

SOLUTIONS FOR ARCHITECTS & DESIGNERS

Floor Ceiling Wall

www.obo.eu/architects

OBO BETTERMANN

THE SUPPLY OF ROOMS WITH POWER AND DATA

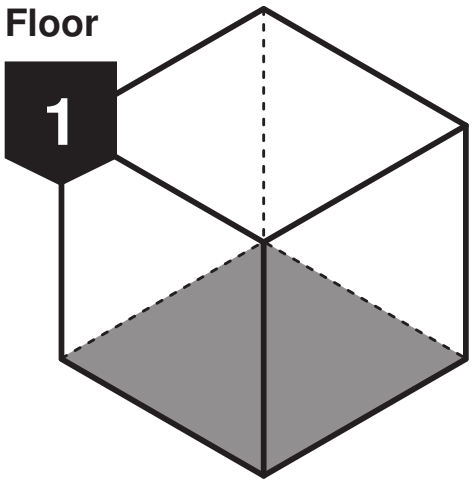




There are many rooms, in which people come together. Some are for living, some for working, some for celebrating or sleeping. No matter how rooms are used, they have something in common: they must be supplied with power and data. There are always three dimensions for this supply: floor, ceiling and wall. In rooms in which aesthetics and functionality must work together, spatial supply routes offer a wide range of solutions for all kinds of requirements for design and usability. The interplay of material, design, structure, surface and texture differs according to the room use.

The same applies to the usability of the technical interior. Housing, offices and administrative buildings, industrial halls, sports facilities and also public buildings – rooms require different points of supply which frequently need to be flexible over a long period and which are easily accessible, safe and match visually and technically. OBO Bettermann supplies the solutions.

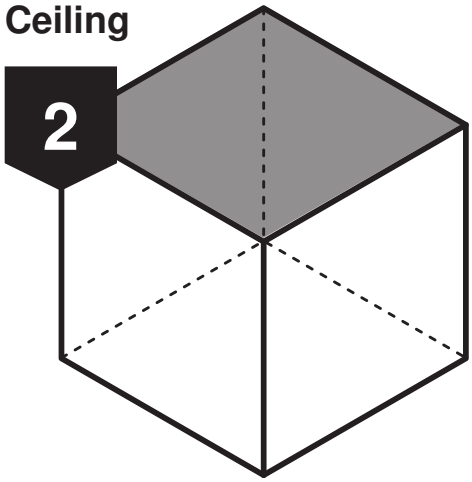
Floor



Floor

The floor of a room offers three supply options: from the surface (screed-bound), via a system floor and from the edge. The supply from the surface is guaranteed and based on fixed basic planning, which is not changed. Planned floor tanks are activated via a duct system and achieved via screed sockets adaptable to requirements. By contrast, a long-term flexible variant is offered by the system floor, which uses the cavities under the floor plates and allows refitting or movement of floor tanks. Supply via the edge is also possible with rooms with floor-depth glass surfaces, in which a discreet floor flap with brush bar provides access to power and data.

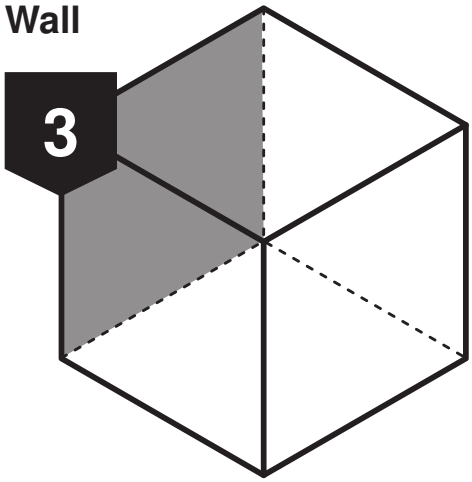
Ceiling



Ceiling

The supply from the ceiling offers a combination of space-saving and flexible connection options, in which rough industrial charm, modern technology and ecological consciousness converge. Classic cable trays, originally with a purely functional role, become part of the visual character of open-plan offices, lofts and public spaces. They are not just functional, but also make a contribution to the look and feel of contemporary settings. Floor to ceiling service poles attach the connection systems to the open, almost floating cable trays and make them accessible throughout the room.

Wall



Wall

Particularly in offices, supply routes via the wall are the classic and trusted method for power and data supply. Wall-mounted skirting trunking and installation pipes can be installed in a purely functional manner or as a part of the visual design of the room. Here, many connections can be housed functionally, or material and wall characteristics can be matched in a design-orientated manner. No matter whether for a pragmatic application or a more aesthetic location, the supply through the wall is flexible and functional, and not only underlines the character and charm of a location, but also helps to define it.

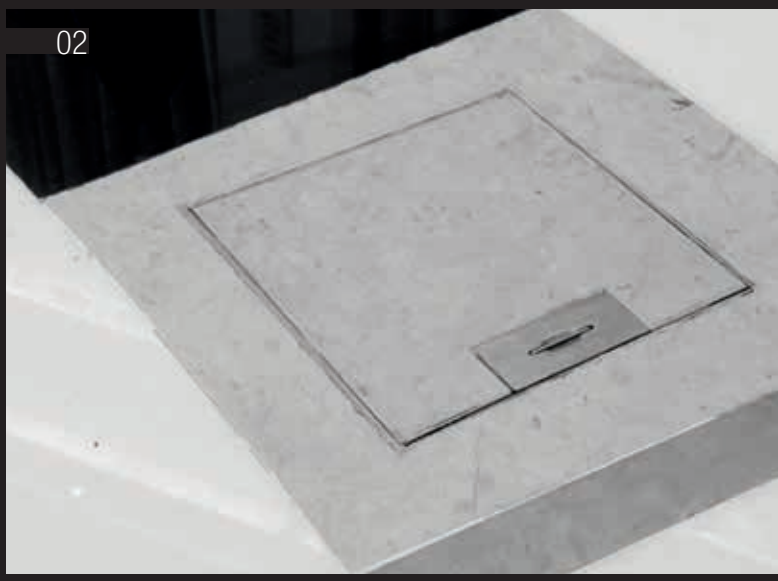
UNDERFLOOR SYSTEMS

Underfloor systems offer installation space for power, data and multimedia connections in the floor structure. Various solutions are available, depending on the application.



01 Service outlets (GES)

The GES service outlets are the tried-and-trusted solution for office installations with carpeted floors. They are available in plastic or metal and possess countless intelligent details such as cable routing clips, carpet protection frames, as reliable protection for the cut edge of the carpet and a locking lid closure with automatic lid opening.





02 Cassettes

The compact cassettes can be adjusted to be flush with the height of the finished floor/raw floor and can have noise decoupling in a special version. Cassettes are particularly suitable for floor coverings such as tiles or parquet. There are various versions for dry, moist and wet-care floor coverings. The materials stainless steel and brass ensure lasting resistance and a fine appearance.

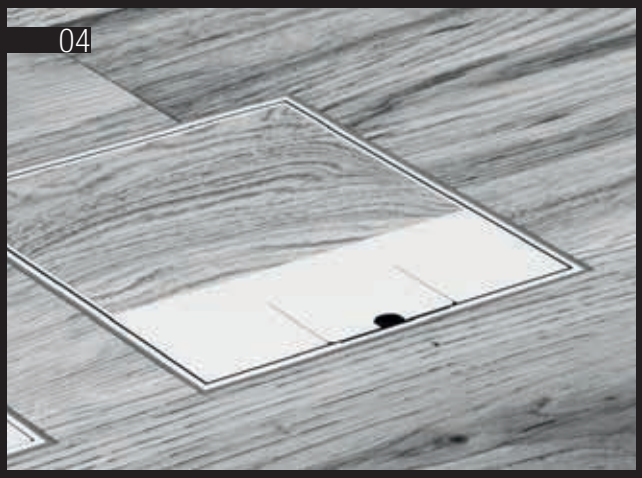
03 Round floor sockets (GES R2)

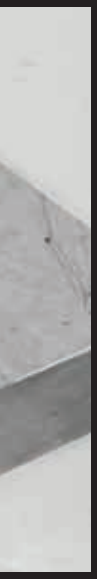
The lids of the round floor sockets are available in various versions and different surfaces. The GES R2 sockets are made from die-cast zinc. Nickel, old copper, chrome and old brass are available as a surface finish. Thus, the GES R2 can be integrated into a wide range of high-quality floor areas.

OBO Bettermann took over the Cable Management division of Ackermann at the beginning of 2006 and expanded its technical competence in the field of underfloor and cable routing systems. Since then, Ackermann made by OBO products are a key component part of the product range of the company's electrical installation solutions.

ACKERMANN MADE BY OBO

04





05



04 Floor sockets and floor boxes, square (UDHOME)

The UDHOME system consists of compact, square floor sockets and floor boxes, which can be mounted as a complete flush-mount unit, flush with any floor type. In the installed state, visible elements are reduced to fine, flush-floor edges and metallic surfaces. The UDHOME is available in stainless steel and pure brass.

05 Sockets to British Standard

Sockets to British Standard (type AP MT) can be mounted in the floor box. For the supply with data equipment, mounting supports of the type LJU6C are available.

	Variants						Size (mm)	
	Decouplable	Height-adjustable	Heavy-duty	Wet care	Installation height	Number of devices	Round	Rectangular
GES	✓			✓	From 75 mm	2, 4, 6, 9	∅ 234 ∅ 294 ∅ 324	118 x 194 222 x 222 274 x 221 264 x 264
Cassettes	✓	✓	✓	✓	From 90 mm	4, 9	∅ 214 ∅ 274 ∅ 304	199 x 199 243 x 243
GES R2	✓		✓	✓	From 85 mm	1	∅ 140	
UDHOME		✓	✓	✓	From 95/110 mm	1, 4, 9		125 x 125 205 x 205 250 x 250

UNDERFLOOR SYSTEM PROPERTIES



06 Load

DIN EN 50085-2-2 specifies the load requirements for electrical installation systems. According to this standard, cassettes/service outlets may only bend by a maximum of 6 mm when subjected to a load. However, with harder floor coverings, such as stone or tiles, bending of 6 mm will lead to breakage. For this reason, OBO has increased its internal quality criteria and goes a step further with the OBO testing standard.

The test results from the OBO BET Test Centre formed the basis for the development of the internal classification of heavy-duty classes SL1 and SL2. Products of heavy-duty class SL1 are suitable for loads of up to 10 kN, whilst products of heavy-duty class SL2 are even suitable for loads of up to 20 kN. This can prevent the breaking of hard and sensitive floor coverings such as stone or tiles.

You can find more information on this subject here:
www.obo.eu/load

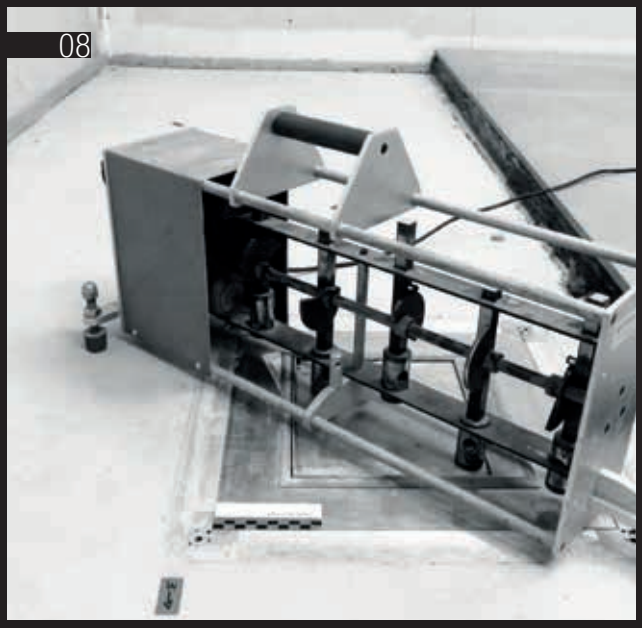


07 Wet care

All the device installation units for wet-care floors have a protection rating of at least IPX4 when closed to fulfil the requirements of EN 50085-2-2 without restriction. Device installation units with tube body also protect the electrical installation against the ingress of water when used – despite a reduced protection level of IP20. The tube body protrudes 10 mm above the top edge of the floor covering. Up to this height, puddles or waves of water cannot ingress into the installation compartment.

Wet care occurs primarily with smooth floors such as stone floors, tiles, ceramic floors, linoleum and PVC.

You can find more information on this subject here:
www.obo.eu/wet-care



08 Noise protection

The underfloor systems from Ackermann made by OBO are intended for installation in floating wet screeds. Normally, there are requirements for the transmission of air and footfall sound, both for vertical sound transmission, i.e. from storey to storey, and for horizontal sound transmission (from adjacent rooms).

As the underfloor systems are also run under partitions, the question of the influence of the system on noise transmission is of high relevance. For this reason, the air and noise transmission for the EÜK duct and OKA and OKB trunking systems and UDHOME 4 floor tanks were evaluated in qualified tests with the MÜLLERBBM GmbH testing institute in Planegg, Munich.

You can find further information on this subject here:
www.obo.eu/noise-protection

Planning and selection of the correct underfloor system

The planning and selection of an underfloor system also bring the following requirements:

- Installation requirements
- Requirements from construction planning
- Organisation requirements and user specifications
- Safety requirements

According to these requirements, the correct selection of the duct or trunking system is of key significance for technical planning. The OBO construct software developed by us allows rapid, targeted planning in the field of underfloor systems (www.obo-construct.com). You can find more information on selecting the correct version of our duct or trunking systems on our website under the following link:

www.obo.eu/trunking-systems

Standards for underfloor systems

Standards can be divided into two categories: installation specifications and product standards. The installation engineer is primarily responsible for compliance with the erection specifications.

The product standard EN 50085-2-2 specifies the testing criteria for underfloor systems. The OBO Bettermann underfloor systems are VDE-certified. You can find out more on the requirements for our underfloor systems, standards and tests on our website via the following link:

www.obo.eu/ufs-standardisation

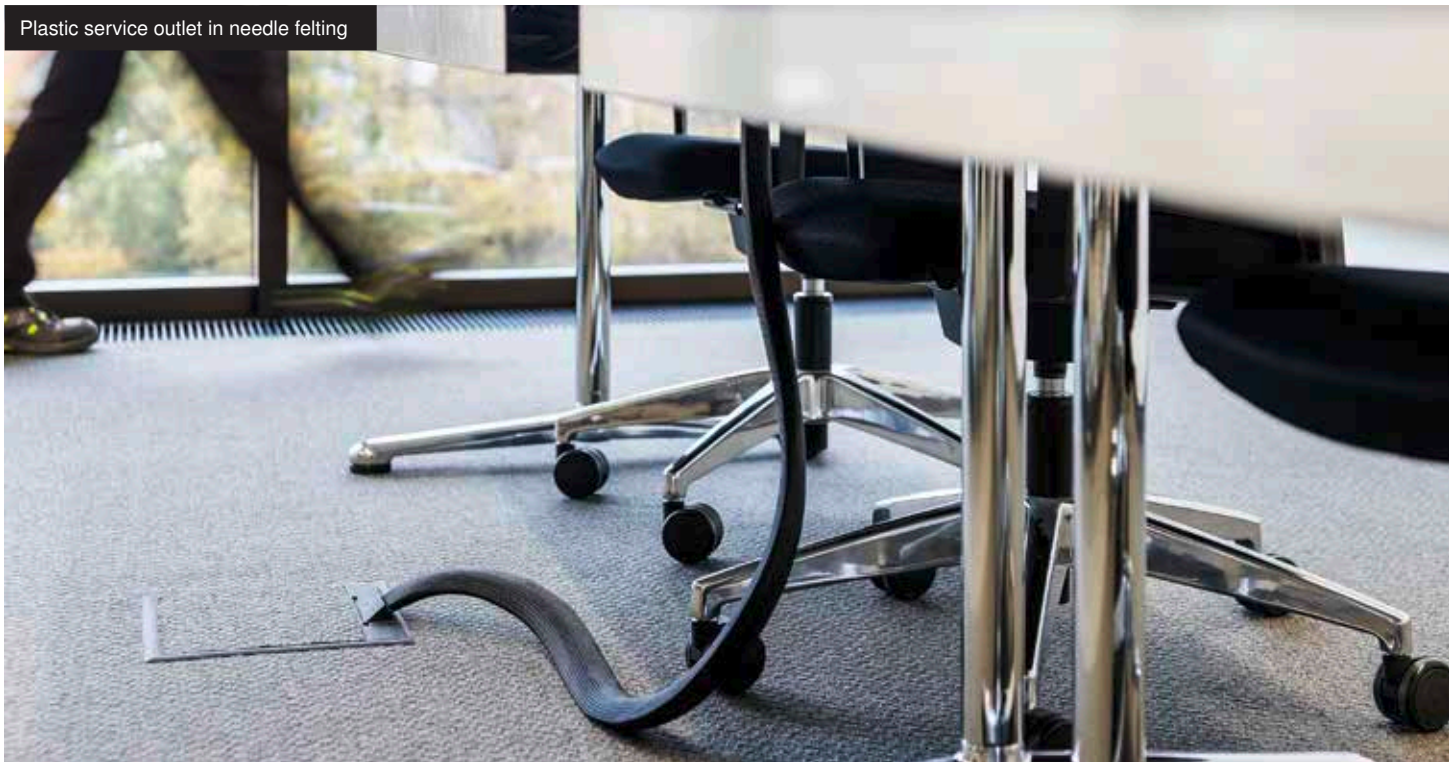
Fire protection in underfloor systems

In Germany, the Master Cable Installation Guideline (MLAR) is significant for fire protection measures in cable systems and for underfloor systems. The Master System Floors Directive (MSysBöR) applies additionally.

According to the requirements in these standards, OBO Bettermann underfloor systems can be run in escape and rescue routes and through fire walls. When doing so, special requirements need to be taken into account in the installation and system selection. You can find more information on our website via the following links:

www.obo.eu/ufs-fire-protection

VERSATILE POWER SUPPORT SERVICE OUTLETS



Plastic service outlet in needle felting



GRAF9 service outlet in tiled floors

Service outlets for the installation space for devices such as sockets, data sockets and multimedia connections in the floor. As a discreet and practical solution for power and data supply, they can be installed in screed-flush and screed-covered underfloor systems. Versions made of plastic, aluminium and stainless steel can be installed in an accentuated or complementary manner in a range of floor coverings.

Depending on the requirements and covering, the service outlets are suitable for dry-care floors such as carpets, but also wet-care floors, such as PVC, stone floors, tiles or parquet. The range of different sizes, versions and materials make them a flexible solution for different room uses.





Plastic service outlet in a natural rubber floor
Futurium, Berlin



Stainless steel service
outlet in a wooden floor





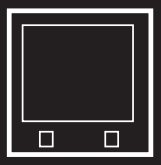
CHECK

What are the basic types?

Rectangular with handle clamp



Rectangular with locking slider



Round with handle clamp



Round with locking slider



Graf 9 with tube body



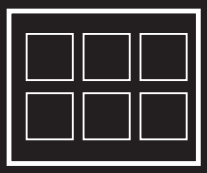
How many installation devices can be installed in the service outlets?



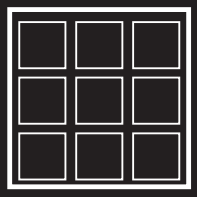
2 x installation devices
External dimensions
118 x 194 mm



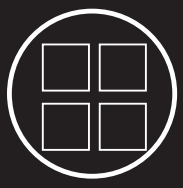
4 x installation devices
External dimensions
222 x 222 mm



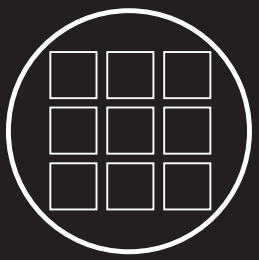
6 x installation devices
External dimensions
297 x 221 mm



9 x installation devices
External dimensions
243 x 243 mm



4 x installation devices
External dimensions
∅ 234 mm

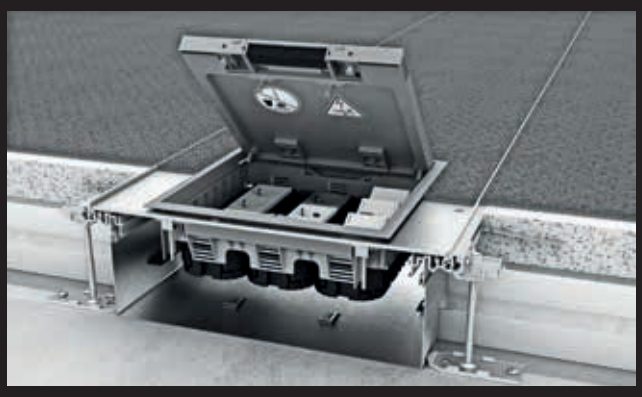


9 x installation devices
External dimensions
∅ 324 mm

How high must the floor structure be?

From 75 mm, service outlets can be installed with devices. Special devices also allow limited device installation from 55 mm.







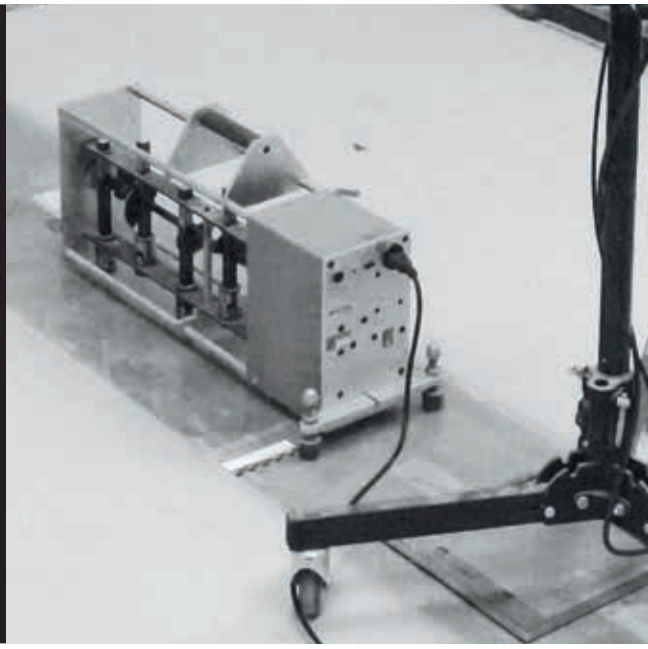
What types of floor care are possible?

The different construction types of the service outlets allow dry, moist or wet care. Products for wet care are also suitable for mechanical floor cleaning. With wet-care floor coverings, current requirements (from the DIN EN 50085-2-2) mean that service outlets with tube body are to be used for device installation.



How do service outlets behave with regard to noise transmission in underfloor systems?

Basically, the noise transmission of service outlets in the overall underfloor system should be regarded in conjunction with the floor system, as they are one of many components. OBO Ackermann underfloor systems are comprehensively investigated with regard to noise protection and do not impede the noise protection properties of a floor system if the noise protection measures recommended by OBO are implemented. Service outlets are installed in decouplable screed boxes to maintain the noise protection of the underfloor system in floating screed floats. You can find further information on page 7.



What are the load capacities of the service outlets?

Depending on the material and application, service outlets can be subjected to loads between 2,000 N and 3,000 N. For plastic service outlets, we recommend loads of up to 2,000 N (200 kg). For metal service outlets, we recommend loads of up to 3,000 N (300 kg).



Which floor covering is suitable for the product?

All types of carpeted floors, plastic floor coverings and thinner floor coverings where the cut edges must be protected.



UNLIKELY ALL-ROUNDER CASSETTES



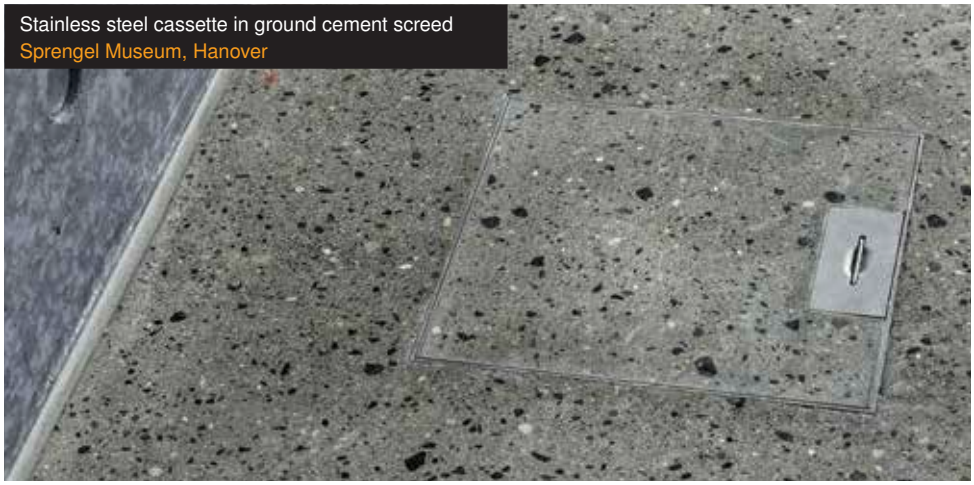
Stainless steel cassette in artificial stone
BMW car showroom

From a sprawling office to varied event spaces, from a modern loft to a stylish showroom – all kinds of rooms must be supplied reliably.

The compact, flush-floor cassettes also offer elegant and robust solutions for power, data and multimedia connections. Through their stability and long lifespan, cassettes are frequently used in natural stone or tiled floors, where solidity and an exact end between the floor covering and cassettes are required.



Stainless steel cassettes in tiled floors



Stainless steel cassette in ground cement screed
Sprengel Museum, Hanover



Stainless steel cassette in ground poured asphalt screed
Futurium, Berlin



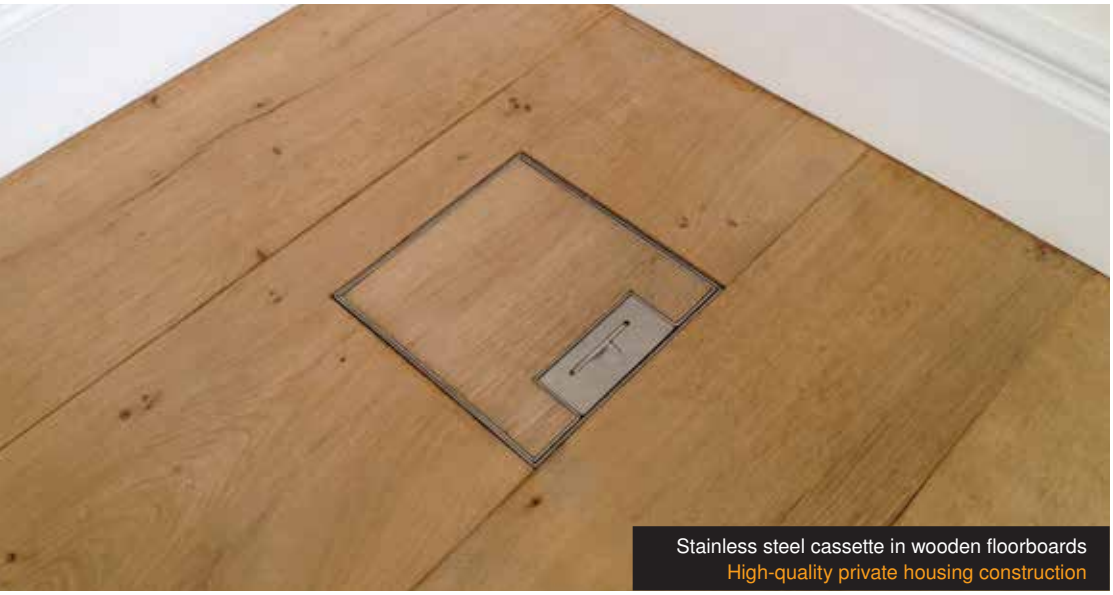
Visible screed as floating screed surface



Stainless steel cassette
Coating smoothed on screed floor







Stainless steel cassette in wooden floorboards
High-quality private housing construction



Stainless steel cassette in a terrazzo floor

High quality, perfect adaptability: The height of the cassettes can be adjusted to the height of the finished floor and, in the special version, can be used for noise decoupling. They are available in round and rectangular versions with versions for dry, moist and wet-care floor coverings. The cassettes are suitable for raised and cavity floors and all kinds of screed-flush underfloor systems.

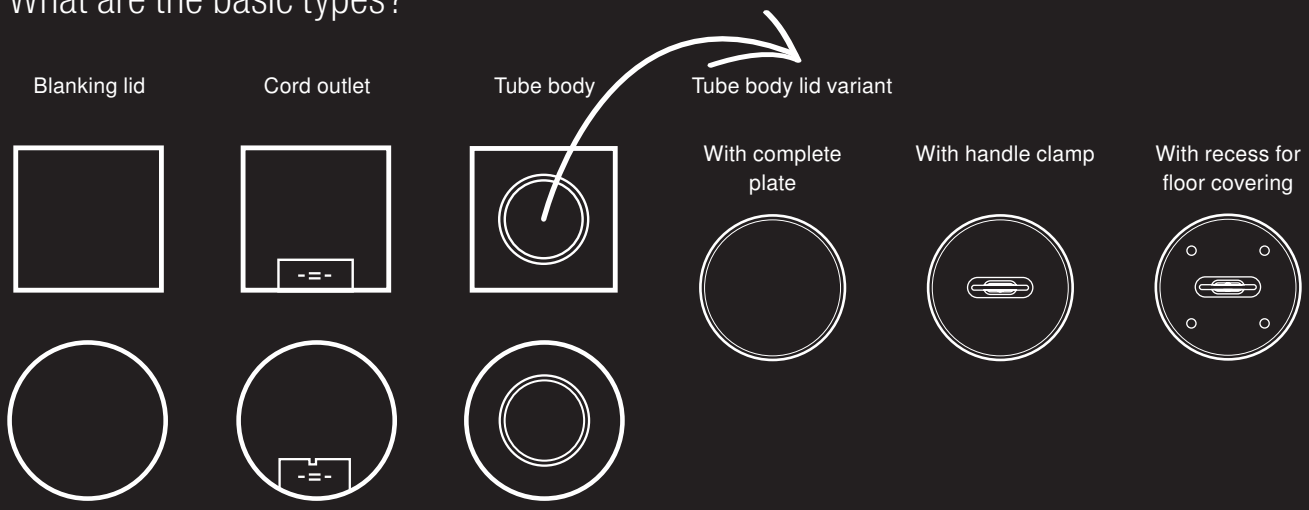
Floor covering recesses, delicate lines and high-quality materials offer wide-ranging supply in the different coverings and interiors.



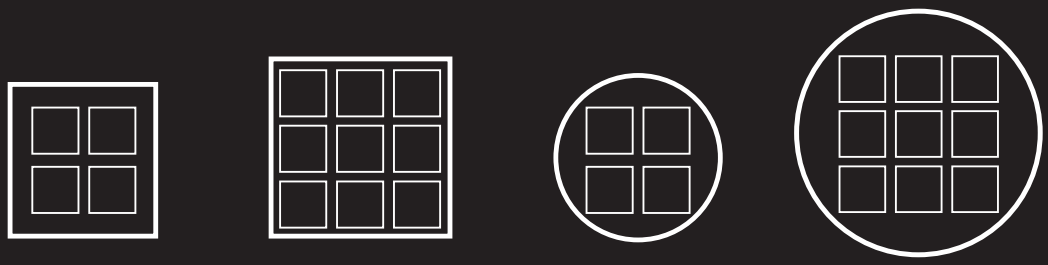
Brass cassette in marble
Excelsior Hotel Gallia, Milan

CHECK

What are the basic types?



How many installation devices can be installed in the cassettes?



4 x installation devices
External dimensions
199 x 199 mm

9 x installation devices
External dimensions
243 x 243 mm

4 x installation devices
External dimensions
∅ 214 mm

9 x installation devices
External dimensions
∅ 304 mm



How high must the floor structure be?



Height-adjustable cassettes with device installation can be installed for floor heights from 105 mm. Inspection cassettes without device installation can be installed in a floor height of 100 mm or more.



Specially decoupled, height-adjustable cassettes for screed installation can be installed from floor heights of just 90 mm, including device installation.

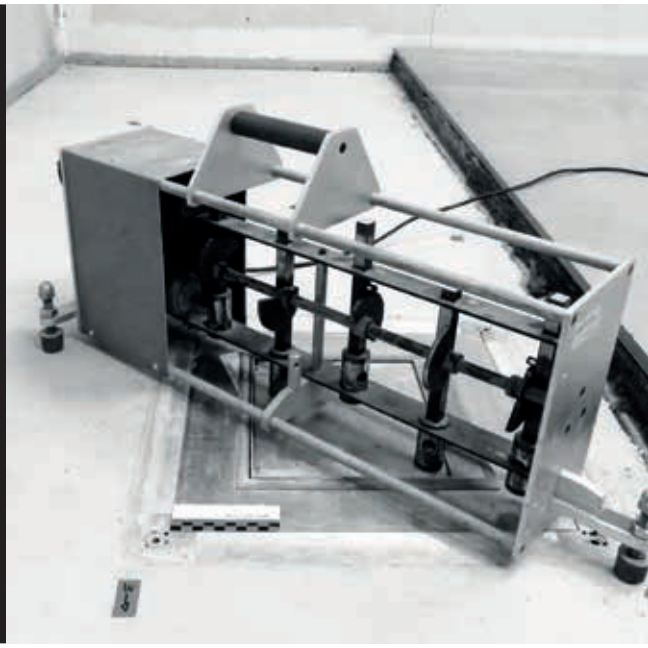
What types of floor care are possible?

The different construction types of the cassettes allow dry, moist and wet care and are, to some extent, also suitable for floors requiring mechanical cleaning. With wet-care floor coverings, requirements (from the DIN EN 50085-2-2) mean that service outlets with tube body are to be used for device installation.



How do cassettes behave with regard to noise transmission in underfloor systems?

Decoupled, height-adjustable cassettes can ensure that there is no worsening of noise transmission in insulated floor systems. They can be installed in screed floors or in system floors and wooden beam ceilings (see page 16). Basically, the noise transmission of cassettes in the overall underfloor system should be regarded in conjunction with the floor system, as they are a system component of the floor construction. If cassettes are installed in screed sockets, then they should also be decoupled. See also the information on page 7 under Point 08 Noise protection.



What are the load capacities of the cassettes?

Standard cassettes for use in buildings with normal load requirements are designed for traffic loads of up to 3,000 N – according to the requirements of EN 50085-2-2. For high load requirements, such as those in car dealerships, airports or railway station buildings, there are heavy-duty cassette solutions designed for loads up to 20 kN (2,000 kg). These values are tested according to the heavy-duty classification OBO SL.



Which floor covering is suitable for the product?

Stone, marble, tiles, parquet, wooden floorboards or other cut-resistant and thicker floor coverings. However, terrazzo (ground) is also available in a special application.



SMALL ALL-ROUNDER
ROUND FLOOR SOCKET (GES R2)



Old brass floor socket in wooden floorboards



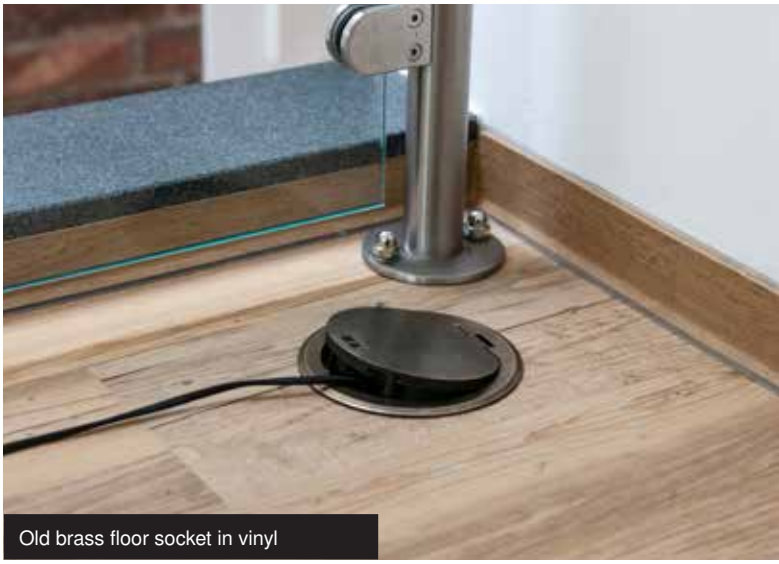
Chrome floor socket in tile floors

Sleek design, high-quality material, extreme load capacity – the round floor socket (GES R2) is used anywhere where only small, punctuated supply points are required in the floor. The modular structure of the height-adjustable screed socket, installation socket and lid allows versatile used of the round floor socket, from private accommodation through to car dealerships.

With various lid variants in plastic and metal, the GES R2 floor socket can be seamlessly integrated in a wide range of different coverings. In addition, the IP66 protection class means that the metal variants are suitable for wet-care floors.



Black plastic floor socket in carpet floor



Old brass floor socket in vinyl



The GES R2 floor socket offers space for two Modul 45 units and two data technology connections and is a true space-saver through its diameter of just 140 mm. The GES R2 floor sockets are available in various materials.

Various lid opening variants allow adaptation to the use and cleaning requirements of the floor. A variant with access protection for public areas is also available.



Old copper floor socket in wooden floorboards

CHECK

What are the basic types?

Hinged lid with locking slider



Tube body with handle clamp



Blanking lid

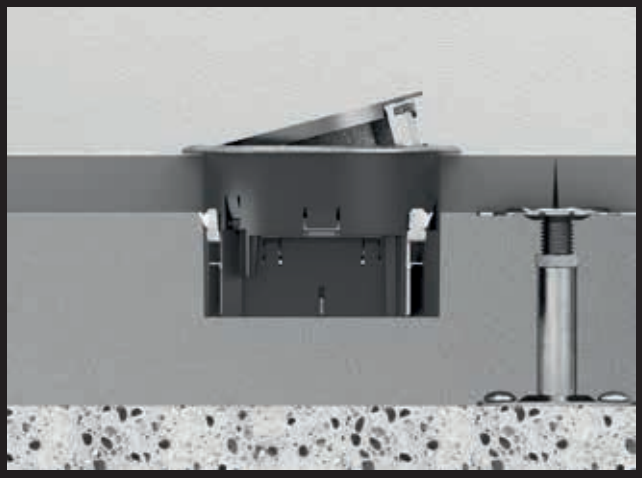


External dimension ∅ 140 mm

How many installation devices can be installed in the GES R2 floor socket?



1x BS socket Modul 45
2x data technology





How high must the floor structure be?

The minimum installation height from the top edge of the floor is 85 mm. Installation can take place in screed constructions or in raised and cavity floors.

In screed constructions, installation takes place in a height-adjustable screed socket with a height adjustment range of 85 to 130 mm via simple 3-point height adjustment. A further height increase with accessories is also possible.

What is the load capacity of the GES R2 floor socket?

The GES R2 fulfils the standard EN 50085 2-2 and is designed for high load requirements of up to 20 kN.



What types of floor care are possible?

The tube body seals the closed installation space against the ingress of water, which occurs, for example, when the floor is cleaned. When the tube body cover is open for letting out cables, a seal in the lower ring of the installation socket offers protection against the ingress of water.

The GES R2 floor socket with tube body thus fulfils the requirements for service outlets in wet-care floors according to EN 50085-2-2.

In addition, when completely closed, the GES R2 floor socket with hinged lid fulfils the requirements of EN 50085-2-2 for use in wet-care rooms.



Which floor covering is suitable for the GES R2 round floor socket?

The GES R2 floor sockets are suitable for all floor coverings. They are available in these surfaces:

Metal variants
- Nickel
- Brass
- Chrome
- Copper
- Nickel-oxidised
- Black

Plastic variants
- Iron grey
- Graphite black



STRAIGHT AND DISCREET SQUARE FLOOR SOCKETS (UDHOME)



Stainless steel floor socket in wooden flooring
Museo della Pietà, Milan

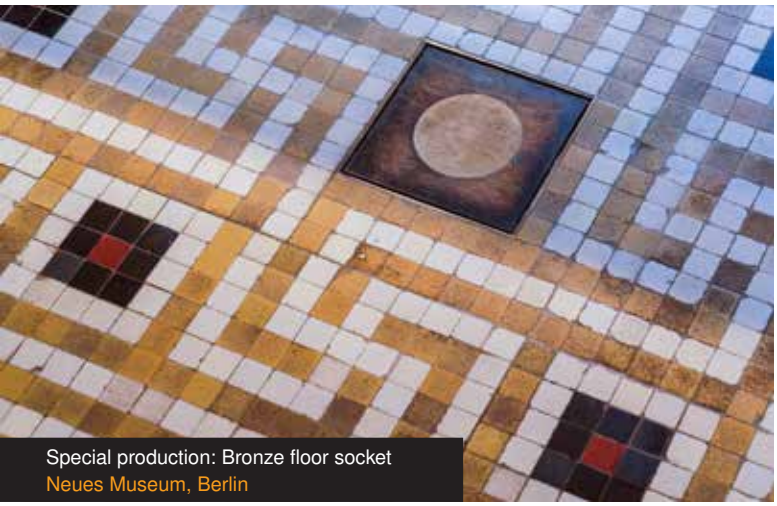
In a museum, in a foyer, in an event room – even in high-quality private housing, UDHOME is at home everywhere. The ready-for-installation floor socket can be closed completely through the cable outlets in the lid, even during use.

The system of the square UDHOME floor sockets is characterised by a straight, discreet appearance. The floor sockets can be installed flush with the finished floor. Floor coverings of stone, tiles, plastic or wood can be integrated easily in the lid of the system. Stainless steel or pure brass are used for the visible parts of the square floor sockets.

Stainless steel floor socket in linoleum







Special production: Bronze floor socket
Neues Museum, Berlin

The various sizes of the UDHOME series offer space for two to twelve Modul 45 devices and can thus be used in a wide range of ways, depending on the room use.

Due to its compact design, the smaller, square UDHOME2 resists heavy loads and, through the tube body lid, is also suitable for wet care.

Stainless steel floor socket in oak parquet



CHECK

What are the basic types?

UDHOME2

Lid with stainless steel cover



Lid with floor covering recess



Tube body



UDHOME4

Lid with floor covering recess



UDHOME9

Lid with floor covering recess



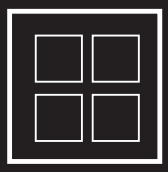
How many installation devices can be installed in the UDHOME?

UDHOME2



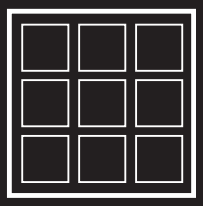
1 x installation device
External dimensions
140 x 140 mm

UDHOME4



4 x installation devices
External dimensions
205 x 205 mm

UDHOME9



9 x installation devices
External dimensions
250 x 250 mm

You can find more information about our Modul 45® devices (sockets, data and multimedia technology connections) on page 5 under Point 05 Modul 45® devices and on page 46 f.





How high must the floor structure be?

The maximum floor height for installation is 130 mm. Height extensions are available for higher screed constructions (see right-hand image). The minimum installation height for the UDHOME series is 95 mm. The internal height adjustment permits adjustment of the cover to the top edge of the finished floor, even after screed laying.

For screed laying, the housing is adjusted to the top edge of the screed, in order to simplify screed work. Supply lines into the UDHOME are run into the floor sockets using flexible installation pipes.

What is the load capacity of the UDHOME?

The UDHOME 2 with tube body is designed for high loads up to 15 kN and thus also suitable for heavy-duty applications. The UDHOME 4 and UDHOME 9 are designed for loads of up to 3 kN and can thus be used for all normal applications with plenty of reserve. All the UDHOME solutions fulfil the standards of EN 50085-2-2.



What types of floor care are possible?

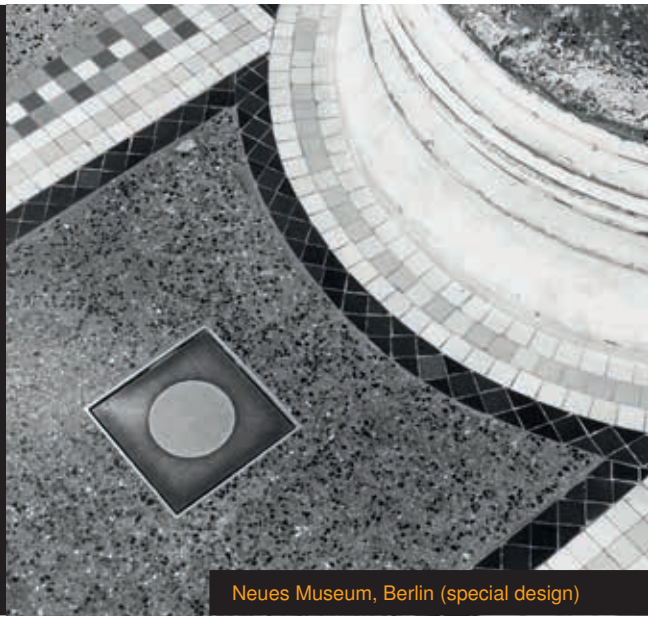
The product spectrum runs for uses from dry to wet-care floors. The UDHOME2 as a tube body version (right-hand image) with its IP protection is suitable for use in wet-care hollow and screed floors.

The UDHOME4 and 9 are only suitable for dry and moist care.



Which floor covering is suitable for UDHOME?

The products of the UDHOME series are suitable for all cut-resistant floor coverings, such as stone, tiles, parquet, wooden floorboards and also terrazzo (ground) in special applications.



Neues Museum, Berlin (special design)

SEAMLESS SUPPLIERS
BRUSH BAR TRUNKING SYSTEM

A room completely without sockets, neither on the wall, nor on the floor. And still supplied with power and data? The OKB trunking system makes it possible. The cable trunking runs along the walls and can only be detected by a slender brush bar, which is used as a cable outlet.

As the bar is continuous, cables can be run out at any point and thus always have the shortest route to the destination.







Here, the trunking is used for both cable routing and device installation, meaning that no floor boxes or cassettes are required. The lids of the OKB can be opened and closed easily and at any time.

As the trunking is mounted flush with the screed and the lids are covered directly with the floor covering, they fit discreetly and seamlessly in any interior.



CHECK

What are the basic types?

Trunking unit
with brush bar



Side view
85 x 250 mm

Internal corner
with brush bar



From above
421 x 421 mm

External corner
with brush bar



From above
423 x 423 mm

Brush bar



How high must the floor structure be?

The floor structure from the top edge of the raw floor to the top edge of the finished screed must be at least 85 mm. The height setting is variable to max. 333 mm to the top edge of the finished screed. The floor covering can be up to 25 mm thick.



What types of floor care are possible?

The trunking system is suitable for dry or moist-care floor coverings.

What are the load capacities of the brush bar trunking?

The trunking system can accept a load capacity of up to 3,000 N
(300 kg).

How does brush bar trunking react to noise transmission?

The screed-flush trunking with brush bar is installed at the edge of a side of the room. With regard to footfall noise transmission, the installation of this trunking leads to no worsening of the footfall noise properties in floating cement screen floors. In the case of wall penetrations through partitions with noise protection requirements, noise protection insulation should be installed as required.

The air and footfall noise transmission for the OKB brush bar trunking system was tested in a qualified manner by the testing institute MÜLLER-BBM GmbH in Planegg, Munich.

You can find further information on page 7 (Point 08 Noise protection).



When is the trunking system routed?

The OKB system is mounted on the raw concrete before the screed work. It runs along the walls for the entire length of the room. The practical fittings of the OKB system allow routing into any corner of the room. Appropriate prefabricated internal and external corners ensure uncomplicated mounting. The system can be adjusted exactly to the planned screed height using the height-adjustment feet.



Which floor covering is suitable for the product?

The trunking system is suitable for all cut-resistant floor coverings such as parquet and plastic coverings of up to 25 mm thickness.



VERSATILE USE
SERVICE POLES

Flexibility is important. Not only in open-plan offices or in temporary set-ups, in addition to the type of connections, the positioning of the supply is of key significance. The floor to ceiling service pole system means that a supply is possible exactly where it is currently needed.



The poles use the supply from the ceiling and can be freely positioned in the room using a simple clamping device or gland on the floor.





Workstations, exhibitions, trade fair stands – the different sizes and shapes of the service poles as well as the variable equipment with standard or Modul 45 sockets allow the optimum adaptation of the service poles to the immediate surroundings.



CHECK

What are the basic types?



45 mm system opening



80 mm system opening

Which variants are available?

Floor service pole

Round



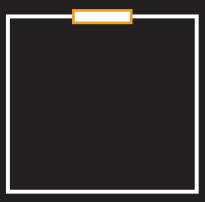
∅ 70 x 675 mm

Oval



80 x 130 x 675 mm

Square



140 x 130 x 250 mm
140 x 130 x 500 mm
140 x 130 x 675 mm

Oval



146 x 65 x 675 mm

Floor to ceiling service pole

Round



∅ 70 x 3,000 mm

Round



∅ 80 x 3,000 mm

Round



∅ 80 x 3,000 mm

Oval



130 x 80 x 3,000 mm

Oval



145 x 64 x 3,000 mm
146 x 65 x 3,000 mm

Square



110 x 70 x 3,000 mm



140 x 110 x 3,000 mm

You can find more information about our Modul 45 devices (sockets, data and multimedia technology connections) on page 5 under Point 05 Modul 45® devices and on page 46 f.

How are floor to ceiling service poles fastened?

Floor to ceiling service poles with a clamping device are clamped between the floor and ceiling with a special spring tension device. This guarantees the stability of the pole and torsion protection as required by the standard.

The floor to ceiling poles with a hose to the ceiling have a plate-shaped, heavy-duty stand, which prevents the pole from tipping over through its large area and high dead weight. A flexible hose to the ceiling feeds the pole with data and power cables and allows flexible movement of the pole.



Which materials are used to manufacture the service poles?

OBO service poles are manufactured from extruded 6,000 series aluminium. Frequently, magnesium silicon alloys of this series are used in aircraft and vehicle construction, on account of their excellent material properties.

Also with functional interior elements, the tried-and-trusted material properties of aluminium, such as its low weight with high resistance and a long lifespan, are useful. However, haptics and design also have a central significance. The service poles are therefore given an anodising layer, a surface method which provides a even matt finish.



Which factors are important when selecting a service pole?

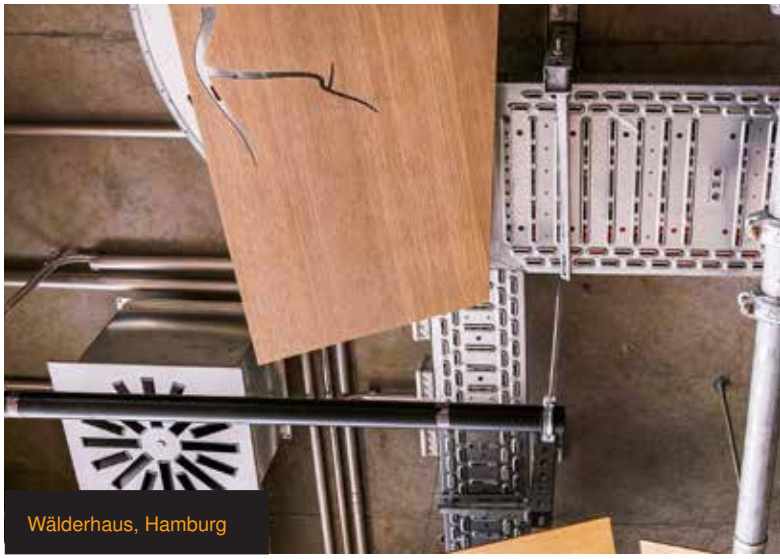
A decisive aspect in selection is the option of supplying the pole. Especially in large offices, floor to ceiling service poles make use of their flexibility when they can be supplied from above through a false ceiling. A further criterion is the number of electrical services required, because this value determines the installation space required in the pole.



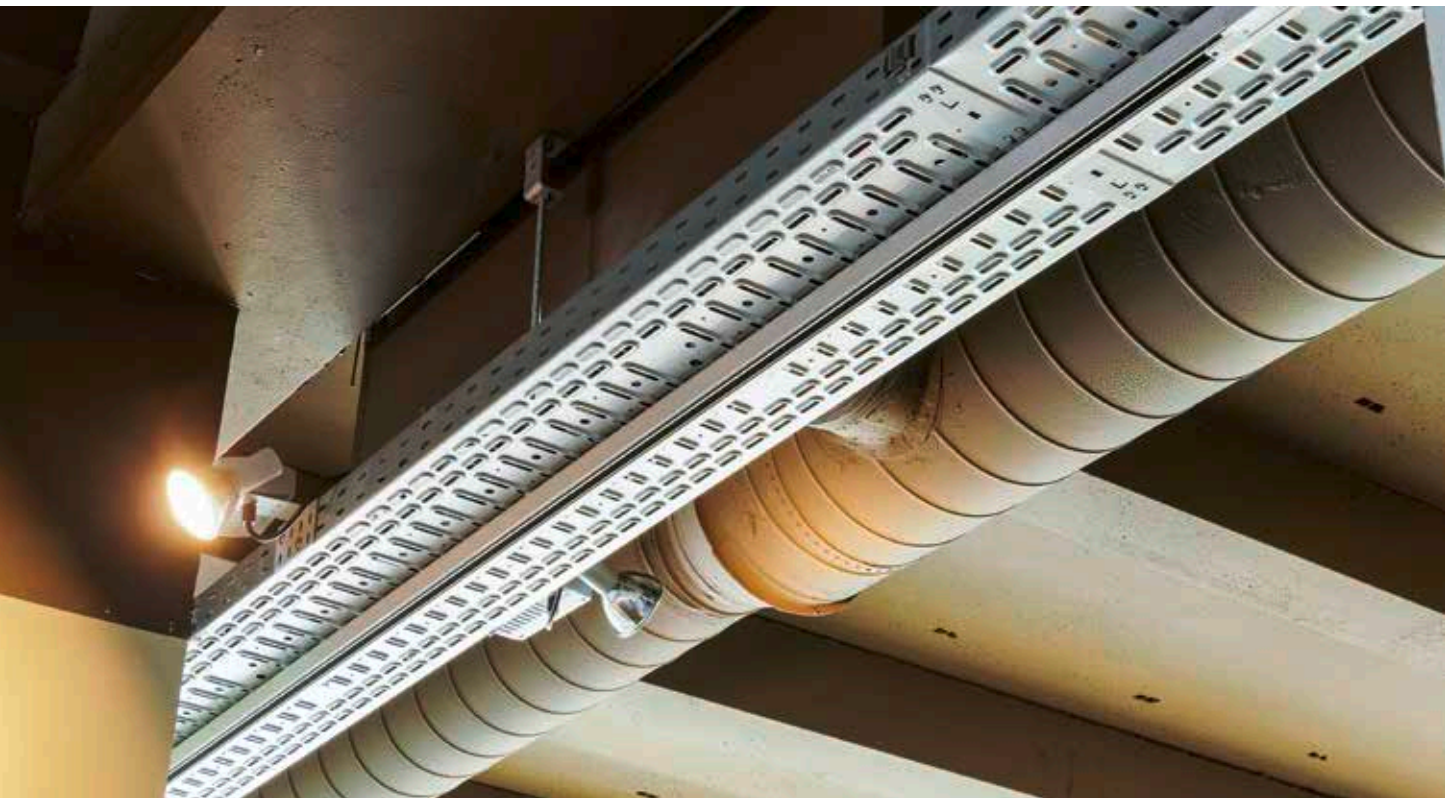
INDUSTRIAL CHARM CABLE TRAYS

Open ceilings, a rough industrial look – this is the home of the Magic cable tray systems. Slender, functional and absolutely robust, the RKS-Magic®, MKS-Magic® and SKS-Magic® make a contribution to a technically purist interior, whether in modern cafés, studios or lofts.

The special thing about the Magic cable tray systems is its patented plug connections, which allow installation in the blink of an eye. The different surface properties of the RKSM, MKSM and SKSM make these cable trays usable in all kinds of applications – both indoors and outdoors.



Wälderhaus, Hamburg





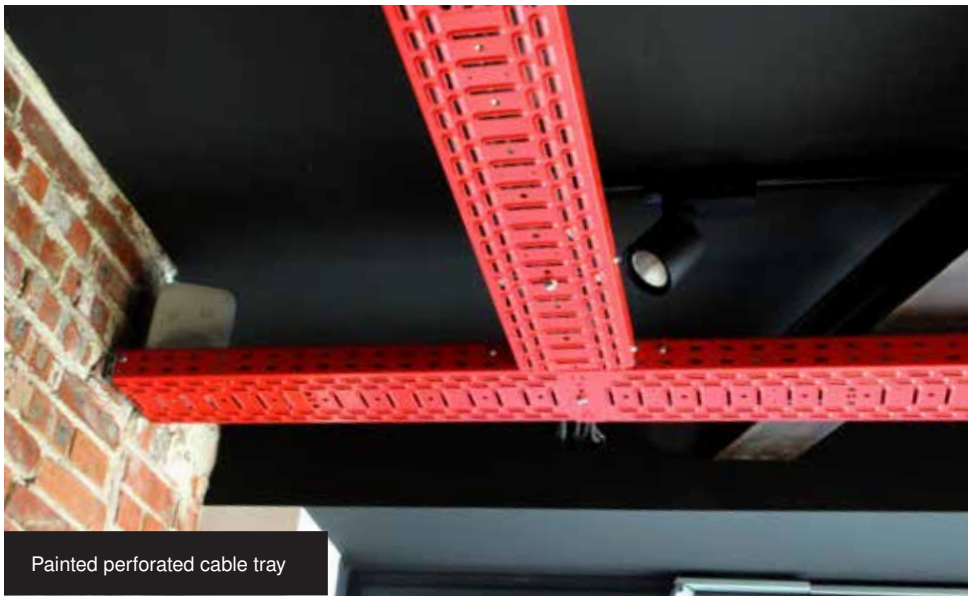
Carrera World, Oberasbach



Painted unperforated cable tray
Brezel Museum, Erdmannhausen

Besides the perforated MKSM and SKSM variants, these cables are also available in an unperforated form. In addition, all the versions can be powder-coated in all RAL shades.

From colourful accents to a complete monochrome ceiling, various items can be given significant design accents with the cable trays.



Painted perforated cable tray

CHECK

What are the basic types?

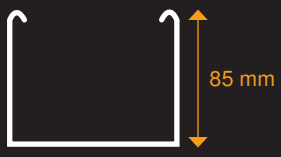
Perforated cable tray



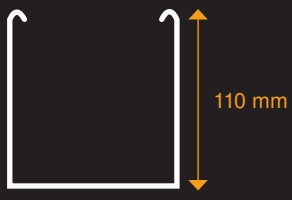
RKSM 35



RKSM 60
MKSM 60
SKSM 60



MKSM 85
SKSM 85

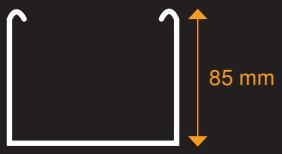


MKSM 110
SKSM 110

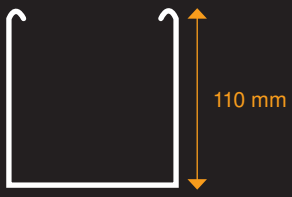
Unperforated cable tray



MKSMU 60
SKSMU 60



MKSMU 85
SKSMU 85



MKSMU 110
SKSMU 110

RKS – rational cable tray system
MKS – medium-duty cable tray system
SKS – heavy-duty cable tray system

Which variants are available?

Type	Side height in mm	Width in mm							FS Strip galvanised	FT Hot-dip galvanised	A2 Stainless steel	A4 Stainless steel
		100	150	200	300	400	500	600				
RKSM	35	✓		✓	✓				✓			
	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MKSM	60	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	85	✓		✓	✓	✓	✓	✓	✓	✓		
	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*	
MKSMU	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*	
	85	✓		✓	✓	✓	✓	✓	✓	✓		
	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*	
SKSM	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*	✓*
	85	✓		✓	✓	✓	✓	✓	✓	✓		
	110	✓	✓	✓	✓	✓	✓	✓	✓	✓		
SKSMU	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*	
	85	✓		✓	✓	✓	✓	✓	✓	✓		
	110	✓	✓	✓	✓	✓	✓	✓	✓	✓		

*Not available in the width 150 mm

What additional fittings exist?



RBM 45
45° bend



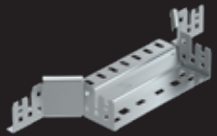
RBM 90
90° bend



RBMV
Variable bend



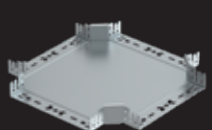
RGBEV
Articulated bend element



RAAM
Mounting/branch piece



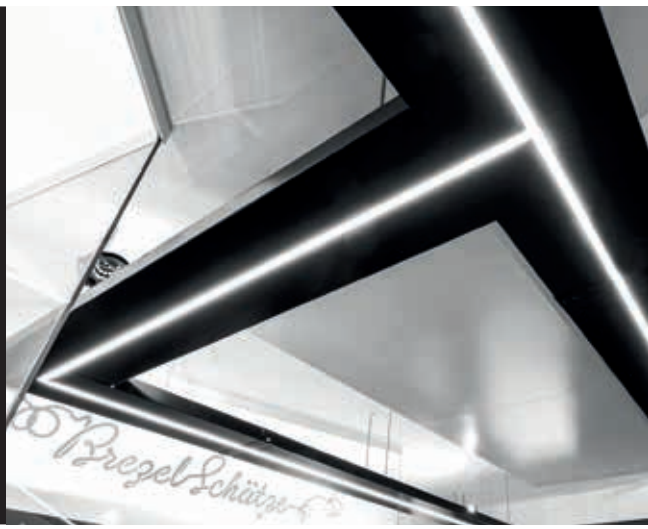
RTM
T piece



RKM
Intersection

Is powder coating possible?

Powder coating is possible in all RAL shades. Besides the visual accents through colour and structure, the appropriate coating can, depending on the powder, also provide increased corrosion protection and the best insulating properties.



How much safety is guaranteed?

Mechanical safety
A clean transition is guaranteed at the joints – also at maximum load, and in the case of vibrations and knocks. The cable tray systems are subjected to load tests at our BET Testing Centre. The basic principles for the tests of OBO cable support systems is DIN EN 61537 and DIN VDE 0639.

Electrical safety
Equipotential bonding is also permanently guaranteed without additional components. The cable trays are tested for EMC and impulse currents and are VDE-tested to DIN EN IEC 61537:2007.

Safety in the event of fire
With the RKSM, the maintenance of electrical functionality of the MPA is tested according to DIN 4102-12 and the cable trays can withstand loads of up to 20 kg/m at a width of 100–400 mm.



Which requirements does the cable tray fulfil?

Whether indoors or outdoors, in aggressive atmospheres or under special hygienic conditions, the cable tray systems can offer the perfect surface and materials for your cable support system, no matter what the requirements may be.

Cable trays, fittings and accessories are machined from high-quality sheet steel and are available with various surfaces. Different hardening or coating methods ensure tailor-made corrosion protection, specially modified to suit the appropriate application:



STRAIGHT DESIGN OPEN SKIRTING TRUNKING



Practical, versatile, flexible – Rapid skirting trunking is a real workhorse. Various versions and countless fittings bring all kinds of supply connections to the wall exactly where they are required.

The two different sizes can be equipped as required with standard or Modul 45 sockets and adapted perfectly to the appropriate room requirements.







Depending on requirements, versions in plastic, aluminium or steel are available. The halogen-free and antibacterial variants are suitable for special safety requirements.

The trunking made from metal can be powder-coated in all RAL shades.





CHECK

What are the basic types?



45 mm system opening



80 mm system opening

Which variants are available?

Rapid 45

1 Single-compartment 2 Two-compartment 3 Three-compartment

Material	Trunking height in mm	Trunking width in mm	RAL 9010 pure white	RAL 7035 light grey	Anodised	Special colour
Plastic 1	53	100	✓	✓		
Plastic 2	53	130	✓	✓		
	53	165	✓	✓		
Plastic 3	53	160	✓	✓		
Aluminium 1	53	100	✓		✓	✓
Aluminium 2	53	130	✓		✓	✓
	53	165	✓		✓	✓

Rapid 80

Material	Trunking height in mm	Trunking width in mm	RAL 9010 pure white	RAL 9001 cream	RAL 7035 light grey	RAL 7030 stone grey	Anodised	Special colour
Plastic 1	70	110	✓	✓	✓	✓		
		130	✓	✓	✓	✓		
		170	✓	✓	✓	✓		
Sheet steel 1	70/90	110	✓					
		130	✓					✓
		170	✓					✓
		210	✓					✓
Sheet steel 2	70/90	170	✓					✓
		210	✓					✓
Aluminium 1	70	110	✓				✓	✓
		130	✓				✓	✓
	90	130	✓				✓	✓
	70	170	✓				✓	✓
Aluminium 2	90	210	✓				✓	✓

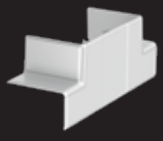
What additional fittings exist?



External corner, variable



External corner



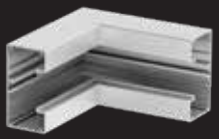
T piece adapter



End piece



Internal corner, variable



Internal corner



Flat angle



Flat angle cover

Matching fittings are available for all variants of the skirting trunking.

How can noise transmission be reduced?

In modern office buildings, device installation trunking is often run through office partitions, creating a connection between multiple offices. Here, there is the problem that noise may be carried through the trunking penetration.

To prevent the air conduction of noise, the free cross-section of the trunking remaining can filled with noise insulation after cabling, e.g. air noise barrier, type 7 LSB. The same applies to any gaps between the trunking and the adjoining wall.

When used correctly, the air noise barrier, type 7 LSB, can achieve attenuation of up to 40 dB.



Why is there halogen-free skirting trunking?

Flame-protection agents, based on halogen compounds such as fluorine, iodine, chlorine and bromine, are used to keep the flammability of PVC low. If there is a fire, this safety aspect becomes a dangerous disadvantage: toxic smoke gases such as carbon dioxide and carbon monoxide are formed. These usually endanger people far faster than flames and heat. Therefore, from a fire protection perspective, halogen-free installation materials are a safe alternative. Manufactured completely from halogen-free plastics, if there is a fire, they reduce the amount of toxic smoke gases and the formation of corrosive substances.



Connectable device installation for Rapid 45

Modul 45connect stands out through its innovative socket and adapter components and offers numerous application options. The connection adapter, with which sockets can be arranged easily, creates a high level of flexibility.

Thus, it is possible to create multi-socket combinations without the need for additional wiring. Combinations with a maximum of two connection adapters are tested and VDE-approved and 4x to 9x socket combinations can be created easily.



FUNCTIONALITY BROUGHT INTO SHAPE COVERED SKIRTING TRUNKING



Purist exterior, spacious interior. The GAD device installation trunking hides connectors, cables and power supply units behind pure anodised aluminium. The covers are available in straight, convex and curved versions and can be locked in the opened state as required.

LED strips can be applied to the trunking to create attractive effects. Whilst illumination of the interior simplifies the handling of cables and connectors, lighting mounted on the underside of the trunking can emphasise the structure or colour of the wall in a special manner.



CHECK

Which cover variants are available?

Style



Rectangular
Side view

Soft



Convex
Side view

Swing



Curved
Side view

In which versions is it available?

Trunking height in mm	Trunking width in mm	Aluminium	Anodised
140	2,000	✓	✓

What are the advantages of the design?

The GAD Design device installation trunking permits cable routing and device installation in a high-quality environment. With this trunking system, requirements for electrical services can be fulfilled "invisibly". Connectors, power units or data/network connections disappear behind a hinged cover. The cables are run out of the trunking system in bundled form using a cover adapter at the desired point. Optionally, an LED light bar can be mounted on the underside of the trunking system, which illuminates storage areas located under the system.



What are the benefits of an anodised surface?

During anodising, metal surfaces are electrically oxidised. This creates an extremely hard, scratch-resistant surface. Compared to other treatment methods, no outside material is used.

The metallic character of the aluminium remains intact.
In addition, the method offers reliable protection against corrosion.



VERY SLEEK
ELECTRICAL INSTALLATION PIPES

From refineries to existing buildings, from the workshop to the office – installation pipes are slender, versatile and robust. With their minimalist and technical charm, they ensure a different type of supply in modern facilities.

Available in various colours, the precision-lasered pipes are suitable anywhere where a professional surface-mounted installation is required and space for design elements is given.





Office of Rusan arhitektura d.o.o., Zagreb

CHECK

What components are available?

Pipes

With thread

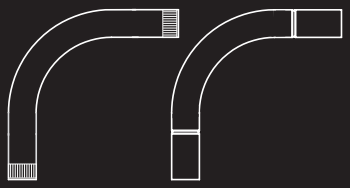


Without thread

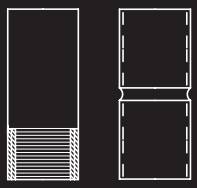


Extension and connection pieces

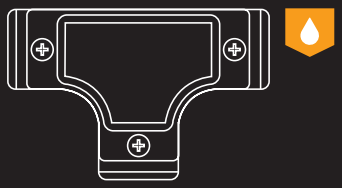
90° pipe bend
With and without thread



Sleeve
With and without thread
(Internal thread)



Control T piece
With and without thread (internal thread)
IP54 protection rating



Which variants are available for the pipes?

Pipe diameter in mm							Length in mm*
16	20	25	32	40	50	63	3,000

* The length of the pipes can be shortened to fit exactly.

Which surfaces are available?

The precision-lasered electrical installation pipes are available in various materials and with various surfaces. They are suitable for standardised surface-mounted installation, which meets all the statutory requirements for safe cable routing.

The following surfaces are available:

- Stainless steel
- Aluminium
- Steel
- Powder-coated, black



ALWAYS SUITABLE DEVICES MODUL 45



Modul 45 devices
in service pole

The devices of the Modul 45 series, with an edge length of 45 x 45 mm, provide a large benefit in the smallest space. As connections for power, data and multimedia applications, they are compatible with all underfloor systems, service poles and wall trunking. The design of these devices is created in such a way that they can also be installed flush with the surface (see service pole image).

The Modul 45 devices are available in the colours white, grey, aluminium, black-grey, pure orange, signal red and mint green.



Modul 45 device installation in underfloor systems

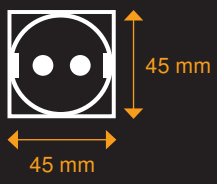


Modul 45 device installation in aluminium wall trunking

CHECK

Which variants are available?

Protective contact and earthing pin sockets



Country-specific sockets



Switching devices



Data technology



Multimedia technology



Which solutions does the system offer?

The Modul 45 devices offer the right solution for every application – no matter whether you're dealing with sockets, data or multimedia technology.

- Multiple sockets for economic device installation
- Sockets for international applications
- Modul 45connect as a completely connectable variant of installation solutions
- Data technology supports for data modules of different manufacturers
- Multimedia connection solutions for data, video and audio transmission



Connectable connection technology Modul 45connect

With the connect solution, the electrical installation can be executed as a plug-and-play solution. OBO Bettermann offers the connectable connection technology right through to the socket. This allows pre-terminated cables to be connected directly to the socket or via adapters. Whether directly or with conventionally connected adapters, all the solutions share the fact that the installation time can be made considerably shorter.

With changes of use, subsequent installation changes can be made in the building at any time using plug and play.



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Building Connections

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