x75	6	14.5	Torx	75	50	1.900	<b>3498274</b>

Stainless steel screw-in anchor for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With round head for universal fastenings in wet rooms and outdoor areas. 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.





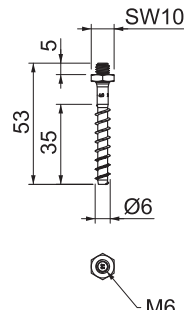
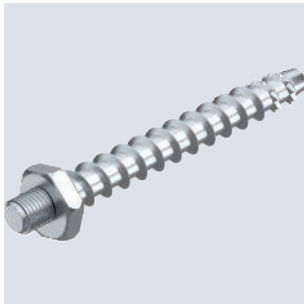
## MMS-plus MS mounting rail tie, with flat panhead



Type	Dimension mm	Dim. L mm	Drill hole		Screw system	Pack Piece	Weight kg/100 pc.	Item no.
			Ø mm	Head Ø mm				
MMS+ MS 7.5x50	7,5x50	50	6	17	Torx	100	1.500	3498261
MMS+ MS 7.5x60	7,5x60	60	6	17	Torx	50	1.800	3498262

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With large round head to fasten mounting and profile rails. 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.

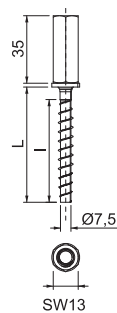
## MMS-plus ST push-in tie, with connection thread



Type	Dimension mm	Drill hole Ø mm	SW Thread	SW mm	Pack Piece	Weight kg/100 pc.	Item no.

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. M6 connection thread for fastening clips with threaded foot. 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.

## MMS-plus I internal thread tie, with combination thread sleeve



Type	Dimension mm	Dim. L mm	Drill hole		SW Thread	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
			Ø mm	Thread					
MMS+ I 7.5x40	7,5x40	40	6	M8/M10	13	40	3.810	3498266	
MMS+ I 7.5x60	7,5x60	60	6	M8/M10	13	40	4.230	3498268	

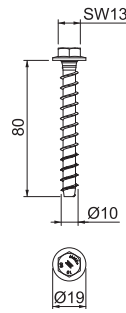
Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With M8/M10 combination thread sleeve for fastening threaded rods. Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities under fire loads proven up to fire resistance class R120.



### MMS-plus SS hexagonal tie, with pressed washer

Type	Dimen- sion mm	Dim. L mm	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
			Ø	SW			
MMS+ SS 10x80	10x80	80	8	13	25	4.000	3498124
MMS+ SS 10x100	10x100	100	8	13	25	4.800	3498159

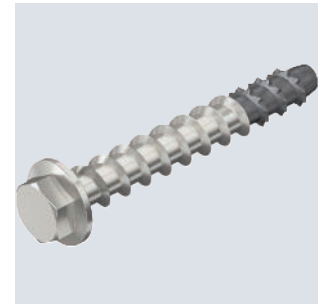
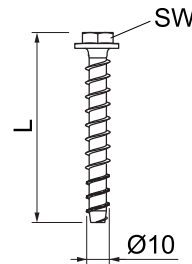
Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With hex head drive and pressed washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets. Construction product tested according to EAD and CE mark, with European Technical Assessment (ETA) and proof of suitability. Load-bearing capacities under fire loads proven up to fire resistance class R120.



### MMS-plus SS hexagonal tie, with pressed washer, made of A4 stainless steel

Type	Dimen- sion mm	Dim. L mm	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
			Ø	SW			
MMS+ SS 10x75 A4	10x75	75	8	13	25	3.700	3498126
MMS+ SS 10x95 A4	10x95	95	8	13	25	4.600	3498128
MMS+ SS12x105 A4	12x105	105	10	15	25	8.200	3498174
MMS+ SS12x120 A4	12x120	120	10	15	25	9.400	3498176

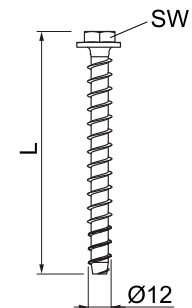
Stainless steel screw-in anchor for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With hex head drive and pressed washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets in wet rooms and in outdoor areas. 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.



### MMS-plus hexagonal tie, with pressed washer

Type	Dimen- sion mm	Dim. L mm	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
			Ø	SW			
MMS+ SS 12x100	12x100	100	10	15	25	7.800	3498170
MMS+ SS 12x120	12x120	120	10	15	25	8.900	3498172

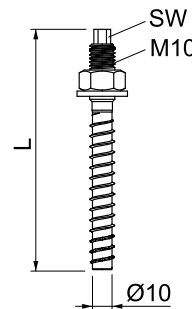
Stainless steel screw-in anchor for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With hex head drive and pressed washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets in wet rooms and in outdoor areas. 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.



### MMS-plus V pre-push tie, with connection thread

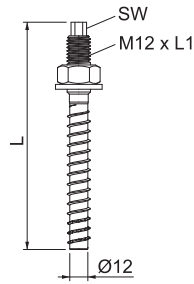
Type	Dimen- sion mm	Dim. L mm	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
			Ø	SW			
MMS+ V 10x90	10x90	90	8	M10x20 7	25	5.500	3498190
MMS+ V 10x110	10x110	110	8	M10x40 7	25	6.660	3498192

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With connection thread and washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets in push-through mounting. 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.



## MMS-plus V pre-push tie, with connection thread

St VZ



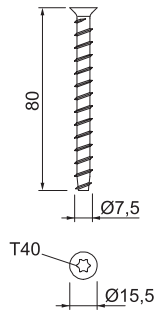
Type	Dimension mm	Dimension L mm	Drill hole Ø mm	Thread	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
MMS+ V 12x110	12x110	110	10	M12x30	8	25	6.900	3498196

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With connection thread and washer to accept large loads. Suitable for fastening suspended loads from suspended supports and wall brackets in push-through mounting.

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.

## MMS-plus F countersunk head tie

St VZ  
ABZ



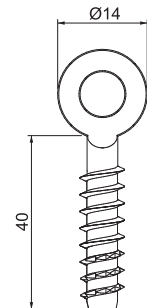
Type	Dimension mm	Drill hole Ø mm	Head Ø mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
MMS+ F 7.5x80	7,5x80	6	15,5	Torx	50	2.000	3498160

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With countersunk head for universal fastenings. Torx drive T40.

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.

## MMS-plus R ring tie, with setting tool

St VZ



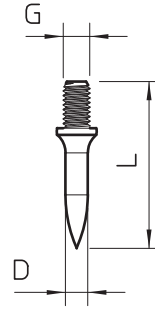
Type	Dimension mm	Drill hole Ø mm	Head Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
MMS+ R 6x40	6x40	5	14	200	0.790	3498180

Bolt tie for direct mounting without additional anchors in cracked and uncracked concrete and masonry. With ring eyelet for universal fastenings. Setting tool contained in the scope of delivery.

St G

Type	Shank length mm	Dim. L mm	Dim. D Ø mm	Dim. G mm	Pack Piece	Weight kg/100 pc.	Item no.
903 15 G	15	23	4	M6	100	0.330	3100154
903 18 G	18	26	4	M6	100	0.360	3100189
903 25 G	25	33	4	M6	100	0.404	3100251
903 30 G	30	38	4	M6	100	0.470	3100308
903 40 G	40	48	4	M6	100	0.571	3100405

Hardened steel, electrogalvanised with M6 x 8 mm thread.

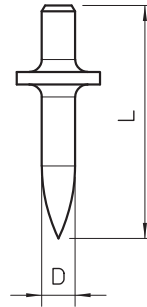


OBO anchor

St

Type	Shank length mm	Dim. L mm	Dim. D Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
903 RB 15	15	21	4	200	0.295	3105016
903 RB 18	18	24	4	200	0.348	3105024
903 RB 22	22	30	4	200	0.325	3105032

Hardened steel, shiny without thread.

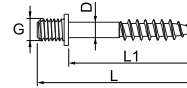


OBO anchor

St G

Type	Dim. G mm	Dim. D mm	Dim. L1 mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
985 M6 25	M6	4.3	25	35	100	0.412	3133028
985 M6 35	M6	4.3	35	45	100	0.533	3133036

With wood screw shank and M6 thread.

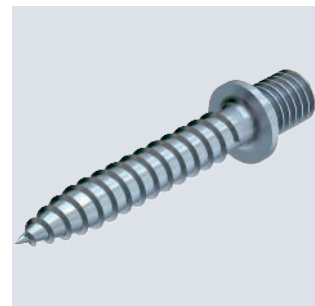
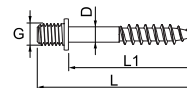


Screw-in anchor with M6 thread

St G

Type	Dim. G mm	Dim. D mm	Dim. L1 mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
985 M8 35	M8	5.2	35	47	100	0.950	3133230

With wood screw shank and M8 thread.



Screw-in anchor with M8 thread



# Knock-in anchors

## Flattener

St

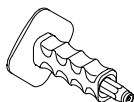


Type	Dim.		Size	Pack Piece	Weight kg/100 pc.	Item no.
	L mm	D mm				
915 S M6	135	14	M6	1	17.000	3031012

Flattener for OBO anchors 903 with M6 thread.

## Flattener with hand protection

St



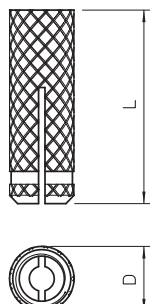
Type	Pack Piece	Weight kg/100 pc.	Item no.
915 RBS M4	1	52.000	3031500

Flattener with hand protection for OBO anchors 903/RB Ø 4 mm and also for OBO anchors 904 with M4 thread.

## Anchor, light-duty fastening

### Brass spreading anchor

CuZn 37

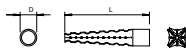


Type	Thread	Drill hole depth mm	Length mm	Drill hole Ø mm	Pull-hole out value N	Pack Piece	Weight kg/100 pc.	Item no.
865 M6x24	M6	32	24	8	6000	100	0.442	3483061
865 M8x30	M8	41	30	11	7000	100	0.867	3483088
865 M10x34	M10	53	34	12	9000	100	1.315	3483096

Areas of application: full brick, concrete, wood. Ideally suited for areas exposed to high temperatures.

### Metal spreading anchor

St GTP



Type	Dim. D mm	Dim. L mm	Drill hole Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
MD 5 GTP	5	30	5-7	200	0.190	3484602
MD 6 GTP	6	32	7-9	100	0.250	3484629

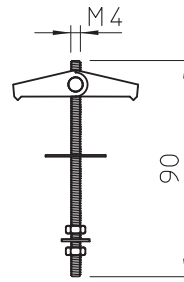
Areas of application: gas concrete, lightweight concrete, Poroton, pumice, plaster, hollow brick and full brick. Can be knocked into porous concrete (gas concrete) of low resistance without drilling. Superbly suited for areas subjected to high temperatures.

St G

Sprung hinged anchor

Type	Thread	Length mm	Drill hole Ø mm	Minimum cavity depth mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
450 M4x95 G	M4	90	14	35	0.2	50	1.750	3481611

With threaded rod, washer and hexagonal nut; brass axle.

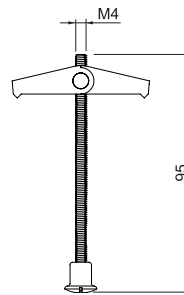


St G

Sprung hinged anchor

Type	Thread	Length mm	Drill hole Ø mm	Minimum cavity depth mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
451 M4x95 G	M4	95	14	35	0.2	50	1.700	3481662

With threaded rod and slotted brass nut; brass axle.

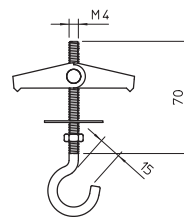


St G

Sprung hinged anchor

Type	Thread	Length mm	Drill hole Ø mm	Minimum cavity depth mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
452 M4x70 G	M4	70	14	35	0.4	50	1.950	3481778

With ceiling hook, washer and hexagonal nut; brass axle.

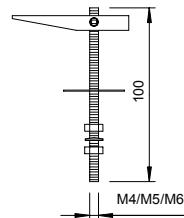


St G

Tilting anchor

Type	Thread	Length mm	Drill hole Ø mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
458 M4x100 G	M4	100	13	0.5	50	3.310	3482154
456 M5x100 G	M5	100	13	0.7	50	3.810	3482103
453 M6x100 G	M6	100	16	0.7	50	5.250	3482014

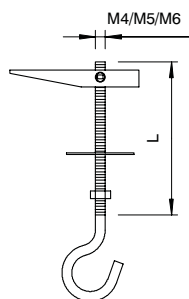
Two washers and two hexagonal nuts, with threaded shank.



# Anchor, light-duty fastening

## Tilting anchor

St G

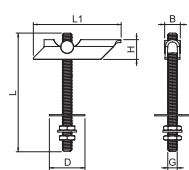
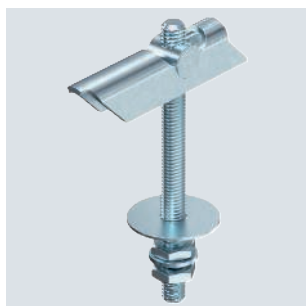


Type	Thread	Dim. L mm	Drill hole Ø mm	Hook-Ø mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
457 M4x55 G	M4	55	13	14	0.25	50	3.250	3482138
455 M5x65 G	M5	65	13	16	0.4	50	3.850	3482057
455 M5x100 G	M5	100	13	16	0.4	50	4.250	3482073
454 M6x100 G	M6	100	16	16	0.7	25	6.000	3482030

One washer and one hexagonal nut, with ceiling hook.  
Note: Reckon with 5x safety for luminaire suspensions.

## Tilting anchor

St G



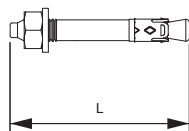
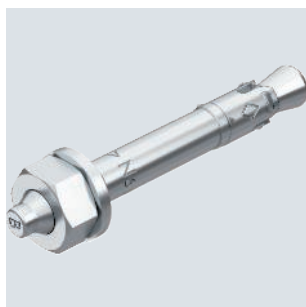
Type	Thread	Dim. L mm	Drill hole Ø mm	Break load kN	Minimum cavity depth mm	Pack Piece	Weight kg/100 pc.	Item no.
KD 8 100	M8	100	22	2.4	75	25	11.200	3482707
KD 10 100	M10	100	25	2.4	75	25	11.200	3482758

Including nut and large washer.  
The universal heavy-duty fastening for stressed concrete, hollow steel profiles, metal sheets and plates.  
Use: heating, ventilation and air conditioning technology, cooling systems, sprinkler systems, pipes, cable tracks, etc.  
\* Dependent on the thickness of the ceiling profile.

# Anchor, heavy-duty fastening

## Nail anchor N with thread

St G  
ABZ



Type	Thread	Drill hole Ø mm	Drill hole depth mm	Clamping range mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
N 6-5-10/49	M6	6	40	5-10	49	100	1.160	3498396

The nail anchor N can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting.  
The nail tie only needs to be hammered into the drill hole. It is not necessary to apply torque subsequently. When the load occurs, the nail tie spreads itself and bolts itself in the drill hole.  
European Technical Approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.

A4 2B

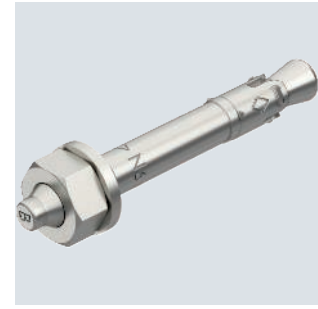
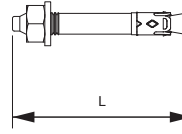
ABZ

## Nail anchor N with thread, V4A

Type	Thread	Drill hole Ø mm	Drill hole depth mm	Fix- ture thick- ness mm	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>N 6-5/49 A4</b>	M6	6	40	5	49		50	1.200	<b>3498399</b>

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

European technical approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.



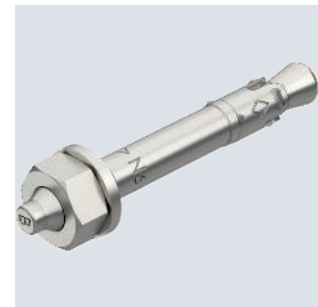
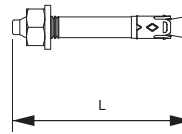
A5

## Nail anchor N with thread, A5

Type	Thread	Drill hole Ø mm	Drill hole depth mm	Fix- ture thick- ness mm	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>N 6-5/49 HCR</b>	M6	6	40	5	49		50	1.200	<b>3498398</b>

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

European technical approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.



St G

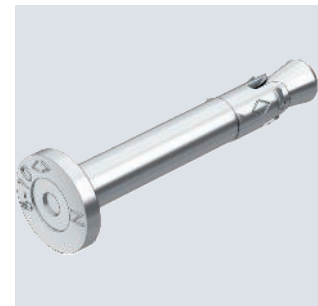
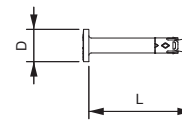
ABZ

## Nail anchor N-K with nail head

Type	Drill hole Ø mm	Drill hole depth mm	Clamping range mm	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>N-K 6-5-10/44</b>	6	40	5-10	44	13	100	1.135	<b>3498390</b>

The nail anchor N-K can be used for multiple fastenings of non-load-bearing systems and in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting. The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

European Technical Approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.



A4 2B

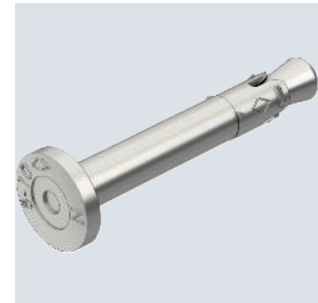
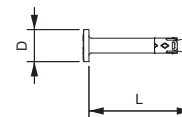
ABZ

## Nail anchor N-K with nail head, V4A

Type	Drill hole Ø mm	Drill hole depth mm	Fix- ture thick- ness mm	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>N-K 6-5/44 A4</b>	6	40	5	44	13	50	1.100	<b>3498393</b>

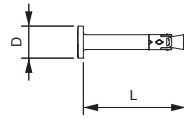
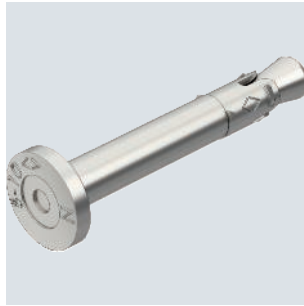
The nail anchor N can be used for multiple fastenings of non-load-bearing systems, indoors and outdoors, in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting. The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

European technical approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.





## Nail anchor N-K with nail head, A5



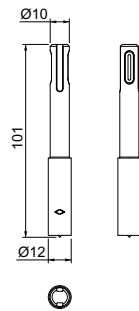
Type	Drill hole Ø mm	Drill hole depth mm	Fixture thickness mm	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
N-K 6-5/44 HCR	6	40	5	44	13	50	1.135	3498392

The nail anchor N can be used for multiple fastenings of non-load-bearing systems in areas with highly corrosive impacts in cracked and non-cracked concrete, thereby combining the benefits of a bolt tie with even easier mounting.

The nail anchor only needs to be hammered into the drill hole. When the load occurs, the nail anchor spreads itself and bolts itself in the drill hole.

European technical approval ETA-11/0240, including characteristic values under fire exposure to fire resistance R 120.

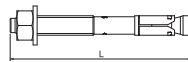
## Setting tool for nail anchor



Type	Pack Piece	Weight kg/100 pc.	Item no.
N-K SWZ SDS	1	5.000	3498314

Setting tool for nail anchor, type N-K, with SDS plus seat.

## Bolt tie BZ



Type	Drill hole Ø mm	Drill hole depth mm	Thread	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
BZ 10-150/230	10	75	M10	230	25	13.600	3498344
BZ 12-160/255	12	90	M12	255	20	22.400	3498358

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

European Technical Approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120.

Proof of suitability in the case of seismic impacts, categories C1 and C2.

Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.

### Installation

#### Standard anchoring depth

Loads and characteristics	Anchoring depth mm	Drill hole Ø mm	Drill hole depth mm	Clamping strength mm	Approved load area, tension zone kN
M 8-100/165	46	8	60	100	2.4
M 10-75/155	60	10	75	75	4.3
M 10-100/180	60	10	75	100	4.3
M 10-150/230	60	10	75	150	4.3
M 12-15/110	70	12	90	15	7.6
M 12-85/180	70	12	90	85	7.6
M 12-105/200	70	12	90	105	7.6
M 12-160/255	70	12	90	160	7.6
M 16-15/135	85	16	110	15	11.9

#### Reduced anchoring depth

Loads and characteristics	Anchoring depth mm	Drill hole Ø mm	Drill hole depth mm	Clamping strength mm	Approved load area, tension zone kN
M 8-111/165	35	8	49	111	2.4
M 10-95/155	40	10	55	95	3.6
M 10-120/180	40	10	55	120	3.6
M 12-35/110	50	12	70	35	6.1
M 12-105/180	50	12	70	105	6.1
M 12-125/200	50	12	70	125	6.1
M 16-35/135	65	16	90	35	9.0

A5

## Bolt tie BZ A5

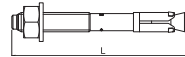
Type	Drill hole Ø mm	Drill hole depth mm	Thread	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>BZ 8-10-21/75HCR</b>	8	60	M8	75	100	3.080	<b>3498516</b>
<b>BZ10-10-30/90HCR</b>	10	75	M10	90	50	6.040	<b>3498556</b>
<b>BZ12-15-35/110HC</b>	12	90	M12	110	25	10.200	<b>3498666</b>

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

European technical approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120.

Proof of suitability in the case of seismic impacts, categories C1 and C2.

Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.



Anchors and ties



## Standard anchoring depth

Loads and characteristic values	M8-10/75	M 10-10/90	M 12-15/110
Standard anchoring depth	mm 46	60%	70
Drill hole Ø	mm 8	10th	12th
Drill hole depth	mm 60%	75	90
Clamping strength	mm 10th	10th	15
Permitted load area, tension zone	KN 2.4	4.3	7.6

## Reduced anchoring depth

Loads and characteristic values	M 8-21/75	M 10-30/90	M 12-35/110
Reduced anchoring depth	mm 35	40	50
Drill hole Ø	mm 8	10	12
Drill hole depth	mm 49	55	70
Clamping strength	mm 21	30	35
App. load area, tension zone	KN 2.4	3.6	6.1

## Installation

St G

## Bolt tie BZ-IG

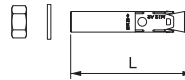
Type	Thread	Drill hole Ø mm	Drill hole depth mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>BZ-IG M 6-0</b>	M6	8	60	50	20	1.830	<b>3498370</b>
<b>BZ-IG M 8-0</b>	M8	10	75	62	20	3.180	<b>3498372</b>
<b>BZ-IG M 10-0</b>	M10	12	90	70	20	5.550	<b>3498374</b>
<b>BZ-IG M 12-0</b>	M12	16	105	86	20	11.700	<b>3498376</b>

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.



St G

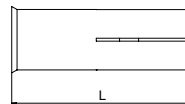
## Impact tie, version with collar

Type	Thread	Drill hole Ø mm	Drill hole depth mm	Dim. L mm	Perm. load range, tension zone kN	Pack Piece	Weight kg/100 pc.	Item no.
<b>ES M 10x30</b>	M10	12	30	30	2	50	1.800	<b>3492032</b>
<b>ES M 6x25</b>	M6	8	25	25	1.7	100	0.600	<b>3492018</b>
<b>ES M 8x25</b>	M8	10	25	25	1.9	100	1.000	<b>3492020</b>
<b>ES M 8x30</b>	M8	10	30	30	1.7	100	1.100	<b>3492023</b>
<b>ES M 10x25</b>	M10	12	25	25	2.1	50	1.400	<b>3492022</b>
<b>ES M 10x40</b>	M10	12	40	40	2	50	2.100	<b>3492024</b>
<b>ES M 12x25</b>	M12	15	25	25	2.1	50	2.200	<b>3492025</b>
<b>ES M 12x50</b>	M12	15	50	50	2.4	50	4.100	<b>3492026</b>

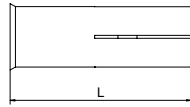
Impact tie for single fastening of non-load-bearing systems in non-cracked concrete as well as for multiple fastening in cracked and non-cracked concrete.

Tested to fire protection standards, fire resistance class R 120 according to European Technical Approval ETA-02/0020 (option 7) and European Technical Approval ETA-05/0116.

Mounting with marking and setting tool.



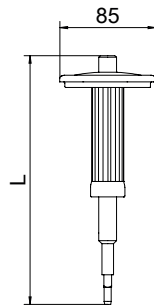
## Impact tie, version with collar



Type	Thread	Drill hole Ø mm	Drill hole depth mm	Dim. L mm	Perm. load range, tension zone kN	Pack Piece	Weight kg/100 pc.	Item no.
ES M 8x30 A4	M8	10	30	30	1.7	50	1.100	3492003
ES M 10x40 A4	M10	12	40	40	2	50	2.000	3492008
ES M 12x50 A4	M12	15	50	50	2.4	50	4.300	3492012

Impact tie for single fastening of non-load-bearing systems in non-cracked concrete as well as for multiple fastening in cracked and non-cracked concrete. Tested to fire protection standards, fire resistance class R 120 according to European Technical Approval ETA-02/0020 (option 7) and European Technical Approval ETA-05/0116. Mounting with marking and setting tool.

## Marking spreading tool for drop-in anchors



Type	Length mm	Thread	Pack Piece	Weight kg/100 pc.	Item no.
E-MSH 6x25	235	M6	1	41.300	3492964
E-MSH 8x25	235	M8	1	42.500	3492966
E-MSH 8x30	235	M8	1	43.100	3492968
E-MSH 10x25	235	M10	1	44.500	3492971
E-MSH 12x25	235	M12	1	48.000	3492973
E-MSH 10x40	235	M10	1	45.000	3492974
E-MSH 12x50	235	M12	1	47.000	3492978

Marking spreading tool with hand protection for drop-in anchors, type E

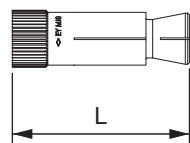
## Setting tool for drop-in anchor



Type	Length mm	Thread	Pack Piece	Weight kg/100 pc.	Item no.
E-SW 8x30	168	M8	1	13.400	3492030
E-SW 10x30	168	M10	1	14.000	3492029

Setting tool for drop-in anchor of the type E. With the standard version there is no marking made on the anchor sleeve.

## Hollow core anchor Easy



Type	Thread	Drill hole Ø mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
Easy M6	M6	10	40	50	1.000	3498768
Easy M8	M8	12	44	25	1.500	3498770
Easy M10	M10	16	53	25	3.320	3498774
Easy M12	M12	18	58	25	4.230	3498776

Hollow core anchor "Easy" for mounting in prestressed hollow concrete slabs. When the screw or the nut is tightened, the cone is released from the anchor sleeve and pulled into it. This makes the anchor expand in the hollow space, thereby creating form lock. The hollow core anchor can also be used when the expansion area is not located in the cavity. The fastening of the component can be done with standard screws and threaded rods.

General type approval Z-21.1-1785 granted by the German Institute for civil engineering (DIBt), Berlin, including permissible loads when exposed to fire up to a fire resistance duration of 120 minutes.



St G

DIBt U

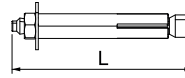
### Porous concrete anchor with external thread

Type	Thread	Fix- ture thick- ness mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
PBD M6x10	M6	10	86	25	4.900	3497600
PBD M8x10	M8	10	88	25	7.600	3497608
PBD M10x10	M10	10	90	25	11.400	3497616

Steel spreading anchor tested for fire protection properties and approved for use in porous concrete.

Version with external thread. Suitable for fire loads of up to 120 minutes, please refer to the general construction approval for the load values (applies to porous concrete of resistance classes of min. 3.3).

A setting tool is required for mounting.



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DIBt U

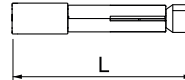
### Porous concrete anchor with internal thread

Type	Thread	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
PBD i M6	M6	82	25	4.500	3497700
PBD i M8	M8	82	25	6.200	3497702
PBD i M10	M10	92	25	9.300	3497704
PBD i M12	M12	92	25	8.900	3497706

Steel spreading anchor tested for fire protection properties and approved for use in porous concrete.

Version with internal thread. Suitable for fire loads of up to 120 minutes, please refer to the general construction approval for the load values (applies to porous concrete of resistance classes of min. 3.3).

A setting tool is required for mounting.

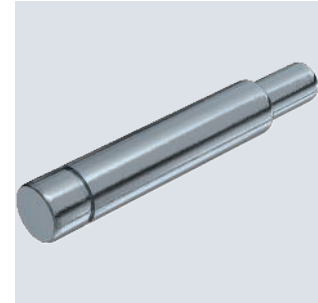
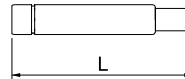


St G

### Setting tool for hand hammer

Type	Size	Pack Piece	Weight kg/100 pc.	Item no.
EWP 6x10	M6x10	1	32.500	3497640
EWP 8x10	M8x10	1	39.800	3497648
EWP 10x10	M10x10	1	47.600	3497656

Setting tool PBD porous concrete anchors – for hand hammer.

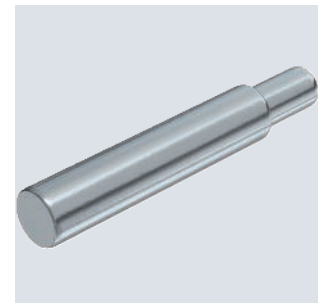
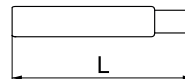


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### Setting tool for hand hammer

Type	Size	Pack Piece	Weight kg/100 pc.	Item no.
EWP 6 i	M6x10	1	30.000	3497720
EWP 8 i	M8x10	1	37.100	3497722
EWP 10 i/ 12 i	M10/M12x10	1	44.800	3497724

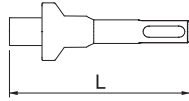
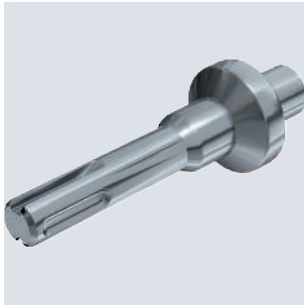
Setting tool for PBDi porous concrete anchors – for hand-hammer.





## Setting tool for rotary hammer

St G

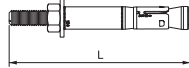


Type	Size	Pack Piece	Weight kg/100 pc.	Item no.
SDS-EWP 8x10	M8x10	1	26.000	3497676
SDS-EWP 10x10	M10x10	1	25.600	3497684

Setting tool for PBD porous concrete anchors – for rotary hammer with SDS seat.

## High-load anchor SZ-B

St G



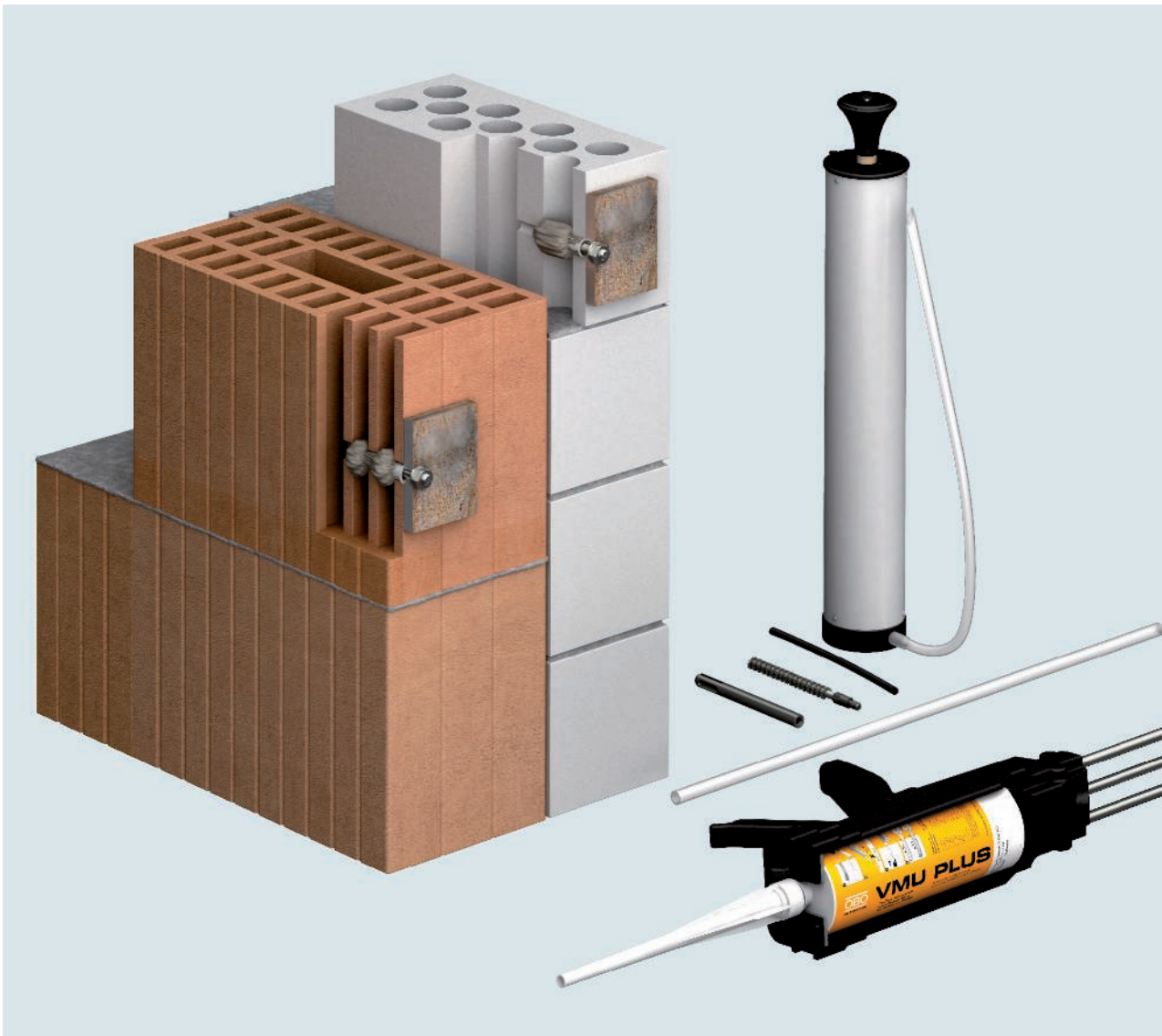
Type	Thread	Drill hole Ø mm	Drill hole depth mm	Dim. L mm	Fix- ture thick- ness mm	Perm. load range, tension kN	Pack Piece	Weight kg/100 pc.	Item no.
SZ-B 18/0x142	M12	18	105	142	30	12.3	20	21.123	3498752

The high-load anchor SZ is a heavy-duty push-through anchor system with a threefold expanding special sleeve which facilitates very high approved loads with small axial spacings and edge distances. The plastic press ring secures the permanent tightening of the fastening piece against the ground.

Due to the special design with an elongated thread and a shortened anchor sleeve, this special version is not approved to the European technical norm ETA .



## System description



The VMS Plus injection mortar system is particularly suitable for fire protection fastening in hollow brick, concrete, calcareous limestone, sand-lime brick and masonry. The non-spreading connection is created through the use of the plastic wire sleeve and a threaded anchor rod. The components are tested and approved for a fire resistance period of 90 minutes.

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

### System benefits

- Injection anchor tested and approved for fire
- Determined load capacity according to fire resistance period
- Use in calcareous limestone, masonry, hollow brick and sand-lime brick
- Various dimensions for the different routing components and applications
- Proven fastening with plastic wire sieves

# Mounting aid



**Drilling**  
Creation of a drill hole with a suitable diameter.



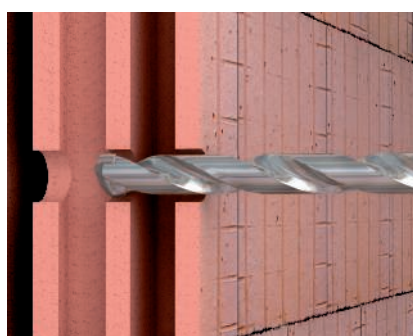
**Cleaning of the drill hole**  
Blowing-out and cleaning the drill hole with a hand-held blower or compressed air.



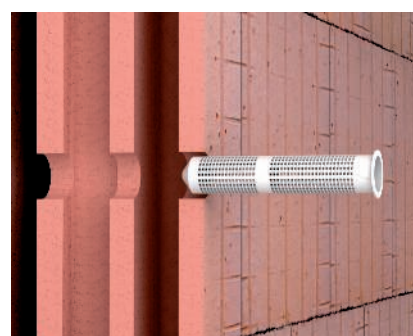
**Cleaning with steel wire brush**  
Mechanical cleaning of the drill hole with steel wire brush. The cleaning process by blowing and brushing must be carried out twice.



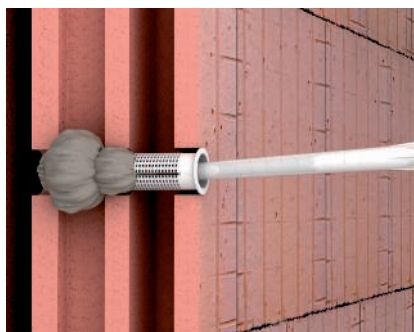
**Application of the injection mortar**  
Pressing of the injection mortar into the drill hole.



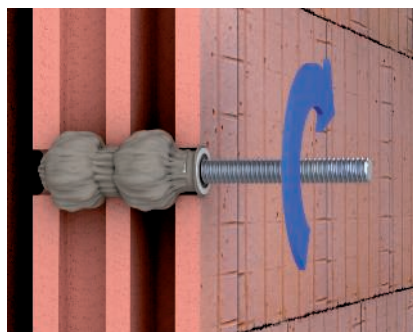
**Use in hollow brick**  
Drill the hole in the hollow brick according to the selected anchor size and then clean it.



**Mounting preparations**  
Insert the fitting plastic wire sleeve in the drill hole.



**Applying the injection mortar**  
Press in the injection mortar from the cartridge from the base of the drill hole to the opening. In so doing, draw the point back slowly.



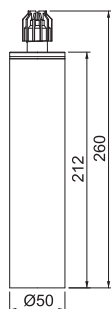
**Inserting the anchor rod**  
Attach the anchor rod in the filled wire sleeve up to the set marking. The mortar pushes through the openings of the wire sleeve, forming a closure.



**Mounted component, hollow brick wall**  
Mounting the component with a washer and nut on a hollow brick wall. Comply with the tightening torque according to the approval.



## Injection mortar in cartridge, 300 ml



Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
<b>VMU plus 300</b>	300	1	56.400	<b>3497806</b>

Styrene-free, vinyl ester composite mortar for spread-free anchoring of high loads with threaded anchor rods. Coaxial cartridge, including 1 mixing tube, to be worked with the standard cartridge gun or VM-P 345 Profi.

European Technical Assessment for cracked and uncracked concrete, as well as for masonry of full and hollow brick. Earthquake-proof in concrete according to Category C1. Fire protection approval for concrete and masonry with fire resistance classes up to 120 minutes.

Substrate temperature during processing -10 °C to +40 °C (concrete), ambient temperature after complete hardening -40 °C to +120 °C (in concrete). Will keep for at least 18 months if stored in a dark, cool and dry place.

## Injection mortar in cartridge, 420 ml

ABZ



Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
<b>VMU plus 420</b>	420	1	83.000	<b>3497803</b>

Styrene-free, vinyl ester composite mortar for spread-free anchoring of high loads with threaded anchor rods. Coaxial cartridge, including one mixing tube, to be worked with the pressing gun, type VM-P 380 Profi.

European Technical Assessment for cracked and uncracked concrete, as well as for masonry of full and hollow brick. Earthquake-proof in concrete according to Category C1. Fire protection approval for concrete and masonry with fire resistance classes up to 120 minutes.

Substrate temperature during processing -10 °C to +40 °C (concrete), ambient temperature after complete hardening -40 °C to +120 °C (in concrete). If stored in a dark, cool and dry place, will keep for at least 18 months.

## Pressing gun for standard cartridges and side-by-side cartridges



Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>VM-P 345 Profi</b>	1	100.000	<b>3497906</b>

Side-by-side cartridge pistol for the use of standard cartridges or side-by-side cartridges. The cartridge pistol is suitable for the injection mortar VMU plus 280 and can also be used with normal 300 ml cartridges.

## Pressing gun for 10:1 coaxial cartridges



Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>VM-P 380 Profi</b>	1	110.000	<b>3497909</b>

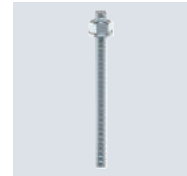
High-quality 2-component cartridge pistol. The parallel movement of the outlet to the holding grip ensures easy working. Suitable for the injection mortar type VMU plus 420.

St G

ABZ

## Anchor rod

Type	Dim. L mm	Dim. d mm	Thread	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
VMU-A 8-110vz	110	6.5	M8	13	10	4.350	3497820
VMU-A 10-130vz	130	8.2	M10	17	10	8.150	3497822
VMU-A 10-150vz	150	8.2	M10	17	10	9.150	3497824
VMU-A 12-155vz	155	9.9	M12	19	10	13.850	3497826
VMU-A 8-110A4	110	6.5	M8	13	10	4.350	3497830
VMU-A 10-130A4	130	8.2	M10	17	10	8.150	3497832
VMU-A 12-155A4	155	9.9	M12	19	10	13.850	3497834



With the anchor rod and matching plastic wire sleeve, loads are fastened without spreading pressure in masonry walls using the VMS plus injection mortar. The system is also used for fastening in concrete ceilings. On concrete and full brick walls, the anchor rod is only mounted with the injection mortar VMU plus, without a wire sleeve.

The anchor rod VMU-A 8x110 mm is mounted using the plastic wire sleeve VM-SH 12x80 or VM-SH 16x85.

The VMU-A 10x130 mm anchor rod is mounted using the VM-SH 16x85 plastic wire sleeve.

The VMU-A 10x150 mm anchor rod is mounted using the VM-SH 16x85 or VM-SH 16x130 plastic wire sleeve.

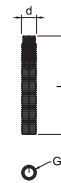
The VMU-A 12x155 mm anchor rod is mounted using the VM-SH 20x85 plastic wire sleeve.

St G

ABZ

## Metallic internal thread sleeve

Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
VMU-IG M6x80vz	80	10	10	3.350	3497840
VMU-IG M8x80vz	80	12	10	4.650	3497842
VMU-IG M10x80vz	80	16	10	8.750	3497844
VMU-IG M6x80A4	80	10	10	3.350	3497850
VMU-IG M8x80A4	80	12	10	4.650	3497852
VMU-IG M10x80A4	80	16	10	8.750	3497854



With the internal thread sleeve and matching plastic wire sleeve, loads are fastened without spreading pressure in concrete and masonry walls and ceilings using the VMS plus injection mortar.

The internal thread sleeve VMU-IG M6x80 mm is mounted using the plastic wire sleeve VM-SH 16x85.

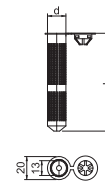
The internal thread sleeves VMU-IG M8x80 and VMU-IG M10x80 mm are mounted using the plastic wire sleeve VM-SH 20x85.

PA

ABZ

## Plastic wire sleeve

Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
VMU-SH 12x80	80	12	10	0.200	3497860
VMU-SH 16x85	85	16	10	0.300	3497862
VMU-SH 16x130	130	16	10	0.400	3497864
VMU-SH 20x85	85	20	10	0.400	3497866



The plastic wire sleeve is a supplement to the anchor rod or internal thread sleeve and is used to install components on masonry.

The plastic wire sleeve VM-SH 12x80 is mounted with the anchor rod VMU-A 8x110.

The plastic wire sleeve VM-SH 16x85 is mounted with the anchor rods VMU-A 10x130 and VMU-A 10x150 or the internal thread sleeve VMU-IG M6x80.

The plastic wire sleeve VM-SH 16x130 is mounted with the anchor rod VMU-A 10x150.

The plastic wire sleeve VM-SH 20x85 is mounted with the anchor rod VMU-A 12x155 or the internal thread sleeve VMU-IG M8x80 and VMU-IG M10x80.

## Blow pump for drill holes



Type	Pack Piece	Weight kg/100 pc.	Item no.
VM-AP 360	1	27.000	3497912

Manual pump with 750 ml air volume for blowing out drill holes according to anchor approval.

## Steel cleaning brush for drill holes

St G



Type	Dia- meter mm	Length mm	Thread	Pack Piece	Weight kg/100 pc.	Item no.
RB 10 M 6	10	130	M6	1	5.000	3497870
RB 12 M 6	12	140	M6	1	5.000	3497872
RB 14 M 6	14	180	M6	1	5.000	3497874
RB 16 M 6	16	190	M6	1	5.000	3497875
RB 18 M 6	18	200	M6	1	5.000	3497876
RB 20 M 6	20	220	M6	1	5.000	3497878

Using the steel wire brush, drill holes must be mechanically cleaned according to the anchor approval, in order to obtain a clean adhesion substrate for the injection mortar.

The steel wire brush is fixed to an SDS adapter with a threaded connection, in order to clean the drill holes with a drill.

## SDS adapter

St



Type	Pack Piece	Weight kg/100 pc.	Item no.
RBL M6 SDS	1	6.000	3497915

Adapter for accepting steel wire brushes for mechanical cleaning of drill holes according to the anchor approval. Suitable for drills with SDS seat.

## SDS extension

St



Type	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
RB-L 150 M6	150	1	9.700	3497932

Extension with internal and external M6 thread for the connection of the SDS adapter with steel wire brush in difficult to access drill holes.

## Mixer pipe for mortar cartridge

PA



Type	Pack Piece	Weight kg/100 pc.	Item no.
VM-X	12	1.000	3497981

Mixing tubes for attachment to the cartridges of the VMU plus injection mortar system.



PA

## Extension pipe

Type	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
VM-XE 10/200	200	12	1.000	3497984
VM-XE 10/500	500	10	2.000	3497987

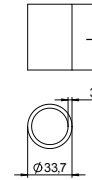
Fixed length extension tube for use on the mixing tube tips in the VMU plus injection mortar system.



St FT

## Spacer sleeve for insulated ceilings

Type	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
DHI 050	50	30	11.600	7205900
DHI 060	60	24	14.000	7205901
DHI 070	70	20	16.200	7205902
DHI 080	80	20	18.200	7205903
DHI 090	90	14	20.800	7205904
DHI 100	100	14	23.400	7205905
DHI 110	110	12	24.600	7205906
DHI 120	120	12	27.600	7205907
DHI 130	130	12	30.400	7205908
DHI 140	140	12	32.800	7205909
DHI 150	150	12	35.000	7205910



Spacer sleeve for mounting suspension components under insulated ceilings. They prevent the insulation from pushing in when the fastening screws are tightened. Burr arm, galvanised internally and externally.

St

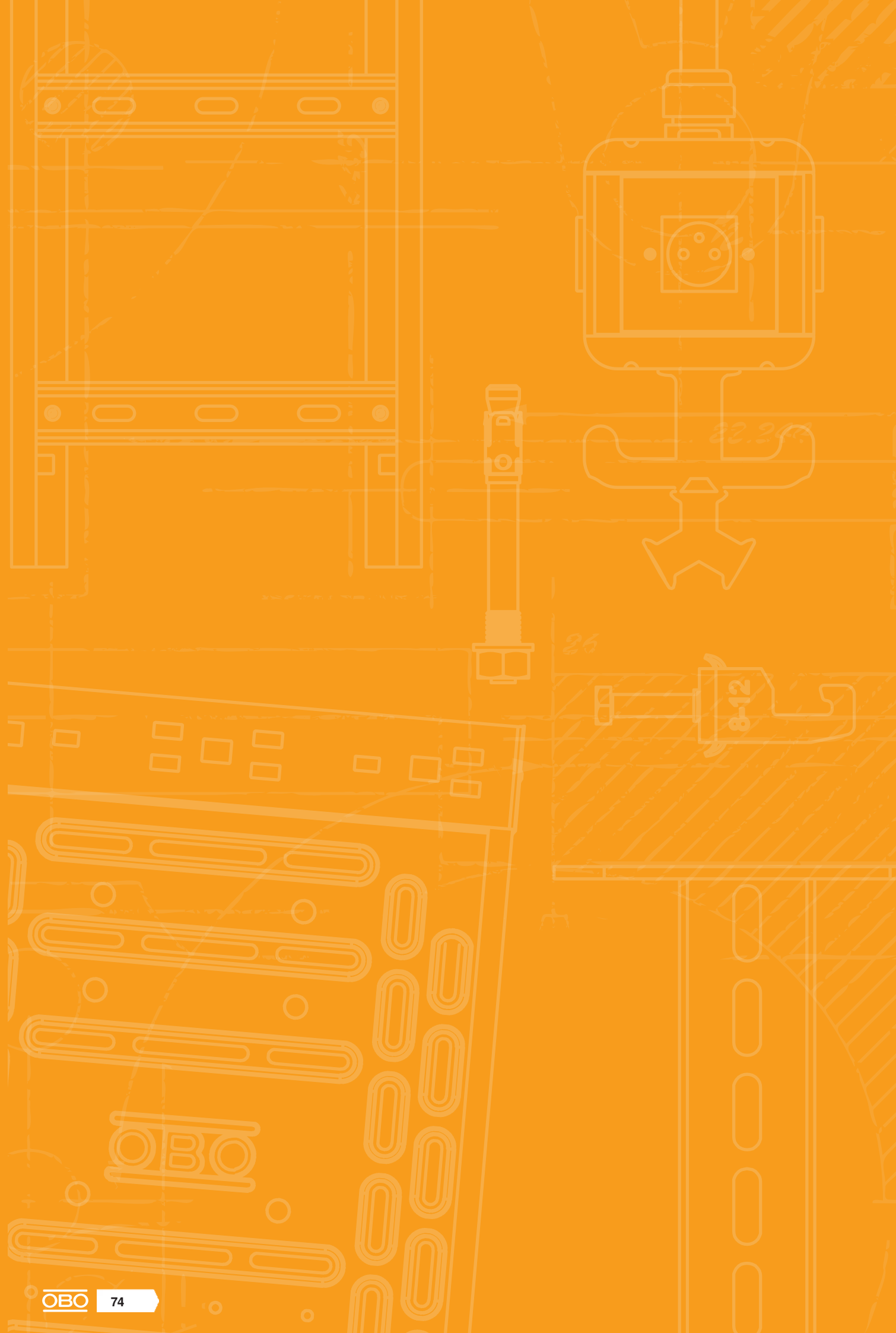
## Perforated sleeve, metal

Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
VM-SH 12x1000	1000	12	1	6.000	3497972
VM-SH 16x1000	1000	16	1	7.000	3497975
VM-SH 22x1000	1000	22	1	10.000	3497978









Metal wire sleeve for use in hollow brick and stones in combination with injection mortar system VMU plus.





# Plastic fastening clips

	Quick clips	76
	Push-fit clips	86
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	Pressure clips	94
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	Cable ties	136
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# OBO Quick series

Arrangeable cable and pipe clips – available with infinitely adjustable clamping range or safety lock

## starQuick clip

- Snap lock with patented safety system
- Can be lined up together up to size SQ28
- UV- and weatherproof polyamide
- Wall and ceiling mounting

HALOGEN  
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M



## Quick clip – the high-speed clip

- Extreme loading capacity
- Insertion slopes
- Slot fastening
- Expandable above each other
- Latch-in hole/middle stopper

## Multi-Quick clip

- One clip for multiple dimensions
- Universal application
- PG and metric

The OBO Quick series offers three different types of halogen-free pressure and pipe clips for the time-saving and secure fastening of cables and electrical installation pipes. The benefit from shorter mounting times when fastening installations on walls and ceilings, both indoors and outdoors.

All the clip types and sizes of the OBO Quick series can be interconnected easily, thanks to the shared arrangement contour. This means you can mount up to two clips with a single drill hole. The patented shape of the arrangement contour permits a particularly high carrying capacity.



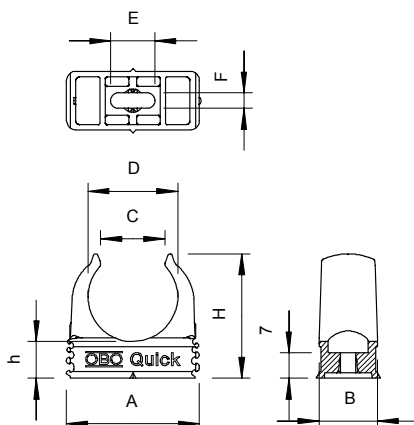
## Quick clip

The high-speed clip

- Extreme loading capacity
- Maximum stability
- Extremely easy mounting
- Insertion slopes
- Slot fastening
- Suitable for lining up
- Latch-in hole/middle stopper





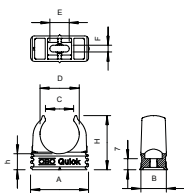


- OBO Quick clip for all metric steel armoured pipes, and light-duty and heavy-duty insulation pipes
- Suitable for OBO Quick Pipe
- Pipe centring aids allow optimal attachment of the pipe and automatically turn the clip into the correct position
- Patented
- Universal fastening option; can be arranged with the OBO Multi-Quick and starQuick clip
- Slot for side alignment during mounting with wood screw or knock-in anchor
- Recommended fastening spacing 50–60 cm
- For max. extraction values (F) at a room temperature of 20 °C, see table

G	A	B	C	D	E	F	H	H	F (20 °C)
	mm	mm	mm	mm	mm	mm	mm	mm	N
M16	25.3	16	11.5	15.5	7	4.2	25	10	75
M20	30.3	16	14	19.4	9	4.2	29.5	10	90
M25	36.3	16	17.5	24.3	12	4.2	34	10	100
M32	46.3	16	22.4	31.4	12	4.2	42	11	120
M40	57.3	16	26	39.2	11	4.6	51	12	140
M50	70.3	18	32	49	12	6	63	14	165
M63	87.3	20	43	61.5	12	6	74.5	15	230

## Quick clips

### Quick clip



Type	Nominal size	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2955 M16	M16	Light grey	1200	100	0.252	2149004
2955 M20	M20	Light grey	1200	100	0.325	2149010
2955 M25	M25	Light grey	1200	100	0.430	2149016
2955 M32	M32	Light grey	600	50	0.630	2149022
2955 M40	M40	Light grey	600	50	0.835	2149028
2955 M50	M50	Light grey	300	25	1.454	2149034
2955 M63	M63	Light grey	240	20	2.203	2149040

Flush-mounted clip to accept metric steel armoured pipes and heavy-duty insulating pipes, as well as Quick Pipe electrical installation pipes. Universal fastening options on walls and ceilings, both in indoor and protected outdoor areas. With slot for side alignment during mounting with wood screw or knock-in anchor. Toolless pipe mounting. Can also be arranged with OBO Multi-Quick or starQuick clip. M16 - M32 size can be screwed onto M6 thread. Recommended fastening spacing 50–60 cm, for max. extraction values F at a room temperature of 20 °C, see the table.

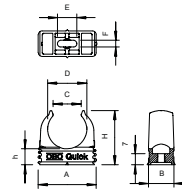
PP



Quick clip, black

Type	Nominal size	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2955 M16 SW	M16	Jet black	100	0.252	2149559
2955 M20 SW	M20	Jet black	100	0.325	2149563
2955 M25 SW	M25	Jet black	100	0.430	2149567
2955 M32 SW	M32	Jet black	50	0.630	2149571
2955 M40 SW	M40	Jet black	50	0.835	2149575
2955 M50 SW	M50	Jet black	25	1.454	2149579
2955 M63 SW	M63	Jet black	20	2.203	2149583

Flush-mounted clip to accept metric steel armoured pipes and heavy-duty insulating pipes, as well as Quick Pipe electrical installation pipes. Universal fastening options on walls and ceilings, both in indoor and protected outdoor areas. With slot for side alignment during mounting with wood screw or knock-in anchor. Toolless pipe mounting. Can also be arranged with OBO Multi-Quick or starQuick clip. M16 - M32 size can be screwed onto M6 thread. Recommended fastening spacing 50–60 cm, for max. extraction values F at a room temperature of 20 °C, see the table.



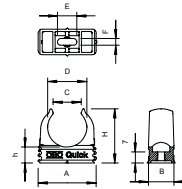
PP



Quick Clip, flame-resistant, stone grey

Type	Nominal size	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2955 F M16 STGR	M16	Stone grey	100	0.252	2149303
2955 F M20 STGR	M20	Stone grey	100	0.325	2149309
2955 F M25 STGR	M25	Stone grey	100	0.430	2149315
2955 F M32 STGR	M32	Stone grey	50	0.630	2149321
2955 F M40 STGR	M40	Stone grey	50	0.835	2149327
2955 F M50 STGR	M50	Stone grey	25	1.454	2149333
2955 F M63 STGR	M63	Stone grey	20	2.203	2149339

Flame-resistant, flush-mounted clip to accept metric steel armoured pipes and heavy-duty insulating pipes, as well as Quick Pipe electrical installation pipes. Universal fastening options on walls and ceilings, both in indoor and protected outdoor areas. With slot for side alignment during mounting with wood screw or knock-in anchor. Toolless pipe mounting. Can also be arranged with OBO Multi-Quick or starQuick clip. M16 - M32 size can be screwed onto M6 thread. Recommended fastening spacing 50–60 cm, for max. extraction values F at a room temperature of 20 °C, see the table.



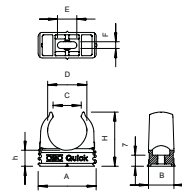
PP

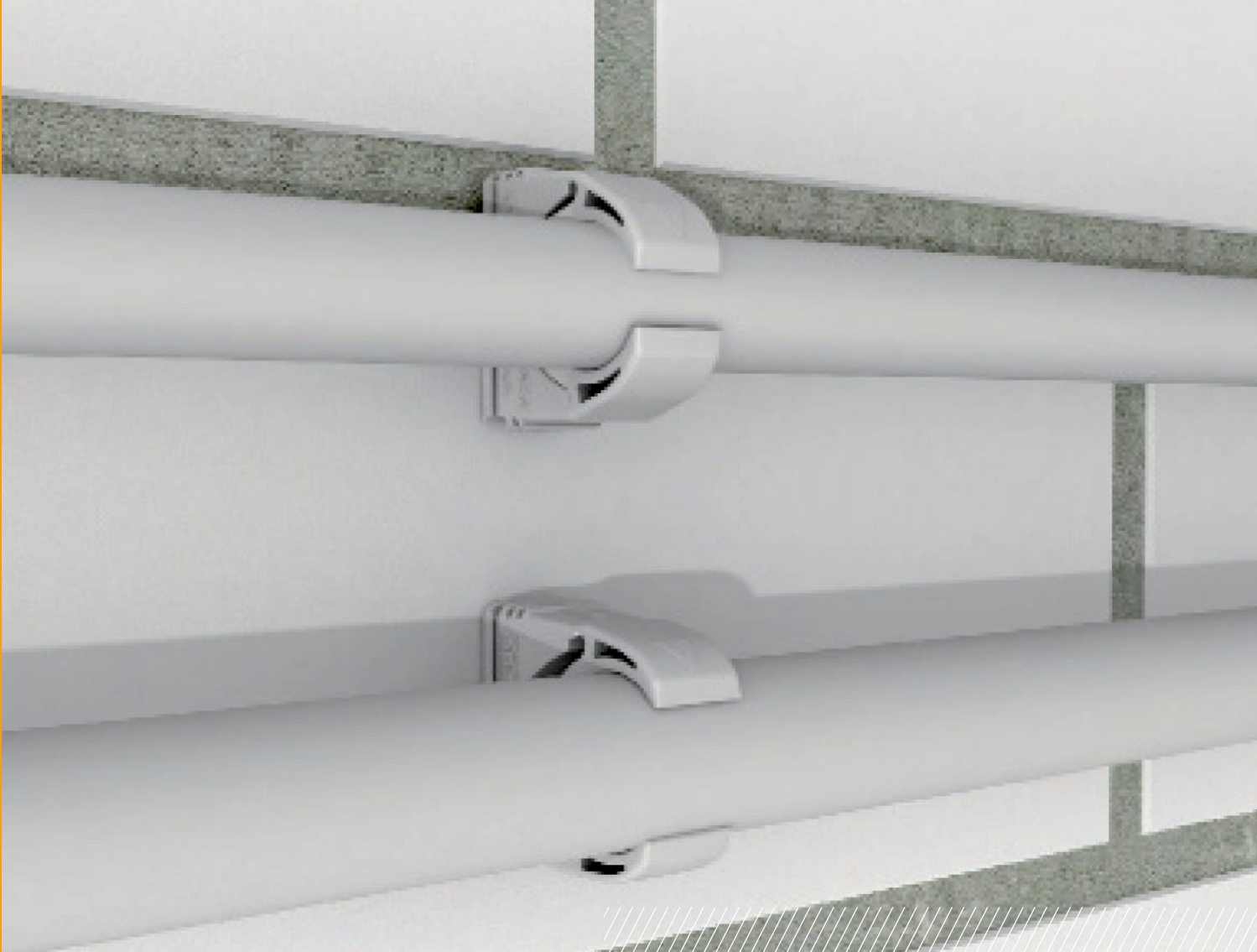


Quick clip, flame-resistant, pure white

Type	Nominal size	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2955 F M16 RW	M16	Pure white	100	0.252	2149351
2955 F M20 RW	M20	Pure white	100	0.325	2149357
2955 F M25 RW	M25	Pure white	100	0.430	2149363
2955 F M32 RW	M32	Pure white	50	0.630	2149369
2955 F M40 RW	M40	Pure white	50	0.835	2149375

Flame-resistant, flush-mounted clip to accept metric steel armoured pipes and heavy-duty insulating pipes, as well as Quick Pipe electrical installation pipes. Universal fastening options on walls and ceilings, both in indoor and protected outdoor areas. With slot for side alignment during mounting with wood screw or knock-in anchor. Toolless pipe mounting. Can also be arranged with OBO Multi-Quick or starQuick clip. M16 - M32 size can be screwed onto M6 thread. Recommended fastening spacing 50–60 cm, for max. extraction values F at a room temperature of 20 °C, see the table.

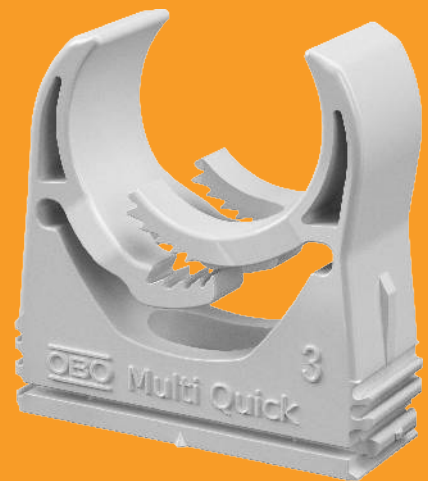




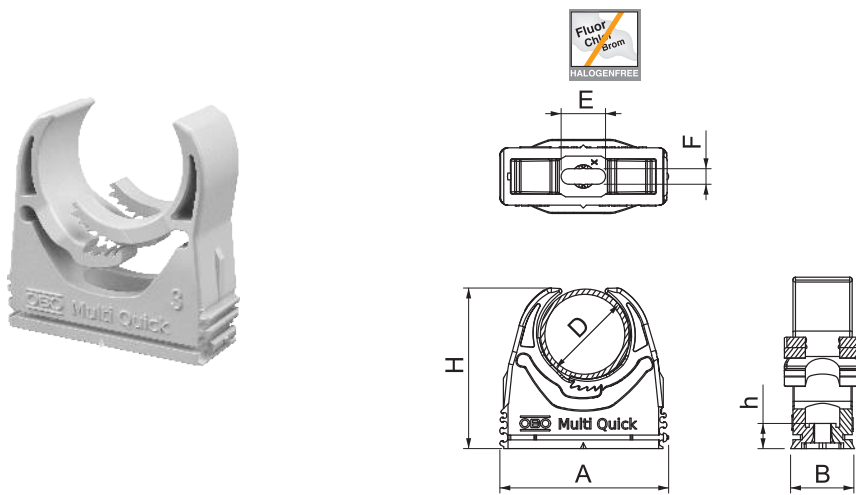
## Multi-Quick clip

The universal clamp

- PG and metric
- Easy fastening
- Secure locking
- Radial arrangement
- Simplified storage
- Clamping ranges from 15–37 mm
- Universal application



# Multi-Quick clip



- PG and metric
- Easy fastening
- Secure locking
- Radial arrangement
- Simplified storage
- Clamping ranges from 15–37 mm
- Universal application
- Fastening in rails types CL2008

D	A	B	H	E	F
mm	mm	mm	mm	mm	mm
15–19	27.5	27.5	32	8	4,1
18.5–22.5	33	33	37	8	4,1
25–28.5	43	43	46	8	4,1
31–37	55	55	58	8	4,1

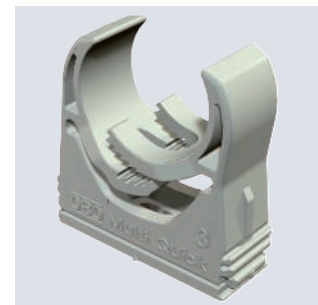
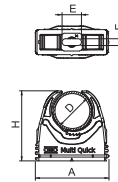
## Multi-Quick clips

PA



Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>M-Quick 15-19LGR</b>	15-19	Light grey	100	0.545	<b>2153106</b>
<b>M-Quick 18-22LGR</b>	18.5-22.5	Light grey	100	0.760	<b>2153114</b>
<b>M-Quick 25-28LGR</b>	25-28.5	Light grey	50	1.170	<b>2153130</b>
<b>M-Quick 31-37LGR</b>	31-37	Light grey	25	1.780	<b>2153157</b>

Flush-mounted clip to accept metric and PG pipes and Quick Pipe electrical installation pipes. Flexible clamping range of several millimetres. Universal fastening options on walls and ceilings and usable in a profile rail, both in indoor and protected outdoor areas. Toolless pipe mounting. Can also be arranged with OBO Quick clip or starQuick clip.



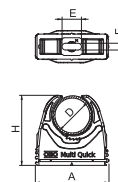
## Multi-Quick clip

PA



Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>M-Quick M20 LGR</b>	16-20	Light grey	100	0.600	<b>2153718</b>
<b>M-Quick M25 LGR</b>	20-25	Light grey	50	0.930	<b>2153726</b>
<b>M-Quick M32 LGR</b>	25-32	Light grey	50	1.390	<b>2153734</b>

Flush-mounted clip to accept metric pipes and Quick Pipe electrical installation pipes. Flexible clamping range of several millimetres. Universal fastening options on walls and ceilings, both indoors and outdoors. Toolless pipe mounting. Can also be arranged with OBO Quick or starQuick clip.



## Multi-Quick clip, metric







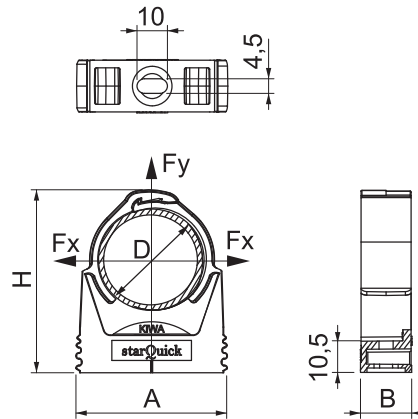
## starQuick clip

The safety clamp

- Snap lock with patented safety system
- All sizes clip together, up to size SQ28
- UV- and weatherproof polyamide
- Wall and ceiling mounting



# starQuick clip



- All sizes clip together, up to size SQ28
- Breaking load with bolt DIN96, diameter 4.5 mm, min. at 20 °C
- For use outdoors and in public spaces
- UV- and weatherproof polyamide
- Clamping range 10–65 mm
- Wall and ceiling mounting
- Patented safety system

G	A	B	D	H	Fx	Fy
mm	mm	mm	mm	mm	N	N
10	29	17	9.5–12	31.6	500	500
12 14	29	17	11.5–15	34.5	550	550
15 16	29	17	14–16.5	35.7	600	600
17 19	29	17	16–20	39.8	700	700
20 23	29	17	19.5–23.5	49.5	800	800
25 28	40	17	24–28	49.5	850	850
28 32	40	17	27.5–32	52.8	900	900
32 35	43	17	31.2–35.8	65.8	1,000	1,000
35 40	47	17	35–40.1	65.8	1,100	1,100
40 44	52	17	39.3–44.5	69.5	1,200	1,200
45 50	57	17	44–50	75.5	1,200	1,200
50 54	63	17	48–55	81	1,400	1,400
59 65	74	20	58.5–65	94.3	1,500	1,500

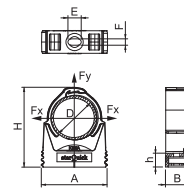
## starQuick clips

### starQuick clip



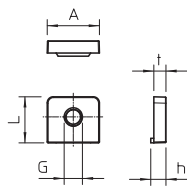
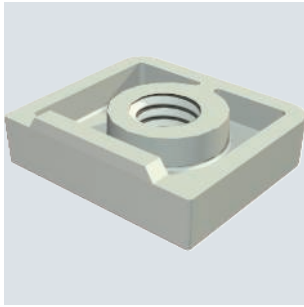
Type	Clamping range D mm	Colour	Dim. E mm	Dim. F mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
SQ-10 LGR	9.5-12	Light grey	10	4.5	10.5	100	0.568	2146053
SQ-12 LGR	11.5-15	Light grey	10	4.5	10.5	100	0.540	2146061
SQ-15 LGR	14-16.5	Light grey	10	4.5	10.5	100	0.584	2146096
SQ-17 LGR	16-20	Light grey	10	4.5	10.5	100	0.640	2146118
SQ-20 LGR	19.5-23.5	Light grey	10	4.5	10.5	50	0.670	2146134
SQ-25 LGR	24-28	Light grey	10	4.5	10.5	50	0.970	2146207
SQ-28 LGR	27.5-32	Light grey	10	4.5	10.5	50	1.070	2146215
SQ-32 LGR	31.2-35.8	Light grey	10	4.5	10.5	50	1.230	2146258
SQ-36 LGR	35-40.1	Light grey	10	4.5	10.5	25	1.510	2146290
SQ-40 LGR	39.3-44.5	Light grey	10	4.5	10.5	25	1.710	2146320
SQ-47 LGR	44-50	Light grey	10	4.5	10.5	25	1.980	2146363
SQ-51 LGR	48-55	Light grey	10	4.5	10.5	15	2.250	2146444
SQ-59 LGR	58.5-65	Light grey	10	4.5	10.5	15	3.300	2146487

Highly stable clip to accept plastic and metal electrical and sanitary pipes, as well as the Quick Pipe electrical installation pipe. Universal fastening options on walls, ceilings and steel structures, both indoors and outdoors. Flexible clamping range of several millimetres. Toolless pipe mounting. Can be arranged to up to Ø 28 mm, also with OBO Quick starQuick clip. For high load values, can be combined with double bracket. Can be mounted on profile rails for variable spacings and numbers of clips.



starQuick nut

PC



Type	Nominal size	Dim. A mm	Dim. L mm	Dim. h mm	Dim. t mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
SQ M6	M6	17	15	5	4	Light grey	100	0.070	2146509

Nut for insertion in starQuick clip, to mount the clip on an M6 thread.

starQuick double holder SWS

PA

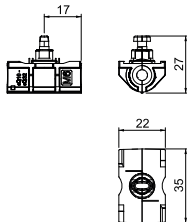
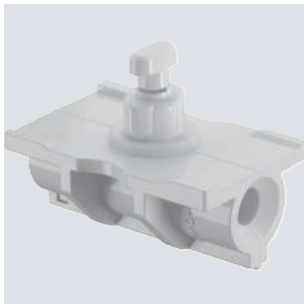


Type	Colour	Pack PU	Weight kg/100 PUs	Item no.
SQ 2 SWS	Signal white	1	0.650	2147000

starQuick double holder 74.6x20.1

starQuick studding adapter for threaded rods

PA



Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
SQ-SA M6	Light grey	100	0.600	2147280
SQ-SA M8	Light grey	100	0.505	2147283

Adapter for mounting starQuick clips on threaded rods.

starQuick clip SWS

PA



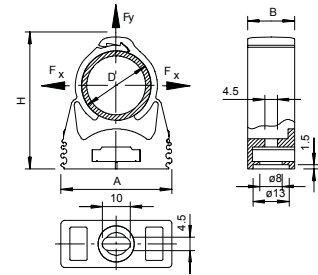
Type	Nominal size	Clamping range D mm	Break load kN	Colour	Pack PU	Weight kg/100 PUs	Item no.
SQ-10 T20 SWS	10	9.5-12	500	Signal white	1	11.360	2146922
SQ-12 T20 SWS	12-14	11.5-15	550	Signal white	1	12.000	2146923
SQ-15 T20 SWS	15-16	14-16.5	600	Signal white	1	11.680	2146924
SQ-17 T20 SWS	17-19	16-20	700	Signal white	1	12.820	2146925
SQ-20 T10 SWS	20-23	19.5-23.5	800	Signal white	1	6.700	2146926
SQ-25 T10 SWS	25-28	24-28	850	Signal white	1	9.610	2146927
SQ-28 T10 SWS	28-32	27.5-32	900	Signal white	1	10.700	2146928
SQ-32 T10 SWS	32-35	31.2-35.8	1000	Signal white	1	12.050	2146929



Highly stable clip to accept plastic and metal electrical and sanitary pipes, as well as the Quick Pipe electrical installation pipe. Universal fastening options on walls, ceilings and steel structures, both indoors and outdoors. Flexible clamping range of several millimetres. Toolless pipe mounting. Can be arranged to up to Ø 28 mm, also with OBO Quick clip or starQuick clip. For high load values, can be combined with double bracket. Can be mounted on profile rails for variable spacings and numbers of clips.

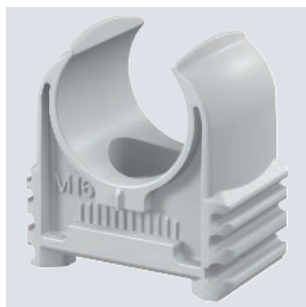
Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. H mm	Break load kN
SQ-10 T20 SWS	9.5-12	29	17	33	500
SQ-12 T20 SWS	11.5-15	29	17	35	550
SQ-15 T20 SWS	14-16.5	29	17	35	600
SQ-17 T20 SWS	16-20	29	17	39	700
SQ-20 T10 SWS	19.5-23.5	29	17	41	800
SQ-25 T10 SWS	24-28	40	17	48	850
SQ-28 T10 SWS	27.5-32	40	17	53	900
SQ-32 T10 SWS	31.2-35.8	43.1	17	56	1000

Dimensions





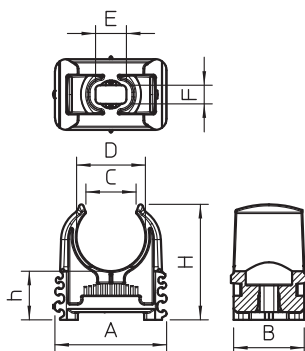
### Quick clip, for push-fit anchors, light grey



Type	Nominal size	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2957 M16	M16	Light grey	100	0.315	2149701
2957 M19-20	M19-20	Light grey	100	0.403	2149710

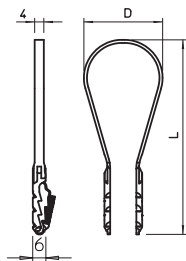
Flush-mounted clip to accept metric steel armoured pipes and heavy-duty insulating pipes, as well as Quick Pipe electrical installation pipes. Universal fastening options on walls and ceilings, both in indoor and protected outdoor areas. With slot for side alignment during mounting with wood screw or knock-in anchor. Toolless pipe mounting. Can also be arranged with OBO Multi-Quick or starQuick clip. M16 - M32 size can be screwed onto M6 thread. Recommended fastening spacing 50–60 cm, for max. extraction values F at a room temperature of 20 °C, see the table.

#### Dimensions



Type	Nominal size	Dim. A mm	Dim. B mm	Dim. C mm	Dim. D mm	Dim. E mm	Dim. F mm	Dim. H mm	Dim. h mm
2957 M16	M16	25.3	16	11.4	15.6	7	4.2	26	7
2957 M19-20	M19-20	30.3	16	13.3	18.6	9	4.2	30	7

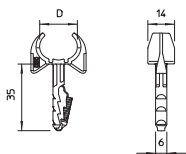
### BKS clamp clip



Type	Clamping range D mm	Dim. L mm	Dim. D mm	Pull-out value N	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1973 3-13 LGR	3-13	52	13	500	Light grey	100	0.089	2148803
1973 8-28 LGR	8-28	70	27	500	Light grey	100	0.122	2148846
1973 20-40 LGR	20-40	89	36	500	Light grey	100	0.150	2148862

For cables, flexible pipes and all kinds of insulating and armoured steel pipes, suitable for concrete, calcareous limestone and full brick. Use in gas concrete masonry is possible, but reduced load capacities must be expected.

### Snap clip



Type	Clamping range D mm	Drill hole depth mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1975 12-15	12-15	40	Light grey	100	0.251	2148021
1975 16-19	16-19	40	Light grey	100	0.372	2148048
1975 19-22	19-22.5	40	Light grey	100	0.533	2148056

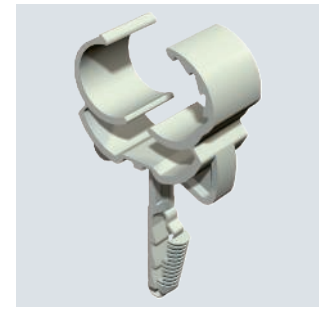
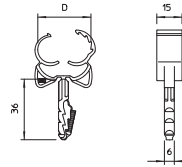
With moulded-on push-fit plug for rapid mounting in concrete walls and masonry. Push plug into hole until the clip makes contact with the surface. When the pipe is pressed into the clip, the arms of the clip grip it.

PA



Type	Clamping range D mm	Drill hole Ø mm	Drill hole depth mm	Breaking load for concrete B25 N	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1976 12-15	12-15.5	6	40	190 N	Light grey	100	0.245	2148501
1976 16-21	16-21.5	6	40	500 N	Light grey	100	0.443	2148528
1976 22-28	22.5-28.5	6	40	500 N	Light grey	100	0.781	2148536

With moulded-on push-fit plug for rapid mounting in concrete walls and masonry. Push plug into hole until the clip makes contact with the surface. When the pipe is pressed into the clip, the arms of the clip grip it.



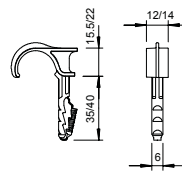
### Click-snap clip

PA



Type	Clamping range D mm	Drill hole Ø mm	Drill hole depth mm	Breaking load for concrete B25 N	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1974 16-23	16-23	6	40	50	Light grey	100	0.263	2197804
1974 22-30	22-30	6	40	65	Light grey	100	0.446	2197812

These push-fit clips are used when installing cables and pipes on walls and ceilings and when running flexible pipes on concrete and in the screed. The single push-fit clips can be used instead of nail clips in concrete and aerated concrete. The advantage of the push-fit clips is that they only have to be pushed into the drilled hole. Anchors and bolts are not needed.



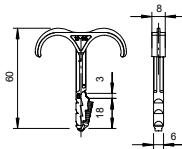
### Single push-fit clip

PA



Type	Clamping range D mm	Drill hole Ø mm	Drill hole depth mm	Breaking load for concrete B25 N	Colour	Pack Piece	Item no.
1974 2X4-12	4-12	6	40	90	Light grey	100	2197855
1974 2X12-25	12-25	6	40	120	Light grey	100	2197863

These push-fit clips are used when installing cables and pipes on walls and ceilings and when running flexible pipes on concrete and in the screed. The double push-fit clips can be used instead of nail clips in concrete and aerated concrete. The advantage of the push-fit clips is that they only have to be pushed into the drilled hole. Anchors and bolts are not needed.



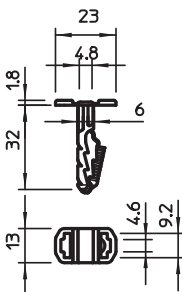
### Double push-fit clip

PA



Type	Drill hole depth mm	Breaking load for concrete B25 N	Colour	Pack Piece	Weight kg/100 pc.	Item no.
910 STK 6x30	35	260	Light grey	100	0.108	2351609

The push-fit anchor can accept a cable tie (type 550 or 555) up to 9 mm wide, which can be used to install several cables and pipes. Suitable for concrete, lime sandstone and brickwork as solid brick. Use in gas concrete masonry is possible, but reduced load capacities must be expected.

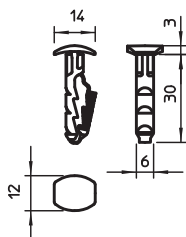


### Push-fit anchor for cable ties



## Push-fit anchor with mushroom head

PA



Type	Dowel Ø mm	Length mm	Drill hole depth mm	Breaking load for concrete B25 N	Pack Piece	Weight kg/100 pc.	Item no.
<b>910 STP 6x30</b>	6	30	35	250	100	0.101	<b>2351412</b>

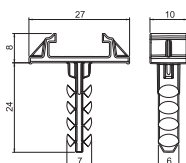
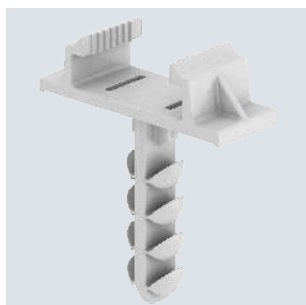
The push-fit anchor allows simple mounting, e.g. of labelling panels or small WDK ducts. Suitable for concrete, lime sandstone and brickwork as solid brick. Use in gas concrete masonry is possible, but reduced load capacities must be expected.

## Push-fit anchor for Quick clip, type 2957

PA



Ø6

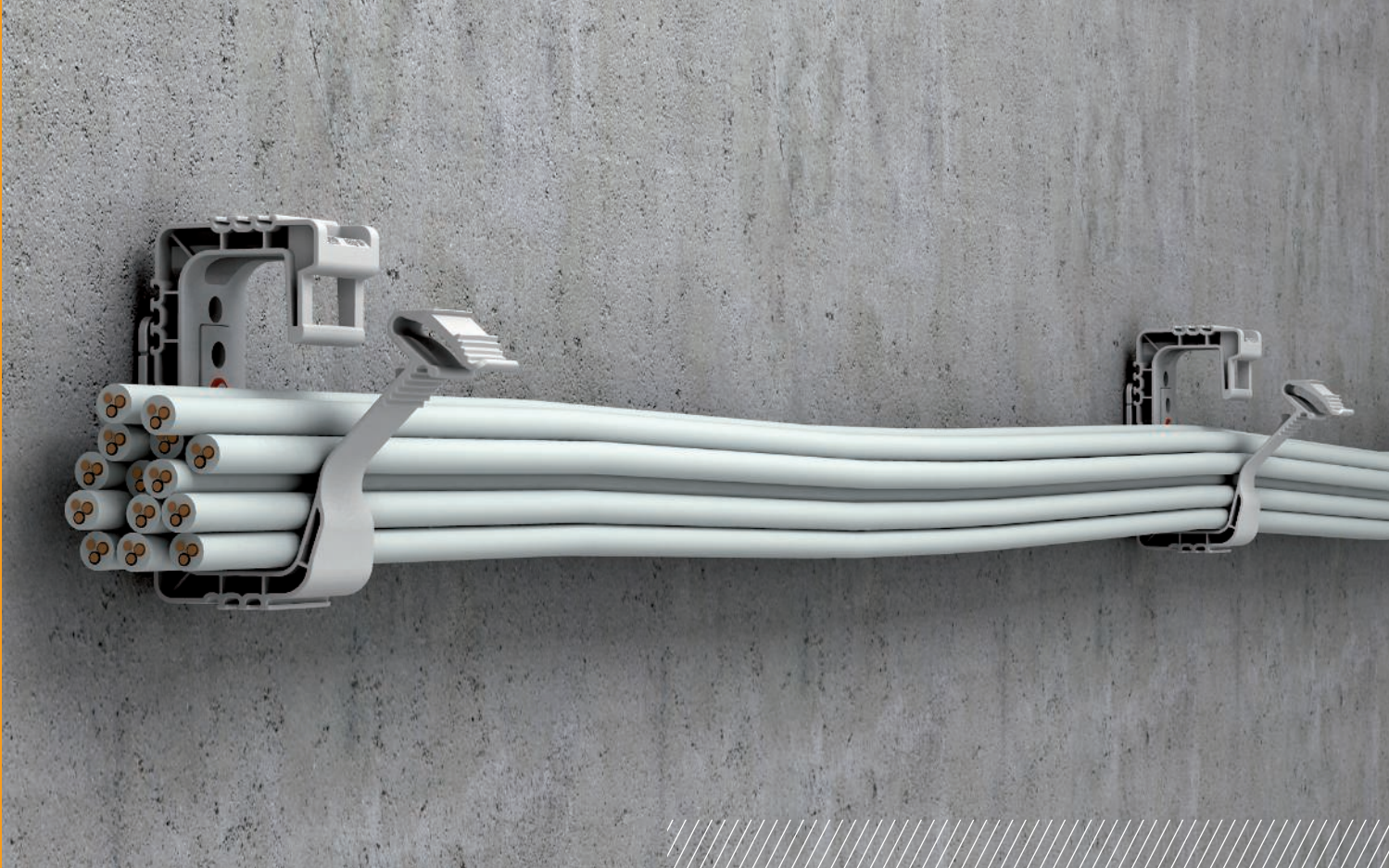


Type	Dowel Ø mm	Length mm	Drill hole depth mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>910 STQS 6x26</b>	6	26	30	100	0.110	<b>2351650</b>

Push-fit anchor suitable for Quick clip, type 2957. The anchor is fixed to the Quick clip by a locking mechanism. Suitable for rapid mounting in concrete walls and masonry. The anchor is pushed into the hole until the clip makes contact with the surface.







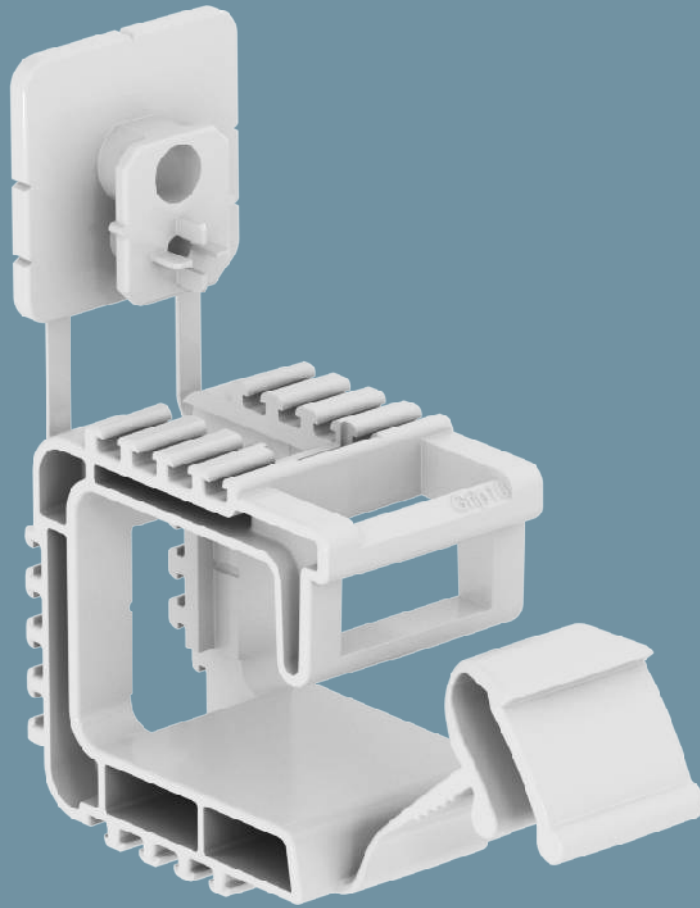
## Grip cable tidy

Cable tidy for general use, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun.

- Wall and ceiling mounting
- Can be joined together "back to back"
- For multiple cables
- Rapid mounting using the fastening element
- Ideal for retroinstallation
- Flame-resistant version, stone grey, to DIN EN 0471/DIN IEC 695 Part 2-1, test temperature 960 °C



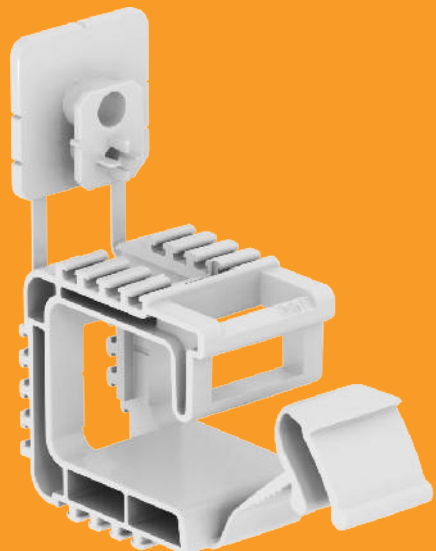




## Grip 10 cable tidy

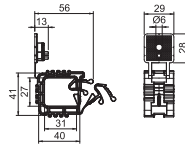
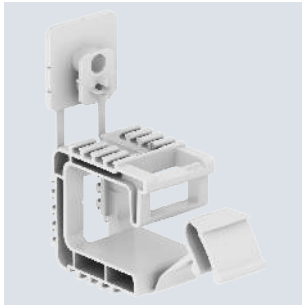
Cable tidy for general use, suitable for wall and ceiling mounting.

- Wall and ceiling mounting
- Can be joined together "back to back"
- For multiple cables
- Rapid mounting using the fastening element
- Ideal for retroinstallation
- Flame-resistant version, stone grey, to DIN EN 0471/DIN IEC 695 Part 2-1, test temperature 960 °C



## Grip 10

PP

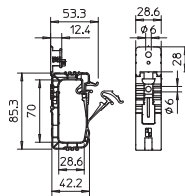
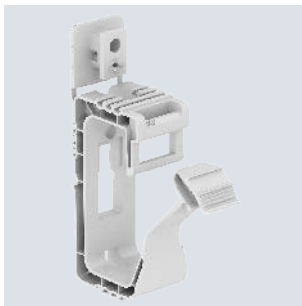


Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 10 SP	10	Light grey	100	1.410	2205384
2031 10	10	Light grey	50	1.410	2205380

Cable tidy with fastening holes of Ø 6 mm for mounting installation cables, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. The recommended fastening spacing when assigned fully is 250 to 400 mm.

## Grip 20

PP

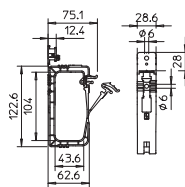
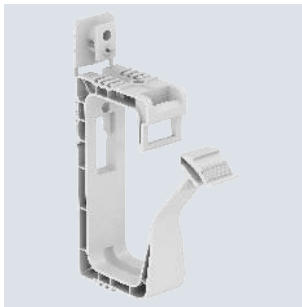


Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 20	20	Light grey	50	1.920	2205404
2031 20 SP	20	Light grey	100	1.920	2205408

Cable tidy for general use with fastening holes of Ø 6 mm, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. The recommended fastening spacing when assigned fully is 250–400 mm.

## Grip 40

PP

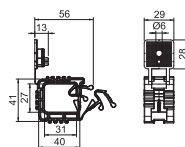
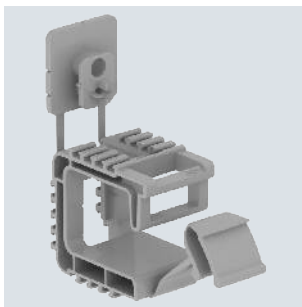


Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 40	40	Light grey	25	3.610	2205416
2031 40 SP	40	Light grey	50	3.280	2205420

Cable tidy for general use with fastening holes of Ø 6 mm, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. The recommended fastening spacing when assigned fully is 250–400 mm.

## Grip 10 flame-resistant

PP



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 F 10	10	Stone grey	50	1.410	2205388

Cable tidy with fastening holes of Ø 6 mm for mounting installation cables, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. The recommended fastening spacing when assigned fully is 250 - 400 mm.

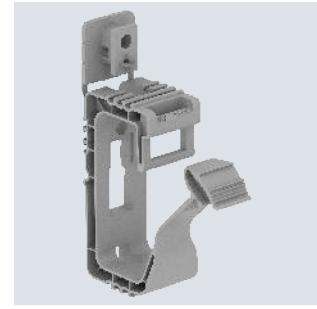
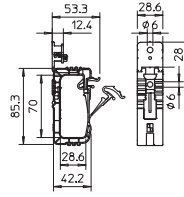
Flame-resistant version, stone grey, to DIN VDE 0471/DIN IEC 695 Part 2-1, test temperature 960 °C.

PP



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 F 20	20	Stone grey	50	1.920	2205412

Cable tidy for general use, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. Flame-resistant version, stone grey, to DIN VDE 0471/DIN IEC 695 Part 2-1, test temperature 960 °C. The recommended fastening spacing when assigned fully is 250–400 mm.



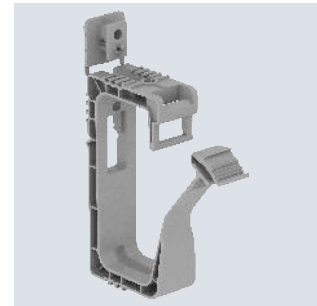
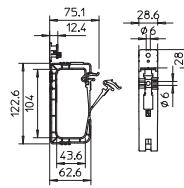
### Grip 40 flame-resistant

PP

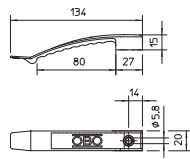
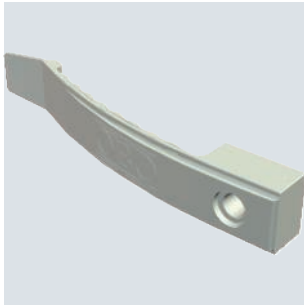


Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2031 F 40	40	Stone grey	25	3.610	2205423

Cable tidy for general use with fastening holes of Ø 6 mm, suitable for wall and ceiling mounting. The moulded fastening element can be fastened using knock-in anchors or a gas pressure nail gun. Flame-resistant version, stone grey, to DIN VDE 0471/DIN IEC 695 Part 2-1, test temperature 960 °C. The recommended fastening spacing when assigned fully is 250–400 mm.



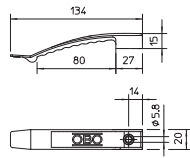
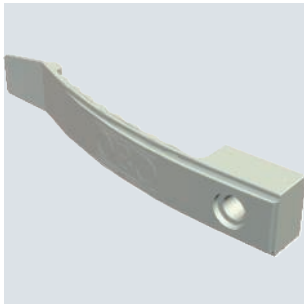
### Pressure clip for 8 cables



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2032	8	Light grey	50	1.371	2205017
2032 SP	8	Light grey	100	1.371	2204975

Standard version for general use, e.g. on intermediate ceilings and partition walls.  
Clamping height 9 mm – with spacer 13 mm.  
Fastening hole: 6 mm Ø.

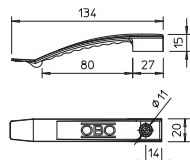
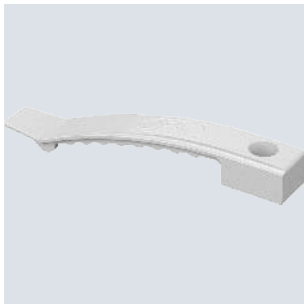
### Pressure clip for 8 cables, flame resistant



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2032 F	8	Stone grey	50	1.412	2204908

Flame-resistant version, specially for use in suspended ceilings.  
Thermoplast. Polyester, stone grey RAL 7030, flame-resistant to VDE 0471/DIN IEC 695 Part 2-1, Test temperature 960 °C, respectively V-O to UL 94, halogen-free.  
Clamping height: 9 mm, with spacer 13 mm.  
Fastening hole: 6 mm Ø.

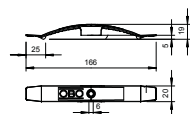
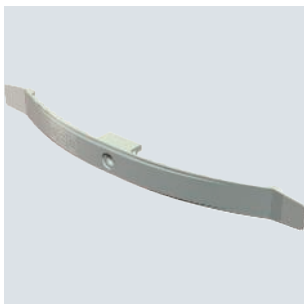
### Pressure clip for 8 cables, connectable



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2032 AS	8	Light grey	50	1.300	2205052

Version suitable for fixing with gas pressure nail gun (i.e. by SPIT), for example for use on intermediate ceilings and partition walls.  
Clamping height: 9 mm, with spacer 13 mm.  
Fastening hole: 7 mm Ø.

### Pressure clip for 10 cables



Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2034	10	Light grey	50	1.169	2205041
2034 SP	10	Light grey	100	1.169	2204991

Standard version for general use, e.g. on intermediate ceilings and partition walls.  
Clamping height 9 mm – with spacer 13 mm.  
Fastening hole: 6 mm Ø.



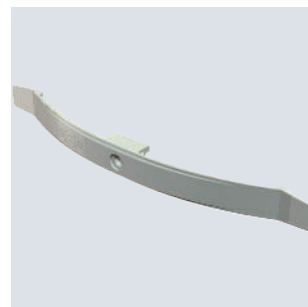
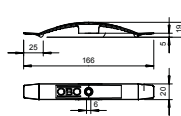
PBPT



### Pressure clip for 10 cables, flame resistant

Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2034 F	10	Stone grey	50	0.808	2204924

Flame-resistant version, specially for use in suspended ceilings.  
 Thermoplast. Polyester, stone grey RAL 7030, flame-resistant to VDE 0471/DIN IEC 695 Part 2-1, Test temperature 960 °C, respectively V-O to UL 94, halogen-free.  
 Clamping height: 9 mm, with spacer 13 mm.  
 Fastening hole: 6 mm Ø.



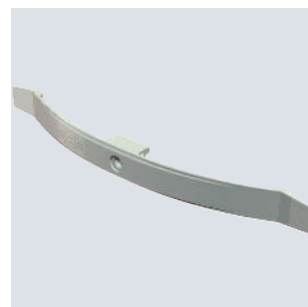
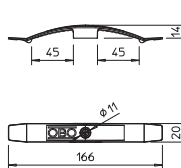
PA



### Pressure clip for 10 cables, connectable

Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2034 AS	10	Light grey	50	1.130	2205054

Version suitable for fixing with gas pressure nail gun (i.e. by SPIT), for example for use on intermediate ceilings and partition walls.  
 Clamping height: 9 mm, with spacer 13 mm.  
 Fastening hole: 7 mm Ø.



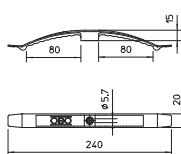
PA



### Pressure clip for 16 cables

Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2033	16	Light grey	25	2.077	2205033
2033 SP	16	Light grey	100	2.077	2204983

Standard version for general use, e.g. on intermediate ceilings and partition walls.  
 Clamping height 9 mm – with spacer 13 mm.  
 Fastening hole: 6 mm Ø.



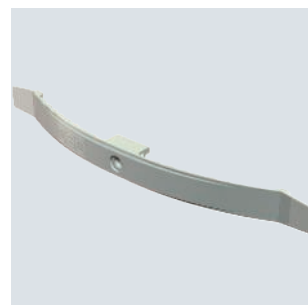
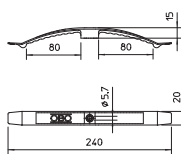
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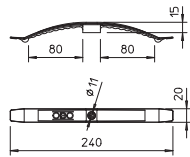
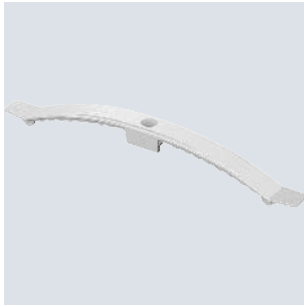
### Pressure clip for 16 cables, flame resistant

Type	No. of conductors	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2033 F	16	Stone grey	25	2.588	2204916

Flame-resistant version, specially for use in suspended ceilings.  
 Thermoplast. Polyester, stone grey RAL 7030, flame-resistant to VDE 0471/DIN IEC 695 Part 2-1, Test temperature 960 °C, respectively V-O to UL 94, halogen-free.  
 Clamping height: 9 mm, with spacer 13 mm.  
 Fastening hole: 6 mm Ø.



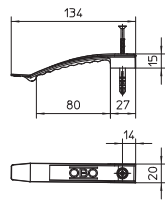
Pressure clip for 16 cables, connectable



Type	No. of conductors	NYM 3 x 1.5	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2033 AS	16		Light grey	25	2.100	2205053

Version suitable for fixing with gas pressure nail gun (i.e. by SPIT), for example for use on intermediate ceilings and partition walls.  
Clamping height: 9 mm, with spacer 13 mm.  
Fastening hole: 7 mm Ø.

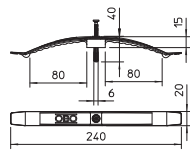
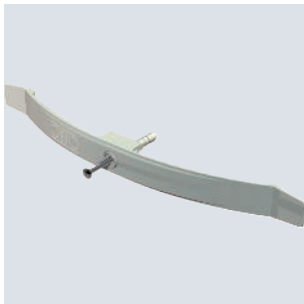
Pressure clip with knock-in anchor, for 8 cables



Type	No. of conductors	NYM 3 x 1.5	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2032 SD	8		Light grey	50	1.791	2204800
2032 SD SP	8		Light grey	100	1.791	2204851

With pre-mounted knock-in anchor, 6 mm Ø.  
Required drill hole depth 50 mm.  
Clamping height 9 mm – with spacer 13 mm.  
Fastening hole 6 mm Ø.

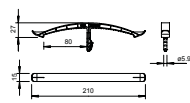
Pressure clip with knock-in anchor, for 16 cables



Type	No. of conductors	NYM 3 x 1.5	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2033 SD	16		Light grey	25	2.515	2204819
2033 SD SP	16		Light grey	100	2.515	2204878

With pre-mounted knock-in anchor, 6 mm Ø.  
Required drill hole depth 50 mm.  
Clamping height 9 mm – with spacer 13 mm.  
Fastening hole 6 mm Ø.

Pressure clip with push-fit anchor



Type	No. of conductors	NYM 3 x 1.5	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2033 STD	16		Light grey	25	1.037	2204541

With moulded push-fit plug, 6 mm Ø.



## Series pressure clip, light grey

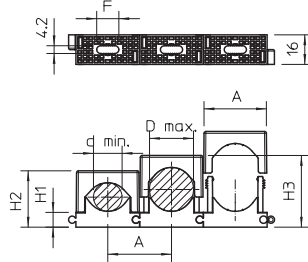
PA



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2037 3-7 LGR	3-7	Light grey	1000	100	0.260	2250071
2037 6-13 LGR	6-13	Light grey	1200	100	0.359	2250136
2037 12-20 LGR	12-20	Light grey	500	50	0.572	2250209
2037 16-24 LGR	16-24	Light grey	600	50	0.838	2250241
2037 18-30 LGR	18-30	Light grey	300	25	0.997	2250306
2037 27-43 LGR	27-43	Light grey	300	25	1.615	2250438

Universal clip for the single fastening of cables and pipes, all sizes can be seamlessly expanded among each other, with adhesive foot, slot and for screwing to M6 thread. To stick the polyamide clips to masonry and concrete, use Impu-Fix ribbon conductor quick adhesive, type 509.  
\*Sizes 3-7 are not suitable for nail guns.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. d min. mm	Dim. d max. mm	Dim. F mm
2037 3-7 LGR	3-7	14.5	7.5	15.5	19.5	3	7	6
2037 6-13 LGR	6-13	20	8.5	20	27	6	13	13
2037 12-20 LGR	12-20	28	8.5	26	34	12	20	14
2037 16-24 LGR	16-24	34.5	8.5	31	39	16	24	12
2037 18-30 LGR	18-30	40	9	34	46	18	30	12
2037 27-43 LGR	27-43	55	10.5	46	62	27	43	15

## Series pressure clip, light grey, special packaging

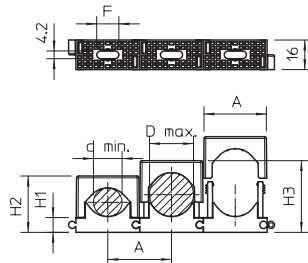
PA



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2037 12-20 LGR	12-20	Light grey	500	500	0.572	2249952

Universal clip for the single fastening of cables and pipes, all sizes can be seamlessly expanded among each other, with adhesive foot, slot and for screwing onto an M6 thread.  
\*Sizes 3-7 are not suitable for nail guns.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. d min. mm	Dim. d max. mm	Dim. F mm
2037 12-20 LGR	12-20	28	8.5	26	34	12	20	14

Series pressure clip 2037

PA



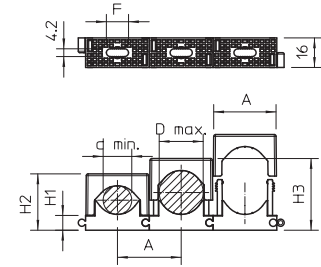
Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2037 12-20 SW	12-20	Black	600	50	0.571	2250527

Universal clip for the single fastening of cables and pipes, all sizes can be seamlessly expanded among each other, with adhesive foot, slot and for screwing onto an M6 thread.  
\*Sizes 3-7 are not suitable for nail guns.



Type	Clamping range D mm	Dim. A mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. d min. mm	Dim. d max. mm	Dim. F mm
2037 12-20 SW	12-20	28	8.5	26	34	12	20	14

Dimensions



PA



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2037 12-20 CW	12-20	Cream	600	50	0.586	2250705

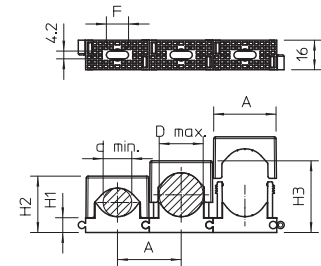
Universal clip for the single fastening of cables and pipes, all sizes can be seamlessly expanded among each other, with adhesive foot, slot and for screwing onto an M6 thread.  
\*Sizes 3-7 are not suitable for nail guns.

Series pressure clip, cream white



Type	Clamping range D mm	Dim. A mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. d min. mm	Dim. d max. mm	Dim. F mm
2037 12-20 CW	12-20	28	8.5	26	34	12	20	14

Dimensions





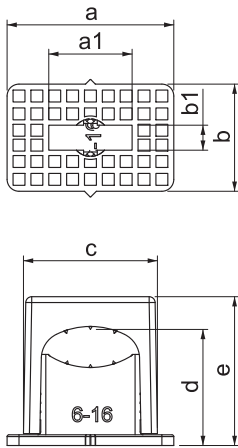
### Pressure ISO clip 3050, single, light grey



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
3050 LGR	6-16	Light grey	1200	100	0.400	2101017

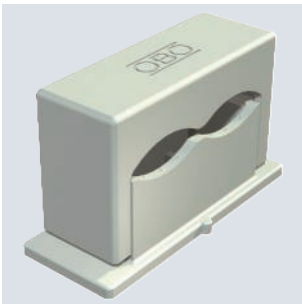
With adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

#### Dimensions



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm
3050 LGR	6-16	13	4	28	18	22.5	25	34

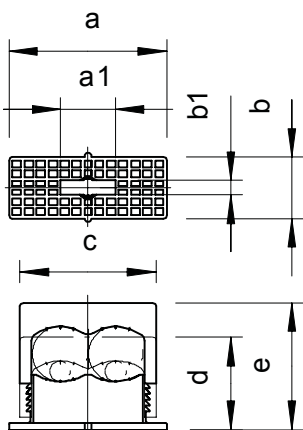
### Pressure ISO clip 3050, double, light grey



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
3050 2 6-16	6-16	Light grey	250	25	1.044	2115018

For two cables, with adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

#### Dimensions



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm
3050 2 6-16	6-16	26	3.8	46	18	40	26	35

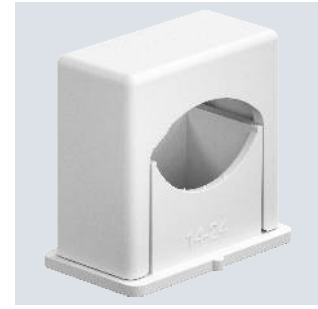
PS



### Pressure ISO clip 3051, single, light grey

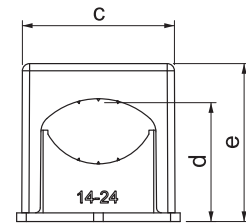
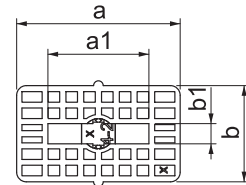
Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
3051 LGR	14-24	Light grey	600	50	0.720	2101033

With adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm
3051 LGR	14-24	21	4.2	34	20	32	33	43

#### Dimensions



PS



### Pressure ISO clip 3051, single, pure white

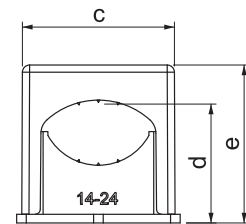
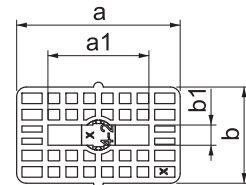
Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
3051 RW	14-24	Pure white	50	0.720	2102048

With adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm
3051 RW	14-24	21	4.2	34	20	32	33	43

#### Dimensions



## Pressure ISO clip 3052, single, light grey

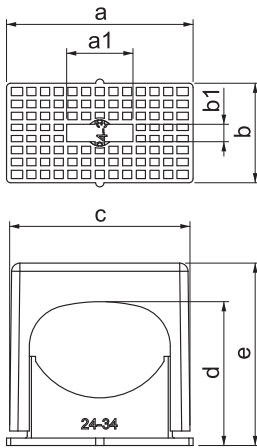
PS



Type	Clamping range D mm	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
3052 LGR	24-34	Light grey	300	25	1.290	2101068

With adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

### Dimensions



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm
3052 LGR	24-34	16	4.2	45	24	43	43	57

PS

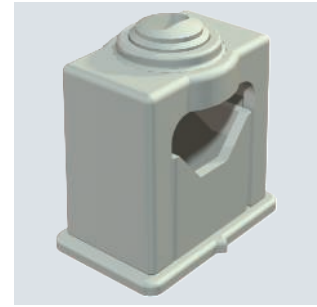


Type	Clamping range D		Pack Piece	Weight kg/100 pc.	Item no.
	mm	Colour			
3040 LGR	6-16	Light grey	100	0.532	2105012
3041 LGR	16-24	Light grey	50	1.168	2105039
3042 LGR	24-34	Light grey	25	2.488	2105055

Solid cable fastening through clamping screws, with adhesive base, slot and for screwing to M6 thread.

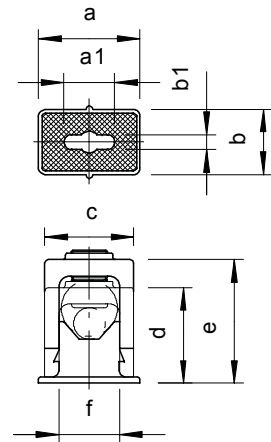
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

### Grip ISO clip, single



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm	Dim. f mm
3041 LGR	16-24	20	4.2	35	22	37	36	44	31
3042 LGR	24-34	14	4.2	50	22	48	49	59	40

#### Dimensions



PS

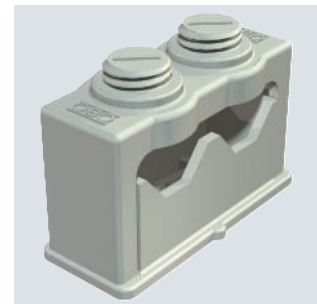


Type	Clamping range D		Pack Piece	Weight kg/100 pc.	Item no.
	mm	Colour			
3040 2	6-16	Light grey	25	1.184	2107015
3041 2	16-24	Light grey	25	1.948	2107031

Solid cable fastening through clamping screws, with adhesive base, slot and for screwing to M6 thread.

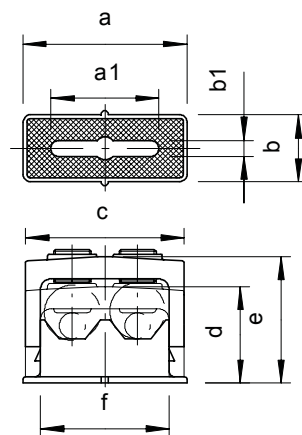
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

### Grip ISO clip, double



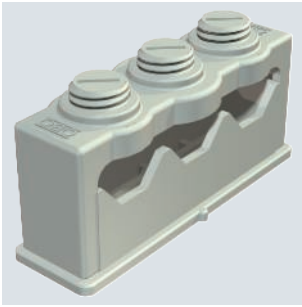
Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm	Dim. f mm
3041 2	16-24	46	4.5	63	22	61	37	46	55

#### Dimensions



## Grip ISO clip, triple

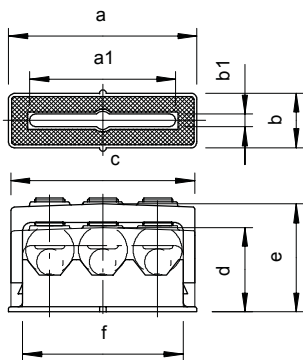
PS



Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
3040 3	6-16	Light grey	25	1.508	2109018

Solid cable fastening through clamping screws, with adhesive base, slot and for screwing to M6 thread.  
Use the Impu-Fix ribbon conductor quick adhesive, type 509, to stick the polystyrene clips to masonry and concrete.

### Dimensions



Type	Clamping range D mm	Dim. a1 mm	Dim. b1 mm	Dim. a mm	Dim. b mm	Dim. c mm	Dim. d mm	Dim. e mm	Dim. f mm
3040 3	6-16	48	4	62	18	61	31	38	55



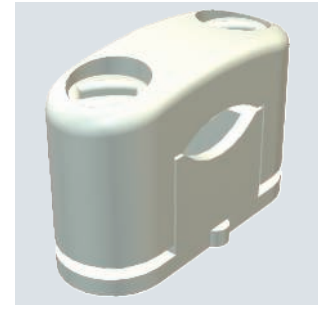
PS



SOM clip, single

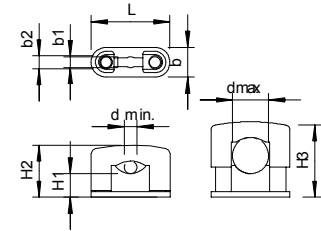
Type	Clamping range D		Pack Piece	Weight kg/100 pc.	Item no.
	mm	Colour			
3079 LGR	5-14	Light grey	50	0.431	2124149
3080 LGR	6-17	Light grey	50	0.926	2124173
3081 LGR	15-25	Light grey	25	1.860	2124254
3082 LGR	22-34	Light grey	25	2.055	2124343

With plastic screws, so corrosion-protected, with slot for fastening with wood screws or 5 mm knock-in anchors.



Type	Clamping range D mm	Dim. L mm	Dim. d min. mm	Dim. d max. mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. b mm	Dim. b1 mm	Dim. Bolt
3079 LGR	5-14	31	5	13	10.5	20	29	12	4.2	M5x14
3080 LGR	6-17	37	6	17	11	24.5	35.5	14	4	M6x18
3081 LGR	15-25	51	14	25	11.5	33	44	17	5	M8x23
3082 LGR	22-34	62	22	34	11	40	52	18	5.2	M8x23

Dimensions



UF



SOM clip, single, hardly flammable

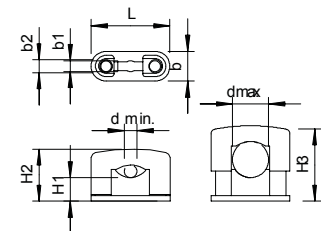
Type	Clamping range D		Pack Piece	Weight kg/100 pc.	Item no.
	mm	Colour			
3083 LGR	32-45	Light grey	20	5.840	2124459

With plastic screws, so corrosion-protected, with slot for fastening with wood screws or 5 mm knock-in anchors.  
Hardly flammable.



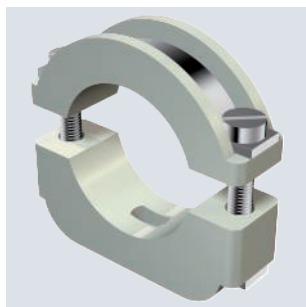
Type	Clamping range D mm	Dim. L mm	Dim. d min. mm	Dim. d max. mm	Dim. H1 mm	Dim. H2 mm	Dim. H3 mm	Dim. b mm	Dim. b1 mm	Dim. Bolt
3083 LGR	32-45	77	32	45	12	54	57	21	6.5	M8x40

Dimensions



## Lightning ISO clip

PS



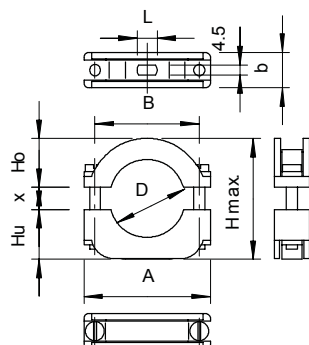
Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>3015 12 LGR</b>	6-12	Light grey	50	1.600	<b>2157128</b>
<b>3015 17 LGR</b>	10-17	Light grey	50	1.742	<b>2157179</b>
<b>3015 24 LGR</b>	17-24	Light grey	50	2.542	<b>2157241</b>
<b>3015 34 LGR</b>	24-34	Light grey	25	3.620	<b>2157349</b>

Lightning ISO clips: plastic clip with metal insert, therefore also suitable for heavy-duty applications; metal parts made of electrogalvanised steel.

3015 with 4.5 mm slot.

\*Sizes 6-12 and 10-17 not suitable for bolt-firing device.

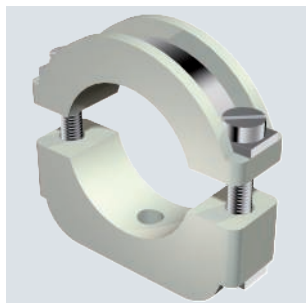
### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. H mm	Dim. Ho mm	Dimension Hu mm	Dimension L mm	Dim. b mm	Dim. Bolt
3015 12 LGR	6-12	34	24	30	9.5	13.5	7.5	14	M4 x 22
3015 17 LGR	10-17	38	28	36.5	12	14	7.5	14	M4 x 25
3015 24 LGR	17-24	47.5	37	43	16	18	10	15	M4 x 30
3015 34 LGR	24-34	57	47	54.4	22	22	9	16	M5 x 35

## Lightning ISO clip, screw-on

PS



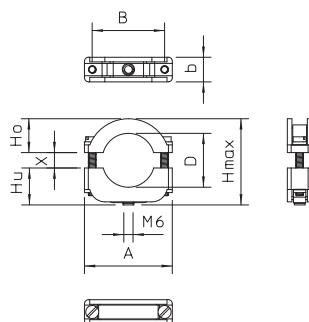
Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>3019 M6 LGR</b>	6-12	Light grey	50	1.564	<b>2158124</b>
<b>3020 LGR</b>	10-17	Light grey	50	1.588	<b>2158175</b>
<b>3021 LGR</b>	17-24	Light grey	25	2.632	<b>2158248</b>
<b>3022 LGR</b>	24-34	Light grey	25	3.623	<b>2158345</b>

Lightning ISO clips: plastic clip with metal insert, therefore also suitable for heavy-duty applications; metal parts made of electrogalvanised steel.

Can be screwed onto M6 thread.

\*Sizes 6-12 and 10-17 not suitable for bolt-firing device.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. b mm	Dim. B mm	Dim. H mm	Dim. Ho mm	Dimension Hu mm	Dim. x mm	Dim. Bolt
3019 M6 LGR	6-12	34	14	24	32.5	9.5	13.5	6	M4 x 22
3020 LGR	10-17	38	14	28	36	12	14	7	M4 x 25
3021 LGR	17-24	47.5	15	37	44	16	18	8	M4 x 30
3022 LGR	24-34	57	16	47	56	22	22	10	M5 x 35

PP



### Base clamp clip, single

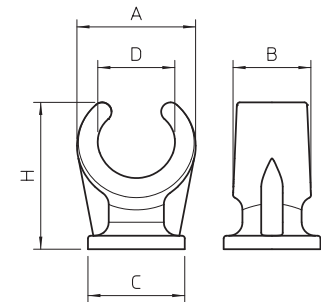
Type	Size	Colour	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2962 6 LGR	6	Light grey	1200	100	0.080	2140063
2962 8 LGR	8	Light grey	2000	100	0.106	2140071
2962 10 LGR	10	Light grey	2400	100	0.136	2140101
2962 12 LGR	12	Light grey	1200	100	0.182	2140128
2962 15 LGR	14-15	Light grey	1000	100	0.277	2140152
2962 18 LGR	16-18	Light grey	1200	100	0.377	2140187
2962 22 LGR	19-22	Light grey	500	50	0.514	2140233
2962 28 LGR	25-28	Light grey	250	25	0.948	2140284
2962 35 LGR	32-35	Light grey	300	25	1.295	2140357
2962 42 LGR	40-42	Light grey	300	25	1.709	2140411



Can be screwed onto M6 thread.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. H mm
2962 6 LGR	6	11.5	10	15	17
2962 8 LGR	8	14	11	15	19
2962 10 LGR	10	16.5	12	15	20.5
2962 12 LGR	12	19	13	15	23
2962 15 LGR	14-15	22	14.5	18	28
2962 18 LGR	16-18	24.5	15.5	20	30
2962 22 LGR	19-22	29.2	17	22	34
2962 28 LGR	25-28	38.8	20	25	41
2962 35 LGR	32-35	47	22	32	51
2962 42 LGR	40-42	54	23	32	58

#### Dimensions

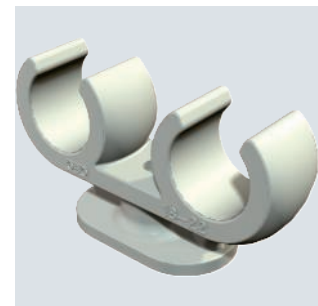


PP



### Base clamp clip, double

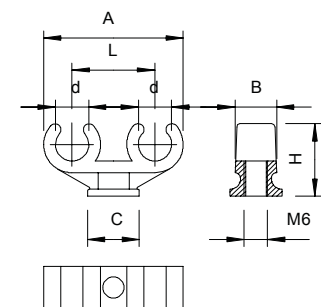
Type	Size	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2962 2X10	10 + 10	Light grey	100	0.283	2140608
2962 2x16	15/16 + 15/16	Light grey	50	0.809	2140683
2962 2x22	18/22 + 18/22	Light grey	25	1.064	2140721



Can be screwed onto M6 thread.

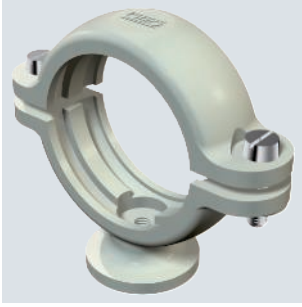
Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. L mm	Dim. H mm
2962 2X10	10	40.5	12	Ø 15	24	21
2962 2x16	15-16	57.5	15.5	20x33	33	30
2962 2x22	18-22	67	17	22x38	38	34

#### Dimensions



## ISO base clip

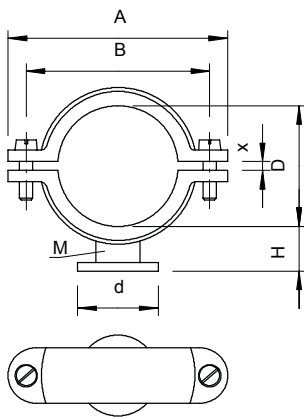
PS



Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2960 11 M6 LGR	9-11	Light grey	50	0.549	2130114
2960 12 M6 LGR	12-13	Light grey	50	0.480	2130122
2960 15 M6 LGR	15-17	Light grey	50	0.510	2130157
2960 18 M6 LGR	16.5-18	Light grey	50	0.791	2130181
2960 22 M6 LGR	20.5-22	Light grey	50	0.951	2130211
2960 22 LGR SO	19-22	Light grey	50	1.296	2136880
2960 25 M6 LGR	22.5-25	Light grey	25	1.221	2130254
2960 28 M6 LGR	25.5-28	Light grey	25	1.341	2130289
2960 35 M6 LGR	31.5-35	Light grey	25	1.761	2130351
2960 40 M6 LGR	36.5-40	Light grey	20	3.017	2130408
2960 43 M6 LGR	40.5-43	Light grey	20	3.098	2130432
2960 47 M6 LGR	45.5-47	Light grey	15	4.235	2130475
2960 54 M6 LGR	50.5-54	Light grey	15	4.524	2130548

Can be screwed onto M6 thread.

### Dimensions



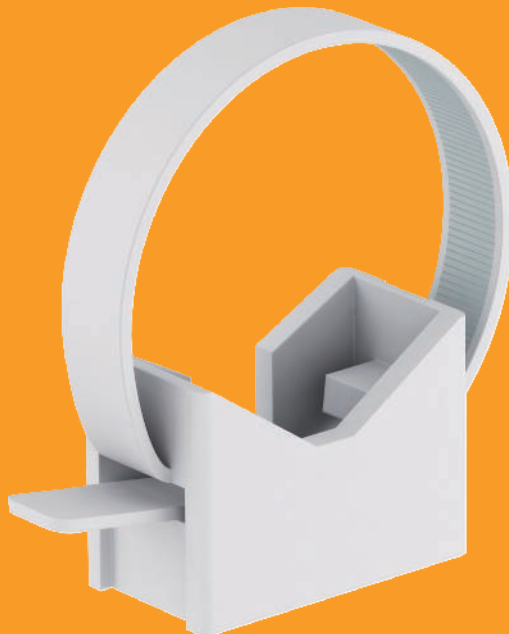
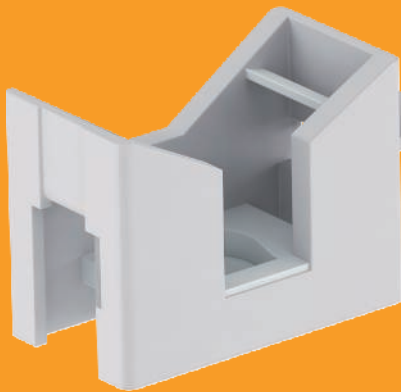
Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. x mm	Dim. H mm	Dim. d mm	Thread
2960 11 M6 LGR	9-11	35	25	2.2	11.6	17	M6
2960 12 M6 LGR	12-13	35	25	1	10	17	M6
2960 15 M6 LGR	15-17	38	28	0	11.5	18	M6
2960 18 M6 LGR	16.5-18	46	34	2	12	20	M6
2960 22 M6 LGR	20.5-22	50	38	2	14	21	M6
2960 22 LGR SO	19-22	50	38	3.4	14	21	M6
2960 25 M6 LGR	22.5-25	55	43	3	16	23	M6
2960 28 M6 LGR	25.5-28	58	46	3	17.5	24	M6
2960 35 M6 LGR	31.5-35	66	54	4	18.5	28	M6
2960 40 M6 LGR	36.5-40	80	66	4	23	34	M6
2960 43 M6 LGR	40.5-43	80	66	3	21	34	M6
2960 47 M6 LGR	45.5-47	98	82	2	22.5	36	M6
2960 54 M6 LGR	50.5-54	98	82	4	20	36	M6



# CTC cable tie clip

Fasten cables and up to four pipe sizes quickly, flexibly and reliably with only one cable tie clip.

- Pipe clip with cable tie with internal gear teeth
- Universally applicable for cables and pipes
- Fastening by means of knock-in anchor Ø 5 mm/Ø 6 mm





## CTC cable tie clip

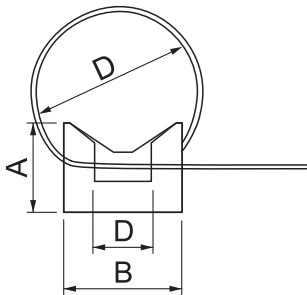
PA



Type	Dimension mm	Max. bundle Ø mm	Minimum breaking load kN	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>CTC 7,5x180 LGR</b>	16-32	32	0.36	Light grey	100	0.600	<b>2332790</b>
<b>CTC 7,5x280 LGR</b>	40-63	63	0.36	Light grey	100	0.900	<b>2332794</b>

With the cable tie clip from OBO Bettermann, you can profit from faster and more reliable fastening of cables and pipes. The internally toothed cable tie ensures a secure hold and can be adapted to up to 4 pipe sizes. The CTC cable tie clip is made of halogen-free polyamide and can thus be used easily in interiors and protected external areas.

### Dimensions



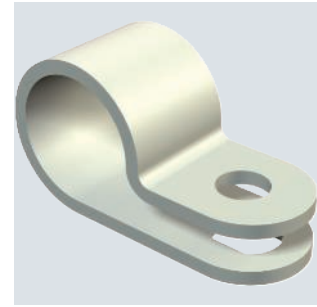
Type	Length mm	Width mm	Height mm
CTC 7,5x180 LGR	180	7.5	1.5
CTC 7,5x280 LGR	281	7.5	1.5

PA



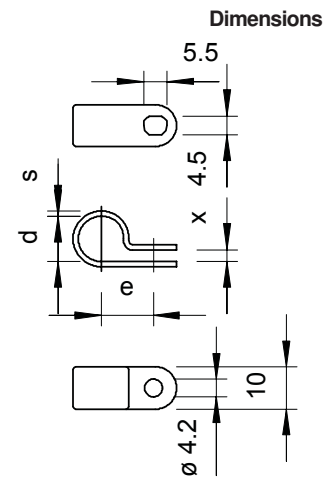
## Fastening clip

Type	For cable		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Colour			
255 3.2 LGR	3.2	Light grey	100	0.039	2222035
255 5.2 LGR	5.2	Light grey	100	0.039	2222051
255 6.5 LGR	6.5	Light grey	100	0.047	2222078
255 8 LGR	8	Light grey	100	0.054	2222086
255 9.5 LGR	9.5	Light grey	100	0.063	2222094
255 11 LGR	11	Light grey	100	0.073	2222116
255 12.5 LGR	12.5	Light grey	100	0.078	2222124
255 14 LGR	14	Light grey	100	0.103	2222140
255 16 LGR	16	Light grey	100	0.126	2222167
255 17.5 LGR	17.5	Light grey	100	0.123	2222175



Fastening clip for secure all-round fixing of cables.

Type	For cable Ø mm	Dim. d mm	Dim. e mm	Dim. s mm	Dim. x mm
255 5.2 LGR	5.2	5	9.5	1	1.8
255 6.5 LGR	6.5	6.3	10	1	2.2
255 8 LGR	8	7.8	10	1.2	2.2
255 9.5 LGR	9.5	9.3	11	1.2	2.2
255 11 LGR	11	10.8	13	1.2	2.8
255 12.5 LGR	12.5	12.3	14	1.2	2.8
255 14 LGR	14	13.8	15	1.5	3.2
255 16 LGR	16	15.8	16	1.5	3.2
255 17.5 LGR	17.5	17.2	17	1.5	3.2



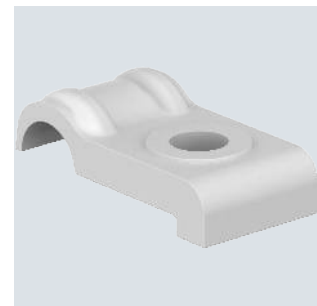
## ISO nail clips

PP

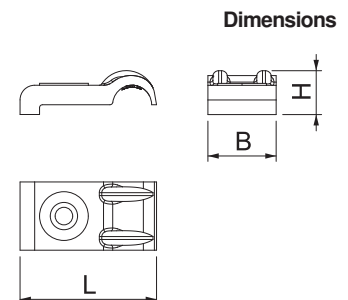
## ISO nail clip 4028 2-4

Type	For cable		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Colour			
4028	2-4	Light grey	100	0.017	2215047

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.



Type	For cable Ø mm	Dim. B mm	Dim. L mm	Dim. H mm	Dim. H1 mm



ISO nail clip, type 4029 4-7

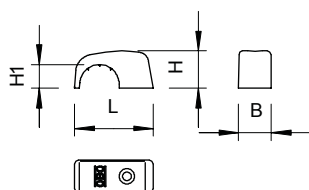
PP



Type	For cable	Colour	Pack	Weight	Item no.
	Ø		Piece	kg/100 pc.	
4029	4-7	Light grey	100	0.028	2215071

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.

Dimensions



Type	For cable	Dim.	Dim.	Dim.	Dim.
	Ø	B	L	H	H1
4029	4-7	7.2	15	7	3.7

ISO nail clip 4030 7-11

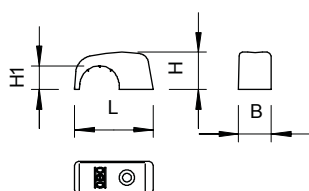
PP



Type	For cable	Colour	Pack	Weight	Item no.
	Ø		Piece	kg/100 pc.	
4030	7-11	Light grey	100	0.053	2215101

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.

Dimensions



Type	For cable	Dim.	Dim.	Dim.	Dim.
	Ø	B	L	H	H1
4030	7-11	8.3	20	9.5	6

PP

ISO nail clip 4031 10-14

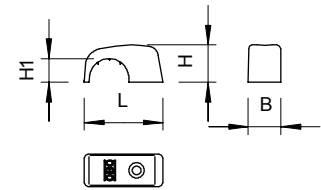
Type	For cable		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Colour			
4031 10-14	10-14	Light grey	100	0.104	2215144

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.



Type	For cable				
	Ø mm	Dim. B mm	Dim. L mm	Dim. H mm	Dim. H1 mm
4031 10-14	10-14	10	27	12.5	7.6

Dimensions



PP

ISO nail clip 4031 14-17

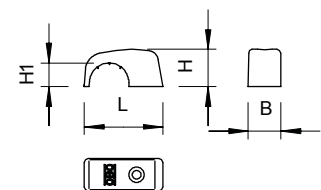
Type	For cable		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Colour			
4031 14-17	14-17	Light grey	100	0.155	2215179

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.



Type	For cable				
	Ø mm	Dim. B mm	Dim. L mm	Dim. H mm	Dim. H1 mm
4031 14-17	14-17	11	33	15.8	11

Dimensions



## ISO nail clip 4032 16-20

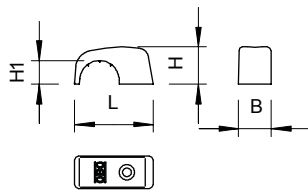
PP



Type	For cable		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Colour			
4032	16-20	Light grey	100	0,214	2215209

OBO makes various fastening systems available for fastening cables securely on different substrates. Starting with the adhesive clip or ISO nail clips for fastening, e.g. on wooden beams, up to the Nail-Fix for fixing in masonry slits, OBO can offer a wide range of clips for nail fastening, suitable for steel nails 2 mm.

### Dimensions



Type	For cable	Dim. B	Dim. L	Dim. H	Dim. H1
	Ø mm	mm	mm	mm	mm
4032	16-20	12	37	17,5	12



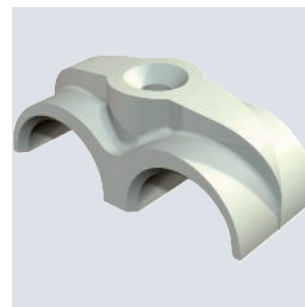
PS



Double ISO nail clip

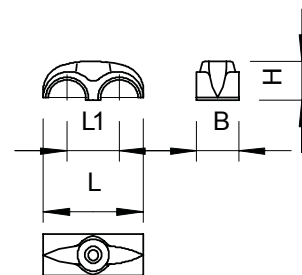
For cable		Pack		Weight		Item no.
Type	Ø	Piece	kg/100 pc.	mm	mm	
3030 2	7-11	Light grey	100	0.084		2213117

Nail clips to fasten two cables, suitable for steel nails 2 mm.



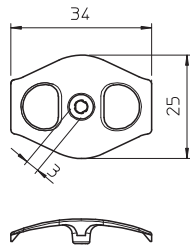
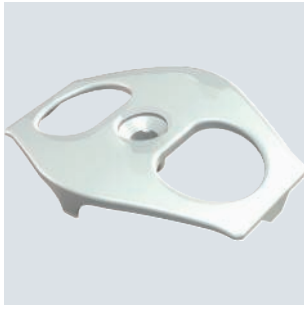
For cable		Dim.	Dim.	Dim.	Dim.
Type	Ø	B	L1	L	H
3030 2	7-11	9	14	27	10.5

Dimensions



# Nail clamp

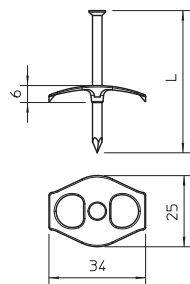
## Nail-Fix, without nail



Type	For nail		Colour	Pack Piece	Weight kg/100 pc.	Item no.
	Ø x l	mm				
1996 O	3,0-3,5	Transparent		100	0.053	2222809

Without nails for refitting Ø 3 mm and 3.5 mm steel nails to fix cables in masonry slots and on masonry for one or two cables NYM 3 x 1.5/2.5 mm<sup>2</sup> or one or two cables NYM 5 x 1.5/2.5 mm<sup>2</sup>.

## Nail-Fix, with nail

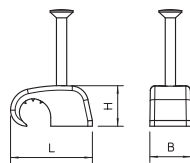


Type	For nail		Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
	Ø x l	mm				
1996 40	3 x 40	Transparent	1200	100	0.267	2222833
1996 50	3,5 x 50	Transparent	1200	100	0.380	2222841
1996 60	3,5 x 60	Transparent	1200	100	0.443	2222868
1996 70	3,5 x 70	Transparent	1200	100	0.773	2222876

With pre-mounted, galvanised steel nail Ø 3 mm or 3.5 mm to fix cables in masonry slots and on masonry for one or two cables NYM 3 x 1.5/2.5 mm<sup>2</sup> or one or two cables NYM 5 x 1.5/2.5 mm<sup>2</sup>.

## Adhesive clips

### Adhesive clip 2025, light grey



Type	For nail		For cable Ø	Colour	Pack Piece	Weight kg/100 pc.	Item no.
	Ø x l	mm					
2025 18 LGR	2 x 18	4-7	Light grey		100	0.072	2228610
2025 25 LGR	2 x 25	4-7	Light grey		100	0.086	2228629
2025 25 LGR SO	2 x 25	4-7	Light grey		300	0.086	2232901
2025 30 LGR	2 x 30	4-7	Light grey		100	0.097	2228637

Adhesive clip, for clamping to the cable.

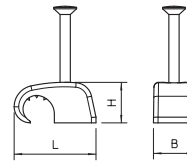
PP



Adhesive clip, pure white

Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2025 18 RW	2,0x18	4-7	Pure white	100	0.072	2228686
2025 25 RW	2,0x25	4-7	Pure white	100	0.086	2228688

Adhesive clip, for clamping to the cable.



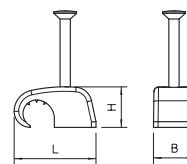
PP



Adhesive clip 2026, light grey

Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2026 18 LGR	2 x 18	7-12	Light grey	100	0.097	2228718
2026 25 LGR	2 x 25	7-12	Light grey	100	0.110	2228726
2026 25 LGR SP	2 x 25	7-12	Light grey	200	0.111	2228432
2026 25 LGR SO	2 x 25	7-12	Light grey	300	0.111	2232928
2026 35 LGR	2 x 35	7-12	Light grey	100	0.135	2228734
2026 35 LGR SP	2 x 35	7-12	Light grey	200	0.135	2228440
2026 35 LGR SO	2 x 35	7-12	Light grey	300	0.135	2232930
2026 45 LGR	2 x 45	7-12	Light grey	100	0.156	2228750
2026 45 LGR SP	2 x 45	7-12	Light grey	200	0.156	2228467

Adhesive clip, for clamping to the cable.



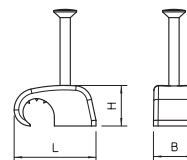
PP



Adhesive clip 2026, pure white

Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2026 25 RW	2,0x25	7-12	Pure white	100	0.111	2228422
2026 18 RW	2,0x18	7-12	Pure white	100	0.097	2228420

Adhesive clip, for clamping to the cable.



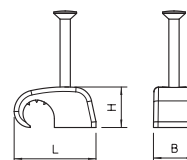
PP



Adhesive clip 2027, light grey

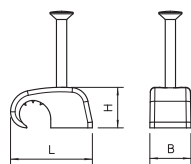
Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2027 25 LGR	2,0x25	10-14	Light grey	100	0.161	2228823
2027 30 LGR	2,0x30	10-14	Light grey	100	0.172	2228831
2027 40 LGR	2,0x40	10-14	Light grey	100	0.196	2228858

Adhesive clip, for clamping to the cable.



## Adhesive clip 2027, light grey

PP

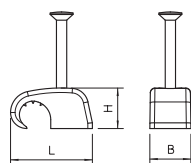


Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2027 30 LGR SO	2,0x30	10-14	Light grey	150	0.172	2232936
2027 40 LGR SO	2,0x40	10-14	Light grey	150	0.196	2232940

Adhesive clip, for clamping to the cable.

## Adhesive clip, type 2028, light grey

PP

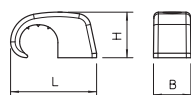


Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2028 40 LGR	2,0x40	14-17	Light grey	100	0.270	2228904

Adhesive clip, for clamping to the cable.

## Adhesive clip, type 4039, without nail, light grey

PP

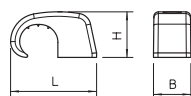


Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4039	2	4-7	Light grey	100	0.028	2215306
4039 SP	2	4-7	Light grey	200	0.028	2214873

Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.

## Adhesive clip 4040, without nail

PP



Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4040	2	7-12	Light grey	100	0.053	2215314
4040 SP	2	7-12	Light grey	200	0.053	2214881

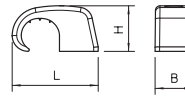
Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.

PP



Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4041	2	10-14	Light grey	100	0.106	2215349

Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.



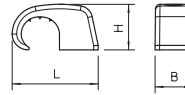
### Adhesive clip, without nail

PP



Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4042	2	14-17	Light grey	100	0.181	2215322

Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.



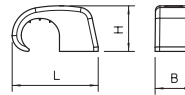
### Adhesive clip 4042, without nail

PP



Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4043	2	17-21	Light grey	100	0.268	2215330

Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.



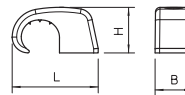
### Adhesive clip 4043, without nail

PP



Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
4044	2	21-25	Light grey	50	0.399	2215357

Adhesive clip, for clamping to the cable, suitable for steel nails 2 mm.



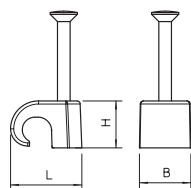
### Adhesive clip 4044, without nail





## Adhesive clip 1985, natural

PP



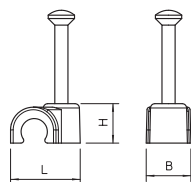
Type	For nail Ø x l mm	For cable Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1985 16-19	2,5x40	16-19	Natural	100	0.156	2228963

Adhesive clip, for clamping to the cable, short design

## ISO nail clips

### ISO nail clip 2004

PP

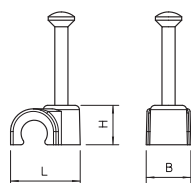


Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2004 18 LGR	4	2,0x18	Light grey	200	0.057	2227223
2004 25 LGR	4	2,0x25	Light grey	200	0.071	2227231

ISO nail clip, short design

### ISO nail clip 2004

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2004 18 RW	4	2,0x18	Pure white	200	0.057	2225220
2004 25 RW	4	2,0x25	Pure white	200	0.071	2225239

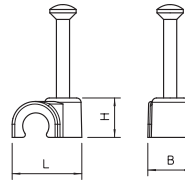
ISO nail clip, short design

PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2005 18 LGR	5	2,0x18	Light grey	100	0.063	2227347
2005 25 LGR	5	2,0x25	Light grey	100	0.077	2227339

ISO nail clip, short design



ISO nail clip 2005

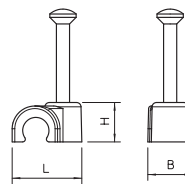


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2005 18 RW	5	2,0x18	Pure white	100	0.064	2225379
2005 25 RW	5	2,0x28	Pure white	100	0.078	2225344

ISO nail clip, short design



ISO nail clip 2005

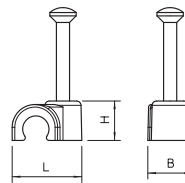


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2006 25 LGR	6	2,0x25	Light grey	100	0.089	2227428
2006 35 LGR	6	2,0x35	Light grey	100	0.113	2227436

ISO nail clip, short design



ISO nail clip 2006

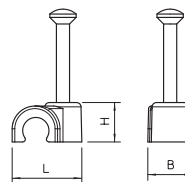


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2006 25 LGR SP	6	2,0x25	Light grey	200	0.089	2227460
2006 35 LGR SP	6	2,0x35	Light grey	200	0.113	2227371

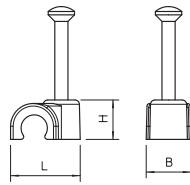
ISO nail clip, short design



ISO nail clip 2006



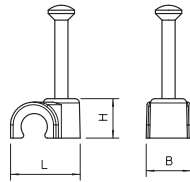
ISO nail clip 2006



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2006 18 RW	6	2,0x18	Pure white	100	0.075	2225409
2006 25 RW	6	2,0x25	Pure white	100	0.089	2225417
2006 35 RW	6	2,0x35	Pure white	100	0.113	2225425

ISO nail clip, short design

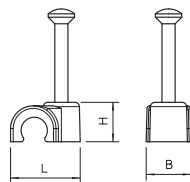
ISO nail clip 2006



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2006 35 WK SO	6	2,0x35	White/clear	300	0.113	2232715

ISO nail clip, short design

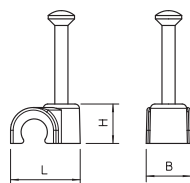
ISO nail clip 2007



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2007 25 LGR	7	2,0x25	Light grey	100	0.083	2227517
2007 35 LGR	7	2,0x35	Light grey	100	0.121	2227525

ISO nail clip, short design

ISO nail clip 2007



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2007 35 LGR SO	7	2,0x35	Light grey	300	0.121	2232804

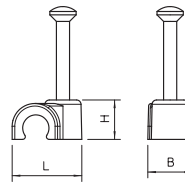
ISO nail clip, short design

PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2007 18 RW	7	2,0x18	Pure white	100	0.083	2225506
2007 25 RW	7	2,0x25	Pure white	100	0.097	2225514
2007 35 RW	7	2,0x35	Pure white	100	0.121	2225522

ISO nail clip, short design



ISO nail clip 2007

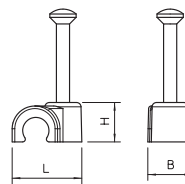


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2007 25 SW	7	2,0x25	Jet black	100	0.097	2232146

ISO nail clip, short design



ISO nail clip 2007

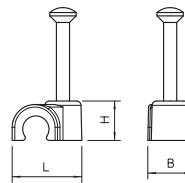


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2008 25 LGR	8	2,0x25	Light grey	100	0.103	2227614
2008 35 LGR	8	2,0x35	Light grey	100	0.127	2227622
2008 45 LGR	8	2,0x45	Light grey	100	0.148	2227630

ISO nail clip, short design



ISO nail clip 2008

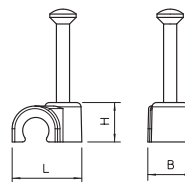


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2008 25 LGR SO	8	2,0x25	Light grey	300	0.103	2232812
2008 35 LGR SO	8	2,0x25	Light grey	300	0.127	2232814
2008 45 LGR SO	8	2,0x45	Light grey	300	0.148	2232816

ISO nail clip, short design

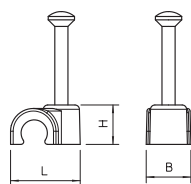


ISO nail clip 2008



ISO nail clip 2008

PP

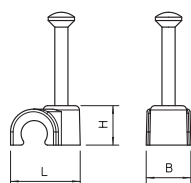


Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2008 25 RW	8	2,0x25	Pure white	100	0.104	2225611
2008 35 RW	8	2,0x35	Pure white	100	0.128	2225638

ISO nail clip, short design

ISO nail clip 2008

PP

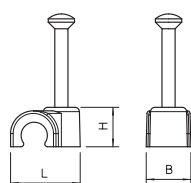


Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2008 25 SW	8	2,0x25	Jet black	100	0.104	2232170

ISO nail clip, short design

ISO nail clip 2009

PP

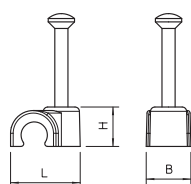


Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2009 25 LGR	9	2,0x25	Light grey	100	0.109	2227711
2009 35 LGR	9	2,0x35	Light grey	100	0.134	2227738
2009 35 LGR SP	9	2,0x35	Light grey	200	0.132	2227762
2009 45 LGR	9	2,0x45	Light grey	100	0.153	2227746
2009 45 LGR SP	9	2,0x45	Light grey	200	0.155	2227797

ISO nail clip, short design

ISO nail clip 2009

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2009 25 LGR SO	9	2,0x25	Light grey	300	0.109	2232820
2009 35 LGR SO	9	2,0x35	Light grey	300	0.134	2232822
2009 45 LGR SO	9	2,0x45	Light grey	300	0.155	2232824

ISO nail clip, short design

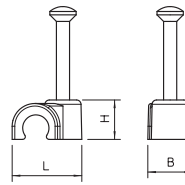


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2009 25 RW	9	2,0x25	Pure white	100	0.107	2225719
2009 35 RW	9	2,0x35	Pure white	100	0.131	2225727

ISO nail clip, short design.



ISO nail clip 2009

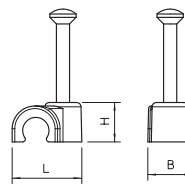


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2009 25 SW	9	2,0x25	Jet black	100	0.109	2232219

ISO nail clip, short design



ISO nail clip 2009

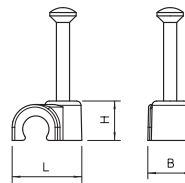


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2010 25 LGR	10	2,0x25	Light grey	100	0.122	2227800
2010 35 LGR	10	2,0x35	Light grey	100	0.146	2227819
2010 45 LGR	10	2,0x45	Light grey	100	0.167	2227827

ISO nail clip, short design



ISO nail clip 2010

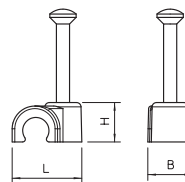


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2010 35 LGR SO	10	2,0x35	Light grey	150	0.146	2232830
2010 45 LGR SO	10	2,0x45	Light grey	150	0.167	2232834

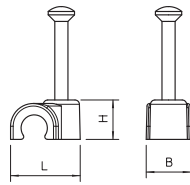
ISO nail clip, short design



ISO nail clip 2010



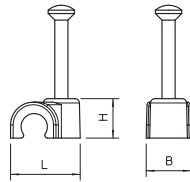
## ISO nail clip 2010



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2010 25 RW	10	2,0x25	Pure white	100	0.123	2225808
2010 35 RW	10	2,0x35	Pure white	100	0.147	2225816

ISO nail clip, short design

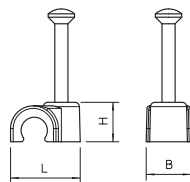
## ISO nail clip 2010



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2010 25 SW	10	2,0x25	Jet black	100	0.123	2232235

ISO nail clip, short design

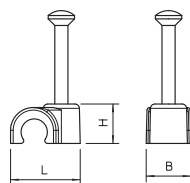
## ISO nail clip 2011



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2011 35 LGR	11	2,0x35	Light grey	100	0.162	2227916
2011 45 LGR	11	2,0x45	Light grey	100	0.183	2227924

ISO nail clip, short design

## ISO nail clip 2011



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2011 25 RW	11	2,0x25	Pure white	100	0.138	2225905
2011 35 RW	11	2,0x35	Pure white	100	0.162	2225913

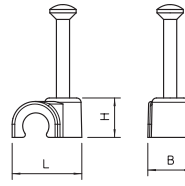
ISO nail clip, short design

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2012 35 LGR</b>	12	2,0x35	Light grey	100	0.165	<b>2228025</b>
<b>2012 45 LGR</b>	12	2,0x45	Light grey	100	0.189	<b>2228033</b>

ISO nail clip, short design



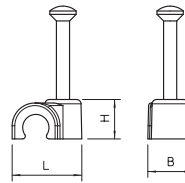
ISO nail clip 2012

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2012 35 LGR SO</b>	12	2,0x35	Light grey	150	0.169	<b>2232839</b>
<b>2012 45 LGR SO</b>	12	2,0x45	Light grey	150	0.190	<b>2232842</b>

ISO nail clip, short design



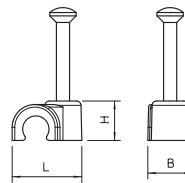
ISO nail clip 2012

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2012 25 RW</b>	12	2,0x25	Pure white	100	0.145	<b>2226014</b>
<b>2012 35 RW</b>	12	2,0x35	Pure white	100	0.169	<b>2226022</b>

ISO nail clip, short design



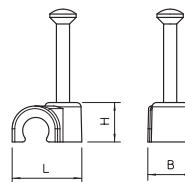
ISO nail clip 2012

PP



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2012 35 SW</b>	12	2,0x35	Jet black	100	0.169	<b>2232316</b>

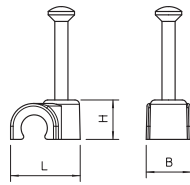
ISO nail clip, short design



ISO nail clip 2012



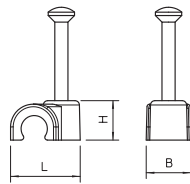
ISO nail clip 2014



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2014 40 LGR	14	2,0x40	Light grey	50	0.466	2228114
2014 50 LGR	14	2,0x50	Light grey	50	0.336	2228122

ISO nail clip, short design

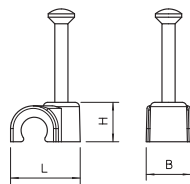
ISO nail clip 2014



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2014 30 RW	14	2,0x30	Pure white	50	0.432	2228103
2014 40 RW	14	2,0x40	Pure white	50	0.303	2228111

ISO nail clip, short design

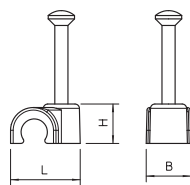
ISO nail clip 2016



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2016 40 LGR	16	2,0x40	Light grey	50	0.402	2228211
2016 50 LGR	16	2,0x50	Light grey	50	0.361	2228238

ISO nail clip, short design

ISO nail clip 2016



Type	For cable Ø mm	For nail Ø x l mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2016 40 RW	16	2,0x40	Pure white	50	0.320	2228219

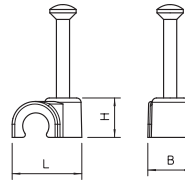
ISO nail clip, short design

PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2018 40 LGR</b>	18	2,0x40	Light grey	25	0.548	<b>2228300</b>
<b>2018 50 LGR</b>	18	2,5x50	Light grey	25	0.700	<b>2228319</b>

ISO nail clip, short design



### ISO nail clip 2018

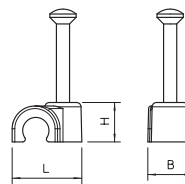


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2018 40 RW</b>	18	2,0x40	Pure white	25	0.548	<b>2226308</b>

ISO nail clip, short design



### ISO nail clip 2018

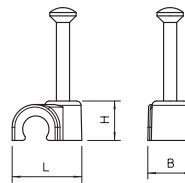


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2020 40 LGR</b>	20	2,0x40	Light grey	25	0.418	<b>2228408</b>
<b>2020 50 LGR</b>	20	2,0x50	Light grey	25	0.463	<b>2228416</b>

ISO nail clip, short design



### ISO nail clip 2020

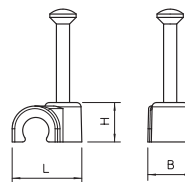


PP



Type	For cable Ø mm	For nail Ø x l mm mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
<b>2020 40 RW</b>	20	2,0x40	Pure white	25	0.419	<b>2226405</b>

ISO nail clip, short design



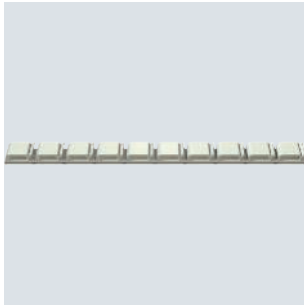
### ISO nail clip, type 2020





## Cable clip

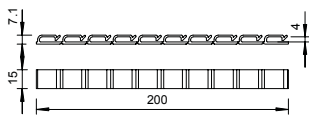
PS



Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
507	Light grey	100	1.200	2327104

Self-adhesive

### Dimensions



## Series clips

### Series clip

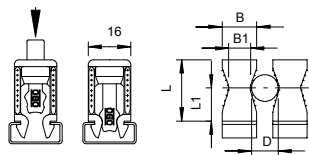
PS



Type	Clamping range D mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2047 5-25 LGR	5-25	Light grey	100	0.320	2251256

Series clip without metallic parts, thus protected against corrosion;  
Use: Lock the clip in the profile rail and fix it by hitting it with a hammer.  
Also suitable for rails with 11–12 mm slot width.

### Dimensions



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimen- sion B1 mm	Clamping range D mm
2047 5-25 LGR	23	12.5	13	8	5-25

PS



Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2050 5-25 LGR	5-25	M4 x 27	Light grey	100	0.631	2254026

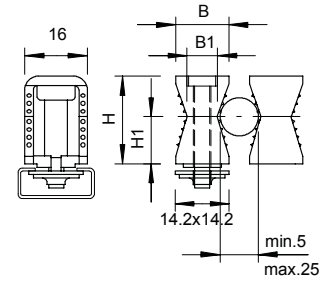
Also suitable for rails of 11 - 12 mm slot width; polystyrene clip element, impact resistant, halogen-free, light grey RAL 7035; metal parts: electrogalvanised steel.

Series clip



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimension B1 mm	Clamping range D mm
2050 5-25 LGR	23	12.5	14	8.5	5-25

Dimensions



PS



Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2050 5-25 RW	5-25	M4 x 27	Pure white	100	0.631	2254522

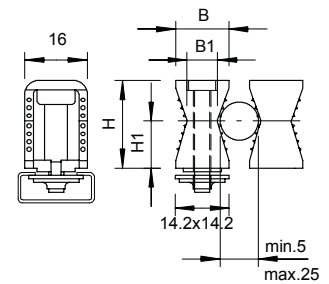
Also suitable for rails of 11 - 12 mm slot width; polystyrene clip element, impact resistant, halogen-free, light grey RAL 7035; metal parts: electrogalvanised steel.

Series clip



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimension B1 mm	Clamping range D mm
2050 5-25 RW	23	12.5	14	8.5	5-25

Dimensions



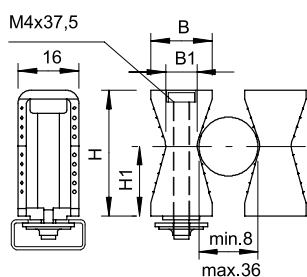
## Series clip, black



Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2051 8-36 SW	8-36	M4 x 37.5	Graphite black	100	0.970	2254565

Also suitable for rails of 11 - 12 mm slot width; polystyrene clip element, impact resistant, halogen-free, light grey RAL 7035; metal parts: electrogalvanised steel.

### Dimensions



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimen- sion B1 mm	Clamping range D mm
2051 8-36 SW	34	19	16.5	8.5	8-36

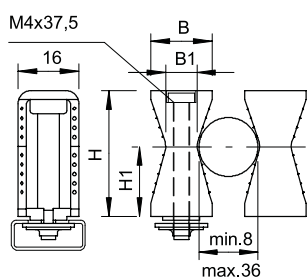
## Series clip



Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2051 8-36 LGR	8-36	M4 x 37.5	Light grey	100	0.851	2254034

Also suitable for rails of 11 - 12 mm slot width; polystyrene clip element, impact resistant, halogen-free, light grey RAL 7035; metal parts: electrogalvanised steel.

### Dimensions



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimen- sion B1 mm	Clamping range D mm
2051 8-36 LGR	34	19	16.5	8.5	8-36

PA



Series clip

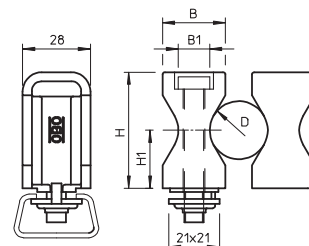
Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2054 14-48 LGR	14-48	M8 x 55	Light grey	25	4.320	2255014
2055 24-72 LGR	24-72	M8 x 75	Light grey	20	6.471	2255022

Heavyweight version, also suitable for rails of 16 ÷ 17 mm slot width; polyamide clip element, light grey RAL 7035; Metal parts: Electrogalvanised steel.



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimension B1 mm	Clamping range D mm
2054 14-48 LGR	48	24	26	13	14-48
2055 24-72 LGR	70	35	38	15	24-72

Dimensions



PA



Series clip, graphite black

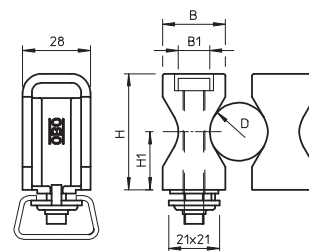
Type	Clamping range D mm	Bolt	Colour	Pack Piece	Weight kg/100 pc.	Item no.
2054 14-48 SW	14-48	M8 x 55	Graphite black	25	4.300	2255502

Heavyweight version, also suitable for rails of 16 ÷ 17 mm slot width; polyamide clip element, light grey RAL 7035; Metal parts: Electrogalvanised steel.



Type	Dim. H mm	Dim. H1 mm	Dim. B mm	Dimension B1 mm	Clamping range D mm
2054 14-48 SW	48	24	26	13	14-48

Dimensions



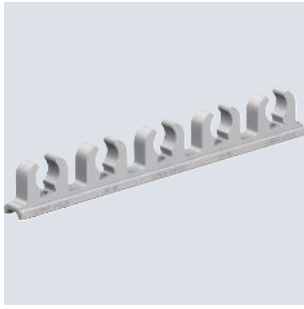
## Series terminal clip

PE

11-12

Power  
Cable

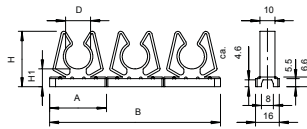
KEMA  
KEUR



Type	Clamping range D mm	Colour	Number of clips per strip	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2036 19 NL STGR	16-19	Stone grey	3	300	25	2.362	2259745
2036 19 NL CW	16-19	Cream	3	300	25	2.428	2259796

2036/...: Individually separable, for pushing into profile rails

### Dimensions



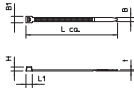
Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. H mm	Dim. H1 mm
2036 19 NL STGR	16-19	31	93	31.5	10.5
2036 19 NL CW	16-19	31	93	31.5	10.5







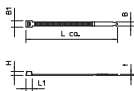
## Cable tie, white



Type	Dim. B mm	Dim. L mm	Dim. t mm	Tensile strength N	Max. bundle Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
565 2.5x75 WS	2.5	75	1	80	15	White	100	0.020	2331800
565 2.5x100 WS	2.5	100	1	80	22	White	100	0.025	2331810
565 2.5x150 WS	2.5	150	1.3	80	39	White	100	0.047	2331816
565 2.5x200 WS	2.5	200	1.3	80	55	White	100	0.062	2331822
565 3.6x150 WS	3.6	150	1.4	180	36	White	100	0.070	2331830
565 3.6x200 WS	3.6	200	1.4	180	52	White	100	0.104	2331836
565 3.6x290 WS	3.6	290	1.4	180	82	White	100	0.140	2331842
565 3.6x365 WS	3.6	365	1.4	180	105	White	100	0.183	2331848
565 4.8x120 WS	4.8	120	1.5	220	27	White	100	0.089	2331860
565 4.8x160 WS	4.8	160	1.6	220	39	White	100	0.120	2331866
565 4.8x200 WS	4.8	200	1.6	220	52	White	100	0.149	2331872
565 4.8x300 WS	4.8	300	1.5	220	83	White	100	0.201	2331878
565 4.8x365 WS	4.8	365	1.5	220	105	White	100	0.251	2331884
565 4.8x430 WS	4.8	430	1.5	220	125	White	100	0.288	2331890
565 7.6x200 WS	7.6	200	1.8	530	52	White	100	0.287	2331910
565 7.6x300 WS	7.6	300	1.6	530	80	White	100	0.334	2331916
565 7.6x380 WS	7.6	380	1.8	530	105	White	100	0.533	2331922
565 7.6x450 WS	7.6	450	2	530	128	White	100	0.717	2331934
565 9x760 WS	9	760	2	800	227	White	100	1.311	2331944

Cable ties are used for quick, uncomplicated fixing or bundling of cables and pipes to cable support systems or other mounting structures.

## Cable tie, black, UV and weather-resistant



Type	Dim. B mm	Dim. L mm	Dim. t mm	Tensile strength N	Max. bundle Ø mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
565 2.5x75 SWUV	2.5	75	1	80	15	Black	100	0.020	2331802
565 2.5x100 SWUV	2.5	100	1	80	22	Black	100	0.025	2331812
565 2.5x150 SWUV	2.5	150	1.3	80	39	Black	100	0.047	2331818
565 2.5x200 SWUV	2.5	200	1.3	80	55	Black	100	0.062	2331824
565 3.6x150 SWUV	3.6	150	1.4	180	36	Black	100	0.070	2331832
565 3.6x200 SWUV	3.6	200	1.4	180	52	Black	100	0.104	2331838
565 3.6x290 SWUV	3.6	290	1.4	180	82	Black	100	0.140	2331844
565 3.6x365 SWUV	3.6	365	1.4	180	105	Black	100	0.183	2331850
565 4.8x120 SWUV	4.8	120	1.5	220	27	Black	100	0.089	2331862
565 4.8x160 SWUV	4.8	160	1.6	220	39	Black	100	0.120	2331868
565 4.8x200 SWUV	4.8	200	1.6	220	52	Black	100	0.149	2331874
565 4.8x300 SWUV	4.8	300	1.5	220	83	Black	100	0.201	2331880
565 4.8x365 SWUV	4.8	365	1.5	220	105	Black	100	0.251	2331886
565 4.8x430 SWUV	4.8	430	1.5	220	125	Black	100	0.288	2331892
565 7.6x200 SWUV	7.6	200	1.8	530	52	Black	100	0.287	2331912
565 7.6x300 SWUV	7.6	300	1.6	530	80	Black	100	0.334	2331918
565 7.6x380 SWUV	7.6	380	1.8	530	105	Black	100	0.533	2331924
565 7.6x450 SWUV	7.6	450	2	530	128	Black	100	0.717	2331936
565 9x760 SWUV	9	760	2	800	227	Black	100	1.311	2331946

Cable ties are used for quick, uncomplicated fixing or bundling of cables and pipes to cable support systems or other mounting structures.





# Impu-Fix ribbon conductor bonding agent

## Impu-Fix ribbon conductor bonding agent



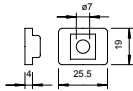
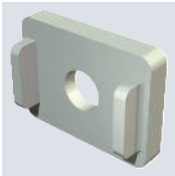
Type	Contents		Pack Piece	Weight kg/100 pc.	Item no.
	kg				
509	0.65		1	70.000	2341018

Impu-Fix ribbon conductor bonding agent to stick clips and ribbon conductors to masonry and concrete.

## Spacers

### Spacer

PS



Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.

To increase the clamping height of pressure clips from 10 to 13 mm for thicker cables, impact-resistant polystyrene.

## Solvent mixtures

### Solvent mixture



Type	Contents		Pack Piece	Weight kg/100 pc.	Item no.
	ml				
508	1000		1	105.000	2341107

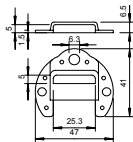
Thinning.

Solvent mixture to create an optimum processing consistency of Impu-Fix ribbon conductor quick adhesive and to clean the working material.

## Accessories, adhesive mounting

### Ceiling outlet

PS

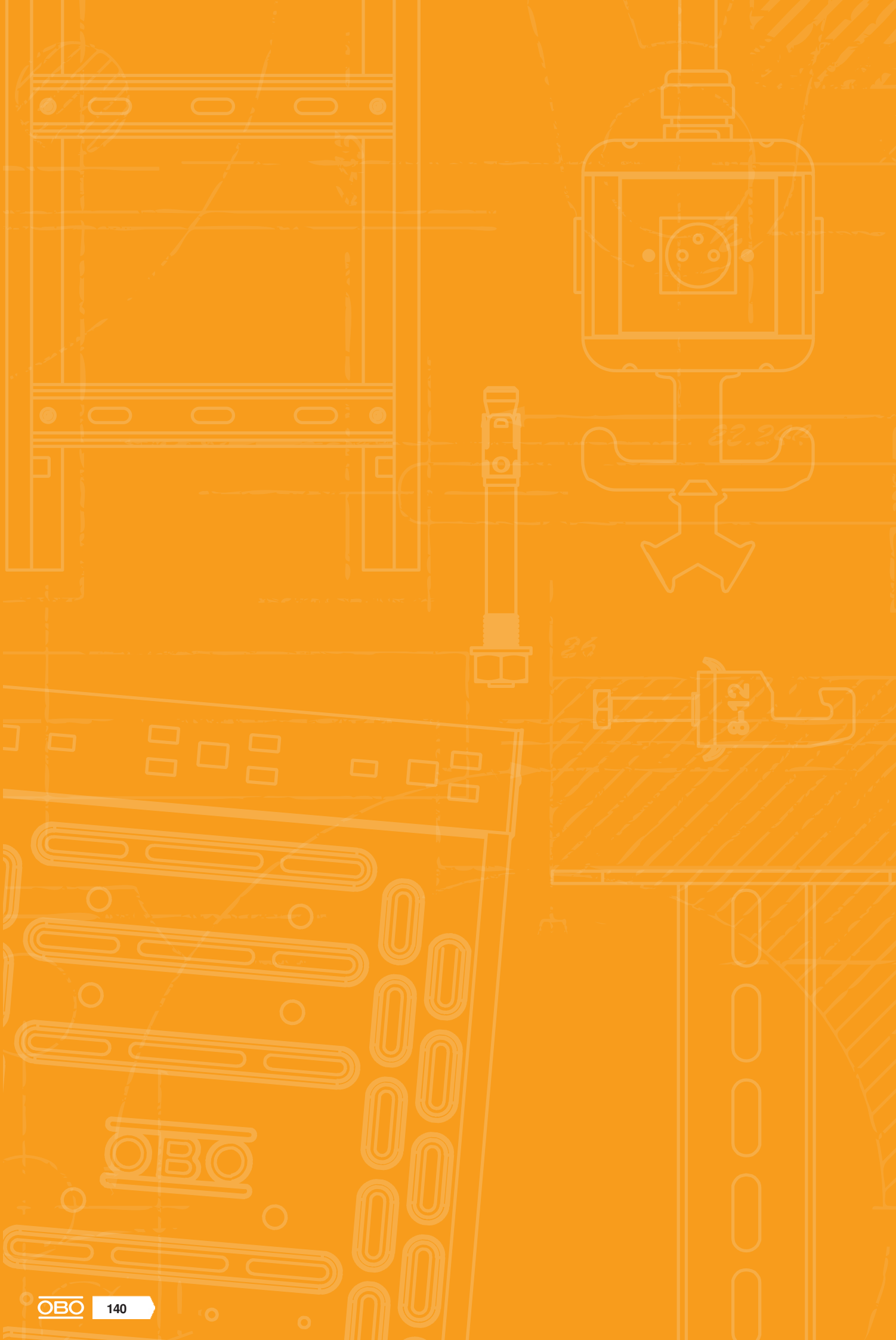


Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.

To fasten ribbon conductors.

















# Metal fastening clips

	Quick clips	142
	Cable tidies	144
	Pressure clips	148
	Cable and pipe spacer clips	150
	Fastening clips	166
	Strain relief clips	180
	Clamp clips	184
	Accessories, U clamps	210

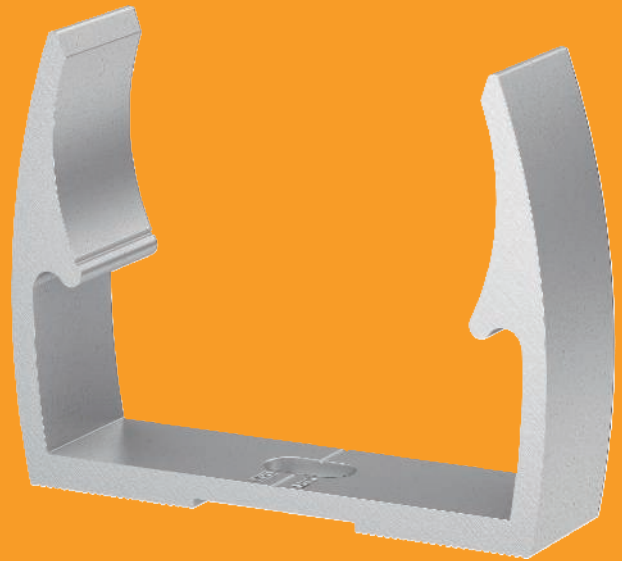




## Quick clip, aluminium

OBO's aluminium Quick clip offers installers a high-quality means of fastening electrical installation pipes. The ingenious design of this product allows fast, easy installation on walls and ceilings. The clip boasts impressively high holding forces.

- Strong clip holding forces thanks to optimised geometry
- Centre mark around slot for easy alignment
- Pipe centring aids for easy insertion of the pipe
- Modern, attractive design



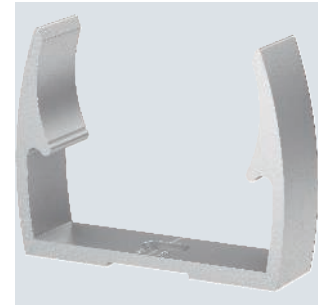
Alu

## Quick clip, aluminium

Type	Nominal size	Shipping		Pack Piece	Weight kg/100 pc.	Item no.
		box	Piece			
ALQ M16	16	1200		100	0.780	2149916
ALQ M20	20	1200		100	0.900	2149920
ALQ M25	25	100		100	1.110	2149925
ALQ M32	32	600		50	1.600	2149932
ALQ M40	40	50		50	2.400	2149940
ALQ M50	50	300		25	2.730	2149950
ALQ M63	63	20		20	3.340	2149963

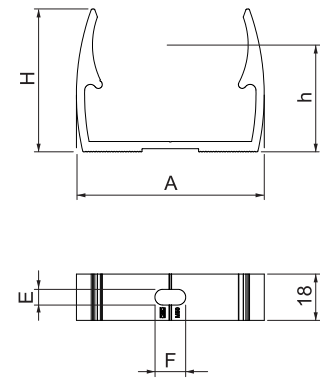
OBO Quick clip, type ALQ M, for all metric ALU pipe systems, as well as light-duty and heavy-duty insulation pipes. Suitable for mounting the OBO pipe system, material: aluminium. Pipe centring aids allow optimal attachment of the pipe and automatically turn the clip into the correct position.

Slot for side alignment during mounting with wood screw or knock-in anchor. Recommended fastening spacing 50–60 cm.



Type	Dim.	Dim.	Dim.	Dim.	Dim.	Dim.
	A	B	E	F	H	h
ALQ M16	22	18	5.1	9.5	25	18.5
ALQ M20	25	18	5.1	9.5	27.5	20
ALQ M25	31	18	5.1	9.5	30	22
ALQ M32	39	18	5.1	9.5	35	26
ALQ M40	50	18	6.1	12	42	30.5
ALQ M50	60	18	6.1	12	46.5	33.5
ALQ M63	73	18	6.1	12	55.5	41.5

## Dimensions







## Grip cable tidy, metal

E30

E90



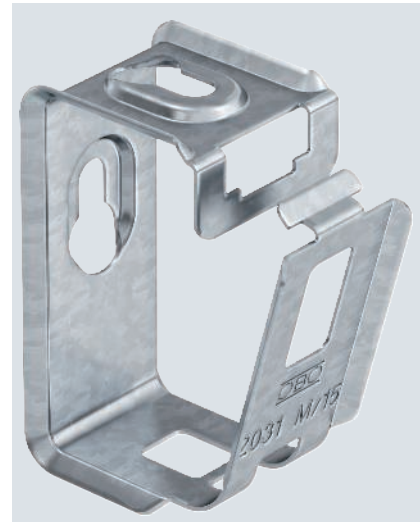
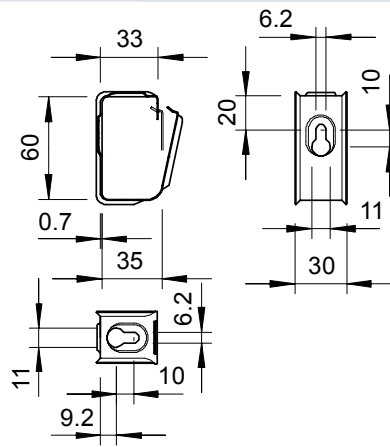
The movable closing strap means that the Grip cable tidy can be opened and closed again and again with just the application of light pressure. This means that you can remove a cable easily and at any time from fixed wall and ceiling installations, or also install a new cable at a later date.

- Ingenious design means both wall and ceiling mounting are possible
- Easy cable insertion
- Extremely sturdy click-in connector means reinstalling cables is no problem
- UL-tested quality
- Also available in stainless steel qualities A2 and A4
- Tested for the maintenance of electrical functionality
- Halogen and fire load-free

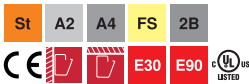


### Grip collection clamp, metal 15

Type	No. of conductors NYM 3 x 1.5	BS	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2031 M 15 FS	15		50	50	3.700	2207028
2031 M 15 A2	15		50	50	3.000	2207080
2031 M 15 A4	15		50	50	3.000	2207132

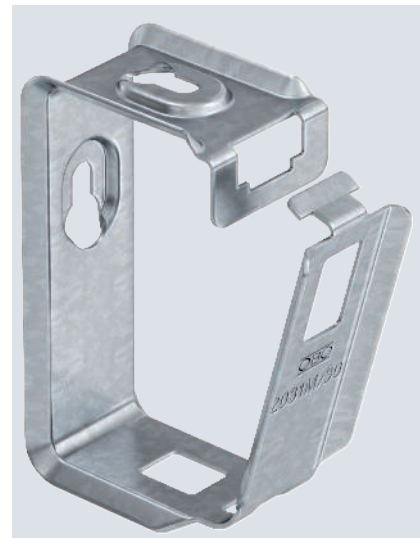
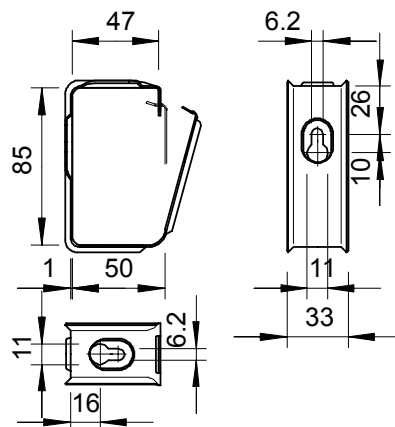


Metal cable tidy for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools. Detailed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



### Grip collection clamp, metal 30

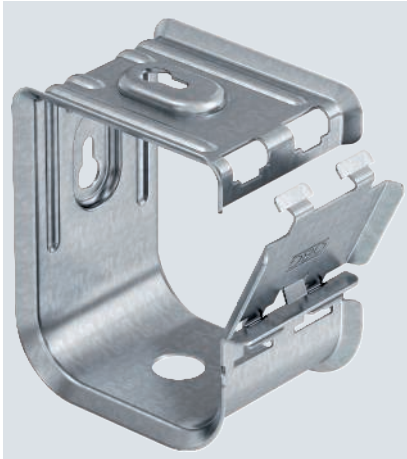
Type	No. of conductors NYM 3 x 1.5	BS	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2031 M 30 FS	30		25	25	6.200	2207036
2031 M 30 A2	30		25	25	6.500	2207088
2031 M 30 A4	30		25	25	6.500	2207140



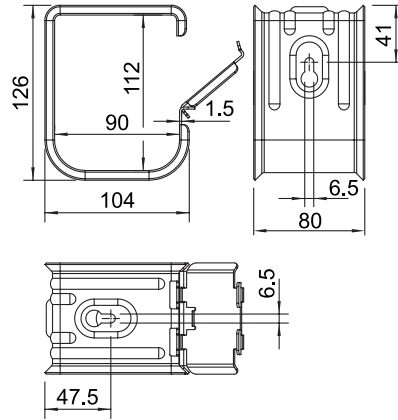
Metal grouped support for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools.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



Grip collection clamp, metal 70



Type	No. of conductors NYM 3 x 1.5	Shipping box BS	Piece	Pack Piece	Weight kg/100 pc.	Item no.
2031 M 70 FS	70		10	10	34.500	2207060
2031 M 70 A2	70		10	10	37.000	2207112
2031 M 70 A4	70		10	10	37.000	2207164

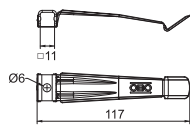


Metal grouped support for high mechanical stability, even in case of fire. Suitable for safe mounting above fire protection ceilings. Also approved as a cable-specific variant for the maintenance of electrical function to DIN 4102 part 12. For wall and ceiling mounting. Lock can be opened without tools.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





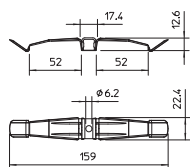
### Pressure clip for 8 cables



Type	No. of conductors	Pack Piece	Weight kg/100 pc.	Item no.
2035 M A2	8	20	1.030	2204020

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

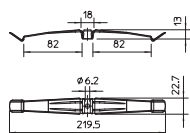
### Pressure clip for 10 cables



Type	No. of conductors	Pack Piece	Weight kg/100 pc.	Item no.
2034 M A2	10	50	1.860	2204010

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

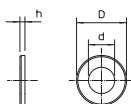
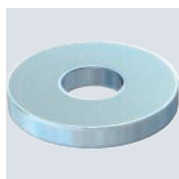
### Pressure clip for 16 cables



Type	No. of conductors	Pack Piece	Weight kg/100 pc.	Item no.
2033 M A2	16	25	2.310	2204000

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

### Spacer



Type	Dim. D mm	Dim. d mm	Dim. h mm	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2033 D 15x3 G	15	6.4	3	3000	50	0.340	2205097

To increase the clamping height of pressure clips from 10 to 13 mm for large cable cross-sections.





## Cable and pipe spacer clip 732 with M6 threaded connection

- Safe fastening of cables and pipe systems on walls, on floors and on ceilings
- The distance from the fastening substrate can be adjusted variably using the thread on the screw or a custom-length threaded rod
- M6 bolt ties, angler anchors or Sprint screws (to be ordered separately) are required for fastening
- Tested and approved in systems for maintaining electrical functionality of classes E30 to E90 according to DIN 4102 Part 12



E30

E90





## Cable and pipe spacer clip 733

- Closed cable and pipe spacer clip 733 with slot
- Safe fastening of cables and pipe systems on walls, on floors and on ceilings
- Tested and approved in systems for maintaining electrical functionality of classes E30 to E90 according to DIN 4102 Part 12



E30

E90

# Cable and pipe spacer clips

Safe fastening of cables and pipe systems on walls, on floors and on ceilings. The distance from the fastening substrate can be adjusted variably using the thread on the screw or a custom-length threaded rod. M6 bolt ties, angler anchors or Sprint screws (to

be ordered separately) are required for fastening. Tested and approved in systems for maintaining electrical functionality of classes E30 to E90 according to DIN 4102 Part 12.

Metal fastening clips



Cable and pipe spacer clip 732 with M6 threaded connection

E30 E90

Cable and pipe spacer clip 733

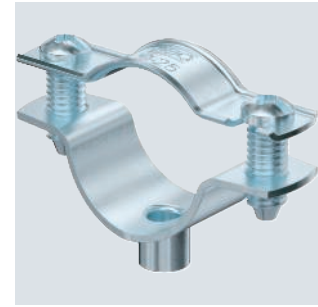




Spacer clip 732

St G  
E30 E60 E90 

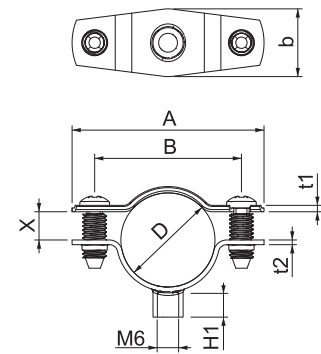
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASG 732 6 G	5-6	25	1.136	1362404
ASG 732 7 G	6-7	25	1.341	1362406
ASG 732 8 G	7-8	25	1.349	1362408
ASG 732 10 G	8-10	25	1.504	1362410
ASG 732 12 G	10-12	25	1.567	1362412
ASG 732 14 G	12-14	25	1.638	1362414
ASG 732 17 G	14-17	25	1.793	1362417
ASG 732 20 G	17-20	25	1.895	1362420
ASG 732 25 G	20-25	25	2.145	1362424
ASG 732 30 G	25-30	20	3.157	1362428
ASG 732 36 G	30-36	20	3.664	1362432
ASG 732 44 G	36-44	20	4.002	1362436
ASG 732 53 G	44-53	20	4.713	1362440
ASG 732 63 G	53-63	20	5.231	1362444



Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via attachment piece with internal thread.  
Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. x mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H1 mm
ASG 732 6 G	5-6	35	23	1.5	18	1	1.25	6.5
ASG 732 7 G	6-7	35	23	1.5	18	1	1.25	6.5
ASG 732 8 G	7-8	35	23	1.5	18	1	1.25	6.5
ASG 732 10 G	8-10	37	25	3	18	1	1.25	6.5
ASG 732 12 G	10-12	39	27	3	18	1	1.25	6.5
ASG 732 14 G	12-14	41	29	3	18	1.25	1.25	6.5
ASG 732 17 G	14-17	44	32	4.5	18	1.25	1.25	6.5
ASG 732 20 G	17-20	47	35	4.5	18	1.25	1.25	6.5
ASG 732 25 G	20-25	51	39	7.5	18	1.25	1.25	6.5
ASG 732 30 G	25-30	59	45	7.5	18	1.5	1.5	6.5
ASG 732 36 G	30-36	65	51	9	18	1.5	1.5	6.5
ASG 732 44 G	36-44	73	59	12	18	1.5	1.5	6.5
ASG 732 53 G	44-53	84	70	13.5	18	1.5	1.5	6.5
ASG 732 63 G	53-63	94	80	15	18	1.5	1.5	6.5

Dimensions



## Spacer clip 732

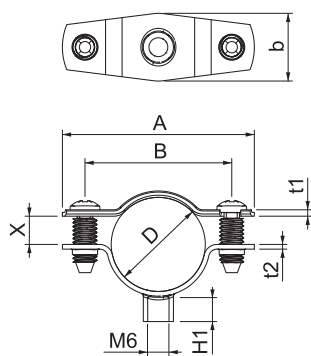


Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASG 732 6 FT	5-6	25	1.398	1362354
ASG 732 7 FT	6-7	25	1.415	1362356
ASG 732 8 FT	7-8	25	1.424	1362358
ASG 732 10 FT	8-10	25	1.585	1362360
ASG 732 12 FT	10-12	25	1.653	1362362
ASG 732 14 FT	12-14	25	1.729	1362364
ASG 732 17 FT	14-17	25	1.892	1362367
ASG 732 20 FT	17-20	25	2.002	1362369
ASG 732 25 FT	20-25	25	2.261	1362372
ASG 732 30 FT	25-30	20	3.309	1362374
ASG 732 36 FT	30-36	20	3.840	1362378
ASG 732 44 FT	36-44	20	4.197	1362382
ASG 732 53 FT	44-53	20	4.942	1362386
ASG 732 63 FT	53-63	20	5.492	1362389

Spacer clip for the installation of pipes and cables on walls, ceiling and floors. With self-locking upper part. Surfaces G and FT from a clip size of 20 are suitable for installation with a nail device or a bolt-firing tool.

Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E30 to E90.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. x mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H1 mm
ASG 732 6 FT	5-6	35	23	1.5	18	1	1.25	6.5
ASG 732 7 FT	6-7	35	23	1.5	18	1	1.25	6.5
ASG 732 8 FT	7-8	35	23	1.5	18	1	1.25	6.5
ASG 732 10 FT	8-10	37	25	3	18	1	1.25	6.5
ASG 732 12 FT	10-12	39	27	3	18	1	1.25	6.5
ASG 732 14 FT	12-14	41	29	3	18	1.25	1.25	6.5
ASG 732 17 FT	14-17	44	32	4.5	18	1.25	1.25	6.5
ASG 732 20 FT	17-20	47	35	4.5	18	1.25	1.25	6.5
ASG 732 25 FT	20-25	51	39	7.5	18	1.25	1.25	6.5
ASG 732 30 FT	25-30	59	45	7.5	18	1.5	1.5	6.5
ASG 732 36 FT	30-36	65	51	9	18	1.5	1.5	6.5
ASG 732 44 FT	36-44	73	59	12	18	1.5	1.5	6.5
ASG 732 53 FT	44-53	84	70	13.5	18	1.5	1.5	6.5
ASG 732 63 FT	53-63	94	80	15	18	1.5	1.5	6.5



Spacer clip 732

A2

E30 E60 E90



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASG 732 6 A2	5-6	25	1.537	1362622
ASG 732 7 A2	6-7	25	1.553	1362624
ASG 732 8 A2	7-8	25	1.561	1362626
ASG 732 10 A2	8-10	25	1.749	1362628
ASG 732 12 A2	10-12	25	1.796	1362630
ASG 732 14 A2	12-14	25	1.859	1362632
ASG 732 17 A2	14-17	25	2.007	1362634
ASG 732 20 A2	17-20	25	2.110	1362636
ASG 732 25 A2	20-25	25	2.361	1362638
ASG 732 30 A2	25-30	20	3.321	1362640
ASG 732 36 A2	30-36	20	3.728	1362642
ASG 732 44 A2	36-44	20	4.099	1362644
ASG 732 53 A2	44-53	20	4.781	1362646
ASG 732 63 A2	53-63	20	5.301	1362648

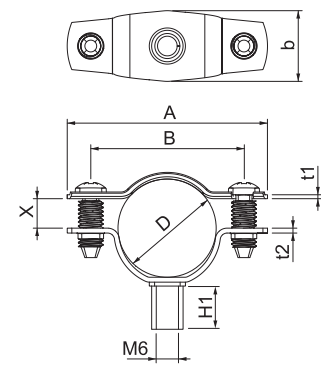


Spacer clip for the installation of pipes and cables on walls, ceiling and floors. With self-locking upper part. Surfaces G and FT from a clip size of 20 are suitable for installation with a nail device or a bolt-firing tool.

Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E30 to E90.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. x mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H1 mm
ASG 732 6 A2	5-6	35	23	1.5	18	1	1.25	12
ASG 732 7 A2	6-7	35	23	1.5	18	1	1.25	12
ASG 732 8 A2	7-8	35	23	1.5	18	1	1.25	12
ASG 732 10 A2	8-10	37	25	3	18	1	1.25	12
ASG 732 12 A2	10-12	39	27	3	18	1	1.25	12
ASG 732 14 A2	12-14	41	29	3	18	1.25	1.25	12
ASG 732 17 A2	14-17	44	32	4.5	18	1.25	1.25	12
ASG 732 20 A2	17-20	47	35	4.5	18	1.25	1.25	12
ASG 732 25 A2	20-25	51	39	7.5	18	1.25	1.25	12
ASG 732 30 A2	25-30	59	45	7.5	18	1.5	1.5	12
ASG 732 36 A2	30-36	65	51	9	18	1.5	1.5	12
ASG 732 44 A2	36-44	73	59	12	18	1.5	1.5	12
ASG 732 53 A2	44-53	84	70	13.5	18	1.5	1.5	12
ASG 732 63 A2	53-63	94	80	15	18	1.5	1.5	12

Dimensions



## Spacer clip 732

A4

E30

E60

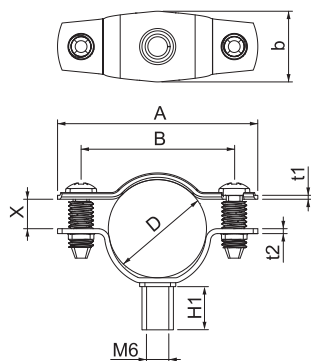
E90



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASG 732 6 A4	5-6	25	1.558	1362454
ASG 732 7 A4	6-7	25	1.574	1362456
ASG 732 8 A4	7-8	25	1.582	1362458
ASG 732 10 A4	8-10	25	1.773	1362460
ASG 732 12 A4	10-12	25	1.821	1362462
ASG 732 14 A4	12-14	25	1.885	1362464
ASG 732 17 A4	14-17	25	2.035	1362467
ASG 732 20 A4	17-20	25	2.139	1362469
ASG 732 25 A4	20-25	25	2.394	1362472
ASG 732 30 A4	25-30	20	3.370	1362474
ASG 732 36 A4	30-36	20	3.782	1362478
ASG 732 44 A4	36-44	20	4.158	1362482
ASG 732 53 A4	44-53	20	4.851	1362486
ASG 732 63 A4	53-63	20	5.379	1362489

Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via attachment piece with internal thread.  
Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. x mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H1 mm
ASG 732 6 A4	5-6	35	23	1.5	18	1	1.25	12
ASG 732 7 A4	6-7	35	23	1.5	18	1	1.25	12
ASG 732 8 A4	7-8	35	23	1.5	18	1	1.25	12
ASG 732 10 A4	8-10	37	25	3	18	1	1.25	12
ASG 732 12 A4	10-12	39	27	3	18	1	1.25	12
ASG 732 14 A4	12-14	41	29	3	18	1.25	1.25	12
ASG 732 17 A4	14-17	44	32	4.5	18	1.25	1.25	12
ASG 732 20 A4	17-20	47	35	4.5	18	1.25	1.25	12
ASG 732 25 A4	20-25	51	39	7.5	18	1.25	1.25	12
ASG 732 30 A4	25-30	59	45	7.5	18	1.5	1.5	12
ASG 732 36 A4	30-36	65	51	9	18	1.5	1.5	12
ASG 732 44 A4	36-44	73	59	12	18	1.5	1.5	12
ASG 732 53 A4	44-53	84	70	13.5	18	1.5	1.5	12
ASG 732 63 A4	53-63	94	80	15	18	1.5	1.5	12



Spacer clip 733

St G  
E30 E60 E90 

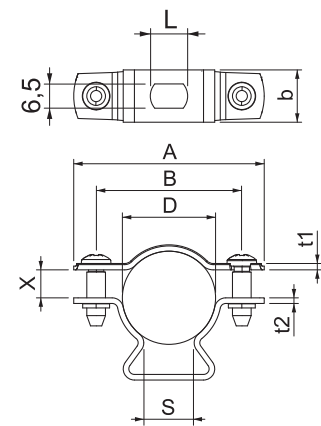
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASL 733 10 G	8-10	25	1.794	1362754
ASL 733 12 G	10-12	25	1.857	1362756
ASL 733 14 G	12-14	25	1.936	1362758
ASL 733 17 G	14-17	25	2.099	1362762
ASL 733 20 G	17-20	25	2.201	1362764
ASL 733 25 G	20-25	25	2.419	1362768
ASL 733 30 G	25-30	20	3.401	1362772
ASL 733 36 G	30-36	20	3.774	1362776
ASL 733 44 G	36-44	20	4.151	1362780
ASL 733 53 G	44-53	20	5.616	1362784
ASL 733 63 G	53-63	20	6.212	1362788



Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via slot.  
Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

Type	Dim. A mm	Dim. B mm	Dim. x mm	Dim. t1 mm	Dim. t2 mm	Dim. L mm	Dim. b mm	Dim. s mm
ASL 733 10 G	37	25	3	1	1.5	10	16	5.5
ASL 733 12 G	39	27	3	1	1.5	10	14	6.9
ASL 733 14 G	41	29	3	1.25	1.5	10	14	8
ASL 733 17 G	44	32	4.5	1.25	1.5	10	14	9.5
ASL 733 20 G	47	35	4.5	1.25	1.5	10	14	12
ASL 733 25 G	51	39	7.5	1.25	1.5	10	14	13.5
ASL 733 30 G	59	45	7.5	1.5	1.5	10	16	16.5
ASL 733 36 G	65	51	9	1.5	1.5	10	16	20
ASL 733 44 G	73	59	12	1.5	1.5	10	16	24
ASL 733 53 G	84	70	13.5	1.5	2	10	16	29.5
ASL 733 63 G	94	80	15	1.5	2	10	16	35.3

Dimensions





## Spacer clip 733

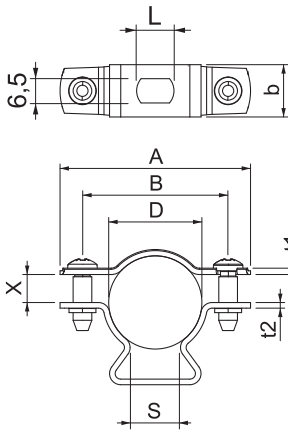


Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASL 733 10 FT	8-10	25	1.883	1362704
ASL 733 12 FT	10-12	25	1.951	1362706
ASL 733 14 FT	12-14	25	2.035	1362708
ASL 733 17 FT	14-17	25	2.206	1362712
ASL 733 20 FT	17-20	25	2.000	1362714
ASL 733 25 FT	20-25	25	2.540	1362718
ASL 733 30 FT	25-30	20	3.567	1362722
ASL 733 36 FT	30-36	20	3.956	1362726
ASL 733 44 FT	36-44	20	4.356	1362730
ASL 733 53 FT	44-53	20	5.850	1362734
ASL 733 63 FT	53-63	20	6.477	1362738

Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via slot.

Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

### Dimensions



Type	Dim. A mm	Dim. B mm	Dim. x mm	Dim. t1 mm	Dim. t2 mm	Dim. L mm	Dim. b mm	Dim. s mm
ASL 733 10 FT	37	25	3	1	1.5	10	16	5.5
ASL 733 12 FT	39	27	3	1	1.5	10	14	6.9
ASL 733 14 FT	41	29	3	1.25	1.5	10	14	8
ASL 733 17 FT	44	32	4.5	1.25	1.5	10	14	9.5
ASL 733 20 FT	47	35	4.5	1.25	1.5	10	14	12
ASL 733 25 FT	51	39	7.5	1.25	1.5	10	14	13.5
ASL 733 30 FT	59	45	7.5	1.5	1.5	10	16	16.5
ASL 733 36 FT	65	51	9	1.5	1.5	10	16	20
ASL 733 44 FT	73	59	12	1.5	1.5	10	16	24
ASL 733 53 FT	84	70	13.5	1.5	2	10	16	29.5
ASL 733 63 FT	94	80	15	1.5	2	10	16	35.3



Spacer clip 733

A2

E30 E60 E90 

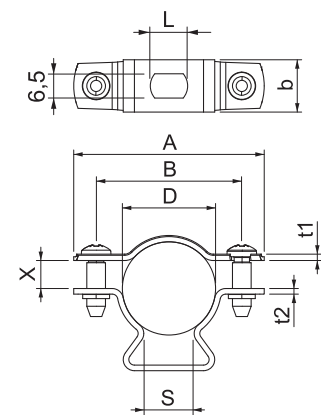
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASL 733 10 A2	8-10	25	1.804	1362976
ASL 733 12 A2	10-12	25	1.867	1362978
ASL 733 14 A2	12-14	25	1.946	1362980
ASL 733 17 A2	14-17	25	2.110	1362982
ASL 733 20 A2	17-20	25	2.213	1362984
ASL 733 25 A2	20-25	25	2.432	1362986
ASL 733 30 A2	25-30	20	3.416	1362988
ASL 733 36 A2	30-36	20	3.792	1362990
ASL 733 44 A2	36-44	20	4.170	1362992
ASL 733 53 A2	44-53	20	5.643	1362994
ASL 733 63 A2	53-63	20	6.242	1362996



Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via slot.  
Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

Type	Dim. A mm	Dim. B mm	Dim. x mm	Dim. t1 mm	Dim. t2 mm	Dim. L mm	Dim. b mm	Dim. s mm
ASL 733 10 A2	37	25	3	1	1.5	10	16	5.5
ASL 733 12 A2	39	27	3	1	1.5	10	14	6.9
ASL 733 14 A2	41	29	3	1.25	1.5	10	14	8
ASL 733 17 A2	44	32	4.5	1.25	1.5	10	14	9.5
ASL 733 20 A2	47	35	4.5	1.25	1.5	10	14	12
ASL 733 25 A2	51	39	7.5	1.25	1.5	10	14	13.5
ASL 733 30 A2	59	45	7.5	1.5	1.5	10	16	16.5
ASL 733 36 A2	65	51	9	1.5	1.5	10	16	20
ASL 733 44 A2	73	59	12	1.5	1.5	10	16	24
ASL 733 53 A2	84	70	13.5	1.5	2	10	16	29.5
ASL 733 63 A2	94	80	15	1.5	2	10	16	35.3

Dimensions



## Spacer clip 733

A4

E30

E60

E90

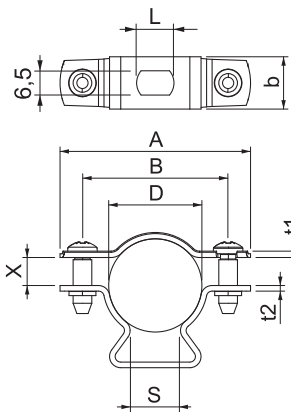


Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASL 733 10 A4	8-10	25	1.828	1362904
ASL 733 12 A4	10-12	25	1.893	1362906
ASL 733 14 A4	12-14	25	1.973	1362908
ASL 733 17 A4	14-17	25	2.139	1362912
ASL 733 20 A4	17-20	25	2.243	1362914
ASL 733 25 A4	20-25	25	2.466	1362918
ASL 733 30 A4	25-30	20	3.466	1362922
ASL 733 36 A4	30-36	20	3.846	1362926
ASL 733 44 A4	36-44	20	4.230	1362930
ASL 733 53 A4	44-53	20	5.723	1362934
ASL 733 63 A4	53-63	20	6.331	1362938

Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking cover. Fastening via slot.

Approved for the maintenance of electrical function according to DIN 4102 Part 12, maintenance of electrical function classes E 30 to E 90.

### Dimensions



Type	Dim. A mm	Dim. B mm	Dim. x mm	Dim. t1 mm	Dim. t2 mm	Dim. L mm	Dim. b mm	Dim. s mm
ASL 733 10 A4	37	25	3	1	1.5	10	16	5.5
ASL 733 12 A4	39	27	3	1	1.5	10	14	6.9
ASL 733 14 A4	41	29	3	1.25	1.5	10	14	8
ASL 733 17 A4	44	32	4.5	1.25	1.5	10	14	9.5
ASL 733 20 A4	47	35	4.5	1.25	1.5	10	14	12
ASL 733 25 A4	51	39	7.5	1.25	1.5	10	14	13.5
ASL 733 30 A4	59	45	7.5	1.5	1.5	10	16	16.5
ASL 733 36 A4	65	51	9	1.5	1.5	10	16	20
ASL 733 44 A4	73	59	12	1.5	1.5	10	16	24
ASL 733 53 A4	84	70	13.5	1.5	2	10	16	29.5
ASL 733 63 A4	94	80	15	1.5	2	10	16	35.3



Spacer clip 733

Alu



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
ASL 733 10 ALU	8-10	25	0.917	1362804
ASL 733 12 ALU	10-12	25	0.938	1362806
ASL 733 14 ALU	12-14	25	0.965	1362808
ASL 733 17 ALU	14-17	25	1.062	1362812
ASL 733 20 ALU	17-20	25	1.097	1362814
ASL 733 25 ALU	20-25	25	1.254	1362818
ASL 733 30 ALU	25-30	20	1.592	1362822
ASL 733 36 ALU	30-36	20	1.802	1362826
ASL 733 44 ALU	36-44	20	1.931	1362830
ASL 733 53 ALU	44-53	20	2.537	1362834
ASL 733 63 ALU	53-63	20	2.742	1362838

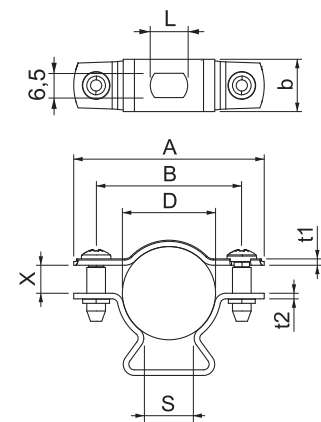


Spacer clip for the installation of pipes and cables on walls, ceilings and floors. With self-locking upper part. Fastening via slot. From the clip size of 20 suitable for installation with a nail device or bolt-firing device.

Approved for the maintenance of electrical function to DIN 4102 Part 12, maintenance of electrical function classes E30 to E90 (except ALU).

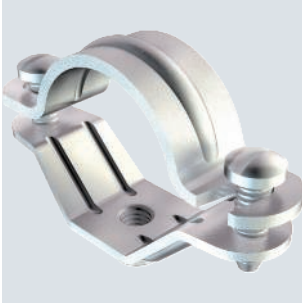
Type	Dim. A mm	Dim. B mm	Dim. x mm	Dim. t1 mm	Dim. t2 mm	Dim. L mm	Dim. b mm	Dim. s mm
ASL 733 10 ALU	37	25	3	1	1.5	10	16	5.5
ASL 733 12 ALU	39	27	3	1	1.5	10	14	6.9
ASL 733 14 ALU	41	29	3	1.25	1.5	10	14	8
ASL 733 17 ALU	44	32	4.5	1.25	1.5	10	14	9.5
ASL 733 20 ALU	47	35	4.5	1.25	1.5	10	14	12
ASL 733 25 ALU	51	39	7.5	1.25	1.5	10	14	13.5
ASL 733 30 ALU	59	45	7.5	1.5	1.5	10	16	16.5
ASL 733 36 ALU	65	51	9	1.5	1.5	10	16	20
ASL 733 44 ALU	73	59	12	1.5	1.5	10	16	24
ASL 733 53 ALU	84	70	13.5	1.5	2	10	16	29.5
ASL 733 63 ALU	94	80	15	1.5	2	10	16	35.3

Dimensions



Screw-in spacer clip, universal

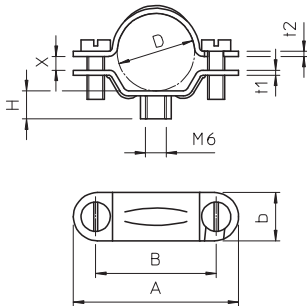
St G



Type	Clamping range D mm	Size	Bolt	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2900 M6 13-16 G	13.5-16	M16	M5x14	500	50	2.280	1383094
2900 M6 16-19 G	16.5-19	Pg 11	M5x14	500	50	2.320	1383116
2900 M6 18-21 G	18-21	M20	M5x14	500	50	2.340	1383132
2900 M6 19-23 G	19-23	Pg 16	M5x14	500	50	2.400	1383167
2900 M6 24-29 G	24-29	M25	M5x14	400	50	3.320	1383213
2900 M6 33-38 G	33-38	Pg 29	M5x14	250	25	5.830	1383310
2900 M6 30-34 G	30-34	M32	M5x14	50	50	4.950	1383299
2900 M6 39-42 G	39-42	M40	M5x16	300	25	5.490	1383418
2900 M6 43-48 G	43-48	Pg 36	M5x14	240	20	6.330	1383361
2900 M6 49-55 G	49-55	M50	M6x15	240	20	9.300	1383426
2900 M6 54-60 G	54-60	Pg 48	M6x15	240	20	8.970	1383485
2900 M6 61-64 G	61-64	M63	M6x16	240	20	8.090	1383507

With M6 thread.

Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H mm	Dim. x mm
2900 M6 13-16 G	13.5-16	48	35	14	1.5	1.5	9	2.2
2900 M6 16-19 G	16.5-19	48	35	14	1.5	1.5	9	2.6
2900 M6 18-21 G	18-21	48	35	14	1.5	1.5	9	2.9
2900 M6 19-23 G	19-23	48	35	14	1.5	1.5	9	4
2900 M6 24-29 G	24-29	60	47	14	1.5	2	7.5	4.6
2900 M6 33-38 G	33-38	79	64	16	2	2	6.5	3.5
2900 M6 30-34 G	30-34	68	54	16	2	2	8	5
2900 M6 39-42 G	39-42	79	64	16	2	2	6.5	5
2900 M6 43-48 G	43-48	79	64	16	2	2	8	5
2900 M6 49-55 G	49-55	102	86	18	2	2	8	5.5
2900 M6 54-60 G	54-60	102	86	18	2	2	8	6.3
2900 M6 61-64 G	61-64	106.5	90.5	18	2	2	6.5	6

Screw-in spacer clip, universal

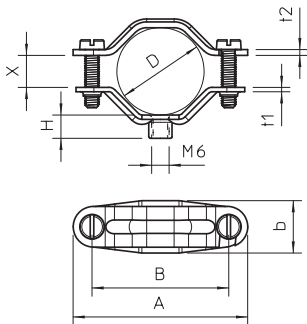
St G



Type	Clamping range D mm	Bolt	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.
2070 M6 G	12-20	M5x16	500	50	2.300	1380028
2071 M6 G	20-30	M5x20	600	50	3.310	1380222
2072 M6 G	30-44	M5x22	300	25	5.990	1380427
2073 M6 G	44-60	M6x25	240	20	9.660	1380729

With M6 thread.  
Universal clip with large tensioning area.

Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. t1 mm	Dim. t2 mm	Dim. H mm	Dim. x mm
2070 M6 G	12-20	48	35	14	1.5	1.5	9	9
2071 M6 G	20-30	60	47	18	1.5	2	7.5	11
2072 M6 G	30-44	79	64	18	2	2	8	15
2073 M6 G	44-60	102	86	18	2	2	8	18



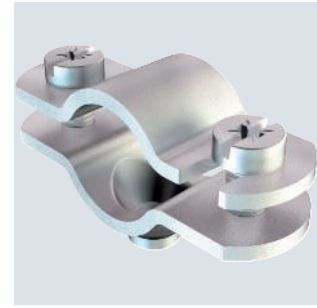


St G

Type	Clamping range D		Bolt	Pack Piece	Weight kg/100 pc.	Item no.
	mm	mm				
731 W 12 G	8-12		M5x12	50	2.470	1366122
731 W 16 G	12-16		M5x12	50	2.816	1366165
731 W 20 G	16-20		M5x14	50	3.124	1366203
731 W 25 G	20-25		M5x14	50	3.480	1366254
731 W 30 G	25-30		M5x14	25	4.060	1366300
731 W 35 G	30-35		M5x18	25	4.344	1366351

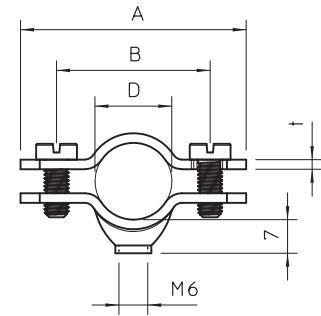
With M6 thread.

### Screw-in spacer clip



Type	Dim. A	Dim. B	Dim. D	Dim. t	Hole size
	mm	mm	mm	mm	mm
731 W 12 G	43	28	12	2	M6
731 W 16 G	47	32	16	2	M6
731 W 20 G	51	36	20	2	M6
731 W 25 G	58	43	25	2	M6
731 W 30 G	64	49	30	2	M6
731 W 35 G	65	50	35	2	M6

#### Dimensions

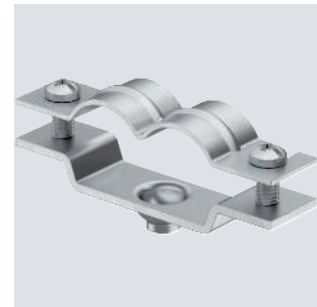


St G

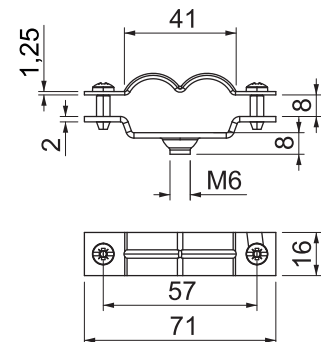
Type	Clamping range D mm	Bolt	Shipping box Piece	Pack Piece	Weight kg/100 pc.	Item no.

With M6 thread.

### Screw-in spacer clip 705, double

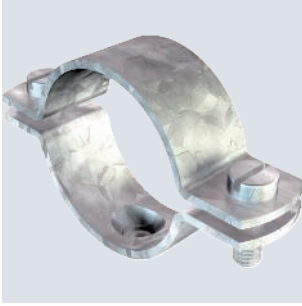


#### Dimensions



Screw-in spacer clip, heavy-duty version M6

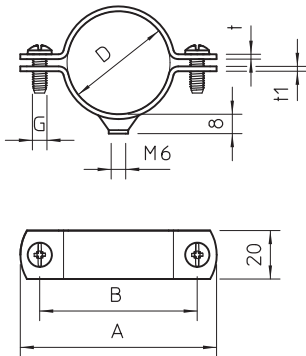
St FT



Type	Clamping range D mm	Size	For pipe Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
2900WM6 13.5 FT	12.5-13.5	1/4"	—	25	2.860	1385003
2900WM6 17 FT	16-17	3/8"	M16	25	4.912	1385011
2900WM6 21.5 FT	19-21.5	1/2"	M20	25	5.104	1385038
2900WM6 27 FT	24.5-27	3/4"	M25	25	5.600	1385054
2900WM6 33.5 FT	30.5-33.5	1"	M32	25	6.144	1385062
2900WM6 42.5 FT	39.5-42.5	1 1/4"	M40	25	7.644	1385089
2900WM6 48.5 FT	45.5-48.5	1 1/2"	M50	25	8.872	1385119
2900WM6 54 FT	51-54	1 3/4"	—	20	10.400	1385127
2900WM6 60 FT	56-60	2"	M63	15	11.720	1385135

Can be screwed onto M6 thread. Size 27 FT is suitable for M25. Size 42.5 FT is suitable for M40. Size 48.5 FT is suitable for M50. Size 60 FT is suitable for M63.

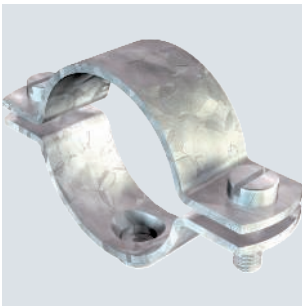
Dimensions



Type	Dim. A mm	Dim. B mm	Dim. D mm	Dim. t mm	Dim. t1 mm	Thread
2900WM6 13.5 FT	48	32	13.5	2	2	M6
2900WM6 17 FT	52	36	17	2	2	M6
2900WM6 21.5 FT	56	40	21.5	2	2	M6
2900WM6 27 FT	62	46	27	2	2	M6
2900WM6 33.5 FT	70	54	33.5	2	2	M6
2900WM6 42.5 FT	83	67	42.5	2	2	M6
2900WM6 48.5 FT	88	72	48.5	2.5	2	M6
2900WM6 54 FT	96	80	54	2.5	2.5	M6
2900WM6 60 FT	105	89	60	2.5	2.5	M6

Screw-in spacer clip, heavy-duty version M8

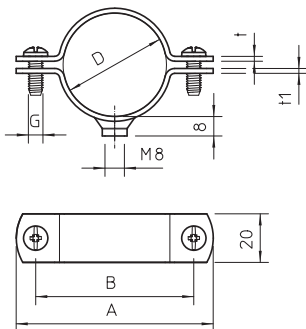
St FT



Type	Clamping range D mm	Size	For pipe Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
2900WM8 17 FT	16-17	3/8"	M16	25	5.040	1387014
2900WM8 21.5 FT	19-21.5	1/2"	M20	25	5.768	1387030
2900WM8 27 FT	24.5-27	3/4"	M25	25	6.144	1387057
2900WM8 33.5 FT	30.5-33.5	1"	M32	25	6.864	1387065
2900WM8 42.5 FT	39.5-42.5	1 1/4"	M40	25	9.000	1387081
2900WM8 48.5 FT	45.5-48.5	1 1/2"	M50	25	9.284	1387111
2900WM8 60 FT	56-60	2"	M63	15	11.346	1387138
2900WM8 75.5 FT	71.5-75.5	2 1/2"	M80	50	21.000	1387154
2900WM8 88 FT	83-88	3"	M95	50	23.800	1387170

Can be screwed onto M8 thread. Size 27 FT is suitable for M25. Size 42.5 FT is suitable for M40. Size 48.5 FT is suitable for M50. Size 60 FT is suitable for M63.

Dimensions



Type	Dim. A mm	Dim. B mm	Dim. D mm	Dim. t mm	Dim. t1 mm	Thread
2900WM8 17 FT	52	36	17	2	2.5	M8
2900WM8 21.5 FT	56	40	21.5	2	2.5	M8
2900WM8 27 FT	62	46	27	2	2.5	M8
2900WM8 33.5 FT	70	54	33.5	2	2.5	M8
2900WM8 42.5 FT	81	65	42.5	2	2.5	M8
2900WM8 48.5 FT	88	74	48.3	2	2.5	M8
2900WM8 60 FT	105	89	60	2.5	2.5	M8
2900WM8 75.5 FT	125	105	75.5	3	3	M8
2900WM8 88 FT	138	118	88	3	3	M8

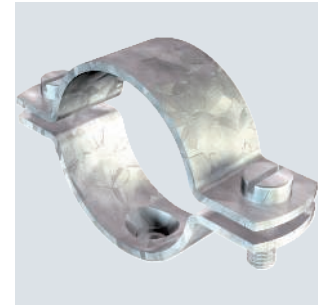


St FT

## Screw-in spacer clip, heavy-duty version M10

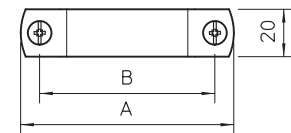
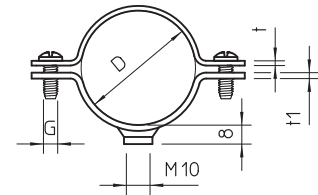
Type	Clamping range D		For pipe Ø	Pack Piece	Weight kg/100 pc.	Item no.
	mm	Size				
<b>2900WM10 21.5 FT</b>	19-21.5	1/2"	M20	25	5.768	<b>1388037</b>
<b>2900WM10 27 FT</b>	24.5-27	3/4"	M25	25	6.144	<b>1388053</b>
<b>2900WM10 33.5 FT</b>	30.5-33.5	1"	M32	25	6.864	<b>1388061</b>
<b>2900WM10 48.5 FT</b>	45.5-48.5	1 1/2"	M50	25	9.284	<b>1388118</b>
<b>2900WM10 60 FT</b>	56-60	2"	M63	15	11.346	<b>1388134</b>

Can be screwed onto M10 thread. Size 27 FT is suitable for M25. Size 48.5 FT is suitable for M50. Size 60 FT is suitable for M63.

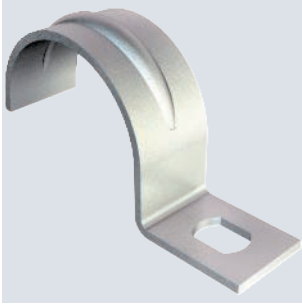


Type	Dim. A	Dim. B	Dim. t	Dim. t1	Thread
	mm	mm	mm	mm	
2900WM10 21.5 FT	56	40	2	2.5	M10
2900WM10 27 FT	62	46	2	2.5	M10
2900WM10 33.5 FT	70	54	2	2.5	M10
2900WM10 48.5 FT	88	72	2	2.5	M10
2900WM10 60 FT	105	89	2.5	2.5	M10

## Dimensions



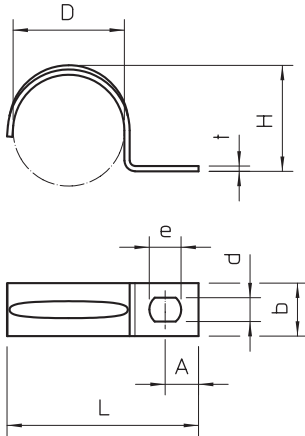
## Fastening clip 604, light duty



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



St G



## Fastening clip 1015, medium-duty

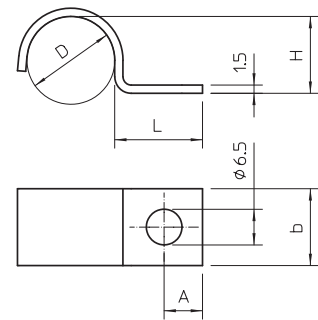
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
1015 5 G	5	6,5	1,5	100	0.325	1009028
1015 6 G	6	6,5	1,5	100	0.385	1009036
1015 7 G	7	6,5	1,5	100	0.418	1009044
1015 8 G	8	6,5	1,5	100	0.428	1009052
1015 9 G	9	6,5	1,5	100	0.468	1009060
1015 10 G	10	6,5	1,5	100	0.560	1009079
1015 11 G	11	6,5	1,5	100	0.632	1009087
1015 12 G	12	6,5	1,5	100	0.672	1009109
1015 13 G	13	6,5	1,5	100	0.683	1009117
1015 14 G	14	6,5	1,5	100	0.710	1009168
1015 15 G	15	6,5	1,5	100	0.744	1009184
1015 16 G	16	6,5	1,5	100	0.753	1009192
1015 17 G	17	6,5	1,5	100	0.764	1009206
1015 18 G	18	6,5	1,5	100	0.835	1009214



Single-lobe fastening clip for cables and pipes.

Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. b mm	Dim. A mm
1015 5 G	5	16	4	12	7
1015 6 G	6	16	5	12	7
1015 7 G	7	16	6	12	7
1015 8 G	8	16	7	12	7
1015 9 G	9	16	8	12	7
1015 10 G	10	16	9	12	7
1015 11 G	11	16	10	14	7
1015 12 G	12	16	11	14	7
1015 13 G	13	16	12	14	7
1015 14 G	14	16	12,5	14	7
1015 15 G	15	16	13,5	14	7
1015 16 G	16	16	14	14	7
1015 17 G	17	16	15	14	7
1015 18 G	18	16	16	14	7

## Dimensions



A2 2B



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
1015 6 A2	6	6,5	1,5	100	0.341	1008633
1015 7 A2	7	6,5	1,5	100	0.420	1008641
1015 8 A2	8	6,5	1,5	100	0.428	1008668
1015 10 A2	10	6,5	1,5	100	0.560	1008684
1015 12 A2	12	6,5	1,5	100	0.672	1008706

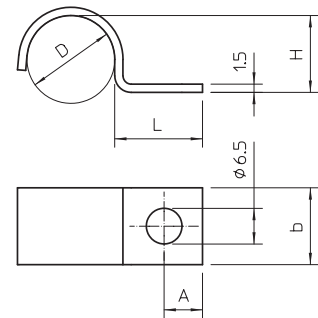
Single-lobe fastening clip for cables and pipes.

## Fastening clip 1015

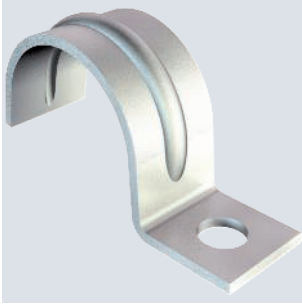


Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. b mm	Dim. A mm
1015 6 A2	6	16	5	12	7
1015 7 A2	7	16	6	12	7
1015 8 A2	8	16	7	12	7
1015 10 A2	10	16	9	12	7
1015 12 A2	12	16	11	14	7

## Dimensions



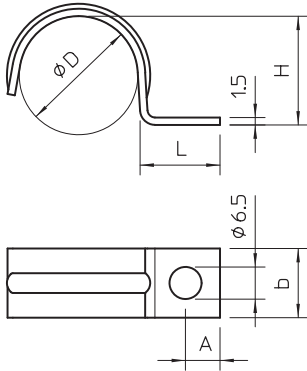
## Fastening clip 1015, medium-duty



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
1015 20 G	20	6,5	1,5	100	0,921	1009230
1015 25 G	25	6,5	1,5	100	1,150	1009427
1015 28 G	28	6,5	1,5	100	1,250	1009362

Single-lobe fastening clip for cables and pipes.  
Beading from size 20.

### Dimensions



Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. b mm	Dim. A mm
1015 20 G	20	16	18	14	7
1015 25 G	25	16	22,5	14	7
1015 28 G	28	16	25	14	7

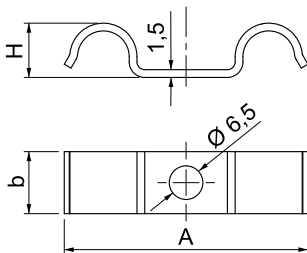
## Fastening clip 1015 D



Type	For Ø mm	Hole size mm	Material thickness mm	For Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
1015 D 5 G	5	6,5	1,5	5	100	0,600	1009455
1015 D 6 G	6	6,5	1,5	6	100	0,670	1009457
1015 D 7 G	7	6,5	1,5	7	100	1,070	1009459
1015 D 8 G	8	6,5	1,5	8	100	1,150	1009461
1015 D 9 G	9	6,5	1,5	9	100	1,220	1009463
1015 D 10 G	10	6,5	1,5	10	100	1,300	1009465
1015 D 12 G	12	6,5	1,5	12	100	1,700	1009469
1015 D 14 G	14	6,5	1,5	14	100	1,870	1009473
1015 D 15 G	15	6,5	1,5	15	100	1,980	1009475
1015 D 16 G	16	6,5	1,5	16	100	1,414	1009477
1015 D 18 G	18	6,5	1,5	18	100	2,250	1009481
1015 D 20 G	20	6,5	1,5	20	100	2,500	1009485
1015 D 22 G	22	6,5	1,5	22	100	2,650	1009489
1015 D 25 G	25	6,5	1,5	25	100	2,950	1009493

Fastening clip with a central fastening point for 2 cables or 2 pipes

### Dimensions



Type	Dim. A mm	Dim. b mm	Dim. H mm
1015 D 5 G	33	12	6
1015 D 6 G	35	12	7
1015 D 7 G	41	12	8
1015 D 8 G	43	12	9
1015 D 9 G	45	12	10
1015 D 10 G	47	12	10,5
1015 D 12 G	51	14	12
1015 D 14 G	55	14	14
1015 D 15 G	58	14	15
1015 D 16 G	60	14	16
1015 D 18 G	64	14	18
1015 D 20 G	69	14	21
1015 D 22 G	72	14	22
1015 D 25 G	79	14	25

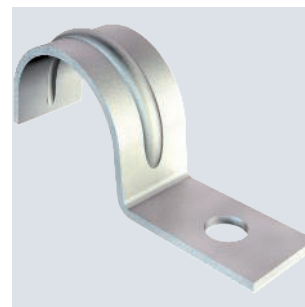




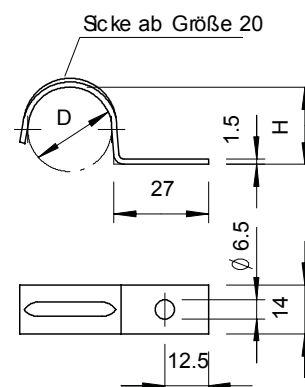
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
1015 RB 20 G	20	6,5	1,5	100	1.100	1010794

For fastening of rigid and bending plastic pipes on concrete substrates using knock-in anchors 903/RB and flatteners with hand protection 915/RB.

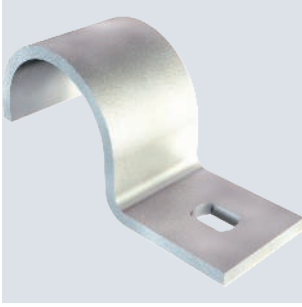
## Fastening clip 1015 RB



## Dimensions



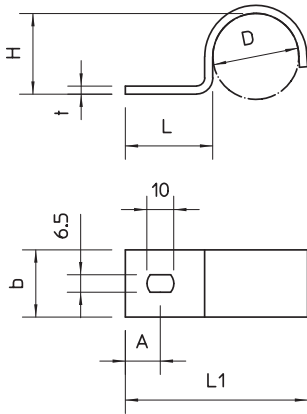
## Fastening clip 822, heavy-duty



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
822 6 FT	6	6,5x10	2	100	0.885	1014005
822 10 FT	10	6,5x10	2	100	1.075	1014013
822 12 FT	12	6,5x10	2	100	1.450	1014021
822 14 FT	14	6,5x10	2	100	1.600	1014048
822 16 FT	15,2	6,5x10	2	100	1.733	1014099
822 18 FT	18,6	6,5x10	2	100	1.946	1014110
822 20 FT	20	6,5x10	2	100	2.125	1014137
822 22.5 FT	22,5	6,5x10	2	50	2.338	1014161
822 25 FT	25	6,5x10	2	50	2.400	1014501
822 28.3 FT	28,3	6,5x10	2	50	4.420	1014218
822 32 FT	32	6,5x10	2	100	5.490	1014528
822 37 FT	37	6,5x10	2	100	7.100	1014293
822 40 FT	40	6,5x10	2	100	6.590	1014536
822 47 FT	47	6,5x10	3	100	8.500	1014366
822 50 FT	50	6,5x10	3	100	7.690	1014544
822 63 FT	63	6,5x10	3	100	9.260	1014552

Single-lobe fastening clip for cables and pipes.

### Dimensions



Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. L1 mm	Dim. b mm
822 6 FT	6	23,5	5	2	10	32	20
822 10 FT	10	23,5	9	2	10	36	20
822 12 FT	12	23,5	11	2	10	38,5	20
822 14 FT	14	23,5	13	2	10	40,5	20
822 16 FT	15,2	23,5	14	2	10	42	20
822 18 FT	18,6	23,5	17	2	10	45	20
822 20 FT	20	23,5	19,5	2	10	48	20
822 22.5 FT	22,5	23,5	21	2	11	49	20
822 25 FT	25	25,5	23,5	3	11	53	20
822 28.3 FT	28,3	27	26,5	3	11	60	20
822 32 FT	32	32,5	30	3	13	68	25
822 37 FT	37	30	35	3	13	70	25
822 40 FT	40	32,5	38	3	13	76	25
822 47 FT	47	30	45	3	13	81	25
822 50 FT	50	32,5	47	3	15	86	25
822 63 FT	63	33,5	60	3	15	100	25



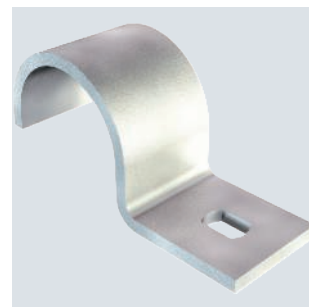
A2 2B



## Fastening clip 822 V2A

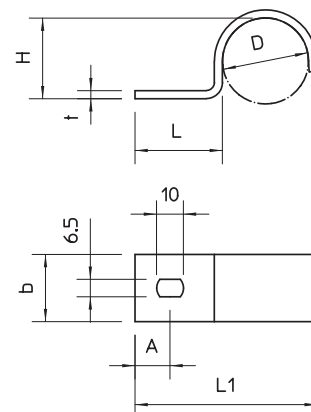
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
822 12 A2	12	6,5x10	2	100	1.450	1014714

Single-lobe fastening clip for cables and pipes.



Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. L1 mm	Dim. b mm
822 12 A2	12	23,5	11	2	10	37,58	20

## Dimensions



## Fastening clip 822, heavy-duty

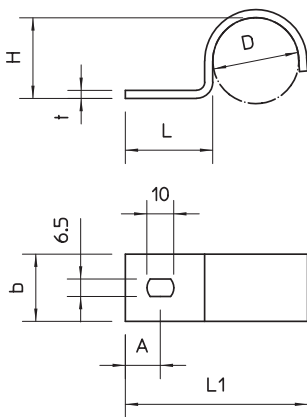
A4 2B



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>822 6 A4</b>	6	6,5x10	2	100	0.885	<b>1013861</b>
<b>822 10 A4</b>	10	6,5x10	2	100	1.075	<b>1013865</b>
<b>822 12 A4</b>	12	6,5x10	2	100	1.450	<b>1013869</b>
<b>822 14 A4</b>	14	6,5x10	2	100	1.600	<b>1013873</b>
<b>822 16 A4</b>	15,2	6,5x10	2	100	1.733	<b>1013877</b>
<b>822 18 A4</b>	18,6	6,5x10	2	100	1.946	<b>1013881</b>
<b>822 20 A4</b>	20	6,5x10	2	100	2.125	<b>1013885</b>
<b>822 22.5 A4</b>	22,5	6,5x10	2	50	2.338	<b>1013889</b>
<b>822 25 A4</b>	25	6,5x10	2	50	2.400	<b>1013893</b>
<b>822 32 A4</b>	32	6,5x10	3	100	5.490	<b>1013903</b>
<b>822 40 A4</b>	40	6,5x10	3	100	6.590	<b>1013911</b>
<b>822 50 A4</b>	50	6,5x10	3	100	7.690	<b>1013921</b>
<b>822 63 A4</b>	63	6,5x10	3	100	9.260	<b>1013925</b>

Single-lobe fastening clip for cables and pipes.

### Dimensions



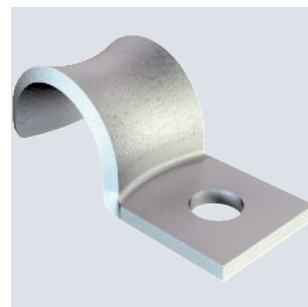
Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. L1 mm	Dim. b mm
<b>822 6 A4</b>	6	23,5	5	2	10	32	20
<b>822 10 A4</b>	10	23,5	9	2	10	36	20
<b>822 12 A4</b>	12	23,5	11	2	10	38,5	20
<b>822 14 A4</b>	14	23,5	13	2	10	40,5	20
<b>822 16 A4</b>	15,2	23,5	14	2	10	42	20
<b>822 18 A4</b>	18,6	23,5	17	2	10	45	20
<b>822 20 A4</b>	20	23,5	20	2	10	48	20
<b>822 22.5 A4</b>	22,5	23,5	21	2	11	49	20
<b>822 25 A4</b>	25	25,5	23,5	2	11	53	20
<b>822 32 A4</b>	32	32,5	30	3	13	68	25
<b>822 40 A4</b>	40	32,5	38	3	13	76	25
<b>822 50 A4</b>	50	32,5	47	3	15	86	25
<b>822 63 A4</b>	63	33,5	60	3	15	100	25





### Fastening clip, plant standard 7855, single-lobe

Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
WN 7855 A 2	2	3,2	0,8	100	0.039	1043013
WN 7855 A 2.5	2.5	3,2	0,8	100	0.041	1043021
WN 7855 A 4	4	3,2	1	100	0.062	1043064
WN 7855 A 4.5	4.5	3,2	1	100	0.074	1043072
WN 7855 A 5	5	3,2	1	100	0.090	1043080
WN 7855 A 6	6	3,2	1	100	0.082	1043102
WN 7855 A 7	7	3,2	1	100	0.120	1043129
WN 7855 A 8	8	3,2	1	100	0.159	1043145
WN 7855 A 9	9	3,2	1,5	100	0.168	1043161
WN 7855 A 10	10	3,2	1,5	100	0.170	1043196
WN 7855 A 12	12	4,3	1,5	100	0.530	1043226
WN 7855 A 14	14	4,3	1,5	100	0.579	1043242

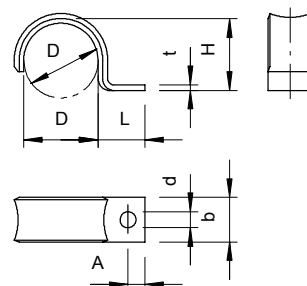


Dimensions to Siemens standard SN 78550, shape A, with strongly rounded edges, thus particularly suitable for sensitive cables.

\* Sizes 2 to 10 not suitable for bolt-firing tool and nail device.

Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. d mm	Dim. b mm
WN 7855 A 2	2	8,5	1,5	0,8	3	3,2	6
WN 7855 A 2.5	2.5	5,25	2	0,8	3	3,2	6
WN 7855 A 4	4	7,5	3,5	0,8	3	3,2	6
WN 7855 A 4.5	4.5	8,5	4	1	3	3,2	6
WN 7855 A 5	5	8	4,5	1	3	3,2	6
WN 7855 A 6	6	7,5	5,5	1	3	3,2	6
WN 7855 A 7	7	10	6	1	4	3,2	8
WN 7855 A 8	8	9,5	7	1	4	3,2	8
WN 7855 A 9	9	9	8	1	4	3,2	8
WN 7855 A 10	10	8,5	9	1	4	3,2	8
WN 7855 A 12	12	13,5	10	1,5	4,5	4,3	12
WN 7855 A 14	14	12,5	12	1,5	4,5	4,3	12

Dimensions

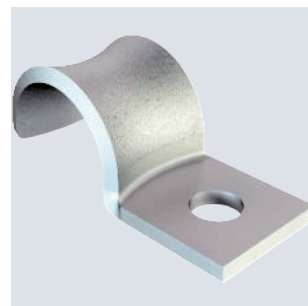


### Fastening clip, plant standard 7855, single-lobe

Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
WN 7855 A 3	3	3,2	0,8	100	0.050	1043048

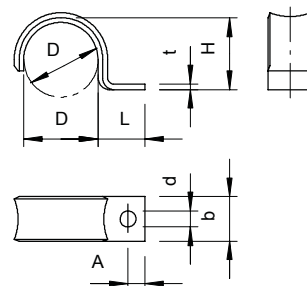
Dimensions to Siemens standard SN 78550, shape A, with strongly rounded edges, thus particularly suitable for sensitive cables.

\* Sizes 2 to 10 not suitable for bolt-firing tool and nail device.

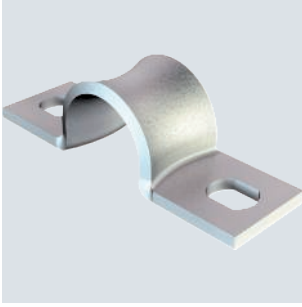


Type	Dim. D mm	Dim. L mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. d mm	Dim. b mm
WN 7855 A 3	3	8	3,3	0,8	3	3,2	6

Dimensions



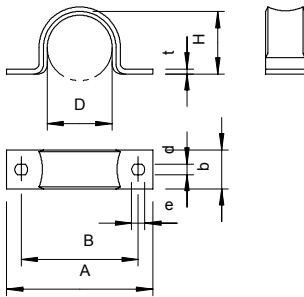
Fastening clip, plant standard 7855, double-lobe



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
WN 7855 B 3	3	3,2x4	0.8	100	0.080	1044044
WN 7855 B 4	4	3,2x4	0.8	100	0.082	1044060
WN 7855 B 4.5	4.5	3,2x4	1	100	0.097	1044079
WN 7855 B 5	5	3,2x4	1	100	0.118	1044087
WN 7855 B 6	6	3,2x4	1	100	0.128	1044109
WN 7855 B 7	7	3,2x4	1	100	0.200	1044125
WN 7855 B 8	8	3,2x4	1	100	0.218	1044141
WN 7855 B 9	9	3,2x4	1.5	100	0.222	1044176
WN 7855 B 10	10	3,2x4	1.5	100	0.223	1044192
WN 7855 B 12	12	4,3x5	1.5	100	0.675	1044214
WN 7855 B 14	14	4,3x5	1.5	100	0.733	1044230
WN 7855 B 16	16	4,3x5	1.5	100	0.742	1044257

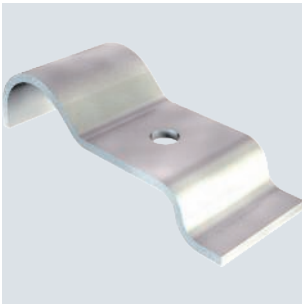
Dimensions to Siemens standard SN 78550, shape B, with strongly rounded edges, thus particularly suitable for sensitive cables.  
\* Sizes 3 to 10 not suitable for nail device.

Dimensions



Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
WN 7855 B 3	3	2.5	0.8	21	14	6	3.2	4
WN 7855 B 4	4	3.5	1	21	14	6	3.2	4
WN 7855 B 4.5	4.5	4	1	24	16	6	3.2	4
WN 7855 B 5	5	4.5	1	24	16	6	3.2	4
WN 7855 B 6	6	5.5	1	24	16	6	3.2	4
WN 7855 B 7	7	6	1	28	20	8	3.2	4
WN 7855 B 8	8	7	1	28	20	8	3.2	4
WN 7855 B 9	9	8	1	28	20	8	3.2	4
WN 7855 B 10	10	9	1	28	20	8	3.2	4
WN 7855 B 12	12	10	1.5	39	30	12	4.3	5
WN 7855 B 14	14	12	1.5	39	30	12	4.3	5
WN 7855 B 16	16	14	1.5	39	30	12	4.3	5

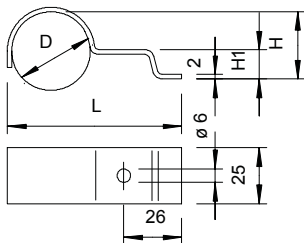
Fastening clip 1594, single-lobe, heavy-duty version



Type	For cable Ø mm	Hole size mm	Material thickness mm	Colour	Pack Piece	Weight kg/100 pc.	Item no.
1594 22 G	22	6	2	Stone grey	100	3.300	1310925

For earthing cable fastening to house connection boxes.  
Levanisit coated.

Dimensions



Type	Dim. L mm	Dim. H mm	Dim. H1 mm
1594 22 G	65	18	11



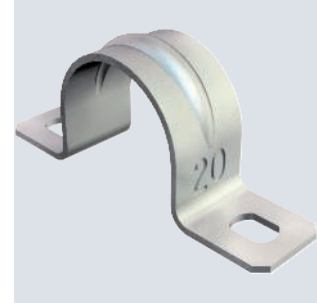


St G



## Fastening clip 605, medium-duty

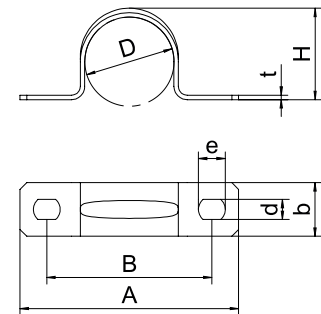
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
605 7 G	7	4,5x6	1	100	0.183	1018078
605 8 G	8	4,5x6	1	100	0.203	1018086
605 9 G	9	4,5x6	1	100	0.246	1018094
605 10 G	10	4,5x6	1	100	0.432	1018108
605 11 G	11	4,5x6	1	100	0.462	1018116
605 12 G	12	4,5x6	1	100	0.485	1018124
605 13 G	13	4,5x6	1	100	0.532	1018132
605 14 G	14	4,5x6	1	100	0.560	1018140
605 15 G	15	4,5x6	1	100	0.584	1018159
605 16 G	16	4,5x6	1	100	0.585	1018167
605 17 G	17	4,5x6	1	100	0.604	1018175
605 18 G	18	4,5x6	1	100	0.640	1018183
605 19 G	19	4,5x6	1	100	0.671	1018191
605 20 G	20	4,5x6	1	100	0.664	1018205
605 21 G	21	4,5x6	1	100	0.678	1018213
605 23 G	23	4,5x6	1	100	0.826	1018221
605 25 G	25	4,5x6	1	100	0.960	1018256
605 26 G	26	4,5x6	1	100	0.975	1018264
605 28 G	28	4,5x6	1	100	1.067	1018280
605 30 G	30	4,5x6	1	100	1.150	1018302
605 32 G	32	4,5x6	1	100	1.260	1018337
605 35 G	35	5,5x7	1.5	100	1.921	1018353
605 37 G	37	5,5x7	1.5	100	2.007	1018361



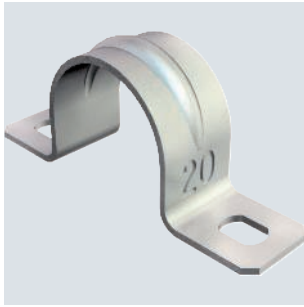
Two lobe fastening clips for cables and pipes.  
\* Sizes 7 to 12 not suitable for bolt-firing tool.

Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
605 7 G	7	6	1	32	21	10	4.5	6
605 8 G	8	7	1	33	22	10	4.5	6
605 9 G	9	8	1	34	23	10	4.5	6
605 10 G	10	9	1	37	25	12	4.5	6
605 11 G	11	10	1	38	26	12	4.5	6
605 12 G	12	11	1	39	27	12	4.5	6
605 13 G	13	12	1	41	29	12	4.5	6
605 14 G	14	13	1	42	30	12	4.5	6
605 15 G	15	13.5	1	43	31	12	4.5	6
605 16 G	16	14.5	1	44	32	12	4.5	6
605 17 G	17	15.5	1	45	33	12	4.5	6
605 18 G	18	16.5	1	46	34	12	4.5	6
605 19 G	19	17.5	1	47	35	12	4.5	6
605 20 G	20	18.5	1	49	37	12	4.5	6
605 21 G	21	19.5	1	50	38	12	4.5	6
605 23 G	23	21	1	52	40	12	4.5	6
605 25 G	25	23	1	58	44	14	4.5	6
605 26 G	26	24	1	59	45	14	4.5	6
605 28 G	28	26	1	61	47	14	4.5	6
605 30 G	30	28	1	63	49	14	4.5	6
605 32 G	32	30	1	66	52	14	5.5	6
605 35 G	35	32	1.5	70	56	14	5.5	7
605 37 G	37	34	1.5	72	58	14	5.5	7

## Dimensions



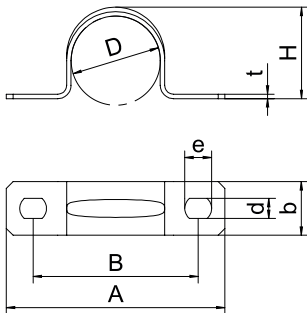
## Fastening clip 605, medium duty



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
605 40 G	40	5,5x7	1.5	50	1.900	1018396
605 43 G	43	5,5x7	1.5	50	2.324	1018434
605 47 G	47	5,5x7	1.5	50	2.366	1018477
605 50 G	50	5,5x7	1.5	25	2.770	1018507
605 55 G	55	5,5x7	1.5	25	3.840	1018558
605 60 G	60	5,5x7	1.5	25	3.800	1018604
605 63 G	63	5,5x7	1.5	25	3.670	1018639

Two lobe fastening clips for cables and pipes.  
\* Sizes 7 to 12 not suitable for bolt-firing tool.

### Dimensions



Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
605 40 G	40	37	1.5	75	61	14	5.5	7
605 43 G	43	40	1.5	78	64	14	5.5	7
605 47 G	47	44	1.5	82	68	14	5.5	7
605 50 G	50	46	1.5	88	74	16	5.5	7
605 55 G	55	51	1.5	94	78	16	5.5	7
605 60 G	60	56	1.5	99	83	16	5.5	7
605 63 G	63	59	1.5	112	98	16	5.5	7

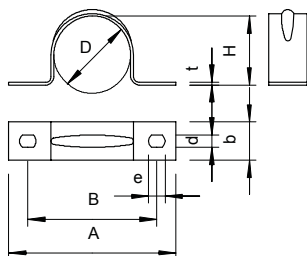
## Fastening clip 605, medium duty



Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
605 16 ALU	16	4,5x6	1	100	0.218	1017799
605 20 ALU	20	4,5x6	1	100	0.228	1017837
605 25 ALU	25	4,5x6	1	100	0.330	1017861
605 32 ALU	32	4,5x6	1	100	0.433	1017926
605 40 ALU	40	5,5x7	1.5	50	0.650	1017950
605 50 ALU	50	5,5x7	1.5	25	0.952	1017980
605 63 ALU	63	5,5x7	1.5	25	1.260	1017997

Two lobe fastening clips for cables and pipes.

### Dimensions



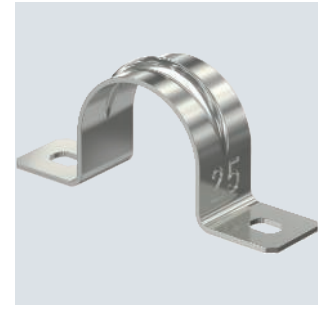
Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
605 16 ALU	16	14.5	1	44	32	12	4.5	6
605 20 ALU	20	18.5	1	49	37	12	4.5	6
605 25 ALU	25	23	1	58	44	14	4.5	6
605 32 ALU	32	29	1	95	71	25	4.5	6
605 40 ALU	40	37	1.5	75	61	14	5.5	7
605 50 ALU	50	46	1.5	110	86	25	5.5	7
605 63 ALU	63	59	1.5	120	96	25	5.5	7

A4 2B



### Fastening clip 605, medium-duty

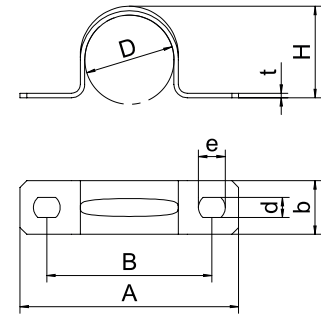
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
605 12 A4	12	4,5x6	1	100	0.485	1018653
605 16 A4	16	4,5x6	1	100	0.585	1018661
605 20 A4	20	4,5x6	1	100	0.664	1018669
605 25 A4	25	4,5x6	1	100	0.992	1018679
605 32 A4	32	4,5x6	1	100	1.260	1018693
605 40 A4	40	5,5x7	1,5	50	1.900	1018705
605 50 A4	50	5,5x7	1,5	25	2.770	1018717
605 63 A4	63	5,5x7	1,5	25	3.670	1018729



Two lobe fastening clips for cables and pipes.

Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
605 12 A4	12	11	1	39	27	12	4,5	6
605 16 A4	16	14,5	1	44	32	12	4,5	6
605 20 A4	20	18,5	1	49	37	12	4,5	6
605 25 A4	25	23	1	58	44	14	4,5	6
605 32 A4	32	30	1	66	52	14	4,5	6
605 40 A4	40	37	1,5	75	61	14	5,5	7
605 50 A4	50	46	1,5	88	74	16	5,5	7
605 63 A4	63	59	1,5	112	98	16	5,5	7

Dimensions



St FT



### Fastening clip 823, heavy duty

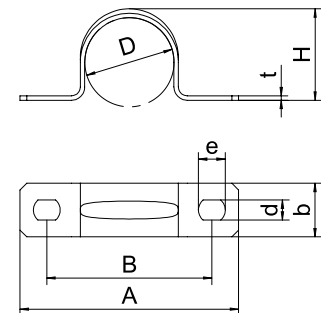
Type	For Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
823 16 FT	16	6,5x10	2	50	2.260	1015095
823 18.3 FT	18,6	6,5x10	2	50	2.446	1015117
823 20 FT	20	6,5x10	2	50	2.662	1015133
823 22.5 FT	22,5	6,5x10	2	50	2.988	1015168
823 25 FT	25	6,5x10	3	25	6.770	1015494
823 28.3 FT	28,3	6,5x10	3	25	5.208	1015214
823 32 FT	32	6,5x10	3	100	7.469	1015496
823 37 FT	37	6,5x10	3	100	8.700	1015303
823 40 FT	40	6,5x10	3	100	8.460	1015498
823 47 FT	47	6,5x10	3	100	10.120	1015362
823 54 FT	54	6,5x10	3	100	10.760	1015427
823 59.3 FT	59,3	6,5x10	3	100	11.800	1015486
823 50 FT	50	6,5x10	3	100	9.050	1015500
823 63 FT	63	6,5x10	3	100	10.700	1015508



Two lobe fastening clips for cables and pipes.

Type	Dim. D mm	Dim. H mm	Dim. t mm	Dim. A mm	Dim. B mm	Dim. b mm	Dim. d mm	Dim. e mm
823 16 FT	15,2	13	2	59	40	20	6,5	10
823 18.3 FT	18,6	16	2	62	43	20	6,5	10
823 20 FT	20,4	18	2	64	45	20	6,5	10
823 22.5 FT	22,5	20	2	67	48	20	6,5	10
823 25 FT	25	23,5	3	79	60	25	6,5	10
823 28.3 FT	28,3	25,5	3	75	56	20	6,5	10
823 32 FT	32	29	3	95	71	25	6,5	10
823 37 FT	37	34	3	93	69	25	6,5	10
823 40 FT	40	36	3	100	76	25	6,5	10
823 47 FT	47	43	3	103	79	25	6,5	10
823 54 FT	54	50	3	110	86	25	6,5	10
823 59.3 FT	59,3	55	3	116	92	25	6,5	10
823 50 FT	50	46	3	110	86	25	6,5	10
823 63 FT	63	59	3	120	96	25	6,5	10

Dimensions



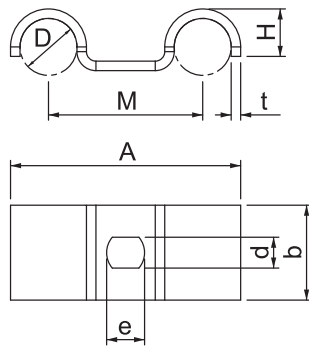
## Fastening clip 824 VA



Type	Shipping box		Pack Piece	Weight kg/100 pc.	Item no.
	Dim.	Dimension M			
824 12 A2	500		50	2.310	1016555

Fastening clip for 2 cables with central strap

### Dimensions

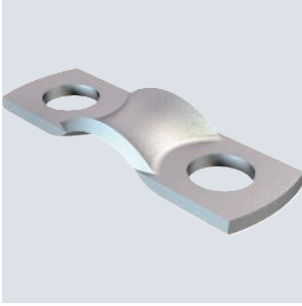


Type	Dim. D mm	Dimen- sion M mm	Dim. t mm	Dim. A mm	Dim. b mm	Dim. d mm	Dim. e mm
824 12 A2	12	32,5	2	48,5	20	6,5	8



## Strain relief clip 7901

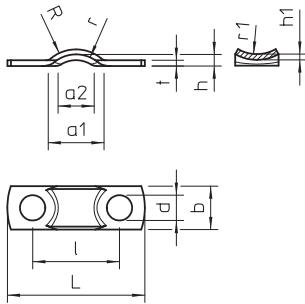
St G



Type	For cable Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>7901 5 G</b>	5	3,5	0,8	100	0,063	<b>1435019</b>
<b>7901 6.5 G</b>	6,5	3,2	1	100	0,115	<b>1435027</b>

Fastening clip for strain relief of cables.

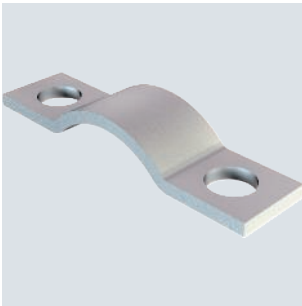
### Dimensions



Type	Dim. L mm	Dim. l mm	Dim. d mm	Dim. b mm	Dim. R mm	Dim. r mm	Dim. a1 mm	Dim. a2 mm	Dim. t mm	Dim. h mm	Dim. r1 mm	Dim. h1 mm
<b>7901 5 G</b>	19	12	3,5	6	5	4	6,5	4	0,8	1,6	5	0,8
<b>7901 6.5 G</b>	23	16	3,2	7	6,5	8	8	4	1	1,6	5	1,2

## Strain relief clip 7902

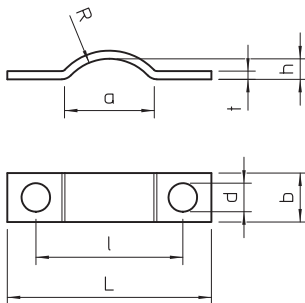
St G



Type	For cable Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>7902 6 G</b>	6,5	3,5	1	100	0,096	<b>1436015</b>
<b>7902 8 G</b>	8	4	1	100	0,159	<b>1436023</b>

Fastening clip for strain relief of cables.

### Dimensions



Type	Dim. L mm	Dim. l mm	Dim. d mm	Dim. b mm	Dim. R mm	Dim. a mm	Dim. t mm	Dim. h mm
<b>7902 6 G</b>	25	18	3,5	6	6,5	11	1	2,5
<b>7902 8 G</b>	30	23	4	8	8	12	1	4,5



St G

Strain relief clip 7903

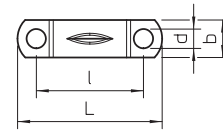
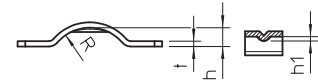
Type	For cable Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
7903 6 G	6	2,5	0,5	100	0.105	1437003
7903 8 G	8	3,6	0,8	100	0.130	1437011
7903 9 G	9	4,5	1	100	0.244	1437038

Fastening clip for strain relief of cables.



Type	Dim. L mm	Dim. l mm	Dim. d mm	Dim. b mm	Dim. R mm	Dim. t mm	Dim. h mm	Dim. h1 mm
7903 6 G	23	16,5	2,5	6	6	1	1,5	0,5
7903 8 G	27	20	3,6	7	8	1	3,5	0,8
7903 9 G	31	23	4,5	8	9	1,5	4	1

Dimensions

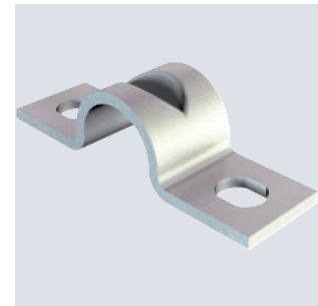


St G

Strain relief clip 7904

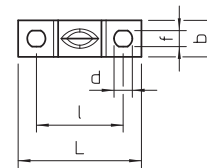
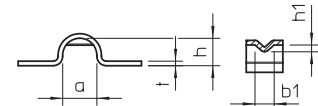
Type	For cable Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
7904 6 G	6	3,5x4	1	100	0.185	1438018

Fastening clip for strain relief of cables.



Type	Dim. L mm	Dim. l mm	Dim. d mm	Dim. f mm	Dim. b mm	Dim. a mm	Dim. t mm	Dim. h mm	Dim. b1 mm	Dim. h1 mm
7904 6 G	27,5	19	4	3,5	8	7,5	1	6	4,5	1,5

Dimensions



## Strain relief clip 7905

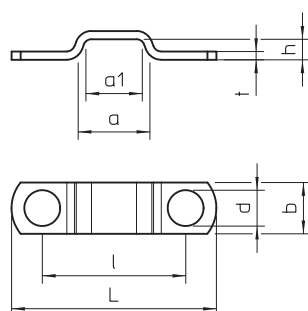
St G



Type	For cable Ø mm	Hole size mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
7905 5 G	5	3,5	0,8	100	0,054	1439014

Fastening clip for strain relief of cables.

### Dimensions



Type	Dim. L mm	Dim. l mm	Dim. d mm	Dim. b mm	Dim. a mm	Dim. a1 mm	Dim. t mm	Dim. h mm
7905 5 G	20	14	3,5	5	7	5,5	0,8	2

## Strain relief clip 7908

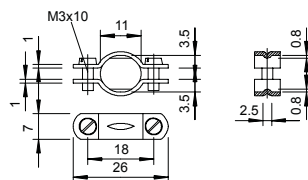
St G



Type	For cable Ø mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
7908 11 G	11	1	100	0,433	1442015

Fastening clip for strain relief of cables.

### Dimensions

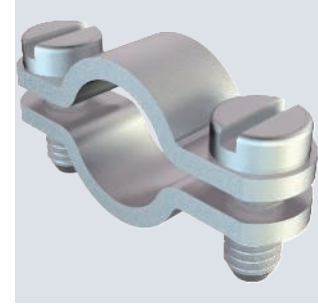
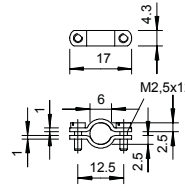


St G

## Strain relief clip 7909

Type	For cable	Material	Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	thickness mm			
7909 6 G	6	1	100	0.198	1443011

Fastening clip for strain relief of cables.



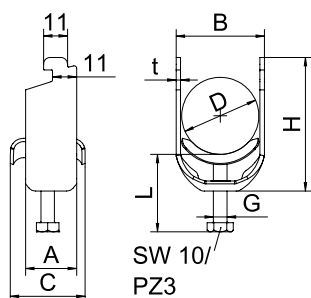
### Clamp clip 2056 N-foot, 1-fold, metal pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-N1-M-12 FT	8-12	100	2.450	1187002
BS-N1-M-16 FT	12-16	100	2.800	1187008
BS-N1-M-22 FT	16-22	100	3.150	1187014
BS-N1-M-28 FT	22-28	100	4.900	1187020
BS-N1-M-34 FT	28-34	100	6.400	1187026
BS-N1-M-40 FT	34-40	100	7.000	1187032
BS-N1-M-46 FT	40-46	100	8.500	1187038
BS-N1-M-52 FT	46-52	100	9.150	1187044
BS-N1-M-58 FT	52-58	100	12.100	1187050

Clamp clip with N-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 11–12 mm With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

#### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-N1-M-12 FT	8-12	22	17	28	M6	1.5	35	34	3
BS-N1-M-16 FT	12-16	22.5	20	28	M6	1.5	39	34	3
BS-N1-M-22 FT	16-22	22.5	27	28	M6	1.5	46	34	3
BS-N1-M-28 FT	22-28	22.5	33	28	M6	2	52	78	3
BS-N1-M-34 FT	28-34	22.5	39	34	M6	2	59	33	3
BS-N1-M-40 FT	34-40	22.5	45	33	M6	2	66	34	3
BS-N1-M-46 FT	40-46	25	51	33	M8	2	73	43	5
BS-N1-M-52 FT	46-52	25	57	33	M8	2	80	43	5
BS-N1-M-58 FT	52-58	25	64	33	M8	2.5	86	43	5

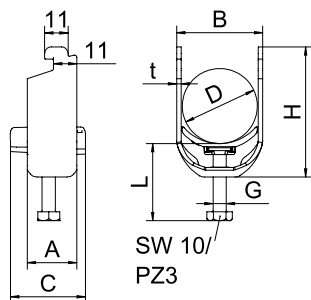
### Clamp clip 2056 N-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-N1-K-12 FT	8-12	100	2.500	1187202
BS-N1-K-16 FT	12-16	100	2.919	1187208
BS-N1-K-22 FT	16-22	100	3.100	1187214
BS-N1-K-28 FT	22-28	100	4.600	1187220
BS-N1-K-34 FT	28-34	100	5.900	1187226
BS-N1-K-40 FT	34-40	100	5.970	1187232
BS-N1-K-46 FT	40-46	100	6.640	1187238
BS-N1-K-52 FT	46-52	100	7.270	1187244
BS-N1-K-58 FT	52-58	50	10.560	1187250
BS-N1-K-64 FT	58-64	50	11.200	1187256
BS-N1-K-70 FT	64-70	50	12.330	1187262

Clamp clip with N-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 11–12 mm With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

#### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-N1-K-12 FT	8-12	22.5	17	34	M6	1.5	35	35	3
BS-N1-K-16 FT	12-16	22.5	20	34	M6	1.5	39	35	3
BS-N1-K-22 FT	16-22	22.5	27	34	M6	1.5	46	35	3
BS-N1-K-28 FT	22-28	22.5	33	34	M6	2	52	35	3
BS-N1-K-34 FT	28-34	22.5	39	34	M6	2	59	35	3
BS-N1-K-40 FT	34-40	22.5	45	34	M6	2	66	70	3
BS-N1-K-46 FT	40-46	25	51	40	M8	2	73	45	5
BS-N1-K-52 FT	46-52	25	57	40	M8	2	80	45	5
BS-N1-K-58 FT	52-58	25	64	40	M8	2.5	86	45	5
BS-N1-K-64 FT	58-64	25	70	40	M8	2.5	93	45	5
BS-N1-K-70 FT	64-70	25	76	40	M8	2.5	99	45	5



St FT



### Clamp clip 2056 N-foot, 2-fold, plastic pressure sleeve

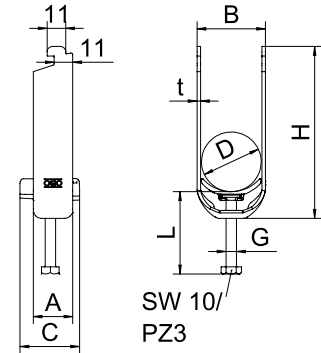
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-N2-K-12 FT	8-12	50	3.500	1187203

Clamp clip with N-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For slot width 11–12 mm With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-N2-K-12 FT	8-12	22.5	17	34	M6	1.5	52	35	3

Dimensions



Alu



### Clamp clip 2056 N-foot, 1-fold, plastic pressure sleeve

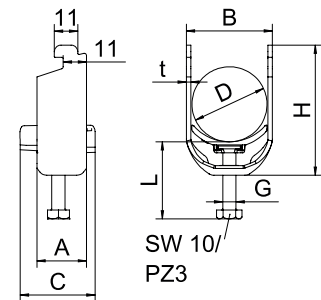
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-N1-K-12 ALU	8-12	50	0.900	1187302
BS-N1-K-16 ALU	12-16	50	1.090	1187308
BS-N1-K-22 ALU	16-22	50	1.200	1187314
BS-N1-K-28 ALU	22-28	50	1.700	1187320
BS-N1-K-34 ALU	28-34	50	2.200	1187326
BS-N1-K-40 ALU	34-40	50	2.350	1187332
BS-N1-K-46 ALU	40-46	50	2.550	1187338
BS-N1-K-52 ALU	46-52	50	2.880	1187344
BS-N1-K-58 ALU	52-58	50	4.100	1187350

Clamp clip with N-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 11–12 mm With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-N1-K-12 ALU	8-12	22.5	17	34	M6	1.5	35	35	2
BS-N1-K-16 ALU	12-16	22.5	20	34	M6	1.5	39	35	2
BS-N1-K-22 ALU	16-22	22.5	27	34	M6	1.5	46	35	2
BS-N1-K-28 ALU	22-28	22.5	33	34	M6	2	52	35	2
BS-N1-K-34 ALU	28-34	22.5	39	34	M6	2	59	35	2
BS-N1-K-40 ALU	34-40	22.5	45	34	M6	2	66	70	2
BS-N1-K-46 ALU	40-46	25	51	40	M8	2	73	45	2
BS-N1-K-52 ALU	46-52	25	57	40	M8	2	80	45	2
BS-N1-K-58 ALU	52-58	25	64	40	M8	2.5	86	45	2

Dimensions



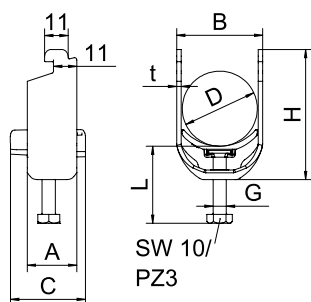
## Clamp clip 2056 N-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-N1-K-12 A2	8-12	50	2.500	1188102
BS-N1-K-16 A2	12-16	50	2.919	1188108
BS-N1-K-22 A2	16-22	50	4.400	1188114
BS-N1-K-28 A2	22-28	50	6.500	1188120
BS-N1-K-34 A2	28-34	50	8.000	1188126
BS-N1-K-40 A2	34-40	25	6.155	1188132
BS-N1-K-46 A2	40-46	25	6.770	1188138

Clamp clip with N-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 11–12 mm With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-N1-K-12 A2	8-12	22.5	17	34	M6	1.5	35	35	3
BS-N1-K-16 A2	12-16	22.5	20	34	M6	1.5	39	35	3
BS-N1-K-22 A2	16-22	22.5	27	34	M6	1.5	46	35	3
BS-N1-K-28 A2	22-28	22.5	33	34	M6	2	52	35	3
BS-N1-K-34 A2	28-34	22.5	39	34	M6	2	59	35	3
BS-N1-K-40 A2	34-40	22.5	45	34	M6	2	66	70	3
BS-N1-K-46 A2	40-46	25	51	40	M8	2	73	45	5

# Clamp clips, U base

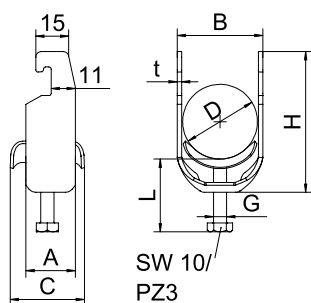
## Clamp clip 2056 U-foot, 1-fold, metal pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U1-M-12 FT	8-12	100	3.300	1186502
BS-U1-M-16 FT	12-16	100	3.520	1186509
BS-U1-M-22 FT	16-22	100	3.960	1186516
BS-U1-M-28 FT	22-28	100	5.890	1186522
BS-U1-M-34 FT	28-34	100	7.650	1186529
BS-U1-M-40 FT	34-40	100	8.360	1186536
BS-U1-M-46 FT	40-46	100	10.890	1186542
BS-U1-M-52 FT	46-52	100	11.660	1186549
BS-U1-M-58 FT	52-58	100	14.740	1186556
BS-U1-M-64 FT	58-64	100	15.730	1186562
BS-U1-M-70 FT	64-70	50	18.200	1186569
BS-U1-M-76 FT	70-76	25	20.600	1186576

Clamp clip with U-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

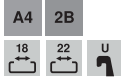
### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U1-M-12 FT	8-12	22.5	17	28	M6	1.5	40	34	3
BS-U1-M-16 FT	12-16	22.5	20	28	M6	1.5	44	34	3
BS-U1-M-22 FT	16-22	22.5	27	18	M6	1.5	51	34	3
BS-U1-M-28 FT	22-28	22.5	33	28	M6	2	57	34	3
BS-U1-M-34 FT	28-34	22.5	39	34	M6	2	64	33	3
BS-U1-M-40 FT	34-40	22.5	45	33	M6	2	70	34	3
BS-U1-M-46 FT	40-46	25	51	33	M8	2	76	43	5
BS-U1-M-52 FT	46-52	25	57	33	M8	2	83	43	5
BS-U1-M-58 FT	52-58	25	64	33	M8	2.5	89	43	5
BS-U1-M-64 FT	58-64	25	70	33	M8	2.5	95	43	5
BS-U1-M-70 FT	64-70	25	76	33	M8	2.5	101	43	5
BS-U1-M-76 FT	70-76	25	82	37	M8	2.5	108	43	5







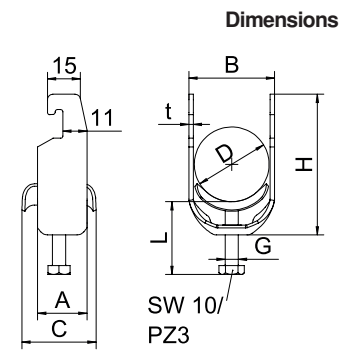
### Clamp clip 2056 U-foot, 1-fold, metal pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U1-M-12 A4	8-12	100	3.300	1186602
BS-U1-M-16 A4	12-16	100	3.520	1186609
BS-U1-M-22 A4	16-22	100	3.590	1186616
BS-U1-M-28 A4	22-28	100	4.930	1186622
BS-U1-M-34 A4	28-34	100	6.656	1186629
BS-U1-M-40 A4	34-40	100	8.360	1186636
BS-U1-M-46 A4	40-46	100	10.890	1186642
BS-U1-M-52 A4	46-52	100	11.660	1186649
BS-U1-M-58 A4	52-58	100	14.740	1186656
BS-U1-M-64 A4	58-64	100	15.730	1186662
BS-U1-M-70 A4	64-70	50	18.200	1186669
BS-U1-M-76 A4	70-76	25	20.600	1186676



Clamp clip with U-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U1-M-12 A4	8-12	22.5	17	28	M6	1.5	40	34	3
BS-U1-M-16 A4	12-16	22.5	20	28	M6	1.5	44	34	3
BS-U1-M-22 A4	16-22	22.5	27	28	M6	1.5	51	34	3
BS-U1-M-28 A4	22-28	22.5	33	28	M6	2	57	34	3
BS-U1-M-34 A4	28-34	22.5	39	34	M6	2	64	33	3
BS-U1-M-40 A4	34-40	22.5	45	33	M6	2	70	34	3
BS-U1-M-46 A4	40-46	25	51	33	M8	2	76	43	5
BS-U1-M-52 A4	46-52	25	57	33	M8	2	83	43	5
BS-U1-M-58 A4	52-58	25	64	33	M8	2.5	89	43	5
BS-U1-M-64 A4	58-64	25	70	33	M8	2.5	95	43	5
BS-U1-M-70 A4	64-70	25	76	33	M8	2.5	101	43	5
BS-U1-M-76 A4	70-76	25	82	37	M8	2.5	108	43	5



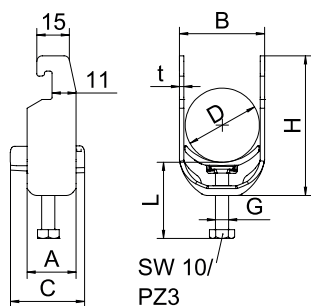
## Clamp clip 2056 U-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U1-K-12 FT	8-12	100	2.850	1186702
BS-U1-K-16 FT	12-16	100	3.050	1186709
BS-U1-K-22 FT	16-22	100	3.223	1186716
BS-U1-K-28 FT	22-28	100	4.344	1186722
BS-U1-K-34 FT	28-34	100	7.500	1186729
BS-U1-K-40 FT	34-40	100	8.100	1186736
BS-U1-K-46 FT	40-46	100	10.000	1186742
BS-U1-K-52 FT	46-52	100	11.200	1186749
BS-U1-K-58 FT	52-58	100	13.400	1186756
BS-U1-K-64 FT	58-64	100	14.300	1186762
BS-U1-K-70 FT	64-70	50	15.250	1186769
BS-U1-K-76 FT	70-76	25	20.600	1186776
BS-U1-K-82 FT	76-82	25	22.000	1186782
BS-U1-K-90 FT	82-90	25	26.200	1186789
BS-U1-K-100 FT	90-100	25	30.000	1186797

Clamp clip with U-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U1-K-12 FT	8-12	22.5	17	34	M6	1.5	40	35	3
BS-U1-K-16 FT	12-16	22.5	20	34	M6	1.5	44	35	3
BS-U1-K-22 FT	16-22	22.5	27	34	M6	1.5	51	35	3
BS-U1-K-28 FT	22-28	22.5	33	34	M6	2	57	35	3
BS-U1-K-34 FT	28-34	22.5	39	34	M6	2	64	35	3
BS-U1-K-40 FT	34-40	22.5	45	34	M6	2	70	35	3
BS-U1-K-46 FT	40-46	25	51	40	M8	2	76	45	5
BS-U1-K-52 FT	46-52	25	57	40	M6	2	83	32	5
BS-U1-K-58 FT	52-58	25	64	40	M8	2.5	89	45	5
BS-U1-K-64 FT	58-64	25	70	40	M8	2.5	95	45	5
BS-U1-K-70 FT	64-70	25	79	40	M8	2.5	101	45	5
BS-U1-K-76 FT	70-76	25	82	40	M8	2.5	108	45	5
BS-U1-K-82 FT	76-82	25	88	40	M8	2.5	114	45	5
BS-U1-K-90 FT	82-90	27	97	40	M8	3	124	45	5
BS-U1-K-100 FT	90-100	27	107	40	M8	3	134	45	5





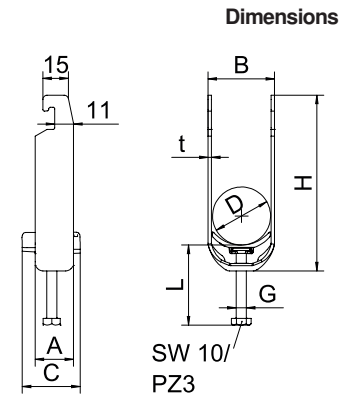
### Clamp clip 2056 U-foot, 2-fold, plastic pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U2-K-12 FT	8-12	50	3.150	1186703
BS-U2-K-16 FT	12-16	50	3.600	1186710
BS-U2-K-22 FT	16-22	50	4.950	1186717
BS-U2-K-28 FT	22-28	50	6.940	1186723
BS-U2-K-34 FT	28-34	50	9.500	1186730
BS-U2-K-40 FT	34-40	50	11.350	1186737
BS-U2-K-46 FT	40-46	50	11.350	1186743
BS-U2-K-52 FT	46-52	50	15.050	1186750
BS-U2-K-58 FT	52-58	50	19.800	1186757



Clamp clip with U-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U2-K-12 FT	8-12	22.5	17	34	M6	1.5	57	35	3
BS-U2-K-16 FT	12-16	22.5	20	34	M6	1.5	65	35	3
BS-U2-K-22 FT	16-22	22.5	27	34	M6	1.5	78	35	3
BS-U2-K-28 FT	22-28	22.5	33	34	M6	2	90	47	3
BS-U2-K-34 FT	28-34	22.5	39	34	M6	2	103	47	3
BS-U2-K-40 FT	34-40	22.5	45	34	M6	2	116	47	3
BS-U2-K-46 FT	40-46	25	51	40	M8	2	128	45	5
BS-U2-K-52 FT	46-52	25	57	40	M8	2	141	32	5
BS-U2-K-58 FT	52-58	25	64	40	M8	2.5	153	45	5



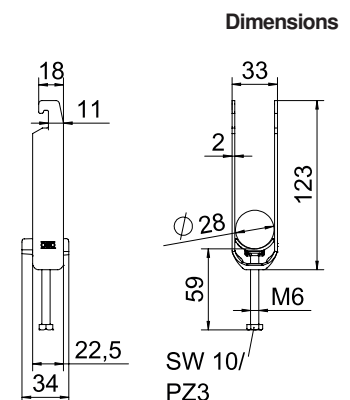
### Clamp clip 2056 U-foot, 3-fold, plastic pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U3-K-12 FT	8-12	50	4.750	1186704
BS-U3-K-16 FT	12-16	50	4.850	1186711
BS-U3-K-22 FT	16-22	50	6.600	1186718
BS-U3-K-28 FT	22-28	50	10.500	1186724
BS-U3-K-34 FT	28-34	50	13.250	1186731
BS-U3-K-40 FT	34-40	50	14.400	1186738
BS-U3-K-46 FT	40-46	50	18.950	1186744



Clamp clip with U-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 3 single cables on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U3-K-12 FT	8-12	22.5	17	34	M6	1.5	74	47	3
BS-U3-K-16 FT	12-16	22.5	20	34	M6	1.5	84	47	3
BS-U3-K-22 FT	16-22	22.5	27	34	M6	1.5	105	47	3
BS-U3-K-28 FT	22-28	22.5	33	34	M6	2	123	59	3
BS-U3-K-34 FT	28-34	22.5	39	34	M6	2	142	59	3
BS-U3-K-40 FT	34-40	22.5	45	34	M6	2	161	59	3
BS-U3-K-46 FT	40-46	25	51	40	M8	2	179	72	5



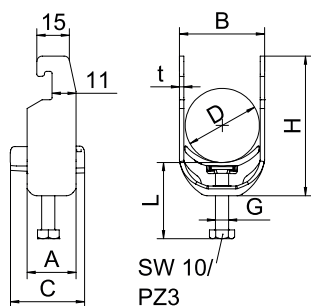
## Clamp clip 2056 U-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U1-K-12 A2	8-12	50	3.000	1186802
BS-U1-K-16 A2	12-16	50	3.200	1186809
BS-U1-K-22 A2	16-22	50	3.800	1186816
BS-U1-K-28 A2	22-28	50	5.350	1186822
BS-U1-K-34 A2	28-34	50	7.200	1186829
BS-U1-K-40 A2	34-40	25	8.100	1186836
BS-U1-K-46 A2	40-46	25	9.900	1186842
BS-U1-K-52 A2	46-52	25	11.200	1186849
BS-U1-K-58 A2	52-58	25	13.400	1186856
BS-U1-K-64 A2	58-64	15	14.300	1186862
BS-U1-K-70 A2	64-70	15	20.500	1186869
BS-U1-K-76 A2	70-76	10	19.100	1186876

Clamp clip with U-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U1-K-12 A2	8-12	22.5	17	34	M6	1.5	40	35	3
BS-U1-K-16 A2	12-16	22.5	20	34	M6	1.5	44	35	3
BS-U1-K-22 A2	16-22	22.5	27	34	M6	1.5	51	35	3
BS-U1-K-28 A2	22-28	22.5	33	34	M6	2	57	35	3
BS-U1-K-34 A2	28-34	22.5	39	34	M6	2	64	35	3
BS-U1-K-40 A2	34-40	22.5	45	34	M6	2	70	35	3
BS-U1-K-46 A2	40-46	25	51	40	M8	2	76	45	5
BS-U1-K-52 A2	46-52	25	57	40	M8	2	83	32	5
BS-U1-K-58 A2	52-58	25	64	40	M8	2.5	89	45	5
BS-U1-K-64 A2	58-64	25	70	40	M8	2.5	95	45	5
BS-U1-K-70 A2	64-70	25	76	40	M8	2.5	101	45	5
BS-U1-K-76 A2	70-76	25	82	40	M8	2.5	108	45	5



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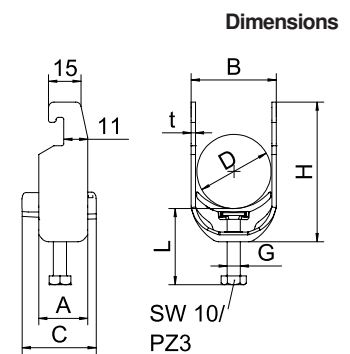
### Clamp clip 2056 U-foot, 1-fold, plastic pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-U1-K-12 ALU	8-12	50	1.100	1186902
BS-U1-K-16 ALU	12-16	50	1.200	1186909
BS-U1-K-22 ALU	16-22	50	1.350	1186916
BS-U1-K-28 ALU	22-28	50	1.950	1186922
BS-U1-K-34 ALU	28-34	50	2.550	1186929
BS-U1-K-40 ALU	34-40	50	2.800	1186936
BS-U1-K-46 ALU	40-46	50	3.600	1186942
BS-U1-K-52 ALU	46-52	50	3.950	1186949
BS-U1-K-58 ALU	52-58	50	4.900	1186956
BS-U1-K-64 ALU	58-64	50	5.250	1186962
BS-U1-K-70 ALU	64-70	50	5.600	1186969
BS-U1-K-76 ALU	70-76	50	7.050	1186976



Clamp clip with U-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For slot width 18–22 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-U1-K-12 ALU	8-12	22.5	17	34	M6	1.5	40	35	2
BS-U1-K-16 ALU	12-16	22.5	20	34	M6	1.5	44	35	2
BS-U1-K-22 ALU	16-22	22.5	27	34	M6	1.5	51	35	2
BS-U1-K-28 ALU	22-28	22.5	33	34	M6	2	57	35	2
BS-U1-K-34 ALU	28-34	22.5	39	34	M6	2	64	35	2
BS-U1-K-40 ALU	34-40	22.5	45	34	M6	2	70	35	2
BS-U1-K-46 ALU	40-46	25	51	40	M8	2	76	45	2
BS-U1-K-52 ALU	46-52	25	57	40	M8	2	83	32	2
BS-U1-K-58 ALU	52-58	25	64	89	M8	2.5	89	45	2
BS-U1-K-64 ALU	58-64	25	70	40	M8	2.5	95	45	2
BS-U1-K-70 ALU	64-70	25	76	101	M8	2.5	101	45	2
BS-U1-K-76 ALU	70-76	25	82	40	M8	2.5	108	45	2



### Clamp clips, fastening to flat iron

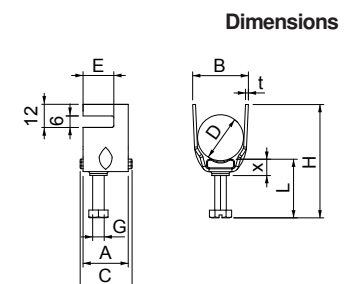
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### Clamp clips, BBS clip for flat iron

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
2056F 29 FT	22-29	100	3.200	1171895

Suitable for flat, angular and U irons of 4–12 mm material thickness. Clip and bolt made of hot-dip galvanised steel. Polypropylene pressure sleeve, halogen-free, colour light grey RAL 7035.



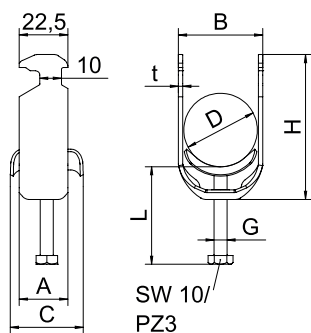
## Clamp clip 2056 H-foot, 1-fold, metal pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H1-M-12 FT	8-12	100	3.200	1186002
BS-H1-M-16 FT	12-16	100	3.500	1186009
BS-H1-M-22 FT	16-22	100	4.400	1186016
BS-H1-M-28 FT	22-28	100	6.100	1186022
BS-H1-M-34 FT	28-34	100	7.700	1186029
BS-H1-M-40 FT	34-40	100	8.600	1186036
BS-H1-M-46 FT	40-46	100	9.600	1186042
BS-H1-M-52 FT	46-52	100	10.400	1186049
BS-H1-M-58 FT	52-58	100	13.100	1186056
BS-H1-M-64 FT	58-64	100	14.500	1186062
BS-H1-M-70 FT	64-70	50	16.100	1186069
BS-H1-M-76 FT	70-76	25	18.300	1186076
BS-H1-M-82 FT	76-82	25	19.100	1186082
BS-H1-M-90 FT	82-90	25	23.300	1186089
BS-H1-M-100 FT	90-100	25	24.500	1186097

Clamp clip with hammerhead foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. The counter-sleeve must be ordered separately.

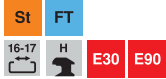
### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H1-M-12 FT	8-12	22,5	17	28	M6	1,5	42	34	3
BS-H1-M-16 FT	12-16	22,5	20	28	M6	1,5	46	34	3
BS-H1-M-22 FT	16-22	22,5	27	28	M6	1,5	52	34	3
BS-H1-M-28 FT	22-28	22,5	33	28	M6	2	59	34	3
BS-H1-M-34 FT	28-34	22,5	39	34	M6	2	67	45	3
BS-H1-M-40 FT	34-40	22,5	45	33	M6	2	74	46	3
BS-H1-M-46 FT	40-46	25	51	33	M8	2	82	43	5
BS-H1-M-52 FT	46-52	25	57	33	M8	2	89	43	5
BS-H1-M-58 FT	52-58	25	64	33	M8	2,5	96	43	5
BS-H1-M-64 FT	58-64	25	70	33	M8	2,5	102	43	5
BS-H1-M-70 FT	64-70	25	76	33	M8	2,5	109	43	5
BS-H1-M-76 FT	70-76	25	82	37	M8	2,5	115	55	5
BS-H1-M-82 FT	76-82	25	88	37	M8	2,5	122	55	5
BS-H1-M-90 FT	82-90	27	97	38	M8	3	132	55	5
BS-H1-M-100 FT	90-100	27	107	38	M8	3	143	55	5







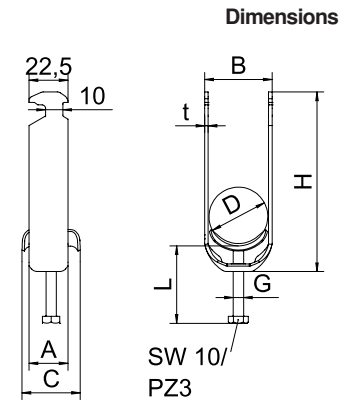
### Clamp clip 2056 H-foot, 2-fold, metal pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H2-M-12 FT	8-12	50	3.980	1186003
BS-H2-M-16 FT	12-16	50	4.750	1186010
BS-H2-M-22 FT	16-22	50	6.900	1186017
BS-H2-M-28 FT	22-28	50	7.800	1186023

Clamp clip with hammerhead foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H2-M-12 FT	8-12	22.5	17	28	M6	1.5	55	34	3
BS-H2-M-16 FT	12-16	22.5	20	28	M6	1.5	63	34	3
BS-H2-M-22 FT	16-22	22.5	27	28	M6	1.5	77	34	3
BS-H2-M-28 FT	22-28	22.5	33	28	M6	2	91	34	3



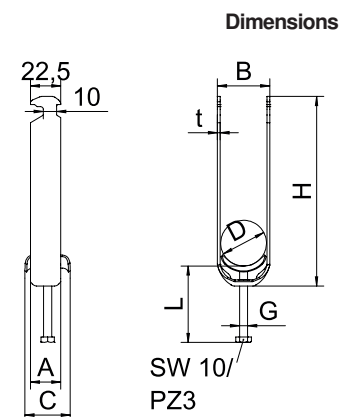
### Clamp clip 2056 H-foot, 3-fold, metal pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H3-M-12 FT	8-12	50	4.050	1186004
BS-H3-M-16 FT	12-16	50	5.800	1186012
BS-H3-M-22 FT	16-22	50	6.500	1186018
BS-H3-M-28 FT	22-28	50	9.500	1186024

Clamp clip with hammerhead foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 3 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H3-M-12 FT	8-12	22.5	17	28	M6	1.5	68	46	3
BS-H3-M-16 FT	12-16	22.5	20	28	M8	1.5	81	46	3
BS-H3-M-22 FT	16-22	22.5	27	28	M6	1.5	101	34	3
BS-H3-M-28 FT	22-28	22.5	33	28	M6	2	121	34	3



## Clamp clip 2056 H-foot, 1-fold, metal pressure sleeve

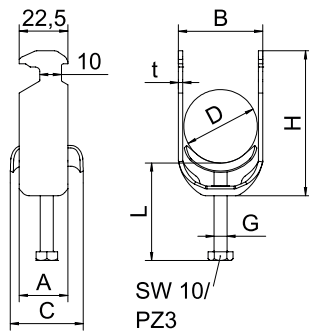
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Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H1-M-12 A2	8-12	50	3.200	1186102
BS-H1-M-16 A2	12-16	50	3.500	1186109
BS-H1-M-22 A2	16-22	50	4.400	1186116
BS-H1-M-28 A2	22-28	25	6.100	1186122
BS-H1-M-52 A2	46-52	25	10.400	1186149
BS-H1-M-58 A2	52-58	15	13.100	1186156
BS-H1-M-34 A2	28-34	25	7.700	1186129
BS-H1-M-40 A2	34-40	25	8.600	1186136
BS-H1-M-46 A2	40-46	25	9.600	1186142
BS-H1-M-64 A2	58-64	15	14.500	1186162
BS-H1-M-70 A2	64-70	15	16.100	1186169
BS-H1-M-76 A2	70-76	10	18.300	1186176

Clamp clip with hammerhead foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H1-M-12 A2	8-12	22.5	17	28	M6	1.5	42	34	3
BS-H1-M-16 A2	12-16	22.5	20	28	M6	1.5	46	34	3
BS-H1-M-22 A2	16-22	22.5	27	28	M6	1.5	52	34	3
BS-H1-M-28 A2	22-28	22.5	33	28	M6	2	59	34	3
BS-H1-M-52 A2	46-52	25	57	33	M8	2	89	43	5
BS-H1-M-58 A2	52-58	25	64	33	M8	2.5	96	43	5
BS-H1-M-34 A2	28-34	22.5	39	34	M6	2	67	45	3
BS-H1-M-40 A2	34-40	22.5	45	33	M6	2	74	46	3
BS-H1-M-46 A2	40-46	25	51	33	M8	2	82	43	5
BS-H1-M-64 A2	58-64	25	70	33	M8	2.5	102	43	5
BS-H1-M-70 A2	64-70	25	76	33	M8	2.5	109	43	5
BS-H1-M-76 A2	70-76	25	82	37	M8	2.5	115	55	5





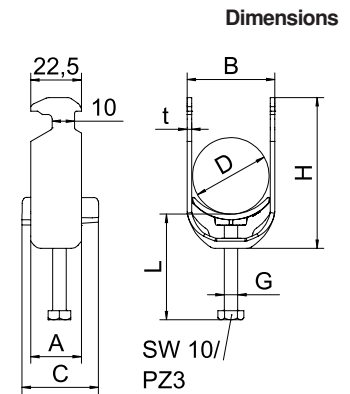
## Clamp clip 2056 H-foot, 1-fold, plastic pressure sleeve

Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H1-K-12 FT	8-12	100	3.540	1186202
BS-H1-K-16 FT	12-16	100	3.820	1186209
BS-H1-K-22 FT	16-22	100	4.508	1186216
BS-H1-K-28 FT	22-28	100	6.240	1186222
BS-H1-K-34 FT	28-34	100	7.680	1186229
BS-H1-K-40 FT	34-40	100	8.260	1186236
BS-H1-K-46 FT	40-46	100	10.900	1186242
BS-H1-K-52 FT	46-52	100	11.900	1186249
BS-H1-K-58 FT	52-58	100	14.300	1186256
BS-H1-K-64 FT	58-64	100	15.600	1186262
BS-H1-K-70 FT	64-70	50	18.200	1186269
BS-H1-K-90 FT	82-90	25	26.200	1186289
BS-H1-K-76 FT	70-76	25	20.600	1186276
BS-H1-K-82 FT	76-82	25	22.000	1186282
BS-H1-K-100 FT	90-100	25	27.800	1186297



Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H1-K-12 FT	8-12	22,5	17	34	M6	1,5	42	35	3
BS-H1-K-16 FT	12-16	22,5	20	34	M6	1,5	46	35	3
BS-H1-K-22 FT	16-22	22,5	27	34	M6	1,5	52	35	3
BS-H1-K-28 FT	22-28	22,5	33	34	M6	2	59	35	3
BS-H1-K-34 FT	28-34	22,5	39	34	M6	2	67	47	3
BS-H1-K-40 FT	34-40	22,5	45	34	M6	2	74	47	3
BS-H1-K-46 FT	40-46	25	51	40	M8	2	82	45	5
BS-H1-K-52 FT	46-52	25	57	40	M8	2	89	46	5
BS-H1-K-58 FT	52-58	25	64	40	M8	2,5	96	46	5
BS-H1-K-64 FT	58-64	25	70	40	M8	2,5	102	45	5
BS-H1-K-70 FT	64-70	25	76	40	M8	2,5	109	46	5
BS-H1-K-90 FT	82-90	27	97	40	M8	3	132	58	5
BS-H1-K-76 FT	70-76	25	82	40	M8	2,5	115	58	5
BS-H1-K-82 FT	76-82	25	88	40	M8	2,5	122	58	5
BS-H1-K-100 FT	90-100	27	107	40	M8	3	143	58	5



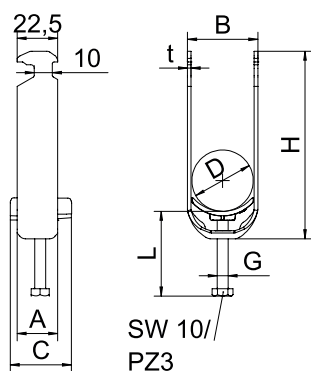
## Clamp clip 2056 H-foot, 2-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H2-K-12 FT	8-12	50	4.100	1186203
BS-H2-K-16 FT	12-16	50	4.650	1186210
BS-H2-K-22 FT	16-22	50	5.120	1186217
BS-H2-K-28 FT	22-28	50	7.700	1186223
BS-H2-K-34 FT	28-34	50	10.200	1186230
BS-H2-K-40 FT	34-40	50	11.450	1186237
BS-H2-K-46 FT	40-46	50	14.900	1186243
BS-H2-K-52 FT	46-52	50	11.900	1186250
BS-H2-K-58 FT	52-58	50	21.400	1186257
BS-H2-K-64 FT	58-64	50	24.250	1186263

Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H2-K-12 FT	8-12	22.5	17	34	M6	1.5	55	35	3
BS-H2-K-16 FT	12-16	22.5	20	34	M6	1.5	63	35	3
BS-H2-K-22 FT	16-22	22.5	27	34	M6	1.5	77	35	3
BS-H2-K-28 FT	22-28	22.5	33	34	M6	2	91	35	3
BS-H2-K-34 FT	28-34	22.5	39	34	M6	2	104	47	3
BS-H2-K-40 FT	34-40	22.5	45	34	M6	2	118	47	3
BS-H2-K-46 FT	40-46	25	51	40	M8	2	132	57	5
BS-H2-K-52 FT	46-52	25	57	40	M8	2	146	57	5
BS-H2-K-58 FT	52-58	25	64	40	M8	2.5	159	57	5
BS-H2-K-64 FT	58-64	25	70	40	M8	2.5	172	58	5





### Clamp clip 2056 H-foot, 3-fold, plastic pressure sleeve

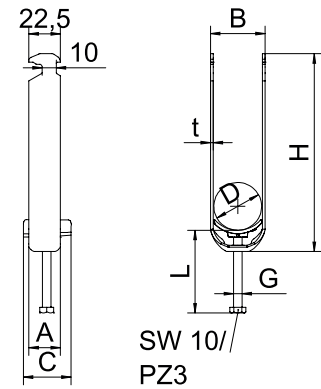
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H3-K-12 FT	8-12	50	4.900	1186204
BS-H3-K-16 FT	12-16	50	6.200	1186211
BS-H3-K-22 FT	16-22	50	7.100	1186218
BS-H3-K-28 FT	22-28	50	10.650	1186224
BS-H3-K-34 FT	28-34	50	13.100	1186231
BS-H3-K-40 FT	34-40	50	14.350	1186238
BS-H3-K-46 FT	40-46	25	19.800	1186244



Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 3 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H3-K-12 FT	8-12	22.5	17	34	M6	1.5	68	47	3
BS-H3-K-16 FT	12-16	22.5	20	34	M6	1.5	81	35	3
BS-H3-K-22 FT	16-22	22.5	27	34	M6	1.5	101	35	3
BS-H3-K-28 FT	22-28	22.5	33	34	M6	2	121	35	3
BS-H3-K-34 FT	28-34	22.5	39	34	M6	2	141	47	3
BS-H3-K-40 FT	34-40	22.5	45	34	M6	2	161	59	3
BS-H3-K-46 FT	40-46	25	51	40	M8	2	182	72	5

#### Dimensions



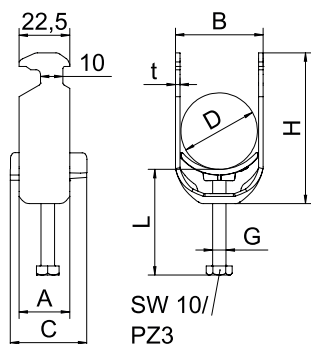
## Clamp clip 2056 H-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H1-K-12 A2	8-12	50	3.300	1186302
BS-H1-K-16 A2	12-16	50	3.600	1186309
BS-H1-K-22 A2	16-22	50	4.200	1186316
BS-H1-K-28 A2	22-28	50	6.500	1186322
BS-H1-K-34 A2	28-34	50	7.400	1186329
BS-H1-K-40 A2	34-40	25	8.000	1186336
BS-H1-K-46 A2	40-46	25	10.900	1186342
BS-H1-K-52 A2	46-52	25	11.400	1186349
BS-H1-K-58 A2	52-58	25	14.500	1186356
BS-H1-K-64 A2	58-64	15	15.600	1186362
BS-H1-K-70 A2	64-70	15	18.200	1186369
BS-H1-K-76 A2	70-76	10	20.800	1186376

Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H1-K-12 A2	8-12	22,5	17	34	M6	1,5	42	35	3
BS-H1-K-16 A2	12-16	22,5	20	34	M6	1,5	46	35	3
BS-H1-K-22 A2	16-22	22,5	27	34	M6	1,5	52	35	3
BS-H1-K-28 A2	22-28	22,5	33	34	M6	2	59	35	3
BS-H1-K-34 A2	28-34	22,5	39	34	M6	2	67	47	3
BS-H1-K-40 A2	34-40	22,5	45	34	M6	2	75	47	3
BS-H1-K-46 A2	40-46	25	51	40	M8	2	82	45	5
BS-H1-K-52 A2	46-52	25	51	40	M8	2	89	46	5
BS-H1-K-58 A2	52-58	25	64	40	M8	2,5	96	46	5
BS-H1-K-64 A2	58-64	25	70	40	M8	2,5	102	45	5
BS-H1-K-70 A2	64-70	25	76	40	M8	2,5	109	46	5
BS-H1-K-76 A2	70-76	25	82	40	M8	2,5	115	58	5







## Clamp clip 2056 H-foot, 2-fold, plastic pressure sleeve

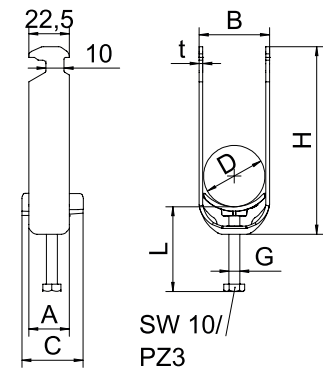
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H2-K-16 A2	12-16	50	4.650	1186310
BS-H2-K-22 A2	16-22	50	5.150	1186317
BS-H2-K-28 A2	16-22	50	7.700	1186323
BS-H2-K-34 A2	28-34	50	10.200	1186330
BS-H2-K-40 A2	34-40	25	14.350	1186337
BS-H2-K-46 A2	40-46	25	14.950	1186343
BS-H2-K-52 A2	46-52	25	16.700	1186350
BS-H2-K-58 A2	52-58	25	21.400	1186357
BS-H2-K-64 A2	58-64	15	24.250	1186363



Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H2-K-16 A2	12-16	22.5	20	34	M6	1.5	63	35	3
BS-H2-K-22 A2	16-22	22.5	27	34	M6	1.5	77	35	3
BS-H2-K-28 A2	16-22	22.5	33	34	M6	2	91	35	3
BS-H2-K-34 A2	28-34	22.5	39	34	M6	2	104	47	3
BS-H2-K-40 A2	34-40	22.5	45	34	M6	2	118	47	3
BS-H2-K-46 A2	40-46	25	51	40	M8	2	132	57	5
BS-H2-K-52 A2	46-52	25	57	40	M8	2	146	57	5
BS-H2-K-58 A2	52-58	25	64	40	M8	2.5	159	57	5
BS-H2-K-64 A2	58-64	25	70	40	M8	2.5	172	58	5

## Dimensions



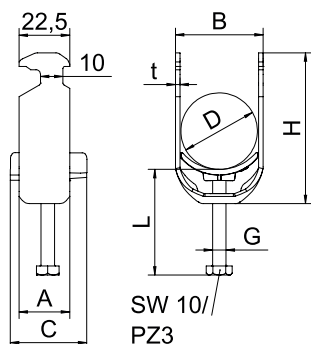
## Clamp clip 2056 H-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H1-K-12 ALU	8-12	100	0.750	1186402
BS-H1-K-16 ALU	12-16	100	0.900	1186409
BS-H1-K-22 ALU	16-22	100	1.050	1186416
BS-H1-K-28 ALU	22-28	100	1.500	1186422
BS-H1-K-34 ALU	28-34	100	2.300	1186429
BS-H1-K-40 ALU	34-40	100	2.700	1186436
BS-H1-K-46 ALU	40-46	100	3.600	1186442
BS-H1-K-52 ALU	46-52	100	3.900	1186449
BS-H1-K-58 ALU	52-58	50	4.200	1186456
BS-H1-K-64 ALU	58-64	50	4.500	1186462
BS-H1-K-70 ALU	64-70	50	5.400	1186469
BS-H1-K-76 ALU	70-76	25	5.850	1186476

Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H1-K-12 ALU	8-12	22.5	17	34	M6	1.5	42	35	2
BS-H1-K-16 ALU	12-16	22.5	20	34	M6	1.5	46	35	2
BS-H1-K-22 ALU	16-22	22.5	27	34	M6	1.5	52	35	2
BS-H1-K-28 ALU	22-28	22.5	33	34	M6	2	59	35	2
BS-H1-K-34 ALU	28-34	22.5	39	34	M6	2	67	47	2
BS-H1-K-40 ALU	34-40	22.5	45	34	M6	2	74	47	2
BS-H1-K-46 ALU	40-46	25	51	40	M8	2	82	45	2
BS-H1-K-52 ALU	46-52	25	57	40	M8	2	89	46	2
BS-H1-K-58 ALU	52-58	25	64	40	M8	2.5	96	46	2
BS-H1-K-64 ALU	58-64	25	70	40	M8	2.5	102	45	2
BS-H1-K-70 ALU	64-70	25	76	40	M8	2.5	109	46	2
BS-H1-K-76 ALU	70-76	25	82	40	M8	2.5	115	58	2





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### Clamp clip 2056 H-foot, 2-fold, plastic pressure sleeve

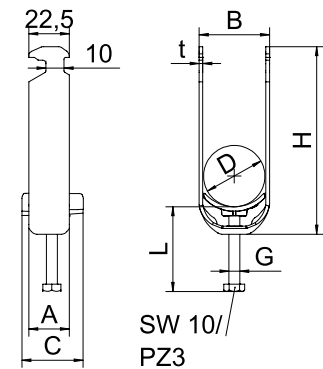
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H2-K-12 ALU	8-12	50	1.000	1186403
BS-H2-K-16 ALU	12-16	50	1.250	1186410
BS-H2-K-22 ALU	16-22	50	1.500	1186417
BS-H2-K-28 ALU	22-28	50	2.000	1186423
BS-H2-K-34 ALU	28-34	50	3.200	1186430
BS-H2-K-40 ALU	34-40	50	3.750	1186437
BS-H2-K-46 ALU	40-46	50	4.850	1186443
BS-H2-K-52 ALU	46-52	50	5.300	1186450
BS-H2-K-58 ALU	52-58	50	6.000	1186457



Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H2-K-12 ALU	8-12	22.5	17	34	M6	1.5	55	35	2
BS-H2-K-16 ALU	12-16	22.5	20	34	M6	1.5	63	35	2
BS-H2-K-22 ALU	16-22	22.5	27	34	M6	1.5	77	35	2
BS-H2-K-28 ALU	22-28	22.5	33	34	M6	2	91	35	2
BS-H2-K-34 ALU	28-34	22.5	36	34	M6	2	104	47	2
BS-H2-K-40 ALU	34-40	22.5	45	34	M6	2	118	47	2
BS-H2-K-46 ALU	40-46	25	51	40	M8	2	132	57	2
BS-H2-K-52 ALU	46-52	25	57	40	M8	2	89	57	2
BS-H2-K-58 ALU	52-58	25	64	40	M8	2.5	159	57	2

#### Dimensions



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### Clamp clip 2056 H-foot, 3-fold, plastic pressure sleeve

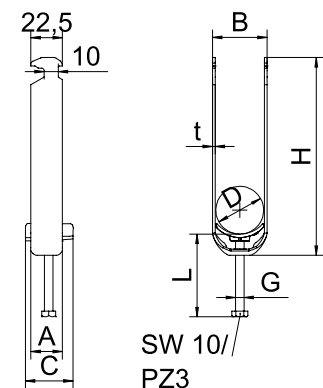
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-H3-K-22 ALU	16-22	50	2.050	1186418
BS-H3-K-28 ALU	22-28	50	2.900	1186424
BS-H3-K-34 ALU	28-34	50	4.200	1186431



Clamp clip with hammerhead foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 3 single cables on a C-profile rail. For a slot width 16–17 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

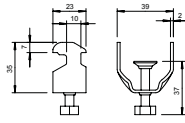
Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-H3-K-22 ALU	16-22	22.5	27	34	M6	1.5	101	35	2
BS-H3-K-28 ALU	22-28	22.5	33	34	M6	2	121	35	2
BS-H3-K-34 ALU	28-34	22.5	39	34	M6	2	141	47	2

#### Dimensions



# Clamp clip H-foot

## Clamp clip, fastening earthing strips



Type	For rail with slot width mm	Max. torque Nm	Pack Piece	Weight kg/100 pc.	Item no.
<b>2056 BE FT</b>	16-17	5	25	4.700	<b>1174053</b>

To fasten earthing strips with widths of up to 30 mm to profile rails, suitable for all C profile rails with 16–17 mm slot width.

# Clamp clip F-foot

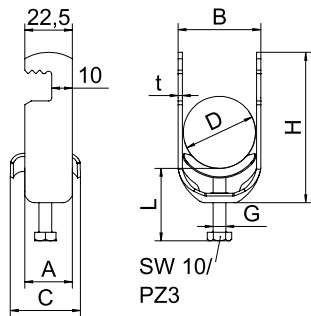
## Clamp clip 2056 F-foot, 1-fold, metal pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>BS-F1-M-12 FT</b>	8-12	100	3.700	<b>1187402</b>
<b>BS-F1-M-16 FT</b>	12-16	100	3.900	<b>1187408</b>
<b>BS-F1-M-22 FT</b>	16-22	100	4.550	<b>1187414</b>
<b>BS-F1-M-28 FT</b>	22-28	100	6.000	<b>1187420</b>
<b>BS-F1-M-34 FT</b>	28-34	100	8.000	<b>1187426</b>

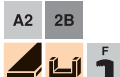
Clamp clip with F-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on flat bars. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
<b>BS-F1-M-12 FT</b>	8-12	22.5	17	28	M6	1.5	47	34	3
<b>BS-F1-M-16 FT</b>	12-16	22.5	20	28	M6	1.5	51	34	3
<b>BS-F1-M-22 FT</b>	16-22	22.5	27	28	M6	1.5	58	34	3
<b>BS-F1-M-28 FT</b>	22-28	22.5	33	28	M6	2	64	34	3
<b>BS-F1-M-34 FT</b>	28-34	22.5	39	34	M6	2	71	34	3





### Clamp clip 2056 F-foot, 1-fold, metal pressure sleeve

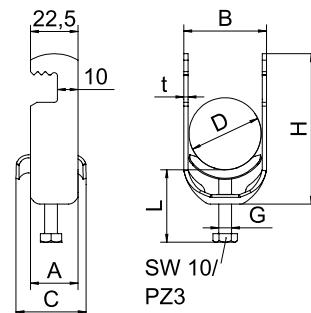
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-F1-M-28 A2	22-28	100	6.000	1187520
BS-F1-M-34 A2	28-34	100	8.000	1187526
BS-F1-M-40 A2	34-40	100	8.500	1187532

Clamp clip with F-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on flat bars. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-F1-M-28 A2	22-28	22.5	33	28	M6	2	64	34	3
BS-F1-M-34 A2	28-34	22.5	39	33	M6	2	71	34	3
BS-F1-M-40 A2	34-40	22.5	45	33	M6	2	77	34	3

Dimensions



### Clamp clip 2056 F-foot, 1-fold, plastic pressure sleeve

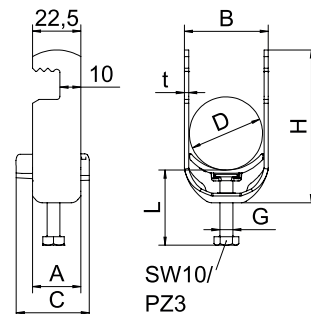
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-F1-K-12 FT	8-12	100	3.700	1187602
BS-F1-K-16 FT	12-16	100	3.900	1187608
BS-F1-K-22 FT	16-22	100	4.500	1187614
BS-F1-K-28 FT	22-28	100	6.000	1187620
BS-F1-K-34 FT	28-34	100	8.740	1187626
BS-F1-K-40 FT	34-40	100	8.500	1187632
BS-F1-K-46 FT	40-46	100	10.600	1187638
BS-F1-K-52 FT	46-52	100	11.700	1187644
BS-F1-K-58 FT	52-58	50	13.050	1187650
BS-F1-K-64 FT	58-64	50	14.800	1187656

Clamp clip with F-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on flat bars. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-F1-K-12 FT	8-12	22.5	17	34	M6	1.5	47	35	3
BS-F1-K-16 FT	12-16	22.5	20	34	M6	1.5	51	35	3
BS-F1-K-22 FT	16-22	22.5	27	34	M6	1.5	58	35	3
BS-F1-K-28 FT	22-28	22.5	33	34	M6	2	64	35	3
BS-F1-K-34 FT	28-34	22.5	39	34	M6	2	71	35	3
BS-F1-K-40 FT	34-40	22.5	45	34	M6	2	77	35	3
BS-F1-K-46 FT	40-46	25	51	40	M8	2	83	45	5
BS-F1-K-52 FT	46-52	25	57	40	M8	2	90	35	5
BS-F1-K-58 FT	52-58	25	64	40	M8	2.5	96	45	5
BS-F1-K-64 FT	58-64	25	70	40	M8	2.5	102	45	5

Dimensions



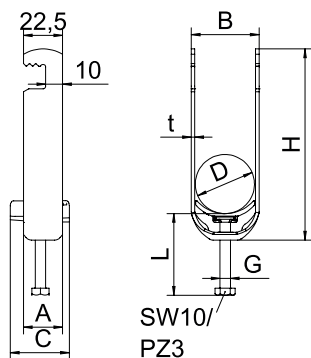
## Clamp clip 2056 F-foot, 2-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-F2-K-12 FT	8-12	50	4.250	1187603
BS-F2-K-16 FT	12-16	50	4.550	1187609
BS-F2-K-22 FT	16-22	50	5.200	1187615
BS-F2-K-28 FT	22-28	50	7.900	1187621
BS-F2-K-34 FT	28-34	50	9.900	1187627
BS-F2-K-40 FT	34-40	50	10.672	1187633
BS-F2-K-46 FT	40-46	50	12.050	1187639
BS-F2-K-52 FT	46-52	50	16.600	1187645

Clamp clip with F-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on flat bars. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-F2-K-12 FT	8-12	22,5	17	34	M6	1,5	64	34	3
BS-F2-K-16 FT	12-16	22,5	20	34	M6	1,5	72	35	3
BS-F2-K-22 FT	16-22	22,5	27	34	M6	1,5	85	45	3
BS-F2-K-28 FT	22-28	22,5	33	34	M6	2	97	47	3
BS-F2-K-34 FT	28-34	22,5	39	34	M6	2	110	47	3
BS-F2-K-40 FT	34-40	22,5	45	34	M6	2	123	47	3
BS-F2-K-46 FT	40-46	25	51	40	M8	2	135	45	5
BS-F2-K-52 FT	46-52	25	57	40	M8	2	148	45	5







## Clamp clip 2056 W-foot, 1-fold, plastic pressure sleeve

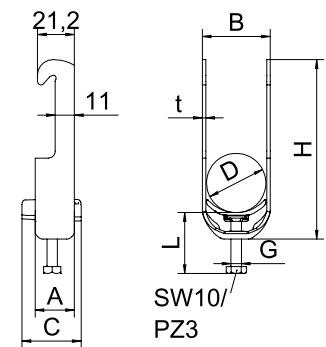
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-W1-K-12 FT	8-12	100	4.450	1187702
BS-W1-K-16 FT	12-16	100	4.890	1187708
BS-W1-K-22 FT	16-22	100	5.700	1187714
BS-W1-K-28 FT	22-28	100	7.800	1187720
BS-W1-K-34 FT	28-34	100	9.400	1187726
BS-W1-K-40 FT	34-40	100	10.000	1187732
BS-W1-K-46 FT	40-46	100	12.800	1187738
BS-W1-K-52 FT	46-52	100	13.600	1187744
BS-W1-K-58 FT	52-58	50	17.100	1187750
BS-W1-K-64 FT	58-64	50	18.600	1187756
BS-W1-K-70 FT	64-70	50	18.500	1187762



Clamp clip with W-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on angle irons < 40 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-W1-K-12 FT	8-12	22.5	17	34	M6	1.5	80	35	3
BS-W1-K-16 FT	12-16	22.5	20	34	M6	1.5	84	35	3
BS-W1-K-22 FT	16-22	22.5	27	34	M6	1.5	91	35	3
BS-W1-K-28 FT	22-28	22.5	33	34	M6	2	97	35	3
BS-W1-K-34 FT	28-34	22.5	39	34	M6	2	103	35	3
BS-W1-K-40 FT	34-40	22.5	45	34	M6	2	109	35	3
BS-W1-K-46 FT	40-46	25	51	40	M8	2	115	45	5
BS-W1-K-52 FT	46-52	25	57	40	M8	2	122	45	5
BS-W1-K-58 FT	52-58	25	64	40	M8	2.5	128	45	5
BS-W1-K-64 FT	58-64	25	70	40	M8	2.5	134	45	5
BS-W1-K-70 FT	64-70	25	76	40	M8	2.5	140	46	5

## Dimensions



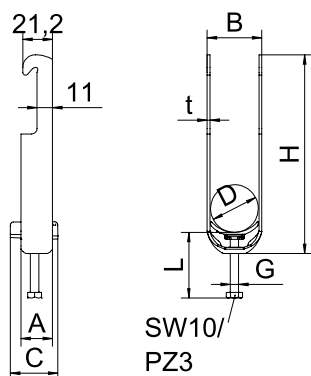
## Clamp clip 2056 W-foot, 2-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>BS-W2-K-16 FT</b>	12-16	50	7.050	<b>1187709</b>
<b>BS-W2-K-22 FT</b>	16-22	50	7.050	<b>1187715</b>
<b>BS-W2-K-28 FT</b>	22-28	50	10.350	<b>1187721</b>
<b>BS-W2-K-34 FT</b>	28-34	50	11.600	<b>1187727</b>
<b>BS-W2-K-40 FT</b>	34-40	25	12.700	<b>1187733</b>
<b>BS-W2-K-46 FT</b>	40-46	25	16.750	<b>1187739</b>
<b>BS-W2-K-52 FT</b>	46-52	25	18.200	<b>1187745</b>
<b>BS-W2-K-58 FT</b>	52-58	25	23.000	<b>1187751</b>

Clamp clip with W-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 2 single cables on angle irons < 40 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. Multiple cables should be separated by double sleeves. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
<b>BS-W2-K-16 FT</b>	12-16	22.5	20	34	M6	1.5	105	35	3
<b>BS-W2-K-22 FT</b>	16-22	22.5	27	34	M6	1.5	118	47	3
<b>BS-W2-K-28 FT</b>	22-28	22.5	33	34	M6	2	130	47	3
<b>BS-W2-K-34 FT</b>	28-34	22.5	39	34	M6	2	142	47	3
<b>BS-W2-K-40 FT</b>	34-40	22.5	45	34	M6	2	155	47	3
<b>BS-W2-K-46 FT</b>	40-46	25	51	40	M8	2	167	45	5
<b>BS-W2-K-52 FT</b>	46-52	25	57	40	M8	2	180	45	5
<b>BS-W2-K-58 FT</b>	52-58	25	64	40	M8	2.5	192	45	5

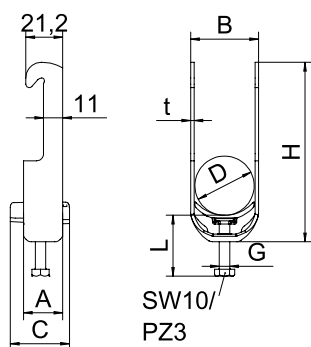
## Clamp clip 2056 W-foot, 1-fold, plastic pressure sleeve



Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>BS-W1-K-22 A2</b>	16-22	50	5.700	<b>1187814</b>
<b>BS-W1-K-28 A2</b>	22-28	50	7.800	<b>1187820</b>
<b>BS-W1-K-34 A2</b>	28-34	50	9.400	<b>1187826</b>
<b>BS-W1-K-40 A2</b>	34-40	25	10.000	<b>1187832</b>
<b>BS-W1-K-46 A2</b>	40-46	25	12.800	<b>1187838</b>
<b>BS-W1-K-52 A2</b>	46-52	25	13.600	<b>1187844</b>
<b>BS-W1-K-58 A2</b>	52-58	25	17.100	<b>1187850</b>

Clamp clip with W-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on angle irons < 40 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

### Dimensions



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
<b>BS-W1-K-22 A2</b>	16-22	22.5	27	34	M6	1.5	91	35	3
<b>BS-W1-K-28 A2</b>	22-28	22.5	33	34	M6	2	97	35	3
<b>BS-W1-K-34 A2</b>	28-34	22.5	39	34	M6	2	103	35	3
<b>BS-W1-K-40 A2</b>	34-40	22.5	45	34	M6	2	109	35	3
<b>BS-W1-K-46 A2</b>	40-46	25	51	40	M8	2	115	45	5
<b>BS-W1-K-52 A2</b>	46-52	25	57	40	M8	2	122	45	5
<b>BS-W1-K-58 A2</b>	52-58	25	64	40	M8	2.5	128	45	5





Alu



### Clamp clip 2056 W-foot, 1-fold, plastic pressure sleeve

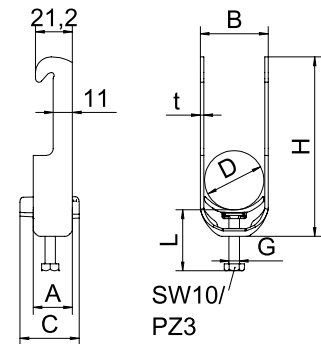
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-W1-K-22 ALU	16-22	50	1.900	1187914
BS-W1-K-28 ALU	22-28	50	2.550	1187920
BS-W1-K-34 ALU	28-34	50	3.200	1187926
BS-W1-K-40 ALU	34-40	50	3.500	1187932
BS-W1-K-46 ALU	40-46	50	4.550	1187938
BS-W1-K-52 ALU	46-52	50	4.800	1187944
BS-W1-K-58 ALU	52-58	50	5.850	1187950
BS-W1-K-64 ALU	58-64	50	6.450	1187956



Clamp clip with W-foot, plastic pressure sleeve made of polypropylene. For vertical and horizontal mounting of 1 single cable on angle irons < 40 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-W1-K-22 ALU	16-22	22.5	27	34	M6	1.5	91	35	3
BS-W1-K-28 ALU	22-28	22.5	33	34	M6	2	97	35	3
BS-W1-K-34 ALU	28-34	22.5	39	34	M6	2	103	35	3
BS-W1-K-40 ALU	34-40	22.5	45	34	M6	2	109	35	3
BS-W1-K-46 ALU	40-46	25	51	40	M8	2	115	45	5
BS-W1-K-52 ALU	46-52	25	57	40	M8	2	122	45	5
BS-W1-K-58 ALU	52-58	25	64	40	M8	2.5	128	45	5
BS-W1-K-64 ALU	58-64	25	70	40	M8	2.5	134	45	5

#### Dimensions



A2 2B



### Clamp clip 2056 W-foot, 1-fold, metal pressure sleeve

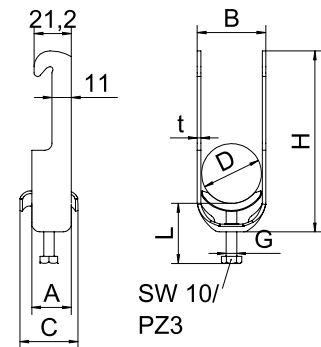
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
BS-W1-M-28 A2	22-28	100	7.800	1188020
BS-W1-M-34 A2	28-34	100	9.400	1188026
BS-W1-M-40 A2	34-40	100	10.000	1188032



Clamp clip with W-foot, metal pressure sleeve with rounded edges to protect the cable. For vertical and horizontal mounting of 1 single cable on angle irons < 40 mm. With 1-start screw thread on pressure sleeve, universal hexagonal screw head WAF10, with slot and cross recess. Suitable for assembly indoors and outdoors. We recommend the use of a counter-sleeve.

Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. C mm	Dim. G mm	Dim. t mm	Dim. H mm	Dim. L mm	Max. torque Nm
BS-W1-M-28 A2	22-28	22.5	33	28	M6	2	97	34	3
BS-W1-M-34 A2	28-34	22.5	39	34	M6	2	103	34	3
BS-W1-M-40 A2	34-40	22.5	45	33	M6	2	109	34	3

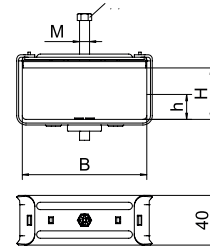
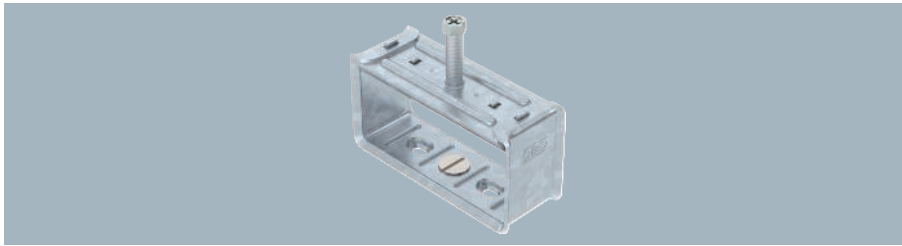
#### Dimensions



# Bundle clips

## Bundle clip

St FT  
16-17

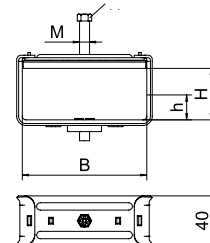
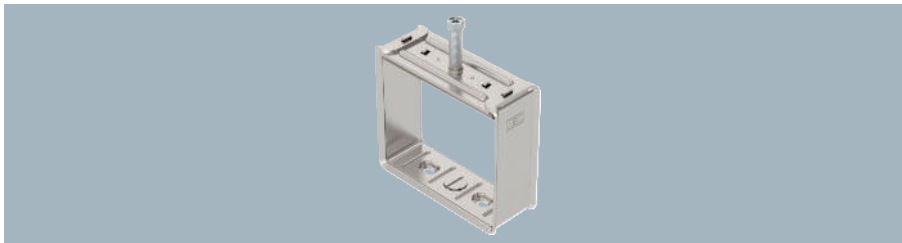


Type	Height x Width mm	Dim. h mm	Dim. H mm	Dim. B mm	Pack Piece	Weight kg/100 pc.	Item no.
2056 B 35 FT	35x50	20	35	50	100	16.000	1194054
2056 B 40 FT	40x100	15	40	100	50	32.700	1194046
2056 B 80 FT	80x100	55	80	100	25	38.300	1194089

Clip and bolt made of hot-dip galvanized steel, countersunk head bolt made of rustproof stainless steel, slide nut made of electrogalvanized stainless steel.

## Bundle clip

A2 2B  
16-17



Type	Height x Width mm	Dim. h mm	Dim. H mm	Dim. B mm	Pack Piece	Weight kg/100 pc.	Item no.
2056 B 80 A2	80x100	55	80	100	25	38.300	1194372

Clip and bolt made of hot-dip galvanized steel, countersunk head bolt made of rustproof stainless steel, slide nut made of electrogalvanized stainless steel.





### Clamp clip, hammer-head base, 3x single-wire connection

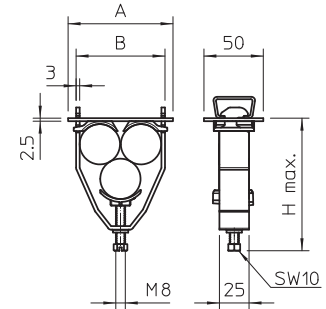
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
2056 E 31 FT	28-31	25	19.500	1174606
2056 E 37 FT	34-37	25	24.600	1174614
2056 E 44 FT	40-44	25	28.300	1174630

Clip element, bolt and lock plate made of hot-dip galvanised steel, pressure and counter-trough made of polypropylene, halogen-free, light grey RAL 7035. Delivered complete with lock plate and counter-troughs.



Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. H mm	Max. torque Nm
2056 E 31 FT	28-31	83	69	107	5
2056 E 37 FT	34-37	95	81	118	5
2056 E 44 FT	40-44	109	95	143	5

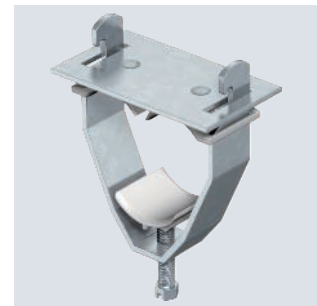
Dimensions



### Clamp clip, U base, 3x single-wire connection

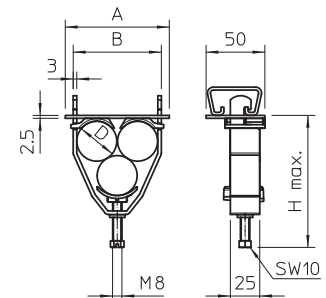
Type	Clamping range D mm	Pack Piece	Weight kg/100 pc.	Item no.
2056U-E28 FT	25-28	25	20.000	1174509
2056U-E31 FT	28-31	25	19.500	1174541
2056U-E34 FT	31-34	25	23.000	1174517
2056U-E37 FT	34-37	25	24.600	1174568
2056U-E40 FT	37-40	25	26.000	1174525
2056U-E44 FT	40-44	25	28.300	1174576

Clip element, bolt and lock plate made of hot-dip galvanised steel, pressure and counter-trough made of polypropylene, halogen-free, light grey RAL 7035. Delivered complete with lock plate and counter-troughs.

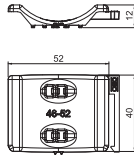
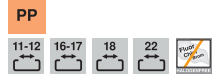


Type	Clamping range D mm	Dim. A mm	Dim. B mm	Dim. H mm	Max. torque Nm
2056U-E28 FT	25-28	77	63	101	5
2056U-E31 FT	28-31	83	69	107	5
2056U-E34 FT	31-34	89	75	112	5
2056U-E37 FT	34-37	95	81	118	5
2056U-E40 FT	37-40	101	87	123	5
2056U-E44 FT	40-44	109	95	143	5

Dimensions



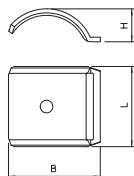
## Universal counter-trough, plastic



Type	Clamping range D mm	Dim. L mm	Dim. B mm	Dim. H mm	Colour	Shipping box Piece	Pack Piece	Item no.
2058UW 12 LGR	8-12	37	18.5	5.8	Light grey	1500	100	1198012
2058UW 16 LGR	12-16	37	21.5	5.8	Light grey	1600	100	1198016
2058UW 22 LGR	16-22	37	27.5	6.8	Light grey	1500	100	1198022
2058UW 28 LGR	22-28	37	33.5	8.3	Light grey	1200	100	1198028
2058UW 34 LGR	28-34	37	45.5	9.8	Light grey	1200	100	1198034
2058UW 40 LGR	34-40	37	45.5	10.8	Light grey	600	50	1198040
2058UW 46 LGR	40-46	40	51.5	11.8	Light grey	600	50	1198046
2058UW 52 LGR	46-52	40	57.5	11.8	Light grey	600	50	1198052
2058UW 58 LGR	52-58	40	63.5	11.8	Light grey	600	50	1198058
2058UW 64 LGR	58-64	40	69.5	11.8	Light grey	600	50	1198064
2058UW 70 LGR	64-70	40	75.5	12.3	Light grey	300	25	1198070
2058UW 76 LGR	70-76	40	81.5	12.3	Light grey	300	25	1198076
2058UW 82 LGR	76-82	40	87.5	12.3	Light grey	300	25	1198082
2058UW 90 LGR	82-90	40	96	12.8	Light grey	300	25	1198090
2058UW 100 LGR	90-100	40	106	12.8	Light grey	300	25	1198100

Regardless of the type of rail, the counter-trough can be used by applying it onto one side of the clamp clip. Due to an intelligent contour on the backside, the counter-trough can be combined to a double trough. Retrofitting possible without the need to dismantle.

## Counter-trough, metal, universal



Type	Clamping range D mm	Dim. L mm	Dim. B mm	Dim. H mm	Pack Piece	Weight kg/100 pc.	Item no.
2058FW M 12 DD	8-12	35	17.5	6.5	100	0.940	1199846
2058FW M 16 DD	12-16	35	21.5	7.7	100	1.100	1199854
2058FW M 22 DD	16-22	35	28	8.8	100	1.200	1199862
2058FW M 28 DD	22-28	35	34	10.4	100	1.400	1199870
2058FW M 34 DD	28-34	35	40	13.5	100	2.160	1199889
2058FW M 40 DD	34-40	35	46	15.1	100	2.490	1199897
2058FW M 46 DD	40-46	35	52	17.2	100	3.270	1199900
2058FW M 52 DD	46-52	35	58	19.2	50	3.460	1199919
2058FW M 58 DD	52-58	35	64	20.3	50	3.620	1199927
2058FW M 64 DD	58-64	35	70	22.4	50	4.280	1199935
2058FW M 70 DD	64-70	35	76	24.5	50	4.590	1199943
2058FW M 8 A2	4-8	35	13	2.25	100	0.249	1197096
2058FW M 12 A2	8-12	35	17.5	6.5	100	0.567	1197134
2058FW M 16 A2	12-16	35	21.5	7.7	100	0.770	1197177
2058FW M 22 A2	16-22	35	28	8.8	100	1.062	1197231
2058FW M 28 A2	22-28	35	34	10.4	100	1.356	1197290
2058FW M 34 A2	28-34	35	40	13.5	100	2.187	1197355
2058FW M 40 A2	34-40	35	46	15.1	100	2.576	1197428
2058FW M 46 A2	40-46	35	52	17.2	100	3.005	1197479
2058FW M 52 A2	46-52	35	58	19.2	50	3.425	1197533
2058FW M 58 A2	52-58	35	64	20.3	50	3.776	1197592
2058FW M 64 A2	58-64	35	70	24.5	50	4.203	1197606

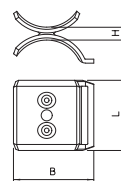
Metal counter-trough, for mounting on clamp clip. Can be used universally, irrespective of the rail.





<b>St</b>	<b>DD</b>
11-12 	16-17 
18 	22 

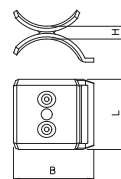
Type	Clamping range D mm	Dim. L mm	Dim. B mm	Dim. H mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>2058 M2 12 DD</b>	8-12	35	17.6	5.4	100	1.360	<b>1199706</b>
<b>2058 M2 16 DD</b>	12-16	35	21.5	5.4	50	1.800	<b>1199714</b>
<b>2058 M2 22 DD</b>	16-22	35	28	5.4	50	2.300	<b>1199722</b>
<b>2058 M2 28 DD</b>	22-28	35	34	5.4	50	3.100	<b>1199730</b>
<b>2058 M2 34 DD</b>	28-34	35	40	6.4	50	3.760	<b>1199749</b>
<b>2058 M2 40 DD</b>	34-40	35	46	6.4	50	5.600	<b>1199757</b>



Metallic double trough as intermediate layer between two or three cables within a clamp clip.

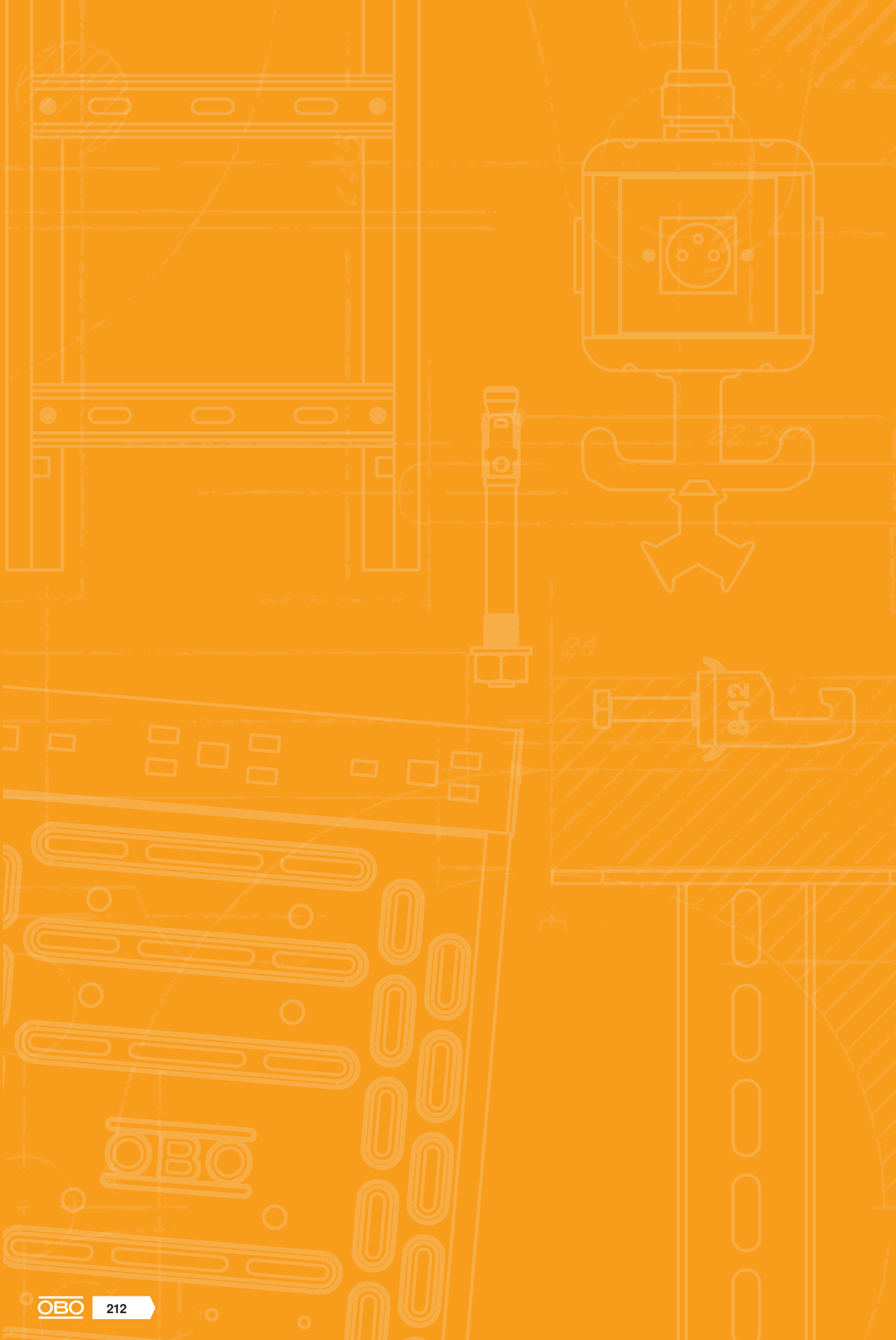
<b>A2</b>	<b>2B</b>
11-12 	16-17 
18 	22 

Type	Clamping range D mm	Dim. L mm	Dim. B mm	Dim. H mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>2058 M2 22 A2</b>	16-22	35	28	5.4	50	2.300	<b>1196597</b>
<b>2058 M2 28 A2</b>	22-28	35	34	5.4	50	3.100	<b>1196599</b>
<b>2058 M2 34 A2</b>	28-34	35	40	6.4	50	3.760	<b>1196601</b>







Metallic double trough as intermediate layer between two or three cables within a clamp clip.





# Mounting accessories

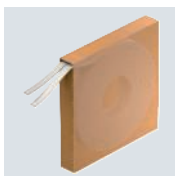
	Tightening straps	212
	Slotted steel straps	216
	Installation straps	218
	Tensioning wire	220



# Tightening strap

## SBR 8 tightening strap

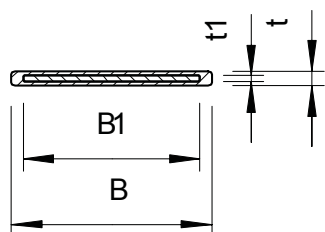
A2 K



Type	Avg. breaking load kN	Colour	Pack m	Weight kg/100 m	Item no.

Tightening strap made of rustproof steel with plastic jacketing to fasten cables on cable support systems.

### Dimensions



Type	Dim. B	Dim. t	Dimen- sion B1	Dim. t1
	mm	mm	mm	mm
SBR 8 A2K	9.3	1	8	0.3

## SBR 15 tightening strap

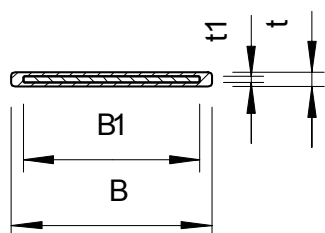
St A2 FSK K



Type	Avg. breaking load kN	Colour	Pack m	Weight kg/100 m	Item no.
SBR 15 A2K	4.19	Jet black	25	7.628	6490282

Tightening strap made of strip-galvanised steel with plastic jacketing to fasten cables on cable support systems.

### Dimensions

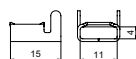


Type	Dim. B	Dim. t	Dimen- sion B1	Dim. t1
	mm	mm	mm	mm
SBR 15 FSK	17	1.2	15	0.5

# Tightening strap locks

## SBV 8 tightening strap lock

St A2 VA FS 2B



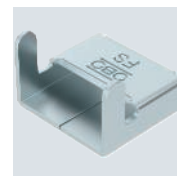
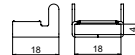
Type	Pack Piece	Weight kg/100 pc.	Item no.
SBV 8 A2	100	0.250	6490942
SBV 8 A4	100	0.250	6490944

Tightening strap lock made of strip-galvanised steel, suitable for portfolio with 8 mm width.

St A2 VA FS 2B

## SBV 15 tightening strap lock

Type	Pack Piece	Weight kg/100 pc.	Item no.
SBV 15 FS	100	0.560	6490950
SBV 15 A2	100	0.564	6490964
SBV 15 A4	100	0.560	6490972



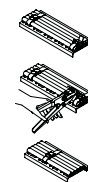
Tightening strap lock made of strip-galvanised steel, suitable for a range of products with a 15 mm width.

## Spring chucks

St

### Spring chuck

Type	Pack Piece	Weight kg/100 pc.	Item no.
575	1	29.700	6498019



Clamping tool for all OBO tightening straps in conjunction with appropriate tightening strap locks. Simple spring chuck without ratchet function and shortening unit. With ergonomically shaped grips.

St

### Spring chuck

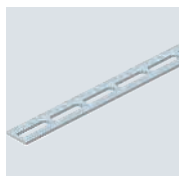
Type	Pack Piece	Weight kg/100 pc.	Item no.
576	1	132.000	6498027



Clamping tool for all OBO tightening straps in conjunction with appropriate tightening strap locks. With high clamping force, ratchet function, shortening unit and round grips for pleasant handling.



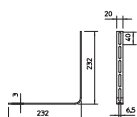
## Slotted steel strap in strips



Type	Dimension mm	Hole size mm	Length mm	Pack m	Weight kg/100 m	Item no.
OSS 20x3 3M FT	20x3	6,5x40	3000	60	35.000	1465767
OSS 30x3 3M FT	30x3	8,5x70	3000	30	53.600	1465805
OSS 40x4 3M FT	40x4	8,5x70	3000	30	101.000	1465821

Perforated slotted steel strap in strips.

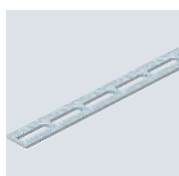
## Slotted steel strap, bent



Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
OSG 20X3 FT	20x3	25	15.800	6017371

Bent slotted steel strap for creation of bends and tees.

## Slotted steel strap, rings



Type	Dimension mm	Hole size mm	Pack m	Weight kg/100 m	Item no.
OSR 20x1.5 BK	20x1,5	5,5x40	200	18.000	1465600

In rings.

## Suspension chain



Type	Break load kN	Pack m	Weight kg/100 m	Item no.
K-C30 G	0.7	25	13.600	1488201

To suspend luminaire supports or other components.





## Mesh installation strip



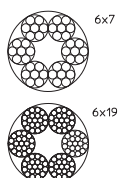
Type	Width mm	Thickness mm	Length m	Pack Piece	Weight kg/100 pc.	Item no.
<b>GB 1525 GR</b>	15	1.3	25	1	18.000	<b>1476980</b>

Tear-resistant and UV-stable fabric tape, universally applicable, e.g. to fix pipes and cables onto the floor, before screed laying using OBO anchors or nails.



## Steel wire tensioning rope

St G

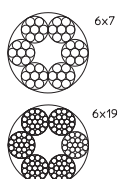


Type	Cable dia- meter mm	Break load kN	In rings m	Pack m	Weight kg/100 m	Item no.
957 2 G	2	2.35	50	50	1.430	5303202
957 3 G	3	5.29	50	50	3.220	5303206
957 4 G	4	9.41	50	50	5.720	5303214
957 5 G	5	14.7	50	50	8.940	5303222
957 6 G	6	21.1	50	50	12.900	5303230
957 8 G	8	34.8	50	50	22.900	5303257
957 10 G	10	54.4	50	50	35.700	5303265

Steel wire tensioning rope, galvanised with fibre inlay (hemp core).  
 Cable Ø 2–6 mm: round-stranded cable 6 x 7 according to DIN 3055.  
 Cable Ø 8–10 mm: round-stranded cable 6 x 19 according to DIN 3060.  
 Minimum break force 1770 N/mm<sup>2</sup>.

## Steel wire tensioning rope

VA 2B

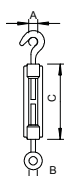


Type	Cable dia- meter mm	Break load kN	In rings m	Pack m	Weight kg/100 m	Item no.
957 2 A4	2	2.35	50	50	1.430	5303179
957 3 A4	3	5.29	50	50	3.220	5303182
957 4 A4	4	9.41	50	50	5.720	5303185
957 5 A4	5	14.7	50	50	8.940	5303188
957 6 A4	6	21.1	50	50	12.900	5303191
957 8 A4	8	34.8	50	50	22.900	5303194
957 10 A4	10	54.4	50	50	35.700	5303197

Cable Ø 2–6 mm: round-stranded cable 6 x 7 according to DIN 3055.  
 Cable Ø 8–10 mm: round-stranded cable 6 x 19 according to DIN 3060.  
 Minimum break force 1,770 N/mm<sup>2</sup>.

## Tension jack

St G

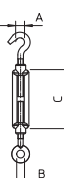


Type	Thread	Dim. A mm	Dim. B mm	Dim. C mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
945 M6 G	M6	9	8.5	110	2	5	8.642	5300037
945 M10 G	M10	14	13.5	125	5	5	33.650	5300053
945 M12 G	M12	16	15.5	125	7	5	53.000	5300061
945 M16 G	M16	22	19	170	8.5	5	84.000	5300088

With hook and eye, to DIN 1480.

## Tension jack

VA 2B



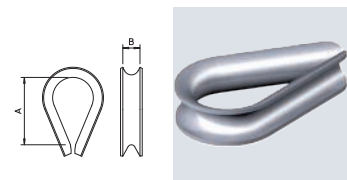
Type	Thread	Dim. A mm	Dim. B mm	Dim. C mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
945 M6 A4	M6	9	8.5	110	2	5	10.500	5300120
945 M10 A4	M10	14	13.5	125	5	5	28.000	5300124
945 M12 A4	M12	16	15.5	125	8	5	42.000	5300127
945 M16 A4	M16	22	19	170	10	5	100.000	5300132

With hook and eye, to DIN 1480.

St G FT

Type	For rope-Ø mm	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm			
946 3 G	3	23.5	3.5	25	0.210	5301033
946 4 G	4	28.5	5	25	0.390	5301041
946 5 G	5	30	6	25	0.660	5301009
946 6 G	6	33	7	25	0.840	5301068
946 8 G	8	39	9	10	1.880	5301084
946 10 FT	10	47.5	11	10	2.900	5301106

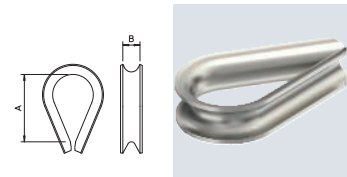
Cable eye stiffener to DIN 65457.



VA 2B

Type	For rope-Ø mm	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		A mm	B mm			
946 3 A4	3	23.5	3.5	25	0.210	5301170
946 4 A4	4	28.5	5	25	0.390	5301172
946 5 A4	5	30	6	25	0.660	5301174
946 6 A4	6	33	7	25	0.840	5301176
946 8 A4	8	39	9	10	1.880	5301180
946 10 A4	10	47.5	11	10	2.900	5301184

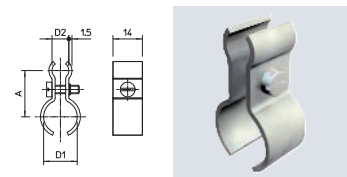
Cable eye stiffener to DIN 65457.



St G

Type	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
	D1 mm	D2 mm	A mm			
1020 11-16 G	11-16	4-9	22	50	1.420	1404164
1020 14-18 G	14-18	4-9	26	50	1.650	1404180
1020 18-28 G	19-28	4-9	34	50	2.000	1404288

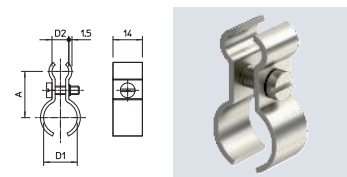
To fasten cables to tensioning cables. With bolt M4x13.



A4 2B

Type	Dim.			Pack Piece	Weight kg/100 pc.	Item no.
	D1 mm	D2 mm	A mm			
1020 11-16 A4	11-16	4-9	22	50	1.420	1404168
1020 14-18 A4	14-18	4-9	26	50	1.650	1404184
1020 18-28 A4	19-28	4-9	34	50	2.000	1404292

To fasten cables to tensioning cables. With V4A bolt M4x14.



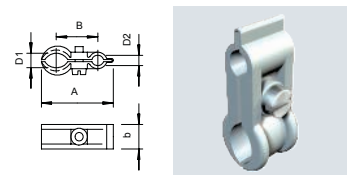
PS



Type	Dim.					Pack Piece	Weight kg/100 pc.	Item no.
	D1 mm	D2 mm	A mm	B mm	b mm			
4024 9-16	9-16	3-8	41	24	14	100	0.460	2305151
4024 16-23	16-23	5-10	55	31.5	15	50	0.930	2305232

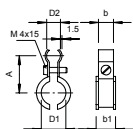
Bolt, steel, electrogalvanised, light grey.

### Tensioning wire clip, polystyrene



## Fix ISO tensioning wire clip

St FS

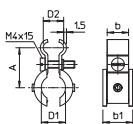


Type	Dim. D1 mm	Dim. D2 mm	Dim. A mm	Dim. b mm	Dim. b1 mm	Pack Piece	Weight kg/100 pc.	Item no.
4021 K 6-13	6-13	4-9	21.5	11.5	16	100	1.295	2307618
4021 K 9-16	9-16	4-9	26	14	18.3	100	1.457	2307634

Metal clip with plastic inlay, steel, strip galvanised, polyethylene inlays.

## Fix ISO tensioning wire clip

A4 2B

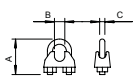


Type	Dim. D1 mm	Dim. D2 mm	Dim. A mm	Dim. b mm	Dim. b1 mm	Pack Piece	Weight kg/100 pc.	Item no.
4021 K 6-13 A4	6-13	4-9	21.5	11.5	16	100	1.295	2307622
4021 K 9-16 A4	9-16	4-9	26	14	18.3	100	1.457	2307638

The cable and pipe fastenings of the special system include cable ties, fastening straps and installation strips, with which cable and pipe installations can be fastened to cable support systems such as cable or mesh cable trays or other mounting constructions. A complete tensioning wire system to suspend and catch cable weights is also a component part of the special system.

## Wire cable clamp

St G

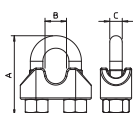


Type	For rope-Ø mm	Dim. A mm	Dim. B mm	Dim. C mm	Pack Piece	Weight kg/100 pc.	Item no.
947 3 G	3	20	4	4	25	1.100	5302021
947 5 G	5	24	6	5	25	1.400	5302056
947 6 G	6	28	8	5	25	1.700	5302064
947 8 G	8	34	9	6	10	3.100	5302080
947 10 G	10	42	11	8	10	6.500	5302102

Wire cable clamp for fastening steel wire tensioning ropes.

## Wire cable clamp

VA 2B

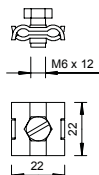


Type	For rope-Ø mm	Dim. A mm	Dim. B mm	Dim. C mm	Pack Piece	Weight kg/100 pc.	Item no.
947 3 A4	3	20	4	4	25	1.090	5302170
947 5 A4	5	24	6	5	25	1.500	5302174
947 6 A4	6	28	8	5	25	2.080	5302178
947 8 A4	8	34	9	6	10	3.390	5302182
947 10 A4	10	42	11	8	10	6.310	5302188

Wire cable clamp for fastening steel wire tensioning ropes.

## Wire cable clamp

St G



Type	For rope-Ø mm	Bolt	Pack Piece	Weight kg/100 pc.	Item no.
261 3-6 G	3-6	M6x12	100	1.498	5305012

Wire cable clamp for fastening steel wire tensioning ropes.

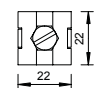
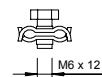


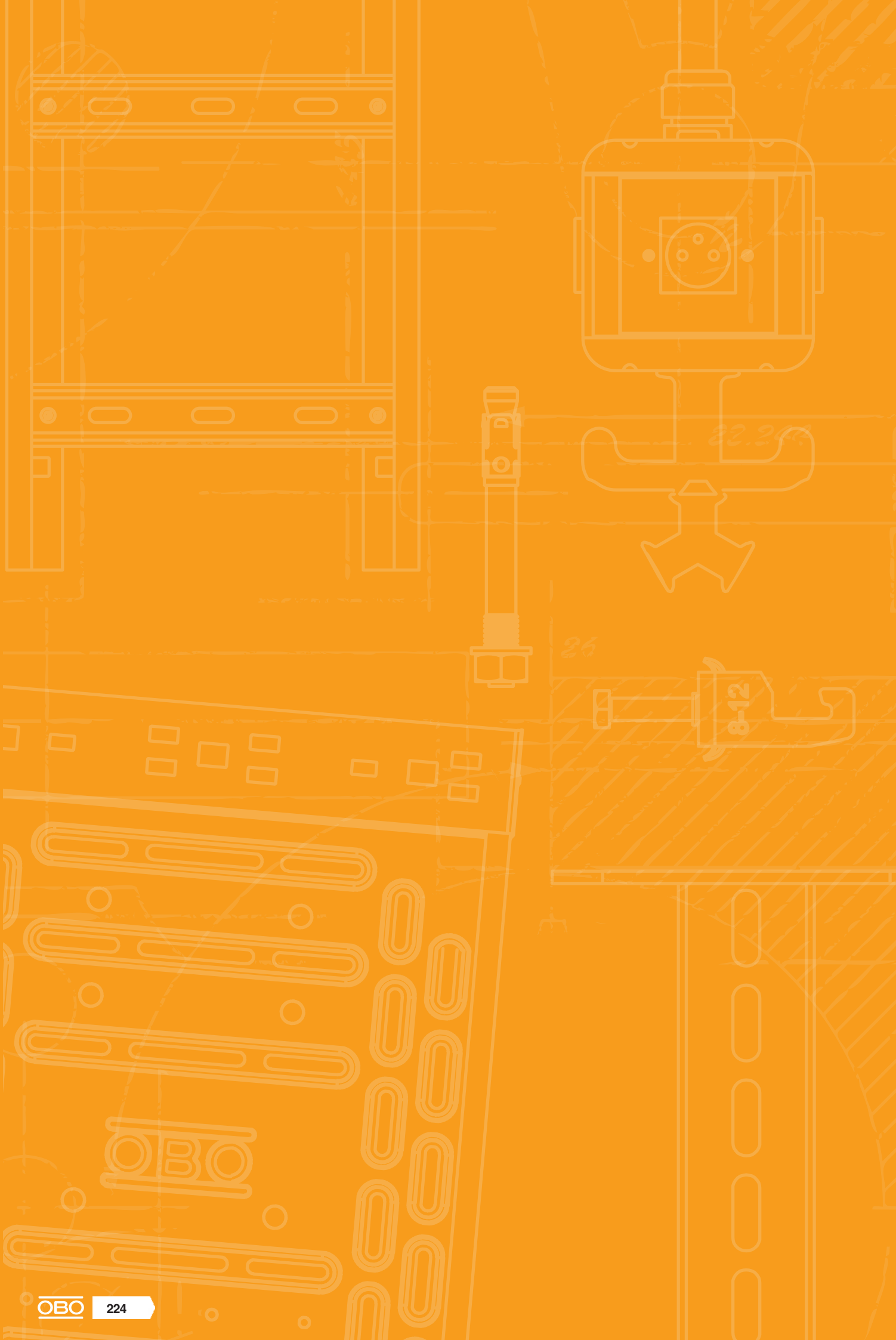
A4 2B

## Wire cable clamp

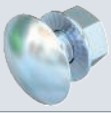



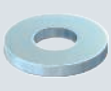
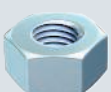


Type	For rope-Ø		Pack Piece	Weight kg/100 pc.	Item no.
	mm	Bolt			
261 3-6 A4	3-6	M6x12	100	1.498	5305016

The cable and pipe fastenings of the special system include cable ties, fastening straps and installation strips, with which cable and pipe installations can be fastened to cable support systems such as cable or mesh cable trays or other mounting constructions. A complete tensioning wire system to suspend and catch cable weights is also a component part of the special system.





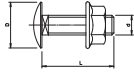
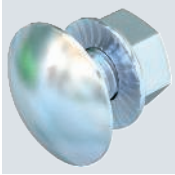
# Bolts and screws

	Truss-head bolts	224
	Hexagonal bolts	230
	Hooks	234
	Threaded rods	238
	Washers	240
	Nuts	244
	Wood screws	248
	Accessories, bolts and screws	254



## Truss-head bolt with flange nut

St G

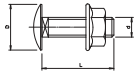
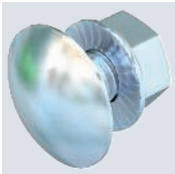


Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Dim. D mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB 6x12 VZ G</b>	M6x12	12	6	13.5	5.6	10	0.700	<b>6406133</b>
<b>FRSB 6x12 G</b>	M6x12	12	6	13.5	5.6	100	0.804	<b>6406130</b>
<b>FRSB 6x20 G</b>	M6x20	20	6	13.5	5.6	100	0.903	<b>6406181</b>

Hot galvanised truss-head bolt with square neck including electrogalvanised combination nut.  
For universal fastening of construction components. Permitted use of the article only in dry atmospheres.

## Truss-head bolt with flange nut

St F

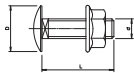
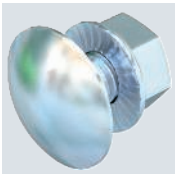


Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Dim. D mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB 6x12 VZ F</b>	M6x12	12	6	13.5	5.6	10	0.840	<b>6406125</b>
<b>FRSB 6x12 F</b>	M6x12	12	6	13.5	5.6	100	0.812	<b>6406122</b>
<b>FRSB 6x16 F</b>	M6x16	16	6	13.5	5.6	100	0.890	<b>6406157</b>
<b>FRSB 6x20 F</b>	M6x20	20	6	13.5	5.6	100	0.965	<b>6406203</b>
<b>FRSB 6x30 F</b>	M6x30	30	6	13.5	5.6	100	1.232	<b>6406907</b>

Truss-head bolt with square neck including flange nut.

## Truss-head bolt with combination nut

St G

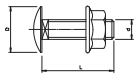
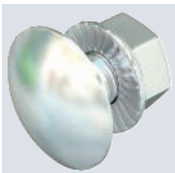


Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Dim. D mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRS 10x25 G</b>	M10x25	25	10	24	8.8	50	3.926	<b>6407521</b>

Truss-head bolt with square neck including combination nut.

## Truss-head bolt with flange nut

A2 VA 2B

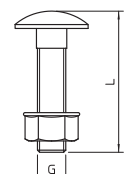
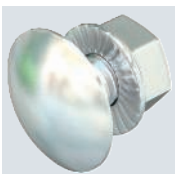


Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Dim. D mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB 6x12 A2</b>	M6x12	12	6	13.5	A2-70	100	0.830	<b>6406138</b>
<b>FRSB 6x16 A2</b>	M6x16	16	6	13.5	A2-70	100	0.800	<b>6406189</b>
<b>FRSB 6x20 A2</b>	M6x20	20	6	13.5	A2-70	100	0.960	<b>6406205</b>
<b>FRSB 6x12 A4</b>	M6x12	12	6	13.5	A4-50	100	0.796	<b>6406142</b>
<b>FRSB 6x16 A4</b>	M6x16	16	6	13.5	A4-50	100	0.800	<b>6406193</b>
<b>FRSB 6x20 A4</b>	M6x20	20	6	13.5	A4-70	100	0.960	<b>6406207</b>

Truss-head bolt with square neck including flange nut.

## Truss-head bolt with combination nut, V2A

A2 2B



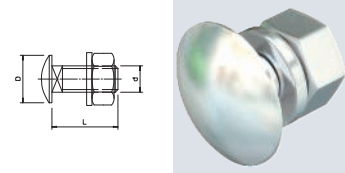
Type	Dimen- sion mm	Dim. D mm	Dim. L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB M8x35 A2</b>	M8x35	8	35	50	2.570	<b>3175608</b>
<b>FRSB M10x20 A2</b>	M10x20	10	20	50	3.000	<b>3175620</b>
<b>FRSB M10x25 A2</b>	M10x25	10	25	50	3.700	<b>3175625</b>

Truss-head bolt with square neck and combination nut.

VA 2B

Truss-head bolt with nut and washer

Type	Dimension mm	Dim. L mm	Dim. d mm	Dim. D mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
FRS 10x25 A4	M 10x25	25	10	24	A4-70	50	4.500	6407524

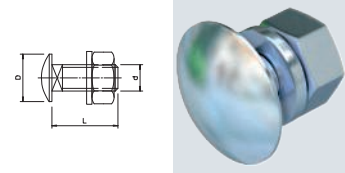


Truss-head bolt with square neck including washer and hexagonal nut.

St F

Truss-head bolt with nut and washer

Type	Dimension mm	Dim. L mm	Dim. d mm	Dim. D mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
FRS 8x16 F 8.8	M8x16	16	8	20	8.8	50	1.947	6406963
FRS 8x16 F 5.6	M8x16	16	8	20	5.6	50	2.000	6406939
FRS 8x20 F	M8x20	20	8	20	5.6	50	2.054	6406971
FRS 8x25 F	M8x25	25	8	20	8.8	50	2.217	6406998
FRS 8x35 F	M8x35	35	8	20	5.6	50	2.431	6407048
FRS 8x35 8.8 F	M8x35	35	8	20	8.8	50	2.700	6407050
FRS 10x20 F	M10x20	20	10	24	8.8	50	4.100	6407471
FRS 10x25 F	M10x25	25	10	24	5.6	50	4.077	6407528
FRS 10x25 F 8.8	M10x25	25	10	24	8.8	50	4.500	6407560
FRS 10x25 TPS F	M10x25	25	10	18	5.6	50	4.300	6407536
FRS 10x30 F	M10x30	30	10	24	8.8	50	4.187	6407579
FRS 12x25 F	M12x25	25	12	30	5.6	50	6.518	6406254
FRS 12x30 F	M12x30	30	12	30	5.6	50	6.805	6406270

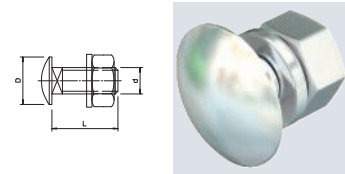


Truss-head bolt with square neck. With washer and hexagonal nut.  
The truss-head bolt can be used in combination with hot-dip and double-dip galvanised articles.

A2 2B

Truss-head bolt with nut and washer

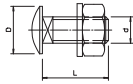
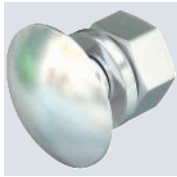
Type	Dimension mm	Dim. L mm	Dim. D mm	Dim. d mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
FRS 10x25 TPS A2	M 10x25	25	18	10	A2-70	50	4.000	6407537



Truss-head bolt with square neck. With washer and hexagonal nut.  
The truss-head bolt can be used in combination with hot-dip and double-dip galvanised articles.



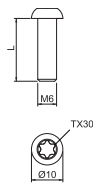
Truss-head bolt with nut and washer



Type	Dimension mm	Dim. L mm	Dim. d mm	Dim. D mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
FRS 6x12 A2	M6x12	12	6	13.5	A2-70	100	0.760	6406521
FRS 6x16 A2	M6x16	15	6	13.5	A2-70	100	0.869	6406556
FRS 6x20 A2	M6x20	20	6	13.5	A2-70	100	0.942	6406602
FRS 8x16 A2	M8x16	16	8	20	A2-70	50	1.926	6406696
FRS 8x25 A2	M8x25	25	8	20	A2-70	50	2.300	6406815
FRS 8x35 A2	M8x35	35	8	20	A2-70	50	2.700	6406823
FRS 10x20 A2	M10x20	20	10	24	A2-70	50	4.100	6406866
FRS 10x25 A2	M10x25	25	10	24	A2-70	50	3.905	6406718
FRS 10x30 A2	M10x30	30	10	24	A2-70	50	4.500	6406726
FRS 12x25 A2	M12x25	25	12	30	A2-70	25	6.400	6406750
FRS 12x30 A2	M12x30	30	12	30	A2-50	25	6.800	6406769
FRS 6x12 A4	M6x12	12	6	13.5	A4-70	100	0.820	6406564
FRS 6x16 A4	M6x16	16	6	13.5	A4-70	100	0.900	6406580
FRS 6x20 A4	M6x20	20	6	13.5	A4-70	100	0.977	6406610
FRS 8x16 A4	M8x16	16	8	20	A4-50	50	2.200	6406653
FRS 8x16 A4	M8x16	16	8	20	A4-70	50	2.200	6406698
FRS 12x25 A4	M12x25	25	12	30	A4-70	25	6.400	6406785
FRS 10x20 A4	M10x20	20	10	24	A4-70	50	4.000	6406870
FRS 10x20S A4	M10x20	20	10	24	A4-70	50	4.100	6406872

Truss-head bolt with square neck including washer and hexagonal nut.

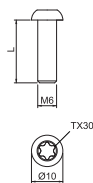
Flat-head screw with internal Torx, steel



Type	Dimension mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
7380T 6x20 G	M6x20	Torx	100	0.570	3164952
7380T 6x35 G	M6x35	Torx	100	0.910	3164956

Flat head screw with TX 30, according to ISO 7380-1, suitable for fastening cable routes on brackets as well as for the mounting of barrier strips. The rounded head shape provides optimum cable protection. The Torx drive offers optimum force transmission in the screw movement.

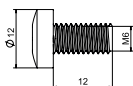
Flat-head screw with internal Torx, stainless steel



Type	Dimension mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
7380T M6x20 A2	M6x20	Torx	100	0.580	3164972
7380T M6x35 A2	M6x35	Torx	100	0.910	3164976

Flat head screw with TX 30, according to ISO 7380-1, suitable for fastening cable routes on brackets as well as for the mounting of barrier strips. The rounded head shape provides optimum cable protection. The Torx drive offers optimum force transmission in the screw movement.

Flat-head screw with hexalobular internal



Type	Dimension mm	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
FKS 6x12 G	M6x12	Torx	100	0.530	6049246

Flat-head screw with hexalobular internal to connect base and crossbeam of the symmetrical floor support BSS, to be used on walkable cable tray system BKRS.



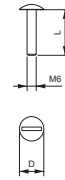
A2 2B



Pan head screw, stainless steel

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
BS M6x30 A2	M6x30	100	0.790	1148896

The cup screw is used to connect two panels or to fasten cable sections on brackets. The flat, rounded head offers optimum cable protection.



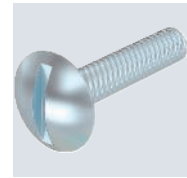
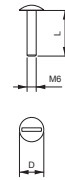
St G



Pan head screw, steel

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
BS M6x30 G	M6x30	100	0.800	1148898

The cup screw is used to connect two panels or to fasten cable sections on brackets. The flat, rounded head offers optimum cable protection.



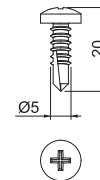
St G



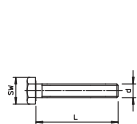
Drilling screw DIN 7504

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
DIN 7504 N G	4,8 x 16	100	0.250	3176428

Self-tapping, with Philips.



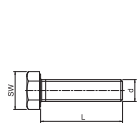
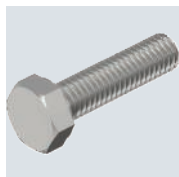
## Hexagonal bolt DIN 933



Type	Thread	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
SKS M6x16 ZL	M6	M6x16	16	6	10	100	0.530	3156706
SKS M6x20 ZL	M6	M6x20	20	6	10	100	0.600	3156708
SKS M6x30 ZL	M6	M6x30	30	6	10	100	0.780	3156710
SKS M6x40 ZL	M6	M6x40	40	6	10	100	0.950	3156712
SKS M6x55 ZL	M6	M6x55	55	6	10	100	1.230	3156715
SKS M6x60 ZL	M6	M6x60	60	6	10	100	1.310	3156716
SKS M8x20 ZL	M8	M8x20	20	8	13	100	1.190	3156728
SKS M8x30 ZL	M8	M8x30	30	8	13	100	1.510	3156730
SKS M8x40 ZL	M8	M8x40	40	8	13	100	1.820	3156732
SKS M8x50 ZL	M8	M8x50	50	8	13	100	2.150	3156734
SKS M8x60 ZL	M8	M8x60	60	8	13	100	2.440	3156736
SKS M8x80 ZL	M8	M8x80	80	8	13	100	3.080	3156738
SKS M10x20 ZL	M10	M10x20	20	10	17	50	2.180	3156758
SKS M10x30 ZL	M10	M10x30	30	10	17	50	2.660	3156760
SKS M10x40 ZL	M10	M10x40	40	10	17	50	3.200	3156762
SKS M10x50 ZL	M10	M10x50	50	10	17	50	3.700	3156764
SKS M10x60 ZL	M10	M10x60	60	10	17	50	4.160	3156766
SKS M10x70 ZL	M10	M10x70	70	10	17	50	4.640	3156768
SKS M10x80 ZL	M10	M10x80	80	10	17	50	5.000	3156770
SKS M10x100 ZL	M10	M10x100	100	10	17	50	6.180	3156774
SKS M12x30 ZL	M12	M12x30	30	12	19	50	3.880	3156788
SKS M12x40 ZL	M12	M12x40	40	12	19	50	4.600	3156790
SKS M12x50 ZL	M12	M12x50	50	12	19	50	5.340	3156792
SKS M12x60 ZL	M12	M12x60	60	12	19	50	6.080	3156794
SKS M12x80 ZL	M12	M12x80	80	12	19	50	7.520	3156796
SKS M12x100 ZL	M12	M12x100	100	12	19	50	8.940	3156799

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

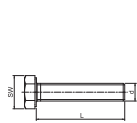
## Hexagonal bolt DIN 933 V2A



Type	Thread	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
HHS M10x45 A2	M10	M10x45	45	10	17	50	3.370	3156040
HHS M12x45 A2	M12	M12x45	45	12	19	50	4.850	3156042
HHS M16x50 A2	M16	M16x50	50	16	24	50	10.300	3156044

Hexagonal bolt according to DIN 933 with metric thread.

## Hexagonal bolt DIN 933



Type	Thread	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
HHS M6x16 A4	M6	M6x16	16	6	10	100	0.511	3156016
HHS M6x20 A4	M6	M6x20	20	6	10	100	0.580	3156018
HHS M6x25 A4	M6	M6x25	25	6	10	100	0.665	3156019
HHS M6x30 A4	M6	M6x30	30	6	10	100	0.751	3156020
HHS M6x35 A4	M6	M6x35	35	6	10	100	0.837	3156021
HHS M6x40 A4	M6	M6x40	40	6	10	100	0.923	3156022
HHS M8x20 A4	M8	M8x20	20	8	13	100	1.230	3156024
HHS M8x25 A4	M8	M8x25	25	8	13	100	1.390	3156025
HHS M8x30 A4	M8	M8x30	30	8	13	100	1.550	3156026
HHS M8x40 A4	M8	M8x40	40	8	13	100	1.870	3156027
HHS M8x50 A4	M8	M8x50	50	8	13	100	2.180	3156028
HHS M10x20 A4	M10	M10x20	20	10	17	100	2.320	3156031
HHS M10x30 A4	M10	M10x30	30	10	17	100	2.620	3156032
HHS M10x40 A4	M10	M10x40	40	10	17	50	3.120	3156033
HHS M10x50 A4	M10	M10x50	50	10	17	50	3.620	3156034
HHS M10x60 A4	M10	M10x60	60	10	17	50	4.130	3156035
HHS M12x30 A4	M12	M12x30	30	12	19	50	3.770	3156036
HHS M12x40 A4	M12	M12x40	40	12	19	50	4.740	3156029
HHS M12x50 A4	M12	M12x50	50	12	19	50	5.200	3156037

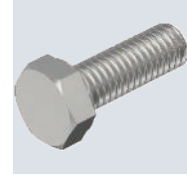
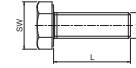
Hexagonal bolt according to DIN 933 with metric thread.



A5

## Hexagonal bolt DIN 933

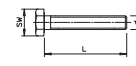
Type	Thread	Dimen- sion mm	Dim. L mm	Dim. d mm	Dim. SW mm	Pack Piece	Weight kg/100 pc.	Item no.
HHS M8x20 A5	M8	M8x20	20	8	13	100	1.230	3156054
HHS M10x30 A5	M10	M10x30	30	10	17	100	2.620	3156062
HHS M12x40 A5	M12	M12x40	40	12	19	50	4.490	3156067



St F

## Hexagonal M6

Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Resist- ance SW grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 6x12 F	M6x12	12	6	10 5.6	100	0.810	3156494
SKS 6x20 F	M6x20	20	6	10 5.6	100	0.917	3156516
SKS 6x30 F	M6x30	30	6	10 5.6	100	1.097	3156524

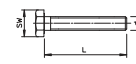


Hexagonal bolt for universal fastening of construction components. With hexagonal nut and 2 washers.

St F

## Hexagonal bolt M8

Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Resist- ance SW grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 8x16 F	M8x16	16	8	13 8.8	50	1.691	3158624
SKS 8x20 F	M8x20	20	8	13 8.8	50	1.837	3158632
SKS 8x30 F	M8x30	30	8	13 5.6	50	2.144	3158640

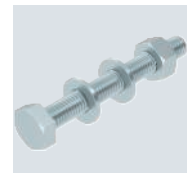
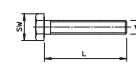


Hexagonal bolt for universal fastening of construction components. With hexagonal nut and 2 washers.

St F

## Hexagonal bolt M10

Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Resist- ance SW grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x25 F	M10x25	25	10	17 8.8	50	3.719	3160734
SKS 10x30 F	M10x30	30	10	17 8.8	50	3.995	3160742
SKS 10x40 F	M10x40	40	10	17 8.8	50	4.422	3160750
SKS 10x60 F	M10x60	60	10	17 8.8	20	6.000	6408516
SKS 10x80 F	M10x80	80	10	17 8.8	20	6.900	6418250
SKS 10x90 F	M10x90	90	10	17 8.8	20	8.950	6418252
SKS 10x120 F	M10x120	120	10	17 8.8	20	8.294	3160793

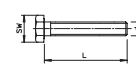


Hexagonal bolt for universal fastening of construction components. With hexagonal nut and 2 washers.

St G

## Hexagonal bolt for trapezoidal fastening TPB 100

Type	Dimen- sion mm	Dim. L mm	Dim. d mm	Resist- ance SW grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x110 G	M10x110	110	10	17 5.6	20	9.500	6418244

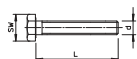


Hexagonal bolt for mounting trapezoidal fastening TPB 100, with shaft and thread, including hexagonal nut and 2 washers.



## Hexagonal bolt M10

VA A4



Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x30 A4	M 10x30	30	10	17	A4-70	50	3.000	3160752
SKS 10x80 A5	M 10x90	90	10	17	A5-80	20	7.520	6418247
SKS 10x90 A5	M 10x90	90	10	17	A5-80	20	10.038	6418257

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

## Hexagonal bolt M12

St F

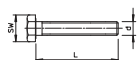


Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 12x30 F	M 12x30	30	12	19	8.8	20	5.990	3163091
SKS 12x40 F	M 12x40	40	12	19	8.8	25	7.800	3163113
SKS 12x60 F	M 12x60	60	12	19	8.8	25	8.057	3163156

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

## Hexagonal bolt M10

A2 VA 2B

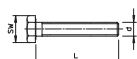


Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 10x90 A2	M 10x90	90	10	17	A2-70	20	10.038	6418255
SKS 10x80 A4	M 10x80	80	10	17	A4-70	20	7.800	6418248
SKS 10x90 A4	M 10x90	90	10	17	A4-70	20	7.800	6418256

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

## Hexagonal bolt M12

St F

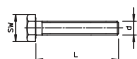


Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 12x80 F	M 12x80	80	12	19	8.8	20	10.000	6418287
SKS 12x100 F	M 12x100	100	12	19	8.8	20	10.981	6418295
SKS 12x110 F	M 12x110	110	12	19	8.8	20	14.500	6418317
SKS 12x130 F	M 12x130	130	12	19	8.8	20	13.101	6408478

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

## Hexagonal bolt M12

A2 2B



Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
SKS 12x80 A2	M 12x80	80	12	19	A2-70	20	10.400	6418279
SKS 12x100 A2	M 12x100	100	12	19	A2-70	20	12.000	6418368
SKS 12x110 A2	M 12x110	110	12	19	A2-70	20	14.500	6418376

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

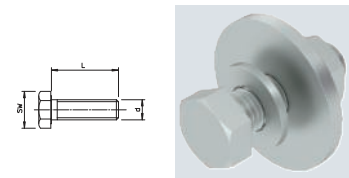


## Hexagonal bolts

St F

Type	Dimension mm	Dim. L mm	Dim. d mm	SW mm	Resistance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>SKS 12x40 G F</b>	M 12x40	40	12	19	8.8	10	9.800	<b>3164020</b>

Hexagonal bolt for universal fastening of construction components and for the fastening of wall and support brackets on adapter plates. With hexagonal nut and 2 washers.



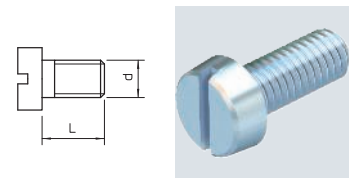
## Cylinder head bolts

St G



Type	Thread	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>341 M6x10 G</b>	M6	10	100	0.349	<b>3153096</b>
<b>341 M6x16 G</b>	M6	16	100	0.479	<b>3153150</b>
<b>341 M6x20 G</b>	M6	20	100	0.569	<b>3153207</b>

Cylinder head bolt according to ISO 1207 with metric thread



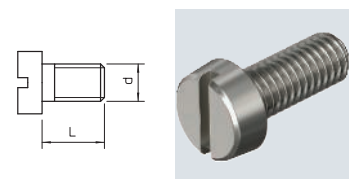
## Cylinder head bolt A2

A2



Type	Thread	Length mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>341 M6x16 A2</b>	M6	16	100	0.485	<b>3168905</b>

Cylinder head bolt according to ISO 1207 with metric thread

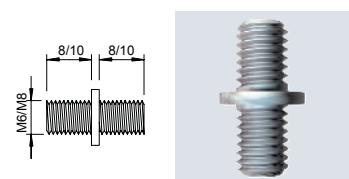


## Double nipple

St G

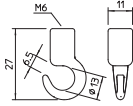
Type	Thread	Thread length mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>3100 M6 G</b>	M6	8	100	0.358	<b>3131068</b>
<b>3100 M8 G</b>	M8	10	100	0.680	<b>3131084</b>

Double nipple with metric thread.



## Ceiling hook

St G

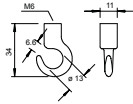


Type	Thread	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
2081 K M6	M6	1.5	100	0.899	3460061

Ceiling hook with metric internal thread.

## Ceiling hook

St G

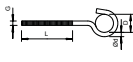


Type	Thread	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
2081 M6 G	M6	1.2	100	1.257	3460169

Ceiling hook with metric internal thread.

## Ceiling hook

St G

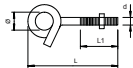


Type	Dim. L mm	Dim. D mm	Dim. d mm	Thread	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
867 M5X125 G	90	16	4.3	M5	0.4	100	1.730	3470148
867 M6X 95 G	55	16	5.2	M6	0.8	100	2.095	3470210
867 M6X125 G	85	16	5.2	M6	0.8	100	2.760	3470237

Ceiling hook with long metric thread.

## Ceiling hook

St G

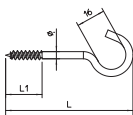


Type	Thread	Dim. d mm	Dim. L mm	Dim. L1 mm	Dim. d mm	Washer Ø mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
948 TG6	M6	6	70	46	13	18	1	25	3.300	3453820

Tightly wound ceiling hook. Including two large washers and nuts.

## Ceiling hook

St G



Type	Material	Dim. Ø mm	Dim. L mm	Dim. L1 mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
915 3.9x50 G	3.9	50	20	0.15	100	0.724	3450058	
915 3.9x60 G	3.9	60	20	0.15	100	0.800	3450066	
915 3.9x70 G	3.9	70	20	0.15	100	0.879	3450074	
915 3.9x80 G	3.9	80	20	0.15	100	0.913	3450082	
915 3.9x90 G	3.9	90	20	0.15	100	1.076	3450090	
915 3.9x100 G	3.9	100	20	0.15	100	1.187	3450104	
915 4.3x120 G	4.3	120	24	0.2	100	1.662	3450120	

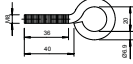
Ceiling hook with rolled wood screw thread.





## Frame eyelet

St G

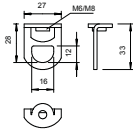


Type	Thread	Length mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
869 M8X40 G	M8	70	2	25	3.540	3472086

Frame eyelet M8 x 40 mm.

## TS suspension eyelet

St G

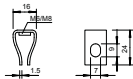
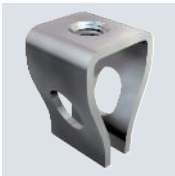


Type	Thread	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
2990 M6 G	M6	1.6	50	2.320	3462862
2990 M8 G	M8	1.7	50	2.320	3462889

Suspension eyelet with interior thread.

## Rabitz coupler

St G



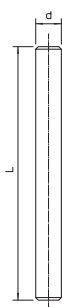
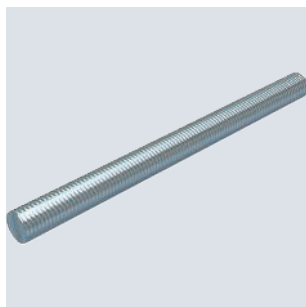
Type	Thread	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
2083 M6 G	M6	1.7	100	1.090	3462064
2083 M8 G	M8	1.7	100	1.090	3462080

Rabitz coupler with metric thread.



## Threaded rod

St G

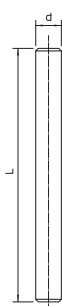


Type	Thread	Dim. d mm	Dim. L mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
TR M6 1M G	M6	6	1000	8.04	10	18.300	3141047
TR M8 1M G	M8	8	1000	14.6	10	30.000	3141128
TR M10 1M G	M10	10	1000	23.2	10	49.000	3141209
TR M12 1M G	M12	12	1000	33.7	10	62.000	3141306
TR M6 2M G	M6	6	2000	8.04	10	36.600	3141048
TR M8 2M G	M8	8	2000	14.6	10	60.000	3141136
TR M10 2M G	M10	10	2000	23.2	10	98.000	3141140
TR M12 2M G	M12	12	2000	33.7	10	140.000	3141144
TR M10 3M G	M10	10	3000	23.2	20	147.000	3141233

Threaded rod to DIN 976.

## Threaded rod

A2 A4 2B

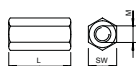


Type	Thread	Dim. d mm	Dim. L mm	Break load kN	Pack Piece	Weight kg/100 pc.	Item no.
TR M6 1M A2	M6	6	1000	19.78	10	18.300	3141327
TR M8 1M A2	M8	8	1000	35.17	10	30.000	3141310
TR M10 1M A2	M10	10	1000	54.95	10	49.000	3141312
TR M12 1M A2	M12	12	1000	79.13	10	70.000	3141314
TR M6 2M A2	M6	6	2000	19.78	10	36.600	3141328
TR M8 2M A2	M8	8	2000	35.17	10	60.000	3141330
TR M10 2M A2	M10	10	2000	54.95	10	98.000	3141339
TR M12 2M A2	M12	12	2000	79.13	10	140.000	3141316
TR M6 1M A4	M6	6	1000	22.61	1	18.300	3141482
TR M8 1M A4	M8	8	1000	40.19	1	30.000	3141492
TR M10 1M A4	M10	10	1000	62.8	1	49.000	3141502
TR M6 2M A4	M6	6	2000	22.61	1	36.600	3141484
TR M8 2M A4	M8	8	2000	40.19	1	60.000	3141494
TR M10 2M A4	M10	10	2000	62.8	20	98.000	3141504
TR M12 2M A4	M12	12	2000	90.43	10	140.000	3141514

Threaded rod to DIN 976.

## Connection sleeve

St G



Type	Thread	Dim. L mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
CSTR M8 G	M8	24	13	50	1.880	6410081
CSTR M10 G	M10	30	17	50	4.150	6410103
CSTR M12 G	M12	40	19	25	7.000	6410111

Connection sleeve with continuous internal thread.

## Connection sleeve

A2 2B



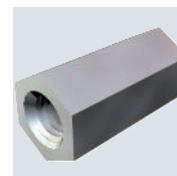
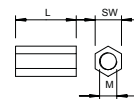
Type	Thread	Dim. L mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
CSTR M8 A2	M8	24	13	50	1.880	6410154
CSTR M10 A2	M10	30	17	50	4.150	6410162

Connection sleeve with continuous internal thread.

Zn G

## Spacer sleeve

Type	Thread	Dim.		Pack Piece	Weight kg/100 pc.	Item no.
		L mm	SW mm			
965 M6X20 G	M6	20	10	100	0.900	3415031
965 M6X25 G	M6	25	10	100	0.960	3415066
965 M6X30 G	M6	30	10	100	1.200	3415082
965 M6X40 G	M6	40	10	100	1.500	3415104
965 M6X50 G	M6	50	10	100	2.000	3415120
965 M8X20 G	M8	20	13	100	1.200	3415147
965 M8X30 G	M8	30	13	100	1.800	3415163

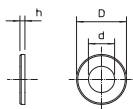
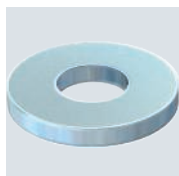


Continuous internal thread.



## Washer

St G

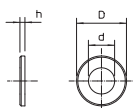
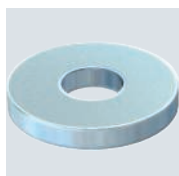


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M4 D09 G</b>	M4	4.3	9	0.8	100	0.031	<b>3402045</b>
<b>WS M6 D12 G</b>	M6	6.4	12	1.6	100	0.114	<b>3402061</b>
<b>WS M8 D16 G</b>	M8	8.4	16	1.6	100	0.156	<b>3402088</b>
<b>WS M10 D20 G</b>	M10	10.5	20	2	100	0.408	<b>3402096</b>
<b>WS M12 D24 G</b>	M12	13	24	2.5	100	0.570	<b>3402126</b>

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

## Washer ISO 7093

St G

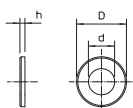
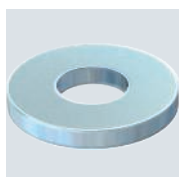


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M6 D28 G</b>	M6	6.5	28	2.5	100	1.104	<b>3402207</b>
<b>WS M8 D28 G</b>	M8	8.5	28	2.5	100	1.100	<b>3402215</b>
<b>WS M10 D28 G</b>	M10	11	28	2.5	100	1.020	<b>3402223</b>

Washer of large outer diameter for universal use.

## Washer

St F

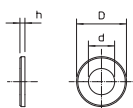


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>966 M6 F</b>	M6	6.6	12	1.6	100	0.098	<b>3402444</b>
<b>966 M8 F</b>	M8	9	16	1.6	100	0.177	<b>3402452</b>
<b>966 M10 F</b>	M10	11	20	2	100	0.327	<b>3402460</b>
<b>966 M12 F</b>	M12	13.5	24	2.5	100	0.620	<b>3402479</b>

Washer for universal use.

## Washer

A2 2B

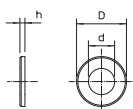


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M6 D12 A2</b>	M6	6.4	12	1.6	100	0.114	<b>3402304</b>
<b>WS M8 D16 A2</b>	M8	8.4	16	1.6	100	0.214	<b>3402312</b>
<b>WS M10 D20 A2</b>	M10	10.5	20	2	100	0.408	<b>3402320</b>
<b>WS M12 D24 A2</b>	M12	13	24	2.5	100	0.627	<b>3402339</b>

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

## Washer

A4 2B



Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M6 D12 A4</b>	M6	6.4	12	1.6	100	0.114	<b>3402306</b>
<b>WS M8 D16 A4</b>	M8	8.4	16	1.6	100	0.214	<b>3402314</b>
<b>WS M10 D20 A4</b>	M10	10.5	20	2	100	0.408	<b>3402322</b>
<b>WS M12 D24 A4</b>	M12	13	24	2.5	100	0.627	<b>3402345</b>

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

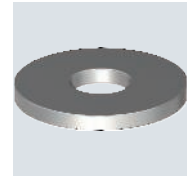
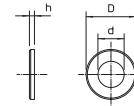




A5

## Washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M6 D12 A5	M6	6.4	12	1.6	100	0.114	3402308
WS M8 D16 A5	M8	8.4	16	1.6	100	0.214	3402316

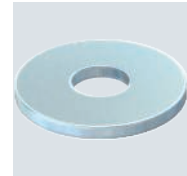
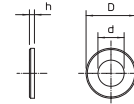


Washer according to DIN 125, shape A, for universal use.

St G

## Fender washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M4 G15 G	M4	4.3	15	1.2	100	0.156	3403025
WS M5 G20 G	M5	5.3	20	1.2	100	0.207	3403041
WS M6 G25 G	M6	6.4	25	1.2	100	0.428	3403084
WS M6 G30 G	M6	6.4	30	1.3	100	0.636	3403092
WS M6 G20 G	M6	6.4	20	1.25	100	0.236	3403076
WS M8 G20 G	M8	8.4	20	1.25	100	0.227	3403122
WS M8 G25 G	M8	8.4	25	1.2	100	0.408	3403130
WS M10 G30 G	M10	10.5	30	1.5	100	0.598	3403165
WS M6 G40 G	M6	6.4	40	1.5	100	1.400	3403099
WS M8 G40 G	M8	8.4	40	2.5	100	2.400	3403140

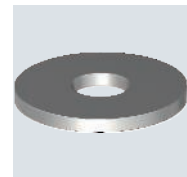
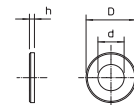


Washer of particularly large outer diameter.

A2 2B

## Fender washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M8 D20 A2	M8	8.4	20	1.5	100	0.240	3403125
WS M8 D25 A2	M8	8.4	25	1.5	100	0.370	3403135
WS M8 D40 A2	M8	8.5	40	1.5	100	0.370	3403145
WS M10 D30 A2	M10	10.5	30	1.5	100	0.592	3403155
WS M10 D40 A2	M10	10.5	40	1.5	100	0.592	3403175

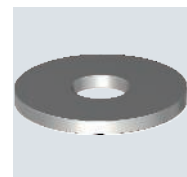
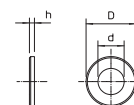


Washer of particularly large outer diameter. In the case of connections on the MS 41 mounting rail, we recommend the external diameter of 40 mm.

A4 2B

## Fender washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
WS M8 D20 A4	M8	8.4	20	1.5	100	0.240	3403127
WS M8 D25 A4	M8	8.4	25	1.2	100	0.370	3403137
WS M8 D40 A4	M8	8.4	40	1.5	100	0.370	3403147
WS M10 D30 A4	M10	10.5	30	1.5	100	0.592	3403163
WS M10 D40 A4	M10	10.5	40	1.5	100	0.592	3403177



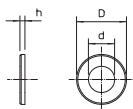
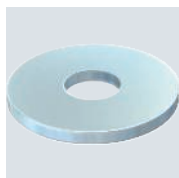
Washer of particularly large outer diameter. In the case of connections on the MS 41 mounting rail, we recommend the external diameter of 40 mm.



# Washers

## Large washer

St F

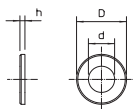


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
DIN440 7 F	M6	6.6	22	2	100	0.535	6408702
DIN440 9 F	M8	9	28	3	100	1.057	6408710
DIN440 11 F	M10	11	34	3	100	1.852	6408729
DIN440 14 F	M12	13.5	44	4	50	4.736	6408737

Washer of particularly large outer diameter.

## Large washer

A2

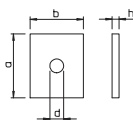
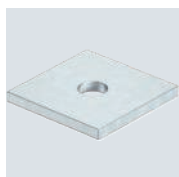


Type	Hole Ø mm	External Ø mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
DIN440 7 A2	6.6	22	2	100	0.535	6408703
DIN440 9 A2	9	28	3	100	1.057	6408715
DIN440 11 A2	11	34	3	100	1.852	6408732
DIN440 14 A2	13.5	44	4	50	4.330	6408739

Washer of particularly large outer diameter.

## Counter plate

St FT



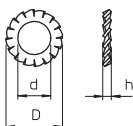
Type	Dimension mm	Hole Ø mm	Material thickness mm	Pack Piece	Weight kg/100 pc.	Item no.
K 60 FT	50x60	13	6.5	10	14.900	6348408
K 70 FT	70x70	17	6.5	10	24.000	6348440

Counter plate to increase the contact surface for pass-through installation of brackets and supports.

## Serrated washers

### Serrated washer DIN 6798

St G

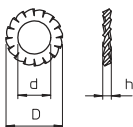


Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
SWS M5 G	M5	5.3	10	1.8	100	0.022	3404056
SWS M6 G	M6	6.4	11	2.1	100	0.036	3404064
SWS M8 G	M8	8.4	15	2.4	100	0.080	3404080
SWS M10 G	M10	10.5	18	2.7	100	0.125	3404102
SWS M12 G	M12	13	20.5	3	100	0.160	3404129

Serrated washer to DIN 6798, shape A.

### Serrated washer DIN 6798

A4 2B



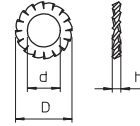
Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
SWS M6 A4	M6	6.4	11	2.1	100	0.036	3404372
SWS M8 A4	M8	8.4	15	2.4	100	0.080	3404377
SWS M10 A4	M10	10.5	18	2.7	100	0.125	3404381
SWS M12 A4	M12	13	20.5	3	100	0.170	3404385

Serrated washer to DIN 6798, shape A.

A2 2B

## Serrated washer DIN 6798

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>SWS M6 A2</b>	M6	6.4	11	2.1	100	0.040	<b>3404331</b>
<b>SWS M8 A2</b>	M8	8.4	15	2.4	100	0.080	<b>3404358</b>



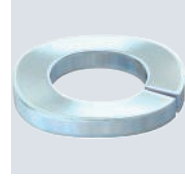
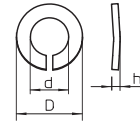
Serrated washer to DIN 6798, shape A.

## Lock washers

St G

## Lock washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>LWS M6 G</b>	M6	6.3	11.8	2.1	100	0.070	<b>3405060</b>
<b>LWS M8 G</b>	M8	8.3	14.8	2.6	100	0.130	<b>3405087</b>
<b>LWS M10 G</b>	M10	10.5	18.1	3	100	0.210	<b>3405109</b>
<b>LWS M12 G</b>	M12	12.5	21.1	3.5	100	0.320	<b>3405125</b>

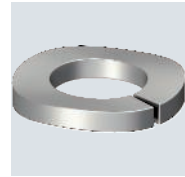
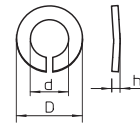


Lock washer according to DIN 128, shape A.

A4 2B

## Spring washer

Type	Thread	Dim. d mm	Dim. D mm	Dim. h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>LWS M6 A4</b>	M6	6.3	11.8	2.1	100	0.070	<b>3405062</b>
<b>LWS M8 A4</b>	M8	8.3	14.8	2.6	100	0.130	<b>3405089</b>
<b>LWS M10 A4</b>	M10	10.5	18.1	3	100	0.210	<b>3405111</b>
<b>LWS M12 A4</b>	M12	12.5	21.1	3.5	100	0.320	<b>3405127</b>

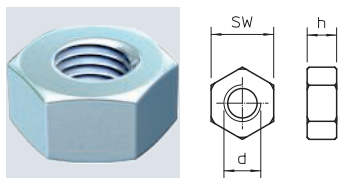


Lock washer according to DIN 128, shape A.



### Hexagonal nut DIN 934

St G

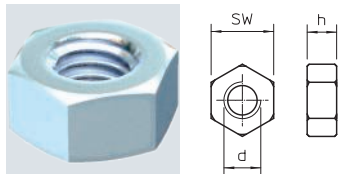


Type	Thread	Dim. Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
HN M4 G	M4	7	3.2	4	100	0.081	3400042
HN M5 G	M5	8	4.7	5	100	0.123	3400050
HN M6 G	M6	10	5.2	6	100	0.221	3400069
HN M8 G	M8	13	6.8	8	100	0.500	3400085
HN M10 G	M10	17	8.4	10	100	1.014	3400107
HN M12 G	M12	19	10.8	12	100	1.730	3400123

Hexagonal nut to DIN 934 with metric thread.

### Hexagonal nut ISO 4032

St F

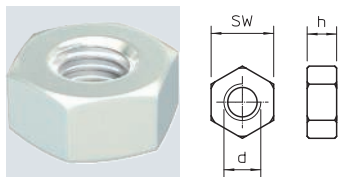


Type	Thread	Dim. Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
DIN934 M6 F	M6	10	5.2	6	100	0.250	3400344
DIN934 M8 F	M8	13	6.8	8	100	0.477	3400352
DIN934 M10 F	M10	17	8.4	10	100	1.061	3400360
DIN934 M12 F	M12	19	10.8	12	100	1.540	3400379

Hexagonal nut to DIN 934 with metric thread.

### Hexagonal nut DIN 934

A2 2B

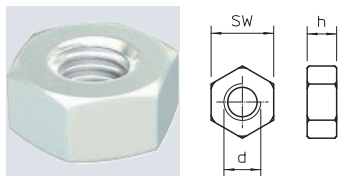


Type	Thread	Dim. Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
HN M6 A2	M6	10	5.2	6	100	0.215	3397068
HN M8 A2	M8	13	6.8	8	100	0.520	3397084
HN M10 A2	M10	17	8.4	10	100	1.043	3397106
HN M12 A2	M12	19	10.8	12	100	1.730	3397114

Hexagonal nut to DIN 934 with metric thread.

### Hexagonal nut DIN 934

A4 2B

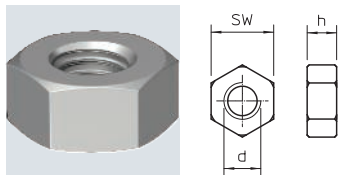


Type	Thread	Dim. Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
HN M6 A4	M6	10	5.2	6	100	0.250	3400173
HN M8 A4	M8	13	6.8	8	100	0.520	3400175
HN M10 A4	M10	17	8.4	10	100	1.084	3400177
HN M12 A4	M12	19	10.8	12	100	1.730	3397145

Hexagonal nut to DIN 934 with metric thread.

### Hexagonal nut DIN 934

A5



Type	Thread	Dim. Dim.			Pack Piece	Weight kg/100 pc.	Item no.
		SW mm	h mm	d mm			
HN M6 A5	M6	10	5.2	6	100	0.250	3400183
HN M8 A5	M8	13	6.8	8	100	0.520	3400185

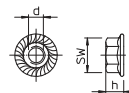
Hexagonal nut to DIN 934 with metric thread.

Bolts and screws

St G

Type	Dim. d mm	Dim. h mm	Resist- SW mm	ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M6 G</b>	6	6	10	8	100	0.315	<b>6408958</b>

Combination nut with washer based on EN 1661.



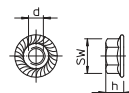
## Flange nut



St F

Type	Dim. d mm	Dim. h mm	Resist- SW mm	ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M6 F</b>	6	6	10	8	100	0.315	<b>6408962</b>

Combination nut with washer based on EN 1661.



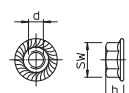
## Flange nut



A2 2B

Type	Dim. d mm	Dim. h mm	Resist- SW mm	ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M6 A2</b>	6	6	10	A2-70	100	0.315	<b>6408966</b>

Nut with pressed washer.



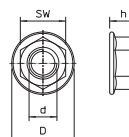
## Combination nut A2



A2 2B

Type	Thread	Dim. SW mm	Dim. h mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M8 A2</b>	M8	13	8	17.9	100	0.800	<b>3156120</b>
<b>KM M10 A2</b>	M10	17	10	21.8	50	1.320	<b>3156122</b>
<b>KM M12 A2</b>	M12	19	12	26	50	2.100	<b>3156126</b>

Combination nut with pressed washer in accordance with EN 1661.



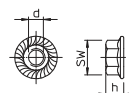
## Combination nut DIN 6923



VA

Type	Dim. d mm	Dim. h mm	Resist- SW mm	ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M8 A4</b>	8	8	13	A4-70	100	0.800	<b>6408920</b>
<b>KM M10 A4</b>	10	10	17	A4-70	100	1.320	<b>6408930</b>
<b>KM M12 A4</b>	12	12	19	A4-70	100	2.260	<b>6408940</b>
<b>KM M6 A4</b>	6	6	10	A4-70	100	0.315	<b>6408970</b>

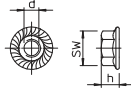
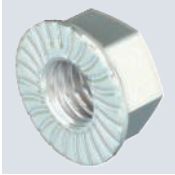
Combination nut with washer based on EN 1661.



## Combination nut



## Combination nut



Type	Dim. d mm	Dim. h mm	SW mm	Resist- ance grade	Pack Piece	Weight kg/100 pc.	Item no.
<b>KM M8 A5</b>	8	8	13	A5-70	100	0.800	<b>6408922</b>
<b>KM M10 A5</b>	10	10	17	A5-70	100	1.320	<b>6408932</b>
<b>KM M6 A5</b>	6	6	10	A5-70	100	0.320	<b>6408972</b>

Combination nut with washer based on EN 1661.

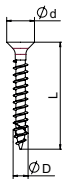






## Chipboard screw, with Torx, countersunk head, stainless steel

A4 2B



Type	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
OTSC 3,5x30 A4	30	3,5	100	0.090	3191050
OTSC 3,5x40 A4	40	3,5	100	0.210	3191052
OTSC 4,0x25 A4	25	4	100	0.125	3191056
OTSC 4,0x30 A4	30	4	100	0.220	3191058
OTSC 4,0x40 A4	40	4	100	0.240	3191060
OTSC 4,0x50 A4	50	4	100	0.310	3191062
OTSC 4,5x30 A4	30	4,5	100	0.290	3191066
OTSC 4,5x40 A4	40	4,5	100	0.310	3191068
OTSC 4,5x50 A4	50	4,5	100	0.400	3191070
OTSC 5,0x40 A4	40	5	100	0.455	3191074
OTSC 5,0x50 A4	50	5	100	0.460	3191076
OTSC 5,0x60 A4	60	5	100	0.465	3191078
OTSC 6,0x40 A4	40	6	100	0.710	3191082
OTSC 6,0x50 A4	50	6	100	0.830	3191084
OTSC 6,0x60 A4	60	6	100	0.960	3191086

Stainless steel wood screw with countersunk head and Torx drive for fastenings in interior and exterior areas.  
Areas of use: Wood, chipboard, plasterboard panels and plastic anchors.

## Chipboard screw, with Torx, panhead, stainless steel

A4 2B



Type	Dim. L mm	Dim. D mm	Pack Piece	Weight kg/100 pc.	Item no.
OTSP 3,5x30 A4	30	3,5	100	0.165	3191000
OTSP 3,5x40 A4	40	3,5	100	0.210	3191002
OTSP 4,0x25 A4	25	4	100	0.185	3191006
OTSP 4,0x30 A4	30	4	100	0.215	3191008
OTSP 4,0x40 A4	40	4	100	0.265	3191010
OTSP 4,0x50 A4	50	4	100	0.325	3191012
OTSP 4,5x30 A4	30	4,5	100	0.260	3191016
OTSP 4,5x40 A4	40	4,5	100	0.330	3191018
OTSP 4,5x50 A4	50	4,5	100	0.395	3191020
OTSP 5,0x40 A4	40	5	100	0.450	3191024
OTSP 5,0x50 A4	50	5	100	0.530	3191026
OTSP 5,0x60 A4	60	5	100	0.600	3191028
OTSP 6,0x40 A4	40	6	100	0.720	3191032
OTSP 6,0x50 A4	50	6	100	0.830	3191034
OTSP 6,0x60 A4	60	6	100	0.960	3191036

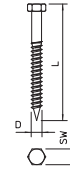
Stainless steel wood screw with lens head and Torx drive for fastenings in interior and exterior areas.  
Areas of use: Wood, chipboard, plasterboard panels and plastic anchors.



St G

## Hexagonal wood screw DIN 571

Type	Dim.		SW	Pack Piece	Weight kg/100 pc.	Item no.
	L mm	D mm				
HHWS 6x40 G	40	6	10	50	0.825	3188043
HHWS 6x50 G	50	6	10	50	0.960	3188051
HHWS 6x60 G	60	6	10	50	1.120	3188078
HHWS 6x80 G	80	6	10	50	1.375	3188094
HHWS 8x40 G	40	8	13	50	1.560	3188140
HHWS 8x50 G	50	8	13	50	1.820	3188159
HHWS 8x60 G	60	8	13	50	2.100	3188167
HHWS 8x70 G	70	8	13	50	2.360	3188175
HHWS 8x80 G	80	8	13	50	2.650	3188183
HHWS 8x100 G	100	8	13	50	3.200	3188205
HHWS 10x60 G	60	10	17	25	3.650	3188256
HHWS 10x70 G	70	10	17	25	4.050	3188272
HHWS 10x80 G	80	10	17	25	4.510	3188280
HHWS 10x100 G	100	10	17	25	5.400	3188302
HHWS 12x70 G	70	12	19	20	5.750	3188361
HHWS 12x80 G	80	12	19	20	6.430	3188388

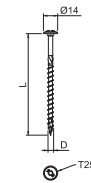


Hexagonal screw to DIN 571 with wood thread. Suitable for anchors, type 910.

St G

## Flange head-screw HT 6

Type	Dim.		Head Ø	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
	D mm	L mm					
HT 6x60 TD	6	60	14	Torx	200	0.850	3498130
HT 6x80 TD	6	80	14	Torx	100	1.100	3498132
HT 6x100 TD	6	100	14	Torx	100	1.300	3498134
HT 6x120 TD	6	120	14	Torx	100	1.300	3498136

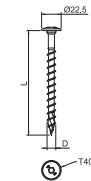


Self-tapping wood screw for fireproof fastening of cable systems for the maintenance of electrical function according to DIN 4102 Part 12 on supporting wooden structures. The flange head shape allows installation without an additional washer.

St G

## Flange head-screw HT 10

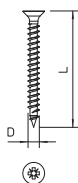
Type	Dim.		Head Ø	Screw system	Pack Piece	Weight kg/100 pc.	Item no.
	D mm	L mm					
HT 10x80 TD	10	80	22.5	Torx	50	3.100	3498140
HT 10x100 TD	10	100	22.5	Torx	50	3.700	3498142
HT 10x120 TD	10	120	22.5	Torx	50	4.300	3498144
HT 10x140 TD	10	140	22.5	Torx	50	4.900	3498146



Self-tapping wood screw for fireproof fastening of cable systems for the maintenance of electrical function according to DIN 4102 Part 12 on supporting wooden structures. The flange head shape allows installation without an additional washer.



## Sprint screw, with Phillips slot



Type	Dim. L mm	Dim. D mm	Head Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
4759 3.0x15	15	3	5.6	200	0.060	3192055
4759 3.0x20	20	3	5.6	200	0.070	3192059
4759 3.0x25	25	3	5.6	200	0.080	3192063
4759 3.5x15	15	3.5	6.5	200	0.060	3192091
4759 3.5x20	20	3.5	6.5	200	0.080	3192105
4759 3.5x25	25	3.5	6.5	200	0.105	3192113
4759 3.5x30	30	3.5	6.5	200	0.120	3192121
4759 3.5x35	35	3.5	6.5	200	0.140	3192148
4759 3.5x40	40	3.5	6.5	200	0.160	3192156
4759 3.5x45	45	3.5	6.5	200	0.180	3192164
4759 3.5x50	50	3.5	6.5	200	0.205	3192172
4759 4.0x15	15	4	7.5	200	0.090	3192199
4759 4.0x20	20	4	7.5	200	0.120	3192202
4759 4.0x25	25	4	7.5	200	0.153	3192210
4759 4.0x30	30	4	7.5	200	0.167	3192229
4759 4.0x35	35	4	7.5	200	0.192	3192237
4759 4.0x40	40	4	7.5	200	0.210	3192245
4759 4.0x45	45	4	7.5	200	0.236	3192253
4759 4.0x50	50	4	7.5	200	0.262	3192261
4759 4.5x30	30	4.5	8.3	200	0.237	3192334
4759 4.5x35	35	4.5	8.3	200	0.270	3192342
4759 4.5x40	40	4.5	8.3	200	0.300	3192350
4759 4.5x45	45	4.5	8.3	200	0.320	3192369
4759 4.5x50	50	4.5	8.3	200	0.363	3192377
4759 5.0x30	30	5	9.2	200	0.304	3192415
4759 5.0x35	35	5	9.2	200	0.356	3192423
4759 5.0x40	40	5	9.2	200	0.380	3192431
4759 5.0x45	45	5	9.2	200	0.430	3192458
4759 5.0x50	50	5	9.2	200	0.480	3192466
4759 6.0x40	40	6	11	200	0.570	3192628
4759 6.0x50	50	6	11	200	0.680	3192636
4759 6.0x60	60	6	11	200	0.790	3192644
4759 3.0x30	30	3	5.6	200	0.110	3192067

Hardened steel, electrogalvanised and Hostafion-coated. Countersunk head with Phillips head (Pozidriv size 2 except Ø 6 mm Pozidriv size 3).

The use of Sprint screws leads to considerably reduced screw-in times compared with standard screws. This noticeable benefit is achieved by the point with the first thread, which leads onto the double thread beyond.

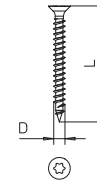
Areas of use: wood, chipboard, Rigips panels, plastic anchors.

St G



## Sprint screw, with Torx

Type	Dim. L mm	Dim. D mm	Head Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
4759T 3.0x15	15	3	5.6	200	0.048	3198193
4759T 3.0x25	25	3	5.6	200	0.085	3198197
4759T 3.0x30	30	3	5.6	200	0.097	3198199
4759T 3.5x15	15	3.5	6.5	200	0.070	3198219
4759T 3.5x20	20	3.5	6.5	200	0.094	3198221
4759T 3.5x25	25	3.5	6.5	200	0.106	3198223
4759T 3.5x30	30	3.5	6.5	200	0.126	3198225
4759T 3.5x35	35	3.5	6.5	200	0.138	3198227
4759T 3.5x40	40	3.5	6.5	200	0.163	3198229
4759T 3.5x50	50	3.5	6.5	200	0.205	3198231
4759T 4.0x15	15	4	7.5	200	0.120	3198237
4759T 4.0x20	20	4	7.5	200	0.126	3198239
4759T 4.0x25	25	4	7.5	200	0.151	3198241
4759T 4.0x30	30	4	7.5	200	0.176	3198243
4759T 4.0x35	35	4	7.5	200	0.197	3198245
4759T 4.0x40	40	4	7.5	200	0.226	3198247
4759T 4.0x45	45	4	7.5	200	0.244	3198249
4759T 4.0x50	50	4	7.5	200	0.275	3198251
4759T 4.5x30	30	4.5	8.2	200	0.214	3198260
4759T 4.5x35	35	4.5	8.2	200	0.265	3198262
4759T 4.5x40	40	4.5	8.2	200	0.271	3198264
4759T 4.5x45	45	4.5	8.2	200	0.308	3198266
4759T 4.5x50	50	4.5	8.2	200	0.340	3198268
4759T 5.0x30	30	5	9.2	200	0.304	3198276
4759T 5.0x35	35	5	9.2	200	0.330	3198278
4759T 5.0x40	40	5	9.2	200	0.380	3198280
4759T 5.0x45	45	5	9.2	200	0.430	3198282
4759T 5.0x50	50	5	9.2	200	0.480	3198284
4759T 6.0x60	60	6	11	200	0.750	3198322



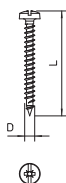
Hardened steel, electrogalvanised and Hostafion-coated. Countersunk head with T bit (six lobe head), sizes Ø 3 mm T10, Ø 3.5 mm T15, Ø 4 and 4.5 mm T20, Ø 5 mm T25.

The use of Sprint screws leads to considerably reduced screw-in times compared with standard screws. This noticeable advantage comes from the point with the first thread, which leads on to the double thread beyond.

Areas of use: wood, chipboard, Rigips panels, plastic anchors.



## Sprint screw, with Philips screw



Type	Dim. L mm	Dim. D mm	Head Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
4758 3.5x15	15	3.5	6.5	200	0.070	3195007
4758 3.5x20	20	3.5	6.5	200	0.090	3195015
4758 3.5x30	30	3.5	6.5	200	0.163	3195031
4758 3.5x25	25	3.5	6.5	200	0.120	3195023
4758 3.5x35	35	3.5	6.5	200	0.170	3195058
4758 3.5x40	40	3.5	6.5	200	0.208	3195066
4758 3.5x45	45	3.5	6.5	200	0.220	3195074
4758 3.5x50	50	3.5	6.5	200	0.240	3195082
4758 4.0x15	15	4	7.5	200	0.100	3195201
4758 4.0x20	20	4	7.5	200	0.140	3195228
4758 4.0x25	25	4	7.5	200	0.177	3195236
4758 4.0x30	30	4	7.5	200	0.220	3195244
4758 4.0x35	35	4	7.5	200	0.250	3195252
4758 4.0x40	40	4	7.5	200	0.270	3195260
4758 4.0x45	45	4	7.5	200	0.280	3195279
4758 4.0x50	50	4	7.5	200	0.310	3195287
4758 4.5x25	25	4.5	8.2	200	0.237	3195422
4758 4.5x30	30	4.5	8.2	200	0.290	3195430
4758 4.5x35	35	4.5	8.2	200	0.300	3195449
4758 4.5x40	40	4.5	8.2	200	0.310	3195457
4758 4.5x45	45	4.5	8.2	200	0.350	3195465
4758 4.5x50	50	4.5	8.2	200	0.393	3195473
4758 5.0x30	30	5	9.5	200	0.376	3195635
4758 5.0x35	35	5	9.5	200	0.415	3195643
4758 5.0x40	40	5	9.5	200	0.454	3195651
4758 5.0x45	45	5	9.5	200	0.493	3195678
4758 5.0x50	50	5	9.5	200	0.533	3195686
4758 5.0x60	60	5	9.5	200	0.585	3195694
4758 6.0x30	30	6	12	200	0.600	3195910
4758 6.0x40	40	6	12	200	0.720	3195929
4758 6.0x50	50	6	12	200	0.830	3195937
4758 6.0x60	60	6	12	200	0.960	3195945

Hardened steel, electrogalvanised and Hostafion-coated. Pan head with combined Phillips and slotted head (Pozi-driv size 2 except Ø 6 mm Pozidriv size 3).

The use of Sprint screws leads to considerably reduced screw-in times compared with standard screws. This noticeable advantage comes from the point with the first thread, which leads on to the double thread beyond.

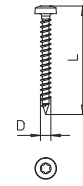
Areas of use: wood, chipboard, Rigips panels, plastic anchors.

St G



## Sprint screw, with Torx

Type	Dim. L mm	Dim. D mm	Head Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
4758T 3.5x15	15	3.5	6.5	200	0.070	3198016
4758T 3.5x20	20	3.5	6.5	200	0.110	3198018
4758T 3.5x25	25	3.5	6.5	200	0.133	3198020
4758T 3.5x30	30	3.5	6.5	200	0.163	3198022
4758T 3.5x35	35	3.5	6.5	200	0.170	3198024
4758T 3.5x40	40	3.5	6.5	200	0.208	3198026
4758T 4.0x15	15	4	7.5	200	0.120	3198030
4758T 4.0x20	20	4	7.5	200	0.159	3198032
4758T 4.0x25	25	4	7.5	200	0.187	3198034
4758T 4.0x30	30	4	7.5	200	0.214	3198036
4758T 4.0x35	35	4	7.5	200	0.246	3198038
4758T 4.0x40	40	4	7.5	200	0.265	3198040
4758T 4.0x45	45	4	7.5	200	0.290	3198042
4758T 4.0x50	50	4	7.5	200	0.323	3198044
4758T 4.5x30	30	4.5	8.2	200	0.260	3198054
4758T 4.5x35	35	4.5	8.2	200	0.300	3198056
4758T 4.5x40	40	4.5	8.2	200	0.329	3198058
4758T 4.5x45	45	4.5	8.2	200	0.355	3198060
4758T 4.5x50	50	4.5	8.2	200	0.393	3198062
4758T 5.0x30	30	5	9.5	200	0.370	3198073
4758T 5.0x35	35	5	9.5	200	0.410	3198075
4758T 5.0x40	40	5	9.5	200	0.450	3198077
4758T 5.0x45	45	5	9.5	200	0.490	3198079
4758T 5.0x50	50	5	9.5	200	0.530	3198081
4758T 5.0x60	60	5	9.5	200	0.740	3198083
4758T 6.0x60	60	6	12	200	0.930	3198118



Hardened steel, electrogalvanised and Hostafion-coated. Pan head with T bit (Allen head), sizes Ø 3 mm T10, Ø 3.5 mm T15, Ø 4 and 4.5 mm T20, Ø 5 mm T25.

The use of Sprint screws leads to considerably reduced screw-in times compared with standard screws. This noticeable advantage comes from the point with the first thread, which leads on to the double thread beyond. Areas of use: wood, chipboard, Rigips panels, plastic anchors.





## Screw-locking adhesive

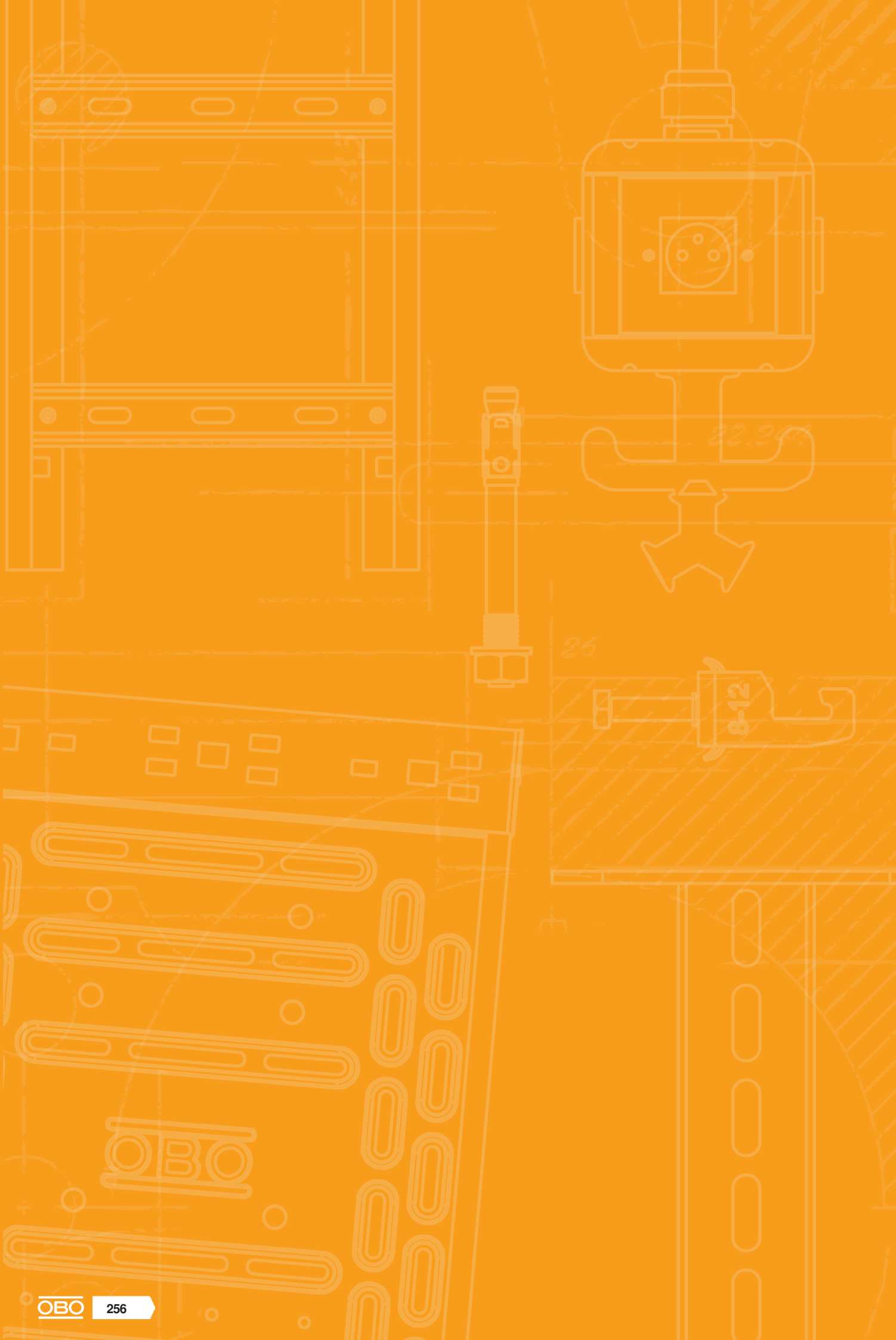


Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
Loctite 243	50	1	7.800	2362940

Medium strength bolt lock, suitable for all metal thread connections (e.g. stainless steel, aluminium, galvanised surfaces). Prevents loosening due to vibrations. Connections can be removed using hand tools for maintenance.







# Nails



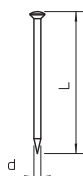
Nails

256

# Steel nails

## Steel nail

St BK



Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
362 16 BK	16	2	100	0.044	3353168
362 18 BK	18	2	100	0.049	3353184
362 23 BK	23	2	100	0.061	3353230
362 30 BK	30	2	100	0.080	3353303
362 40 BK	40	2	100	0.103	3353400
362 50 BK	50	2	100	0.128	3353508
362 60 BK	60	2	100	0.150	3353605

Hardened steel, blue tempered, with bead head.

## Steel nail

St G



Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
362 Z 16 G	16	2	100	0.044	3354164
362 Z 18 G	18	2	100	0.049	3354180
362 Z 23 G	23	2	100	0.061	3354237
362 Z 30 G	30	2	100	0.078	3354296
362 Z 40 G	40	2	100	0.103	3354407
362 Z 50 G	50	2	100	0.128	3354504
362 Z 60 G	60	2	100	0.150	3354601

Hardened steel, electrogalvanised, with bead head.

# Hook nails

## Hook nail

St BK



Type	Dim. L mm	Dim. d mm	Dim. B mm	Pack Piece	Weight kg/100 pc.	Item no.
1101 3x40	40	3	18	250	0.290	3341046
1101 3x50	50	3	18	250	0.344	3341054
1101 3x60	60	3	18	250	0.404	3341062
1101 3x70	70	3	18	250	0.466	3341070
1101 3.4x50	50	3.4	18	250	0.451	3341496
1101 3.4x60	60	3.4	18	250	0.548	3341607
1101 3.4x70	70	3.4	18	250	0.672	3341704
1101 3.4x80	80	3.4	18	250	0.682	3341801
1101 3.4x90	90	3.4	18	250	0.757	3341909
1101 3.4x100	100	3.4	18	250	0.820	3341992

Steel, with an 18 mm hook on the head.

## Hook nail

St G



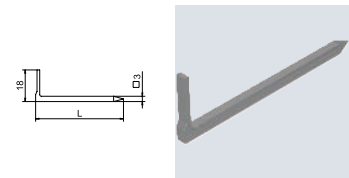
Type	Dim. L mm	Dim. d mm	Dim. B mm	Pack Piece	Weight kg/100 pc.	Item no.
1101 Z 40 G	40	3	18	250	0.288	3342042
1101 Z 50 G	50	3	18	250	0.360	3342050
1101 Z 60 G	60	3	18	250	0.404	3342069
1101 Z 70 G	70	3	18	250	0.474	3342077
1101 Z3.4x50 G	50	3.4	18	250	0.464	3342506
1101 Z3.4x60 G	60	3.4	18	250	0.548	3342603
1101 Z3.4x70 G	70	3.4	18	250	0.600	3342700
1101 Z3.4x80 G	80	3.4	18	250	0.674	3342808

Steel, galvanised, with 18 mm hook on the head.

St BK

## Steel wall hook

Type	Dim. L mm	Dim. d mm	Dim. B mm	Pack Piece	Weight kg/100 pc.	Item no.
716 3X50 BK	50	3	18	100	0.415	3347052
716 3X60 BK	60	3	18	100	0.489	3347060
716 3X70 BK	70	3	18	100	0.553	3347079



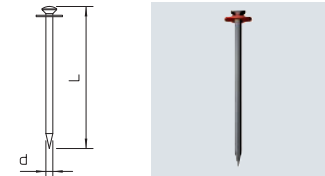
Steel, bright (St), hardened, blue tempered, made of square bar steel.

## Impu steel nails

St BK

### Impu steel nail

Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
500 12	12	2	100	0.040	3360121
500 16	16	2	100	0.046	3360164
500 18	18	2	100	0.055	3360180
500 23	23	2	100	0.062	3360237
500 30	30	2	100	0.081	3360296
500 40	40	2	100	0.108	3360407
500 50	50	2	100	0.128	3360504
500 60	60	2	100	0.150	3360601



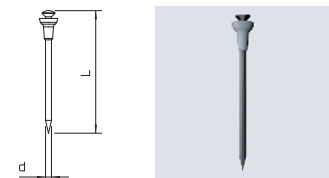
Hardened steel, blue tempered, with vulcanised fibre disc.

## Siko nails

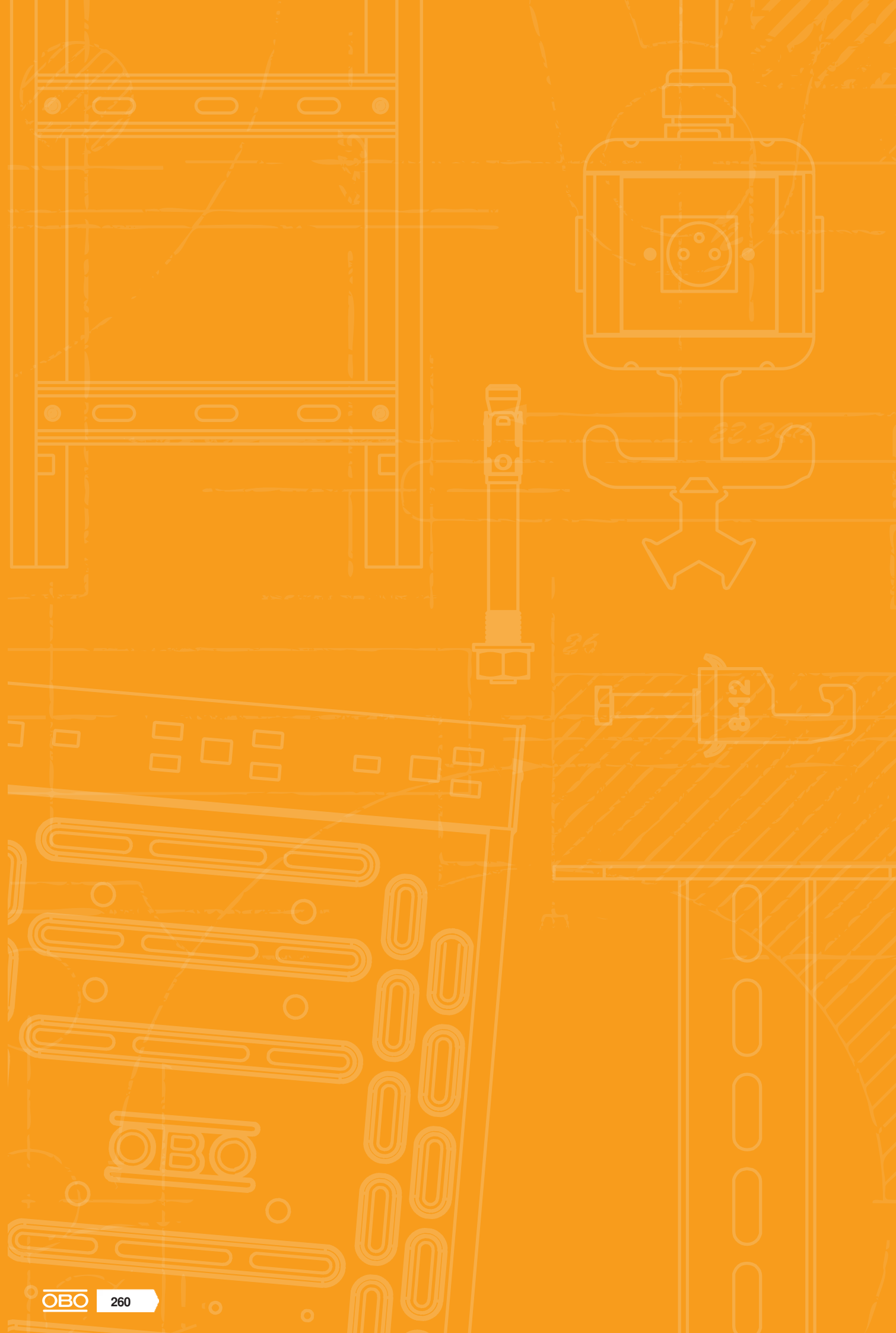
St BK

### Siko nail

Type	Dim. L mm	Dim. d mm	Pack Piece	Weight kg/100 pc.	Item no.
511 12	12	2	100	0.042	3366111
511 16	16	2	100	0.049	3366162
511 18	18	2	100	0.052	3366189
511 23	23	2	100	0.064	3366235
511 30	30	2	100	0.081	3366308
511 40	40	2	100	0.104	3366405
511 50	50	2	100	0.134	3366502
511 60	60	2	100	0.154	3366596









Hardened steel, blue tempered, with polyethylene safety head.




































# Directories

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	Type listing	278
	For the latest general conditions of sale and delivery please see <a href="http://www.obo.global/general-purchasing-conditions/">www.obo.global/general-purchasing-conditions/</a>	


























## 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
 G	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

	Communautés Européennes, EC declaration of conformity according to EC directives
	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
	General construction approval

## 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
<b>Lightning protection classes</b>	
	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 <sup>2</sup>
	Nominal cross-section 1.5–2.5 mm <sup>2</sup>
	Nominal cross-section 2.5 mm <sup>2</sup>
	Nominal cross-section 2.5–4 mm <sup>2</sup>
	Nominal cross-section 4 mm <sup>2</sup>
	Nominal cross-section 4–6 mm <sup>2</sup>
	Nominal cross-section 6 mm <sup>2</sup>
	Nominal cross-section 10 mm <sup>2</sup>
	Nominal cross-section 16 mm <sup>2</sup>













## 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

	Phillips 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

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





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6853113	<b>1187314</b>	185	5476771	<b>1194372</b>	208	6599745	<b>1362456</b>	156	5117919	<b>1366122</b>	163	6456307	<b>1476980</b>	218
6853120	<b>1187320</b>	185				6599752	<b>1362458</b>	156	5117971	<b>1366165</b>	163			
6853182	<b>1187326</b>	185	5847649	<b>1196597</b>	211	6599769	<b>1362460</b>	156	5118039	<b>1366203</b>	163		price/100	
6853205	<b>1187332</b>	185	5847656	<b>1196599</b>	211	6599776	<b>1362462</b>	156	5118091	<b>1366254</b>	163	5151210	<b>1488201</b>	216
6853236	<b>1187338</b>	185	5847663	<b>1196601</b>	211	6599783	<b>1362464</b>	156	5118152	<b>1366300</b>	163		/100 pc.	
6853243	<b>1187344</b>	185				6599790	<b>1362467</b>	156	5118213	<b>1366351</b>	163	5151272	<b>1488252</b>	235
6853250	<b>1187350</b>	185	5514039	<b>1197096</b>	210	6599806	<b>1362469</b>	156						
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6855056	<b>1187920</b>	207	6599387	<b>1362364</b>	154	6600250	<b>1362904</b>	160	5134831	<b>1435019</b>	180	5595410	<b>2146061</b>	83
6855063	<b>1187926</b>	207	6599394	<b>1362367</b>	154	6600267	<b>1362906</b>	160	5134893	<b>1435027</b>	180	5595472	<b>2146096</b>	83
6855155	<b>1187932</b>	207	6599400	<b>1362369</b>	154	6600274	<b>1362908</b>	160				5595533	<b>2146118</b>	83
6855162	<b>1187938</b>	207	6599417	<b>1362372</b>	154	6600281	<b>1362912</b>	160	5134954	<b>1436015</b>	180	5595656	<b>2146134</b>	83
6855179	<b>1187944</b>	207	6599424	<b>1362374</b>	154	6600298	<b>1362914</b>	160	5135012	<b>1436023</b>	180	5595717	<b>2146207</b>	83
6855186	<b>1187950</b>	207	6599431	<b>1362378</b>	154	6600304	<b>1362918</b>	160				5595779	<b>2146215</b>	83
6855216	<b>1187956</b>	207	6600700	<b>1362382</b>	154	6600335	<b>1362922</b>	160	5135074	<b>1437003</b>	181	5595830	<b>2146258</b>	83
			6599448	<b>1362386</b>	154	6600311	<b>1362926</b>	160	5135135	<b>1437011</b>	181	5204275	<b>2146290</b>	83
6855759	<b>1188020</b>	207	6599455	<b>1362389</b>	154	6600328	<b>1362930</b>	160	5135197	<b>1437038</b>	181	5595892	<b>2146320</b>	83
6855773	<b>1188026</b>	207	6599585	<b>1362404</b>										

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5403180	/100 pc. <b>2147280</b>	84	5211211	<b>2204924</b>	95	5215950	<b>2225816</b>	126	5519492	<b>2232901</b>	116	6515165	<b>2332794</b>	110
5403197	<b>2147283</b>	84	5597674	<b>2204975</b>	94	5216070	<b>2225905</b>	126	5519553	<b>2232928</b>	117			
			5597735	<b>2204983</b>	95	5216131	<b>2225913</b>	126	5519614	<b>2232930</b>	117		/pc.	
			5597797	<b>2204991</b>	94				5519676	<b>2232936</b>	118	5228073	<b>2341018</b>	138
5844518	<b>2148021</b>	86				5216254	<b>2226014</b>	127	5519737	<b>2232940</b>	118	5228196	<b>2341107</b>	138
5844570	<b>2148048</b>	86	5211273	<b>2205017</b>	94	5216315	<b>2226022</b>	127						
5844631	<b>2148056</b>	86	5211334	<b>2205033</b>	95	5216438	<b>2226103</b>	128	5221173	<b>2236028</b>	138		/100 pc.	
5863779	<b>2148501</b>	87	5211396	<b>2205041</b>	94	5216490	<b>2226111</b>	128				5828198	<b>2347229</b>	48
5863830	<b>2148528</b>	87	5710028	<b>2205052</b>	94	5216674	<b>2226219</b>	128	5613398	<b>2249952</b>	98	5828259	<b>2347261</b>	48
5863892	<b>2148536</b>	87	5710035	<b>2205053</b>	96	5216797	<b>2226308</b>	129				5448099	<b>2347407</b>	48
5947899	<b>2148803</b>	86	5710042	<b>2205054</b>	95	5216919	<b>2226405</b>	129	5221296	<b>2250071</b>	98	6788521	<b>2347580</b>	46
5877691	<b>2148846</b>	86	5211457	<b>2205092</b>	138				5221357	<b>2250136</b>	98	6788538	<b>2347582</b>	46
5640035	<b>2148862</b>	86	5044970	<b>2205097</b>	148	5217275	<b>2227223</b>	120	5221418	<b>2250209</b>	98	6788545	<b>2347584</b>	46
			6773572	<b>2205380</b>	92	5217336	<b>2227231</b>	120	5221470	<b>2250241</b>	98	6788552	<b>2347586</b>	46
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5583936	<b>2149010</b>	78	6773619	<b>2205388</b>	92	5217459	<b>2227347</b>	121	5221593	<b>2250438</b>	98	7273934	<b>2347605</b>	47
5583998	<b>2149016</b>	78				5606970	<b>2227371</b>	121	5613879	<b>2250527</b>	99			
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5584353	<b>2149303</b>	79	5651703	<b>2205420</b>	92	5217817	<b>2227525</b>	122				6788712	<b>2348128</b>	47
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5585435	<b>2149321</b>	79	5863953	<b>2207028</b>	145	5218050	<b>2227630</b>	123	5614890	<b>2254522</b>	131	6788620	<b>2349482</b>	46
5585497	<b>2149327</b>	79	5798798	<b>2207036</b>	145	5218173	<b>2227711</b>	124	5615019	<b>2254565</b>	132	6788637	<b>2349484</b>	46
5585558	<b>2149333</b>	79	5022497	<b>2207060</b>	146	5218234	<b>2227738</b>	124				6788644	<b>2349486</b>	46
5585619	<b>2149339</b>	79	5809395	<b>2207080</b>	145	5218296	<b>2227746</b>	124	5222798	<b>2255014</b>	133	6788651	<b>2349488</b>	46
5585671	<b>2149351</b>	79	5809401	<b>2207088</b>	145	5607694	<b>2227762</b>	124	5222859	<b>2255022</b>	133			
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5586395	<b>2149369</b>	79	5809463	<b>2207140</b>	145	5218418	<b>2227819</b>	125	5616573	<b>2259745</b>	134			
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5616276	<b>2149559</b>	79				5218593	<b>2227916</b>	126				5669197	<b>2351056</b>	47
5616337	<b>2149563</b>	79	5213017	<b>2213117</b>	115	5218654	<b>2227924</b>	126	5224297	<b>2305151</b>	221	5229513	<b>2351064</b>	47
5616399	<b>2149567</b>	79							5224358	<b>2305232</b>	221	5229575	<b>2351099</b>	47
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5616993	<b>2149579</b>	79				5218951	<b>2228114</b>	128	5901853	<b>2307622</b>	222	5708971	<b>2351609</b>	87
5617051	<b>2149583</b>	79	5213130	<b>2215047</b>	111	5219019	<b>2228122</b>	128	5224471	<b>2307634</b>	222	5931935	<b>2351650</b>	88
5931911	<b>2149701</b>	86	5213192	<b>2215071</b>	112	5219132	<b>2228211</b>	128	5901860	<b>2307638</b>	222			
5931928	<b>2149710</b>	86	5213253	<b>2215101</b>	112	5219194	<b>2228238</b>	128					/pc.	
6409235	<b>2149916</b>	143	5213314	<b>2215144</b>	113	5219255	<b>2228300</b>	129	5225911	<b>2327104</b>	130	5785385	<b>2362940</b>	254
6409242	<b>2149920</b>	143	5213376	<b>2215179</b>	113	5219316	<b>2228319</b>	129						
6409259	<b>2149925</b>	143	5213437	<b>2215209</b>	114	5219378	<b>2228408</b>	129	6416929	<b>2331800</b>	136	5241690	<b>3031012</b>	58
6409266	<b>2149932</b>	143	5213550	<b>2215306</b>	118	5219439	<b>2228416</b>	129	6416936	<b>2331802</b>	136	5851417	<b>3031500</b>	58
6409273	<b>2149940</b>	143	5213611	<b>2215314</b>	118	5496397	<b>2228420</b>	117	6416943	<b>2331810</b>	136			
6409297	<b>2149950</b>	143	5213673	<b>2215322</b>	119	5496458	<b>2228422</b>	117	6416950	<b>2331812</b>	136		/100 pc.	
6409303	<b>2149963</b>	143	5213734	<b>2215330</b>	119	5608110	<b>2228432</b>	117	6416974	<b>2331816</b>	136	5245773	<b>3100154</b>	57
			5213796	<b>2215349</b>	119	5608172	<b>2228440</b>	117	6416981	<b>2331818</b>	136	5245834	<b>3100189</b>	57
5880936	<b>2153106</b>	81	5213857	<b>2215357</b>	119	5828617	<b>2228467</b>	117	6416998	<b>2331822</b>	136	5245896	<b>3100251</b>	57
5880998	<b>2153114</b>	81				5219552	<b>2228610</b>	116	6417001	<b>2331824</b>	136	5245957	<b>3100308</b>	57
5881056	<b>2153130</b>	81	5214038	<b>2222035</b>	111	5219613	<b>2228629</b>	116	6417018	<b>2331830</b>	136	5246015	<b>3100405</b>	57
5881117	<b>2153157</b>	81	5214090	<b>2222051</b>	111	5608530	<b>2228637</b>	116	6417032	<b>2331832</b>	136			
5742395	<b>2153718</b>	81	5214151	<b>2222078</b>	111	5496519	<b>2228686</b>	117	6417049	<b>2331836</b>	136	5851059	<b>3105016</b>	57
5741732	<b>2153726</b>	81	5214212	<b>2222086</b>	111	5828556	<b>2228688</b>	117	6417056	<b>2331838</b>	136	5851110	<b>3105024</b>	57
5741671	<b>2153734</b>	81	5214274	<b>2222094</b>	111	5219675	<b>2228718</b>	117	6417100	<b>2331842</b>	136	5851172	<b>3105032</b>	57
			5214335	<b>2222116</b>	111	5219736	<b>2228726</b>	117	6417117	<b>2331844</b>	136			
5206897	<b>2157128</b>	106	5214397	<b>2222124</b>	111	5219798	<b>2228734</b>	117	6417124	<b>2331848</b>	136	5250272	<b>3131068</b>	233
5206958	<b>2157179</b>	106	5214458	<b>2222140</b>	111	5608837	<b>2228750</b>	117	6417131	<b>2331850</b>	136	5250333	<b>3131084</b>	233
5207016	<b>2157241</b>	106	5214519	<b>2222167</b>	111	5219859	<b>2228823</b>	117	6417155	<b>2331860</b>	136			
5207078	<b>2157349</b>	106	5214571	<b>2222175</b>	111	5219910	<b>2228831</b>	117	6417162	<b>2331862</b>	136	5250395	<b>3133028</b>	57
			5698357	<b>2222809</b>	116	5219972	<b>2228858</b>	117	6417179	<b>2331866</b>	136	5250456	<b>3133036</b>	57
5207139	<b>2158124</b>	106	5705796	<b>2222833</b>	116	5220039	<b>2228904</b>	118	6417186	<b>2331868</b>	136	5250579	<b>3133230</b>	57
5207191	<b>2158175</b>	106	5705734	<b>2222841</b>	116	5609551	<b>2228963</b>	120	6417193	<b>2331872</b>	136			





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6098392	<b>3141484</b>	238				5272717	<b>3192334</b>	250	5785958	<b>3198237</b>	251			
6098408	<b>3141492</b>	238	5317418	<b>3164020</b>	233	5272779	<b>3192342</b>	250	5562511	<b>3198239</b>	251	5297970	<b>3400042</b>	244
6098439	<b>3141494</b>	238	6101023	<b>3164952</b>	228	5272830	<b>3192350</b>	250	5562573	<b>3198241</b>	251	5298038	<b>3400050</b>	244
6098446	<b>3141502</b>	238	6101030	<b>3164956</b>	228	5272892	<b>3192369</b>	250	5563112	<b>3198243</b>	251	5298090	<b>3400069</b>	244
6098453	<b>3141504</b>	238	6101047	<b>3164972</b>	228	5272953	<b>3192377</b>	250	5786016	<b>3198245</b>	251	5298151	<b>3400085</b>	244
6098507	<b>3141514</b>	238	6101078	<b>3164976</b>	228	5273011	<b>3192415</b>	250	5786078	<b>3198247</b>	251	5298212	<b>3400107</b>	244
						5273073	<b>3192423</b>	250	5787457	<b>3198249</b>	251	5298274	<b>3400123</b>	244
5254836	<b>3153096</b>	233	5261018	<b>3168905</b>	233	5273134	<b>3192431</b>	250	5787877	<b>3198251</b>	251	5909293	<b>3400173</b>	244
5254898	<b>3153150</b>	233				5273196	<b>3192458</b>	250	5790037	<b>3198260</b>	251	5909309	<b>3400175</b>	244
5254959	<b>3153207</b>	233	5849520	<b>3175608</b>	226	5273257	<b>3192466</b>	250	5791232	<b>3198262</b>	251	5618072	<b>3400177</b>	244
			5849537	<b>3175620</b>	226	5682578	<b>3192628</b>	250	5791294	<b>3198264</b>	251	5909354	<b>3400183</b>	244
			5849544	<b>3175625</b>	226	5682516	<b>3192636</b>	250	5791539	<b>3198266</b>	251	5909361	<b>3400185</b>	244
5940371	<b>3156016</b>	230				5682455	<b>3192644</b>	250	5791713	<b>3198268</b>	251	5298397	<b>3400344</b>	244
5940388	<b>3156018</b>	230							5792192	<b>3198276</b>	251	5298458	<b>3400352</b>	244
5940395	<b>3156019</b>	230	5871156	<b>3176428</b>	229				5792253	<b>3198278</b>	251	5298519	<b>3400360</b>	244
5940401	<b>3156020</b>	230				5274759	<b>3195007</b>	252	5792437	<b>3198280</b>	251	5298571	<b>3400379</b>	244
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5891994	<b>3156029</b>	230	5270379	<b>3188175</b>	249	5275237	<b>3195201</b>	252	5287650	<b>3341062</b>	258	5300311	<b>3402207</b>	240
5940548	<b>3156031</b>	230	5866954	<b>3188183</b>	249	5275299	<b>3195228</b>	252	5287711	<b>3341070</b>	258	5300373	<b>3402215</b>	240
5940555	<b>3156032</b>	230	5867012	<b>3188205</b>	249	5275350	<b>3195236</b>	252	5287773	<b>3341496</b>	258	5300434	<b>3402223</b>	240
5940562	<b>3156033</b>	230	5867074	<b>3188256</b>	249	5275411	<b>3195244</b>	252	5287834	<b>3341607</b>	258	5300496	<b>3402304</b>	240
5940609	<b>3156034</b>	230	5270430	<b>3188272</b>	249	5275473	<b>3195252</b>	252	5287896	<b>3341704</b>	258	5909415	<b>3402306</b>	240
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5849513	<b>3156042</b>	230				5275770	<b>3195430</b>	252	5288138	<b>3342042</b>	258	5300618	<b>3402320</b>	240
5849582	<b>3156044</b>	230	6621392	<b>3191000</b>	248	5275831	<b>3195449</b>	252	5288190	<b>3342050</b>	258	5618089	<b>3402322</b>	240
5940739	<b>3156054</b>	231	6621408	<b>3191002</b>	248	5275893	<b>3195457</b>	252	5288251	<b>3342069</b>	258	5300670	<b>3402339</b>	240
5940821	<b>3156062</b>	231	6621415	<b>3191006</b>	248	5275954	<b>3195465</b>	252	5288312	<b>3342077</b>	258	5894780	<b>3402345</b>	240
5940876	<b>3156067</b>	231	6621422	<b>3191008</b>	248	5276012	<b>3195473</b>	252	5288374	<b>3342506</b>	258	5300731	<b>3402444</b>	240
5849643	<b>3156120</b>	245	6621439	<b>3191010</b>	248	5276074	<b>3195635</b>	252	5288435	<b>3342603</b>	258	5300793	<b>3402452</b>	240
5849711	<b>3156122</b>	245	6621446	<b>3191012</b>	248	5276135	<b>3195643</b>	252	5288497	<b>3342700</b>	258	5300854	<b>3402460</b>	240
5849728	<b>3156126</b>	245	6621453	<b>3191016</b>	248	5276197	<b>3195651</b>	252	5288558	<b>3342808</b>	258	5300915	<b>3402479</b>	240
5255857	<b>3156494</b>	231	6621460	<b>3191018</b>	248	5276258	<b>3195678</b>	252						
5255970	<b>3156516</b>	231	6621477	<b>3191020</b>	248	5276319	<b>3195686</b>	252	5289272	<b>3347052</b>	259	5867913	<b>3403025</b>	241
5256038	<b>3156524</b>	231	6621484	<b>3191024</b>	248	5321019	<b>3195694</b>	252	5289333	<b>3347060</b>	259	5867975	<b>3403041</b>	241
6687336	<b>3156706</b>	230	6621491	<b>3191026</b>	248	5682875	<b>3195910</b>	252	5289395	<b>3347079</b>	259	5868033	<b>3403076</b>	241
6687343	<b>3156708</b>	230	6621507	<b>3191028</b>	248	5682813	<b>3195929</b>	252				5868095	<b>3403084</b>	241
6687350	<b>3156710</b>	230	6621514	<b>3191032</b>	248	5682752	<b>3195937</b>	252	5291374	<b>3353168</b>	258	5868156	<b>3403092</b>	241
6687367	<b>3156712</b>	230	6621521	<b>3191034</b>	248	5682691	<b>3195945</b>	252	5291435	<b>3353184</b>	258	6849536	<b>3403099</b>	241
6687701	<b>3156715</b>	230	6621538	<b>3191036</b>	248				5291497	<b>3353230</b>	258			
6687374	<b>3156716</b>	230	6621545	<b>3191050</b>	248	5552017	<b>3198016</b>	253	5291558	<b>3353303</b>	258	5868217	<b>3403122</b>	241
6687381	<b>3156728</b>	230	6621552	<b>3191052</b>	248	5552079	<b>3198018</b>	253	5291619	<b>3353400</b>	258	5944348	<b>3403125</b>	241
6687398	<b>3156730</b>	230	6621576	<b>3191056</b>	248	5552130	<b>3198020</b>	253	5291671	<b>3353508</b>	258	5944409	<b>3403127</b>	241
6687404	<b>3156732</b>	230	6621583	<b>3191058</b>	248	5552192	<b>3198022</b>	253	5291732	<b>3353605</b>	258	5868279	<b>3403130</b>	241
6687411	<b>3156734</b>	230	6621590	<b>3191060</b>	248	5552253	<b>3198024</b>	253				5944386	<b>3403135</b>	241
6687428	<b>3156736</b>	230	6621606	<b>3191062</b>	248	5552314	<b>3198026</b>	253	5291916	<b>3354164</b>	258	5944447	<b>3403137</b>	241
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6687442	<b>3156758</b>	230	6621620	<b>3191068</b>	248	5552437	<b>3198032</b>	253	5292036	<b>3354237</b>	258			
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6687497	<b>3156762</b>	230	6621644	<b>3191074</b>	248	5555551	<b>3198036</b>	253	5292159	<b>3354407</b>	258	5946267	<b>3403147</b>	241
6687503	<b>3156764</b>	230	6621651	<b>3191076</b>	248	5557111	<b>3198038</b>	253	5292210	<b>3354504</b>	258	5944393	<b>3403155</b>	241
6687510	<b>3156766</b>	230	6621668	<b>3191078</b>	248	5557418	<b>3198040</b>	253	5292272	<b>3354601</b>	258	5944454	<b>3403163</b>	241
6687527	<b>3156768</b>	230	6621675	<b>3191082</b>	248	5558132	<b>3198042</b>	253				5868330	<b>3403165</b>	241
6687534	<b>3156770</b>	230	6621682	<b>3191084</b>	248	5558378	<b>3198044</b>	253	5292999	<b>3360121</b>	259	5946298	<b>3403175&lt;/</b>	

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5303558	<b>3415031</b>	239	6412044	<b>3492974</b>	64	6842643	<b>3498196</b>	56	5415336	<b>5303265</b>	220	5911036	<b>6408932</b>	246
5303619	<b>3415066</b>	239	6412051	<b>3492978</b>	64		/100 pc.					5911043	<b>6408940</b>	245
5303671	<b>3415082</b>	239				5964100	<b>3498204</b>	53		/100 pc.		6623952	<b>6408958</b>	245
5303732	<b>3415104</b>	239	6652297	<b>3497600</b>	65	6559664	<b>3498261</b>	54	5417132	<b>5305012</b>	222	6078493	<b>6408962</b>	245
5303794	<b>3415120</b>	239	6652365	<b>3497608</b>	65	6842568	<b>3498262</b>	54	5901785	<b>5305016</b>	223	6078554	<b>6408966</b>	245
5303855	<b>3415147</b>	239	6652426	<b>3497616</b>	65		/100 pc.					6078615	<b>6408970</b>	245
5303916	<b>3415163</b>	239	6652488	<b>3497640</b>	65	6559671	<b>3498264</b>	54		/pc.		5911081	<b>6408972</b>	246
			6652532	<b>3497648</b>	65	6710881	<b>3498266</b>	54	6326112	<b>6017371</b>	216			
			6652563	<b>3497656</b>	65	6710911	<b>3498268</b>	54						
5304333	<b>3450058</b>	234	6652662	<b>3497676</b>	66		/100 pc.		7303631	<b>6049246</b>	228	6202218	<b>6410081</b>	238
5304395	<b>3450066</b>	234	6652723	<b>3497684</b>	66	6559640	<b>3498272</b>	53				6202270	<b>6410103</b>	238
5304456	<b>3450074</b>	234	6652778	<b>3497700</b>	65	6952243	<b>3498274</b>	53		/pc.		6202331	<b>6410111</b>	238
5304517	<b>3450082</b>	234	6652785	<b>3497702</b>	65		/pc.		6465972	<b>6348408</b>	242	6043569	<b>6410154</b>	238
5304579	<b>3450090</b>	234	6652792	<b>3497704</b>	65	6571505	<b>3498314</b>	62	6466092	<b>6348440</b>	242	6043682	<b>6410162</b>	238
5304630	<b>3450104</b>	234	6652808	<b>3497706</b>	65		/100 pc.							
5304692	<b>3450120</b>	234	6652839	<b>3497720</b>	65	6592678	<b>3498344</b>	62		/100 pc.		6348794	<b>6418244</b>	231
			6652846	<b>3497722</b>	65	6571482	<b>3498358</b>	62	6199815	<b>6406122</b>	226	5911159	<b>6418247</b>	232
5513315	<b>3453820</b>	234	6652853	<b>3497724</b>	65	6429493	<b>3498370</b>	63	5059585	<b>6406125</b>	226	6822133	<b>6418248</b>	232
				/pc.		6429509	<b>3498372</b>	63	5059585	<b>6406130</b>	226	6437474	<b>6418250</b>	231
5305958	<b>3460061</b>	234	6606986	<b>3497803</b>	70	6429516	<b>3498374</b>	63	6563111	<b>6406133</b>	226	6518470	<b>6418252</b>	231
5306078	<b>3460169</b>	234	7334017	<b>3497806</b>	70	6429523	<b>3498376</b>	63	5059561	<b>6406138</b>	226	5911166	<b>6418255</b>	232
5306191	<b>3460762</b>	235		/pc.		6411924	<b>3498390</b>	61	6077595	<b>6406142</b>	226	5759041	<b>6418256</b>	232
5306252	<b>3460789</b>	235	6606757	<b>3497820</b>	71	6411931	<b>3498392</b>	62	6078370	<b>6406147</b>	226	5911197	<b>6418257</b>	232
			6606764	<b>3497822</b>	71	6429578	<b>3498393</b>	61	6199877	<b>6406157</b>	226	6204373	<b>6418279</b>	232
5306498	<b>3462064</b>	236	6606771	<b>3497824</b>	71	6411948	<b>3498396</b>	60	6616152	<b>6406181</b>	226	6204434	<b>6418287</b>	232
5306559	<b>3462080</b>	236	6606788	<b>3497826</b>	71	6411955	<b>3498398</b>	61	6077717	<b>6406189</b>	226	6204496	<b>6418295</b>	232
5306979	<b>3462862</b>	236	6606818	<b>3497830</b>	71	6429585	<b>3498399</b>	61	6078431	<b>6406193</b>	226	6204557	<b>6418317</b>	232
5307037	<b>3462889</b>	236	6606825	<b>3497832</b>	71	5940128	<b>3498516</b>	63	6199990	<b>6406203</b>	226	6204618	<b>6418368</b>	232
			6606832	<b>3497834</b>	71	5940142	<b>3498556</b>	63	5925248	<b>6406205</b>	226	6204670	<b>6418376</b>	232
			6606849	<b>3497840</b>	71	5940180	<b>3498666</b>	63	5925255	<b>6406207</b>	226			
5307150	<b>3463060</b>	235	6606856	<b>3497842</b>	71	6429486	<b>3498752</b>	66	6200054	<b>6406254</b>	227	6589685	<b>6490192</b>	214
5307211	<b>3463567</b>	235	6606863	<b>3497844</b>	71	6571499	<b>3498768</b>	64	6200115	<b>6406270</b>	227		price/100	
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			6606887	<b>3497852</b>	71	6412082	<b>3498774</b>	64	6200290	<b>6406556</b>	228	6590872	<b>6490282</b>	214
5307334	<b>3464067</b>	235	6606894	<b>3497854</b>	71	6466313	<b>3498776</b>	64	6291311	<b>6406564</b>	228		/100 pc.	
5307396	<b>3464083</b>	235	6606900	<b>3497860</b>	71				6817573	<b>6406580</b>	228	6589579	<b>6490940</b>	214
			6606917	<b>3497862</b>	71	5413530	<b>5300037</b>	220	6200351	<b>6406602</b>	228	6589586	<b>6490942</b>	214
5309253	<b>3470148</b>	234	6606924	<b>3497864</b>	71	5413592	<b>5300053</b>	220	6603077	<b>6406610</b>	228	6589593	<b>6490944</b>	214
5309314	<b>3470210</b>	234	6606931	<b>3497866</b>	71	5413653	<b>5300061</b>	220	6603138	<b>6406653</b>	228	6589609	<b>6490950</b>	215
5309376	<b>3470237</b>	234	6606948	<b>3497870</b>	72	5413714	<b>5300088</b>	220	6200412	<b>6406696</b>	228	6209835	<b>6490964</b>	215
			6606955	<b>3497872</b>	72	5901174	<b>5300120</b>	220	5942849	<b>6406698</b>	228	6650118	<b>6490972</b>	215
5442936	<b>3481611</b>	59	6606962	<b>3497874</b>	72	5901181	<b>5300124</b>	220	6200474	<b>6406718</b>	228		/pc.	
5432852	<b>3481662</b>	59	6615384	<b>3497875</b>	72	5901198	<b>5300127</b>	220	6200535	<b>6406726</b>	228	6209897	<b>6498019</b>	215
5432975	<b>3481778</b>	59	6606993	<b>3497876</b>	72	5901204	<b>5300132</b>	220	6200597	<b>6406750</b>	228	6209958	<b>6498027</b>	215
			6464661	<b>3497906</b>	70	5413899	<b>5301009</b>	221	66064328	<b>6406785</b>	228			
5310631	<b>3482014</b>	59	6464678	<b>3497909</b>	70	5413950	<b>5301033</b>	221	6200771	<b>6406815</b>	228		/100 pc.	
5310693	<b>3482030</b>	60	6464685	<b>3497912</b>	72	5414018	<b>5301041</b>	221	6200832	<b>6406823</b>	228	6397228	<b>7205900</b>	73
5310754	<b>3482057</b>	60	6464708	<b>3497915</b>	72	5414070	<b>5301068</b>	221	6200894	<b>6406866</b>	228	6397235	<b>7205901</b>	73
5310815	<b>3482073</b>	60	6467884	<b>3497932</b>	72	5414193	<b>5301084</b>	221	6822072	<b>6406870</b>	228	6397242	<b>7205902</b>	73
5310877	<b>3482103</b>	59		/100 pc.		5414315	<b>5301106</b>	221	6437894	<b>6406872</b>	228	6397266	<b>7205903</b>	73
5310938	<b>3482138</b>	60	6464906	<b>3497972</b>	73	5901020	<b>5301170</b>	221	5045243	<b>6406907</b>	226	6397297	<b>7205904</b>	73
5310990	<b>3482154</b>	59	6464913	<b>3497975</b>	73	5901068	<b>5301172</b>	221	6201198	<b>6406939</b>	227	6397303	<b>7205905</b>	73
5239475	<b>3482707</b>	60	6464920	<b>3497978</b>	73	5901075	<b>5301174</b>	221	6201259	<b>6406963</b>	227	6397310	<b>7205906</b>	73
5239352	<b>3482758</b>	60		/pc.		5901082	<b>5301176</b>	221	6201310	<b>6406971</b>	227	6397327	<b>7205907</b>	73
			6464937	<b>3497981</b>	72	5901099	<b>5301180</b>	221	6201372	<b>6406998</b>	227	6397358	<b>7205908</b>	73
5311171	<b>3483061</b>	58	6464944	<b>3497984</b>	73	5901105	<b>5301184</b>	221	6201433	<b>6407048</b>	227	6397365	<b>7205909</b>	73
5311232	<b>3483088</b>	58	6464951	<b>3497987</b>	73				6396160	<b>6407050</b>	227	6397372	<b>7205910</b>	73
5311294	<b>3483096</b>	58				5414551	<b>5302021</b>	222	6201730	<b>6407471</b>	227			
5418191	<b>3483214</b>	48	6651290	<b>3498103</b>	53	5414612	<b>5302056</b>	222	5354956	<b>6407521</b>	226			
5418207	<b>3483239</b>	49	6952175	<b>3498105</b>	53	5414674	<b>5302064</b>	222	5925262	<b>6407524</b>	227			
				/100 pc.		5414735	<b>5302080</b>	222	6201792	<b>6407528</b>	227			
5683414	<b>3484602</b>	58	6559657	<b>3498108</b>	53	5414797	<b>5302102</b>	222	6201853	<b>6407536</b>	227			
5683353	<b>3484629</b>	58	6559626	<b>3498124</b>	55	5901327	<b>5302170</b>	222	5626343	<b>6407537</b>	227			
			6952182	<b>3498126</b>	55	5901358	<b>5302174</b>	222	6201914	<b>6407560</b>	227			
6709557	<b>3492003</b>	64	6952199	<b>3498128</b>	55	5901365	<b>5302178</b>	222	6201976	<b>6407579</b>	227			
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1015 D 9 G	6458639	1009463	168	2008 25 LGR	5217930	2227614	123
1015 RB 20 G	5850090	1010794	169	2008 25 LGR SO	5518716	2232812	123
				2008 25 RW	5215530	2225611	124
1020 11-16 A4	5901792	1404168	221	2008 25 SW	5336310	2232170	124
1020 11-16 G	5125891	1404164	221	2008 35 LGR	5217992	2227622	123
1020 14-18 A4	5901808	1404184	221	2008 35 LGR SO	5518778	2232814	123
1020 14-18 G	5125952	1404180	221	2008 35 RW	5215592	2225638	124
1020 18-28 A4	5901815	1404292	221	2008 45 LGR	5218050	2227630	123
1020 18-28 G	5126010	1404288	221	2008 45 LGR SO	5518839	2232816	123
1101 3.4x100	5288077	3341992	258	2009 25 LGR	5218173	2227711	124
1101 3.4x50	5287773	3341496	258	2009 25 LGR SO	5518891	2232820	124
1101 3.4x60	5287834	3341607	258	2009 25 RW	5215776	2225719	125
1101 3.4x70	5287896	3341704	258	2009 25 SW	5336198	2232219	125
1101 3.4x80	5287957	3341801	258	2009 35 LGR	5218234	2227738	124
1101 3.4x90	5288015	3341909	258	2009 35 LGR SO	5519010	2232822	124
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1101 3x50	5287599	3341054	258	2009 35 RW	5215837	2225727	125
1101 3x60	5287650	3341062	258	2009 45 LGR	5218296	2227746	124
1101 3x70	5287711	3341070	258	2009 45 LGR SO	5519195	2232824	124
1101 Z 40 G	5288138	3342042	258	2009 45 LGR SP	5607878	2227797	124
1101 Z 50 G	5288190	3342050	258				
1101 Z 60 G	5288251	3342069	258	2010 25 LGR	5218357	2227800	125
1101 Z 70 G	5288312	3342077	258	2010 25 RW	5215899	2225808	126
1101 Z3.4x50 G	5288374	3342506	258	2010 25 SW	5336136	2232235	126
1101 Z3.4x60 G	5288435	3342603	258	2010 35 LGR	5218418	2227819	125
1101 Z3.4x70 G	5288497	3342700	258	2010 35 LGR SO	5519256	2232830	125
1101 Z3.4x80 G	5288558	3342808	258	2010 35 RW	5215950	2225816	126
				2010 45 LGR	5218470	2227827	125
1594 22 G	5106159	1310925	174	2010 45 LGR SO	5512530	2232834	125
1973 20-40 LGR	5640035	2148862	86	2011 25 RW	5216070	2225905	126
1973 3-13 LGR	5947899	2148803	86	2011 35 LGR	5218593	2227916	126
1973 8-28 LGR	5877691	2148846	86	2011 35 RW	5216131	2225913	126
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1974 2X12-25	5742579	2197863	87	2012 35 LGR	5218777	2228025	127
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VMU-A 10-130A4	6606825	3497832	71	WS M6 G40 G	6849536	3403099	241
VMU-A 10-130vz	6606764	3497822	71	WS M8 D16 A2	5300557	3402312	240
VMU-A 10-150vz	6606771	3497824	71	WS M8 D16 A4	5909477	3402314	240
VMU-A 12-155A4	6606832	3497834	71	WS M8 D16 A5	5909484	3402316	241
VMU-A 12-155vz	6606788	3497826	71	WS M8 D16 G	5300076	3402088	240
VMU-A 8-110A4	6606818	3497830	71	WS M8 D20 A2	5944348	3403125	241
VMU-A 8-110vz	6606757	3497820	71	WS M8 D20 A4	5944409	3403127	241
VMU-IG M10x80A4	6606894	3497854	71	WS M8 D25 A2	5944386	3403135	241
VMU-IG M10x80vz	6606863	3497844	71	WS M8 D25 A4	5944447	3403137	241
VMU-IG M6x80A4	6606870	3497850	71	WS M8 D28 G	5300373	3402215	240
VMU-IG M6x80vz	6606849	3497840	71	WS M8 D40 A2	5946250	3403145	241
VMU-IG M8x80A4	6606887	3497852	71	WS M8 D40 A4	5946267	3403147	241
VMU-IG M8x80vz	6606856	3497842	71	WS M8 G20 G	5868217	3403122	241
VMU-SH 12x80	6606900	3497860	71	WS M8 G25 G	5868279	3403130	241
VMU-SH 16x130	6606924	3497864	71	WS M8 G40 G	6849543	3403140	241
VMU-SH 16x85	6606917	3497862	71				
VMU-SH 20x85	6606931	3497866	71				
VM-X	6464937	3497981	72				
VM-XE 10/200	6464944	3497984	73				
VM-XE 10/500	6464951	3497987	73				
WN 7855 A 10	5029113	/100 pc. 1043196	173				





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