# **CONTA-CABLE KDS** Cable entries **KES** Cable entries SAB|SSAB|SABK Shielding solutions Catalogue 8 *<b>ZCONTACLIP*

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## CONTA-CLIP – Thinking ahead with connection technology

CONTA-CLIP was founded in 1978. We operate globally as an owner-operated medium-sized company.

Users of electrical and electronic connection systems trust our reliable products and our many years of industrial and global market expertise.

Our company is now one of the most important manufacturers in the field.

For over 40 years, our components and solutions have been used in process and industrial automation applications, including: railway technology, materials handling, building automation, air conditioning, mechanical and facility engineering, measurement and control technology, control panel construction, shipbuilding, transformer construction and environmental technology.

Over the years, we have evolved into an innovator that sets the tone with new ideas and creative impulses.

Our employees come from a wide variety of industries and are true connectivity specialists. They understand the specific problems, requirements and challenges of our customers. This results in communication among equals.

The profits then flow into the development of new products and into modern, efficient manufacturing processes. High quality standards throughout all departments are our top priority.

Our top-class products are supported by this interplay between top-class men and machinery. We have also designed our range of services to align with customer needs.

Our products are divided into six categories: CONTA-CONNECT for terminal blocks and accessories, CONTA-CABLE cable management systems, CONTA-ELECTRONICS for electrical and electronic switchgear cabinet components, CONTA-LABEL for marking systems, CONTA-BOX for housings, and CONTA-CON for PCB terminal blocks and connectors.

We design customer-specific solutions for electronics, provide completely assembled housings and assemblies as needed, assemble terminal blocks for series production, and quickly handle component labelling tasks.

We greet these challenges with passion and enthusiasm, because we see each customer as our partner.

CONTA-CLIP customer representatives are always ready to offer their support to the customer, because service and helpfulness are rooted deeply in our corporate philosophy.

## Advantage online: the CONTA-CLIP Online Catalogue

No matter where you are, as long as you're online you can access our digital catalogue to look at our services and quickly identify suitable solutions for your requirements.

**Fast results** Use the full-text search, enter an order number or use the convenient "step-by-step" feature search function.

**Project planning at a glance:** After you've selected the products, all the master data for the materials (sales data, technical data, drawings, connection diagrams, classifications and approvals) are made available as a data sheet or export file.

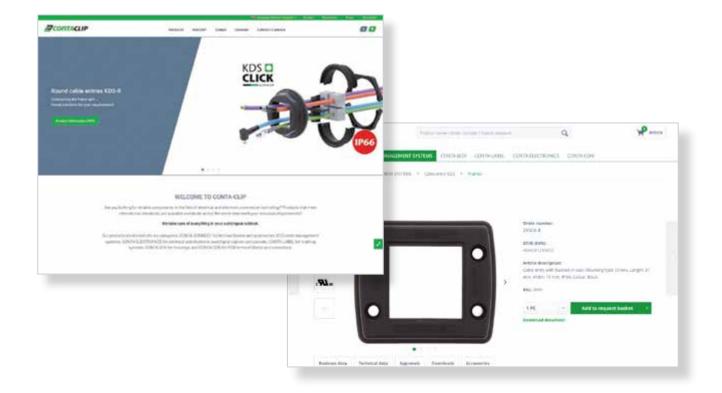
**Detailed inquiries about components** can be sent via the shopping cart directly to our headquarters. Upon request, you will receive an e-mailed copy of your inquiry. **Application films:** Complex functions be explained easily and clearly with sounds and images.

**Printed catalogue:** Would you like an offline overview? Please ask for our free printed catalogues.

**Industry-specific:** You will find the solutions that are relevant for your industry, according to your expertise.

**Newsletter:** Do you want to stay up to date? Subscribe to our newsletter! Simply register, confirm our authentication e-mail, and you'll be regularly informed about all CONTA-CLIP news.

Discover how the world of CONTA-CLIP and our website can deliver added value for you and your projects!



## Globally available for you

Are you working abroad? No problem. Our worldwide sales and distribution partners help us to be globally networked and provide on-time reliable deliveries. Simply scan the QR code shown and you'll learn on our website about the sales partner responsible for your country.





## A complete line of products to meet your demands The CONTA-CLIP Catalogues



#### CONTA-CONNECT

#### Terminal blocks with push-in connection system

Our wide range of innovative PRK and FRK terminal blocks with the Push-in connection system include feed-through terminals, PE terminals, disconnect terminals, fused terminals, multi-level terminals, installation terminals and initiator terminals, for conductor cross-sections from 0.2 mm<sup>2</sup> to 25 mm<sup>2</sup>.



#### Cat. no. 98070.2



#### CONTA-CONNECT

**Terminal blocks with screw connection system and special purpose terminals** Everything for classic wiring with screw connection system, also for high currents: SRK feed-through and PE terminals, RK high-temperature variants, TK transformer terminals, HSK high-power stud terminals and the SVB series screw distributor blocks.

Cat. no. 98071.2



#### CONTA-CONNECT

#### Terminal blocks with tension-spring connection system

Our versatile line of terminals with tension spring connections for conductor cross-sections from 0.2 mm<sup>2</sup> to 16 mm<sup>2</sup> includes: the ZRK/ZSL series of feed-through and PE terminals, the double-level ZRKD/ZSLD, the ZIKD three-level terminal blocks, motor-connection terminals, (blade-) disconnect terminals, fused terminals, direct-mount terminals, and initiator/actuator terminals for transmitting positioning, encoder and alert signals.



Cat. no. 98072.2



#### CONTA-CONNECT

ferrules, and connectors.

**Installation materials and other accessories for terminal blocks** Our installation products include cabling ducts, assembly tools, cable glands with metric or PG threads, DIN rails, rail holders, rail cutters and punching tools. The terminal block accessories include different versions of end stops, wire-end



Cat. no. 98073.2



CONTA-LABEL

#### Marking components for thermal-transfer marking systems

CONTA-CLIP provides the TTPCard thermal-transfer printer and a large selection of PC, PVC and PVCF markers or labels in card format: for professional, permanent labelling of terminals, devices, conductors, cables, facilities and switchgear cabinets.





Our catalogues are available in many languages!





#### **CONTA-LABEL**

#### Marking components for ink-based marking systems

The CONTA-LABEL products provide polyamide markers for labelling conductors, cables, devices and facilities with ink print. These markers are available in many shapes and colours: in the classic MC Maxi-Card format for self-printing with the EMS plotter system EMS or other ink-jet systems, or ready-to-use customized printed in the PMC Pocket-Maxi-Card format.



Cat. no. 98075.2



#### CONTA-BOX

Housings Our wide variety of housings made of polystyrene, polycarbonate, polyester, ABS and aluminium deliver solutions for protecting electronic circuits, integrated devices and terminal blocks. On request, the housings can be custom-processed and assembled with our CONTA-CONNECT, CONTA-ELECTRONICS

Cat. no. 98076.2



#### CONTA-CABLE

and CONTA-CON product lines.

KDS cable entries, KES cable entries, SAB|SSAB|SABK shielding solutions The KDS and KES cable entries enable a tool-free, IP66-sealed feed-through for unassembled and assembled cables and hoses. The feed-through openings can be adapted at any time to meet your requirements. The SAB shied-connection clips can be used to provide a reliable shield contact with conductor diameters from 3 mm to 35 mm.



Cat. no. 98077.2

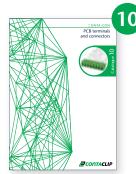


#### CONTA-ELECTRONICS

#### Electrical and electronic cabinet components

Our CONTA-ELECTRONICS products provide active and passive components for the transfer and conversion of analogue and digital signals at the coupling level. This product line includes power supplies, multi-function timing relays, coupling relays, digital switching modules, interface modules, opto-couplers, signal converters, GSM communication modules and much more.

Cat. no. 98078.2



#### CONTA-CON

#### PCB terminals and connectors

This catalogue presents our wide variety of CONTA-CON PCB terminal blocks and connector systems. The modular components can be configured for any required number of poles. They are available in the wire connection types: wire protection, eccentric, clamping yoke, and (for demanding operating conditions) with tension-spring or Push-in wire terminations. This product range is supplemented by the modular feed-through terminals of the SDK series.



Cat. no. 98079.2





## Cable management systems

#### **KDS cable entries**

The **KDS** cable entry system has a modular design consisting of frames, frame inlays and seals. This enables quick and easy dimensioning of feed-through openings for pre-assembled cables – without the use of tools. The system reliably ensures an IP66 seal. Since the diameter, shape (round or with corners) and number of frame openings can be adapted at any time without any costly dismantling of the frame, switchgear cabinets or machine housings can be uniformly prepared for different purposes using KDS. This results in significantly less costs and warehousing overhead.

Our wide range of **KDS** seals currently includes more than 130 variants and is constantly being expanded.

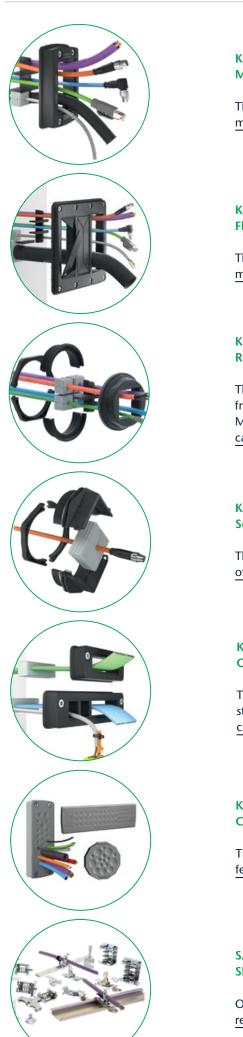
#### **KES cable entries**

The **KES** cable entries enable unassembled cables or pneumatic hoses to be quickly inserted into switchgear cabinets or housings without using tools. The **KES** entry plates feature a dimensionally stable, elastomer-encapsulated polyamide frame. In order to insert the required number of cables, the surface membrane is first pierced with a screwdriver. Then, the unassembled cables are easily pushed through. Tapered inlet grommets on the back of the plate provide IP66 sealing and reliable strain relief. With up to 32 cables per plate, the **KES** achieves a significantly higher packaging density than conventional entry systems.

The **KES-E** cable entry system enables you to insert many cables (without plugs) with diameters ranging from 1.0 mm to 16.1 mm into a very confined space. No tools are needed to insert the cable entry into the opening provided. For inserting the cables, the appropriate membrane is pierced and the cables are simply installed through it. The material TPE guarantees that IP54 protection is maintained. Get started now with CONTA-CLIP!

#### SAB|SSAB|SABK shielding solutions

The **SAB** shield-connection clips provides an easy tool-free contact for the cable shield. It is a modular system for mounting on DIN rails, busbars or direct mounting. The system includes shield-connection brackets for cable diameters from 1.5 mm to 18 mm, clamp mounting feet for all attachment types, busbar holders and shield-connection clips with screw or spring contacts. The stripped cable is easily pushed into the SABK shield-connection clips. The spring force in the clip then ensures that the shield has a consistently good contact. The large-area shield contact ensures low-impedance discharge resistances, even at high frequencies. The SAB/SSAB shield-connection clips cover a clamping range for cable diameters from 3 mm to 35 mm. Busbar supports and end stops for mounting to the bars also supplement this product line.



#### KDSClick Modular cable entry system

The **KDS-SR** screw frames are available in 4 different sizes. The inlays make a wide variety of combinations possible.

Page 10

#### KDS-FP Flange plates

The KDS-FP flange plates are available in 2 different sizes. The inlaysmake a wide variety of combinations possible.Page 16

#### KDS-R Round cable entries

Thanks to three different thread and locking adapters and two external frame sizes, the metric break-through sizes M20 to M32 and M40 to M63 can be equipped with the modular **KSR-R** system. Assembly is carried out from the outside inwards. Page 24

#### KDS-KV

Separable cable glands

The **KDS-KV** separable cable glands are designed for metric break-outs of 20 to 63 mm diameter. Page 32

#### KDS-FB

Cable entry system for flat cables

The KDS-FB cable entry system for flat cables provides you with out-<br/>standing versatility and saves you time while managing cables, espe-<br/>cially for industrial trucks, crane systems and elevator applications.Page 38

#### KES Cable entries

The cable entry systems **KES**, **KES**-**E** and **KES**-**E**-**R** are suitable when feeding in unassembled cables or pneumatic and hydraulic hoses. Page 54

#### SAB Shielding solutions

Our shield-connection clip products provide a modular system for direct installations or DIN-rail mounting.

Page 78

## KDSClick Modular cable entry system

#### A revolutionary cable entry systems

Fast. Safe. Turning cables inside out! The **KDSClick** cable entry system is a cable management solution for switchgear cabinets, housings and machines that features secure seals and strain relief for pre-assembled and non-assembled cables – with or without connectors. KDSClick saves you time and provides you with maximum versatility.

0

**IP66** 

lt's easy. It's quick. It's **KDSClick**.

## The basic components of the modular system

Frames. Inlays. Seals. The modular design – 3 basic components – provides more versatility, variability and variety.

#### 1. Frame

Made from a single mould, the one-piece frame is quick and easy to assemble. It is made of sturdy, glass-fibre reinforced plastic. The foamed seal guarantees an optimal seal with IP66 protection, even on painted or rough surfaces.

#### 2. Inlays

The click-in inlays enable needs-based dimensioning of the frame opening, corresponding to the seal being used. An audible "click" confirms a correct installation. So you can variably configure cable entries to match various requirements (for cables, lines, tubing, pneumatic and hydraulic lines).

#### 3. Seals

The conical shape of the seal makes it easy to press in. This also reliably seals the gaps and ensures strain relief in accordance with DIN EN 62444. The seals are installed by pressing them from the inside outwards into the openings of the previously installed inlays. Their wave-cut profile makes them easy to install and ensures a perfect fit around the cables. There are currently over 130 different seals that can be used for sealing cables of various diameters and sizes.



The seals can be removed by pressing from the outside inwards. Changes, retrofits, servicing or the readjustment of the cable lengths can be made at any time without dismantling the frame. Unwanted manipulations from the outside can be prevented by using an optional inner locking frame.





## KDSClick Modular cable entry system

#### An overview of your advantages

Supported by:



Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

#### Quick inside-outwards assembly for easier servicing work The frame does not need to be

disassembled if your requirements change or if you're carrying out service work.

The one-piece frame can be easily and quickly attached to the wall.

Attaching the frame

#### Captive seal

The foamed-in frame gasket eliminates the risk of incorrect assembly (forgotten gasket) and speeds up the assembly process.

#### Smart separation of the seals

The wave-cut profile makes them easy to install and ensures a perfect fit around the cables.

## No loss of guarantee: assembled cables

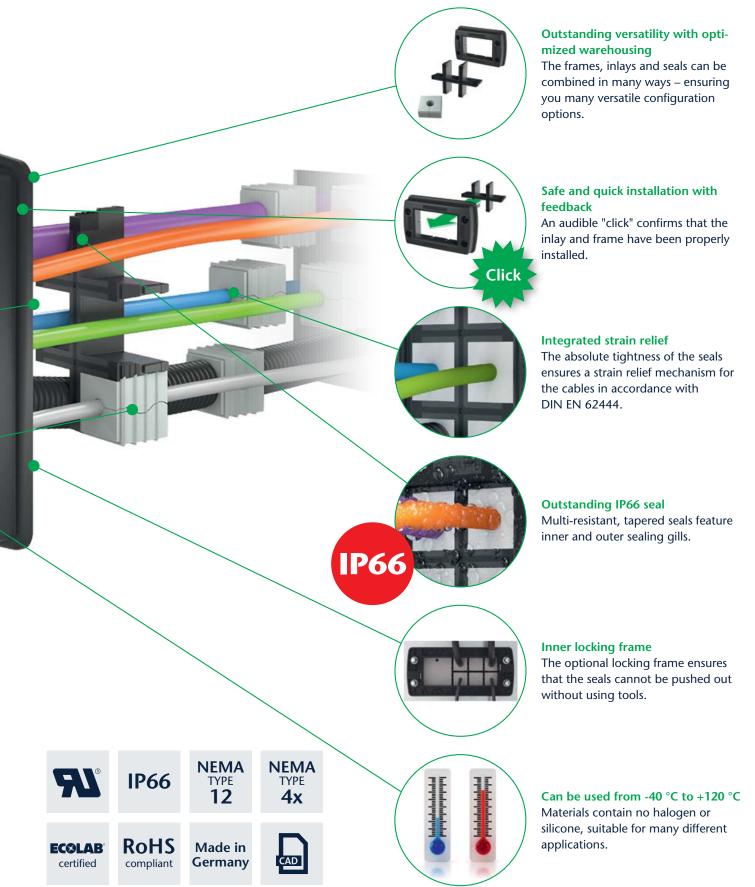
No need to disassemble and reconnect connectors, so manufacturer's warranty is not voided.

## Versatile, high-density assemblies are possible

1-way, 2-way, and 4-way seals provide you with excellent versatility for cable management.

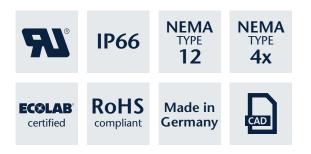


## KDS D CLICK



## KDSClick Modular cable entry system

Frames and inlays		KDS-SR 1-4		KDS-SR 6/10		KDS-SR 8/16		KDS-SR 10/24	
Diagram		Page 32		Page 32		Page 32		Page 32	
Туре		KDS-SR 1-4 BK		KDS-SR 6/10 BK		KDS-SR 8/16 BK		KDS-SR 10/24 BK	
Cat. no.	Qty.	28506.4	1		1	28502.4	1	28504.4	1
Description	Qty.	Screw frame		Screw frame		Screw frame		Screw frame	
Type / Set		KDS-Set 1-4 BK		KDS-Set 6/10 BK		KDS-Set 8/16 BK		KDS-Set 10/24 BK	
Cat. no.	Qtv.	28602.4	1	28603.4	1	28604.4	1	28605.4	1
Description		Set consists of: 1 x KDS-SR 1-4 BK, 1 x KDS-Inlay 4 BK		Set consists of: 1 x KDS-SR 6/10 BK, 1 x KDS-Inlay 2 BK, 1 x KDS-Inlay 6 BK		Set consists of: 1 x KDS-SR 8/16 BK, 1 x KDS-Inlay 1 BK, 2 x KDS-Inlay 4 BK		Set consists of: 1 x KDS-Inlay 4 BK, 1 x KDS-Inlay 6 BK	
Accessories									
Inlay		KDS-Inlay 1 BK		KDS-Inlay 1 BK		KDS-Inlay 1 BK		KDS-Inlay 1 BK	
Cat. no.	Qty.	28516.4	5	28516.4	5	28516.4	5	28516.4	5
Description		For separating vertically		For separating vertically		For separating vertically		For separating vertically	
Inlay				KDS-Inlay 2 BK				KDS-Inlay 2 BK	
Cat. no.	Qty.			28517.4	5			28517.4	5
Description				T-shape				T-shape for large small	
Inlay		KDS-Inlay 4 BK				KDS-Inlay 4 BK		KDS-Inlay 4 BK	
Cat. no.	Qty.	28518.4	5			28518.4	5	28518.4	5
Description		for 4-way splits				for 4-way splits		for 4-way splits	
Inlay				KDS-Inlay 6 BK				KDS-Inlay 6 BK	
Cat. no.	Qty.			28519.4	5			28519.4	5
Description				for 6-way splits				for 6-way splits	
Inner locking frame (optional)		KDS-IVR 1-4 BK		KDS-IVR 6/10 BK		KDS-IVR 8/16 BK		KDS-IVR 10/24 BK	
Cat. no.	Qty.	28507.4	10	28501.4	10	28503.4	10	28505.4	10
Sheet-metal hole punch		BL KDS-SR 1-4		BL KDS-SR 6/10		BL KDS-SR 8/16		BL KDS-SR 10/24	
Cat. no.	Qty.	Page 76		Page 76		Page 76		Page 77	
Description		For sheet steel up to 2 mm; also for marking drilling hol points		For sheet steel up to 2 mm also for marking drilling ho points		For sheet steel up to 2 mn also for marking drilling he points		For sheet steel up to 2 mi also for marking drilling h points	
Actuating tool		KDS BW 1		KDS BW 1		KDS BW 1		KDS BW 1	
Cat. no.	Qty.	Page 70		Page 70		Page 70		Page 70	
Seals small		KDS-DE		KDS-DE		KDS-DE		KDS-DE	
Cat. no.	Qty.	Pages 48/49	10	Pages 48/49	10	Pages 48/49	10	Pages 48/49	10
large	Quy.	KDS-DEG		KDS-DEG		KDS-DEG	10	KDS-DEG	10
Cat. no.	Qty.	Pages 48/49	10	Pages 48/49	10	Pages 48/49	10	Pages 48/49	10
KDS-DES	<b>L</b> .y.	KDS-DES		KDS-DES		KDS-DES		KDS-DES	
Cat. no.	Qty.	Pages 50/51	10	Pages 50/51	10	Pages 50/51	10	Pages 50/51	10
	2-9.								





#### Features

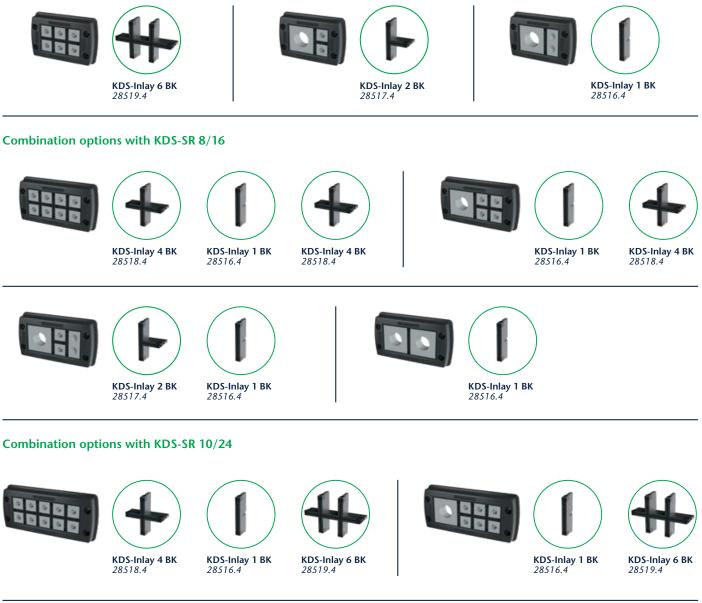
- Material: polyamide PA 6.6, glass-fibre reinforced | TPE
- Colour: black
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +120 °C
- Halogen-free, silicone-free
- Protection: IP66

## **KDSClick Combination options**

#### **Combination options with KDS-SR 1-4**



#### Combination options with KDS-SR 6/10











28516.4





**KDS-Inlay 1 BK** 28516.4







KDS-Inlay 1 BK 28516.4

KDS-Inlay 2 BK 28517.4

## KDS-FP Flange plates

#### Versatility for cable management

The **KDS-FP** flange plate provides manufacturers of machines with a very cost-effective, convenient feed-through solution. It can be used to adapt housings and switchgear cabinets to fit your updated requirements at any time, and can also considerably simplify your warehousing. You no longer have to stock switchgear cabinets or distributors with different configurations of assembled cable and cable outlets. Instead, you can uniformly prepare your products with the flange plate and then adapt them at any time to your specific cabling or tubing requirements. Your advantage is that you save money by requiring fewer variants.



## Your advantages

- Lower costs with increased variability due to standardized opening dimensions
- No loss of guarantee when using assembled cables
- Versatile, high-density assemblies are possible
- Outstanding IP66 seal
- Integrated strain relief
- Outstanding versatility with optimized warehousing
- Can be used from -40 °C to +120 °C

## The basic components of the modular system

Flange plate. Inlays. Seals. The modular design – 3 basic components – provides more versatility, variability and variety.

#### 1. Flange plate

The flange plate is available in the versions **KDS-FP** 2x10/24 (up to 20 feed-through openings) or the **KDS-FP** 3x10/24 (for up to 20 or 30 openings). Uniform housing break-outs of 131 mm x 110 mm or 131 mm x 161 mm are used for installation. By screwing the flange plate on the outside of the cabinet, the break-out is completely sealed according to IP66. On the continuous closed plates, there are two or three cover segments with pre-determined breaking points; these can be pushed out (without tools) which then opens up a 110 mm x 40 mm feed-through opening. The click-in KDSClick frame inlays can be used to subdivide this opening in up to ten appropriately sized frame openings.



#### 2. Inlays

The click-in inlays enable needs-based dimensioning of the frame opening, corresponding to the seal being used. An audible "click" confirms a correct installation. So you can variably configure cable entries to match various requirements (for cables, lines, tubing, pneumatic and hydraulic lines).

#### 3. Seals

The conical shape of the seal makes it easy to press in. This also reliably seals the gaps and ensures strain relief in accordance with DIN EN 62444. The seals are installed by pressing them from the inside outwards into the openings of the previously installed inlays. Their wave-cut profile makes them easy to install and ensures a perfect fit around the cables. There are currently over 130 different seals that can be used for sealing cables of various diameters and sizes.





## KDS-FP Flange plates

#### An overview of your advantages



#### Captive seal

The foamed-in frame gasket eliminates the risk of incorrect assembly (forgotten gasket) and speeds up the assembly process.

#### Variability

Can be extended to max. 30 openings, without the use of tools or further machining.

## No loss of guarantee: assembled cables

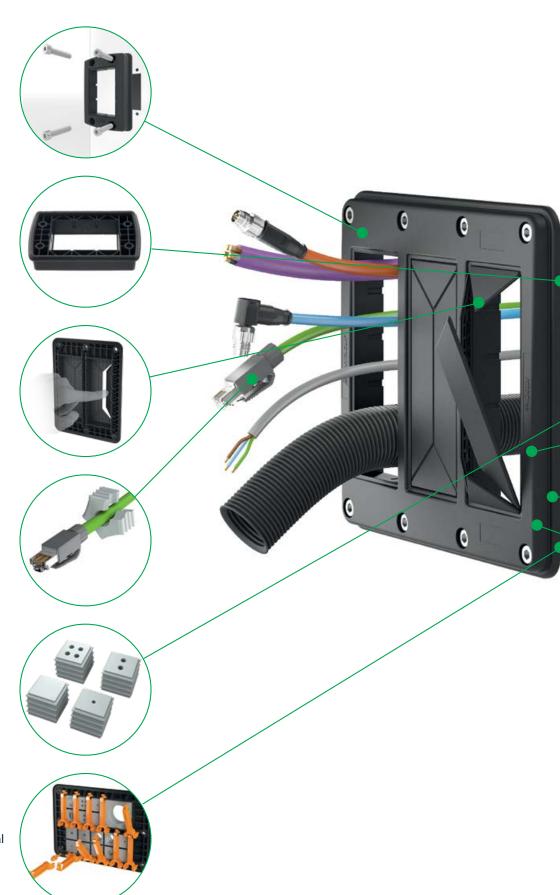
No need to disassemble and reconnect connectors, so manufacturer's warranty is not voided.

## Versatile, high-density assemblies are possible

1-way, 2-way, and 4-way seals provide you with excellent versatility for cable management.

#### Accessories

Locking mechanism can be installed without tools; this provides additional strain relief in direction of cabinet interior

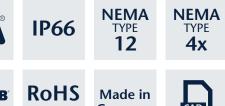


#### KDS 🖸 Outstanding versatility with optimized warehousing The flange plates, inlays and seals CLICK can be combined in many ways ensuring you many versatile configuration options. by CONTA-CLIP Safe and quick installation with feedback An audible "click" confirms that the inlay and frame have been properly installed. Click Integrated strain relief The absolute tightness of the seals ensures a strain relief mechanism for the cables that complies with DIN EN 62444. . . **Outstanding IP66 seal** Multi-resistant, tapered seals feature inner and outer sealing gills. **IP66** Can be used from -40 °C to +120 °C Materials contain no halogen or silicone; suitable for many different applications. NEMA **NEMA IP66** TYPE TYPE 12 **4**x RoHS Made in **ECOLAB** Germany CAD compliant certified

## KDS-FP Flange plates

Flange plates and accessories		KDS-FP 2x10/24				NEMA
				<b>A</b>	IP66	TYPE <b>12</b>
				<b>ECOLAB</b> <sup>°</sup> certified	<b>RoHS</b> compliant	Made i Germar
Diagram		Page 23				
Type		KDS-FP 2x10/24 BK				
Cat. no.	Qty.		1			
Description		Flange plate				
Accessories		5 1				
Inlay		KDS-Inlay 1 BK				
Cat. no.	Qty.	28516.4	5			
Description		For separating vertically				
Inlay		KDS-Inlay 2 BK				
Cat. no.	Qty.		5			
Description		T-shape for large small				
Inlay		KDS-Inlay 4 BK				
Cat. no.	Qty.		5			
Description		for 4-way splits				
Inlay		KDS-Inlay 6 BK	_			
Cat. no.	Qty.		5			
Description		for 6-way splits KDS-FP-IVR OG				
Inner lock Cat. no.	01-		20			
Inner cover UL	Qty.	Z8664.3 KDS-FP-AD/UL YE	20			
Cat. no.	Qty.		10			
Actuating tool	Qty.	KDS BW 1	10			
Cat. no.	Qty.	Page 70				
cut. no.	Qty.	ruge / V				

Flange plates and accessories		KDS-FP 3x10/24 BK	
Diagram		Page 23	
Туре		KDS-FP 3x10/24 BK	
Cat. no.	Qty.	28661.4	1
Description	-	Flange plate	
Accessories			
Inlay		KDS-Inlay 1 BK	
Cat. no.	Qty.	28516.4	5
Description		For separating vertically	
Inlay		KDS-Inlay 2 BK	
Cat. no.	Qty.	28517.4	5
Description		T-shape for large small	
Inlay		KDS-Inlay 4 BK	
Cat. no.	Qty.	28518.4	5
Description		for 4-way splits	
Inlay		KDS-Inlay 6 BK	
Cat. no.	Qty.	28519.4	5
Description		for 6-way splits	
Inner lock		KDS-FP-IVR OG	
Cat. no.	Qty.	28664.3	20
Inner cover UL		KDS-FP-AD/UL YE	
Cat. no.	Qty.	28665.8	10
Actuating tool		KDS BW 1	
Cat. no.	Qty.	Page 70	





## **KDS-FP Combination options**

#### **Combination option 1**





KDS-Inlay 4 BK 28518.4

28516.4

KDS-Inlay 1 BK



KDS-Inlay 6 BK 28519.4

#### **Combination option 2**





KDS-Inlay 1 BK 28516.4

**KDS-Inlay 6 BK** 28519.4



**Combination option 3** 

KDS-Inlay 1 BK 28516.4

**KDS-Inlay 1 BK** 28516.4

KDS-Inlay 6 BK 28519.4

#### **Combination option 4**





KDS-Inlay 1 BK 28516.4 KDS-Inlay 2 BK 28517.4

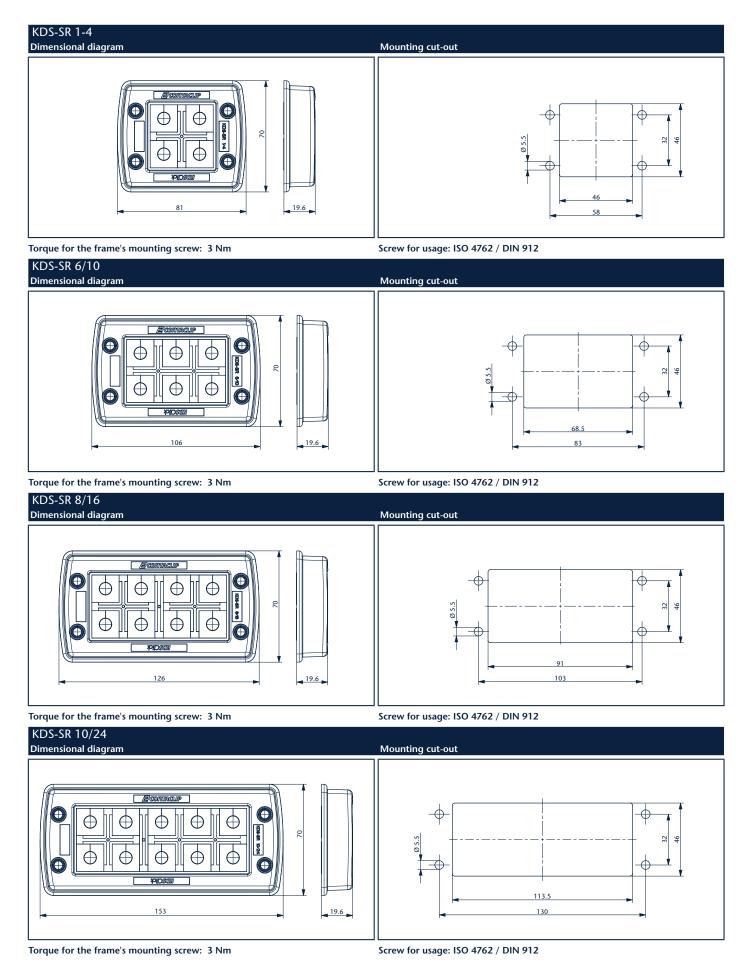
Each of the two or three 10-frame openings can be configured with the appropriate inlays to match a wide variety of individual customer requirements.

**Features** 

- Material: polyamide PA 6.6, glass-fibre reinforced | TPE
- Colour: black
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +120 °C
- Halogen-free, silicone-free
- Protection: IP66

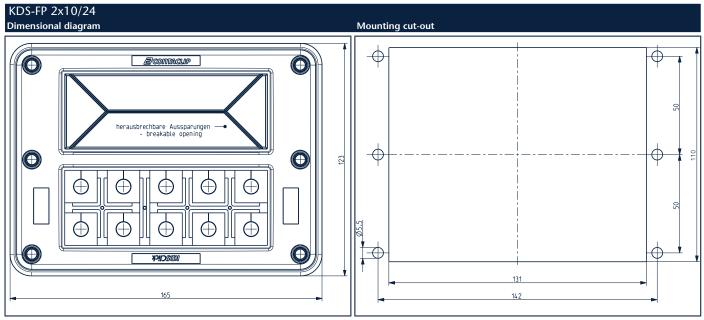
## **KDSClick**

Dimensional drawings / Mounting cut-outs for the modular cable entry system



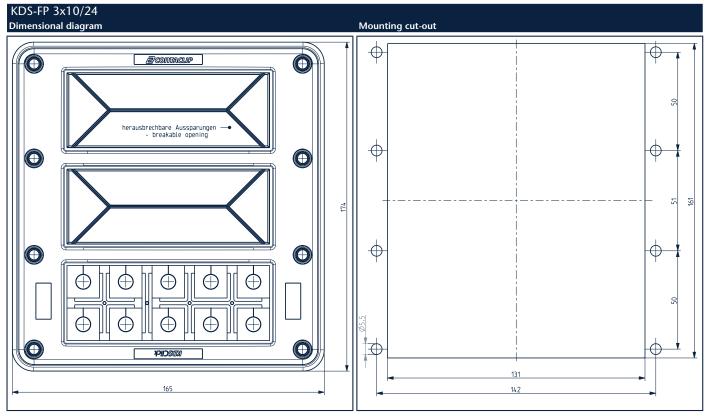
## **KDS-FP**

Dimensional drawings / Mounting cut-outs for the flange plate



Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912



Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912

## KDS-R Round cable entries

#### Overcoming the frame split: Round solutions for your requirements.

The round **KDS-R** cable entries for metric breakouts from M20 to M63 are designed for cables with and without plugs. In case of maintenance or retrofitting with assembled cable harnesses, cables with diameters from 2 mm to 35 mm can be quickly and safely inserted into the switchgear cabinets or housings and sealed according to IP66. The modular system ensures quick and easy assembly in three steps. A reliable seal and absolute secure fit is also provided by the slitted, tapered seals with a wave-cut profile, which, after the cables are routed through the cable entry, are placed around the cables and then pressed into the round cable entry. After that, the separable thread and locking adapter on the switchgear cabinet exterior is easily screwed together with the round frame. The separable locknuts that are mounted on the interior of the locking elements ensure safe and secure attachment. This system can be used with a wall thickness up to 6 mm.



 $\square$ 

#### Your advantages

- Assembled cables can be guided through
- Guarantee retained for assembled cables
- Retrofitting and servicing can be done quickly and easily
- High-density assemblies
- Can be installed on standard metric break-outs
- Protection: IP66

## The basic components of the modular system

#### 1. Round cable entries

The round cable entry **KDS-R** ensures quick and secure assembly of hoses and electrical cables in switchboxes and switchgear cabinets. The seals (TPE) integrated into the cable entry also ensure an outstanding seal in accordance with IP66 on painted and rough surfaces.

#### 2. Inlays

The click-in inlays enable needs-based dimensioning of the frame opening, corresponding to the seal being used. So you can variably configure cable entries to match various requirements (for cables, lines, tubing, pneumatic and hydraulic lines).



The two-piece thread and locking adapter **KDS-RGA** for versatile installation is screwed together with the round cable entry. It locks with a form fit with the cable entry and therefore ensures that the seals and inlays are mechanically secured. The threads located on the switchgear cabinet or housing interior are available respectively in three common diameters for metric break-outs from M20–M32 and M40–M63.

#### 4. Separable locknuts

The individual parts of the locknut **KDS-GM** can be snapped together quickly and easily via the dovetail guide and then can be mounted on the round cable entry.

#### 5. Seals

The tapered shape of the seal **KDS-DE / KDS-DEG** enables user-friendly pressing-in of the seal, reliable sealing of the gaps and ensures a strain relief working towards accordance with DIN EN 62444. To attach them, the seals are pressed from the inside out into the openings of the cable entries. Their wave-cut profile makes them easy to install and ensures a perfect fit around the cables. There are currently over 130 different seals that can be used for sealing cables of various diameters and sizes.











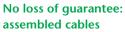
## KDS-R Round cable entries

#### An overview of your advantages



#### Variability

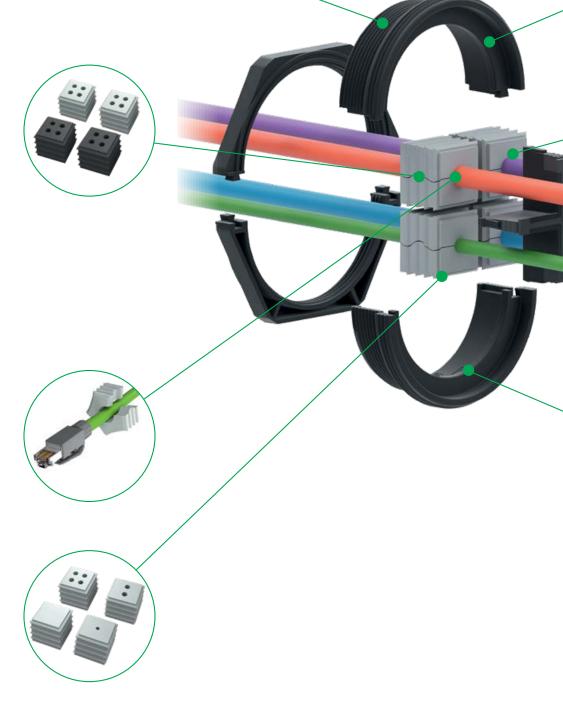
Up to 16 cables can be fed through thanks to the compatibility of the KDS-R 40-63 with the KDS inlay 4.



No need to disassemble and reconnect connectors, so the manufacturer's warranty is not voided.

## Versatile, high-density assemblies are possible

1-way, 2-way, and 4-way seals provide you with excellent versatility for cable management.





## KDS-R Round cable entries

Round cable entries		KDS-R 20-32		KDS-RGA M20/25/	'32	KDS-GM 20/25/3	2
				5			)
Description		Round cable entry		Thread and locking ada	oter	Separable locknut	
Type / colour		KDS-R 20-32 BK		KDS-RGA M20 BK		KDS-GM M20 BK	
Cat. no.	Qty.	28770.4	10	28771.4	5	28616.4	10
Type / colour				KDS-RGA M25 BK		KDS-GM M25 BK	
Cat. no.	Qty.			28772.4	5	28617.4	10
Type / colour				KDS-RGA M32 BK		KDS-GM M32 BK	
Cat. no.	Qty.			28773.4	5	28618.4	10
Cable diameter							
KDS-DE		1 – 13 mm		1 – 13 mm		1 – 13 mm	
KDS-DEG							
Accessories							
Thread adapters		KDS-RGA M20 BK					
Cat. no.	Qty.	28771.4	5				
Thread adapters		KDS-RGA M25 BK					
Cat. no.	Qty.	28772.4	5				
Thread adapters		KDS-RGA M32 BK					
Cat. no.	Qty.	28773.4	5				
Locknut				KDS-GM M20 BK			
Cat. no.	Qty.			28616.4	10		
Locknut				KDS-GM M25 BK			
Cat. no.	Qty.			28617.4	10		
Locknut				KDS-GM M32 BK			
Cat. no.	Qty.			28618.4	10		
Inlay							
Cat. no.	Qty.						
Inlay							
Cat. no.	Qty.						
Inlay							
Cat. no.	Qty.						



Round cable entries		KDS-R 40-63 BK		KDS-RGA M40/50/	63	KDS-GM 40/50/6	3
E		Ø		S	)		
Description		Round cable entry		Thread and locking adap	oter	Separable locknut	
Type / colour		KDS-R 40-63 BK		KDS-RGA M40 BK		KDS-GM M40 BK	
Cat. no.	Qty.	28774.4	4	28775.4	5	28619.4	10
Type / colour	.,			KDS-RGA M50 BK		KDS-GM M50 BK	
Cat. no.	Qty.			28776.4	5	28620.4	10
Type / colour				KDS-RGA M63 BK		KDS-GM M63 BK	
Cat. no.	Qty.			28777.4	5	28621.4	10
Cable diameter							
KDS-DE		1 – 13 mm		1 – 13 mm		1 – 13 mm	
KDS-DEG		14 – 35 mm		14 – 35 mm		14 – 35 mm	
Accessories							
Thread adapters		KDS-RGA M40 BK					
Cat. no.	Qty.	28775.4	5				
Thread adapters		KDS-RGA M50 BK					
Cat. no.	Qty.	28776.4	5				
Thread adapters		KDS-RGA M63 BK					
Cat. no.	Qty.	28777.4	5				
Locknut				KDS-GM M40 BK			
Cat. no.	Qty.			28619.4	10		
Locknut				KDS-GM M50 BK			
Cat. no.	Qty.			28620.4	10		
Locknut				KDS-GM M63 BK			
Cat. no.	Qty.			28621.4	10		
Inlay		KDS-Inlay 1 BK					
Cat. no.	Qty.	28516.4	5				
Inlay		KDS-Inlay 2 BK					
Cat. no.	Qty.	2817.4	5				
Inlay		KDS-Inlay 4 BK					
Cat. no.	Qty.	28518.4	5				



# Compatibility matrix for round cable entry systems KDS-R

grey small			
		black small	
Туре	Cat. no.	Туре	Cat. no.
KDS-DE/B GR	28561.6	KDS-DE/B BK	28520.4
KDS-DE 1.5-2 GR	28562.6	KDS-DE 1.5-2 BK	28521.4
KDS-DE 2-3 GR	28563.6	KDS-DE 2-3 BK	28522.4
KDS-DE 3-4 GR	28564.6	KDS-DE 3-4 BK	28523.4
KDS-DE 4-5 GR	28565.6	KDS-DE 4-5 BK	28524.4
KDS-DE 5-6 GR	28566.6	KDS-DE 5-6 BK	28525.4
KDS-DE 6-7 GR	28567.6	KDS-DE 6-7 BK	28526.4
KDS-DE 7-8 GR	28568.6	KDS-DE 7-8 BK	28527.4
KDS-DE 8-9 GR	28569.6	KDS-DE 8-9 BK	28528.4
KDS-DE 9-10 GR KDS-DE 10-11 GR	28570.6	KDS-DE 9-10 BK	28529.4
KDS-DE 11-12 GR	28571.6 28572.6	KDS-DE 10-11 BK KDS-DE 11-12 BK	28530.4 28531.4
KDS-DE 12-13 GR	28573.6	KDS-DE 12-13 BK	28532.4
KDS-DE 12-15 GR	28574.6	KDS-DE 12-15 BK	28533.4
KDS-DE 14-15 GR	28609.6	KDS-DE 14-15 BK	28608.4
KDS-DE 15-16 GR	28671.6	KDS-DE 15-16 BK	28670.4
KDS-DE 2 x 4-5 GR	28595.6	KDS-DE 2 x 4-5 BK	28555.4
KDS-DE 2 x 5-6 GR	28596.6	KDS-DE 2 x 5-6 BK	28556.4
KDS-DE 2 x 6.5 GR	28607.6	KDS-DE 2 x 6.5 BK	28682.4
KDS-DE 4 x 2-3 GR	28597.6	KDS-DE 4 x 2-3 BK	28557.4
KDS-DE 4 x 3-4 GR	28598.6	KDS-DE 4 x 3-4 BK	28558.4
KDS-DE 4 x 4.5 GR	28606.6	KDS-DE 4 x 4.5 BK	28681.4
KDS-DE 4 x 5 GR	28673.6	KDS-DE 4 x 5 BK	28672.4
KDS-DE/1 x ASI GR	28599.6	KDS-DE/1 x ASI BK	28559.4
KDS-DE/2 x ASI GR	28600.6	KDS-DE/2 x ASI BK	28560.4
		KDS-DE/K 2-1 BK	28553.4
grey large		black large	
Туре	Cat. no.	Туре	Cat. no.
KDS-DEG/B GR	28575.6	KDS-DEG/B BK	28534.4
KDS-DEG 14-15 GR	28576.6	KDS-DEG 14-15 BK	28535.4
KDS-DEG 15-16 GR	28577.6	KDS-DEG 15-16 BK	28536.4
KDS-DEG 16-17 GR	28578.6	KDS-DEG 16-17 BK	28537.4
KDS-DEG 17-18 GR	28579.6	KDS-DEG 17-18 BK	28538.4
KDS-DEG 18-19 GR	28580.6	KDS-DEG 18-19 BK	28539.4
KDS-DEG 19-20 GR	28581.6	KDS-DEG 19-20 BK	28540.4
KDS-DEG 20-21 GR	28582.6	KDS-DEG 20-21 BK	28541.4
KDS-DEG 21-22 GR	28583.6	KDS-DEG 21-22 BK	28542.4
KDS-DEG 22-23 GR	28584.6	KDS-DEG 22-23 BK	28543.4
KDS-DEG 23-24 GR	28585.6	KDS-DEG 23-24 BK	28544.4
KDS-DEG 24-25 GR	28586.6	KDS-DEG 24-25 BK	28545.4
KDS-DEG 25-26 GR	28587.6	KDS-DEG 25-26 BK	28546.4
KDS-DEG 26-27 GR	28588.6	KDS-DEG 26-27 BK	28547.4
KDS-DEG 27-28 GR	28589.6	KDS-DEG 27-28 BK	28548.4
KDS-DEG 27-28 GR	28590.6	KDS-DEG 27-28 BK	28549.4
	28591.6	KDS-DEG 29-30 BK	28550.4
KD2-DEG 29-30 GR	28592.6	KDS-DEG 30-31 BK	
KDS-DEG 29-30 GR KDS-DEG 30-31 GR			28551.4
KDS-DEG 30-31 GR			28551.4 28552.4
	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK	28551.4 28552.4 28601.4
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6	KDS-DEG 31-32 BK	28552.4
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6	KDS-DEG 31-32 BK	28552.4
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES	28552.4 28601.4
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type	28552.4 28601.4 Cat. no.
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR	28552.4 28601.4 Cat. no. 28800.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES KDS-DES KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES KDS-DES KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28806.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES KDS-DES KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR KDS-DES BX4.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28805.6 28806.6 28713.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES KDS-DES KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR KDS-DES BX4.5 GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28805.6 28806.6 28713.6 28714.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR KDS-DE-FB1/A GR KDS-DE-FB1/B GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28805.6 28806.6 28713.6 28714.6 28715.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR KDS-DE-FB1/A GR KDS-DE-FB1/B GR KDS-DE-FB1/C GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28805.6 28805.6 28813.6 28713.6 28713.6 28715.6 28716.6
KDS-DEG 30-31 GR KDS-DEG 31-32 GR	28593.6 28594.6 Small seals Large seals	KDS-DEG 31-32 BK KDS-DEG 32-33 BK KDS-DES Type KDS-DES 2X10.5 GR KDS-DES 3X9.5 GR KDS-DES 3X8.5 GR KDS-DES 4X7.5 GR KDS-DES 7X6.5 GR KDS-DES 8X5.5 GR KDS-DES 8X4.5 GR KDS-DE-FB1/A GR KDS-DE-FB1/B GR	28552.4 28601.4 Cat. no. 28800.6 28801.6 28802.6 28803.6 28803.6 28804.6 28805.6 28805.6 28805.6 28806.6 28713.6 28714.6 28715.6

ound cable entries K	DS-R				
	KDS-R 20 – 32			KDS-R 40–63	
KDS-R M20	KDS-R M25	KDS-R M32	KDS-R M40	KDS-R M50	KDS-R M63
•	•	•	•	•	•
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## KDS-KV Separable cable glands

#### All-round "cornered" solutions for your requirements!

For metric break-outs from M20 to M63, CONTA-CLIP provides the **KDS-KV** separable cable glands for cables with or without attached plugs. In case of maintenance or retrofitting with assembled cable harnesses, cables with diameters from 2 mm to 35 mm can be quickly and safely inserted into the switchgear cabinets or housings and sealed according to IP66. This separable system ensures quick and simple installation. The slitted seal has a wave-cut profile that ensures a reliable seal and a totally secure attachment. The seal is first placed around the cable and then inserted in one of the two halves of the cable gland. After inserting the seals, the two halves of the cable gland are simply snapped together. A locknut (which can also be separated) on the inside of the cabinet ensures a safe and secure attachment.



### Your advantages

- Assembled cables can be guided through
- Guarantee retained for assembled cables
- Retrofitting and servicing can be done quickly and easily
- High-density assemblies
- Can be installed on standard metric break-outs
- Includes a separable hexagon nut

## The basic components of the modular system

#### 1. Split cable glands

Consisting of two half-shells, the cable gland is quick and easy to install. It is made of dimensionally stable, glass-fibre reinforced plastic. The integrated seal guarantees an optimal seal with IP66 protection, even on painted or rough surfaces.



#### 2. Separable locknuts

The individual parts of the locknut can be snapped together quickly and easily via the dovetail guide and then mounted with the gland.

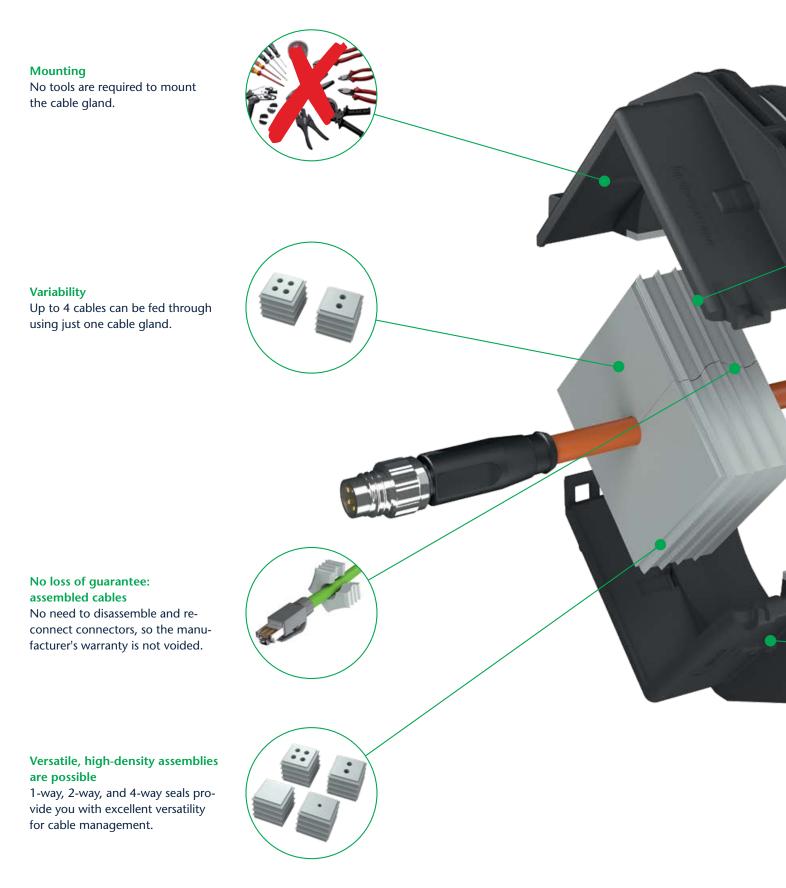
#### 3. Seals

The conical shape of the seal makes it easy to press in. This also reliably seals the gaps and ensures strain relief in accordance with DIN EN 62444. The seals are installed by pressing them from the inside outwards into the openings of the previously installed inlays. Their wave-cut profile makes them easy to install and ensures a perfect fit around the cables. There are currently over 130 different seals that can be used for sealing cables of various diameters and sizes.



## KDS-KV Separable cable glands

#### An overview of your advantages





## KDS-KV Separable cable glands

Separable cable glands	KDS-KV M20	KDS-KV M25	KDS-KV M32
Diagram	Ø 40	Ø 40 1 1 1 1 1 1 1 1 1 1 1 1 1	Ø 40 M SW 38 SW 40 M32x1.5
Туре	KDS-KV M20 BK	KDS-KV M25 BK	KDS-KV M32 BK
Cat. no. Qt			<i>28612.4</i> <b>10</b>
Description	Separable cable gland, including separable locknut	Separable cable gland, including separable locknut	Separable cable gland, including separable locknut
Cable diameter, mm			
KDS-DE	1 – 13 mm	1 – 14 mm	1 – 14 mm
Accessories			
Locknut	KDS-GM 20 BK	KDS-GM 25 BK	KDS-GM 32 BK
Cat. no. Qt	. 28616.4 10	28617.4 10	28618.4 10
Description	Separable locknut	Separable locknut	Separable locknut
Seals			
small	KDS-DE	KDS-DE	KDS-DE
Cat. no. Qt	. Pages 48 – 51	Pages 48 – 51	Pages 48 – 51
Tightening torque of lock nut, in Nm	4	4	4
Combinations			

Separable cable glands	KDS-KV M40	KDS-KV M50	KDS-KV M63
Diagram	0 72	0 72 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ø 72 C FE SW 68 SW 68 SW 72 M63x1.5
Туре	KDS-KV M40 BK	KDS-KV M50 BK	KDS-KV M63 BK
Cat. no. Qty.	28613.4 5	28614.4 5	28615.4 <b>5</b>
Description	Separable cable gland, including separable locknut	Separable cable gland, including separable locknut	Separable cable gland, including separable locknut
Cable diameter, mm			
KDS-DE	14 – 33 mm	14 – 33 mm	14 – 33 mm
Accessories			
Locknut	KDS-GM 40 BK	KDS-GM 50 BK	KDS-GM 63 BK
Cat. no. Qty.			28621.4 5
Description	Separable locknut	Separable locknut	Separable locknut
Seals			
small	KDS-DEG	KDS-DEG	KDS-DEG
Cat. no. Qty.	•	Pages 48 – 51	Pages 48 – 51
Tightening torque of lock nut, in Nm	7	7	7
Combinations			



## **KDS-FB** Cable entry system for flat cables

Fast. Safe. Turning cables inside out! The KDS-FB cable entry system for flat cables provides you with outstanding versatility and saves you time while managing cables, especially for industrial trucks, crane systems and elevator applications. The "fish skin" on the seal

mechanically surrounds the inserted flat cable; this ensures outstanding tolerance compensation and IP66 protection.

Supported by:



Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

## Attaching the frame Made from a single mould, the one-piece frame is quick and easy to assemble. It is made of sturdy, glass-fibre reinforced plastic. 0000 000:0 00000 0000 Quickly assembled from the inside out The frame does not need to be disassembled if your requirements change or if you're carrying out service work. 000000 0 00000 00000 **Captive seal** The moulded-in frame gasket eliminates the risk of incorrect assembly (forgotten seal) and speeds up the assembly process. The seals' conical shape enables them to be easily pressed in so they can seal gaps. To attach them, the seals are pressed from the inside out into the openings. There are currently over 130 different seals that can be used for sealing cables of various diameters and sizes.

Seals

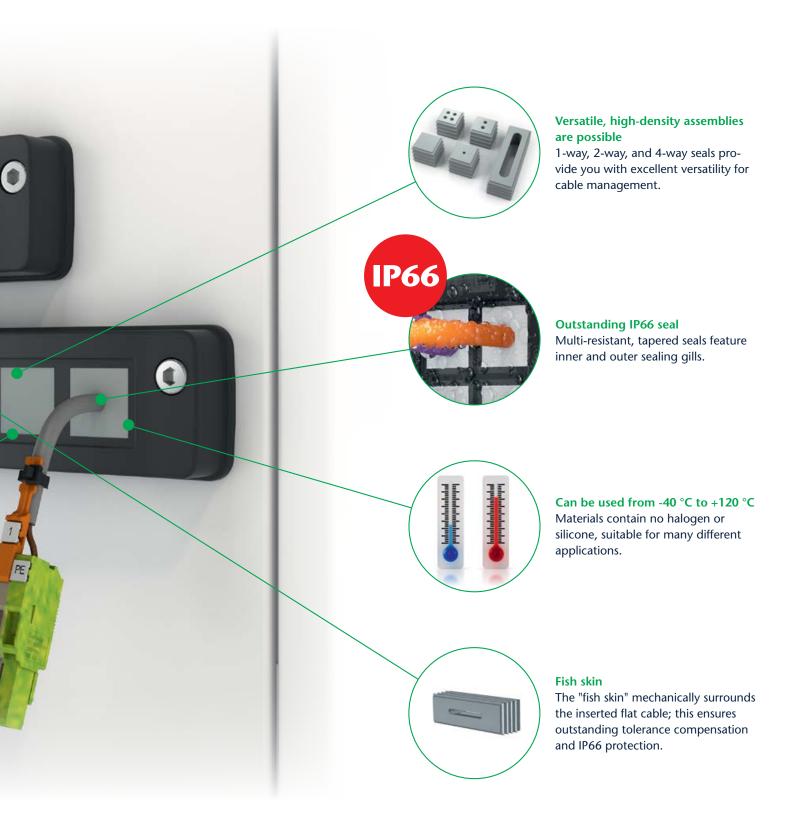


# RoHS Made in Germany



## Your advantages

30% less time required for new installations because of the one-piece frame. Modifications, retrofits, service work or the readjustment of cable lengths can be made at any time without disassembling the frame, since the seals are released from the outside inwards by simply pressing in.



# KDS-FB Cable entry system for flat cables

Frame		KDS-SR-FB1/A		KDS-SR-FB2/A		KDS-SR-FB2/B	
0 0					)		
Diagram		Page 42		Page 42		Page 42	
Type / colour		KDS-SR-FB1/A BK		KDS-SR-FB2/A BK		KDS-SR-FB2/B BK	
Cat. no.	Qty.	28700.4	10	28701.4	10	28702.4	10
<b>Seals</b> (refer to pages 48 – 49, or pages 44 – 45)	Qtj.	20700.1	10	20/01.1	10	20702.1	10
KDS-DE						1 x	
KDS-DE-FB1		1 x				1 x	
KDS-DE-FB2				1 x			
KDS-DE-FB3							
KDS-DE-FB4							
Accessories							
Actuating tool (refer to page 70)		KDS BW 1		KDS BW 1		KDS BW 1	
Cat. no.	Qty.	28622.0	1	28622.0	1	28622.0	1
Sheet-metal hole punch (refer to page 76)		BL-VA KDS-FB1		BL-VA KDS-FB2		BL-VA KDS-FB2	
Cat. no.	Qty.	28729.0	1	28741.0	1	28741.0	1
Frame	)	KDS-SR-FB4/A	7	KDS-SR-FB4/B		KDS-SR-FB4/C	C
Diagram		Page 43		Page 43		Page 43	
5		•		•			
Type / colour	0	KDS-SR-FB4/A BK	10	KDS-SR-FB4/B BK	10	KDS-SR-FB4/C BK	10
Cat. no.	Qty.	28707.4	10	28708.4	10	28709.4	10
Seals (refer to pages 48 – 49, or pages 44 – 45) KDS-DE				2		1 x	
KDS-DE-FB1				2 x		2x	
KDS-DE-FB2				1 x		2 X	
KDS-DE-FB3				1.4			
KDS-DE-FB4		1 x					
Accessories							
Actuating tool (refer to page 70)		KDS BW 1		KDS BW 1		KDS BW 1	
Cat. no.	Qty.		1	28622.0	1	28622.0	1
Sheet-metal hole punch (refer to page 76)	Qty.	BL-VA KDS-FB4		BL-VA KDS-FB4		BL-VA KDS-FB4	
Cat. no.	Otv	28743.0	1	28743.0	1	28743.0	1
	Qty.	20, 10.0		20, 10.0		20. 15.0	



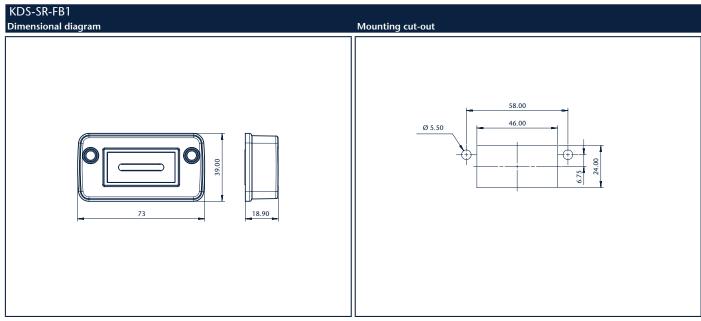
## Features

- Material: polyamide PA 6.6, glass-fibre reinforced | TPE
- Colour: black
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +120 °C
- Halogen-free, silicone-free
- Protection: IP66

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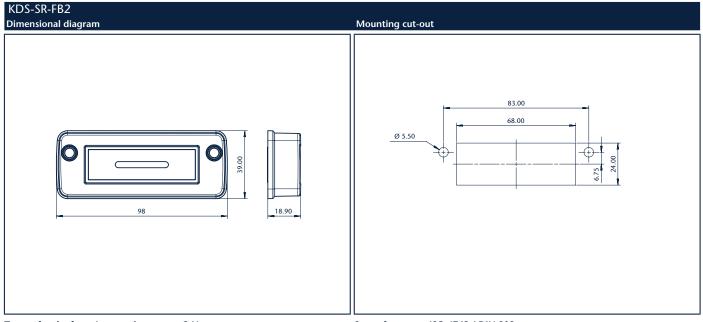


## KDS-FB Dimensional drawing / Mounting cut-out



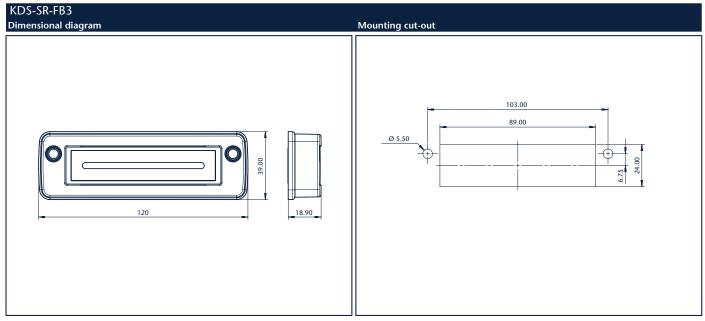
Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912



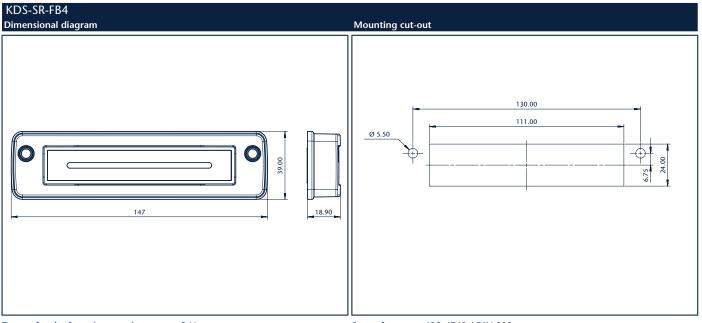
Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912



Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912



Torque for the frame's mounting screw: 3 Nm

Screw for usage: ISO 4762 / DIN 912

# Seals for KDS-FB

Seals	KDS-DE-FB1/A	KDS-DE-FB1/B	KDS-DE-FB1/C
Type / colour	KDS-DE-FB1/A GR	KDS-DE-FB1/B GR	KDS-DE-FB1/C GR
Cat. no. Qty Sealing area	. 28713.6 5	28714.6 5 Width: 19–23 mm Thickness: 5.5–6 mm	28715.6 5 Width: 28–33 mm Thickness: 5.5–6 mm
Seals	KDS-DE-FB2/B	KDS-DE-FB2/C	KDS-DE-FB2/D
Type / colour	KDS-DE-FB2/B GR	KDS-DE-FB2/C GR	KDS-DE-FB2/D GR
Cat. no. Qty Sealing area	28720.6 5 Width: 32.5 – 38 mm Thickness: 5 – 5.5 mm	28721.6 5 Width: 45 – 50.5 mm Thickness: 6 – 6.5 mm	28722.6 5 Width: 47–52 mm Thickness: 9.5–10 mm
Seals	KDS-DE-FB3/C	KDS-DE-FB1/A	KDS-DE-FB4/B
Type / colour	KDS-DE-FB3/C GR	KDS-DE-FB4/A GR	KDS-DE-FB4/B GR
Cat. no. Qty Sealing area	28739.6 5 Width: 64–69 mm Thickness: 11–12 mm	28727.6 5	28728.6 <b>5</b> Width: 85 – 90 mm Thickness: 4.2 – 5.2 mm



## Features

- Material: TPE
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +90 °C (static)
- Halogen-free, silicone-free
- Protection: IP66

KDS-DE-FB1/D	KDS-DE-FB1/E	KDS-DE-FB1/F	KDS-DE-FB2/A
	N N N N N N N N N N N N N N N N N N N		
KDS-DE-FB1/D GR	KDS-DE-FB1/E GR	KDS-DE-FB1/F GR	KDS-DE-FB2/A GR
<i>28716.6</i> <b>5</b> Width: 24 – 30 mm	Width: 19–24 mm	Width: 28–33 mm	28719.6 5
Thickness: 8.5–9 mm	Thickness: 6.5–7 mm	Thickness: 9–9.5 mm	
KDS-DE-FB2/E	KDS-DE-FB2/F	KDS-DE-FB3/A	KDS-DE-FB3/B
KDS-DE-FB2/E GR	KDS-DE-FB2/F GR	KDS-DE-FB3/A GR	KDS-DE-FB3/B GR
28723.6 5 Width: 38–43 mm	<i>28724.6</i> <b>5</b> Width: 49–54 mm	28725.6 <b>5</b>	<i>28726.6</i> <b>5</b> Width: 72–77 mm
Thickness: 12.5–13 mm	Thickness: 5–6 mm		Thickness: 5–5.5 mm

#### KDS-DE-FB4/C



28740.6 Width: 94–99 mm Thickness: 4.2–5.2 mm



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KDS-FB COMBINATION MATRIX

	KDS-SR-FB1/A BK	KDS-SR-FB2/A BK	KDS-SR-FB2/B BK	KDS-SR-FB3/A BK	KDS-SR-FB3/B BK	KDS-SR-FB3/C BK
Cat. no.	28700.4	28701.4	28702.4	28703.4	28704.4	28705.4
<b></b> *						
			•		٠	
<b>KDS-DE-FB1/A GR</b> 28713.6	•		•			•
KDS-DE-FB1/B GR						
28714.6	•		•			•
KDS-DE-FB1/C GR 28715.6	•		•			•
KDS-DE-FB1/D GR						
28716.6	•		•			•
<b>KDS-DE-FB1/E GR</b> 28717.6						
	•		•			•
<b>KDS-DE-FB1/F GR</b> 28718.6	•		٠			•
KDS-DE-FB2/A GR 28719.6		•			•	
<b>KDS-DE-FB2/B GR</b> 28720.6						
KDS-DE-FB2/C GR		•			•	
28721.6		•			•	
<b>KDS-DE-FB2/D GR</b> 28722.4						
		•			•	
<b>KDS-DE-FB2/E GR</b> 28723.6		•			•	
KDS-DE-FB2/F GR						
28724.6		•			•	
KDS-DE-FB3/A GR 28725.6				•		
KDS-DE-FB3/B GR 28726.6				•		
KDS-DE-FB3/C GR						
28739.6				•		
KDS-DE-FB4/A GR 28727.6						
KDS-DE-FB4/B GR 28728.6						
KDS-DE-FB4/C GR						
28740.6						

KDS-SR-FB3/D BK 28706.4	KDS-SR-FB4/A BK 28707.4	<b>KDS-SR-FB4/B BK</b> 28708.4	KDS-SR-FB4/C BK 28709.4	KDS-SR-FB4/D BK 28710.4	KDS-SR-FB4/E BK 28711.4	<b>KDS-SR-FB4/F BK</b> 28712.4
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# Sealing elements KDS systems

Soals	arov small		
Seals	grey small		
	Туре	Cat. no. Qty.	
	KDS-DE/B GR	28561.6 10	Blind
	KDS-DE 1.5 GR	28694.6 <b>10</b>	1.5 mm
	KDS-DE 1.5-2 GR KDS-DE 2 GR	28562.6         10           28696.6         10	2 mm
18 m	KDS-DE 2-3 GR	28696.6         10           28563.6         10	2 mm 3 mm
	KDS-DE 3 GR	28698.6 <b>10</b>	3 mm
	KDS-DE 3-4 GR	28564.6 10	4 mm
	KDS-DE 4-5 GR	28565.6 10	5 mm
	KDS-DE 5-6 GR	28566.6 10	6 mm
	KDS-DE 6-7 GR	28567.6 10	7 mm
	KDS-DE 7-8 GR	28568.6 10	8 mm
	KDS-DE 8-9 GR	28569.6 10	9 mm
	KDS-DE 9-10 GR	28570.6 10	10 mm
	KDS-DE 10-11 GR	28571.6 10	11 mm
	KDS-DE 11-12 GR	28572.6 10	12 mm
	KDS-DE 12-13 GR	28573.6 10	13 mm
	KDS-DE 13-14 GR	28574.6 10	14 mm
	KDS-DE 14-15 GR	28609.6 10	15 mm
	KDS-DE 15-16 GR	28671.6 10	16 mm
Seals	grey large		
	KDS-DEG/B GR	28575.6 10	Blind
	KDS-DEG/B GR KDS-DEG 14-15 GR	28576.6 <b>10</b>	15 mm
	KDS-DEG 15-16 GR	28577.6 <b>10</b>	16 mm
	KDS-DEG 16-17 GR	28578.6 <b>10</b>	17 mm
	KDS-DEG 17-18 GR	28579.6 10	18 mm
	KDS-DEG 18-19 GR	28580.6 <b>10</b>	19 mm
	KDS-DEG 19-20 GR	28581.6 <b>10</b>	20 mm
1 million	KDS-DEG 20-21 GR	28582.6 10	21 mm
	KDS-DEG 21-22 GR	28583.6 10	22 mm
	KDS-DEG 22-23 GR	28584.6 10	23 mm
	KDS-DEG 23-24 GR	28585.6 10	24 mm
	KDS-DEG 24-25 GR	28586.6 10	25 mm
	KDS-DEG 25-26 GR	28587.6 10	26 mm
	KDS-DEG 26-27 GR	28588.6 10	27 mm
	KDS-DEG 27-28 GR	28589.6 10	28 mm
	KDS-DEG 28-29 GR	28590.6 10	29 mm
	KDS-DEG 29-30 GR	28591.6 <b>10</b>	30 mm
	KDS-DEG 30-31 GR	28592.6 <b>10</b>	31 mm
	KDS-DEG 31-32 GR	28593.6 <b>10</b>	32 mm
	KDS-DEG 32-33 GR	28594.6 <b>10</b>	33 mm
	KDS-DEG 33-34 GR	28731.6 <b>10</b>	34 mm 35 mm
	KDS-DEG 34-35 GR	28733.6 10	
Seals with multiple holes	grey		
	KDS-DE 2x4-5 GR	28595.6 10	5 mm
	KDS-DE 2x5-6 GR	28596.6 10	6 mm
	KDS-DE 2x6.5 GR		6.5 mm
•••	KDS-DE 2x7 GR	28690.6 10	7 mm
	KDS-DE 2x8 GR	28692.6 10	8 mm
	KDS-DE 3x5-6 GR	28688.6 10	6 mm
	KDS-DE 4x2-3 GR	28597.6 10	3 mm
	KDS-DE 4x3-4 GR	28598.6 10	4 mm
	KDS-DE 4x5 GR	28673.6 10	5 mm
	KDS-DE 4x4.5 GR	28606.6 10	4.5 mm
	KDS-DE 4x6 GR	28762.6 10	6 mm
Seals for AS interface cables	grey		
	KDS-DE/1xASI GR KDS-DE/2xASI GR	28599.6 10 28600.6 10	
	N3592 ( 224) OR	2000.0 10	
NEMANEMATYPETYPE124x		Features <ul> <li>Material: TPE</li> <li>Flammability: UL 94 V-0</li> </ul>	
<b>ECOLAB</b> ROHS Made in Germany		<ul> <li>Temperature range: -40</li> <li>Halogen-free, silicone-free</li> <li>Protection: IP66</li> </ul>	

Seals	black small			
	Туре	Cat. no.	Qty.	Max. Ø
	KDS-DE/B BK	28520.4	10	Blind
	KDS-DE 1.5 BK	28693.4	10	1.5 mm
	KDS-DE 1.5-2 BK	28521.4	10	2 mm
	KDS-DE 2 BK	28695.4	10	2 mm
	KDS-DE 2-3 BK	28522.4	10	3 mm
	KDS-DE 3 BK	28697.4	10	3 mm
	KDS-DE 3-4 BK	28523.4	10	4 mm
	KDS-DE 4-5 BK	28524.4	10	5 mm
	KDS-DE 5-6 BK KDS-DE 6-7 BK	28525.4 28526.4	10 10	6 mm 7 mm
	KDS-DE 7-8 BK	28527.4	10	7 mm 8 mm
	KDS-DE 7-0 BK	28528.4	10	9 mm
	KDS-DE 9-10 BK	28529.4	10	10 mm
	KDS-DE 10-11 BK	28530.4	10	11 mm
	KDS-DE 11-12 BK	28531.4	10	12 mm
	KDS-DE 12-13 BK	28532.4	10	13 mm
	KDS-DE 13-14 BK	28533.4	10	14 mm
	KDS-DE 14-15 BK	28608.4	10	15 mm
	KDS-DE 15-16 BK	28670.4	10	16 mm
Seals	black large			
	KDS-DEG/B BK	28534.4	10	Blind
	KDS-DEG 14-15 BK	28535.4	10	15 mm
	KDS-DEG 15-16 BK	28536.4	10	16 mm
	KDS-DEG 16-17 BK	28537.4	10	17 mm
	KDS-DEG 17-18 BK	28538.4	10	18 mm
	KDS-DEG 18-19 BK	28539.4	10	19 mm
	KDS-DEG 19-20 BK	28540.4	10	20 mm
	KDS-DEG 20-21 BK	28541.4	10	21 mm
	KDS-DEG 21-22 BK	28542.4	10	22 mm
	KDS-DEG 22-23 BK	28543.4	10	23 mm
	KDS-DEG 23-24 BK	28544.4	10	24 mm
9.	KDS-DEG 24-25 BK	28545.4	10	25 mm
	KDS-DEG 25-26 BK	28546.4	10	26 mm
	KDS-DEG 26-27 BK	28547.4	10	27 mm
	KDS-DEG 27-28 BK	28548.4	10	28 mm
	KDS-DEG 28-29 BK KDS-DEG 29-30 BK	28549.4 28550.4	10 10	29 mm 30 mm
	KDS-DEG 30-31 BK	28550.4	10	31 mm
	KDS-DEG 31-32 BK	28552.4	10	32 mm
	KDS-DEG 32-33 BK	28601.4	10	33 mm
	KDS-DEG 32-35 BK	28730.4	10	34 mm
	KDS-DEG 34-35 BK	28732.4	10	35 mm
Seals with multiple holes	black			
	Didek			
	KDS-DE 2x4-5 BK	28555.4	10	5 mm
	KDS-DE 2x5-6 BK	28556.4	10	6 mm
	KDS-DE 2x6.5 BK	28682.4	10	6.5 mm
° • /	KDS-DE 2x7 BK	28689.4	10	7 mm
	KDS-DE 2x8 BK	28691.4	10	8 mm
	KDS-DE 3x5-6 BK	28687.4	10	6 mm
	KDS-DE 4x2-3 BK	28557.4	10	3 mm
	KDS-DE 4x3-4 BK	28558.4	10	4 mm
	KDS-DE 4x4.5 BK	28681.4	10	4.5 mm
	KDS-DE 4x5 BK	28672.4	10	5 mm
	KDS-DE 4x6 BK	28763.4	10	6 mm
Seals for AS interface cables	black			
	KDS-DE/1xASI BK	28559.4	10	
	KDS-DE/2xASI BK	28560.4	10	
Cone-shaped seals	black			
	KDS-DE/K 2-11 BK	28553.4	10	11 mm
	KDS-DEG/K 7-24 BK	28554.4	10	24 mm
	A PO	Features		
12 4x		Material: TPE		
		• Flammability: UL94 H		
ECOLAB ROHS Made in		• Temperature range: -4		o +120 °C (static)
		• Halogen-free, silicone		
certified compliant Germany		• High chemical resistar	nce	
		<ul> <li>UV-stabilized</li> </ul>		
		Protection: IP66		

Protection: IP66

## **KDS-DES** seals

The **KDS-DES** seals enable you to install non-assembled cables. The corresponding membrane must be pierced (center point is marked) to insert the cables. The cables can then be guided through the seal. Thanks to their design based on the proven KES system, the KDS-DES seals ensure an IP54-tight seal. Despite the high-density assembly (up to eight cables), the **KDS-DES** seals are compatible with almost all **KDS** solutions (refer to the overview on pages 52 - 53).

The seals' conical shape enables them to be easily pressed in so they can seal gaps. For the assembly, they are pressed into the selected KDS system from the inside outwards.





## • Material: TPE

- Flammability: UL 94 V-0
- Temperature range: -40 °C to +90 °C (static)
- Halogen-free, silicone-free
- Protection class: IP54

Seals	KDS-DES 2X10.5	KDS-DES 3X9.5	KDS-DES 3X8.5	KDS-DES 4X7.5
	00	000	000	0,00
Diagram	Ø 10.5			
Type Cat. no. Qty Size (L x W x H), mm	KDS-DES 2X10.5 GR           28800.6         5           42.69 x 21.1 x 17.7	KDS-DES 3X9.5 GR           28801.6         5           42.69 x 21.1 x 17.7	KDS-DES 3X8.5 GR           28802.6         5           42.69 x 21.1 x 17.7	KDS-DES 4X7.5 GR           28803.6         5           42.69 x 21.1 x 17.7
Connection data Number of cables x cable diameter (mm)	2 x 10.5	3 x 9.5	3 x 8.5	4 x 7.5

Seals	KDS-DES 7X6.5	KDS-DES 8X5.5	KDS-DES 8X4.5	
	0000	0000	0000	
Diagram				
Туре	KDS-DES 7X6.5 GR	KDS-DES 8X5.5 GR	KDS-DES 8X4.5 GR	
Cat. no. Qty.			28806.6 5	
Size (L x W x H), mm	42.69 x 21.1 x 17.7	42.69 x 21.1 x 17.7	42.69 x 21.1 x 17.7	
Connection data				
Number of cables x cable diameter (mm)	7 x 6.5	8 x 5.5	8 x 4.5	

#### The KDS-DES is compatible with the following frames:

Туре	Cat. no.
KDS-SR-FB1/A BK	28700.4
KDS-SR-FB2/B BK	28702.4
KDS-SR-FB3/C BK	28705.4
KDS-SR-FB3/D BK	28706.4
KDS-SR-FB4/B BK	28708.4
KDS-SR-FB4/E BK	28711.4
KDS-SR 1-4 BK*	28506.4
KDS-SR 6/10 BK*	28500.4
KDS-SR 8/16 BK*	28502.4
KDS-SR 10/24 BK*	28504.4
KDS-FP 2x10/24 BK*	28660.4
KDS-FP 3x10/24 BK*	28661.4
KDS-KV M40 BK	28613.4
KDS-KV M50 BK	28614.4
KDS-KV M63 BK	28615.4
KDS-R 40-63 BK**	28774.4

\* Combined with the KDS-Inlay 1 or KDS-Inlay 2

RoHS compliant

**IP54** 

Made in

Germany

\*\* Only in combination with KDS-RGA M63 CAD

# KDSClick Combination options for the modular KDSClick system

### Frame



**4-piece frame KDS-SR 1-4 BK** 28506.4



6-piece frame KDS-SR 6/10 BK 28500.4



8-piece frame KDS-SR 8/16 BK 28502.4



**10-piece frame KDS-SR 10/24 BK** *28504.4* 

## Many combinations for your individual requirements





## Inlays



KDS-Inlay 1 BK 28516.4

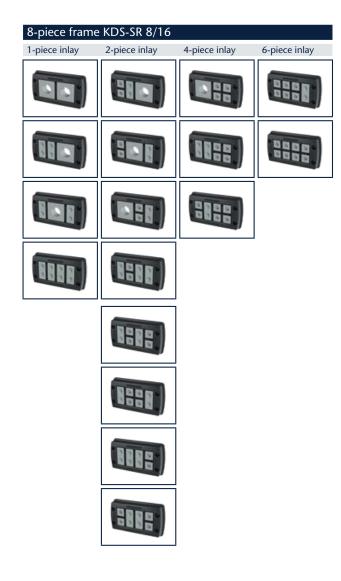


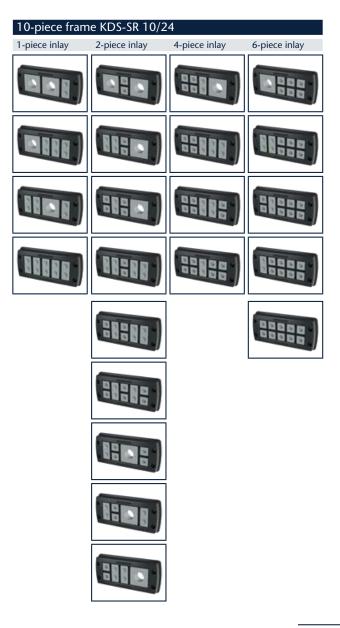


KDS-Inlay 2 BK 28517.4









When feeding in non-assembled cables, lines and pneumatic hoses (without connected plugs), CONTA-CLIP has a wide range of products that offer alternatives to cable glands or single-membrane feed-throughs.

The **KES** cable entries are very flat; they enable space-saving professional cable entries with a very tight seal.

Due to its high assembly density, the **KES** system is well suited for applications where the installations must be carried out in confined spaces.



## Your advantages

- Can be screwed/snapped on
- Very high stability (core: PA 6.6 GF)
- Outstanding strain relief (cone grommet)
- Very simple assembly (with marked centring point)
- High-density assemblies
- double seal/tightness: IP66
- Hygienic design: no dirt-prone niches
- Large assortment (48 varieties)
- UL-listed plastic materials
- UL 94 V-0

#### **Two components**

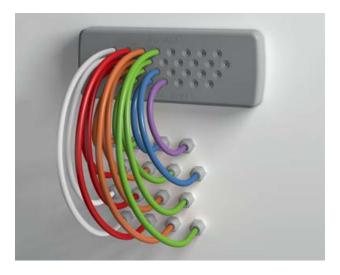
The **KES** system consists of two components. The inner core, made of polyamide PA 6.6 GF, is crucial for the stability and strain relief; it is over-moulded in the sealing areas with TPE to ensure an IP66 protective seal.



#### Many cables in a confined space

Many cables (with various diameters from 3.2 to 20.5 mm) can be inserted in a confined space and double sealed (IP66) thanks to the special construction of the conical grommets. There are three ways that the **KES** system can be installed: screw fastening from outside, screw fastening with threaded bushes and locking hooks from the inside, or snap-in fastening from the outside.

The corresponding membrane must be pierced (center point is marked) to insert the cables.



#### UL 94 V-0 classification

The **KES** is designed for use in mounting cut-outs of 24-pin heavy-duty connectors. All variants are available in grey and black. The materials used comply with the UL 94 V-0 classification.





## An overview of your advantages

#### **High-density assemblies**

In contrast to the classic cable gland, the **KES** allows many cables, hoses and lines to be installed in a space-saving manner, even in cramped installation conditions.



#### Very precise

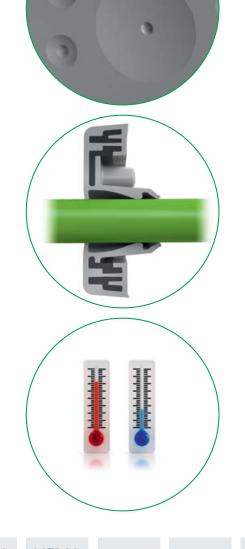
The piercing points are clearly marked so that cables and hoses can be centred precisely.

#### Integrated strain relief

The special shape of the multi-layered membrane cone grommet ensures an optimal strain relief mechanism for the cables, in accordance with DIN EN 62444.

#### **Can be used from -40 °C to +90 °C** Materials contain no halogen or silicone; suita-

ble for many different applications.







RoHS

compliant

# KES variety

#### You can choose one of three attachment options to fit your requirements.

#### 1. Screw-on mount



The **KES** (without threaded bush) is screwed from the outside onto the housing wall.



#### 2. Screw-on mount with threaded bushes and latching clips



Using the latching clips, the **KES-GB** latches onto the outside of the housing wall. It is then screwed on from the inside, through the housing wall, using the integrated threaded bushes.



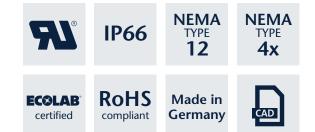
#### 3. Latched (snap-on) mount using latching hooks



The **KES-R** is latched from outside to the housing wall using the latching clips.

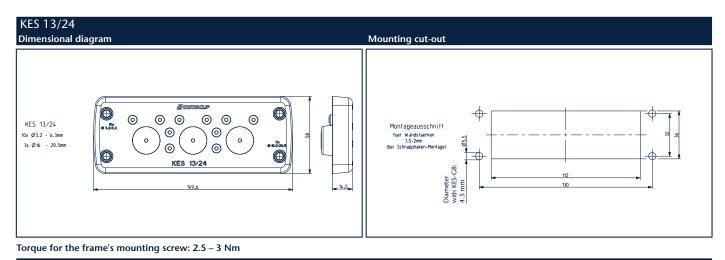


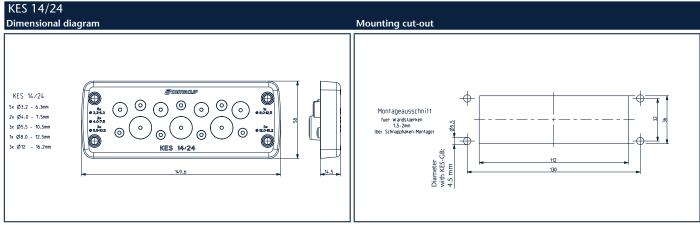
Cable entries		KES 13/24		KES 14/24		KES 16/24	
		· dididi	•			· · · · · · · · · · · · · · · · · · ·	• •
Diagram		Page 60		Page 60		Page 60	
Mounting type							
Screw-on mount							
Type / colour		KES 13/24 GR		KES 14/24 GR		KES 16/24 GR ●	
Cat. no.	Qty.	28630.6	10		10	28632.6	10
Type / colour	Qty.	KES 13/24 BK	10	KES 14/24 BK	10	KES 16/24 BK	10
Cat. no.	Qty.	28630.4	10		10		10
Mounting type	۷.9.	2005011		2000		2000211	
Screw fastening with pressed- in threaded bush and snap-in latching clips.	0						
Type / colour		KES-GB 13/24 GR		KES-GB 14/24 GR		KES-GB 16/24 GR	
Cat. no.	Qty.	28640.6	10	28641.6	10	28642.6	10
Type / colour	Qty.	KES-GB 13/24 BK	10	KES-GB 14/24 BK	10	KES-GB 16/24 BK	10
Cat. no.	Qty.	28640.4	10	28641.4	10	28642.4	10
Mounting type	Q.y.	20010.1	10	20071.1	10	20012.1	10
Tool-free latch-on mount	2						
Type / colour		KES-R 13/24 GR		KES-R 14/24 GR		KES-R 16/24 GR	
Cat. no.	Qty.	28650.6	10	28651.6	10	28652.6	10
Type / colour		KES-R 13/24 BK		KES-R 14/24 BK		KES-R 16/24 BK ●	
Cat. no.	Qty.	28650.4	10	28651.4	10	28652.4	10
Connection data							
Number of cables x cable diameter (mm)		10 x 3.2 – 6.3		5 x 3.2 – 6.3		8 x 3.2 – 5.5	
		3 x 16 – 20.5		2 x 4 – 7.5		6 x 5 – 8.5	
				3 x 5.5 – 10.5		2 x 9.5 – 14.5	
				1 x 8 - 12.5			
F				3 x 12 – 16.2			
Features		DA ( C C L destaura					
Material of frame / sealing plate		PA 6.6 GF / elastomer		PA 6.6 GF / elastomer		PA 6.6 GF / elastomer	
Temperature range		-40 °C to +90 °C		-40 °C to +90 °C		-40 °C to +90 °C	
Protection		IP66		IP66		IP66	
Flammability class Sheet-metal hole punch		UL 94 V-0 Sheet-metal hole punch		UL 94 V-0 Sheet-metal hole punch		UL 94 V-0 Sheet-metal hole punch	
				•			
Cat. no.		Page 76		Page 76		Page 76	



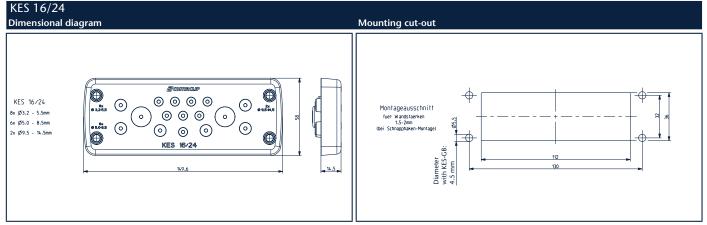
KES G0         Page 60         Page 61         Page 61 <th< th=""><th></th></th<>	
KES: R 16-1/24 GR       KES: T//24 GR       KES: 20/24 GR       KES: 21/24 GR       28633.6       10         KES: 16-1/24 GR       28633.6       10       28633.6       10       28633.6       10         KES: 16-1/24 GR       10       28633.4       10       28633.4       10       28633.4       10         KES: GB: 16-1/24 GR       10       28633.4       10       28633.4       10       28637.4       28637.4         KES: GB: 16-1/24 GR       10       28643.6       10       28643.6       10       28643.6       10       28647.6       10 <th>• •</th>	• •
28633.6       10       28634.6       10       28635.6       10       28636.6       10       28637.6         KES 16-1/24 BK       28634.4       10       28635.6       10       28636.4       10       28637.6         KES 17/24 BK       28634.4       10       28635.6       10       28636.4       10       28637.4         KES 17/24 BK       28634.4       10       28635.4       10       28636.4       10       28637.4         KES 17/24 GR       28637.4       10       28637.4       10       28637.4       10       28637.4         KES CB 16-1/24 GR       28644.6       10       28645.6       10       28646.6       10       28647.6       28647	
28633.6       10       28634.6       10       28635.6       10       28636.6       10       28637.6         KES 16-1/24 BK       28634.4       10       28635.6       10       28636.6       10       28637.6         KES 16-1/24 BK       28634.4       10       28635.6       10       28636.4       10       28637.4         KES-GB 16-1/24 GR       28634.4       10       28635.6       10       28636.4       10       28637.4         KES-GB 16-1/24 GR       28644.6       10       28645.6       10       28646.6       10       28647.6	
KES 16-1/24 BK       KES 17/24 BK       KES 20/24 BK       KES 21/24 BK       KES 32/24 BK       Z8635.4       10       Z8635.4       10       Z8635.4       10       KES -GB 12/24 GR       Z8645.6       10       KES -GB 20/24 GR       Z8645.6       10       Z8647.6       KES -GB 32/24 GR       Z8647.6       KES -GB 32/24 GR       Z8647.4       Z8657.4       Z8657.4	
28633.4       10       28634.4       10       28635.4       10       28636.4       10       28637.4         KES-GB 16-1/24 GR       KES-GB 17/24 GR       KES-GB 20/24 GR       KES-GB 20/24 GR       KES-GB 21/24 GR       KES-GB 20/24 GR       Z8647.6       Z8647.6       KES-GB 20/24 GR       Z8647.6       Z8647.6       KES-GB 20/24 GR       Z8647.6       Z8657.6	10
KES-CB 16-1/24 GR       KES-CB 17/24 GR       KES-CB 20/24 GR       KES-CB 21/24 GR       KES-CB 32/24 GR         28643.6       10       28644.6       10       28645.6       10       28646.6       10         KES-CB 16-1/24 BK       0       28644.4       10       28645.4       10       28646.4       10         KES-CB 16-1/24 GR       0       28644.4       10       28645.4       10       28646.6       10         KES-R 16-1/24 GR       0       28644.4       10       28645.4       10       28646.6       10         KES-R 16-1/24 GR       28654.6       10       28654.6       10       28656.6       10         KES-R 16-1/24 GR       KES-R 17/24 GR       28655.4       10       28656.6       10         28653.4       10       28655.4       10       28655.4       10       28655.4       10         28653.4       10       28655.4       10       28655.4       10       28655.4       10         2855.4       10       2855.5       10.5       14.4 4.7.5       14.5.5 - 10.5       14.5.5 - 10.5       12.4.5.5 - 10.5       14.4.4.7.5         1 x 8 - 12.5       10 x 8 - 12.5       10 x 8 - 12.5       2.8.5.5 - 10.5       2.4.5.5 - 10.5	10
28643.6       10       28644.6       10       28645.6       10       28646.6       10       28647.6         28643.4       10       28644.4       10       28645.4       10       28646.4       10       28647.4         28643.4       10       28645.4       10       28646.4       10       28647.4         28643.4       10       28645.4       10       28647.4       28647.4       28647.4         28647.4       28647.4       28647.4       28647.4       28647.4       28647.4       28647.4         28647.4       28647.4       28647.4       28647.4       28647.4       28647.4       28647.4         28647.4       28657.6       28657.6       28657.6       28657.6       28657.6       28657.4 <td></td>	
KES-GB 16-1/24 BK       KES-GB 17/24 BK       KES-GB 20/24 BK       KES-GB 21/24 BK       KES-GB 32/24 BK $28643.4$ 10 $28644.4$ 10 $28645.4$ 10 $28646.4$ 10 $28647.4$ KES-R 16-1/24 GR       28635.6       10       KES-R 17/24 GR       28653.6       10       KES-R 17/24 GR       28653.6       10 $28653.6$ 10 $28654.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.6$ 10 $28655.4$ 10 $28657.4$ $28655$	
28643.4       10       28644.4       10       28645.4       10       28646.4       10       28647.4         KES-R 16-1/24 GR       KES-R 17/24 GR       A	10
28653.6       10       28654.6       10       28655.6       10       28656.6       10       28657.6         KES-R 16-1/24 BK       28654.4       10       KES-R 20/24 BK       28656.4       10       28657.4         28653.4       10       28654.4       10       KES-R 20/24 BK       28656.4       10       28657.4         2 x 3.2 - 6.3       4 x 3.2 - 6.3       12 x 3.2 - 6.3       1 x 3.2 - 6.3       1 x 3.2 - 6.3       32 x 3.2 - 6.3         9 x 4 - 7.5       2 x 4 - 7.5       8 x 5.5 - 10.5       14 x 4 - 7.5       32 x 3.2 - 6.3       32 x 3.2 - 6.3         1 x 5.5 - 10.5       1 x 5.5 - 10.5       10 x 8 - 12.5       10 x 8 - 12.5       2 x 8 - 12.5       2 x 8 - 12.5         3 x 12 - 16.2       PA 6.6 GF / elastomer	10
28653.6       10       28654.6       10       28655.6       10       28656.6       10       28657.6         KES-R 16-1/24 BK       28654.4       10       KES-R 20/24 BK       28656.4       10       28657.4         28653.4       10       28654.4       10       KES-R 20/24 BK       28656.4       10       28657.4         2 x 3.2 - 6.3       4 x 3.2 - 6.3       12 x 3.2 - 6.3       1 x 3.2 - 6.3       1 x 3.2 - 6.3       32 x 3.2 - 6.3         9 x 4 - 7.5       2 x 4 - 7.5       8 x 5.5 - 10.5       14 x 4 - 7.5       32 x 3.2 - 6.3       32 x 3.2 - 6.3         1 x 5.5 - 10.5       1 x 5.5 - 10.5       10 x 8 - 12.5       10 x 8 - 12.5       2 x 8 - 12.5       2 x 8 - 12.5         3 x 12 - 16.2       PA 6.6 GF / elastomer	
KES-R 16-1/24 BK       KES-R 17/24 BK       KES-R 20/24 BK       KES-R 21/24 BK       KES-R 32/24 BK $28653.4$ 10 $28654.4$ 10 $28655.4$ 10 $28656.4$ 10 $28657.4$ $2 \times 3.2 - 6.3$ $4 \times 3.2 - 6.3$ $12 \times 3.2 - 6.3$ $1 \times 3.2 - 6.3$ $1 \times 3.2 - 6.3$ $32 \times 3.2 - 6.3$ $9 \times 4 - 7.5$ $2 \times 4 - 7.5$ $2 \times 4 - 7.5$ $8 \times 5.5 - 10.5$ $1 \times 4 - 7.5$ $32 \times 3.2 - 6.3$ $1 \times 5.5 - 10.5$ $1 \times 5.5 - 10.5$ $1 \times 5.5 - 10.5$ $2 \times 8 - 12.5$ $3 \times 12 - 16.2$ PA 6.6 GF / elastomer	
28653.4       10       28654.4       10       28655.4       10       28656.4       10       28657.4         2 x 3.2 - 6.3       4 x 3.2 - 6.3       12 x 3.2 - 6.3       1 x 3.2 - 6.3       1 x 3.2 - 6.3       32 x 3.2 - 6.3         9 x 4 - 7.5       2 x 4 - 7.5       8 x 5.5 - 10.5       1 4 x 4 - 7.5       14 x 4 - 7.5       32 x 3.2 - 6.3         1 x 5.5 - 10.5       1 x 5.5 - 10.5       1 0 x 8 - 12.5       2 x 8 - 12.5       4 x 5.5 - 10.5       4 x 5.5 - 10.5         1 x 8 - 12.5       1 0 x 8 - 12.5       1 0 x 8 - 12.5       4 x 5.5 - 10.5       4 x 5.5 - 10.5       4 x 5.5 - 10.5         PA 6.6 GF / elastomer	10
9 x 4 - 7.5       2 x 4 - 7.5       8 x 5.5 - 10.5       14 x 4 - 7.5         1 x 5.5 - 10.5       1 x 5.5 - 10.5       4 x 5.5 - 10.5         1 x 8 - 12.5       10 x 8 - 12.5       2 x 8 - 12.5         3 x 12 - 16.2       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer         PA 6.6 GF / elastomer       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer	10
1 x 5.5 - 10.5       1 x 5.5 - 10.5       4 x 5.5 - 10.5         1 x 8 - 12.5       10 x 8 - 12.5       2 x 8 - 12.5         3 x 12 - 16.2       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer	
1 x 8 - 12.5       10 x 8 - 12.5       2 x 8 - 12.5         3 x 12 - 16.2       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer         PA 6.6 GF / elastomer       PA 6.6 GF / elastomer       PA 6.6 GF / elastomer	
3 x 12 – 16.2 PA 6.6 GF / elastomer PA 6.6 GF / elastomer	
	ier
IP66         IP66         IP66         IP66	
UL 94 V-0     UL 94 V-0     UL 94 V-0     UL 94 V-0       Sheet-metal hole punch     Sheet-metal hole punch     Sheet-metal hole punch     Sheet-metal hole punch	aunch
Sheet-metal hole punchSheet-metal hole punchSheet-metal hole punchSheet-metal hole punchSheet-metal hole punchPage 76Page 76Page 76Page 76Page 76	Junch

## KES Dimensional drawing / Mounting cut-out for cable entries

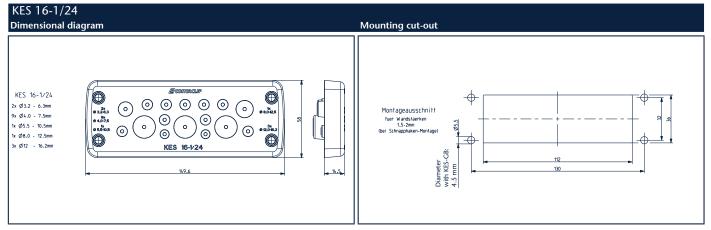




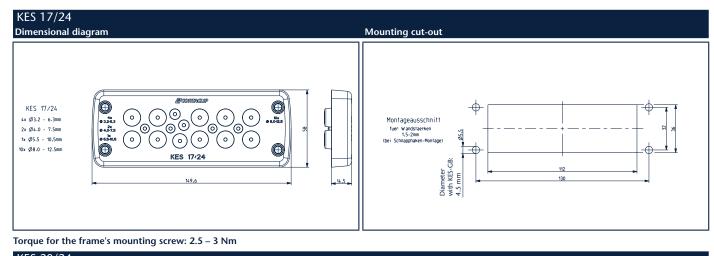
Torque for the frame's mounting screw: 2.5 - 3 Nm

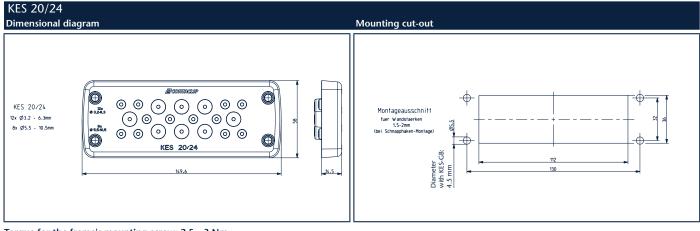


Torque for the frame's mounting screw: 2.5 – 3 Nm

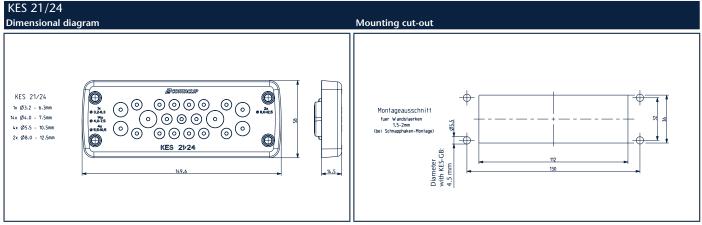


Torque for the frame's mounting screw: 2.5 – 3 Nm

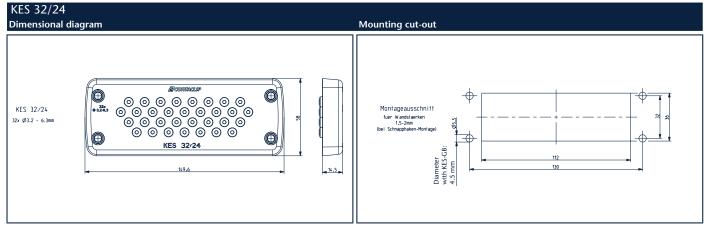




Torque for the frame's mounting screw: 2.5 - 3 Nm

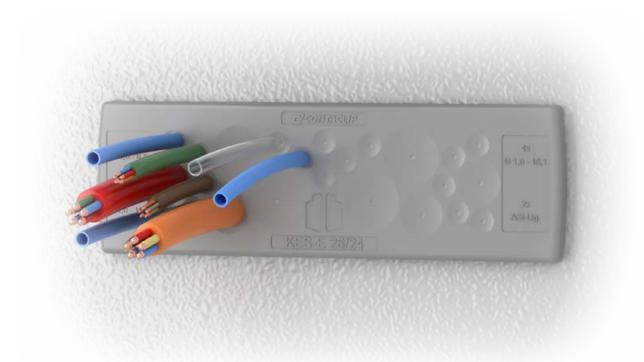


Torque for the frame's mounting screw: 2.5 – 3 Nm



# Many cables in a confined space. The **KES-E** cable entry system enables you to insert many cables (without plugs) with diameters ranging from 1.0 mm to 16.1 mm into a very confined space. The cable entry is inserted without tools into the intended opening (variant "A" for wall thickness from 1.5 to 2.5 mm, and variant "B" for wall thickness from 2.5 to 4.0 mm).

In order to insert the cables, the corresponding membrane (with marked centring point) must be pierced; the cables are then simply guided through. The material TPE guarantees that IP54 protection is maintained.



# $\mathbf{\lambda}$

## Your advantages

- Tool-free installation
- Outstanding stabilitySimple assembly
- (with marked centre point)
- High-density assembliesHygienic design
- Trygleric design
- For walls of various thickness

## Features

- Material: TPE
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +90 °C (static)
- Halogen-free, silicone-free
- Wall thickness A: 1.5 2.5 mm, and B: 2.5 4.0 mm
- Protection class: IP54

# KES-E variety



KES-E 12/24



KES-E 14/24



KES-E 17/24



KES-E 18/24



KES-E 19/24



KES-E 42/24



KES-E 26/24



RoHS compliant

Made in Germany

KES-E 48/24

**IP54** 



KES-E 50/24

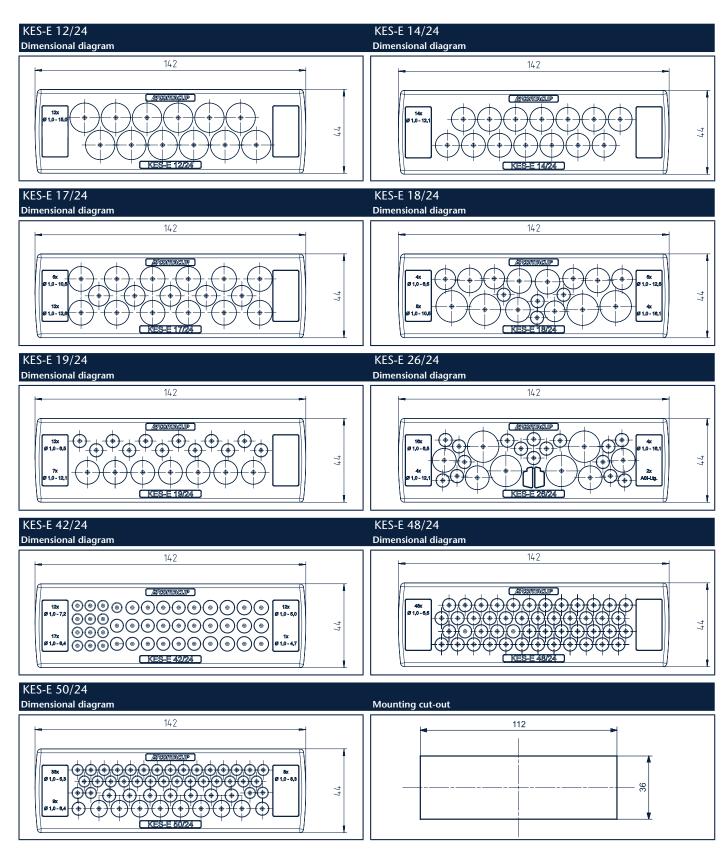
CAD

Cable entries		KES-E 12/24		KES-E 14/24		KES-E 17/24	
				- 399999			
Туре		KES-E 12/24 A GR		KES-E 14/24 A GR ●		KES-E 17/24 A GR ●	
Cat. no.	Qty.	28810.6	10	28811.6	10	28812.6	10
For wall thickness		1.5-2.5		1.5-2.5		1.5-2.5	
Туре		KES-E 12/24 B GR ●		KES-E 14/24 B GR 🌑		KES-E 17/24 B GR 🌑	
Cat. no.	Qty.	28840.6	10	28841.6	10	28842.6	10
For wall thickness		2.5-4.0		2.5-4.0		2.5-4.0	
Connection data							
Number of cables x cable diameter (mm)		12 x 1.0 - 15.0		14x1.0-12.1		5 x 1.0 - 10.5	
F f						12 x 1.0 - 12.6	
Features Protection		IP54		IP54		IP54	
Protection		IF34		IF 34		IF34	
Cable entries		KES-E 18/24		KES-E 19/24		KES-E 26/24	
							and the second
Туре		KES-E 18/24 A GR		KES-E 19/24 A GR		KES-E 26/24 A GR	
Cat. no.	Qty.	28813.6	10	28814.6	10	28815.6	10
For wall thickness	~9.	1.5-2.5		1.5-2.5		1.5-2.5	
Туре		KES-E 18/24 B GR		KES-E 19/24 B GR ●		KES-E 26/24 B GR ●	
Cat. no.	Qty.	28843.6	10	28844.6	10	28845.6	10
For wall thickness		2.5-4.0		2.5-4.0		2.5-4.0	
Connection data							
Number of cables x cable diameter (mm)		4 x 1.0 - 6.5		12x1.0-6.5		16 x 1.0 - 6.5	
		5 x 1.0 - 10.5		7 x 1.0-12.1		4 x 1.0 - 12.1	
		5 x 1.0 - 12.5				4 x 1.0 - 16.1	
Features		4 x 1.0 – 16.1				2 x ASI	
Protection		IP54		IP54		IP54	
Troccuon				н <b>Э</b> т		н <b>У</b> Т	
Cable entries		KES-E 42/24		KES-E 48/24		KES-E 50/24	

Cable entries		KES-E 42/24		KES-E 48/24 KES-E 50/		KES-E 50/24	
			14 11		1000		11
Туре		KES-E 42/24 A GR 🌑		KES-E 48/24 A GR 🌑		KES-E 50/24 A GR ●	
Cat. no.	Qty.	28816.6	10	28817.6	10	28818.6	10
For wall thickness		1.5-2.5		1.5-2.5		1.5-2.5	
Туре		KES-E 42/24 B GR 🌑		KES-E 48/24 B GR 🌑		KES-E 50/24 B GR 🌑	
Cat. no.	Qty.	28846.6	10	28847.6	10	28848.6	10
For wall thickness		2.5-4.0		2.5-4.0		2.5-4.0	
Connection data							
Number of cables x cable diameter (mm)		12 x 1.0 – 7.2		48 x 1.0 - 6.5		33 x 1.0 - 5.3	
		17 x 1.0 – 6.4				9 x 1.0 - 6.4	
		12 x 1.0 - 5.0				8 x 1.0 - 8.3	
		1 x 1.0 – 4.7					
Features							
Protection		IP54		IP54		IP54	

# KES-E

Dimensional drawing / Mounting cut-out for cable entries





# KES-E-R Round cable entries

Many cables in a confined space. The **KES-E-R** cable entry system enables you to insert many cables (without plugs) with diameters ranging from 1.0 mm to 22.5 mm into a very confined space. The cable entry is inserted without tools into the intended opening (variant "A" for wall thickness from 1.5 to 2.5 mm, and variant "B" for wall thickness from 2.5 to 4.0 mm).

In order to insert the cables, the corresponding membrane (with marked centring point) must be pierced; the cables are then simply guided through. The material TPE guarantees that IP54 protection is maintained.





## Your advantages

- Tool-free installation
- Outstanding stabilitySimple assembly
- (with marked centre point)
- High-density assemblies
- Hygienic design
- For walls of various thickness

# Features

- Material: TPE
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +90 °C (static)
- Halogen-free, silicone-free
- Wall thickness A: 1.5–2.5 mm, and B: 2.5–4.0 mm
- Protection class: IP54

# KES-E-R variety



KES-E-R 50/9



KES-E-R 50/12



KES-E-R 50/18



KES-E-R 50/35



KES-E-R 50/11



KES-E-R 50/16



KES-E-R 50/20



## KES-E-R Round cable entries

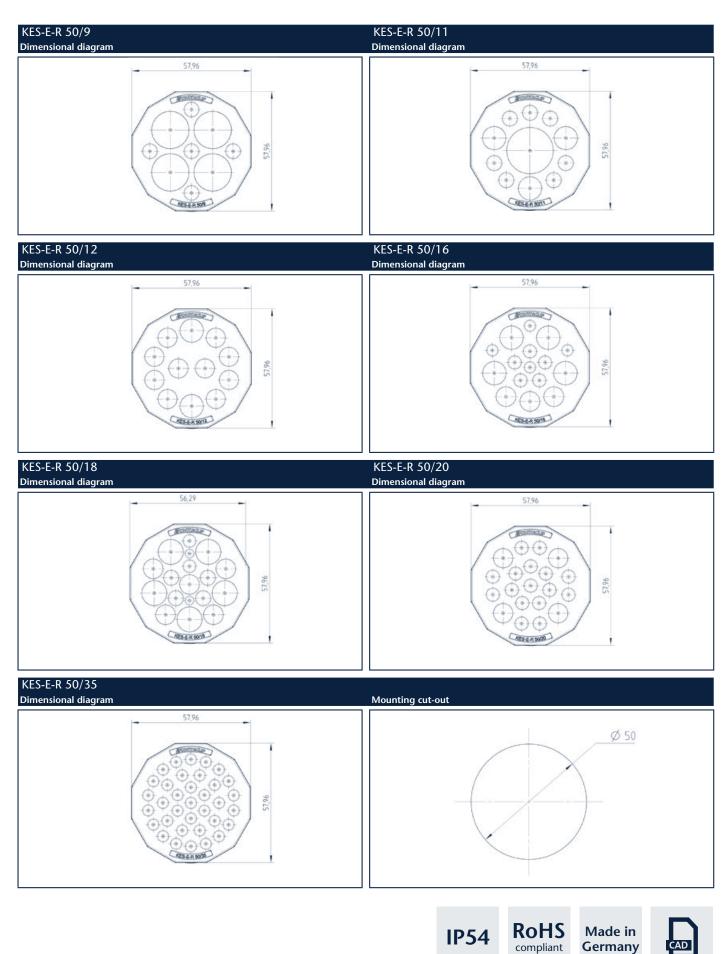
Round cable entries		KES-E-R 50/9		KES-E-R 50/11 KES-E-R 50/1		KES-E-R 50/12	12
		COCOCO COCOCOCO COCOCOCOCOCOCOCOCOCOCOC					
Туре		KES-E-R 50/9 A GR		KES-E-R 50/11 A GR		KES-E-R 50/12 A GR ●	
Cat. no.	Qty.	28829.6	10	28830.6	10	28831.6	10
For wall thickness		1.5-2.5		1.5-2.5		1.5-2.5	
Туре		KES-E-R 50/9 B GR 🌑		KES-E-R 50/11 B GR		KES-E-R 50/12 B GR	
Cat. no.	Qty.	28859.6	10	28860.6	10	28861.6	10
For wall thickness		2.5-4.0		2.5-4.0		2.5-4.0	
Connection data							
Number of cables x cable diameter (mm)		5 x 1.0-7.0		7x1.0-7.2		10 x 1.0-9.2	
		4 x 1.0-18.0		3 x 1.0-11.2		2 x 1.0-11.2	
				1 x 1.0-22.5			
Features							
Protection		IP54		IP54		IP54	

Round cable entries	KES-E-R 50/16	KES-E-R 50/18	KES-E-R 50/20
Туре	KES-E-R 50/16 A GR	KES-E-R 50/18 A GR	KES-E-R 50/20 A GR
Cat. no. Qty.	<i>28832.6</i> <b>10</b>	<i>28833.6</i> <b>10</b>	28834.6 10
For wall thickness	1.5-2.5	1.5-2.5	1.5-2.5
Туре	KES-E-R 50/16 B GR	KES-E-R 50/18 B GR	KES-E-R 50/20 B GR ●
Cat. no. Qty.	<i>28862.6</i> <b>10</b>	<i>28863.6</i> <b>10</b>	28864.6 <b>10</b>
For wall thickness	2.5-4.0	2.5-4.0	2.5-4.0
Connection data			
Number of cables x cable diameter (mm)	4 x 1.0-5.3	2 x 1.0-4.0	16 x 1.0-6.3
	5 x 1.0-6.3	2 x 1.0-6.0	4 x 1.0-9.3
	3 x 1.0-9.5	4 x 1.0-7.2	
	4 x 1.0-11.3	5 x 1.0-9.4	
		5 x 1.0-12.0	
Features			
Protection	IP54	IP54	IP54

Round cable entries		KES-E-R 50/3	5	
Туре		KES-E-R 50/35 A	A GR	
Cat. no.	Qty.	28835.6	10	
For wall thickness		1.5-2.5		
Туре		KES-E-R 50/35 E	B GR 🔍	
Cat. no.	Qty.	28865.6	10	
For wall thickness		2.5-4.0		
Connection data				
Number of cables x cable diameter (mm)		35 x 1.0-5.2		
Features				
Protection		IP54		

# KES-E-R

Dimensional drawing / Mounting cut-out for cable entries



# KDS BW 1 actuating tool

Using the **KDS BW1** actuating tool, the seals can be conveniently mounted in and dismantled from the frame.

The ergonomic grip and the special shape enable simple and precise installations, especially for cabling applications in confined spaces.





# **KDSClick** assortment box

The **KDSClick assortment box** is perfect for installation/maintenance work as well as innovative developments. The large selection of seals and inlays makes it easy to configure all the KDSClick systems to meet your needs.

KDSClick assortment box			
Туре		KDSClick assortment box	
Cat. no.	Qty.	28764.0	1
Included in delivery		20 small dummy elements KDS-DE/B	
		220 small seals KDS-DE 2-14 mm	
		100 small multiple seals KDS-DE 4-6.5 mm	
		5 large dummy elements KDS-DEG/B	
		20 large seals KDS-DEG 14-21 mm	
		7 universal cone seals KDS-DE/K 2- 24 mm	
		37 x inlays 1 to inlay 6	
		1 actuating tool KDS BW 1	
		1 plastic mini-calliper gauge 1 plastic switchgear cabinet key	

## KDS-EMV-SAB shield-connection rails

The **KDS-EMV-SAB** shield-connection rails, when used together with our different shield-connection clips, enable cables to be shielded in a quick, practical and uncomplicated process. The cables can be routed through the CONTA-CLIP cable entry systems into housing or switchgear cabinets. The **KDS-EMV-SAB** shield-connection rails are fastened on the inside of the switchgear cabinet using screws, which are required for mounting the **KDS/KES** system. The appropriate shield clip (depending on the cable diameter) can then be snapped onto the shield-connection rail. The shield-connection clips/brackets are optionally available with a built-in strain relief function.

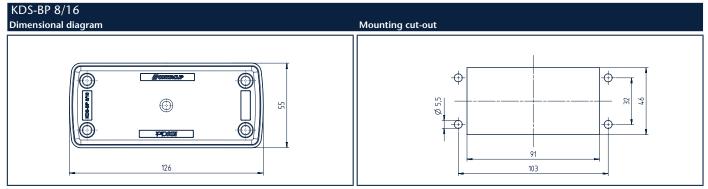
Shield-connection rails	KDS-EMV-SAB 1-4	KDS-EMV-SAB 6/10
Diagram	16     3,35       5,3     5,3	16
TypeCat. no.Qty.Suitable for	KDS-EMV-SAB 1-4           28623.0         1           KDS-SR 1-4 BK         1	KDS-EMV-SAB 6/10           28624.0         1           KDS-SR 6/10 BK         1
Shield-connection rails	KDS-EMV-SAB 8/16	KDS-EMV-SAB 10/24
Diagram		
Type Cat. no. Qty.	KDS-EMV-SAB 8/16 28625.0 1	KDS-EMV-SAB 10/24 28626.0 1
Suitable for	KDS-SR 8/16 BK	KDS-SR 10/24 BK KES/24 KES-GB/24
Shield-connection rails	KDS-FP-EMV-SAB 10/24	
Diagram		
TypeCat. no.Qty.Suitable for	KDS-FP-EMV-SAB 10/24           28627.0         1           KDS-FP 2X10/24 BK         1           KDS-FP 3X10/24 BK         1	

# **KDS-BP** blanking plates

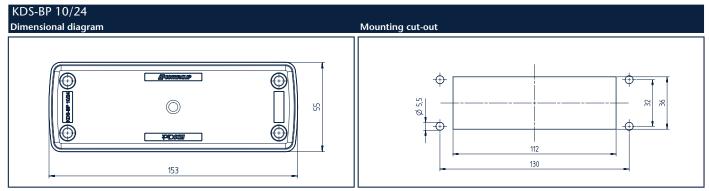
Blanking plates	KDS-BP 8/16	KDS-BP 10/24	
The <b>KDS-BP</b> blanking plates provide a simple method for securely closing existing wall cut-outs for the <b>KDS</b> or <b>KES</b> systems. They are made of glass-fibre reinforced PA 6.6 material which enables excellent impact resistance. An injected, all-round seal made of TPE ensures a reliable IP66 protective seal.			
Type / colour	KDS-BP 8/16 BK	KDS-BP 10/24 BK	0 0
Cat. no. Qty.	28508.4 10	<i>28509.4</i> <b>10</b>	
Description	Blanking plate	Blanking plate	0
Dimensions, mm			
Length x Width:	126 x 55	153 x 55	
Installation height	11.5	11.5	
Dimensions for mounting cut-out (mm)			•
KDS Click	91 x 46	113.5 x 46	
Standard break-outs	86 x 36	112 x 36	
Accessories			
Sheet-metal hole punch	BL-VA KDS-SR 8/16	BL-VA KDS-SR 10/24	
Cat. no. Qty.	28685.0 1	28677.0 1	

## **KDS-BP**

## Dimensional drawing / Mounting cut-out for cable entries



Torque for the frame's mounting screws: 3 Nm



Torque for the frame's mounting screws: 3 Nm



## Features

- Material: polyamide PA 6.6, glass-fibre reinforced | TPE
- Colour: black
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +120 °C
- Halogen-free, silicone-free
- Protection: IP66

#### KDS/KES-VS seal plugs for all KDS and KES systems

Seal plugs, screw frame	Туре	Cat. no.	Qty.	Diameter (ØA), mm	Head diameter, mm
The KDS/KES-VS seal plugs allow you to reseal unused holes in KDS	KDS-VS-SR BK	28779.4	100		
seals or in already pierced <b>KES</b> cable entries. The geometry of the head prevents splashed water or dust from penetrating from the outside. Thus, protection class IP66 is ensured.					
Seal plugs					
	KDS/KES-VS 2 WH	28781.7	25	2	5
	KDS/KES-VS 3 WH	28782.7	25	3	6
ØA	KDS/KES-VS 4 WH	28783.7	25	4	7
	KDS/KES-VS 5 WH	28784.7	25	5	8
	KDS/KES-VS 6 WH	28785.7	25	6	9
	KDS/KES-VS 7 WH	28786.7	25	7	10
	KDS/KES-VS 8 WH	28787.7	25	8	11
	KDS/KES-VS 9 WH	28788.7	25	9	12
	KDS/KES-VS 10 WH	28789.7	25	10	13
	KDS/KES-VS 11 WH	28790.7	25	11	14
17,5	KDS/KES-VS 12 WH	28791.7	25	12	15
11	KDS/KES-VS 13 WH	28792.7	25	13	16
	KDS/KES-VS 14 WH	28793.7	25	14	17
	KDS/KES-VS 15 WH	28794.7		15	18
	KDS/KES-VS 16 WH	28795.7		16	19
	KDS/KES-VS 17 WH	28796.7	25	17	20
	KDS/KES-VS 22 WH	28797.7	25	22	25
Seal plugs AS interface cables					
11.0	KDS-VS ASI/2 WH	28798.7	25	ASI	
-1					



## Features

- Material: polyamide PA 6.6 (KDS-VS-SR: TPE)
- Colour: white (KDS-VS-SR: black)
- Flammability: UL 94 V-0
- Temperature range: -40 °C to +120 °C
- Halogen-free, silicone-free
- Protection: IP66

## Punching tool

The hydraulic hand pump, when used together with our hole punch, is perfectly suited for quickly producing precise chip-free break-outs.

Rectangular punches are available for all **KD**-**SClick** cable entry systems and for the **KES** cable entry system. The built-in punch-hole marking tip can be used to punch-mark the drill points clearly for screw-on attachments. Sheet-metal hole punches are available in circular format for the sizes M20, M25, M32, M40, M50 and M63.

The hydraulic hand pump is also compatible with the hole punches from other popular manufacturers.



## Hydraulic hand pump

#### Hydraulic hand pump

The hydraulic hand pump can be used to punch out openings for various cable feed-through and cable entry systems. The cylinder can be swivelled along 3 axes and rotated 360°, so that the break-outs can also be punched in inconvenient places.

#### Your advantages

- Easy-to-use format without a tube
- Cylinder can rotate 360° and swivel along 3 axes
- Lightweight aluminium version (weight: 2 kg)
- Can also be used for inconvenient hard-to-reach locations

Features

## Punching functionality for max. material thickness

- Round holes 82.0 mm,
- Steel 3 mm, VA 2 mm • Square holes 68.0 x 68.0 mm, Steel 3 mm, VA 2 mm
- Rectangular holes 36.0 x 112.0 mm, Steel 3 mm, VA 2 mm

Hydraulic pump	
Туре	Hydraulic hand pump for sheet-metal hole punch
Cat. no. Qty.	28679.0 1
Included in delivery	1 hydraulic hand pump
	1 hydraulic screw 19.0 x 130 mm
	1 hydraulic screw 19.0 / 9.5 mm
	1 spacer bushing
	1 tube of anti-wear paste
	1 HSS co-boring drill
	Multi-step drill, steps: 8-10-11.5-12.5 (M12) -14.5-17.5-21 mm

1 transport box

# BL sheet-metal hole punch

The punching tool for cable entry systems **KDSClick**, **KDS-FP**, **KDS-FB**, **KDS-R/KDS-KV** and for the cable entry system **KES**. Using the sheet-metal punches, your desired break-outs can be made in a few minutes without any chips or splintering. The built-in punch-hole marking tip can be used to punch-mark the drill points clearly for screw-on attachments.

These sheet-metal punches are compatible with all common hydraulic pumps.

# Assortment case

Punch, die, pulling axle and locknut in plastic case

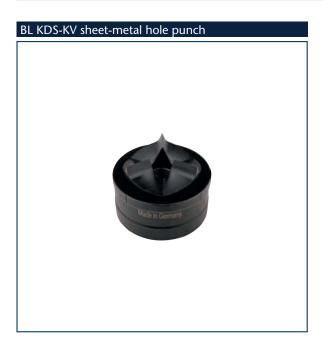
Sets of sheet-metal hole punches		BL SET RECTANGLE Hyc	d.	BL SET M16-M63 Hyd		BL-VA SET RECTANGLE Hyd.
Туре		BL SET RECTANGLE Hyd.		BL SET M16-M63 Hyd.		BL-VA SET RECTANGLE Hyd.
Cat. no.	Qty.	28761.0	1	28766.0	1	28760.0 1
Included in delivery		Hydraulic pump + 4 x BL KDS-SR		Hydraulic pump + 7 x BL M16-M63		Hydraulic pump + 4 x BL-VA KDS-SR

	BL KDS-SR 1-4	BL KDS-SR 6/10	BL KDS-SR 8/16
	BL KDS-SR 1-4	BL KDS-SR 6/10	BL KDS-SR 8/16
Qty.	28674.0 1	28675.0 1	28676.0 1
	2.0 mm, for S 235 sheet metal	2.0 mm, for S 235 sheet metal	2.0 mm, for S 235 sheet metal
	46 x 46 mm	68.5 x 46 mm	91 x 46 mm
	Punch, die, pulling axle, lock- nut, plastic case	Punch, die, pulling axle, lock- nut, plastic case	Punch, die, pulling axle, lock- nut, plastic case
		BL KDS-SR 1-4           28674.0         1           2.0 mm, for S 235 sheet metal           46 x 46 mm           Punch, die, pulling axle, lock-	BL KDS-SR 1-4         BL KDS-SR 6/10           28674.0         1         28675.0         1           2.0 mm, for S 235 sheet metal         2.0 mm, for S 235 sheet metal         46 x 46 mm         68.5 x 46 mm           Punch, die, pulling axle, lock-         Punch, die, pulling axle, lock-         Punch, die, pulling axle, lock-

Sheet-metal hole punch		BL-VA KDS-SR 1-4		BL-VA KDS-SR 6/10		BL-VA KDS-SR 8/16	
Туре		BL-VA KDS-SR 1-4		BL-VA KDS-SR 6/10		BL-VA KDS-SR 8/16	
Cat. no.	Qty.	28683.0	1	28684.0	1	28685.0	1
Maximum wall thickness		2.0 mm, with stainless steel sheet		2.0 mm, with stainless steel sheet		2.0 mm, with stainless steel sheet	
Dimensions of break-out hole		46 x 46 mm		68.5 x 46 mm		91 x 46 mm	
Included in delivery		Punch, die, pulling axle, lock nut, plastic case	-	Punch, die, pulling axle, lock nut, plastic case	-	Punch, die, pulling axle, lock nut, plastic case	:-

Sheet-metal hole punch		BL KES	BL KDS-FP2	BL KDS-KV M20
Туре		BL KES	BL KDS-FP2	BL KDS-KV M20
Cat. no.	Qty.	28744.0 1	28745.0 1	28746.0 1
Maximum wall thickness		2.0 mm, for S 235 sheet metal	2.0 mm, for S 235 sheet metal	2.0 mm, for S 235 sheet metal
Dimensions of break-out hole		112 x 36 mm	110 x 131 mm	20.4 mm
Included in delivery		Punch, die, pulling axle, lock- nut, plastic case	Punch, die, pulling axle, lock- nut, plastic case	Punch, die

Sheet-metal hole punch		BL-VA KES		BL-VA KDS-FP2		BL-VA KDS-KV M20	
Туре		BL-VA KES		BL-VA KDS-FP2		BL-VA KDS-KV M20	
Cat. no.	Qty.	28752.0	1	28753.0	1	28754.0	1
Maximum wall thickness		2.0 mm, with stainless steel sheet		2.0 mm, with stainless steel sheet		2.0 mm, with stainless steel sheet	
Dimensions of break-out hole		112 x 36 mm		110 x 131 mm		20.4 mm	
Included in delivery		Punch, die, pulling axle, lock nut, plastic case	-	Punch, die, pulling axle, lock nut, plastic case	(-	Punch, die	





Hole punch for round cut-outs

Hole punch for rectangular cut-outs

BL-VA SET M16-M63 Hyd.			
BL-VA SET M16-M63 Hyd.			
28765.0	1		
Hydraulic pump + 7 x B-VAL M16-M63			

BL KDS-SR 10/24	BL KDS-FB1	BL KDS-FB2	BL KDS-FB3	BL KDS-FB4
BL KDS-SR 10/24	BL KDS-FB1	BL KDS-FB2	BL KDS-FB3	BL KDS-FB4
28677.0 1	28734.0 1	28735.0 1	28736.0 1	28737.0 1
2.0 mm, for S 235 sheet metal				
113.5 x 46 mm	46 x 24 mm	68 x 24 mm	89 x 24 mm	111 x 24 mm
Punch, die, pulling axle, lock- nut, plastic case				
BL-VA KDS-SR 10/24	BL-VA KDS-FB1	BL-VA KDS-FB2	BL-VA KDS-FB3	BL-VA KDS-FB4
BL-VA KDS-SR 10/24	BL-VA KDS-FB1	BL-VA KDS-FB2	BL-VA KDS-FB3	BL-VA KDS-FB4
28686.0 1	28729.0 1	28741.0 1	28742.0 1	28743.0 1
2.0 mm, with stainless steel sheet	2.0, with stainless steel sheet	2.0, with stainless steel sheet	2.0, with stainless steel sheet	2.0 mm, with stainless steel sheet
113.5 x 46 mm	46 x 24 mm	68 x 24 mm	89 x 24 mm	111 x 24 mm
Punch, die, pulling axle, lock- nut, plastic case				
BL KDS-KV M25	BL KDS-KV M32	BL KDS-KV M40	BL KDS-KV M50	BL KDS-KV M63
BL KDS-KV M25	BL KDS-KV M32	BL KDS-KV M40	BL KDS-KV M50	BL KDS-KV M63
28747.0 1	28748.0 1	28749.0 1	28750.0 1	28751.0 1
2.0 mm, for S 235 sheet metal				
25.4 mm	32.5 mm	40.5 mm	50.5 mm	63.5 mm
Punch, die				
BL-VA KDS-KV M25	BL-VA KDS-KV M32	BL-VA KDS-KV M40	BL-VA KDS-KV M50	BL-VA KDS-KV M63

BL-VA KDS-KV M25		BL-VA KDS-KV	M32		BL-VA KDS-KV M40		BL-VA KDS-KV M50		BL-VA KDS-KV M63	
BL-VA KDS-KV M25		BL-VA KDS-KV M32	2		BL-VA KDS-KV M40		BL-VA KDS-KV M50		BL-VA KDS-KV M63	
28755.0	1	28756.0		1	28757.0	1	28758.0	1	28759.0	1
2.0 mm, with stainless steel sheet		2.0, with stainless st	teel sheet		2.0, with stainless steel sheet		2.0, with stainless steel shee	t	2.0 mm, with stainless stee sheet	el
25.4 mm		32.5 mm			40.5 mm		50.5 mm		63.5 mm	
Punch, die		Punch, die			Punch, die		Punch, die		Punch, die	

# Shield-connection clip

In the field of industrial process engineering, a high degree of interference immunity is required of electrical equipment. This is a critical factor affecting the availability of industrial measurement and control systems.

When constructing low-interference systems, both the cable shielding and the shielded ground are very important. The juncture where the cable shielding connects to the housing ground is a critical point. The connection should be low-ohm and should also feature minimal inductive resistance. You should be certain that this connection can be established in a practical, simple and quick manner. CONTA-CLIP's **SAB/SSAB** shielding systems are one of the most comprehensive product portfolios on the market. They offer a perfect solution for any application.



#### **Overview of installation types**

#### **Direct mounting**





SAB.../D Page 87

SABKM.../D Page 86

C-rail mounting



SAB.../GWP Page 91

#### **Busbar mounting**



SABKM.../SSCH/Z Page 88

SABKMD.../SSCH/Z Page 88

SAB Page 89

SSAB Page 90

#### Mounting on the DIN rail



SAB.../F Page 93



SAB .../MF Page 94



SABKM.../MF/35/Z Page 92

## SABK Shield-connection bracket

The stripped cable is easily pushed into the **SABK** shield-connection clips. The spring force in the clip then ensures that the shield has a consistently good contact.

The large contact areas ensure excellent dissipation of interference current.

The **SABK** can be used with the mounting feet for various mounting platforms (e.g. on DIN rail, busbar, or for direct installation).

The **SABK** for the proper shield diameter is mounted by simply clipping it on (no tools required).

## Υοι

- The spring exerts continuous contact force on the cable shield
- High conductivity
- Very good dissipation of high-frequency interference current
- No tools are required: all sizes can be clipped onto the various mounting feet

Shield-connection bracket	SABK 3	SABK 6	SABK 8
Mounting type	Direct mounting	Direct mounting	Direct mounting
Туре	SABK 3	SABK 6	SABK 8
Cat. no. Qty.	17970.0 <b>25</b>	17971.0 <b>25</b>	17972.0 <b>25</b>
Cable diameter Ø	1.5 – 3 mm	3 – 6 mm	6 – 8 mm
Material	Steel	Steel	Steel

Shield-connection bracket	SABK 11	SABK 16	SABK 30
Mounting type	Direct mounting	Direct mounting	Direct mounting
Type Qty.	SABK 11	SABK 16	SABK 30
Cat. no.	17973.0 <b>25</b>	17974.0 <b>25</b>	<i>17997.0</i> <b>25</b>
Cable diameter Ø	8 – 11 mm	11 – 16 mm	17 – 30 mm
Material	Steel	Steel	Steel

## SABKM Shield-connection clip Multi

The **SABKM Multi** shield-connection clip differs from conventional shielding clips because of its two specially shaped legs.

These legs produce force on both sides so that a very large cable clamping range is attained. The stripped cable is easily pushed into the **SABK**. The spring force in the clip then ensures that the shield has a consistently good contact.

The large contact surfaces ensure that any interference current is reliably dissipated.

The **SABKM** can be used with mounting feet for various mounting systems (e.g. on DIN rail, busbar, or for direct installation).

The **SABKM** for the proper shield diameter is mounted by simply clipping it on (no tools required).

## ノ

- Fewer individual parts because of the large contact/ clamping range
- Consistently good contact force due to spring action
- High conductivity
- Very good dissipation of high-frequency interference current
- No tools are required: all sizes can be clipped onto the various mounting feet

Shield-connection bracket	SABKM 12	SABKM 18
Mounting type	Direct mounting	Direct mounting
Туре	SABKM 12	SABKM 18
Cat. no. Qty.	<i>17975.0</i> <b>25</b>	<i>17976.0</i> <b>25</b>
Cable diameter Ø	3 – 12 mm	7 – 18 mm
Material	Steel	Steel

# MF-SABK/D Mounting foot for direct installation

The mounting foot for the **MF-SABK/D** shield-connection clip serves as a universal carrier for the **SABK/SABKM** with clamping diameters from 1.5 mm to 18 mm. It can be installed directly (e.g. screwed directly onto a mounting plate). The suitable **SABK** can then be snapped in and the cable shield can be pressed in.

#### Your advantages

- Direct mounting using M4 screw
- Universal holder for SABK/SABKM, with cable clamping range from 1.5 to 18 mm
- Variable assembly options leads to less product types
- Less parts in your warehouse
- Very compact construction
- Cable tie can be used for strain relief

#### Installation of the SABKM shield-connection bracket on the MF-SABK/D mounting foot



1. Screw on the mounting foot



2. Snap on your SABK



3. Press in the cable shield



4. Apply strain relief with cable ties

Mounting foot	MF/D M4/Z	MF/D M4
Mounting type	Direct mounting	Direct mounting
Description	With strain relief	Without strain relief
Туре	MF/D M4/Z	MF/D M4
Cat. no. Qty.	<i>17977.0</i> <b>10</b>	<i>27217.0</i> <b>25</b>
Material	Steel	Steel

## RMF/D/Z M4 Row-mounted foot for direct mounting

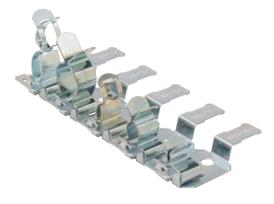
The **RMF/D/Z M4** row-mounted foot for direct mounting serves as a universal carrier for up to 12 shield-connection clips with clamping diameters from 1.5 mm to 18 mm. The row-mounted foot can be shortened to the desired length by breaking it at one of its breakage points. Either screws or rivets can be used to secure it in position.

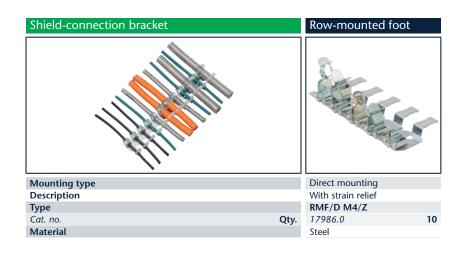


#### Your advantages

- Up to 12 cable shields can be attached to a single row-mounted foot.
- Space-saving installation on the mounting plate
- Universal holders for SABK/SABKM, with variable cable clamping ranges from 1.5 to 18 mm
- Breakage points permit versatile customization for your required number of cables.
- Less parts in your warehouse
- Very compact construction
- Cable tie can be used for strain relief

## Installation of the SABKM shield-connection bracket on the MF-SABK/D mounting foot





# MF-SABK/SSCH Mounting foot for busbar installation

The **MF-SABK/SSCH** mounting foot for busbar mounting serves as a universal carrier for shield-connection clips with cable diameters from 1.5 mm to 18 mm. Simply snap the mounting foot onto the 10 x 3 mm busbar. Then snap in the corresponding shield-connection clip and press in the cable shield.

## Your advantages

- Tool-free mounting onto busbars 10 x 3 mm
- For shield-connection brackets with a 1.5 18 mm clamping range
- Variable assembly options leads to less product types
- Less parts in your warehouse
- Very compact construction
- Cable tie can be used for strain relief

#### Installation of the SABKM shield-connection bracket on the MF-SABK/SSCH mounting foot



1. Screw on the mounting foot



2. Snap on your SABK



3. Press in the cable shield



4. Apply strain relief with cable ties

Mounting foot	MF-SABK/SSCH/Z	MF-SABK/SSCH
A CONTRACT OF CONTRACT.	Contraction of the second seco	E. T.S.
Mounting type	Busbar mounting	Busbar mounting
Description	With strain relief	Without strain relief
Туре	MF-SABK/SSCH/Z	MF-SABK/SSCH
Cat. no. Qty.	<i>17979.0</i> <b>10</b>	27218.0 10
Material	Steel	Steel

## MF-SABK/35 Mounting foot for DIN rail installation

The **MF-SABK/35/Z** mounting foot for **TS 35** DIN rails serves as a universal carrier for shield-connection clips with clamping diameters from 1.5 mm to 18 mm.

Simply snap the mounting foot on the DIN rail. The properly sized shield-connection clip is then snapped on and the cable shield is pushed into the shield-connection clip. The variant with a strain relief clip provides cable ties to relieve the strain.

# R

#### Your advantages

- Tool-free mounting on TS 35 DIN rail
- Universal holder for SABK/SABKM, with cable clamping range from 1.5 to 18 mm
- Variable assembly options leads to less product types
- Less parts in your warehouse
- Cable tie can be used for strain relief

#### Installation of the SABKM shield-connection bracket on the MF-SABK/SSCH mounting foot



1. Screw on the mounting foot



2. Snap on your SABK



3. Press in the cable shield



4. Apply strain relief with cable ties

Mounting foot	MF-SABK/35/Z	MF-SABK/35
	A A A A A	
Mounting type	Mounting on the DIN rail	Mounting on the DIN rail
Description	With strain relief	Without strain relief
Туре	MF-SABK/35/Z	MF-SABK/35
Cat. no. Qty.	<i>17978.0</i> <b>10</b>	<i>27261.0</i> <b>10</b>
Material	Steel	Steel

# Multi SABKM.../D Shield-connection clip for direct mounting

The **SABKM.../D** shield-connection clip can be installed directly (e.g. screwed directly onto a mounting plate). The cable shield must only be pressed into the **SABKM** in order to establish a reliable contact.

The strain relief clip can be used with a cable tie to relieve strain at the cable sheath.

#### Your advantages

X

- Direct mounting using M4 screw
- Very compact construction
- Reduced product types when the Multi shield-connection bracket is used
- Cable tie can be used for strain relief

Shield-connection bracket		SABKM/D		SABKM/D/Z		
Mounting type		Direct mounting		Direct mounting		
Description		Without strain relief		With strain relief		
Туре		SABKM 12/D M4		SABKM 12/D M4/Z		
Cat. no.	Qty.	27246.0	10	17984.0	10	
Cable diameter Ø		3 – 12 mm		3 – 12 mm		
Drill hole diameter Ø		4.2 mm		4.2 mm		
Material		Steel		Steel		
Туре		SABKM 18/D M4		SABKM 18/D M4/Z		
Cat. no.	Qty.	27247.0	10	17985.0	10	
Cable diameter Ø		7 – 18 mm		7 – 18 mm		
Drill hole diameter Ø		4.2 mm		4.2 mm		
Material		Steel		Steel		
Туре		SABKM 30/D M4		SABKM 30/D M4/Z		
Cat. no.	Qty.	27248.0	10	27220.0	10	
Cable diameter Ø		17 – 30 mm		17 – 30 mm		
Drill hole diameter Ø		4.2 mm		4.2 mm		
Material		Steel		Steel		
Туре		SABKM 35/D M4				
Cat. no.	Qty.	27256.0	5			
Cable diameter Ø		16 – 35 mm				
Drill hole diameter Ø		4.2 mm				
Material		Steel				
Туре		SABKM 65/D M4				
Cat. no.	Qty.	27257.0	5			
Cable diameter Ø		35 – 65 mm				
Drill hole diameter Ø		4.2 mm				
Drill hole diameter Ø						

## SAB.../D Shield-connection clip for direct mounting

The **SAB.../D** shield-connection clip can be used for direct mounting installations. The force on the cable comes from a spring-pressure piece. This regulated pressure ensures a constant optimal contact. The **SAB.../D** can be installed with an M4 screw (included in delivery) directly to the mounting plate.

The **SAB 8/D M5** shield-connection clip comes with a special feature; it is equipped with a self-cutting M5 SW3 metal screw. As a result, less time is required to mount the clip on the mounting plate, since you only need to drill one 4.2-mm hole through the plate. The hole threads will then be cut into the plate by the screw.

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- Tool-free installation
- Quick snap-on or mounting of the shield-connection clip
- Different cable cross-sections can be accommodated by the elastic nature of the spring
- Easy to work with

Shield-connection clip		SAB/D	
		STOR STOR	
Mounting type		Direct mounting	
Туре		SAB 8/D	
Cat. no.	Qty.	1549.0	10
Cable diameter Ø		3 – 8 mm	
Screw		M 4	
Material		Steel	
Туре		SAB 8/D/M5	
Cat. no.	Qty.	1526.0	10
Cable diameter Ø		3 – 8 mm	
Screw		M 4	
Material		Steel	
Туре		SAB 13.5/D	
Cat. no.	Qty.	1550.0	10
Cable diameter Ø		4 – 13.5 mm	
Screw		M 4	
Material		Steel	
Туре		SAB 20/D	
Cat. no.	Qty.	1551.0	10
Cable diameter Ø		10 – 20 mm	
Screw		M 4	
Material		Steel	
Туре		SAB 32/D	
Cat. no.	Qty.	17361.0	10
Cable diameter Ø		15 – 32 mm	
Screw		M 4	
Material		Steel	

## SABKM.../SSCH M4 Multi shield-connection clip on mounting foot for mounting to busbars

The Multi shield-connection clip on the mounting foot **SABKM.../SSCH M4** can be snapped onto a 10x3mm busbar without any tools. The cable shield must only be pressed into the Multi shield-connection clip in order to establish a reliable contact.

The strain relief clip can be used with a cable tie to relieve strain.

- Tool-free mounting onto busbars 10 x 3 mm
- Extremely compact construction
- Cable tie can be used for strain relief

Shield-connection bracket	า	SABKM/SSCH		SABKM/SSCH/Z		SABKMD/SSCH		SABKMD/SSCH/Z	Z
		- TO			•				Å
Mounting type		Busbar mounting		Busbar mounting		Busbar mounting		Busbar mounting	
Description		Without strain relief		With strain relief		Without strain relief		With strain relief	
Туре		SABKM 12/SSCH		SABKM 12/SSCH/Z		SABKMD 1.5-3/SSCH		SABKMD 1.5-3/SSCH/Z	1
Cat. no.	Qty.	27224.0	10	17982.0	10	27250.0	10	27259.0	10
Cable diameter Ø		3 – 12 mm		3 – 12 mm		1.5 – 3 mm		1.5 – 3 mm	
Material		Steel		Steel		Steel		Steel	
Туре		SABKM 18/SSCH		SABKM 18/SSCH/Z		SABKMD 3-6/SSCH		SABKMD 3-6/SSCH/Z	
Cat. no.	Qty.	27225.0	10	17983.0	10	27251.0	10	27260.0	10
Cable diameter Ø		7 – 18 mm		7 – 18 mm		3 – 6 mm		3 – 6 mm	
Material		Steel		Steel		Steel		Steel	
Туре		SABKM 30/SSCH		SABKM 30/SSCH/Z		SABKMD 6-8/SSCH		SABKMD 6-8/SSCH/Z	
Cat. no.	Qty.	27226.0	10	27228.0	10	27252.0	10	27254.0	10
Cable diameter Ø		17 – 30 mm		17 – 30 mm		6 – 8 mm		6 – 8 mm	
Material		Steel		Steel		Steel		Steel	
Туре						SABKMD 3-12/SSCH		SABKMD 3-12/SSCH/Z	
Cat. no.	Qty.					27253.0	10	27255.0	10
Cable diameter Ø						3 – 12 mm		3 – 12 mm	
Material						Steel		Steel	

## SAB Shield-connection clip

The SAB shield-connection clips enable busbar mounting. After connecting the wiring, the shield-connection clip is mounted by simply swivelling in the **SAB** clip onto the busbar. The force on the cable comes from a spring-pressure piece. This regulated pressure ensures a constant optimal contact. This makes the **SAB** shield-connection clip very convenient to wire. Depending on the length of the terminal blocks, two or more **SH/SAB** busbar supports should be used. These mechanically connect the front busbar with the DIN rail (support).

- Quick snap-on or mounting of the shield-connection clip
- Different cable cross-sections can be accommodated by the elastic nature of the spring
- Easy to work with

Shield-connection clip		SAB	
Mounting type		Busbar mounting	
Туре		SAB 8	
Cat. no.	Qty.	1527.0	10
Cable diameter Ø		3 – 8 mm	
Material		Steel	
Туре		SAB 13.5	
Cat. no.	Qty.	1528.0	10
Cable diameter Ø		4 – 13.5 mm	
Material		Steel	
Туре		SAB 20	
Cat. no.	Qty.	1529.0	10
Cable diameter Ø		10 – 20 mm	
Material		Steel	
Туре		SAB 32	
Cat. no.	Qty.	17360.0	10
Cable diameter Ø		15 – 32 mm	
Material		Steel	

## SSAB Shield-connection clip for busbar mounting

The **SSAB** shield-connection clips enable busbar mounting. After wiring the terminal block, the shield-connection clip is mounted by simply swivelling in and tightening the knurled thumb screw. This makes the **SSAB** screw-shield-connection clip very convenient to wire. Depending on the length of the terminal blocks, two or more **SH/SAB** busbar supports should be used. These mechanically connect the front busbar with the DIN rail (support). The **SH1** busbar holders are used where a shield-connection system must be mounted directly onto a panel rather than a DIN rail. The 10x3mm busbars can be easily and quickly snapped on to these supports. In both cases, the contact with the earth or ground potential can be established with a **ZB** clamping yoke.

- Screw-on clip for simple retrofitting
- Knurled thumb screw, so no tools required
- Easy to work with
- Large shield surface
- Secure contact

Shield-connection clip for busbar mounting		SSAB	
Mounting type		Busbar mounting	
Туре		SSAB 5	
Cat. no.	Qty.	3694.0	10
Cable diameter Ø		2 – 5 mm	
Torque		0.4 Nm	
Material		Steel	
Туре		SSAB 8	
Cat. no.	Qty.	3695.0	10
Cable diameter Ø		3 – 8 mm	
Torque		0.6 Nm	
Material		Steel	
Туре		SSAB 14	
Cat. no.	Qty.	3696.0	10
Cable diameter Ø		3 – 14 mm	
Torque		0.8 Nm	
Material		Steel	
Type	01.	SSAB 20	10
Cat. no.	Qty.	3697.0	10
Cable diameter Ø		3 – 20 mm 0.8 Nm	
Torque			
Material		Steel SSAB 28	
Type Cat. no.	Otre	3698.0	10
Cable diameter Ø	Qty.	5 – 28 mm	10
Torque		0.8 Nm	
Material		Steel	
Туре		SSAB 35	
Cat. no.	Qty.	3699.0	10
Cable diameter Ø	Qty.	20 – 35 mm	10
cubic diameter D			
Torque		1.8 Nm	

## SAB.../GWP Shield-connection clip for C-rail

The **SAB.../GWP** shield-connection clips enable mounting to a C-rail. The **SAB.../GWP** is attached to the threaded plate with an Allen (hex socket) screw. The force on the cable comes from a spring-pressure piece. This regulated pressure ensures a constant optimal contact with the DIN rail.

## Your advantages

- Shield-connection clip is quickly mounted
- Different cable cross-sections can be accommodated by the elastic nature of the spring
- Easy to work with

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Shield-connection clip for C-rail		SAB/GWP	
	-		
Mounting type		C-rail mounting	
Туре		SAB 8/GWP	
Cat. no.	Qty.	17356.0	10
Cable diameter Ø		3 – 8 mm	
Material		Steel	
Туре		SAB 13.5/GWP	
Cat. no.	Qty.	17357.0	10
Cable diameter Ø		4 – 13.5 mm	
Material		Steel	
Туре		SAB 20/GWP	
Cat. no.	Qty.	17358.0	10
Cable diameter Ø		10 – 20 mm	
Material		Steel	
Туре		SAB 32/GWP	
Cat. no.	Qty.	17359.0	10
Cable diameter Ø		15 – 32 mm	
Material		Steel	

## SABKM.../MF/35 Shield-connection clip for mounting to DIN rail

The Multi **SABKM.../MF/35** shield-connection clip on mounting foot can be snapped onto a **TS 35** DIN rail without using any tools. The cable shield must only be pressed into the Multi shield-connection clip in order to establish a reliable contact. The strain relief clip can be used with a cable tie to relieve strain.

- Simple tool-free installation
- Spring force provides consistently good contact to the cable shield
- Very good dissipation of high-frequency interference current
- Cable tie can be used for strain relief

Shield-connection bracket		SABK/MF/35		SABK/MF/35/Z	
	and the second				
Mounting type		Mounting on the DIN r	ail	Mounting on the DIN	rail
Description		Without strain relief		With strain relief	
Туре		SABK 3/MF/35		SABK 3/MF/35/Z	
Cat. no.	Qty.	27229.0	10	27240.0	10
Cable diameter Ø		1.5 – 3 mm		1.5 – 3 mm	
Туре		SABK 6/MF/35		SABK 6/MF/35/Z	
Cat. no.	Qty.	27230.0	10	27241.0	10
Cable diameter Ø		3 – 6 mm		3 – 6 mm	
Туре		SABK 8/MF/35		SABK 8/MF/35/Z	
Cat. no.	Qty.	27231.0	10	27242.0	10
Cable diameter Ø		6 – 8 mm		6 – 8 mm	
Туре		SABK 11/MF/35		SABK 11/MF/35/Z	
Cat. no.	Qty.	27232.0	10	27243.0	10
Cable diameter Ø		8 – 11 mm		8 – 11 mm	
Туре		SABK 16/MF/35		SABK 16/MF/35/Z	
Cat. no.	Qty.	27233.0	10	27244.0	10
Cable diameter Ø		11 – 16 mm		11 – 16 mm	
Туре		SABK 30/MF/35		SABK 30/MF/35/Z	
Cat. no.	Qty.	27234.0	10	27245.0	10
Cable diameter Ø		17 – 30 mm		17 – 30 mm	
Туре		SABKM 12/MF/35		SABKM 12/MF/35/Z	
Cat. no.	Qty.	27237.0	10	17980.0	10
Cable diameter Ø		3 – 12 mm		3 – 12 mm	
Туре		SABKM 18/MF/35		SABKM 18/MF/35/Z	
Cat. no.	Qty.	27238.0	10	17981.0	10
Cable diameter Ø		7 – 18 mm		7 – 18 mm	
Туре		SABKM 35/MF/35			
Cat. no.	Qty.	27239.0	5		
Cable diameter Ø		16 – 35 mm			
Туре		SABKM 65/MF/35			
Cat. no.	Qty.	27258.0	5		
Cable diameter Ø		35 – 65 mm			

## SAB.../F Shield-connection clip for mounting to DIN rail

The **SAB.../F** shield-connection clips enable mounting to the DIN rail. The force exerted on the cable is regulated by a spring-loaded thrust piece. This ensures optimum contact at all times. The **SAB../F** can be mounted directly to the **TS 35** DIN rail using the clamping foot and a mounting screw.

- Shield-connection clip is quickly mounted
- Different cable cross-sections can be accommodated by the elastic nature of the spring
- Easy to work with

Shield-connection clip	SAB 8/F	SAB 13.5/F		SAB 20/F		
Mounting type	Mounting on the DIN rail		Mounting on the DIN rail		Mounting on the DIN rail	
Туре	SAB 8/F		SAB 13.5/F		SAB 20/F	
Cat. no. Qty.	1571.0	10	1572.0	10	1573.0	10
Cable diameter Ø	3 – 8 mm		4 – 13.5 mm		10 – 20 mm	
Size (L x W x H), mm	18.5 x 13 x 26.5		22 x 19.5 x 32.5		27 x 13 x 26.5	
Material	Steel		Steel		Steel	

## SAB.../MF Shield-connection clip for mounting to DIN rail

The **SAB.../MF/35** shield-connection clips enable mounting to the DIN rail. The **SAB.../MF/35** is snapped on directly via the internal-spring **MF/35** mounting foot without using any tools. The force exerted on the cable is regulated by a springloaded thrust piece. This ensures that optimal contact is maintained with the DIN rail at all times.

#### Your advantages

- Simple tool-free installation
- Different cable cross-sections can be accommodated by the elastic nature of the spring
- Easy to work with

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• /S version can be rotated and fixed in position using the fastening screw

Shield-connection clip	SAB/MF/35	SAB/MF/35/S			
	ň				
Mounting type		Mounting on the DIN rail		Mounting on the DIN rail	
Туре		SAB 8/MF/35		SAB 8/MF/35/S	
Cat. no.	Qty.	17038.0	10	17340.0	10
Cable diameter Ø	·	3 – 8 mm		3 – 8 mm	
Size (L x W x H), mm		18.5 x 13 x 26.5		18.5 x 13 x 26.5	
Material		Steel		Steel	
Туре		SAB 13.5/MF/35		SAB 13.5/MF/3/S5	
Cat. no.	Qty.	17039.0	10	17341.0	10
Cable diameter Ø		4 – 13.5 mm		4 – 13.5 mm	
Size (L x W x H), mm		22 x 19.5 x 32.5		22 x 19.5 x 32.5	
Material		Steel		Steel	
Туре		SAB 20/MF/35		SAB 20/MF/35/S	
Cat. no.	Qty.	17040.0	10	17342.0	10
Cable diameter Ø		10 – 20 mm		10 – 20 mm	
Size (L x W x H), mm		27 x 24.5 x 40.5		27 x 24.5 x 40.5	
Material		Steel		Steel	
Туре		SAB 32/MF/35		SAB 32/MF/35/S	
Cat. no.	Qty.	<i>17363.0</i> <b>10</b>		17343.0	10
Cable diameter Ø		15 – 32 mm		15 – 32 mm	
Size (L x W x H), mm		53.2 x 33 x 71.5		53.2 x 33 x 71.5	
Material		Steel		Steel	

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## **Busbar holder**

Busbar holders are used for mounting all shield-connection clips with 10x3mm busbars. These can be mounted quickly and flexibly according to your requirements. The **SH1** busbar holders are used where a shield-connection system must be mounted directly onto a panel rather than a DIN rail. The 10x3mm busbars can be easily and quickly snapped on to these supports.

The **SH/SAB** busbar holders mechanically connect the preceding busbar with the DIN rail. Thus, the shield-connection clip can easily be extended directly to the terminal strip. The **ES 35/K/ST** end support with its integrated receptacles enables you to easily mount 10x3mm busbars directly above a **TS 35** DIN rail.

Depending on the length, two or more holders can be used. In both cases, the contact with the earth or ground potential can be established with a **ZB** clamping yoke.

Busbar holder		SH 1		SH SAB		ES 35/K/ST	
					~ 》 算		Junit a
Type/colour		SH 1 BG		SH SAB BG		ES 35/K/ST BG	
Cat. no.	Qty.	2318.2	20	1530.2	10	2828.0	50
Size (L x W x H), mm		24 x 24 x 23.7		50 x 9.5 x 98		50 x 9.5 x 44	
Material of cap/holder		PA 6.6 V-2		PA 6.6 V-2		PA 6.6 V-2	
Accessories							
Mounting screw BS		BS M 4x8					
Cat. no.	Qty.	2262.0	20				
Busbar Ssch Copper		Ssch 10 x 3 CU		Ssch 10 x 3 CU		Ssch 10 x 3 CU	
Cat. no.	Qty.	2129.0	1 m	2129.0	1 m	2129.0	1 m
Busbar Ssch Brass		Ssch 10 x 3 Ms		Ssch 10 x 3 Ms		Ssch 10 x 3 Ms	
Cat. no.	Qty.	2128.0	1 m	2128.0	1 m	2128.0	1 m

# Types and catalogue numbers, alphabetic

Туре	Cat. no.	Page	Туре	Cat. no.	Page	Туре	Cat. no.	Page
			KDS-DE 2x4-5 BK	28555.4	49	KDS-DEG 20-21 BK	28541.4	49
В			KDS-DE 2x4-5 GR	28595.6	48	KDS-DEG 20-21 GR	28582.6	48
BL KDS-KV M20	28746.0	76	KDS-DE 2x5-6 BK	28556.4	49	KDS-DEG 21-22 BK	28542.4	49
BL KDS-KV M25	28747.0	77	KDS-DE 2x5-6 GR	28596.6	48	KDS-DEG 21-22 GR	28583.6	48
BL KDS-KV M32	28748.0	77	KDS-DE 2x6.5 BK	28682.4	49	KDS-DEG 22-23 BK	28543.4	49
BL KDS-KV M40	28749.0	77	KDS-DE 2x6.5 GR	28607.6	48	KDS-DEG 22-23 GR	28584.6	48
BL KDS-KV M50	28750.0	77	KDS-DE 2x7 BK	28689.4	49	KDS-DEG 23-24 BK	28544.4	49
BL KDS-KV M63 BL KDS-FB1	28751.0 28734.0	77 77	KDS-DE 2x7 GR KDS-DE 2x8 BK	28690.6 28691.4	48 49	KDS-DEG 23-24 GR	28585.6 28545.4	48 49
BL KDS-FB2	28735.0	77	KDS-DE 2x8 GR	28692.6	49	KDS-DEG 24-25 BK KDS-DEG 24-25 GR	28586.6	49
BL KDS-FB3	28736.0	77	KDS-DE 3-4 BK	28523.4	49	KDS-DEG 25-26 BK	28546.4	49
BL KDS-FB4	28737.0	77	KDS-DE 3-4 GR	28564.6	48	KDS-DEG 25-26 GR	28587.6	48
BL KDS-FP2	28745.0	76	KDS-DE 3x5-6 BK	28687.4	49	KDS-DEG 26-27 BK	28547.4	49
BL KDS-SR 1-4	28674.0	76	KDS-DE 3x5-6 GR	28688.6	48	KDS-DEG 26-27 GR	28588.6	48
BL KDS-SR 10/24	28677.0	77	KDS-DE 4-5 BK	28524.4	49	KDS-DEG 27-28 BK	28548.4	49
BL KDS-SR 6/10	28675.0	76	KDS-DE 4-5 GR	28565.6	48	KDS-DEG 27-28 GR	28589.6	48
BL KDS-SR 8/16	28676.0	76	KDS-DE 4x2-3 BK	28557.4	49	KDS-DEG 28-29 BK	28549.4	49
BL KES	28744.0	76	KDS-DE 4x2-3 GR	28597.6	48	KDS-DEG 28-29 GR	28590.6	48
BL SET M16-M63 Hyd.	28766.0	76	KDS-DE 4x3-4 BK	28558.4	49	KDS-DEG 29-30 BK	28550.4	49
BL SET RECTANGLE Hyd.	28761.0	76	KDS-DE 4x3-4 GR	28598.6	48	KDS-DEG 29-30 GR	28591.6	48
BL-VA KDS-KV M20	28754.0	76	KDS-DE 4x5 BK	28672.4	49	KDS-DEG 30-31 BK	28551.4	49
BL-VA KDS-KV M25	28754.0	77	KDS-DE 4x5 GR	28673.6	48	KDS-DEG 30-31 GR	28592.6	48
BL-VA KDS-KV M32	28756.0	77	KDS-DE 4x4.5 BK	28681.4	49	KDS-DEG 31-32 BK	28552.4	49
BL-VA KDS-KV M40	28757.0	77	KDS-DE 4x4.5 GR KDS-DE 4x6 BK	28606.6	48	KDS-DEG 31-32 GR KDS-DEG 32-33 BK	28593.6	48 49
BL-VA KDS-KV M50 BL-VA KDS-KV M63	28758.0 28759.0	77 77	KDS-DE 4x6 GR	28763.4 28762.6	49 48	KDS-DEG 32-33 BK KDS-DEG 32-33 GR	28601.4 28594.6	49 48
BL-VA KDS-FB1	28729.0	77	KDS-DE 5-6 BK	28525.4	40	KDS-DEG/B BK	28534.4	40
BL-VA KDS-FB2	28741.0	77	KDS-DE 5-6 GR	28566.6	48	KDS-DEG/B GR	28575.6	49
BL-VA KDS-FB3	28742.0	77	KDS-DE 6-7 BK	28526.4	49	KDS-DEG/K 7-24 BK	28554.4	49
BL-VA KDS-FB4	28743.0	77	KDS-DE 6-7 GR	28567.6	48	KDS-DES 2X10.5 GR	28800.6	51
BL-VA KDS-FP2	28753.0	76	KDS-DE 7-8 BK	28527.4	49	KDS-DES 3X8.5 GR	28802.6	51
BL-VA KDS-SR 1-4	28683.0	76	KDS-DE 7-8 GR	28568.6	48	KDS-DES 3X9.5 GR	28801.6	51
BL-VA KDS-SR 10/24	28686.0	77	KDS-DE 8-9 BK	28528.4	49	KDS-DES 4X7.5 GR	28803.6	51
BL-VA KDS-SR 6/10	28684.0	76	KDS-DE 8-9 GR	28569.6	48	KDS-DES 7X6.5 GR	28804.6	51
BL-VA KDS-SR 8/16	28685.0	76	KDS-DE 9-10 BK	28529.4	49	KDS-DES 8X4.5 GR	28806.6	51
BL-VA KES	28752.0	76	KDS-DE 9-10 GR	28570.6	48	KDS-DES 8X5.5 GR	28805.6	51
BL-VA SET M16-M63 Hyd.	28765.0	77	KDS-DE-FB1/A GR	28713.6	44	KDS-EMV-SAB 1-4	28623.0	71
BL-VA SET RECTANGLE Hyd.	28760.0	76	KDS-DE-FB1/B GR	28714.6	44	KDS-EMV-SAB 10/24	28626.0	71
E			KDS-DE-FB1/C GR	28715.6	45	KDS-EMV-SAB 6/10	28624.0	71
_			KDS-DE-FB1/D GR	28716.6	45	KDS-EMV-SAB 8/16	28625.0	71
ES 35/K/ST BG	2828.0	95	KDS-DE-FB1/E GR	28717.6	44	KDS-FP 2x10/24 BK	28660.4	20
Н			KDS-DE-FB1/F GR	28718.6 28719.6	44	KDS-FP 3x10/24 BK KDS-FP-AD/UL YE	28661.4	20
Hydraulic hand pump for	28679.0	75	KDS-DE-FB2/A GR KDS-DE-FB2/B GR	28720.6	44	KDS-FP-AD/OL TE KDS-FP-EMV-SAB 10/24	28665.8 28627.0	20 71
sheet-metal hole punch	20079.0	73	KDS-DE-FB2/C GR	28721.6	44 44	KDS-FP-IVR OG	28664.3	20
			KDS-DE-FB2/D GR	28722.6	44	KDS-GM 20 BK	28616.4	36
Κ			KDS-DE-FB2/E GR	28723.6	45	KDS-GM 25 BK	28617.4	36
KDS-BP 10/24 BK	28509.4	72	KDS-DE-FB2/F GR	28724.6	45	KDS-GM 32 BK	28618.4	36
KDS-BP 8/16 BK	28508.4	72	KDS-DE-FB3/A GR	28725.6	45	KDS-GM 40 BK	28619.4	37
KDS BW 1	28622.0	70	KDS-DE-FB3/B GR	28726.6	45	KDS-GM 50 BK	28620.4	37
KDSClick assortment box	28764.0	70	KDS-DE-FB4/A GR	28727.6	44	KDS-GM 63 BK	28621.4	37
KDS-DE 1.5 BK	28693.4	49	KDS-DE-FB4/B GR	28728.6	45	KDS-GM M20 BK	28616.4	28
KDS-DE 1.5 GR	28694.6	48	KDS-DE/1XASI BK	28559.4	49	KDS-GM M25 BK	28617.4	28
KDS-DE 1.5-2 BK	28521.4	49	KDS-DE/1XASI GR	28599.6	48	KDS-GM M32 BK	28618.4	28
KDS-DE 1.5-2 GR	28562.6	48	KDS-DE/2xASI BK	28560.4	49	KDS-GM M40 BK	28619.4	29
KDS-DE 10-11 BK	28530.4	49	KDS-DE/2xASI GR	28600.6	48	KDS-GM M50 BK	28620.4	29
KDS-DE 10-11 GR	28571.6	48	KDS-DE/B BK	28520.4	49	KDS-GM M63 BK	28621.4	29
KDS-DE 11-12 BK	28531.4	49	KDS-DE/B GR	28561.6	48	KDS-R 20-32 BK	28770.4	28
KDS-DE 11-12 GR	28572.6	48	KDS-DE/K 2-11 BK	28553.4	49	KDS-R 40-63 BK	28774.4	29
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KDS-KV M25 BK	28611.4	36	KES-E 48/24 A GR	28817.6	64	SAB 32/D	17361.0	87
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KDS-KV M50 BK	28614.4	37	KES-E 50/24 B GR	28848.6	64	SAB 32/MF/35/S	17343.0	94
KDS-KV M63 BK	28615.4	37	KES-E-R 50/11 A GR	28830.6	68	SAB 8	1527.0	89
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KDS-SR 6/10 BK	28500.4	14	KES-E-R 50/18 B GR	28863.6	68	SAB 6/101/55/5	17973.0	80
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KDS-SR-FB1/A BK	28700.4	40	KES-E-R 50/20 B GR	28864.6	68	SABK 11/MF/35/Z	27243.0	92
KDS-SR-FB2/A BK	28701.4	40	KES-E-R 50/35 A GR	28835.6	68	SABK 16	17974.0	80
KDS-SR-FB2/B BK	28702.4	40	KES-E-R 50/35 B GR	28865.6	68	SABK 16/MF/35	27233.0	92
KDS-SR-FB3/A BK	28703.4	40	KES-E-R 50/9 A GR	28829.6	68	SABK 16/MF/35/Z	27244.0	92
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KDS-VS 17 WH	28796.7	73	KES-R 14/24 BK	28651.4	58	SABKM 12/SSCH	27224.0	88
KDS-VS 2 WH	28781.7	73	KES-R 14/24 GR	28651.6	58	SABKM 12/SSCH/Z	17982.0	88
KDS-VS 22 WH	28797.7	73	KES-R 16-1/24 BK	28653.4	59	SABKM 18	17976.0	81
KDS-VS 3 WH	28782.7	73	KES-R 16-1/24 GR	28653.6	59	SABKM 18/D M4	27247.0	86
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KES 13/24 GR	28630.6	58	KES-R 21/24 GR	28656.6	59	SABKM 30/SSCH	27226.0	88
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KES 14/24 GR	28631.6	58	KES-R 32/24 GR	28657.6	59	SABKM 35/D M4	27256.0	86
KES 16-1/24 BK	28633.4	59				SABKM 35/MF/35	27239.0	92
KES 16-1/24 GR	28633.6	59	Μ			SABKM 65/D M4	27257.0	86
KES 16/24 BK	28632.4	58	MF-SABK/35	17261.0	85	SABKM 65/MF/35	27258.0	92
KES 16/24 GR	28632.6	58	MF-SABK/35/Z	17978.0	85	SABKMD 1.5-3/SSCH	27250.0	88
KES 17/24 BK	28634.4	59	MF-SABK/SSCH	27218.0	84	SABKMD 1.5-3/SSCH/Z	27259.0	88
KES 17/24 GR	28634.6	59	MF-SABK/SSCH/Z	17979.0	84	SABKMD 3-12/SSCH	27253.0	88
KES 20/24 BK	28635.4	59	MF/D M4	27217.0	82	SABKMD 3-12/SSCH/Z	27255.0	88
KES 20/24 GR	28635.6	59	MF/D M4/Z	17977.0	82	SABKMD 3-6/SSCH	27251.0	88
KES 21/24 BK	28636.4	59				SABKMD 3-6/SSCH/Z	27260.0	88
KES 21/24 GR	28636.6	59	R			SABKMD 6-8/SSCH	27252.0	88
KES 32/24 BK	28637.4	59	RMF/D M4/Z	17986.0	83	SABKMD 6-8/SSCH/Z	27254.0	88
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KES-E 14/24 A GR	28811.6	64	SAB 13.5/D	1550.0	87	SSAB 20	3697.0	90
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KES-E 18/24 A GR	28813.6	64	SAB 13.5/MF/35/S	17341.0	94 94	SSAB S	3695.0	90
KES-E 18/24 B GR	28843.6	64	SAB 13.5/MP/33/3	1529.0	89	33/10 0	3073.0	90
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28619.4	KDS-GM M40 BK	29	28682.4	KDS-DE 2x6.5 BK	49	28770.4	KDS-R 20-32 BK	28
28619.4	KDS-GM 40 BK	37	28683.0	BL-VA KDS-SR 1-4	76	28771.4	KDS-RGA M20 BK	28
28620.4	KDS-GM M50 BK	29	28684.0	BL-VA KDS-SR 6/10	76	28772.4	KDS-RGA M25 BK	28
28620.4	KDS-GM 50 BK	37	28685.0	BL-VA KDS-SR 8/16	76	28773.4	KDS-RGA M32 BK	28
28621.4	KDS-GM M63 BK	29	28686.0	BL-VA KDS-SR 10/24	77	28774.4	KDS-R 40-63 BK	29
28621.4	KDS-GM 63 BK	37	28687.4	KDS-DE 3x5-6 BK	49	28775.4	KDS-RGA M40 BK	29
28622.0	KDS BW 1	70	28688.6	KDS-DE 3x5-6 GR	48	28776.4	KDS-RGA M50 BK	29
28623.0	KDS-EMV-SAB 1-4	71	28689.4	KDS-DE 2x7 BK	49	28777.4	KDS-RGA M63 BK	29
28624.0	KDS-EMV-SAB 6/10	71	28690.6	KDS-DE 2x7 GR	48	28779.4	KDS-VS-SR BK	73
28625.0	KDS-EMV-SAB 8/16	71	28691.4	KDS-DE 2x8 BK	49	28781.7	KDS-VS 2 WH	73
28626.0	KDS-EMV-SAB 10/24	71	28692.6	KDS-DE 2x8 GR	48	28782.7	KDS-VS 3 WH	73
28627.0	KDS-FP-EMV-SAB 10/24	71	28693.4	KDS-DE 1.5 BK	49	28783.7	KDS-VS 4 WH	73
28630.4	KES 13/24 BK	58	28694.6	KDS-DE 1.5 GR	48	28784.7	KDS-VS 5 WH	73
28630.6	KES 13/24 GR	58	28695.4	KDS-DE 2 BK	49	28785.7	KDS-VS 6 WH	73
28631.4	KES 14/24 BK	58	28696.6	KDS-DE 2 GR	48	28786.7	KDS-VS 7 WH	73
28631.6	KES 14/24 GR	58	28700.4	KDS-SR-FB1/A BK	40	28787.7	KDS-VS 8 WH	73
28632.4	KES 16/24 BK	58	28701.4	KDS-SR-FB2/A BK	40	28788.7	KDS-VS 9 WH	73
28632.6	KES 16/24 GR	58	28702.4	KDS-SR-FB2/B BK	40	28789.7	KDS-VS 10 WH	73
28633.4	KES 16-1/24 BK	59	28703.4	KDS-SR-FB3/A BK	41	28790.7	KDS-VS 11 WH	73
28633.6 28634.4	KES 16-1/24 GR	59 59	28704.4 28705.4	KDS-SR-FB3/B BK KDS-SR-FB3/C BK	41 41	28791.7 28792.7	KDS-VS 12 WH	73 73
28634.4 28634.6	KES 17/24 BK	59 59	28705.4 28706.4		41	28792.7	KDS-VS 13 WH	73
28634.6	KES 17/24 GR KES 20/24 BK	59 59	28706.4	KDS-SR-FB3/D BK KDS-SR-FB4/A BK	41	28793.7 28794.7	KDS-VS 14 WH KDS-VS 15 WH	73
28635.6	KES 20/24 BK KES 20/24 GR	59 59	28707.4	KDS-SR-FB4/A BK	40	28794.7	KDS-VS 15 WH	73
28636.4	KES 21/24 BK	59	28709.4	KDS-SR-FB4/C BK	40	28796.7	KDS-VS 17 WH	73
28636.6	KES 21/24 GR	59	28710.4	KDS-SR-FB4/D BK	41	28797.7	KDS-VS 22 WH	73
28637.4	KES 32/24 BK	59	28711.4	KDS-SR-FB4/E BK	41	28798.7	KDS-VS ASI/2 WH	73
28637.6	KES 32/24 GR	59	28712.4	KDS-SR-FB4/F BK	41	28800.6	KDS-DES 2X10.5 GR	51
28640.4	KES-GB 13/24 BK	58	28713.6	KDS-DE-FB1/A GR	44	28801.6	KDS-DES 3X9.5 GR	51
28640.6	KES-GB 13/24 GR	58	28714.6	KDS-DE-FB1/B GR	44	28802.6	KDS-DES 3X8.5 GR	51
28641.4	KES-GB 14/24 BK	58	28715.6	KDS-DE-FB1/C GR	44	28803.6	KDS-DES 4X7.5 G	51
28641.6	KES-GB 14/24 GR	58	28716.6	KDS-DE-FB1/D GR	44	28804.6	KDS-DES 7X6.5 GR	51
28642.4	KES-GB 16/24 BK	58	28717.6	KDS-DE-FB1/E GR	44	28805.6	KDS-DES 8X5.5 GR	51
28642.6	KES-GB 16/24 GR	58	28718.6	KDS-DE-FB1/F GR	44	28806.6	KDS-DES 8X4.5 GR	51
28643.4	KES-GB 16-1/24 BK	59	28719.6	KDS-DE-FB2/A GR	44	28810.6	KES-E 12/24 A GR	64
28643.6	KES-GB 16-1/24 GR	59	28720.6	KDS-DE-FB2/B GR	44	28811.6	KES-E 14/24 A GR	64
28644.4	KES-GB 17/24 BK	59	28721.6	KDS-DE-FB2/C GR	44	28812.6	KES-E 17/24 A GR	64
28644.6	KES-GB 17/24 GR	59	28722.6	KDS-DE-FB2/D GR	44	28813.6	KES-E 18/24 A GR	64
28645.4	KES-GB 20/24 BK	59	28723.6	KDS-DE-FB2/E GR	44	28814.6	KES-E 19/24 A GR	64
28645.6	KES-GB 20/24 GR	59	28724.6	KDS-DE-FB2/F GR	44	28815.6	KES-E 26/24 A GR	64
28646.4	KES-GB 21/24 BK	59	28725.6	KDS-DE-FB3/A GR	44	28816.6	KES-E 42/24 A GR	64
28646.6	KES-GB 21/24 GR	59	28726.6	KDS-DE-FB3/B GR	44	28817.6	KES-E 48/24 A GR	64
28647.4	KES-GB 32/24 BK	59	28727.6	KDS-DE-FB4/A GR	44	28818.6	KES-E 50/24 A GR	64
28647.6	KES-GB 32/24 GR	59	28728.6	KDS-DE-FB4/B GR	44	28829.6	KES-E-R 50/9 A GR	68
28650.4	KES-R 13/24 BK	58	28729.0	BL-VA KDS-FB1	77	28830.6	KES-E-R 50/11 A GR	68
28650.6	KES-R 13/24 GR	58	28734.0	BL KDS-FB1	77	28831.6	KES-E-R 50/12 A GR	68
28651.4	KES-R 14/24 BK	58	28735.0	BL KDS-FB2	77	28832.6	KES-E-R 50/16 A GR	68
28651.6	KES-R 14/24 GR	58	28736.0	BL KDS-FB3	77	28833.6	KES-E-R 50/18 A GR	68
28652.4	KES-R 16/24 BK	58	28737.0	BL KDS-FB4	77	28834.6	KES-E-R 50/20 A GR	68
28652.6	KES-R 16/24 GR	58	28741.0	BL-VA KDS-FB2	77	28835.6	KES-E-R 50/35 A GR	68
28653.4	KES-R 16-1/24 BK	59	28742.0	BL-VA KDS-FB3	77	28840.6	KES-E 12/24 B GR	64
28653.6	KES-R 16-1/24 GR	59	28743.0	BL-VA KDS-FB4	77	28841.6	KES-E 14/24 B GR	64
28654.4	KES-R 17/24 BK	59	28744.0	BL KES	76	28842.6	KES-E 17/24 B GR	64
28654.6	KES-R 17/24 GR	59	28745.0	BL KDS-FP2	76	28843.6	KES-E 18/24 B GR	64
28655.4	KES-R 20/24 BK	59	28746.0	BL KDS-KV M20	76	28844.6	KES-E 19/24 B GR	64
28655.6	KES-R 20/24 GR	59	28747.0	BL KDS-KV M25	77	28845.6	KES-E 26/24 B GR	64
28656.4	KES-R 21/24 BK	59	28748.0	BL KDS-KV M32	77	28846.6	KES-E 42/24 B GR	64
28656.6	KES-R 21/24 GR KES-R 32/24 BK	59	28749.0	BL KDS-KV M40	77	28847.6 28848.6	KES-E 48/24 B GR	64
28657.4		59	28750.0 28751.0	BL KDS-KV M50 BL KDS KV M63	77	28848.6	KES-E 50/24 B GR	64
28657.6 28660.4	KES-R 32/24 GR	59 20	28751.0	BL KDS-KV M63 BL-VA KES	77 76	28859.6 28860.6	KES-E-R 50/9 B GR	68 68
28661.4	KDS-FP 2x10/24 BK	20	28753.0	BL-VA KES BL-VA KDS-FP2		28861.6	KES-E-R 50/11 B GR KES-E-R 50/12 B GR	68 68
28664.3	KDS-FP 3x10/24 BK KDS-FP-IVR OG	20	28754.0	BL-VA KDS-FP2 BL-VA KDS-KV M20	76 76	28862.6	KES-E-R 50/12 B GR KES-E-R 50/16 B GR	68 68
28665.8	KDS-FP-AD/UL YE	20	28755.0	BL-VA KDS-KV M20 BL-VA KDS-KV M25	76	28863.6	KES-E-R 50/18 B GR	68
28670.4	KDS-DE 15-16 BK	20 49	28756.0	BL-VA KDS-KV M32	77	28864.6	KES-E-R 50/18 B GR	68
28671.6	KDS-DE 15-16 GR	49	28757.0	BL-VA KDS-KV M32 BL-VA KDS-KV M40	77	28865.6	KES-E-R 50/20 B GR	68
28672.4	KDS-DE 4x5 BK	40	28758.0	BL-VA KDS-KV M40 BL-VA KDS-KV M50	77	20005.0	RE3-E-N 30/33 D UN	00
28673.6	KDS-DE 4x5 GR	49	28759.0	BL-VA KDS-KV M63	77			
28674.0	BL KDS-SR 1-4	76	28760.0	BL-VA KD3-KV 1003 BL-VA SET RECTANGLE Hyd.	76			
28675.0	BL KDS-SR 6/10	76	28760.0	BL SET RECTANGLE Hyd.	76			
		/0	20/01.0	DE DET RECTAINGLE HYU.	70			
28676.0	BL KDS-SR 8/16	76	28762.6	KDS-DE 4x6 GR	48			



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