



Cable entry and cable holding systems

Cable entry and cable holding systems



Overview



Cable entry system

Cable entry system for one cable and/or insertion of pre-fabricated cables. Cables with plugs can be easily be inserted into casing. Various systems are available for selection.

From page 10



Cable entry plate

Cable entry systems for quick installation of cables. A real alternative to cable fittings. Various systems are available for selection.

From page 74



Strain relief Cable fixing plate

Strain relief and cable holding systems for strain relief and organisation of cables. Achieved easily and cost-effectively with standard cable ties.

From page 165



Cable fitting

Traditional cable fitting for insertion and strain relief of cables.

From page 189



Accessories

The accessories include articles like lock nuts, thread reducers, dummy plugs, cable ties, cable clamps,...

From page 203



Tools

Tools for efficient work. Tools increase quality and productivity.

From page 231



Punching tools

Punching tool for punching of metals, e.g. control cabinets. The most varied of cut-outs in differing sizes can be simply produced with our punching tools.

From page 241



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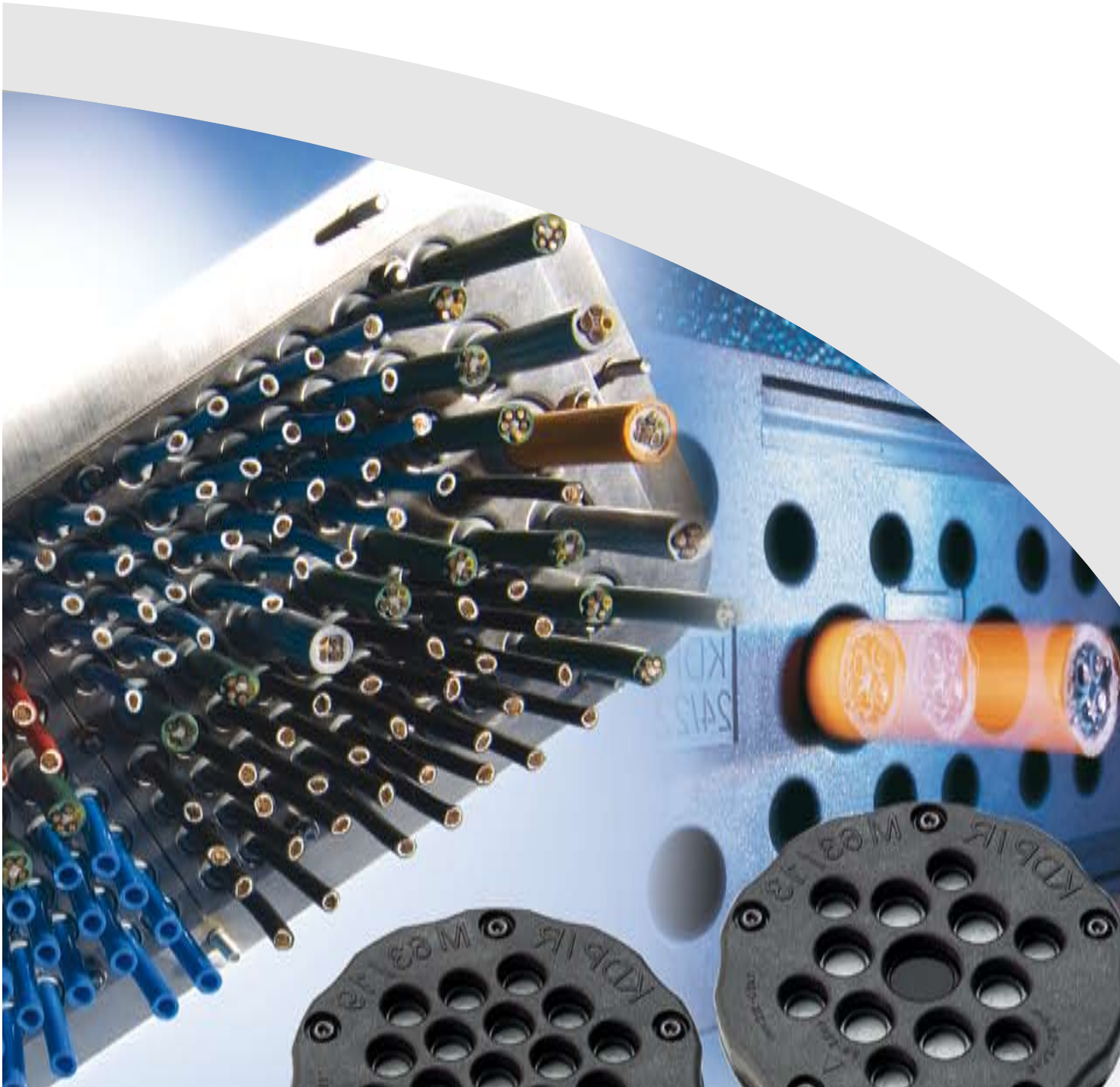
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Cable entry and cable holding systems

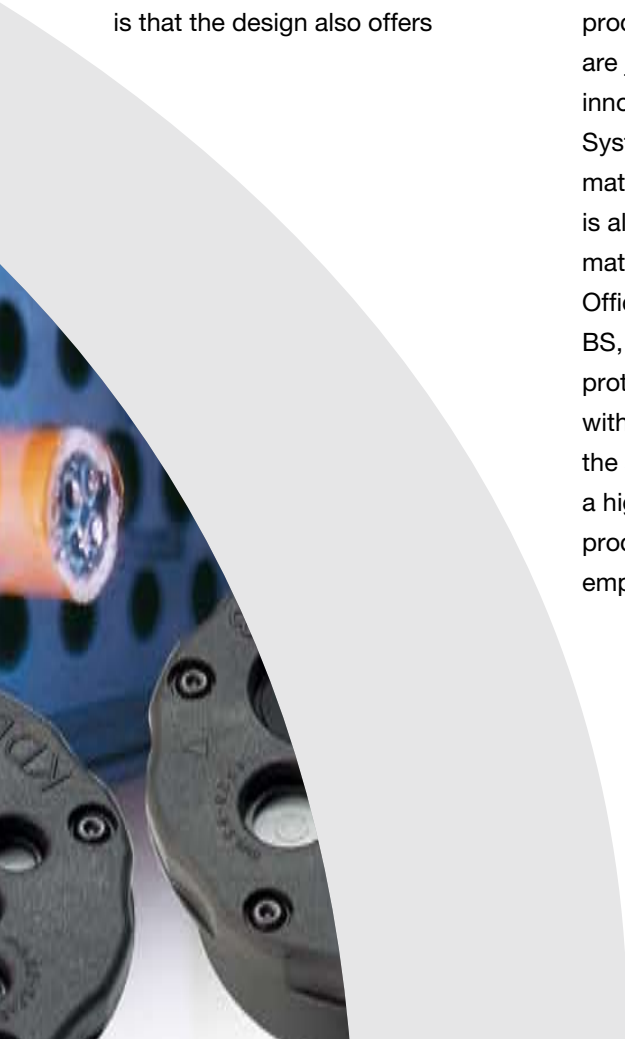


For years, Murrplastik Systemtechnik GmbH has offered cable entry systems, cable entry panel systems, strain relief plates and cable holding systems. Right from the beginning priority was given to a systematic approach. The priority has always been to design products which offer definite application advantages to the customer. The KDL cable entry system has been developed to enable pre-assembled cables e.g. servo cables, computer cables and bus-leads, to be fed into control panels without the need to remove the plugs. An additional advantage is that the design also offers

strain relief to the cables. During the design process, considerable emphasis was given. That is why the divisibility of the KDL product range makes assembly much more straightforward. The potential for strain relief and discharge of sheath currents has also been integrated into the cable fixing plate. A further innovation is the KDP cable entry plate, which offers a real alternative to cable fittings. The KDP boasts enormous savings potential through rapid installation. A lower footprint and user-friendly assembly are two of the major advantages that this product offers. However, these are just some of the outstanding innovations from Murrplastik Systemtechnik GmbH. We've used materials that ensure that the user is always offered a product that matches his particular application. Official approvals such as EN, DIN, BS, NFF and UL and grades of fire protection from HB to V0, together with an IP rating appropriate for the specific application, guarantee a high degree of security and productivity. It should be expressly emphasised that all MP products

are developed and manufactured according to the latest criteria. Even during the development process, environmentally friendly production and the use of environmentally compatible materials are key considerations. The products and systems undergo a wide range of tests in our own laboratory. If available, we utilise German DIN, European, or UL standards. Our engineers can, on request, create specific test criteria in collaboration with the customer. Ongoing tests ensure a high level of quality. Our cable entry and strain relief systems are largely marketed worldwide through our own sales network.

Otherwise, sales are handled by a qualified network of dealers. Both sales organisations have competent staff for you to talk to. All sales organisations have their own warehouse, enabling rapid delivery periods (just in time).



Cable entry system



Overview



KDL/E

The KDL/E reflects continuing development of the KDL in its 3rd generation. Pre-fabricated cables can be inserted even more simply and quickly, e.g. into enclosures. Quicker assembly at double the capacity.

From page 13



KDL

The KDL is a two-part plate that serves to insert pre-fabricated cables. Cables with plugs can be simply inserted into enclosures.

From page 25



KDL/EMV

The KDL/EMV is a metallised cable entry system. Pre-fabricated cables can be inserted simply into enclosures. At the same time, sheath currents can also be discharged using this plate.

From page 43



KDL/S

The KDL/S is a custom cable entry system. It is manufactured to meet the customer's specifications. Various cable shapes can be inserted using this plate.

From page 54



KDL Accessories

This section contains blanking plates, adapter plates and discharge plates.

From page 63





KDL/E cable entry system



Advantages



**We go at
everything
head first**

Even faster and simpler assembly of pre-fabricated cables.

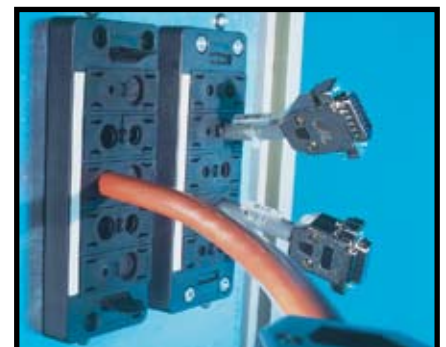
Die KDL/E replaces the tried-and-true KDL/N model.

The single-piece frame no longer needs to be joined together.

The provided catch hooks significantly speed up mounting of the entire plate, e.g. on the control cabinet.

Vario grommets reduce the need for grommets with different diameters.

This ultimately means significantly simpler and quicker assembly in general.



- ✓ Cable insertion without interruption
- ✓ Easy assembly
- ✓ Single-piece frame
- ✓ Snap-in from 1.5 – 4.1 mm
- ✓ No need to screw on
- ✓ Strain relief
- ✓ Protection class IP 54.

Overview

Page 18



Cable entry system Type KDL/E 16

Cable insertion system for cut-outs for 16-pole connectors e.g. Harting or Wieland.

Page 19



Cable entry system Type KDL/E 24

Cable insertion system for cut-outs for 24-pole connectors e.g. Harting or Wieland.

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Cable entry grommet Type KDT/xE

Cable entry grommet with strain relief for cable insertion.
Fits KDL/E frames.





KDL/E cable entry system



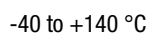
Selection table

		Cable entry grommets	
		Type KDT/ZE	
		Cable diameter	Cable diameter
		3 - 16 mm	16 - 31 mm
Cable entry system	Order no.	Opening, small	Opening, large
KDL/E 16/2	87121010	0	2
KDL/E 16/5	87121012	4	1
KDL/E 16/8	87121014	8	0
KDL/E 24/4	87121016	2	2
KDL/E 24/7	87121018	6	1
KDL/E 24/10	87121020	10	0

Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals UR	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.										
KDL/E 16	Polyamide	-40 °C	+140 °C	VO	✓	IP 54	✓	✓	✓	✓	✓	✓	✓
KDL/E 24	Polyamide	-40 °C	+140 °C	VO	✓	IP 54	✓	✓	✓	✓	✓	✓	✓
KDT/xE	Thermoplastic rubber	-40 °C	+80 °C	HB	✓	IP 54	✓	✓	✓	✓	✓	✓	✓

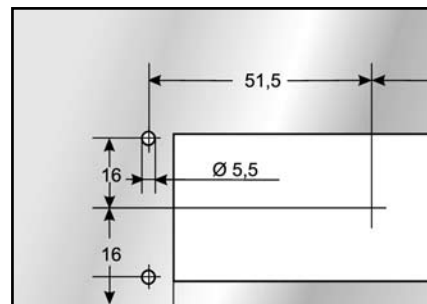
** = not certified



(with suitable grommets and cables)

The KDL/E represents the 3rd generation of Murrplastik cable entry system.

- Even quicker mounting of pre-assembled cables.
- Snap in, meaning screwing on is no longer absolutely necessary.
- Catch hook for 1.5 - 2.0 mm plate thickness included with delivery, additional catch hooks for up to 4.1mm plate thickness available.
- Fits standard cut-outs for connectors (e.g. Harting, Wieland and Rittal).
- Simple realization of EMV solution with discharge plate.



KDL/E 16/x

[illegible]

Cable entry system, type KDL/E 24

RoHS
compliant



-40 to +140 °C



Polyamide



V0



IP 54

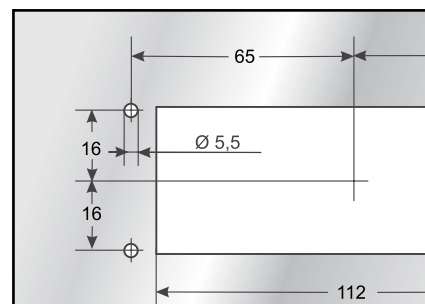
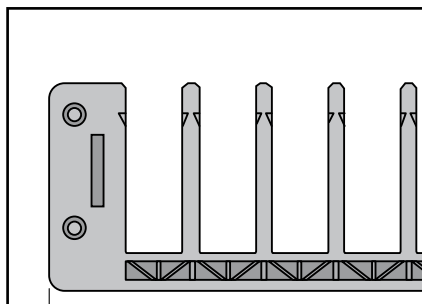
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- Simple realization of EMV solution with discharge plate.



KDL/E 24/x



Type	Order no.	Colour	No. of openings small / large	Installation height mm	For plate thickness mm	Pack qty
KDL/E 24/4	87121016	black	2 / 2	15.5	-	1
KDL/E 24/7	87121018	black	6 / 1	15.5	-	1
KDL/E 24/10	87121020	black	10 / -	15.5	-	1
Replacement parts:						
Catch hooks 1.5-2.0 mm	8712102000	black	-		1.5 - 2.0	1
Catch hooks 2.1-2.7 mm	8712101800	black	-		2.1 - 2.7	1
Catch hooks 2.8-3.4 mm	8712101600	black	-		2.8 - 3.4	1
Catch hooks 3.5-4.1 mm	8712101400	black	-		3.5 - 4.1	1
Matching grommets						
KDT/ZE; KDT/VE; ATG/E; SDT/ZE; BTK/E; BTG/E						
Matching EMV discharge plate in chapter «Accessories Cable entry system»						
KDL/N-AB...						
Matching label plate:						
KS KDL/E	86421090					100
Matching adapter plates type KDP 24/AP/xx for the assembly of multiple KDL/E 24						
in standardised cut-outs (Rittal/Lohmeier/Ensto)						
see chapter «Cable entry plate KDP plastic»						
The right tool for cut-out production						
can be found in the chapter «Punching tools»						



KDL/E cable entry system



Cable entry grommets, type KDT/xE



-40 to +80 °C



Thermoplastic rubber



HB

In conjunction with the KDL/E cable entry system, the KDT/xE cable entry grommet can be used to easily route pre-assembled cables e.g. in control cabinets. The grommet is 2-pce. and is positioned about the cable. The grommets are equipped with catch hooks that anchor themselves in the KDL/E when positioning. Strain relief for type KDT/ZE is achieved using a simple cable tie. Type KDT/VE is a Vario grommet without strain relief which covers a larger clamping range.



Standard grommets



Special grommets



Type	Order no.	Colour	for Ø mm	for opening small / large	No. Openings	Suitable for conduit	Pack qty
Grommet, small							
KDT/ZE 03	87121210	black	3 - 4	● / -	1		10
KDT/ZE 04	87121212	black	4 - 5	● / -	1		10
KDT/ZE 05	87121214	black	5 - 6	● / -	1		10
KDT/ZE 06	87121216	black	6 - 7	● / -	1		10
KDT/ZE 07	87121218	black	7 - 8	● / -	1		10
KDT/ZE 08	87121220	black	8 - 9	● / -	1		10
KDT/ZE 09	87121222	black	9 - 10	● / -	1		10
KDT/ZE 10	87121224	black	10 - 11	● / -	1		10
KDT/ZE 11	87121226	black	11 - 12	● / -	1		10
KDT/ZE 12	87121228	black	12 - 13	● / -	1		10
KDT/ZE 13	87121230	black	13 - 14	● / -	1		10
KDT/ZE 14	87121232	black	14 - 15	● / -	1		10
KDT/ZE 15	87121234	black	15 - 16	● / -	1		10
Grommet, large							
KDT/ZE 16	87121236	black	16 - 17	- / ●	1		10
KDT/ZE 17	87121238	black	17 - 18	- / ●	1		10
KDT/ZE 18	87121240	black	18 - 19	- / ●	1		10
KDT/ZE 19	87121242	black	19 - 20	- / ●	1		10
KDT/ZE 20	87121244	black	20 - 21	- / ●	1		10
KDT/ZE 21	87121246	black	21 - 22	- / ●	1		10
KDT/ZE 22	87121248	black	22 - 23	- / ●	1		10
KDT/ZE 23	87121250	black	23 - 24	- / ●	1		10
KDT/ZE 24	87121252	black	24 - 25	- / ●	1		10
KDT/ZE 25	87121254	black	25 - 26	- / ●	1		10
KDT/ZE 26	87121256	black	26 - 27	- / ●	1		10
KDT/ZE 27	87121258	black	27 - 28	- / ●	1		10

RoHS
compliant

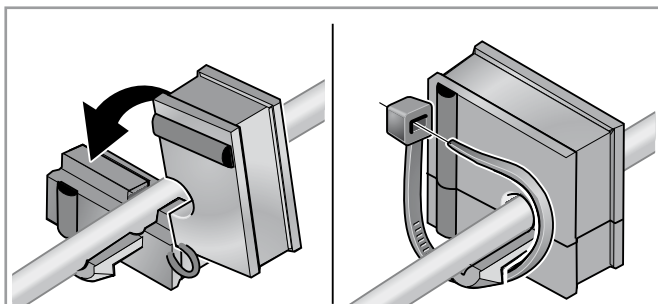




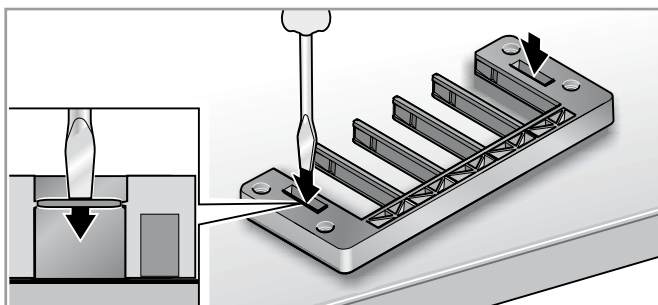
KDL/E cable entry system



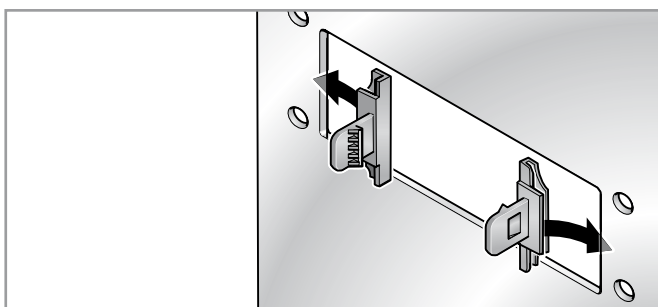
Snap-on mounting



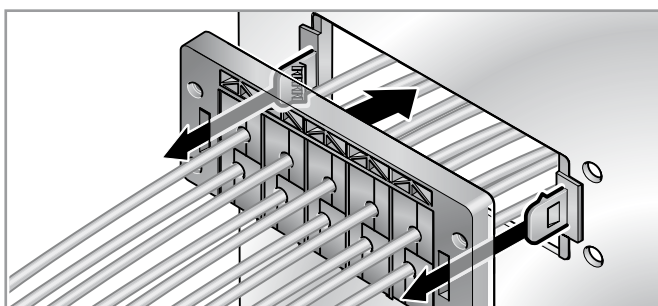
Lay cable into appropriate grommet and provide strain relief where necessary using cable ties.



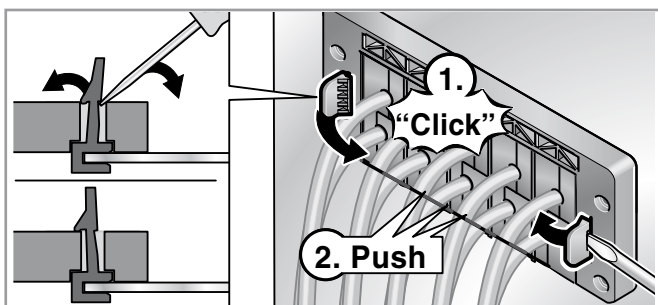
Use appropriate tool to punch through cover on base frame.



Set catch hooks into the sides of the cut-out. Mind the plate thickness.

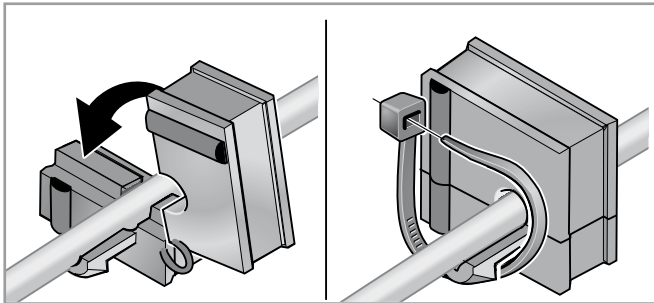


Insert rail completely. The grommet must produce a continuous seal on the back side. Set the rail onto the catch hooks and press on.

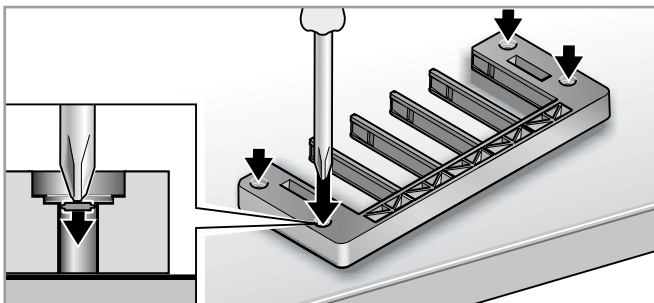


Lock the catch hooks with the rail. Press gently on grommet one more time.

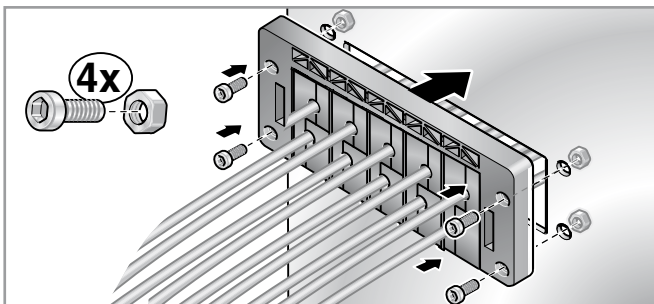
Screw-on mounting



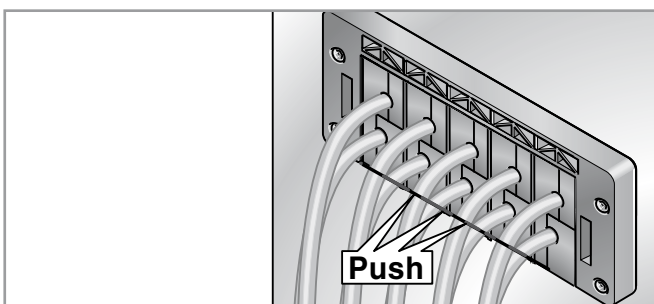
Lay cable into appropriate grommet and provide strain relief where necessary using cable ties.



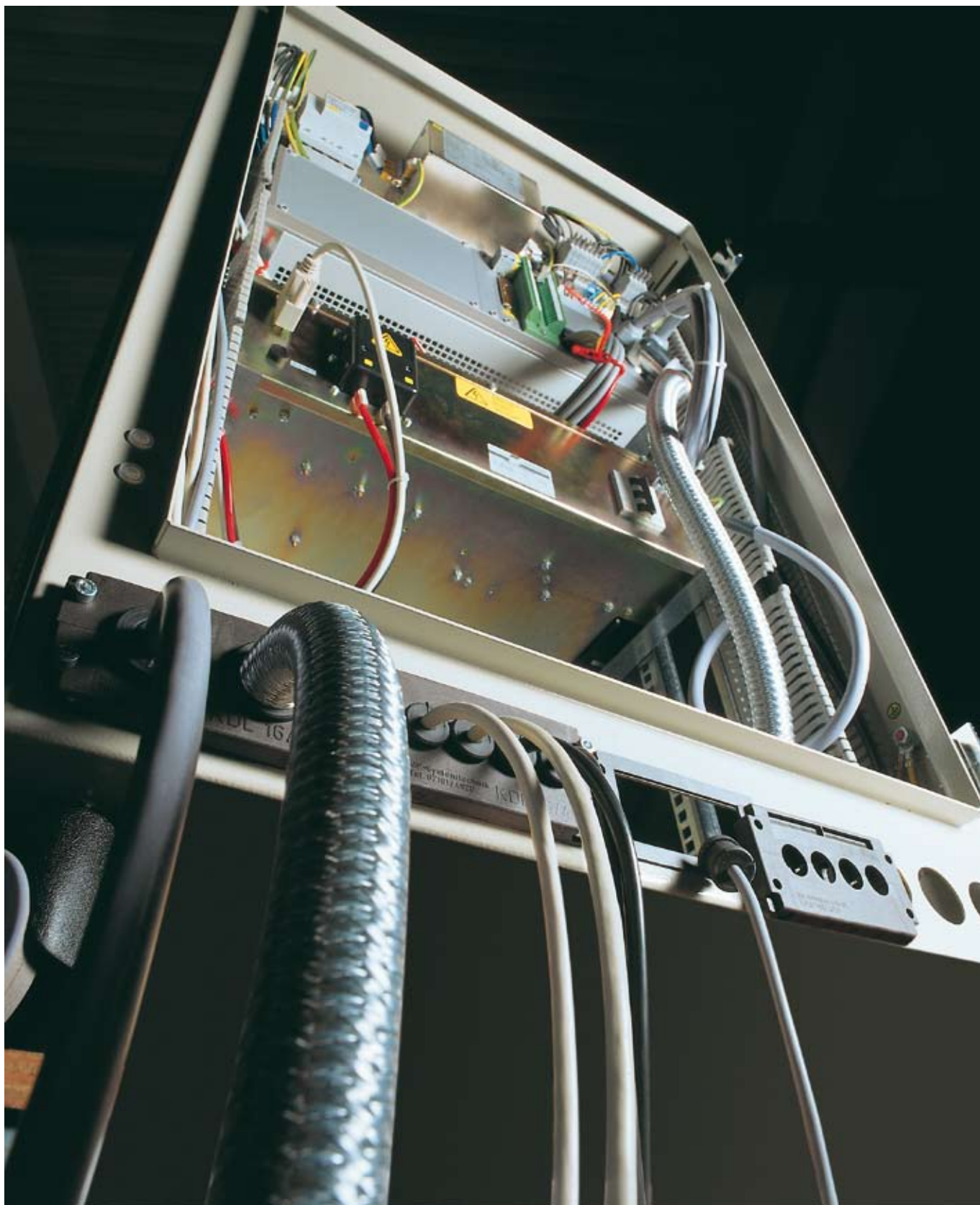
Use appropriate tool to punch through cover on base frame.



Insert rail completely. The grommet must produce a continuous seal on the back side. Affix rail with 4 screws. Do not exceed the maximum torque.



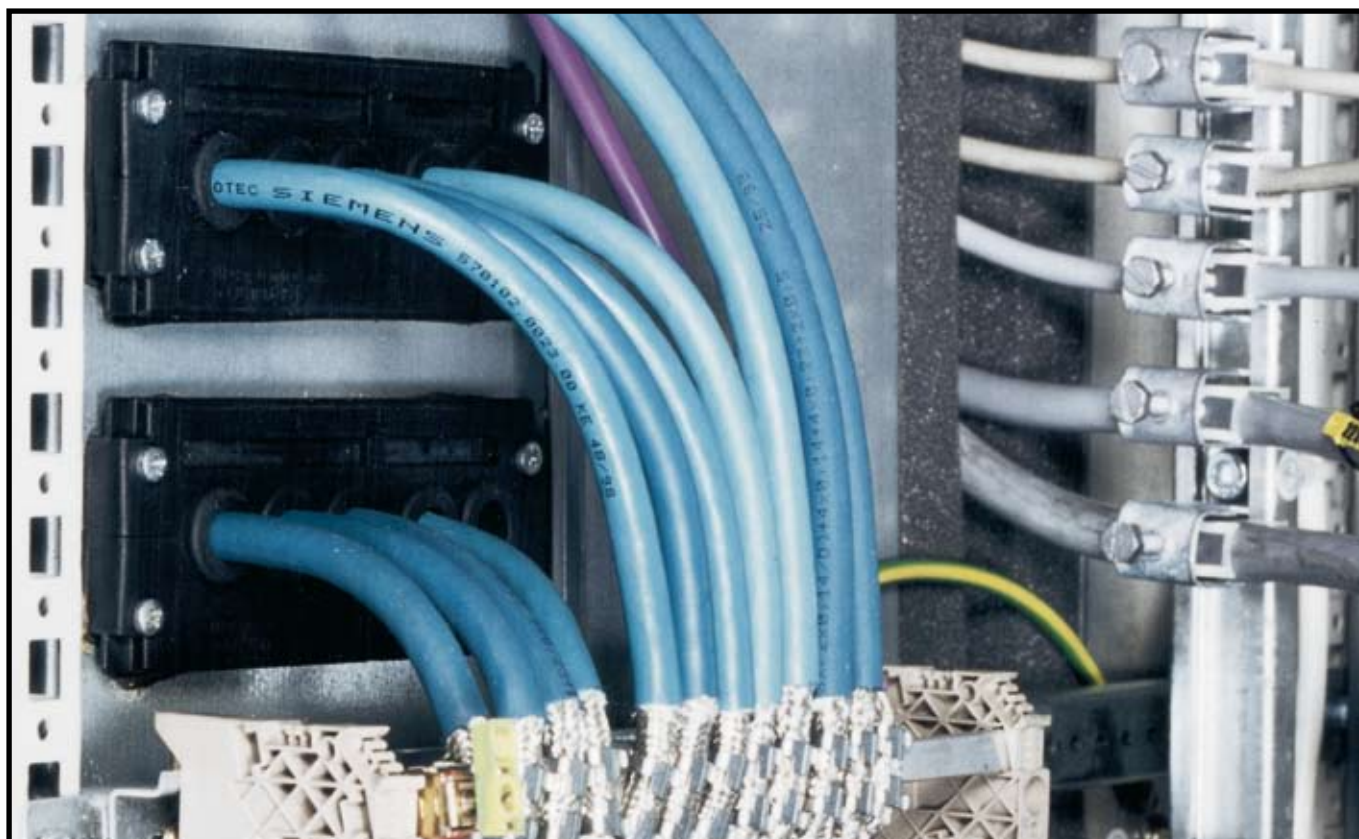
Press gently on grommet one more time.



KDL cable entry system



Advantages



Assembling high-tech plugs securely in the control cabinet

No need to keep cutting the plug off your cable!

It is so easy to introduce pre-assembled plugs into the control cabinet. Cables with attached plugs are often high-tech products which cannot be cut without invalidating the guarantee for the system.

Thanks to the split rail and the split grommets, the cable with plug can be easily mounted in the cable entry system.

As the saying goes: it's an open and shut case!

The KDL can quickly and simply insert up to 30 cables the control cabinet.



- ✓ Cable insertion without interruption
- ✓ Easy assembly
- ✓ Strain relief
- ✓ Protection class IP 54.
- ✓ High packing density
- ✓ Cable & plug manufacturer's system guarantee remains valid

Overview

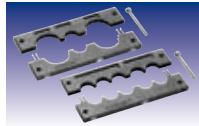
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Cable entry system Type KDL 16...

Cable insertion system for cut-outs for 16-pole connectors e.g. Harting or Wieland.

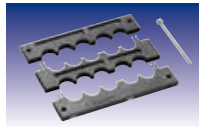
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Cable entry system Type KDL 24...

Cable entry system for cut-outs for 24-pole connectors e.g. Harting or Wieland.

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Cable entry system Type KDL 2/10

Cable entry system for 10 cable entry grommets.

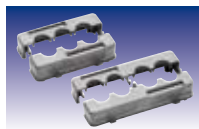
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Cable entry system Type KDL 3/15

Cable entry system for 15 cable entry grommets.

Page 34



Cable entry connector housing Type KD/SG, KD/AG

Connector housing on the basis of Rittal cable connector 16 pole.

Page 36



Cable entry grommet Type KDT/Z

Standard grommets, some with strain relief for cable infeed. Fits all KDL frames and KD/SG.

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Cable entry grommet Type KDT/Z-L

Cable entry grommets PWIS-free. Suitable for use in applications like painting equipment. Fits all KDL frames and KD/SG.

Page 40



Cable entry grommet Type KDT/Z-VO

Cable entry grommets, self-extinguishing. Fire classification VO. Fits all KDL frames and KD/SG.





KDL cable entry system

Selection table

			Cable entry grommets	
			Type KDT/Z	
			Cable diameter	Cable diameter
			3 - 16 mm	16 - 29 mm
Cable entry system	Colour	Order no.	Opening, small	Opening, large
KDL 16/2	black	87171010	0	2
	grey	87171050		
KDL 16/4	black	87171012	4	0
	grey	87171052		
KDL 24/3	black	87171014	1	2
	grey	87171054		
KDL 24/5	black	87171016	5	0
	grey	87171056		
KDL 2/10	black	87171017	10	0
	grey	87171057		
KDL 3/15	black	87171018	15	0
KD/SG-16/3	grey	87171032	3	0
KD/SG-24/4	grey	87171034	4	0

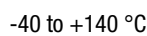
Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.				DB	SNCF	BS						
KDL 16/x	Polyamide	-40 °C	+140 °C	V0	✓	IP 54	✓	✓	✓	✓	✓	✓	✓	✓	✓
KDL 24/x	Polyamide	-40 °C	+140 °C	V0	✓	IP 54	✓	✓	✓	✓	✓	✓	✓	✓	✓
KDL 2/10	Polyamide	-40 °C	+140 °C	V0	✓	IP 54	✓	✓	✓	✓	✓	✓	✓	✓	✓
KDL 3/15	Polyamide	-40 °C	+140 °C	V0	✓	IP 54	✓	✓	✓	✓	✓	✓	✓	✓	✓
KD/SG	Polycarbonate	-40 °C	+125 °C	V0	✓	IP 54				✓	✓	✓	✓	✓	✓
KD/AG	Polycarbonate/Steel Aluminium/ Steel	-40 °C	+125 °C		✓	IP 54				✓	✓	✓	✓	✓	✓
KDT/Z	Thermoplastic rubber	-40 °C	+80 °C	HB	✓	IP 54		✓	✓	✓	✓	✓	✓	✓	✓
KDT/Z-L	Thermoplastic rubber	-40 °C	+80 °C	HB	✓	IP 54				✓	✓	✓	✓	✓	✓
KDT/Z-V0	Thermoplastic rubber	-40 °C	+80 °C	HB	✓	IP 54				✓	✓	✓	✓	✓	✓

** = not certified



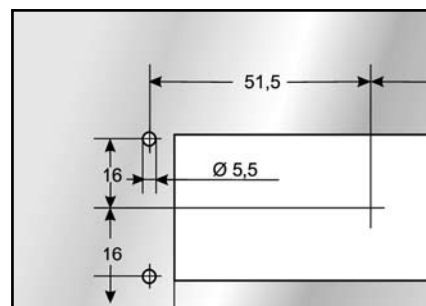
RoHS
compliant



(with suitable grommets and cables)

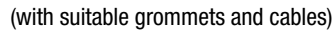
The KDL 16/x is a cable insertion rail for inserting pre-assembled cables. Suitable for cut-outs for 16-pin Harting and Wieland connectors.

- Simple mounting of pre-assembled cables
- Fits standard cut-outs
- Simple strain relief for cables using cable ties
- Simple realization of EMV solution with discharge plate

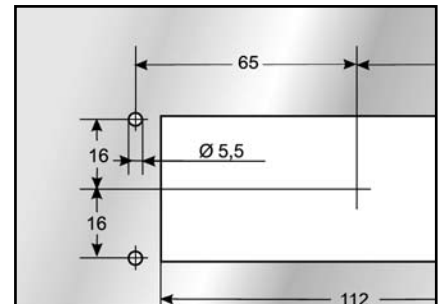


KDL 16...

RoHS
compliant



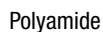
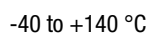
- Simple mounting of pre-assembled cables
- Fits standard cut-outs
- Simple strain relief for cables using cable ties
- Simple realization of EMV solution with discharge plate



KDL 24...

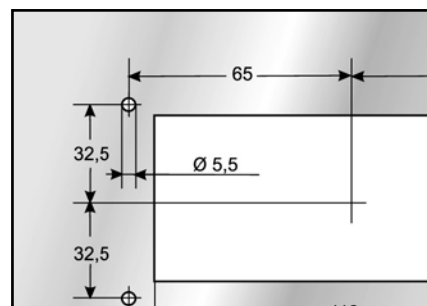


RoHS
compliant



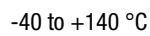
(with suitable grommets and cables)

- Simple mounting of pre-assembled cables
- Large cut-out
- Simple strain relief for cables using cable ties
- Simple realization of EMV solution with discharge plate



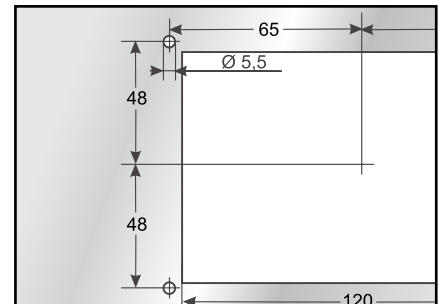
KDL 2/10

RoHS
compliant



(with suitable grommets and cables)

- Simple mounting of pre-assembled cables
- Large cut-out
- Simple strain relief for cables using cable ties
- Simple realization of EMV solution with discharge plate

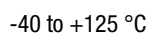


KDL 3/15

[illegible]



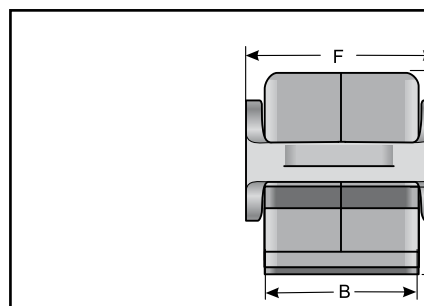
RoHS
compliance



(with suitable grommets and cables)

The KD/SG connector housing is another option for inserting pre-assembled wiring into an enclosure. The KD/SG connector housing can be adapted using the mounting enclosure from Harting or Wieland. Mounting and/or unmounting of the KD/SG is simple and requires no tools.

- Simple mounting of pre-assembled cables
- Simple strain relief for cables using cable ties
- No tools required to separate connector housing from mounting enclosure



KD/SG...

34

Mounting housing type KD/AG

RoHS
compliant



-40 to +125 °C



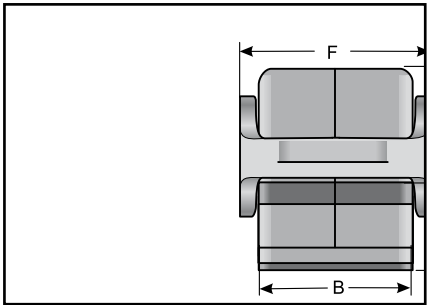
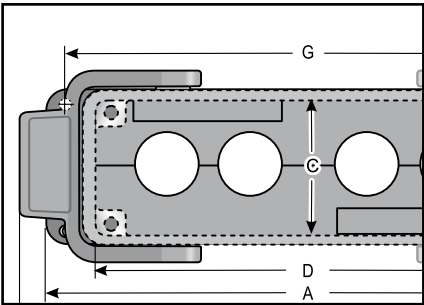
Polycarbonate/Steel
Aluminium die-casting/ Steel



IP 54

- The mounting enclosure is able to accommodate the split connector housing which allows you to easily introduce pre-assembled cables into the control cabinet. Version H in aluminium die-casting with steel catches.

 - Simple mounting of pre-assembled cables
 - Fits standard cut-outs from Harting and Wieland
 - No tools required to separate connector housing from mounting enclosure



KD/AG...

Type	Order no.	Colour	Suitable for	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm	Pack qty
------	-----------	--------	--------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	-------------

KD/AG-16H *	87191132	grey	KD/SG-16/3	113	44	36	86	137	55	103	27	32	4.5	1
KD/AG-24H	87191134	grey	KD/SG-24/4	140	44	36	112	155	55	130	27	32	4.5	1
KD/AG-24	87171144	grey	KD/SG-24/4	140	44	36	112	155	55	130	27	32	4.5	1

* Reduction of cut-out from 24-pole connector to 16-pole connector is possible through the AP 24/16 adapter plate.

The right tool for cut-out production can be found in the chapter «Punching tools»



KDL cable entry system

Cable entry grommets, type KDT/Z (standard)

RoHS
compliant



-40 to +80 °C



Thermoplastic rubber



HB

The cable entry grommet KDT/Z allows the fitting of cables from 3 - 29 mm in size in the cable entry system KDL. Strain relief can be provided quickly and easily for cables from a diameter of 10 mm using cable ties.



KDT/Z...

Type	Order no.	Colour	for Ø mm	for opening small / large	No. Openings	Suitable for conduit	Pack qty
Grommet, small							
KDT/Z 03	87171212	black	3 - 4	● / -	1		10
KDT/Z 04	87171214	black	4 - 5	● / -	1		10
KDT/Z 05	87171216	black	5 - 6	● / -	1		10
KDT/Z 06	87171218	black	6 - 7	● / -	1		10
KDT/Z 07	87171220	black	7 - 8	● / -	1		10
KDT/Z 08	87171222	black	8 - 9	● / -	1		10
KDT/Z 09	87171224	black	9 - 10	● / -	1		10
KDT/Z 10	87171226	black	10 - 11	● / -	1		10
KDT/Z 11	87171228	black	11 - 12	● / -	1		10
KDT/Z 12	87171230	black	12 - 13	● / -	1		10
KDT/Z 13	87171232	black	13 - 14	● / -	1		10
KDT/Z 14	87171234	black	14 - 15	● / -	1		10
KDT/Z 15	87171236	black	15 - 16	● / -	1		10
Grommet, large							
KDT/Z 16	87171412	black	16 - 17	- / ●	1		10
KDT/Z 17	87171414	black	17 - 18	- / ●	1		10
KDT/Z 18	87171416	black	18 - 19	- / ●	1		10
KDT/Z 19	87171418	black	19 - 20	- / ●	1		10
KDT/Z 20	87171420	black	20 - 21	- / ●	1		10
KDT/Z 21	87171422	black	21 - 22	- / ●	1		10
KDT/Z 22	87171424	black	22 - 23	- / ●	1		10
KDT/Z 23	87171426	black	23 - 24	- / ●	1		10
KDT/Z 24	87171428	black	24 - 25	- / ●	1		10
KDT/Z 25	87171430	black	25 - 26	- / ●	1		10
KDT/Z 26	87171432	black	26 - 27	- / ●	1		10
KDT/Z 27	87171434	black	27 - 28	- / ●	1		10
KDT/Z 28	87171436	black	28 - 29	- / ●	1		10

RoHS
compliant





Cable entry grommets, type KDT/Z-L (paint spraying sector)



-40 to +80 °C



Thermoplastic rubber



HB



Free of LABS substances

The KDT/Z-L cable insertion grommet is a cable insertion grommet for wires from 3 to 29 mm. The grommet was specially conceived for use in the paint spraying sector. The material contains no paint-wetting impairment substances. Strain relief can be provided quickly and easily for cables from a diameter of 10 mm using cable ties.



KDT/Z-L...

Type	Order no.	Colour	for Ø mm	for opening small / large	No. Openings	Suitable for conduit	Pack qty
Grommet, small							
KDT/Z-L 03	87173212	White	3 - 4	● / -	1		10
KDT/Z-L 04	87173214	White	4 - 5	● / -	1		10
KDT/Z-L 05	87173216	White	5 - 6	● / -	1		10
KDT/Z-L 06	87173218	White	6 - 7	● / -	1		10
KDT/Z-L 07	87173220	White	7 - 8	● / -	1		10
KDT/Z-L 08	87173222	White	8 - 9	● / -	1		10
KDT/Z-L 09	87173224	White	9 - 10	● / -	1		10
KDT/Z-L 10	87173226	White	10 - 11	● / -	1		10
KDT/Z-L 11	87173228	White	11 - 12	● / -	1		10
KDT/Z-L 12	87173230	White	12 - 13	● / -	1		10
KDT/Z-L 13	87173232	White	13 - 14	● / -	1		10
KDT/Z-L 14	87173234	White	14 - 15	● / -	1		10
KDT/Z-L 15	87173236	White	15 - 16	● / -	1		10
Grommet, large							
KDT/Z-L 16	87173412	White	16 - 17	- / ●	1		10
KDT/Z-L 17	87173414	White	17 - 18	- / ●	1		10
KDT/Z-L 18	87173416	White	18 - 19	- / ●	1		10
KDT/Z-L 19	87173418	White	19 - 20	- / ●	1		10
KDT/Z-L 20	87173420	White	20 - 21	- / ●	1		10
KDT/Z-L 21	87173422	White	21 - 22	- / ●	1		10
KDT/Z-L 22	87173424	White	22 - 23	- / ●	1		10
KDT/Z-L 23	87173426	White	23 - 24	- / ●	1		10
KDT/Z-L 24	87173428	White	24 - 25	- / ●	1		10
KDT/Z-L 25	87173430	White	25 - 26	- / ●	1		10
KDT/Z-L 26	87173432	White	26 - 27	- / ●	1		10
KDT/Z-L 27	87173434	White	27 - 28	- / ●	1		10
KDT/Z-L 28	87173436	White	28 - 29	- / ●	1		10

RoHS
compliant



KDL cable entry system

Cable entry grommets, type KDT/Z-V0 (fire classification)



-40 to +80 °C

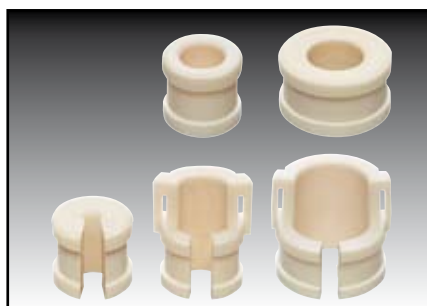


Thermoplastic rubber



V0

The cable entry grommet KDT/Z-V0 allows the fitting of cables from 3 - 29 mm in size in the cable entry system KDL. These cable entry grommets are self-extinguishing (V0) based on UL 94. Strain relief can be provided quickly and easily for cables from a diameter of 10 mm using cable ties.



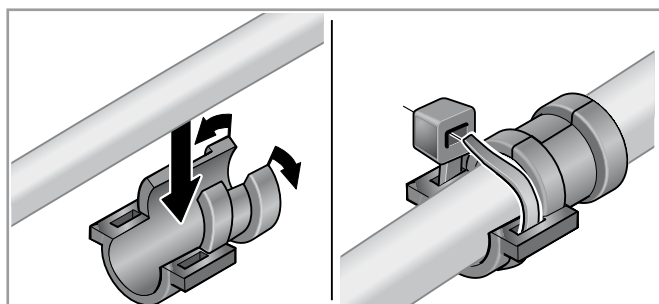
KDT/Z-V0...

Type	Order no.	Colour	for Ø mm	for opening small / large	No. Opening	Pack qty
Grommet, small						
KDT/Z-V0 03	87171512	White	3 - 4	● / -	1	10
KDT/Z-V0 04	87171514	White	4 - 5	● / -	1	10
KDT/Z-V0 05	87171516	White	5 - 6	● / -	1	10
KDT/Z-V0 06	87171518	White	6 - 7	● / -	1	10
KDT/Z-V0 07	87171520	White	7 - 8	● / -	1	10
KDT/Z-V0 08	87171522	White	8 - 9	● / -	1	10
KDT/Z-V0 09	87171524	White	9 - 10	● / -	1	10
KDT/Z-V0 10	87171526	White	10 - 11	● / -	1	10
KDT/Z-V0 11	87171528	White	11 - 12	● / -	1	10
KDT/Z-V0 12	87171530	White	12 - 13	● / -	1	10
KDT/Z-V0 13	87171532	White	13 - 14	● / -	1	10
KDT/Z-V0 14	87171534	White	14 - 15	● / -	1	10
KDT/Z-V0 15	87171536	White	15 - 16	● / -	1	10
Grommet, large						
KDT/Z-V0 16	87171712	White	16 - 17	- / ●	1	10
KDT/Z-V0 17	87171714	White	17 - 18	- / ●	1	10
KDT/Z-V0 18	87171716	White	18 - 19	- / ●	1	10
KDT/Z-V0 19	87171718	White	19 - 20	- / ●	1	10
KDT/Z-V0 20	87171720	White	20 - 21	- / ●	1	10
KDT/Z-V0 21	87171722	White	21 - 22	- / ●	1	10
KDT/Z-V0 22	87171724	White	22 - 23	- / ●	1	10
KDT/Z-V0 23	87171726	White	23 - 24	- / ●	1	10
KDT/Z-V0 24	87171728	White	24 - 25	- / ●	1	10
KDT/Z-V0 25	87171730	White	25 - 26	- / ●	1	10
KDT/Z-V0 26	87171732	White	26 - 27	- / ●	1	10
KDT/Z-V0 27	87171734	White	27 - 28	- / ●	1	10
KDT/Z-V0 28	87171736	White	28 - 29	- / ●	1	10

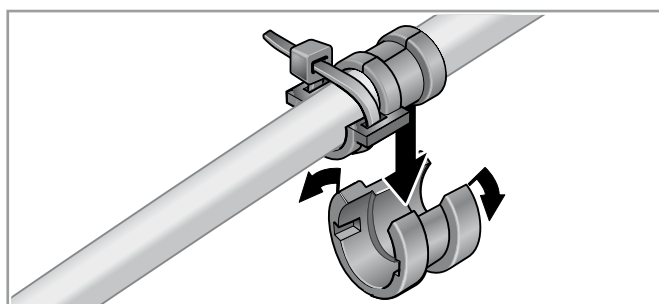
RoHS
compliant



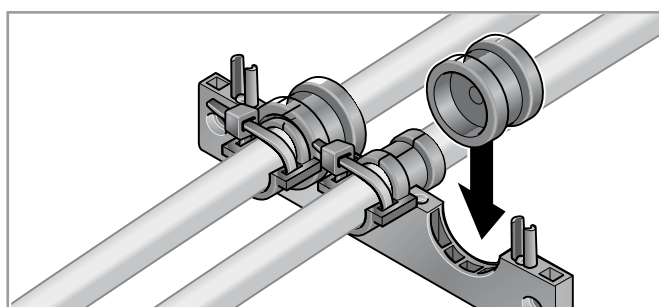
Assembly



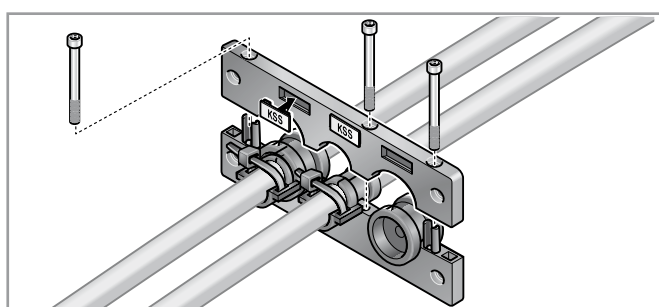
Lay cable into appropriate grommet and provide strain relief where necessary (from 10 mm diameter) using cable ties.



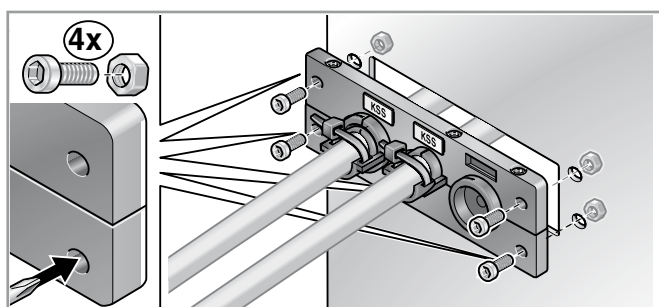
Where required, install small sleeves into the adapter grommet.



Insert rail completely. Fill in empty spaces with dummy grommets.



Join upper and lower part of bar. Fasten rail with the side screws.



Position rail on the cut-out and fasten.

KDL/EMV cable entry system



Advantages



Discharge sheath currents

The KDL-EMV is a cable entry system made of plastic with a metallised surface.

This plate can be used as a trouble-free way to discharge sheath currents from electromagnetic cable shielding.

The KDT/Z-EMV cable entry grommet uses a fitted metal braiding to achieve the connection between the cable shielding and the cable entry system.

An alternative opportunity to discharge sheath currents comes through an additional discharge plate that can be mounted onto the existing drilling pattern.



- ✓ Easy assembly
- ✓ Large cut-out
- ✓ Variable
- ✓ No additional parts required
- ✓ No extra mounting effort required

Overview

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Cable entry system Type KDL16/x-EMV

KDL metallised for cut-out sized 16-pole connectors e.g. Harting or Wieland.

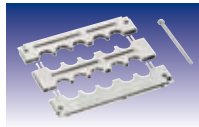
Page 49



Cable entry system Type KDL24/x-EMV

KDL metallised for cut-out sized 24-pole connectors e.g. Harting or Wieland.

Page 50



Cable entry system Type KDL 2/10-EMV

Cable entry system metallised for 10 cable entry grommets.

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Cable entry grommet Type KDT/Z-EMV

KDT with metal mesh insert for cable insertion with simultaneous discharge of sheath currents.





KDL/EMV cable entry system

Selection table

		Cable entry grommets	
		Type KDT/Z-EMV	
		Cable diameter	Cable diameter
		3 - 16 mm	16 - 29 mm
Cable entry system	Order no.	Opening, small	Opening, large
KDL 16/2-EMV	87171020	0	2
KDL 16/4-EMV	87171022	4	0
KDL 24/3-EMV	87171024	1	2
KDL 24/5-EMV	87171026	5	0
KDL 2/10-EMV	87171027	10	0

Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.								
KDL 16/x-EMV	Polyamide with conductive coating	-40 °C	+125 °C	VO	✓	✓	✓	✓	✓	✓	✓
KDL 24/x-EMV	Polyamide with conductive coating	-40 °C	+125 °C	VO	✓	✓	✓	✓	✓	✓	✓
KDL 2/10-EMV	Polyamide with conductive coating	-40 °C	+125 °C	VO	✓	✓	✓	✓	✓	✓	✓
KDT/Z-EMV	Thermoplastic rubber with conductive textile tape	-40 °C	+80 °C	HB	✓	✓	✓	✓	✓	✓	✓

** = not certified



Cable entry system, type KDL 24/x-EMV

RoHS
compliant



-40 to +125 °C



Polyamide with conductive coating

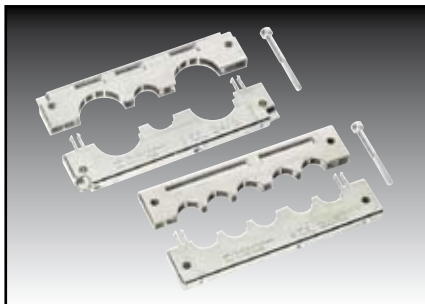
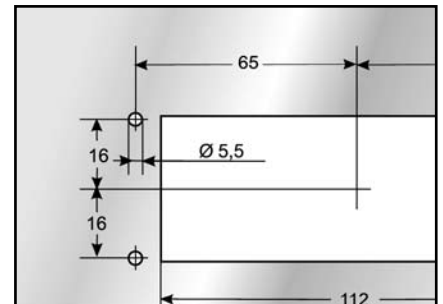
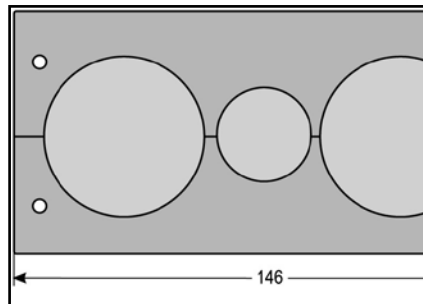


V0

The cable entry system KDL/EMV is based on the cable entry system KDL. A conductive surface allows cable sheath interference to be discharged onto the control cabinet simply and without additional aids.

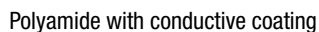
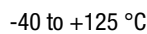
Field-related interferences are discharged by the metallisation.

Suitable for standard cut-out 24-pole connectors from Harting or Wieland, for example.

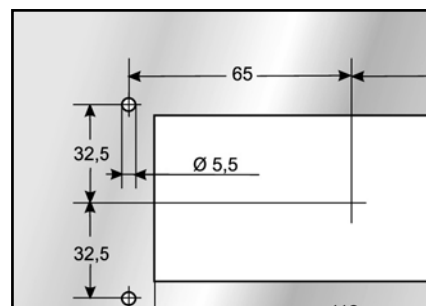
**KDL 24...-EMV**[illegible]



RoHS
compliance



Larger cut-outs can be used to pass through up to 10 wires with large plugs.

**KDL 2/10-EMV**50

Cable entry grommets, type KDT/Z-EMV

RoHS
compliant



-40 to +80 °C



Thermoplastic rubber
with conductive textile tape



HB

The cable entry grommet KDT/Z-EMV is a grommet adapted to the sheath diameter with a conductive textile tape to discharge interferences to the control cabinet.

Strain relief can be provided quickly and easily for cables from a diameter of 10 mm using cable ties.



KDT/Z-EMV...

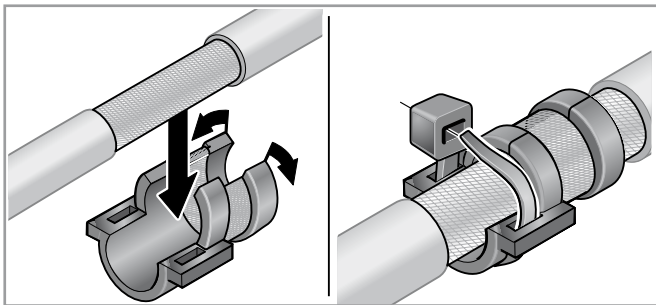
Type	Order no.	Colour	for sheath of Ø mm	for opening small / large	No. Openings	Pack qty
Grommet, small						
KDT/Z-EMV 03	87171812	black	3 - 4	● / -	1	10
KDT/Z-EMV 04	87171814	black	4 - 5	● / -	1	10
KDT/Z-EMV 05	87171816	black	5 - 6	● / -	1	10
KDT/Z-EMV 06	87171818	black	6 - 7	● / -	1	10
KDT/Z-EMV 07	87171820	black	7 - 8	● / -	1	10
KDT/Z-EMV 08	87171822	black	8 - 9	● / -	1	10
KDT/Z-EMV 09	87171824	black	9 - 10	● / -	1	10
KDT/Z-EMV 10	87171826	black	10 - 11	● / -	1	10
KDT/Z-EMV 11	87171828	black	11 - 12	● / -	1	10
KDT/Z-EMV 12	87171830	black	12 - 13	● / -	1	10
KDT/Z-EMV 13	87171832	black	13 - 14	● / -	1	10
KDT/Z-EMV 14	87171834	black	14 - 15	● / -	1	10
KDT/Z-EMV 15	87171836	black	15 - 16	● / -	1	10
Grommet, large						
KDT/Z-EMV 16	87172012	black	16 - 17	- / ●	1	10
KDT/Z-EMV 17	87172014	black	17 - 18	- / ●	1	10
KDT/Z-EMV 18	87172016	black	18 - 19	- / ●	1	10
KDT/Z-EMV 19	87172018	black	19 - 20	- / ●	1	10
KDT/Z-EMV 20	87172020	black	20 - 21	- / ●	1	10
KDT/Z-EMV 21	87172022	black	21 - 22	- / ●	1	10
KDT/Z-EMV 22	87172024	black	22 - 23	- / ●	1	10
KDT/Z-EMV 23	87172026	black	23 - 24	- / ●	1	10
KDT/Z-EMV 24	87172028	black	24 - 25	- / ●	1	10
KDT/Z-EMV 25	87172030	black	25 - 26	- / ●	1	10
KDT/Z-EMV 26	87172032	black	26 - 27	- / ●	1	10
KDT/Z-EMV 27	87172034	black	27 - 28	- / ●	1	10
KDT/Z-EMV 28	87172036	black	28 - 29	- / ●	1	10



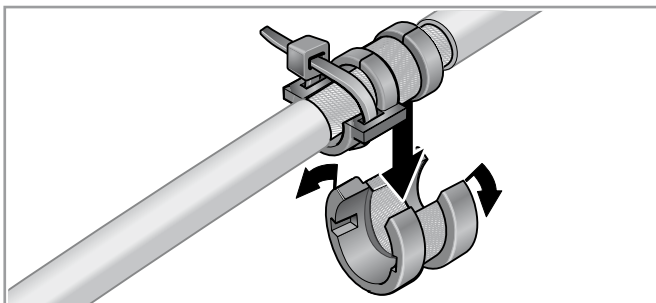
RoHS
compliant



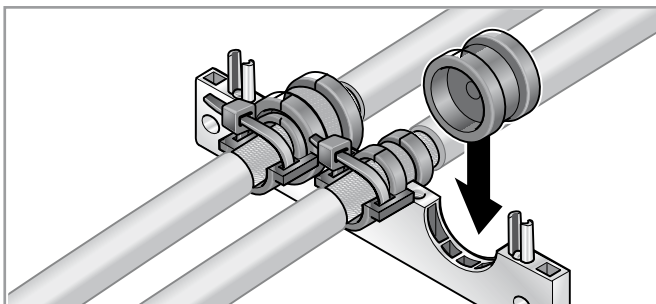
Assembly



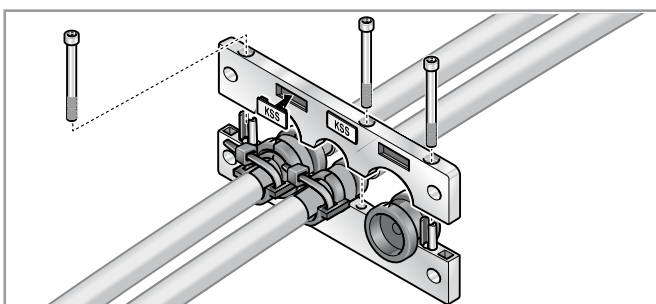
Strip wire at the insertion point and lay into grommet (suitable for diameter at the shielding braid). Use cable ties for strain relief where necessary (from 10 mm diameter).



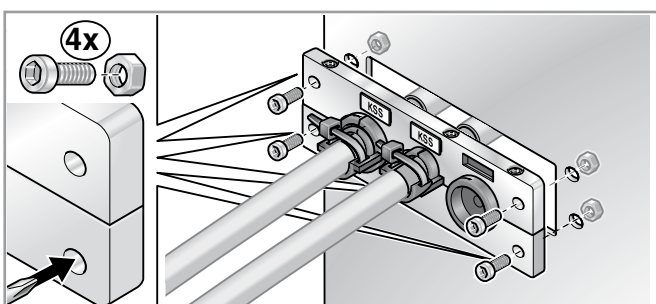
Where required, install small sleeves into the adapter grommet.



Insert rail completely. Fill in empty spaces with dummy grommets.



Join upper and lower part of bar. Fasten rail with the side screws.



Position rail on the cut-out and fasten. Ensure good contact between rail and control cabinet panel.



Notes



Cable entry system KDL/S



Advantages



Custom cable entry

The KDL/S is a custom cable entry system that can be manufactured to meet the customer's specifications.

The cut-out size for the cable entry system corresponds to the cut-out for 16-pole connectors.

Various cable entries can be created, e.g. multi-inserts, custom shapes or different combinations.



- ✓ Individual solution
- ✓ Easy assembly
- ✓ Large cut-out

Overview

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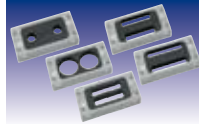


Cable entry system

Type KDL/S

Cable insertion system for cut-outs for 16-pole connectors e.g. Harting or Wieland.

Page 61



Cable entry grommet

Type KDT/S

Custom cable entry grommets designed for KDL/S.





Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.			DB	SNCF	BS						
KDL/S	Polyamide	-40 °C	+125 °C	V0	✓	✓	✓ ❖*	✓	✓	✓	✓	✓	✓	✓
KDT/S	Thermoplastic rubber	-40 °C	+80 °C	HB	✓		✓	✓	✓	✓	✓	✓	✓	✓

** = not certified





Cable entry system KDL/S

Cable entry system, type KDL/S

RoHS
compliant



-40 to +125 °C



Polyamide



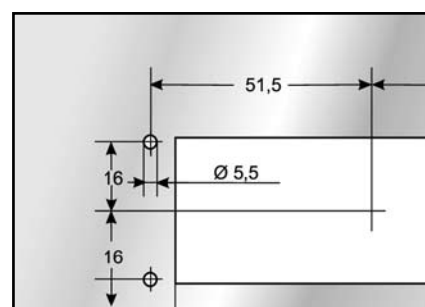
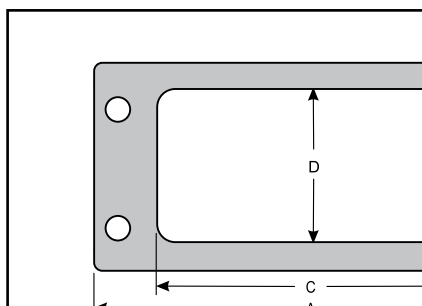
V0

The cable entry system type KDL/S is a custom plate that allows various kinds of cables to be inserted to meet the customer's desires and then for the opening to be closed off. The internal KDT/S grommet can be custom designed based on the customer's desires.

- Fits standard cut-outs for 16-pole connectors (e.g. Harting, Wieland and Rittal)
- Individual solutions



KDL/S 16



Type	Order no.	Colour	A mm	B mm	C mm	D mm	Installation height mm	Pack qty
KDL/S 16	87173004	black	116	58	82	43	15	1
Matching grommets								
KDT/S								
The right tool for cut-out production can be found in the chapter «Punching tools»								
</								

Cable entry grommets, type KDT/S

RoHS
compliant



-40 to +80 °C



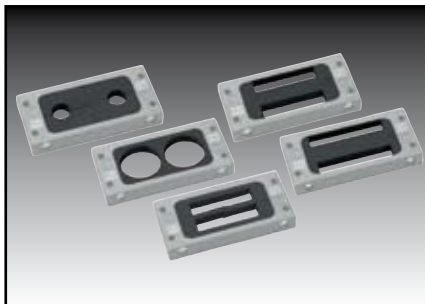
Thermoplastic rubber



HB

The cable entry grommets type KDT/S can be manufactured to meet the customer's specifications. It can provide solutions for the most varied of applications, e.g. insertion of cables in the most varied of shapes or sealing of openings for pass-through metal wiring that must be sealed off.

- Individual solutions

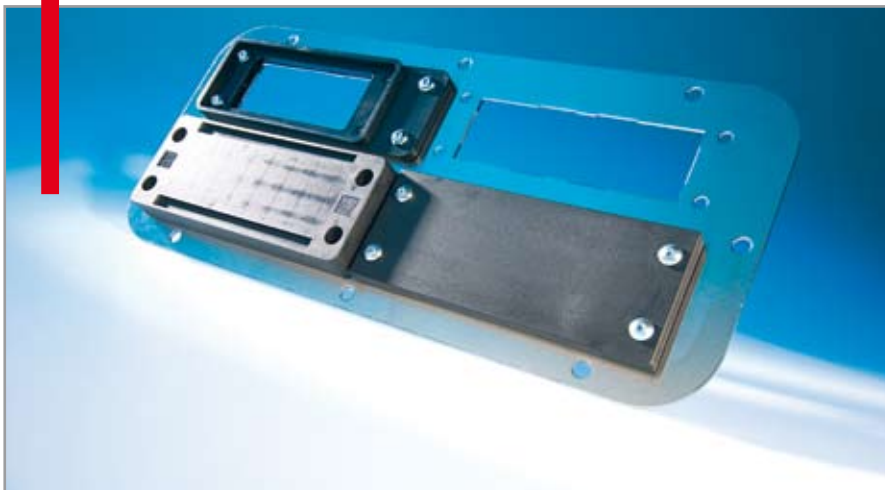


KDT/S

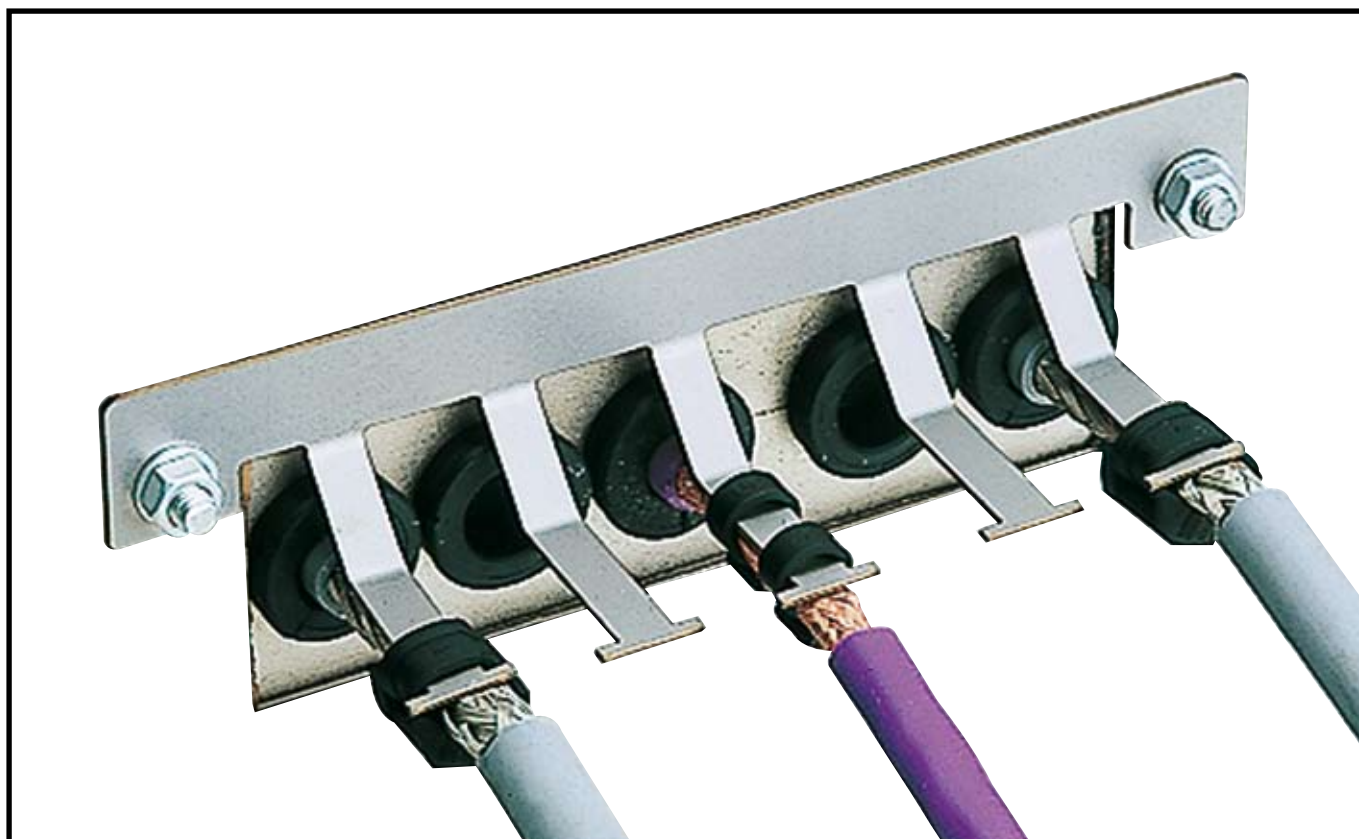
[illegible]



Cable entry systems accessories



Advantages



Accessories that you really need

Among the accessories are blanking plates to seal off various cut-outs in different manners.

Adapter plates for reducing cut-out sizes and discharge plates for discharging sheath currents are also found here.



- ✓ System integrated
- ✓ Easy assembly
- ✓ Cost-effective

Overview

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Blanking plate Type BPV

Blanking plates for sealing cut-outs designed for 16 and 24-pole connectors e.g. Harting or Wieland.

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Blanking plate Type BP

Reinforced blanking plates for sealing cut-outs designed for 16 and 24-pole connectors e.g. Harting or Wieland.

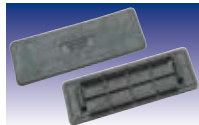
Page 70



Blanking plate Type BP/N

Polyamide blanking plates for sealing cut-outs for 24-pole connectors, e.g. Harting or Wieland. Can be screwed and snapped in.

Page 70



Blanking plate Type BP/H

Blanking plate, snap-in, made of thermoplastic elastomer. For sealing cut-outs for 24-pole connectors e.g. Harting or Wieland.

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Adapter plate Type AP

Reduces a 24-pole connector cut-out into a 16-pole connector cut-out.

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Discharge plate Type KDL-AB

For discharging sheath currents (EMC)

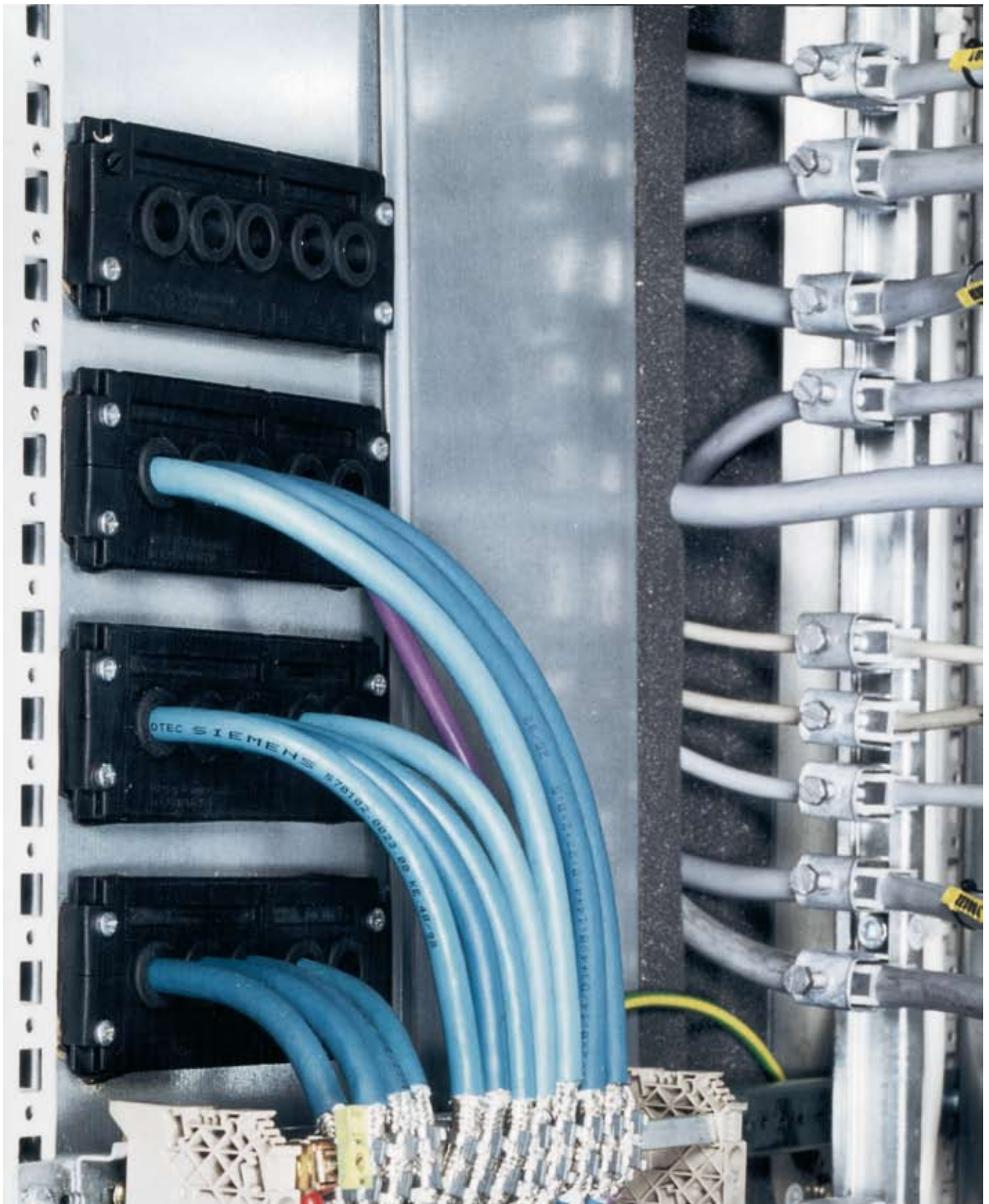




Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals				Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.				UR	CSA	VDE	Ex	DB	SNCF	BS						
BPV	Polyamide	-40 °C	+125 °C	V0	✓	IP65					✓	✓	✓	✓	✓	✓	✓	✓	✓
BP (reinforced)	Polyamide	-40 °C	+125 °C	HB	✓	IP54	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
BP/N	Polyamide, TPU	-40 °C	+125 °C	V0	✓	IP65	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
BP/H	TPE	-40 °C	+60 °C	HB	✓	IP42	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
AP	Polyamide	-40 °C	+125 °C	V0	✓	IP54	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
KDL-AB KDL/N-AB	Stainless steel 1.1401 (V2A)				✓									✓	✓	✓	✓	✓	✓

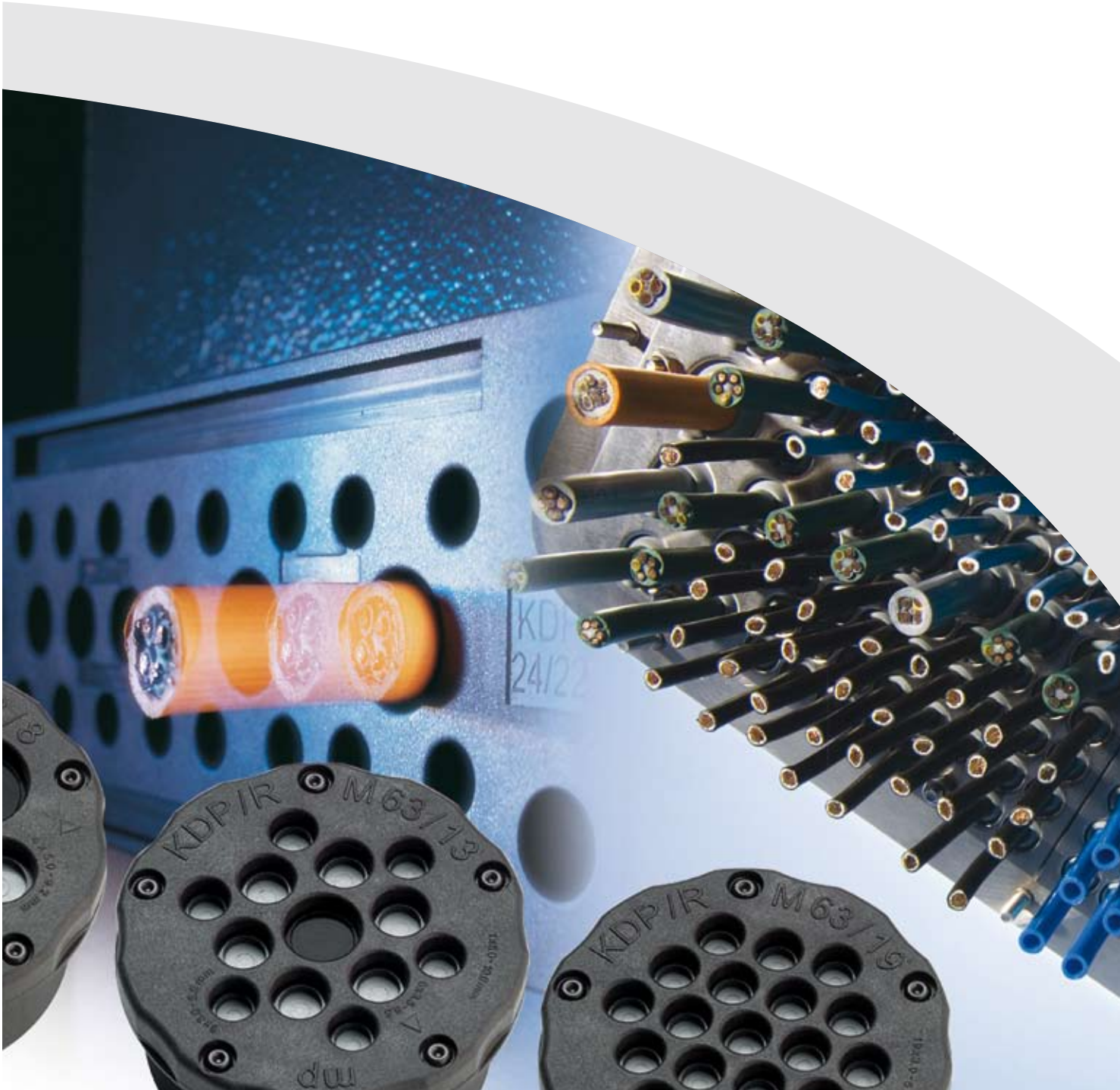
** = not certified





Cable entry plate KDP

Cable entry plate KDP



Overview



KDP round

Round cable entry system with metric threads for screwing in or snapping in using integrated catch hooks. With pre-punched and resealable holes. A real alternative to cable fittings.

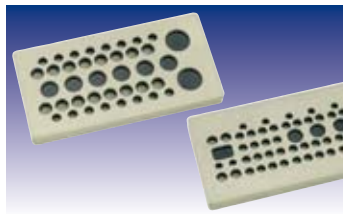
From page 77



KDP rectangular

Rectangular cable entry system with metric threads for screwing in or snapping in using integrated catch hooks. With pre-punched and resealable holes. A real alternative to cable fittings.

From page 87



KDP Rose

Rectangular cable entry system design to fit Rose enclosure. Simply snap in using fixing pin. With pre-punched and resealable holes. A real alternative to cable fittings.

From page 111



KDP Bus enclosure

Complete bus enclosure with transparent top. Integrated cable entry system and mounting rail.

From page 119



KDP metal

Rectangular cable entry system made of aluminium and stainless steel for screwing in. With pre-punched and resealable holes. A real alternative to cable fittings.

From page 127





Cable entry plate KDP Plastic/round





Cable entry plate KDP Plastic/round

Advantages



Straight in! Now also or round cut-outs

Install electric cable and pneumatic conduits with minimal effort, saving time and money.

The KDP cable entry system is ideal if space is at a premium. Simply snap-in the KDP/R or screw in with a locking nut.

The cables are ready to insert in seconds. That's all there is to it!

The KDP/R, a round version, allows for work with round cut-outs.

The principle is identical to our tried-and-true KDP 24 (rectangular).

Custom solutions with other hole patterns are available by request.



- ✓ Enormous time savings during assembly
- ✓ High packing density hence minimal space requirements
- ✓ Assembly without tools
- ✓ High protection class IP 65.
- ✓ Protects the cables
- ✓ Can simply be locked in

Overview

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Cable entry plate Type KDP/R (M50)

Snap-in cable entry system with M50 threads.
Alternative to screwing on.

Page 83



Cable entry plate Type KDP/R (M63)

Snap-in cable entry system with M63 threads.
Alternative to screwing on.





Cable entry plate KDP Plastic/round

Selection table

Cable diameter in mm	Type					
	KDP/R M50/04	KDP/R M50/06	KDP/R M50/08	KDP/R M63/08	KDP/R M63/13	KDP/R M63/19
3,0 - 5,0						19
3,0 - 5,5		1			6	
3,0 - 6,5				2		
3,5 - 6,5			7		6	
5,0 - 9,2		5		4		
6,0 - 10,0	3		1		1	
9,6 - 15,9	1			2		
Total count Openings	4	6	8	8	13	19

Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.				DB	SNCF	BS						
KDP/R (M50)	Enclosure: Polyamide Seal: NBR/EPDM	-30 °C	+90 °C	V0	✓	IP65	✓	✓	✓	✓	✓	✓	✓	✓	✓
KDP/R (M63)	Enclosure: Polyamide Seal: NBR/EPDM	-30 °C	+90 °C	V0	✓	IP65	✓	✓	✓	✓	✓	✓	✓	✓	✓

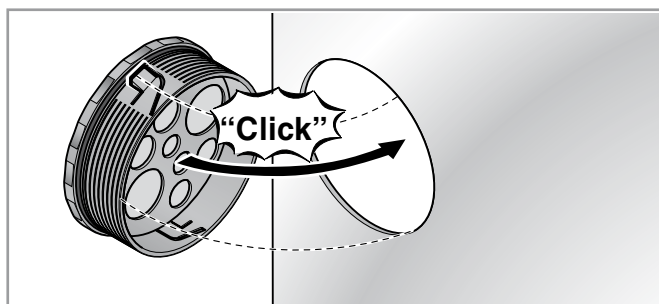
** = not certified



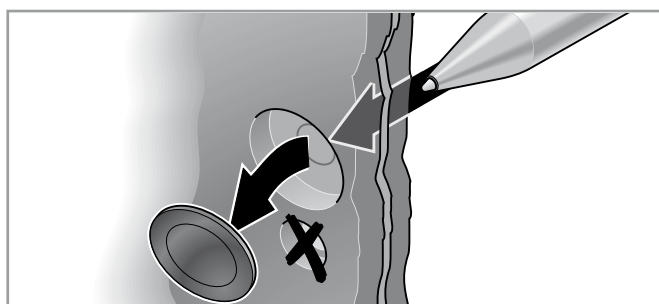


Cable entry plate KDP Plastic/round

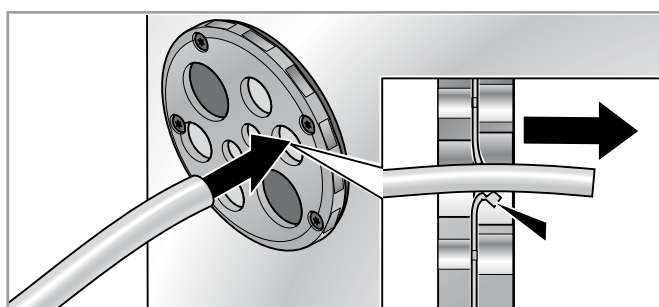
Snap-on mounting



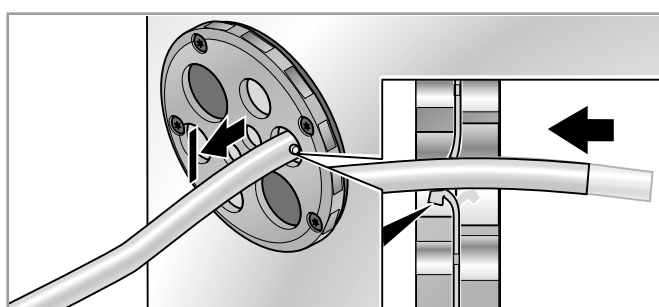
Create circular cut-out dimensioned for the KDP/R. Insert cable insertion plate and press on until it clicks into place.



Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.

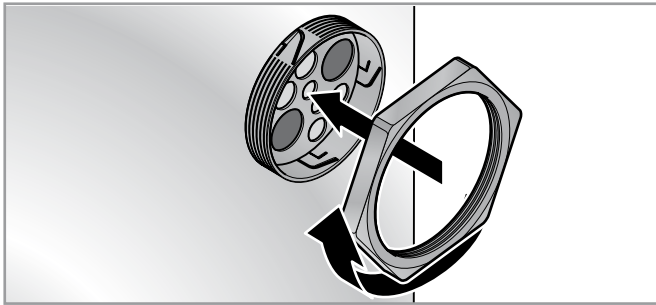


Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear of the KDP/R. Pull cable through to desired length.

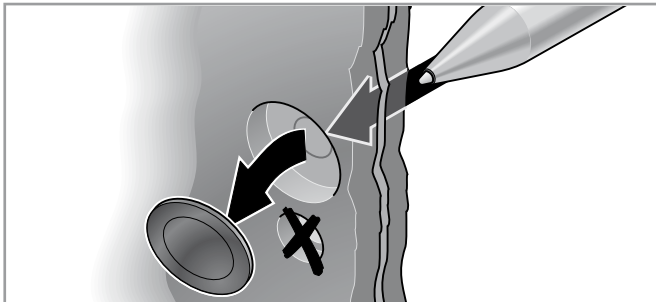


Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.

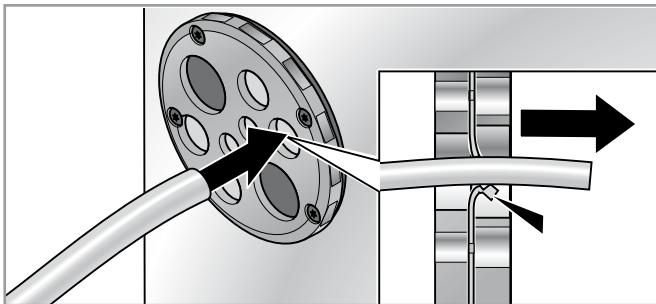
Screw-on mounting



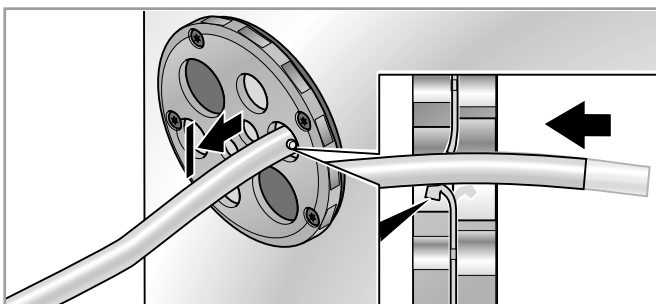
Create circular cut-out dimensioned for the KDP/R. Place cable insertion plate and press on. Fasten KDP/R with lock nut.



Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear of the KDP/R. Pull cable through to desired length.



Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.





Cable entry plate KDP Plastic, rectangular





Cable entry plate KDP Plastic, rectangular

Advantages



**Straight in!
22 cables
installed
in approx.
2 minutes**

10 times faster and with a simultaneous space saving of up to 50 % compared with conventional cable fittings.

Take advantage of these huge potential savings. The plastic KDP is simply clicked into the cut-outs for connectors and the cable is then pushed through - and the cable insertion is already done!

The cable entry plate is an entry and fastening system for electric cables and pneumatic hoses such as those used in control cabinet, plant or machine construction. Wherever quick assembly is required with high packing density and cables must be protected, the cable insertion system is used.



- ✓ Enormous time savings in assembly
- ✓ Extremely low space requirement
- ✓ High packing density
- ✓ Assembly without tools
- ✓ High protection class
- ✓ No kinks in cables and tubes

Overview

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Cable entry plate Type KDP 24

Cable insertion system for cut-outs for 24-pole connectors e.g. Harting or Wieland. For clip action fastening or screwing in place.

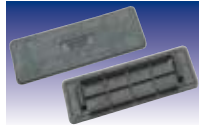
Page 98



Blanking plate Type BP/N

Polyamide blanking plates for sealing cut-outs for 24-pole connectors, e.g. Harting or Wieland. Can be screwed and snapped in.

Page 98



Blanking plate Type BP/H

Blanking plate, snap-in, made of thermoplastic elastomer. For sealing cut-outs for 24-pole connectors e.g. Harting or Wieland.

Page 99



Adapter plate Type KDP 24/AP/RI

Adapter plate with cut-outs for 24-pole connectors. Fit in Rittal enclosures.

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Adapter plate Type KDP 24/AP/EN

Adapter plate with cut-outs for 24-pole connectors. Fit in Ensto enclosures.

Page 106



Adapter plate Type KDP 24/AP/LO

Adapter plate with cut-outs for 24-pole connectors. Fit in Lohmeier enclosures.





Cable entry plate KDP Plastic, rectangular

Selection table

Cable diameter in mm	Type						
	KDP 24/11	KDP 24/12	KDP 24/14	KDP 24/17	KDP 24/22	KDP 24/23	KDP 24/29
3,0 - 6,5	4		6		16		29
4,3 - 8,1						23	
5,0 - 9,2	4		4	17	4		
8,0 - 12,0		12					
8,0 - 12,5					2		
9,6 - 15,9			4				
14,0 - 20,0	3						
Total count Openings	11	12	14	17	22	23	29

Selection table/Rittal enclosures

Rittal housing		Adapter plates for Rittal enclosures with cut-outs for 24-pin connectors					
		KDP 24/AP/RI- AE/4	KDP 24/AP/RI- AE/6+2	KDP 24/AP/RI- AE/2	KDP 24/AP/RI- KL/1	KDP 24/AP/RI- BG/2	KDP 24/AP/RI- BG/3+4
		87663070	87663071	87663072	87663073	87663074	87663075
1030.500	AE	-	-	X	-	-	-
1031.500	AE	-	-	X	-	-	-
1038.500	AE	-	-	X	-	-	-
1039.500	AE	-	X	-	-	-	-
1045.500	AE	X	-	-	-	-	-
1050.500	AE	X	-	-	-	-	-
1057.500	AE	X	-	-	-	-	-
1058.500	AE	-	X	-	-	-	-
1060.500	AE	-	X	-	-	-	-
1073.500	AE	-	X	-	-	-	-
1076.290	IN	-	X	-	-	-	-
1076.500	AE	-	X	-	-	-	-
1077.500	AE	-	X	-	-	-	-
1090.500	AE	-	X	-	-	-	-
1100.500	AE	X	-	-	-	-	-
1110.500	AE	X	-	-	-	-	-
1114.500	AE	X	-	-	-	-	-
1130.500	AE	X	-	-	-	-	-
1180.500	AE	-	X	-	-	-	-
1213.500	AE	X	-	-	-	-	-
1260.500	AE	-	X	-	-	-	-
1280.500	AE	-	X	-	-	-	-
1338.500	AE	X	-	-	-	-	-
1339.500	AE	-	X	-	-	-	-
1350.500	AE	X	-	-	-	-	-
1360.500	AE	-	X	-	-	-	-
1376.500	AE	-	X	-	-	-	-
1380.500	AE	-	-	X	-	-	-
1530.510	KL	-	-	-	X	-	-
1531.510	KL	-	-	-	X	-	-
1532.510	KL	-	-	-	X	-	-
1533.510	KL	-	-	-	X	-	-
1534.510	KL	-	-	-	X	-	-
1535.510	KL	-	-	-	X	-	-
1536.510	KL	-	-	-	X	-	-
1537.510	KL	-	-	-	X	-	-
1538.510	KL	-	-	-	X	-	-
1539.510	KL	-	-	-	X	-	-
1540.510	KL	-	-	-	X	-	-
1541.510	KL	-	-	-	X	-	-
1542.510	KL	-	-	-	X	-	-

X can be directly fitted into the casing
 - cannot be combined



Cable entry plate KDP Plastic, rectangular

Selection table/Rittal enclosures

Rittal housing		Adapter plates for Rittal enclosures with cut-outs for 24-pin connectors					
Number	Type	KDP 24/AP/RI-AE/4	KDP 24/AP/RI-AE/6+2	KDP 24/AP/RI-AE/2	KDP 24/AP/RI-KL/1	KDP 24/AP/RI-BG/2	KDP 24/AP/RI-BG/3+4
		87663070	87663071	87663072	87663073	87663074	87663075
1558.510	BG	-	-	-	-	X	-
1559.510	BG	-	-	-	-	-	X
1919.500	EL	-	X	-	-	-	-
1920.500	EL	-	X	-	-	-	-
1926.500	EL	-	X	-	-	-	-
6214.xx0	CP	-	-	-	X	-	-
6220.xx0	CP	-	-	-	X	-	-
6900.xxx	IW	-	-	-	X	-	-
6901.xxx	IW	-	-	-	X	-	-
7011.535	DK	-	X	-	-	-	-
7012.535	DK	-	X	-	-	-	-
7013.535	DK	-	X	-	-	-	-
7014.535	DK	-	X	-	-	-	-
7454.xxx	DK	-	-	-	X	-	-
7641.000	DK	-	X	-	-	-	-
7643.000	DK	-	X	-	-	-	-
7644.000	DK	-	X	-	-	-	-
7645.000	DK	-	X	-	-	-	-
9665.805	SV	-	-	X	-	-	-
9665.815	SV	X	-	-	-	-	-
9665.825	SV	-	X	-	-	-	-
9665.835	SV	-	X	-	-	-	-
9665.845	SV	-	X	-	-	-	-
9665.855	SV	X	-	-	-	-	-
9751.125	CS	X	-	-	-	-	-
9751.145	CS	X	-	-	-	-	-
9751.165	CS	X	-	-	-	-	-
9752.125	CS	X	-	-	-	-	-
9771.111	CS	X	-	-	-	-	-
9771.115	CS	X	-	-	-	-	-
9772.111	CS	X	X	-	-	-	-
9772.115	CS	X	X	-	-	-	-
9774.200	CS	X	-	-	-	-	-
9774.210	CS	X	-	-	-	-	-
9774.250	CS	X	-	-	-	-	-
9774.400	CS	X	-	-	-	-	-
9774.410	CS	X	-	-	-	-	-
9774.450	CS	X	-	-	-	-	-
9775.100	CS	X	-	-	-	-	-
9775.200	CS	X	-	-	-	-	-
9775.300	CS	X	-	-	-	-	-
9775.400	CS	X	-	-	-	-	-

X can be directly fitted into the casing
- cannot be combined

Selection table/ Ensto und Lohmeier enclosures

ENSTO enclosure		Adapter plate suitable for Ensto enclosures with cut-outs for 24-pin connectors	
Number	Type	KDP 24/AP/EN-KG/1	
		87663076	
FFUF153012G	Cubo F	X	
FFUF203012G	Cubo F	X	
FFUF204012G	Cubo F	X	
FFUF205012G	Cubo F	X	
FFUF206012G	Cubo F	X	
FFUF208012G	Cubo F	X	
FFUF302012	Cubo F	X	
FFUF303012G	Cubo F	X	
FFUF304012G	Cubo F	X	
FFUF305012G	Cubo F	X	
FFUF306012G	Cubo F	X	
FFUF404012G	Cubo F	X	
FFUF406012G	Cubo F	X	
FFUF408012G	Cubo F	X	
FFUF502012	Cubo F	X	
FFUF602012	Cubo F	X	
FFUF802012	Cubo F	X	

Lohmeier housing		Adapter plate suitable for Lohmeier enclosure with cut-outs for 24-pin connectors	
Number	Type	KDP 24/AP/LO-BG/1	KDP 24/AP/LO-BG/2
		87663078	87663077
BG-122020	F-200	X	-
BG-123020	F-300	-	X
BG-123030	F-300	-	X
BG-124020	F-200	X	-
BG-124030	F-200	X	-
BG-125030	F-200 F-300	X	X
BG-126020	F-300	-	X
BG-126030	F-300	-	X

X can be directly fitted into the enclosure
 - cannot be combined



Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals UR	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.					DB	SNCF	BS						
KDP 24/x	Enclosure: Polyamide Seal: TPU/NBR/EPDM	-30 °C	+70 °C	V0	✓	IP65		✓	✦*	✓	✓	✓	✓	✓	✓	✓
KDP 24/AP/RI	Stainless steel 1.4301 (V2A)				✓						✓	✓	✓	✓	✓	✓
KDP 24/AP/EN	Stainless steel 1.4301 (V2A)				✓						✓	✓	✓	✓	✓	✓
KDP 24/AP/LO	Stainless steel 1.4301 (V2A)				✓						✓	✓	✓	✓	✓	✓

** = not certified

Material data

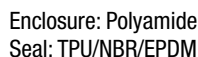
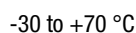
Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Approvals UR	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.					DB	SNCF	BS						
BP/N	Polyamide, TPU	-40 °C	+125 °C	V0	✓	IP65	✓	✓	✓ **	✓	✓	✓	✓	✓	✓	✓
BP/H	TPE	-40 °C	+60 °C	HB	✓	IP42	✓	✓	✓ **	✓	✓	✓	✓	✓	✓	✓

** = not certified



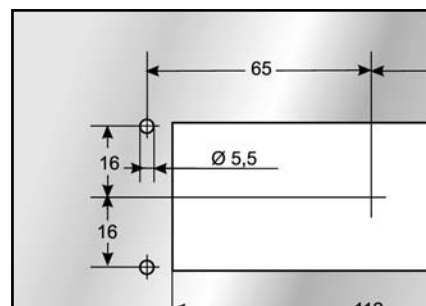


RoHS
compliance



Economical connection technology for tool-free wiring of equipment and machinery. Wherever the rapid and economical introduction of cables and/or pneumatic conduits in confined spaces is essential. The alternative to cable fittings. Suitable for standard cut-outs for 24-pin Harting and Wieland connectors. For snap-in fastening and/or screwing in place.

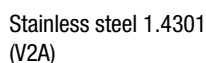
- Snap-in action at plate thicknesses of 1.5 to 2.0 mm



KDP 24

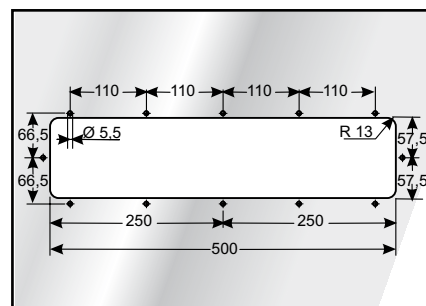


RoHS
compliance



The KDP 24/AP/RI adapter plate can be directly mounted into the pre-fabricated cut-outs from RITTAL casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24

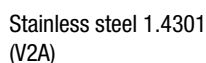


KDP 24/AP/RI-AE/6+2

100

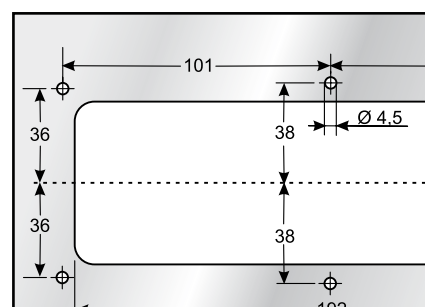


RoHS
compliance



The KDP 24/AP/RI adapter plate can be directly mounted into the pre-fabricated cut-outs from RITTAL casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24



KDP 24/AP/RI-KL/1

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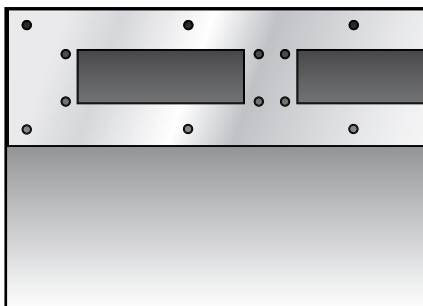
Adapter plate, type KDP 24/AP/RI



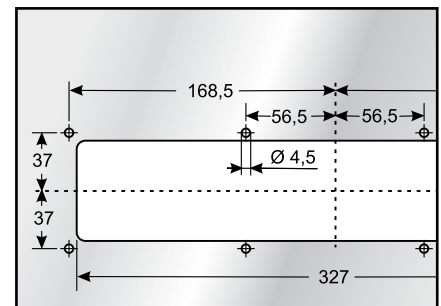
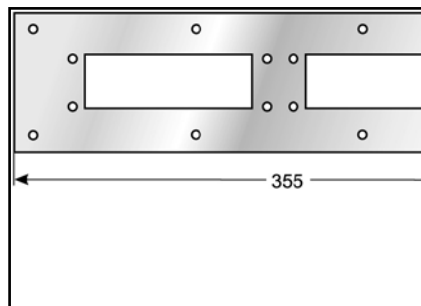
Stainless steel 1.4301
(V2A)

The KDP 24/AP/RI adapter plate can be directly mounted into the pre-fabricated cut-outs from RITTAL casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24

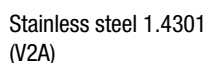


KDP 24/AP/RI-BG/2

[illegible]

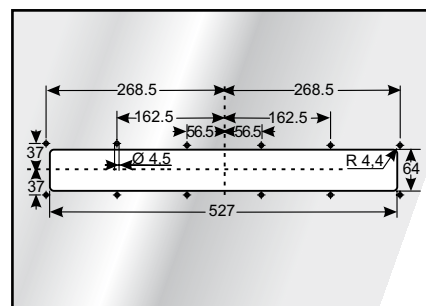


RoHS
compliance



The KDP 24/AP/RI adapter plate can be directly mounted into the pre-fabricated cut-outs from RITTAL casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24



KDP 24/AP/RI-BG/3+4

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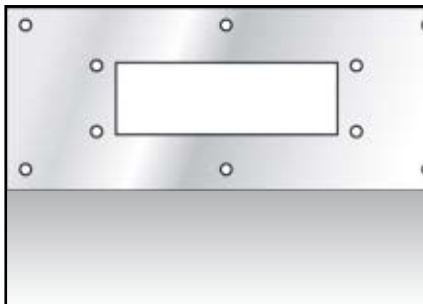
Adapter plate, type KDP 24/AP/EN



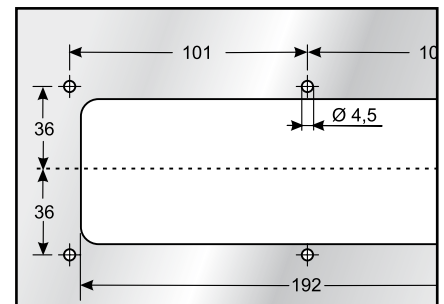
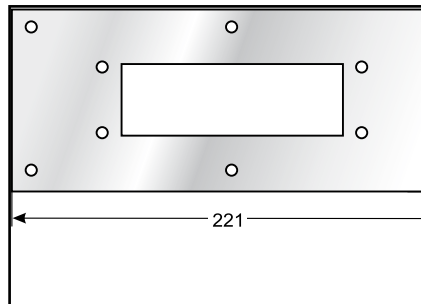
Stainless steel 1.4301
(V2A)

The KDP 24/AP/RI adapter plate can be directly mounted into the pre-fabricated cut-outs from RITTAL casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24

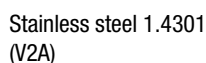


KDP 24/AP/EN-KG/1

[illegible]

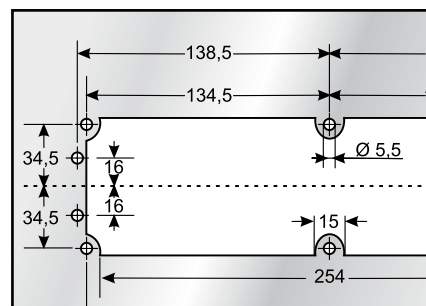


RoHS
compliance



The KDP 24/AP/LO adapter plate can be directly mounted into the pre-fabricated cut-outs from Lohmeier casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate come with seal included.

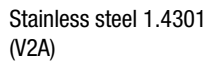
- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24



KDP 24/AP/LO-BG/2

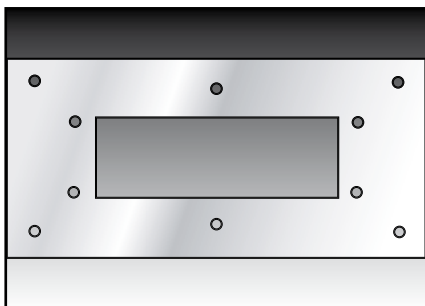
106

Adapter plate, type KDP 24/AP/L0

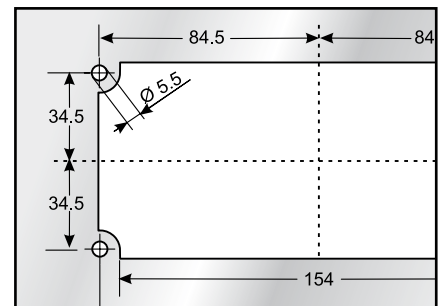
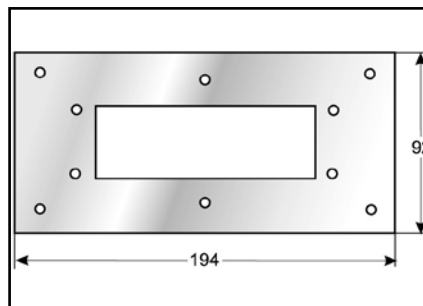


The KDP 24/AP/LO adapter plate can be directly mounted into the pre-fabricated cut-outs from Lohmeier casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate come with seal included.

- Articles for combination with adapter plates: KDP 24; KDL 24; KDL/E 24; KD/AG 24; BP 24; BPV 24; BP/H 24; BP/N 24



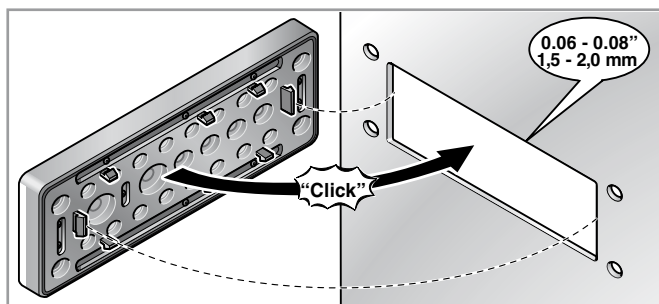
KDP 24/AP/LO-BG/1

[illegible]

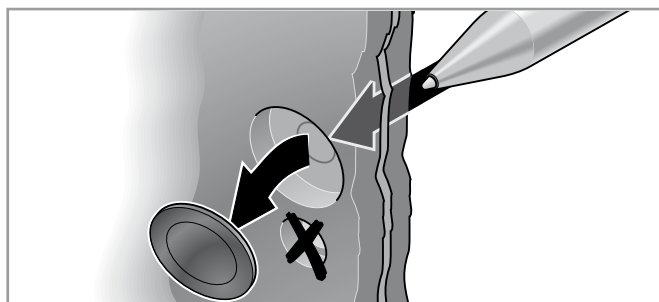


Cable entry plate KDP Plastic, rectangular

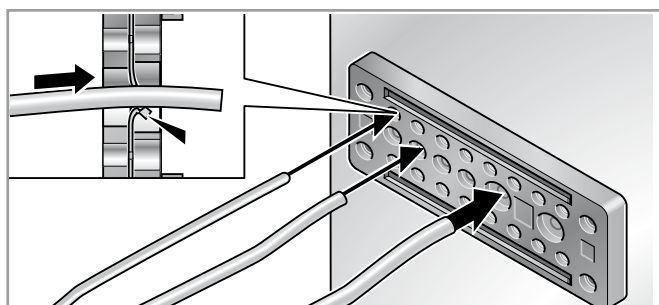
Snap-on mounting



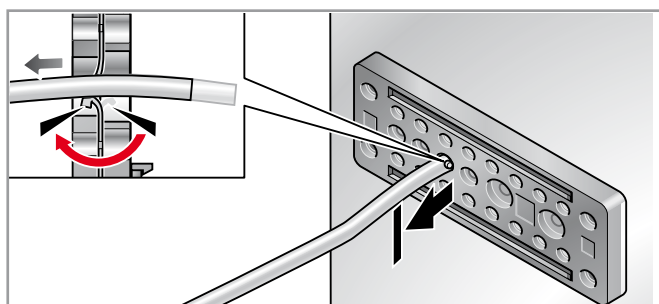
Create cut out (112 x 36 mm) for the KDP 24/x as shown in the illustration. Insert cable insertion plate and press on until it clicks into place.



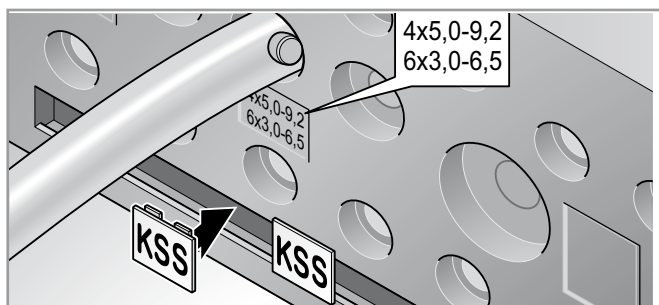
Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear of the KDP 24/x. Pull cable through to desired length.

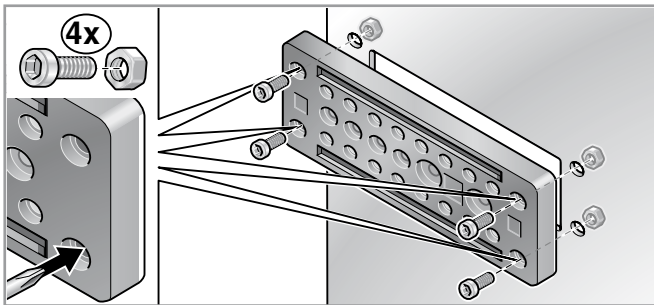


Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.

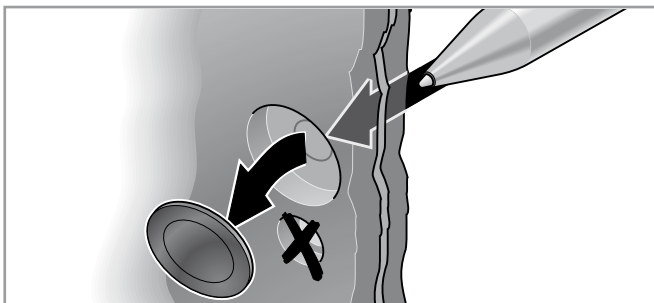


Position optional label plate (type KSS...) and click in. The clamping range for the openings (e.g. 4x5.0-9.2) are visible on the front of the insertion plate.

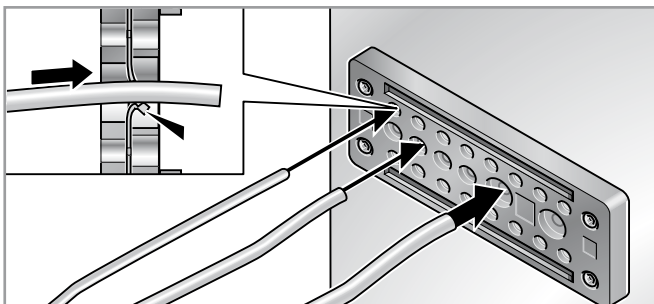
Screw-on mounting



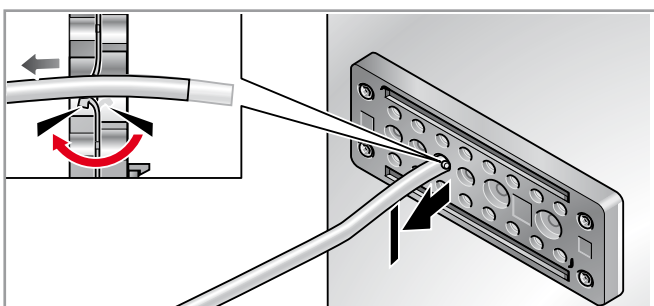
Create cut out (112 x 36 mm) and mounting holes for the KDP 24/x as shown in the illustration. Press through the membrane on the mounting holes on the cable entry plate. Set plate onto the cut-out and screw down.



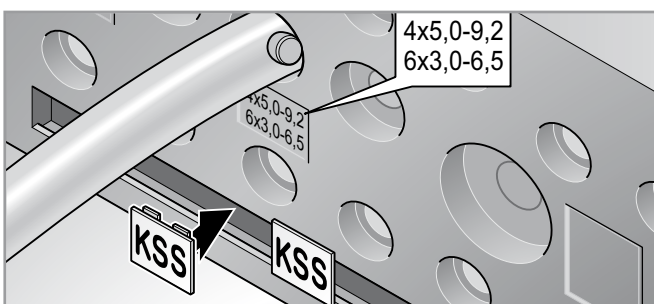
Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear of the KDP 24/x. Pull cable through to desired length.



Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.



Position optional label plate (type KSS...) and click in. The clamping range for the openings (e.g. 4x5.0-9.2) are visible on the front of the insertion plate.





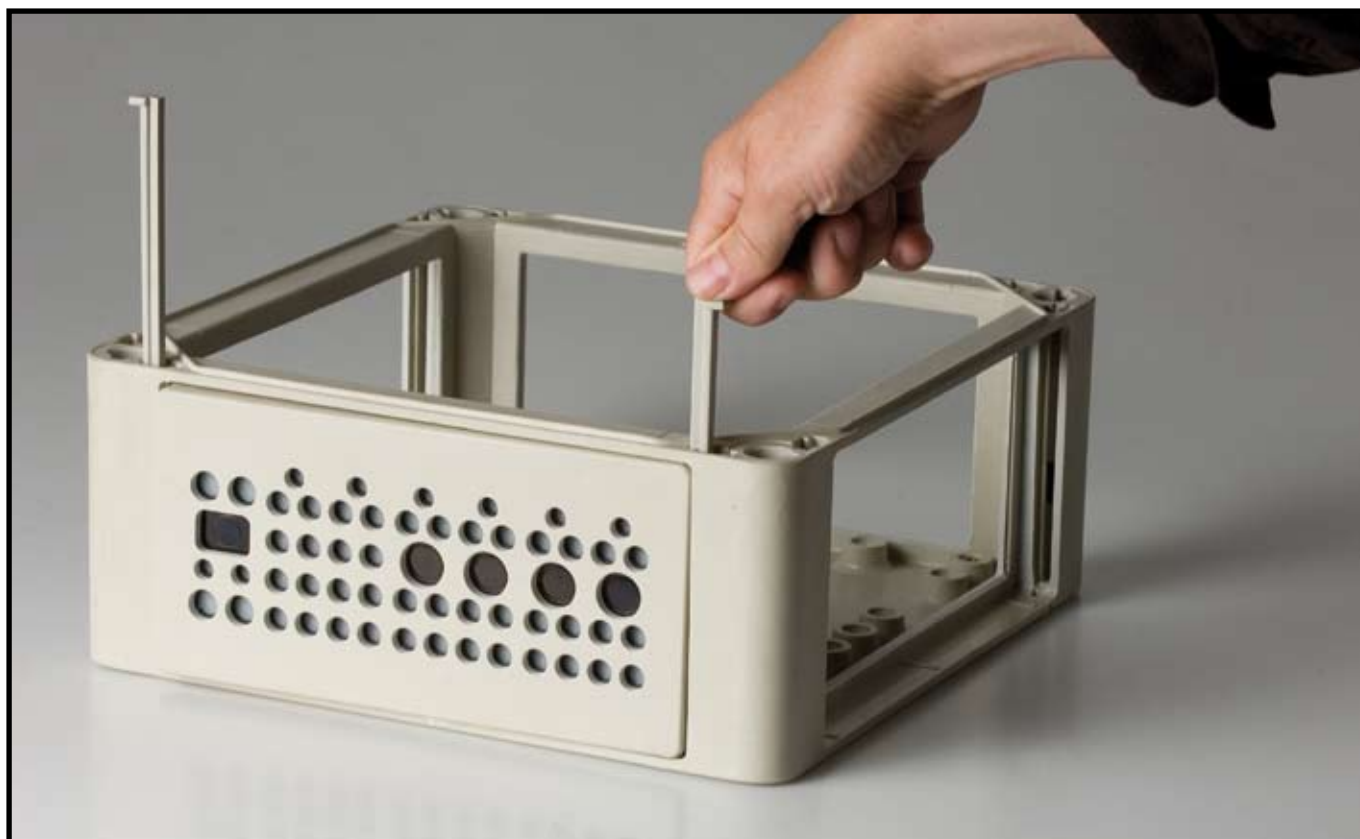
Cable entry plate KDP Rose enclosure, plastic





Cable entry plate KDP Rose enclosure, plastic

Advantages



Straight in! Even in Rose enclosure!

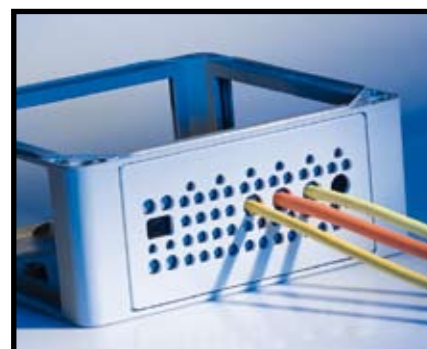
Install electric cable and pneumatic conduits with minimal effort, saving time and money.

The KDP cable entry system is ideal if space is at a premium.

The KDP-BG cable entry systems for Rose enclosures can be built in directly into them.

The pre-fabricated cut-outs are easy to insert individually, even without tools.

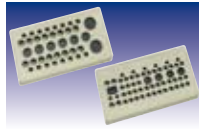
The principle is absolutely identical to our tried-and-true plastic KDP 24 (rectangular).



- ✓ Assembly without tools
- ✓ Huge time savings
- ✓ Cost reductions
- ✓ High protection class
- ✓ Variable
- ✓ Designed for Rose enclosure

Overview

Page 116



Cable entry plate Type Rose

Cable entry plate for insertion of cables, special for Rose enclosure.





Cable entry plate KDP Rose enclosure, plastic

Selection table

Cable diameter in mm	Type	
	KDP-BG 40 Rose	KDP-BG 56+1 Rose
3,0 - 5,0		8
3,5 - 6,5	16	40
4,5 - 8,5		4
6,0 - 10,0	16	
8,0 - 12,0		4
9,0 - 14,0	6	
14,0 - 20,0	2	
Ethernet RJ45		1
Total count Openings	40	57

Material data

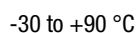
Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.									
Rose	GFK Polyester NBR EPDM	-30 °C	+90 °C	V0	✓	IP65	✓	✓	✓	✓	✓	✓

** = not certified

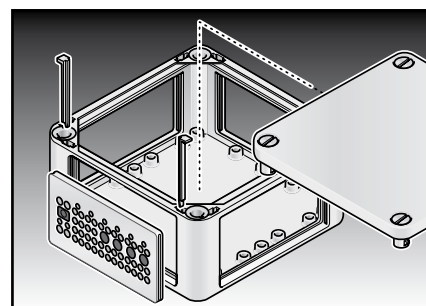




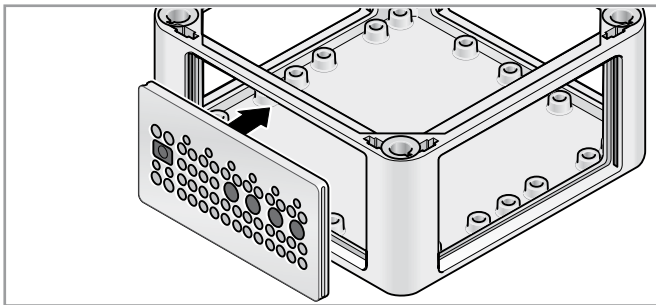
RoHS
compliance



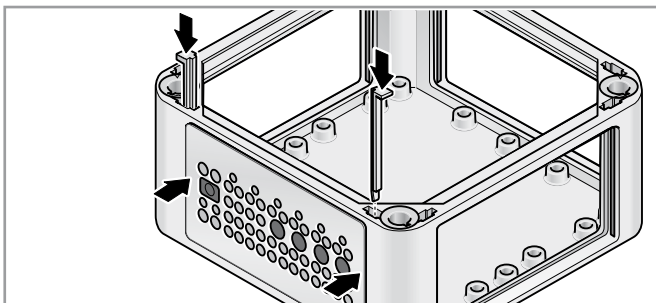
- Assembly without tools
- High protection class IP65
- Flange wedges (2 pieces) included with delivery
- Suited for electric and pneumatic installations
- Casing not included with delivery

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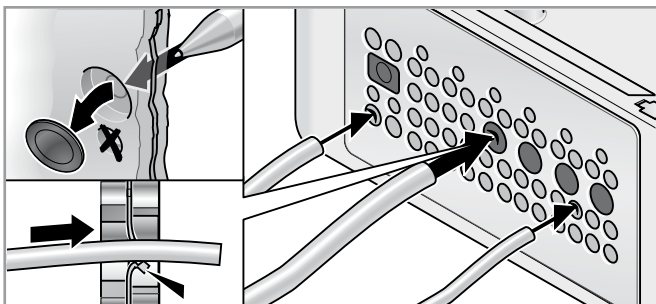
Assembly



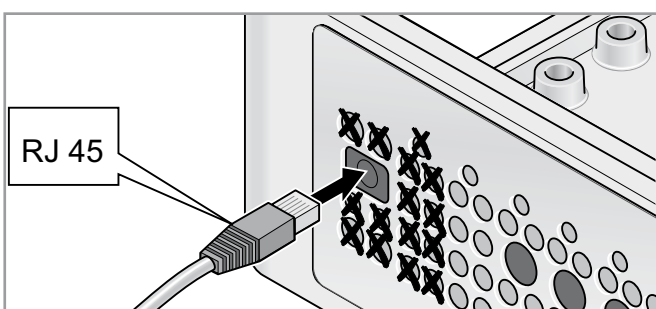
Set cable entry plate into the enclosure.



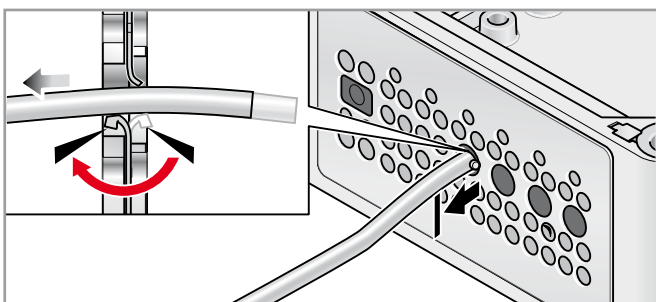
Press on the cable entry plate and press the flange wedges in until stopping point.



Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out. Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear side. Pull cable through to desired length.



Insertion of a cable with a RJ45 plug is only possible at one position. Push cable with plug through the entry from the front. The indicator becomes visible on the rear side. Pull cable through to desired length.



Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.



Cable entry plate KDP plastic bus enclosure





Cable entry plate KDP Plastic bus enclosure

Advantages



All inclusive

This fully integrated enclosure has everything you'll need. Self-extinguishing enclosure with integrated cable entry system and pre-mounted top hat rail. Ideal for installation of bus terminal block. Indicator lights remain visible from outside even when cover is closed. This enables disruptions to be recognised quickly.



- ✓ Fully integrated enclosure
- ✓ Integrated cable entry plate
- ✓ Integrated top hat rail
- ✓ High protection class
- ✓ Transparent cover
- ✓ Quick installation

Overview

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Bus enclosure Type BG

Complete bus enclosure with integrated cable entry system for quick insertion of cables and integrated top hat rail.





Cable entry plate KDP Plastic bus enclosure

Selection table

	Type
Cable diameter in mm	KDP-FB KDP 70
3,0 - 5,0	9
3,0 - 6,2	52
4,0 - 8,0	4
7,0 - 11,5	4
Ethernet RJ45	1
Total count Openings	70

Material data

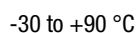
Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.									
Bus enclosure	PC Polycarbonate NBR/EPDM	-30 °C	+90 °C	V0	✓	IP65	✓	✓	✓	✓	✓	✓

** = not certified





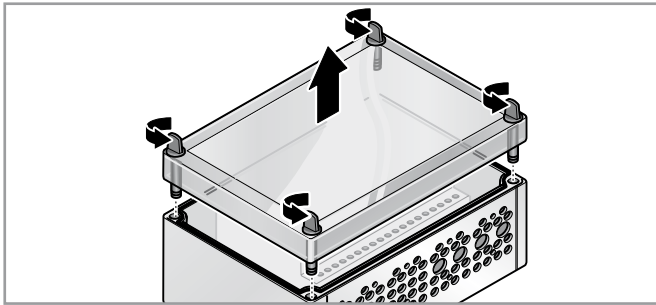
RoHS
compliance



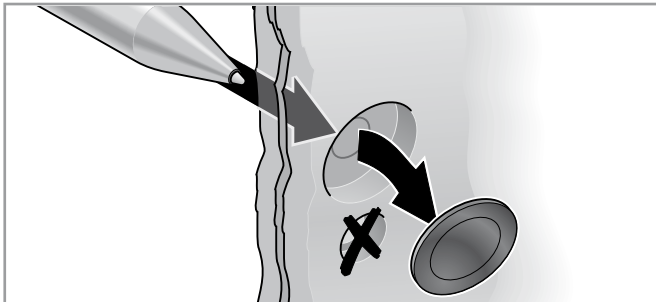
- Transparent cover Indicator lights remain visible even when cover is closed.
- High protection class IP65
- Integrated cable entry plate
- Pre-mounted mounting plate with support bar TS 35x15 (EN 50022-35)

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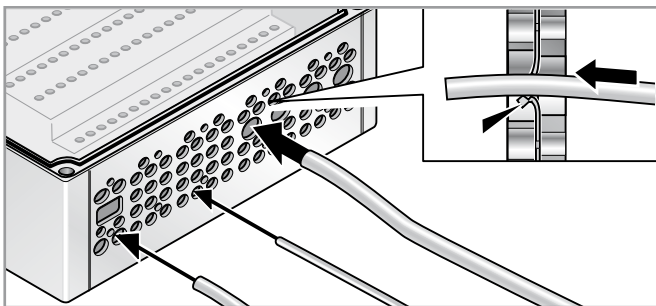
Assembly



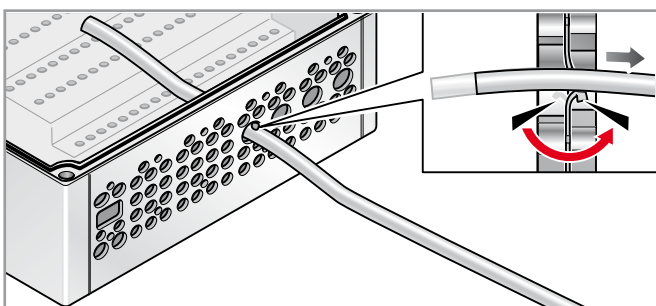
Release cover seals and lift housing cover.



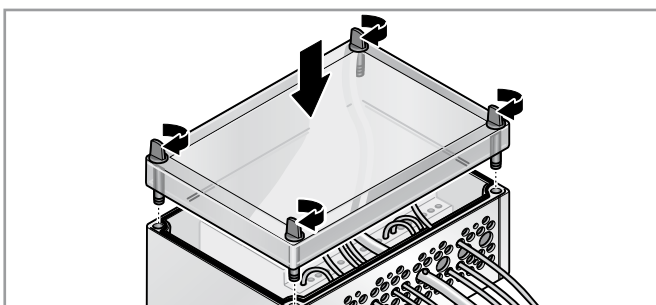
Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear side. Pull cable through to desired length.



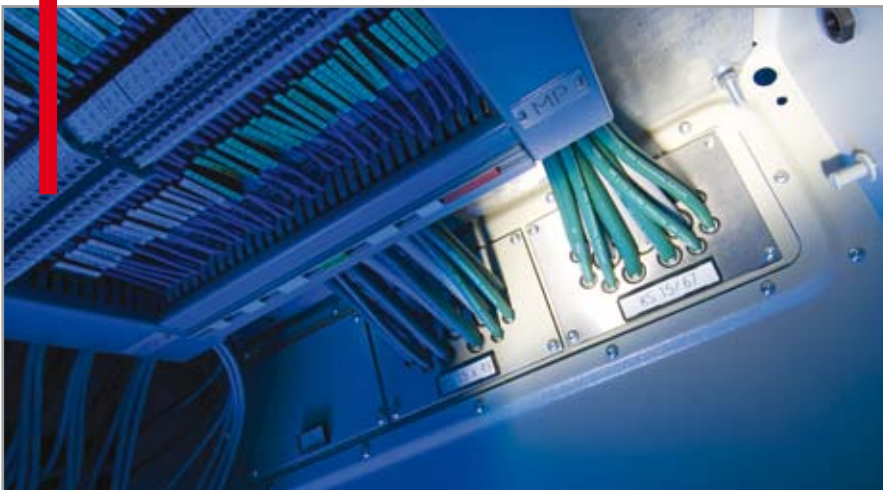
Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.



Following successful installation of all elements, replace cover on top and latch down.



Cable entry plate KDP Metal



Advantages



Fits in even confined spaces

The metal cable entry plate is, like the plastic version, an ideal alternative to cable fittings.

Cables can be installed in seconds, even in highly confined spaces.

Aluminium and stainless steel versions offer a broad range of applications.

Stainless steel version particularly suited for foodstuffs and chemical industries.

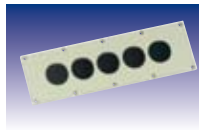
Quick installation of up to 292 cables even while saving up to 50% of space--thereby reducing costs as well.



- ✓ High packing density
- ✓ Quick installation
- ✓ High IP protection class
- ✓ Low installation height
- ✓ Fits in Rittal enclosure

Overview

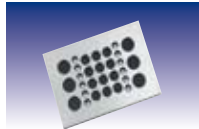
Page 136



Cable entry plate **Product group 90**

KDP made of aluminium and stainless steel. Dimensions correspond partially to Rittal flange plates size 2

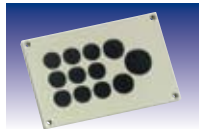
Page 142



Cable entry plate **Product group 100**

KDP made of aluminium and stainless steel. Various types with different hole patterns.

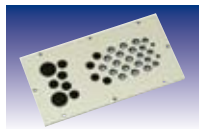
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Cable entry plate **Product group 105**

KDP made of aluminium and stainless steel. Various types with different hole patterns.

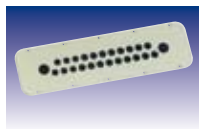
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Cable entry plate **Product group 134**

Cable entry system made of aluminium.

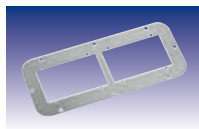
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Cable entry plate **Product group 149**

KDP made of aluminium and stainless steel. Dimensions correspond to Rittal flange plates size 4 and 5.

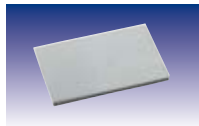
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Adapter plate

Adapter plates for accepting cable entry systems from the 100 and 105 product groups. Dimensions correspond to Rittal flange plates size 4 and 5.

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Blanking plate

Blanking plates made of aluminium and stainless steel. For sealing unused cut-outs.





Cable entry plate KDP Metal

Selection table

Cable diameter in mm	Type																			
	KDP 90/5 ALU	KDP 90/8 ALU	KDP 90/25 ALU	KDP 90/28 ALU and V4A	KDP 90/39+3 ALU and V4A	KDP 90/55 V4A	KDP 100/30 V4A	KDP 100/30B V4A	KDP 100/40 V4A	KDP 100/56 V4A	KDP 100/56B V4A	KDP 100/56C V4A	KDP 105/12 ALU	KDP 105/15 ALU and V4A	KDP 105/32 ALU and V4A	KDP 134/34 ALU	KDP 149/25 ALU	KDP 149/46 ALU	KDP 149/56 V4A	KDP 149/140 V4A
1,0 - 3,5										48	48									
3,0 - 5,0			9			3								16	2					
3,0 - 6,0					24															
3,0 - 6,2						32														
3,5 - 6,2							12	12		48									16	126
3,5 - 6,5											8	4								250
4,0 - 8,0			16	14	12	16								12	6					
4,5 - 8,5									40										64	
6,0 - 10,0				10			12	12		8		4		8	4	15		8	36	36
6,0 - 12,0																6				24
8,0 - 12,0					3	4										4			4	6
9,0 - 14,0				2			6	4					9	4		5		8	8	
10,0 - 14,0																	16			
12,0 - 18,0				2				2					2	3			17	18		2
14,0 - 18,0																		8	8	
14,0 - 20,0																2				
16,0 - 28,0	5	8																		
18,0 - 25,0													1				2	4	4	4
Pre-fabricated cables Max. connector size 48 x 24 mm	6,0				1															
	8,5				2															
Total count Openings	5	8	25	28	42	55	30	30	40	56	56	56	12	15	32	34	25	46	56	140
																				158
																				292

Selection table/Rittal enclosures

Rittal housing			Cable entry systems for Rittal enclosures																																	
			KDP 90/5 ALU	KDP 90/8 ALU	KDP 90/25 ALU	KDP 90/28 ALU	KDP 90/28 V4A	KDP 90/39+3 ALU	KDP 90/39+3 V4A	KDP 90/55 V4A	KDP 100/30 V4A	KDP 100/30B V4A	KDP 100/40 V4A	KDP 100/56 V4A	KDP 100/56B V4A	KDP 100/56C V4A	KDP BP 100/145 V4A	KDP AP 149/100/2 V4A	KDP AP 149/100/3 V4A	KDP 105/12 ALU	KDP 105/15 ALU	KDP 105/15 V4A	KDP 105/32 ALU	KDP 105/32 V4A	KDP BP 105/55 ALU	KDP BP 105/55 V4A	KDP AP 149/105/3 St.	KDP 134/34 ALU	KDP 149/25 ALU	KDP 149/46 ALU	KDP 149/56 V4A	KDP 149/140 V4A	KDP 149/158 V4A	KDP 149/292 V4A		
Number	Type	Cut-outs	87663029	87663026	87663022	87663032	87663034	87663036	87663038	87663058	87663062	87663063	87663061	87663060	87663065	87663067	87663090	87663080	87663082	87663056	87663014	87663016	87663010	87663012	87663092	87663094	87663084	87663024	87663040	87663064	87663086	87663088	87663068	87663066		
1039.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1045.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1050.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1057.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1058.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1060.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1073.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1076.290	IN	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1076.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1077.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1090.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1100.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1110.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1114.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1130.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1180.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1213.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1260.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1280.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1338.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1339.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1350.500	AE	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-		
1360.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1376.500	AE	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X	
1530.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1531.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1532.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1533.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1534.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1535.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1536.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1537.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1538.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1539.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1540.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1541.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1542.510	KL	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

X can be directly fitted into the casing
O fits in the enclosure via an adapter plate
- cannot be combined



Cable entry plate KDP Metal

Selection table/Rittal enclosures

			Cable entry systems for Rittal enclosures																																
Rittal housing			KDP 90/5 ALU	KDP 90/8 ALU	KDP 90/25 ALU	KDP 90/28 ALU	KDP 90/28 V4A	KDP 90/39+3 ALU	KDP 90/39+3 V4A	KDP 90/55 V4A	KDP 100/30 V4A	KDP 100/30B V4A	KDP 100/40 V4A	KDP 100/56 V4A	KDP 100/56B V4A	KDP 100/56C V4A	KDP BP 100/145 V4A	KDP AP 149/100/2 V4A	KDP AP 149/100/3 V4A	KDP 105/12 ALU	KDP 105/15 ALU	KDP 105/15 V4A	KDP 105/32 ALU	KDP 105/32 V4A	KDP BP 105/55 ALU	KDP BP 105/55 V4A	KDP AP 149/105/3 St.	KDP 134/34 ALU	KDP 149/25 ALU	KDP 149/46 ALU	KDP 149/56 V4A	KDP 149/140 V4A	KDP 149/158 V4A	KDP 149/292 V4A	
Number	Type	Cut-outs	87663029	87663026	87663022	87663032	87663034	87663036	87663038	87663058	87663062	87663063	87663061	87663060	87663065	87663067	87663090	87663080	87663082	87663056	87663014	87663016	87663010	87663012	87663092	87663094	87663084	87663024	87663040	87663064	87663086	87663088	87663068	87663066	
1919.500	EL	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
1920.500	EL	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
1926.500	EL	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
6214.xx0	CP	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6220.xx0	CP	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6900.xxx	IW	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6901.xxx	IW	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7011.535	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7012.535	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7013.535	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7014.535	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7454.xxx	DK	2	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7641.000	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7643.000	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7644.000	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
7645.000	DK	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9665.815	SV	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9665.825	SV	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9665.835	SV	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9665.845	SV	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9665.855	SV	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9751.125	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9751.145	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9751.165	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9752.125	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9771.111	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9771.115	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9772.111	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9772.111	CS	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9772.115	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9772.115	CS	5	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	-	X	O	O	O	O	O	O	O	O	X	-	X	X	-	X	-	X
9774.200	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9774.210	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9774.250	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9774.400	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9774.410	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9774.450	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9775.100	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9775.200	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9775.300	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	
9775.400	CS	4	-	-	-	-	-	-	-	-	O	O	O	O	O	O	O	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	

X can be directly fitted into the casing
O fits in the enclosure via an adapter plate
- cannot be combined

Selection Table/ Ensto enclosures

Ensto housing		Cable entry systems for Ensto enclosures							
		KDP 90/5 ALU	KDP 90/8 ALU	KDP 90/25 ALU	KDP 90/28 ALU	KDP 90/28 V4A	KDP 90/39+3 ALU	KDP 90/39+3 V4A	KDP 90/55 V4A
Number	Type	87663029	87663026	87663022	87663032	87663034	87663036	87663038	87663058
FFUF153012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF203012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF204012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF205012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF206012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF208012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF302012	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF303012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF304012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF305012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF306012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF404012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF406012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF408012G	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF502012	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF602012	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ
FFUF802012	Cubo F	-	-	-	Δ	Δ	Δ	Δ	Δ

Δ can be directly fitted into the casing following modification through 2 centre holes in the enclosure

- cannot be combined





Cable entry plate KDP Metal

Material data

Type Cable entry plate	Material	Temperature		RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.								
90/5 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/8 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/25 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/28 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/28 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/39+3 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/39+3 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
90/55 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/30 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/30B V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/40 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/56 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/56B V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
100/56C V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
105/12 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
105/15 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
105/15 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
105/32 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓

** = not certified

Material data

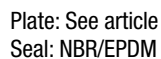
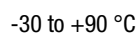
Type Cable entry plate	Material	Temperature		RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.								
105/32 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
134/34 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/25 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/46 ALU	Plate: AlMg3 (3.3535) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/56 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/140 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/158 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓
149/292 V4A	Plate: V4A (1.4571) Seal: NBR/EPDM	-30 °C	+90 °C	✓	IP 65	✓	✓	✓	✓	✓	✓

Type Adapter plate Blanking plate	Material	Temperature		RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.								
149/100/2 V4A	V4A (1.4571)			✓	✓	✓	✓	✓	✓	✓	✓
149/100/3 V4A	V4A (1.4571)			✓	✓	✓	✓	✓	✓	✓	✓
149/105/3 Pce.	Steel (1.1203)			✓	✓	✓	✓	✓	✓	✓	✓
100/145 V4A	V4A (1.4571)			✓	✓	✓	✓	✓	✓	✓	✓
105/155 ALU	AlMg3 (3.3535)			✓	✓	✓	✓	✓	✓	✓	✓
105/155 V4A	V4A (1.4571)			✓	✓	✓	✓	✓	✓	✓	✓

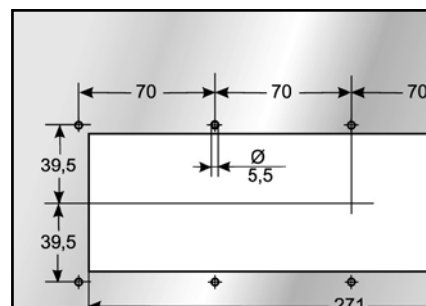
** = not certified



RoHS
compliant



Cable entry plate for insertion of power cables. Ideally suited for roof or floor openings at switch cabinets.



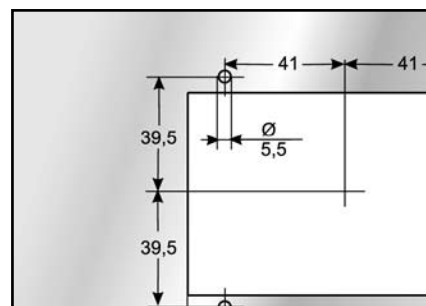
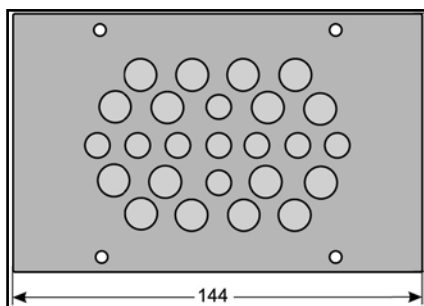
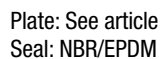
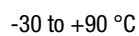
KDP 90/5...

KDP 90/5 ALU	87663029	RAL 7035	5	5 / 16.0 - 28.0 mm *	AlMg3 (3.3535)	1
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* The maximum cable lug width of power cables is 32.0 mm



RoHS
compliant

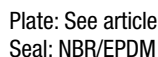
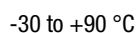


KDP 90/25...

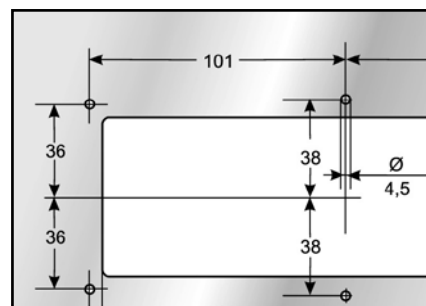
138



RoHS
compliance



The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP 90/39+3...

140



Cable entry plate KDP Metal

Cable entry plate Metal Type 100/30



-30 to +90 °C



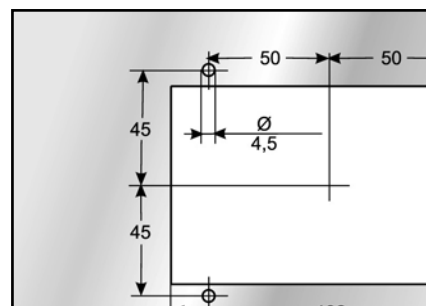
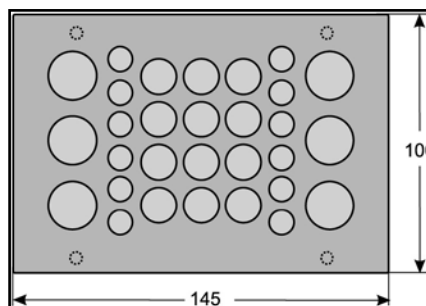
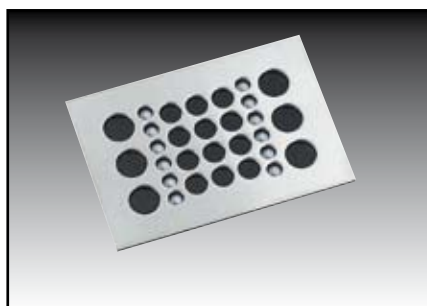
Plate: See article
Seal: NBR/EPDM



IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

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KDP 100/30...

Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 100/30 V4A	87663062	smoothed	30	12 / 3.5 - 6.2 mm 12 / 6.0 - 10.0 mm 6 / 9.0 - 14.0 mm	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching						
Rittal compact control cabinet type AE						
1045.500; 1050.500; 1057.500; 1100.500; 1110.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500						
Rittal module enclosure, compact enclosure, Toptec type CS						
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;						
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400						
Rittal wall-mounted distributor type SV						
9665.815; 9665.855						
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						

Cable entry plate Metal Type 100/30B

RoHS
compliant



-30 to +90 °C



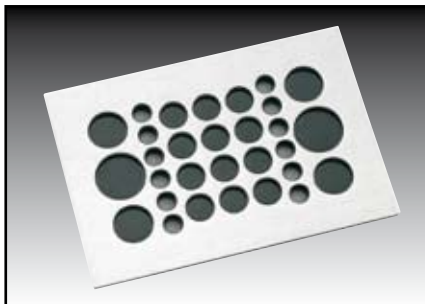
Plate: See article
Seal: NBR/EPDM



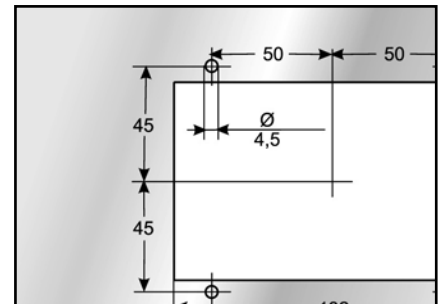
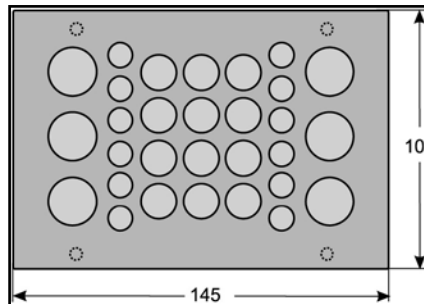
IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



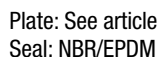
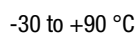
KDP 100/30b...



Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 100/30B V4A	87663063	smoothed	30	12 / 3.5 - 6.2 mm 12 / 6.0 - 10.0 mm 4 / 9.0 - 14.0 mm 2 / 12.0 - 18.0 mm	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching						
Rittal compact control cabinet type AE						
1045.500; 1050.500; 1057.500; 1100.500; 1110.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500						
Rittal module enclosure, compact enclosure, Toptec type CS						
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;						
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400						
Rittal wall-mounted distributor type SV						
9665.815; 9665.855						
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						

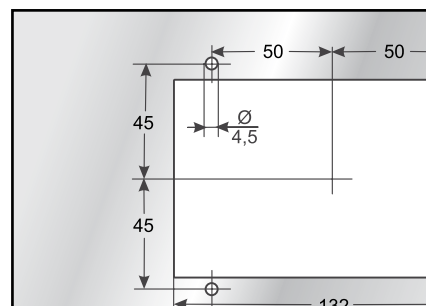


RoHS
compliance



Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

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KDP 100/40...

144

Cable entry plate Metal Type 100/56

RoHS
compliant



-30 to +90 °C



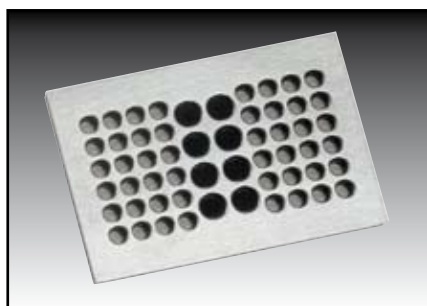
Plate: See article
Seal: NBR/EPDM



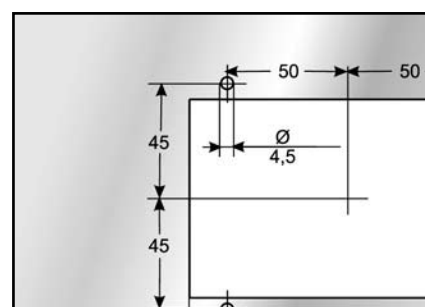
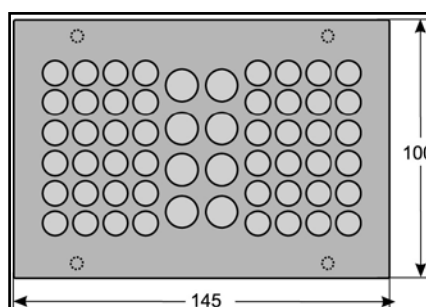
IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP 100/56...



Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 100/56 V4A	87663060	smoothed	56	48 / 3.5 - 6.2 mm 8 / 6.0 - 10.0 mm	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching						
Rittal compact control cabinet type AE						
1045.500; 1050.500; 1057.500; 1100.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500						
Rittal module enclosure, compact enclosure, Toptec type CS						
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;						
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400						
Rittal wall-mounted distributor type SV						
9665.815; 9665.855						
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						



Cable entry plate KDP Metal

Cable entry plate Metal Type 100/56B



-30 to +90 °C



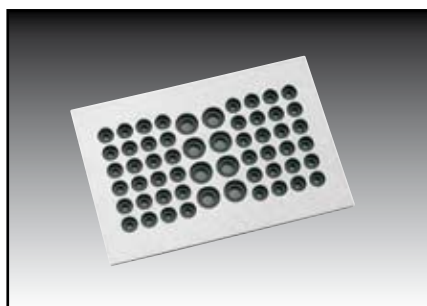
Plate: See article
Seal: NBR/EPDM



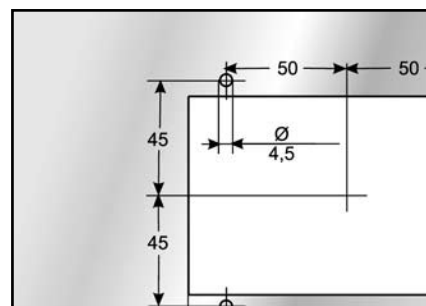
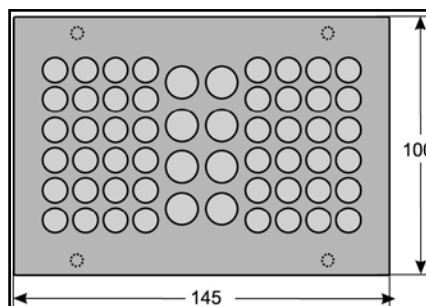
IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP 100/56b...



Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 100/56B V4A	87663065	smoothed	56	48 / 1.0 - 3.5 mm 8 / 3.5 - 6.5 mm	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching						
Rittal compact control cabinet type AE						
1045.500; 1050.500; 1057.500; 1100.500; 1110.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500						
Rittal module enclosure, compact enclosure, Toptec type CS						
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;						
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400						
Rittal wall-mounted distributor type SV						
9665.815; 9665.855						
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						

Cable entry plate Metal Type 100/56C

RoHS
compliant



-30 to +90 °C



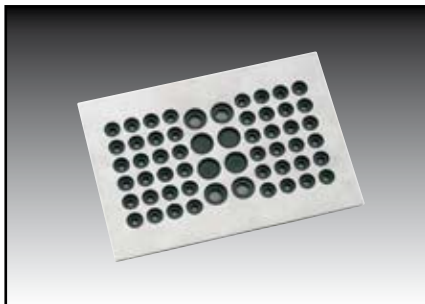
Plate: See article
Seal: NBR/EPDM



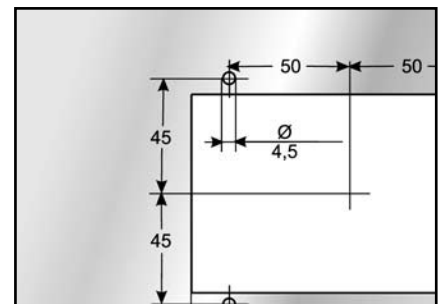
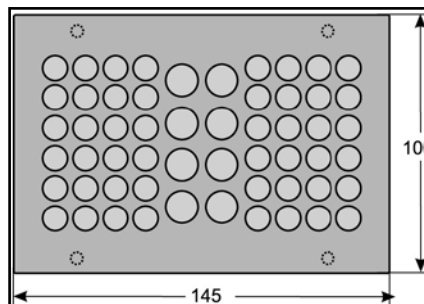
IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 100 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/100/... These adapter plates can be configured individually.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



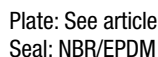
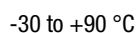
KDP 100/56c...



Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 100/56C V4A	87663067	smoothed	56	48 / 1.0 - 3.5 mm 4 / 3.5 - 6.5 mm 4 / 6.0 - 10.0 mm	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching						
Rittal compact control cabinet type AE						
1045.500; 1050.500; 1057.500; 1100.500; 1110.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500						
Rittal module enclosure, compact enclosure, Topotec type CS						
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;						
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400						
Rittal wall-mounted distributor type SV						
9665.815; 9665.855						
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Topotec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						

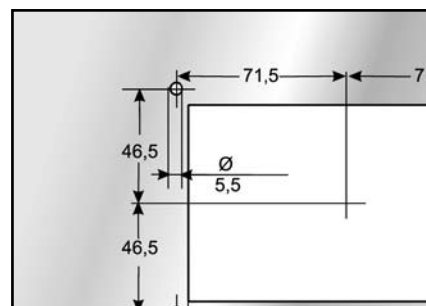


RoHS
compliance



Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 105 fit into standard cut-outs for RITTAL cabinets when combined with adapter plates KDP AP 149/105/... These adapter plates can be configured individually.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

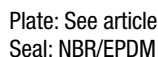
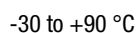


KDP 105/12...

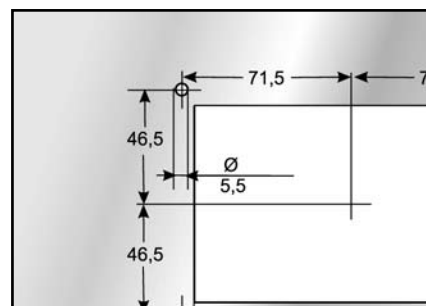
148



RoHS
compliance



The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

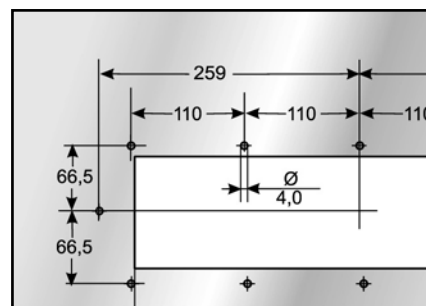
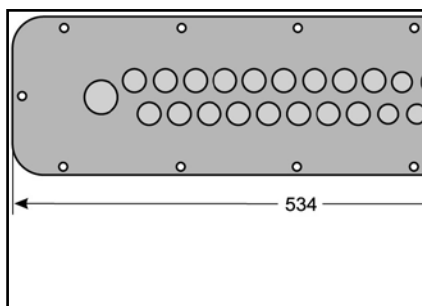
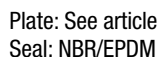
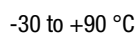


KDP 105/32...

150

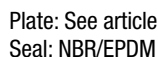
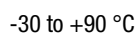


RoHS
compliant

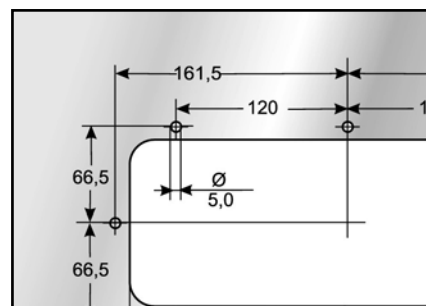
[illegible]



RoHS
compliant



The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP 149/56...

154

Cable entry plate Metal Type 149/140

RoHS
compliant



-30 to +90 °C



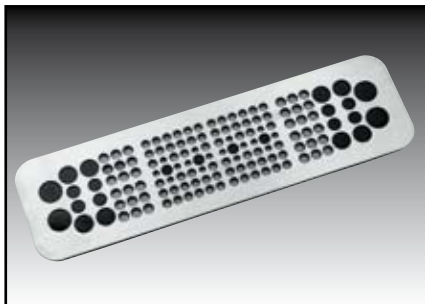
Plate: See article
Seal: NBR/EPDM



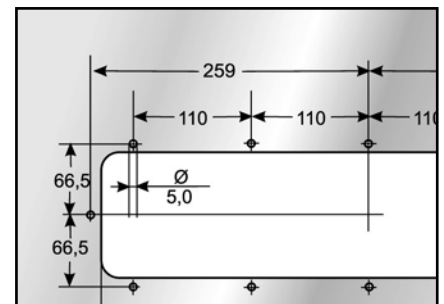
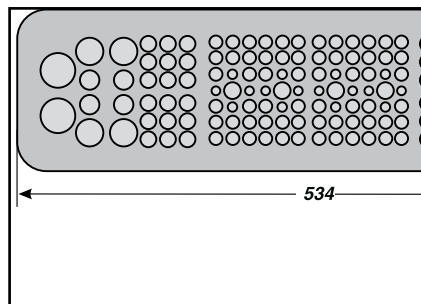
IP 65

Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 149 can be fitted directly into the standard cut-outs of RITTAL cabinets.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



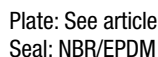
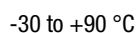
KDP 149/140...



Type	Order no.	Colour	Openings Total	Openings Quantity / Ø	Material Plate	Pack qty
KDP 149/140 V4A	87663088	smoothed	140	16 / 3.5 - 6.2 mm	V4A (1.4571)	1
				64 / 4.5 - 8.5 mm		
				36 / 6.0 - 10.0 mm		
				4 / 8.0 - 12.0 mm		
				8 / 9.0 - 14.0 mm		
				8 / 14.0 - 18.0 mm		
				4 / 18.0 - 25.0 mm		
Corresponds to Rittal flange plate size 5						
Cable entry plate matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						

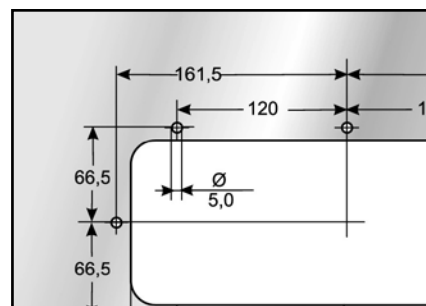


RoHS
compliance



Efficient connection technology for terminal housings and control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, opto-electronics, pneumatic lines and drive technology into a control housing. KDPs of product group 149 can be fitted directly into the standard cut-outs of RITTAL cabinets.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP 149/158...

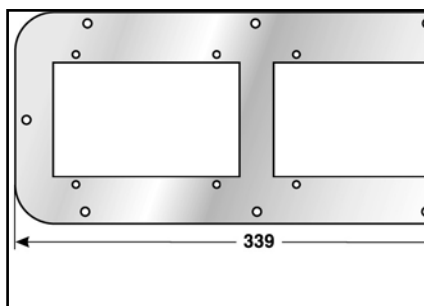
156



RoHS
compliance



Adapter plates KDP AP can be fitted directly into the standard cut-outs of RITTAL cabinets. They serve to hold the cable entry plate of product group 100. Unused adapter positions can be closed off using blanking plates of type KDP BP.



KDP AP 149/100/2...

158

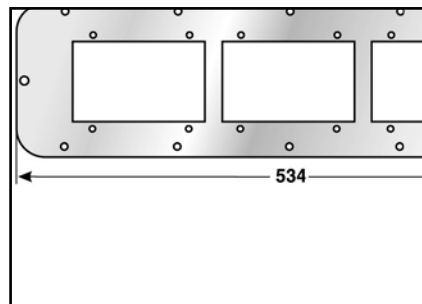
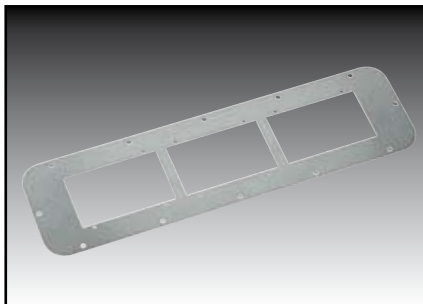
Adapter plate Type 149/100/3

RoHS
compliant



See article

Adapter plates KDP AP can be fitted directly into the standard cut-outs of RITTAL cabinets. They serve to hold the cable entry plate of product group 100. Unused adapter positions can be closed off using blanking plates of type KDP BP.



KDP AP 149/100/3...

Type	Order no.	Colour	Location spaces	Openings Quantity / Ø	Material Plate	Pack qty
KDP AP 149/100/3 V4A	87663082	smoothed	3	3 x PG 100	V4A (1.4571)	1
Corresponds to Rittal flange plate size 5						
Adapter plate matches						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						
matching cable entry plate:						
KDP 100/30 V4A; KDP 100/30B V4A; KDP 100/40 V4A; KDP 100/56 V4A; KDP 100/56B V4A; KDP 100/56C V4A						
matching blanking plate:						
KDP BP 100/145 V4A						



Cable entry plate KDP Metal

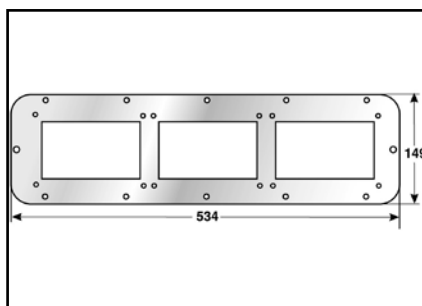
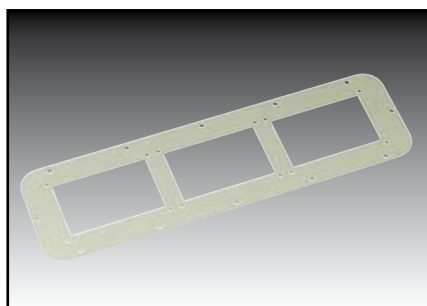
Adapter plate Type 149/105/3



See article

Adapter plates KDP AP can be fitted directly into the standard cut-outs of RITTAL cabinets. They serve to hold the cable entry plate of product group 100. Unused adapter positions can be closed off using blanking plates of type KDP BP.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP AP 149/105/3...

Type	Order no.	Colour	Location spaces	Openings Quantity / Ø	Material Plate	Pack qty
KDP AP 149/105/3 St	87663084	RAL 7035	3	3 x PG 105	Steel (1.1203)	1
Corresponds to Rittal flange plate size 5						
Cable entry plate matching						
Rittal compact control cabinet type AE						
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;						
1339.500; 1360.500; 1376.500						
Rittal wall-mounted enclosure type EL						
1919.500; 1920.500; 1926.500						
Rittal wall-mounted enclosure / distributor type DK						
7011.535; 7012.535; 7013.535; 7014.535; 7641.00; 7643.000; 7644.000; 7645.000						
Rittal module enclosure, compact enclosure, Toptec type CS						
9772.111; 9772.115						
Rittal empty enclosure for industrial distributor type IN						
1076.290						
Rittal wall-mounted distributor type SV						
9665.825; 9665.835; 9665.845						
matching cable entry plate:						
KDP 105/12 ALU; KDP 105/15 ALU and V2A; KDP 105/32 ALU and V2A						
matching blanking plate:						
KDP BP 105/155 ALU and V2A						

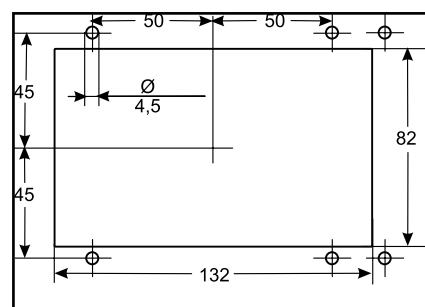
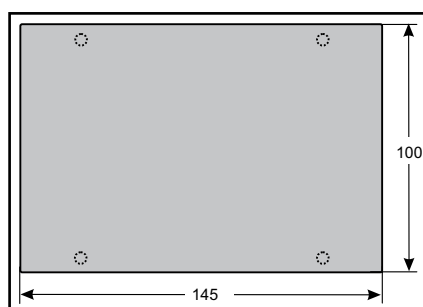
Blanking plate type 100/145

RoHS
compliant



See article

Blanking plate for closing off unused adapter positions and cut-outs.
The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.



KDP BP 100/145...

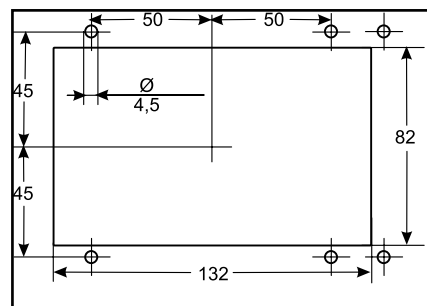
Type	Order no.	Colour	Material Plate	Pack qty
KDP BP 100/145 V4A	87663090	smoothed	V4A (1.4571)	1
In connection with adapter plate KDP AP 149/100/2 (Ord. No. 87663080) matching				
Rittal compact control cabinet type AE				
1045.500; 1050.500; 1057.500; 1100.500; 1114.500; 1130.500; 1213.500; 1338.500; 1350.500				
Rittal module enclosure, compact enclosure, Toptec type CS				
9751.125; 9751.145; 9751.165; 9752.125; 9771.111; 9771.115; 9772.111; 9772.115; 9774.200; 9774.210;				
9774.250; 9774.400; 9774.410; 9774.450; 9775.100; 9775.200; 9775.300; 9775.400				
Rittal wall-mounted distributor type SV				
9665.815; 9665.855				
In connection with adapter plate KDP AP 149/100/3 (Ord. No. 87663082) matching				
Rittal compact control cabinet type AE				
1039.500; 1058.500; 1060.500; 1073.500; 1076.500; 1077.500; 1090.500; 1180.500; 1260.500; 1280.500;				
1339.500; 1360.500; 1376.500				
Rittal wall-mounted enclosure type EL				
1919.500; 1920.500; 1926.500				
Rittal wall-mounted enclosure / distributor type DK				
7011.535; 7012.535; 7013.535; 7014.535; 7641.000; 7643.000; 7644.000; 7645.000				
Rittal module enclosure, compact enclosure, Toptec type CS				
9772.111; 9772.115				
Rittal empty enclosure for industrial distributor type IN				
1076.290				
Rittal wall-mounted distributor type SV				
9665.825; 9665.835; 9665.845				



RoHS
compliant



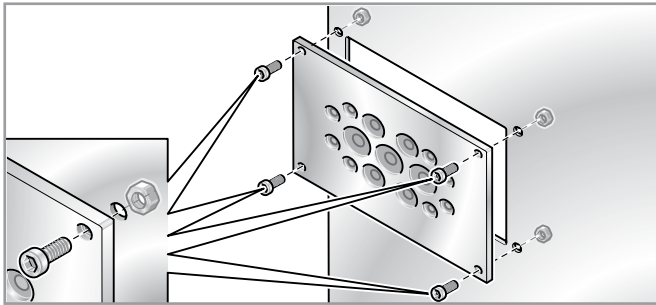
Blanking plate for closing off unused adapter positions and cut-outs.



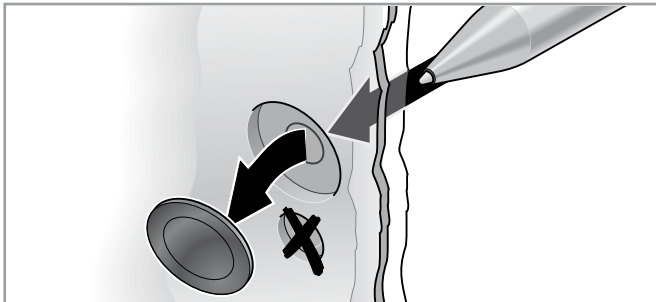
KDP BP 105/155...

162

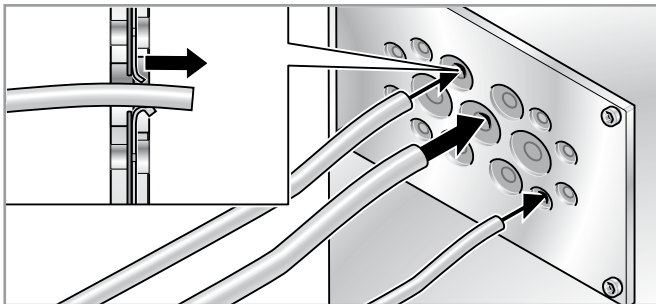
Mounting of type KDP x/x ALU



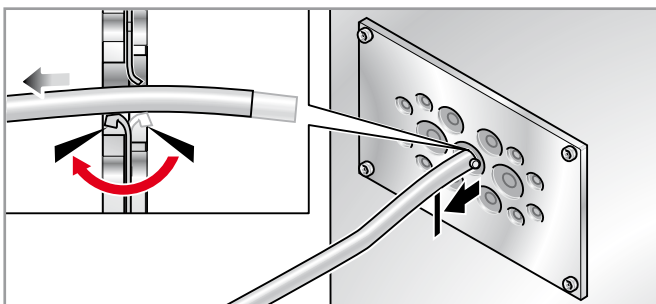
Set cable entry plate onto the cut-out and screw down.



Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear side. Pull cable through to desired length.



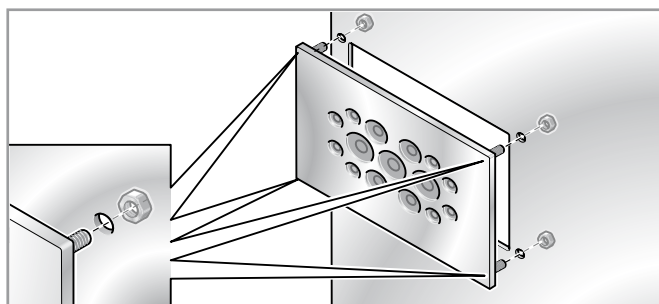
Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.



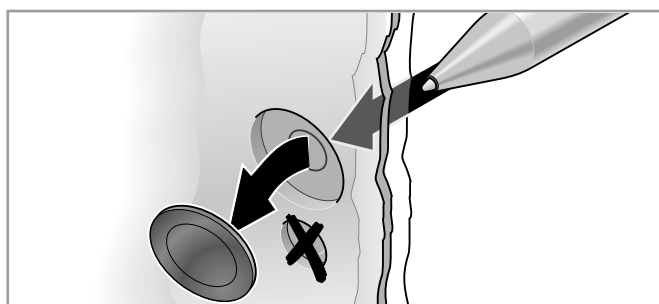


Cable entry plate KDP Metal

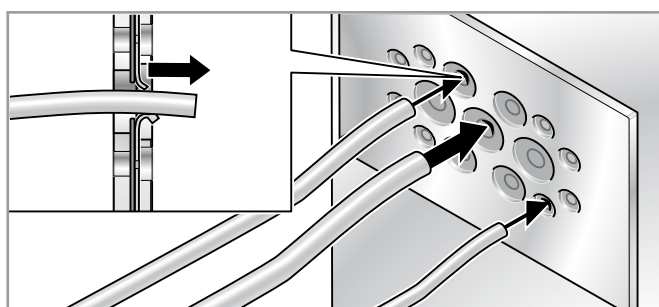
Mounting of type KDP x/x V4A



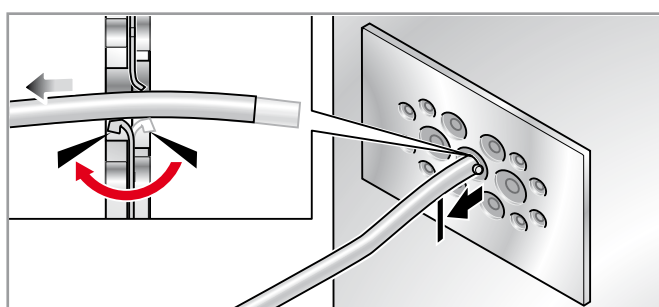
Set cable entry plate onto the cut-out and screw down from the rear.



Where necessary, remove the optional black cover from the locking plate. To do so, press the opening through from the rear until the cover falls out.



Select an opening appropriate for the cable diameter and push the cable through the opening from the front. The indicator becomes visible on the rear side. Pull cable through to desired length.

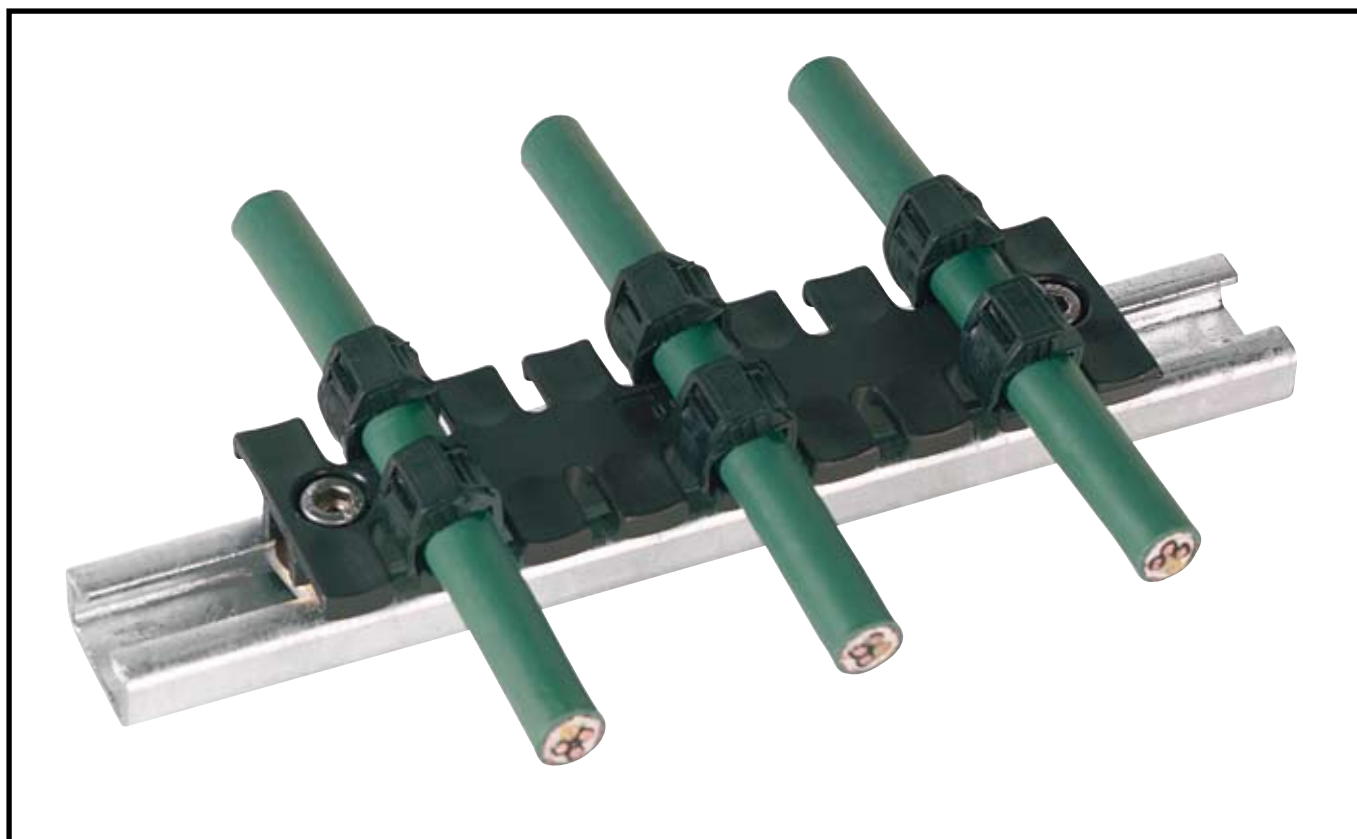


Retract cable approx. 10-15mm until the indicator on the rear is no longer visible. Depending on cable diameter and insertion size, the indicator may well become visible on the front side again.

Strain relief Cable fixing plate



Advantages



Quick and reliable strain relief

Strain relief and organisation of cables-quickly, simply, safely.

A large selection of strain relief plates covers a variety of potential uses.

Various types are available for screw on, snapping in or sliding in. Whether in plastic or metal versions, or as EMC solutions. Anything is possible.

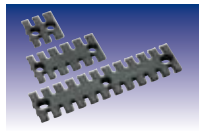
The cables are simply affixed to the strain relief using standard cable ties.



- ✓ Simple
- ✓ Cost-effective
- ✓ Wide variety of types
- ✓ Quick assembly
- ✓ High tensile forces
- ✓ EMC variants

Overview

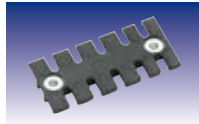
Page 170



Strain relief plate Type ZL

Plastic strain relief plate for strain relief and organisation of cables.

Page 171



Strain relief plate Type ZL-AH, ZL-MH

Plastic strain relief plate with metal inserts made of aluminium and brass.

Page 173



Strain relief plate Type ZL-AM, ZL-SW

Plastic strain relief plate with metal slot nuts for installation on C-profile rails.

Page 175



Strain relief plate Type ZLF

Plastic strain relief plate with snap-on clip for installation of C-profile rails.

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Discharge plate Type ZL xx-AB

Discharge plate for earthing shielded cables.
Fits on strain relief plate type ZL.

Page 177



Strain relief Accessories

Accessories like bushings and spacer sleeves for stacking of strain relief plates.



Strain relief cable fixing plate

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Cable fixing plate Type KAF

Plastic strain relief plate with snap-on clip. Can be stuck onto C and top hat rails.

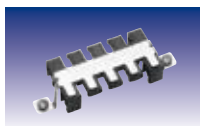
Page 179



Cable fixing plate Type KAF/NI

Plastic strain relief plate with snap-on clip. Can be stuck onto Niedax C-rail model 2910.

Page 180



Cable fixing plate Type KAF/K

Plastic strain relief plate with snap-on clip and discharge plate for earthing shielded cables. Can be stuck onto C and top hat rails.

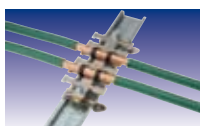
Page 181



Cable fixing plate Type KAF/EK

Metal strain relief plate with snap-on clip. For installation of top hat rails.

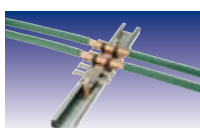
Page 182



Cable fixing plate Type KAF/SF

Metal strain relief plate with metal snap-on clip. For installation of top hat rails.

Page 183



Cable fixing plate Type KAF/DC

Metal strain relief plate with mounting sleeve to screw on.

Page 184



Cable fixing plate Type KAF/SK

Metal shielding clamp with friction spring for installation and earthing of individual cables.

Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	Approvals Railroad use			Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.			DB	SNCF	BS						
ZL	Plate: Polyamide	-40 °C	+125 °C	V0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZL-AH	Plate: Polyamide Insert bushing: Aluminium	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
ZL-MH	Plate: Polyamide Insert bushing: Brass	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
ZL-AM	Plate: Polyamide Other Elements: Stainless steel 1.4301	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
ZL-SW	Polyamide	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
ZLF	Polyamide	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
ZL xx-AB	Stainless steel 1.4301				✓				✓	✓	✓	✓	✓	✓
KAF	Polyamide	-40 °C	+125 °C	V0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
KAF/NI	Polyamide	-40 °C	+125 °C	V0					✓	✓	✓	✓	✓	✓
KAF/K	Plate: Polyamide Discharge plate: V2A	-40 °C	+125 °C	V0		✓	✓	✓	✓	✓	✓	✓	✓	✓
KAF/EK	Plate: V2A								✓	✓	✓	✓	✓	✓
KAF/SF	Plate: V2A								✓	✓	✓	✓	✓	✓
KAF/SF	Plate: V2A								✓	✓	✓	✓	✓	✓
KAF/DC	Plate: V2A Stand: Brass								✓	✓	✓	✓	✓	✓
SK	Galvanised sheet steel								✓	✓	✓	✓	✓	✓

** = not certified





Strain relief Cable fixing plate

Strain relief, type ZL

RoHS
compliant



-40 to +125 °C

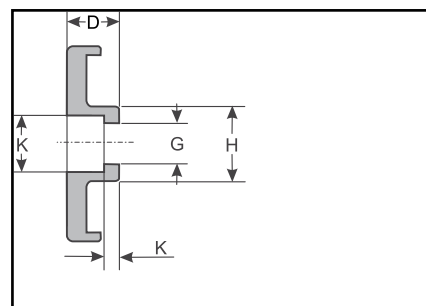
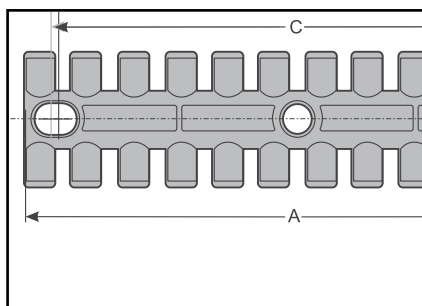
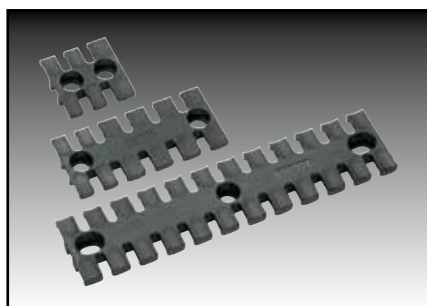


Plate: Polyamide



V0

The strain relief plate ZL may be used wherever cables, cords, wires or cables must be relieved or routed in a way that is secure, easy and cost-effective. The insertion of the ELB bush stops the cold extrusion characteristic of plastic from affecting the secure fixing of the plate. The DH spacer sleeve is needed for two-tier mounting.

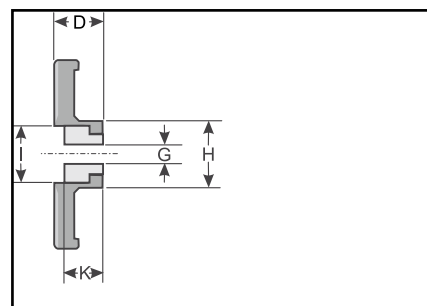


ZL...

Type	Order no.	Colour	max. number of cables	A mm	B mm	C mm	D mm	G mm	H mm	I mm	K mm	Pack qty
ZL 04	87701010	black	12	95.0	35.0	74.5	9.2	5.5	-	8.5	3.1	1
ZL 05	87701012	black	15	119.0	35.0	108.0	9.2	5.5	-	8.5	3.1	1
ZL 39	87701014	black	3	38.5	40.0	19.5	10.0	9.0	14.0	12.0	3.1	1
ZL 60	87701016	black	4	59.5	40.0	43.5	10.0	9.0	14.0	12.0	3.1	1
ZL 70	87701017	black	5	69.5	40.0	43.5	10.0	9.0	14.0	12.0	3.1	1
ZL 80	87701015	black	6	79.5	40.0	68.0	10.0	9.0	14.0	12.0	3.1	1
ZL 87/68	87701018	black	6	86.5	40.0	68.0	10.0	9.0	14.0	12.0	3.1	1
ZL 87/50	87701019	black	6	86.5	40.0	50.0	10.0	9.0	14.0	12.0	3.1	1
ZL 103	87701020	black	7	102.5	40.0	84.0	10.0	9.0	14.0	12.0	3.1	1
ZL 121	87701022	black	8	121.0	40.0	102.5	10.0	9.0	14.0	12.0	3.1	1
ZL 140	87701024	black	9	139.5	40.0	121.0	10.0	9.0	14.0	12.0	3.1	1
ZL 180/6	87701026	black	12	180.0	42.0	154.0 - 160.0	11.9	9.0	16.0	12.0	3.1	1
ZL 180/8	87701027	black	12	180.0	42.0	154.0 - 160.0	11.9	11.0	16.0	13.4	3.1	1
Accessories ZL 04 and ZL 05												
DH 30/8	87701054											
Accessories ZL39-180/8												
ELB / 6	87701050											1
ELB/8 *	87701060											1
DH 32/6	87701052		32									1
DH 32/8 *	87701062		32									1
* for ZL 180/8 only												



The strain relief plate ZL-MH is based on the strain relief plate ZL. Inserting the brass bushing enables a standard M5 or M6 screw to be used for fastening.

[illegible]

Strain relief, type ZL-AM



-40 to +125 °C



Plate: Polyamide

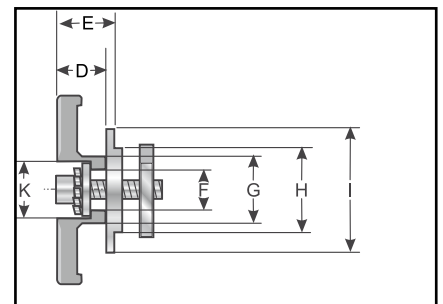
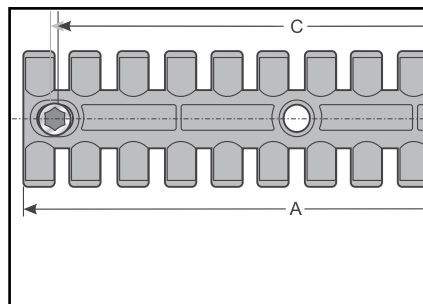
Other Elements: Stainless steel 1.4301



V0

The strain relief plate ZL-AM is based on the strain relief plate ZL. The embedded brass discs hinder the cold flow deformation properties of the plastic under heavy and permanent vibration, thereby preventing the screwed connection from loosening by itself. Slot nuts and screws are made from stainless steel. Easily assembled on a C-rail with 16 mm slot and an inner span of 22 mm - 27 mm.

- Very quick assembly
- Orderly routing of the cable
- Simple and effective strain relief through cable ties.



ZL-AM...

Type	Order no.	Colour	max. number of cables	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm	Pack qty
ZL-AM 39	87702210	black	3	38.5	40.0	19.5	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 60	87702212	black	4	59.5	40.0	43.5	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 87	87702214	black	6	86.5	40.0	68.0	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 103	87702216	black	7	102.5	40.0	84.0	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 121	87702218	black	8	121.0	40.0	102.5	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 140	87702220	black	9	139.5	40.0	121.0	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1
ZL-AM 180	87702222	black	12	180.0	42.0	154.0 - 160.0	10.0	12.0	5.0	14.0	16.0	26.0	12.0	1

Note: The fastening screw is outfitted with UNC threads





Strain relief Cable fixing plate

Strain relief, type ZL-SW



-40 to +125 °C



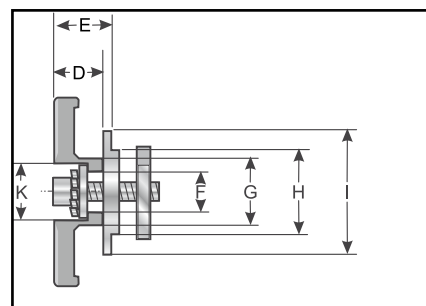
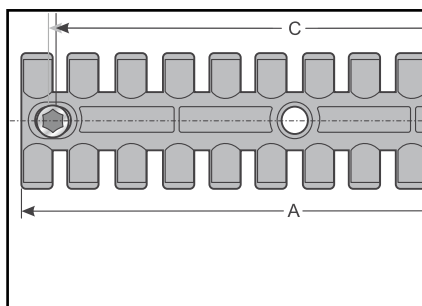
Polyamide



V0

The strain relief plate ZL-SW is based on the strain relief plate ZL. The embedded brass discs hinder the cold flow deformation properties of the plastic under heavy and permanent vibration, thereby preventing the screwed connection from loosening by itself. Slot nuts and screws are made from stainless steel. Easily assembled on a C-rail with 12 mm slot and an inner span up to 27 mm.

- Very quick assembly
- Orderly routing of the cable
- Simple and effective strain relief through cable ties.



Type	Order no.	Colour	max. number of cables	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm	Pack qty
ZL-SW 39	87702410	black	3	38.5	40.0	19.5	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 60	87702412	black	4	59.5	40.0	43.5	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 87	87702414	black	6	86.5	40.0	68.0	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 103	87702416	black	7	102.5	40.0	84.0	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 121	87702418	black	8	121.0	40.0	102.5	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 140	87702420	black	9	139.5	40.0	121.0	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1
ZL-SW 180/6	87702422	black	12	180.0	42.0	154.0 - 160.0	10.0	12.0	6.2	14.0	11.6	18.0	12.0	1

Note: The fastening screw is outfitted with metric threads



Strain relief Cable fixing plate

Strain relief, type ZL xx-AB

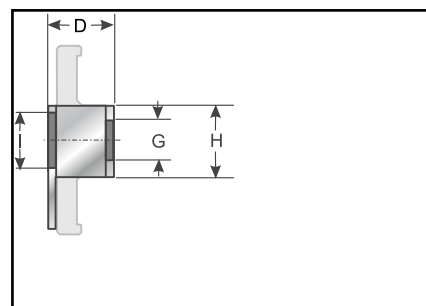
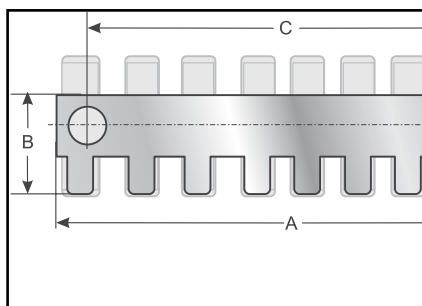
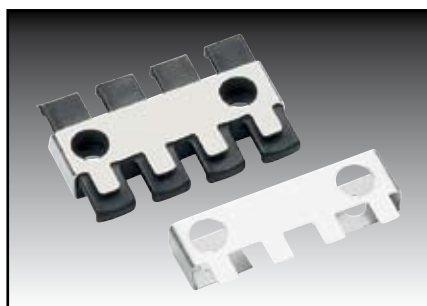
RoHS
compliant



Stainless steel 1.4301

In conjunction with the ZL strain relief rail, the ZL-AB discharge plate is suitable for discharging interferences which may occur on cable sheaths.

ZL strain relief not included in delivery. Please order separately.



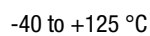
ZL...-AB/EMV

Type	Order no.	Suitable for	max. number of cables	A mm	B mm	C mm	D mm	G mm	H mm	I mm	Pack 1
ZL 39-AB/EMV	87701034	ZL 39	3	41.0	25.0	19.5	12.0	6.5	16.0	10.0	1
ZL 60-AB/EMV	87701036	ZL 60	4	62.5	25.0	43.5	12.0	6.5	16.0	10.0	1
ZL 87-AB/EMV	87701040	ZL 87/68	6	89.0	25.0	68.0	12.0	6.5	16.0	10.0	1
ZL 140-AB/EMV	87701046	ZL 140	9	142.5	25.0	121.0	12.0	6.5	16.0	10.0	1

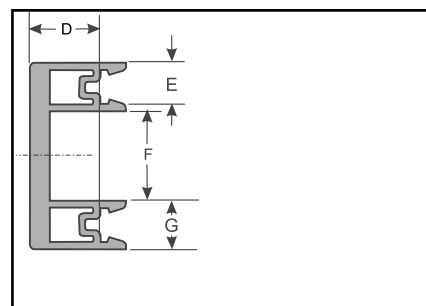
The corresponding ZL strain relief plate is required for the discharge plate.



Cable fixing plate, type KAF



The cable fixing plate KAF is suitable for simultaneously holding and relieving the strain of cables in the control cabinet. Mounting is performed on a 35 mm top hat rail (EN 50022; Niedax 2934;2936) or on a C-rail (Niedax 2970;2971). Installation is a simple snap-in process.



KAF...

[illegible]

Cable fixing plate, type KAF/NI



-40 to +125 °C

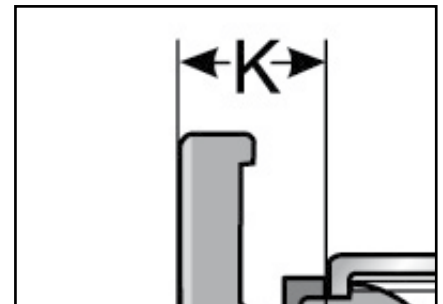
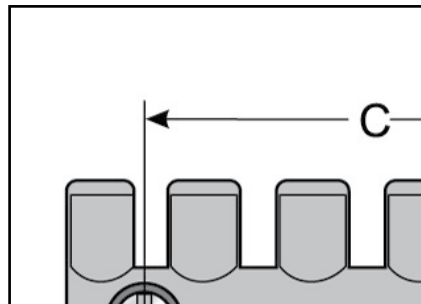


Polyamide



V0

The cable fixing plate KAF is suitable for simultaneously holding and relieving the strain of cables in the control cabinet. Mounted using Niedax model 2910 C-rail. Installation is a simple snap-in process. Additional securing through pre-mounted lock screw.

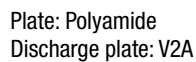
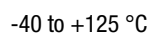


KAF/NI

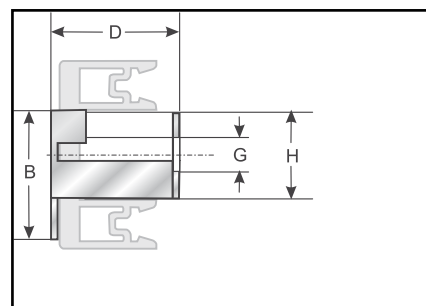
[illegible]



Cable fixing plate, type KAF/K



The cable fixing plate KAF/K-EMV consists of a plastic carrier with a fitted V2A discharge plate. Integrated clamps ensure quick and safe fastening, both on the top hat or C-rail. The ground contact occurs through the lateral brackets. The use of two connecting points ensures a good discharge.



KAF/K...

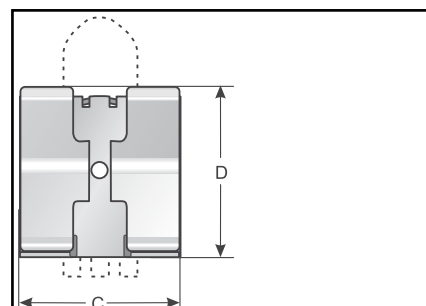
[illegible]



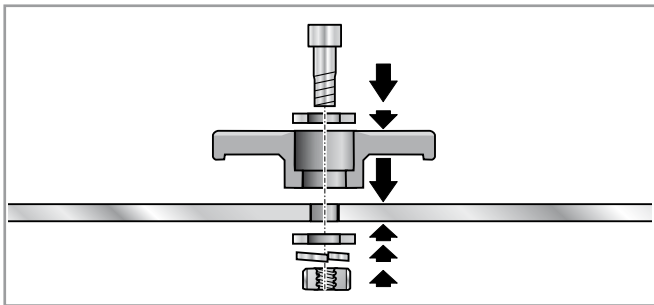
Shielding clamp, type SK



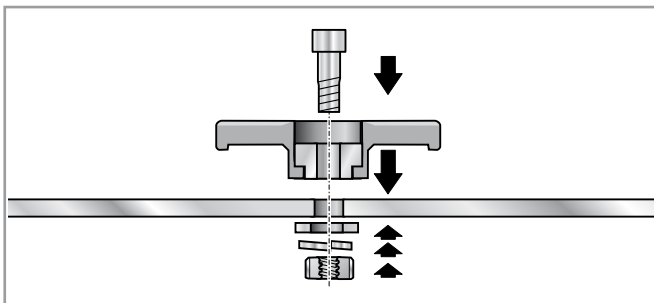
The shielding clamp may be used wherever the shielding from individual cables must be connected with the earth potential. The SK can be either screwed down on the mounting plate or snapped on to the 35 mm top hat rail (EN 50022) by means of a mounting foot. SK mounting foot not included in delivery. Please order separately.

[illegible]

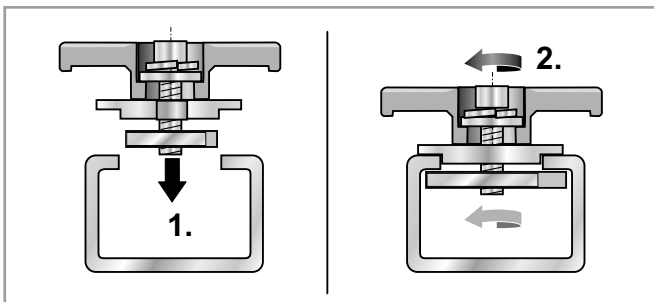
Mounting (ZL; ZL-AH; ZL-MH; ZL-AM; ZL-SW; ZLF)



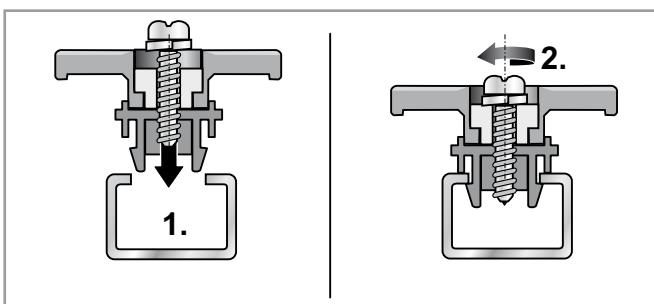
Mounting strain relief type ZL: Set plate onto level surface and affix with suitable mounting material.



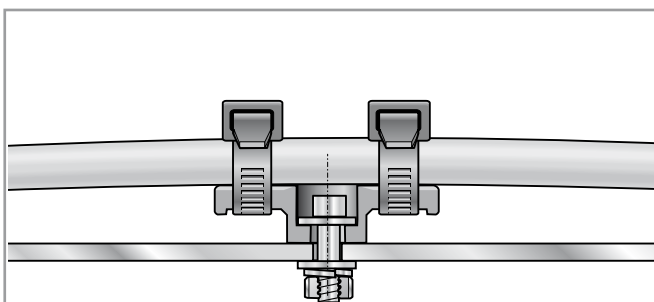
Mounting strain relief type ZL-AH or ZL-MH: Set plate onto level surface and affix with suitable mounting material.



Mounting strain relief type ZL-AM or ZL-SW: set plate into suitable rail. Turn slot nut into rail using fastening screw. Ensure proper positioning of the slot nut. Screw down the fastening screw until the plate is clamped.



Mounting strain relief type ZLF: set plate into suitable rail. Screw down the fastening screw until the plate is clamped.

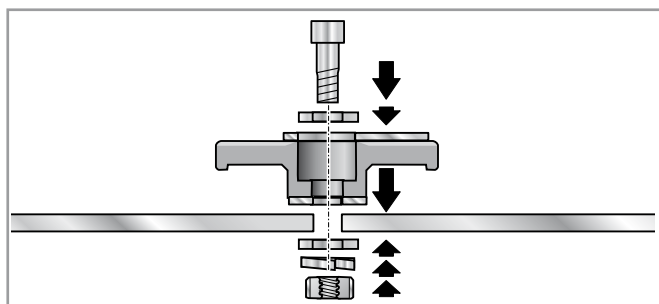


Wire mounting on ZL, ZL-AH, ZL-MH, ZL-AM, ZL-SW and ZLF: lay cables perpendicular to plate and affix on both sides with cable ties. For larger cable diameters, secure the cable through at least 2 retainers.

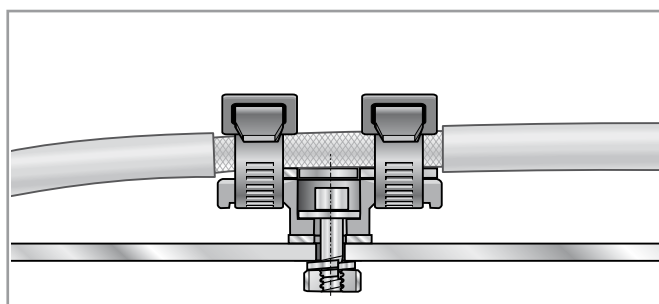


Strain relief Cable fixing plate

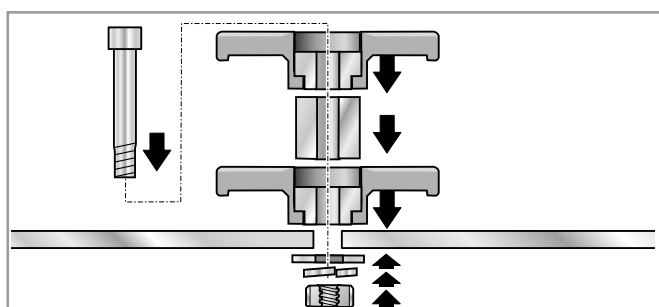
Mounting (ZL xx-AB; doubled; KAF)



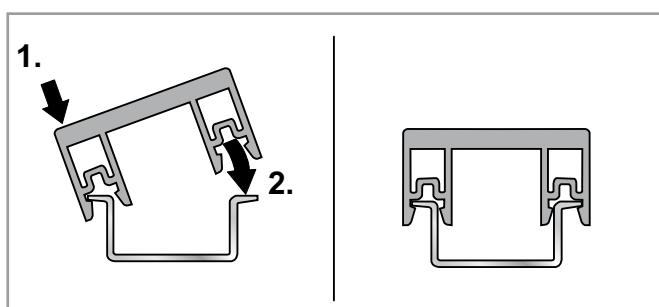
Mounting strain relief, type ZL xx-AB: Set plate with attached discharge plate onto level surface and affix with suitable mounting material. Ensure good contact.



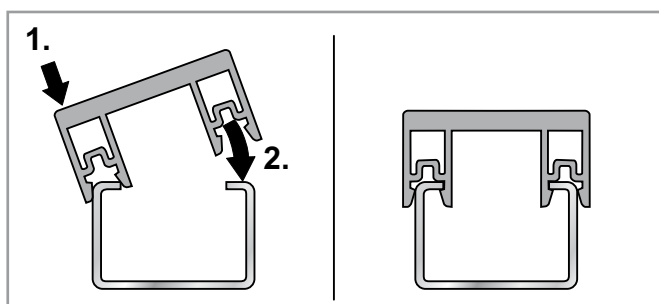
Cable mounting on ZL xx-AB: Lay stripped cables perpendicular to plate and affix on both sides with cable ties. For larger cable diameters, secure the cable through at least 2 retainers.



Strain relief for 2-tier installation: Provide metal inserts for upper and lower ZL. Install DH spacing sleeve between the plates. Affix with a suitable mounting material.

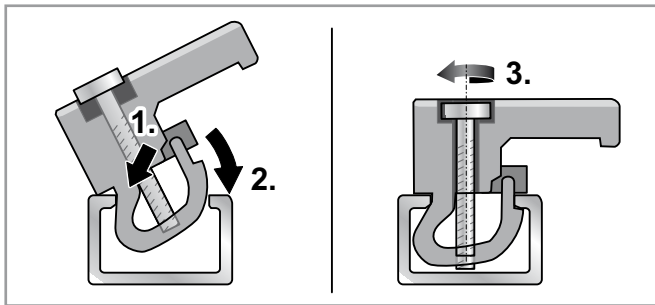


Mounting strain relief type KAF on top hat rail: Set plate lengthwise to the rail. Press plate into the side opposite it until it clicks into the rail.

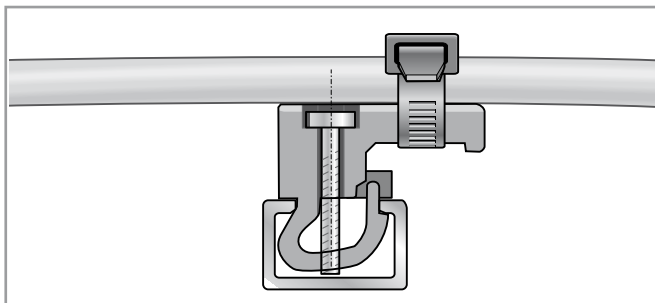


Mounting strain relief type KAF on C-rail: Set plate lengthwise on the lower side of the rail. Press plate into the side opposite it until it clicks into the rail.

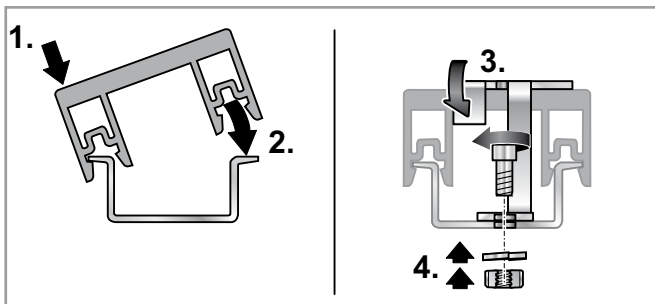
Mounting (KAF; KAF/NI; KAF/K; KAF/EK)



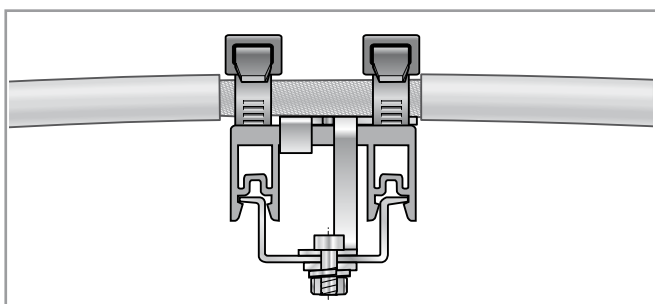
Mounting strain relief type KAF/NI on Nidax C-rail: Set plate lengthwise to the rail and press in. Affix with the lock screw.



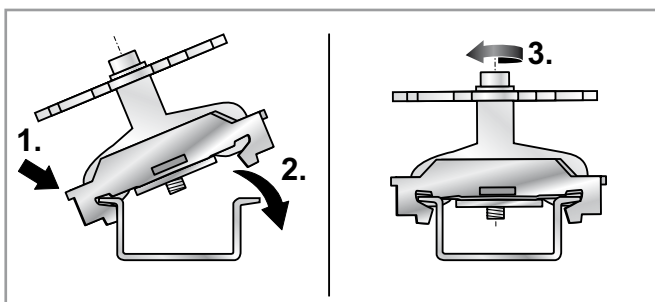
Cable mounting on the KAF or KAF/NI: lay cables perpendicular to plate and affix on both sides with cable ties. For larger cable diameters, secure the cable through at least 2 retainers.



Mounting strain relief type KAF/K: Set plate lengthwise to the rail. Press plate into the side opposite it until it clicks into the rail. Place the discharge plate. Affix with a suitable mounting material. Ensure good contact.



Cable mounting onto KAF/K: Lay stripped cables perpendicular to plate and affix on both sides with cable ties. For larger cable diameters, secure the cable through at least 2 retainers.

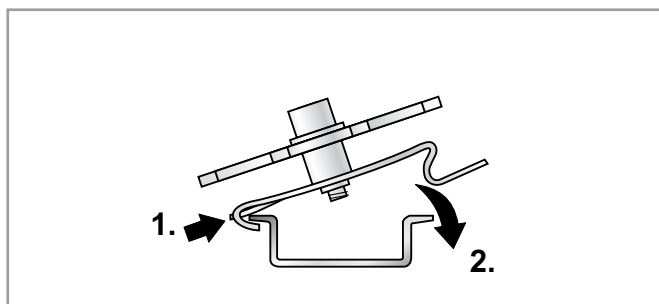


Mounting strain relief type KAF/EK: Set plate lengthwise atop the rail. Screw down the fastening screw until the plate is clamped.

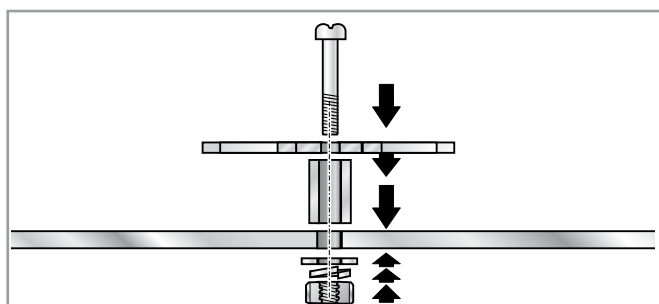


Strain relief Cable fixing plate

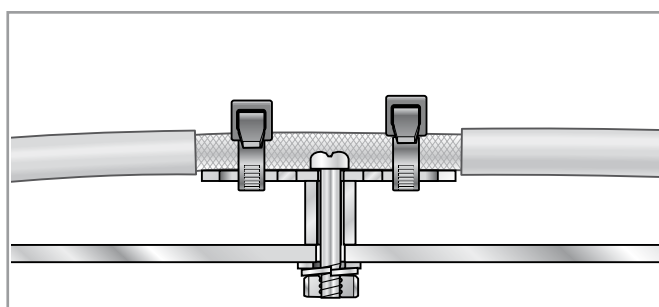
Mounting (KAF/SF; KAF/DC; SK)



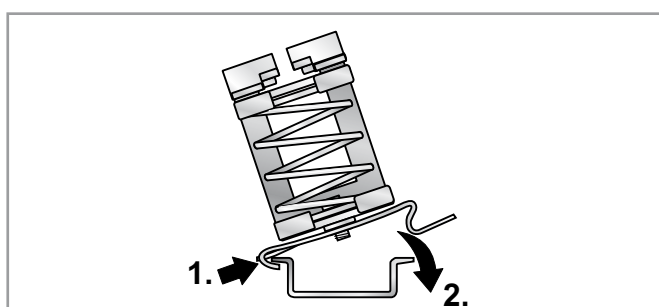
Mounting strain relief type KAF/SF: Set snap-on foot into the top hat rail and press down until the foot clicks in.



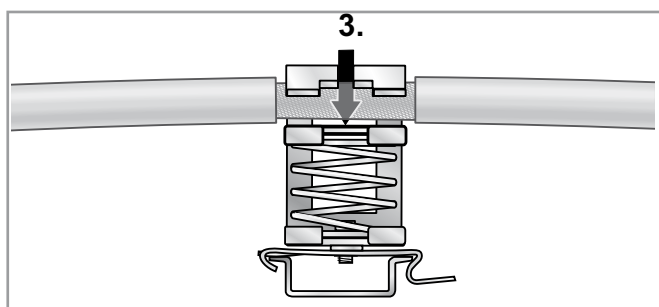
Mounting strain relief type KAF/DC: Position plate using spacer sleeves on the flat space and affix with a suitable mounting material.



Cable mounting on KAF/EK, KAF/SF or KAF/DC: Lay stripped cables perpendicular to plate and affix on both sides with cable ties. For larger cable diameters, secure the cable through at least 2 retainers.



Mounting shielding clamp SK: Mount shielding clamp with the fastening screw or set the snap-on foot into the top hat rail and press down until the foot clicks in. Ensure good contact.



Cable mounting for the SK shielding clamp: Press down on pressure plate and insert stripped cable. Release pressure plate and check contact.

Cable fittings



Advantages



Tried-and-true

Traditional cable fittings are required in all installations. Known for excellent strain relief even while providing higher protection class. They are available in a wide variety of models, such as plastic or metal. Other types are available for EMC applications or in areas at risk of explosion. Multi-inserts add more capacity.



- ✓ High protection class
- ✓ Good strain relief
- ✓ Easy assembly
- ✓ Wide variety of types

Overview

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Cable fitting Type WKK

Plastic cable fitting for installation of individual cables.

Page 197



Cable fitting Type WKK/Ex

Plastic cable fitting with approval for explosive areas for installation of individual cables.

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Cable fitting Type WKM

Metal cable fitting for installation of individual cables.

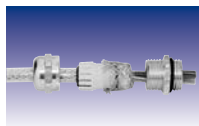
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Cable fitting Type MWKM

Metal cable fitting for multiple inserts for installation of several cables.

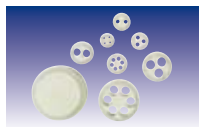
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Cable fitting Type WKM/EMV

Metal cable fitting for installation and earthing of shielded cables.

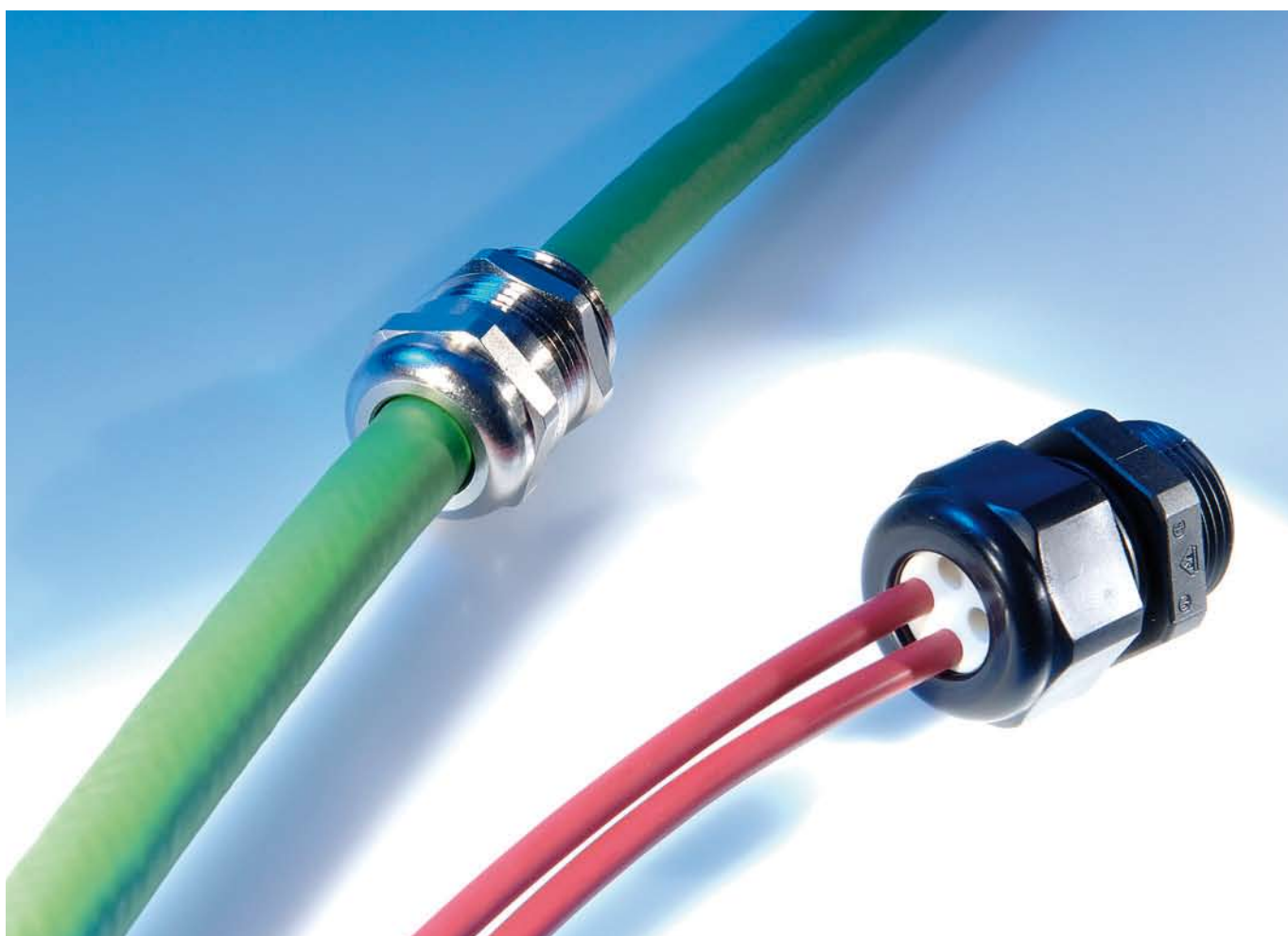
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Multi-insert Type KV-ME

Multi-inserts for cable fittings for installation of several cables.





Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.									
WKK	Polyamide/moulded seal: NBR	-40 °C	+100 °C	V0	✓	IP 68 up to 10 bar with addl. O-ring type OR	✓	✓	✓	✓	✓	✓
WKK-Ex	Polyamide/moulded seal: NBR	-20 °C	+105 °C	V0	✓	IP 68 up to 10 bar with addl. O-ring type OR	✓	✓	✓	✓	✓	✓
WKM	Brass, nickel-plated; Polyamide; NBR	-40 °C	+100 °C		✓	IP 68 up to 10 bar	✓	✓	✓	✓	✓	✓
MWKM	Brass, nickel-plated; Polyamide; NBR	-40 °C	+100 °C		✓	IP 65	✓	✓	✓	✓	✓	✓
WKM-EMV	Brass, nickel-plated; Polyamide; NBR	-40 °C	+100 °C		✓	IP 68 up to 10 bar	✓	✓	✓	✓	✓	✓
WKM-EMV	Brass, nickel-plated; Polyamide; NBR	-40 °C	+100 °C		✓	IP 68 up to 10 bar	✓	✓	✓	✓	✓	✓
KV-ME	Elastomer	-40 °C	+100 °C		✓	IP 65	✓	✓	✓	✓	✓	✓

** = not certified



Type WKK (plastic version)

RoHS
compliant



-40 to +100 °C, transient +120 °C



Polyamide/moulded seal: NBR



V0

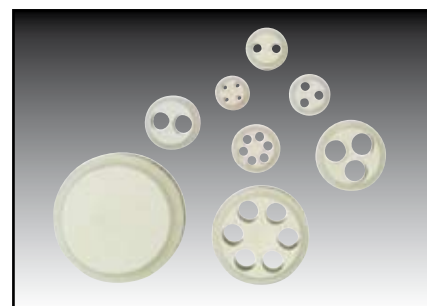
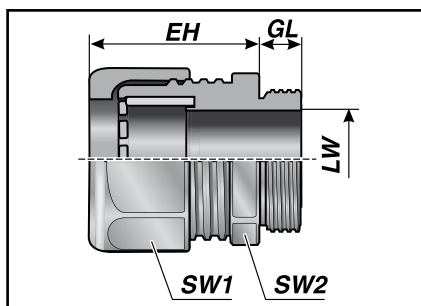


IP 68 up to 10 bar with additional
O-ring type OR

The cable fitting offers excellent strain relief and has a vibration-resistant cap nut.
The multi-insert KV-ME enables several cables to be routed through one cable fitting.

- Very high protection class
- Easy to mount
- Large clamping range

An additional O-ring (type OR) is required in order to assure a protection rating of IP68.



WKK

Type	Order no.	Colour	Connecting thread	LW mm	EH mm	GL mm	SW 1/2 mm	Pack qty
Metric version								
WKK-M12x1.5	84105050	black	M12x1.5	3.0 - 6.5	21.0	8.0	15/15	50
WKK-M16x1.5	84105056	black	M16x1.5	4.0 - 8.0	22.0	8.0	19/19	50
WKK-M20x1.5	84105062	black	M20x1.5	6.0 - 12.0	27.0	9.0	24/24	50
WKK-M25x1.5	84105068	black	M25x1.5	13.0 - 18.0	31.0	11.0	33/33	50
WKK-M32x1.5	84105074	black	M32x1.5	18.0 - 25.0	39.0	11.0	42/42	25
WKK-M40x1.5	84105080	black	M40x1.5	22.0 - 32.0	48.0	13.0	53/53	10
WKK-M50x1.5	84105086	black	M50x1.5	32.0 - 38.0	49.0	13.0	60/60	5
WKK-M63x1.5	84105092	black	M63x1.5	37.0 - 44.0	49.0	14.0	65/68	5
WKK-M12x1.5	84105000	grey	M12x1.5	3.0 - 6.5	21.0	8.0	15/15	50
WKK-M16x1.5	84105006	grey	M16x1.5	4.0 - 8.0	22.0	8.0	19/19	50
WKK-M20x1.5	84105012	grey	M20x1.5	6.0 - 12.0	27.0	9.0	24/24	50
WKK-M25x1.5	84105018	grey	M25x1.5	13.0 - 18.0	31.0	11.0	33/33	50
WKK-M32x1.5	84105024	grey	M32x1.5	18.0 - 25.0	39.0	11.0	42/42	25
WKK-M40x1.5	84105030	grey	M40x1.5	22.0 - 32.0	48.0	13.0	53/53	10
WKK-M50x1.5	84105036	grey	M50x1.5	32.0 - 38.0	49.0	13.0	60/60	5
WKK-M63x1.5	84105042	grey	M63x1.5	37.0 - 44.0	49.0	14.0	65/68	5
Metric version with extended thread								
WKK/L-M12x1.5	84105650	black	M12x1.5	3.0 - 6.5	21.0	15.0	15/15	100
WKK/L-M16x1.5	84105652	black	M16x1.5	4.0 - 8.0	22.0	15.0	19/19	100
WKK/L-M20x1.5	84105654	black	M20x1.5	6.0 - 12.0	27.0	15.0	24/24	100
WKK/L-M25x1.5	84105656	black	M25x1.5	13.0 - 18.0	31.0	15.0	33/33	100

Type WKK (plastic version)

RoHS
compliant

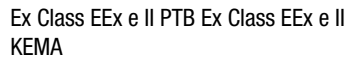
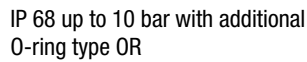
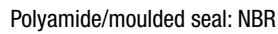
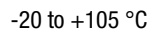
Type	Order no.	Colour	Connecting thread	LW mm	EH mm	GL mm	SW 1/2 mm	Pack qty
Pg version								
WKK-Pg 07	84101050	black	Pg 07	3.0 - 6.5	21.0	8.0	15/15	50
WKK-Pg 09	84101052	black	Pg 09	4.0 - 8.0	22.0	8.0	19/19	50
WKK-Pg 11	84101054	black	Pg 11	5.0 - 10.0	25.0	8.0	22/22	50
WKK-Pg 13.5	84101056	black	Pg 13.5	6.0 - 12.0	27.0	9.0	24/24	50
WKK-Pg 16	84101058	black	Pg 16	10.0 - 14.0	28.0	10.0	27/27	50
WKK-Pg 21	84101060	black	Pg 21	13.0 - 18.0	31.0	11.0	33/33	50
WKK-Pg 29	84101062	black	Pg 29	18.0 - 25.0	39.0	11.0	42/42	25
WKK-Pg 36	84101064	black	Pg 36	22.0 - 32.0	48.0	13.0	53/53	10
WKK-Pg 42	84101066	black	Pg 42	32.0 - 38.0	49.0	13.0	60/60	5
WKK-Pg 48	84101068	black	Pg 48	37.0 - 44.0	49.0	13.0	65/65	5
WKK-Pg 07	84101010	grey	Pg 07	3.0 - 6.5	21.0	8.0	15/15	50
WKK-Pg 09	84101012	grey	Pg 09	4.0 - 8.0	22.0	8.0	19/19	50
WKK-Pg 11	84101014	grey	Pg 11	5.0 - 10.0	25.0	8.0	22/22	50
WKK-Pg 13.5	84101016	grey	Pg 13.5	6.0 - 12.0	27.0	9.0	24/24	50
WKK-Pg 16	84101018	grey	Pg 16	10.0 - 14.0	28.0	10.0	27/27	50
WKK-Pg 21	84101020	grey	Pg 21	13.0 - 18.0	31.0	11.0	33/33	50
WKK-Pg 29	84101022	grey	Pg 29	18.0 - 25.0	39.0	11.0	42/42	25
WKK-Pg 36	84101024	grey	Pg 36	22.0 - 32.0	48.0	13.0	53/53	10
WKK-Pg 42	84101026	grey	Pg 42	32.0 - 38.0	49.0	13.0	60/60	5
WKK-Pg 48	84101028	grey	Pg 48	37.0 - 44.0	49.0	13.0	65/65	5
Pg version with extended thread								
WKK/L-Pg 07	84101650	black	Pg 07	3 - 6.5	21.0	15.0	15/15	50
WKK/L-Pg 09	84101652	black	Pg 09	4 - 8	22.0	15.0	19/19	50
WKK/L-Pg 11	84101654	black	Pg 11	5 - 10	25.0	15.0	22/22	50
WKK/L-Pg 13.5	84101656	black	Pg 13.5	6 - 12	27.0	15.0	24/24	50
WKK/L-Pg 16	84101658	black	Pg 16	10 - 14	28.0	15.0	27/27	50
WKK/L-Pg 21	84101660	black	Pg 21	13 - 18	31.0	15.0	33/33	50
WKK/L-Pg 29	84101662	black	Pg 29	18 - 25	39.0	15.0	42/42	25
WKK/L-Pg 36	84101664	black	Pg 36	22 - 32	48.0	18.0	53/53	10
WKK/L-Pg 42	84101666	black	Pg 42	32 - 38	49.0	18.0	60/60	5
WKK/L-Pg 48	84101668	black	Pg 48	37 - 44	49.0	18.0	65/65	5
WKK/L-Pg 07	84101610	grey	Pg 07	3 - 6.5	21.0	15.0	15/15	50
WKK/L-Pg 09	84101612	grey	Pg 09	4 - 8	22.0	15.0	19/19	50
WKK/L-Pg 11	84101614	grey	Pg 11	5 - 10	25.0	15.0	22/22	50
WKK/L-Pg 13.5	84101616	grey	Pg 13.5	6 - 12	27.0	15.0	24/24	50
WKK/L-Pg 16	84101618	grey	Pg 16	10 - 14	28.0	15.0	27/27	50
WKK/L-Pg 21	84101620	grey	Pg 21	13 - 18	31.0	15.0	33/33	50
WKK/L-Pg 29	84101622	grey	Pg 29	18 - 25	39.0	15.0	42/42	25
WKK/L-Pg 36	84101624	grey	Pg 36	22 - 32	48.0	18.0	53/53	10
WKK/L-Pg 42	84101626	grey	Pg 42	32 - 38	49.0	18.0	60/60	5
WKK/L-Pg 48	84101628	grey	Pg 48	37 - 44	49.0	18.0	65/65	5



RoHS
compliant



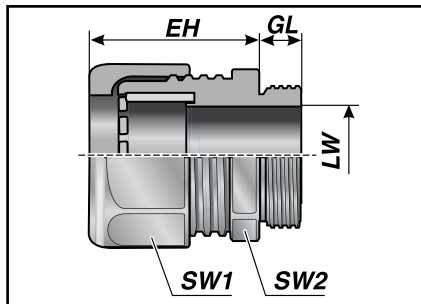
RoHS
compliant



The cable fitting offers excellent strain relief and has a vibration-resistant cap nut.

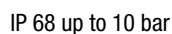
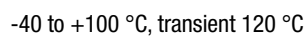
- Very high protection class
- Approved for areas at risk of explosion
- Large clamping range

An additional O-ring (type OR) is required in order to reach a protection rating of IP68.

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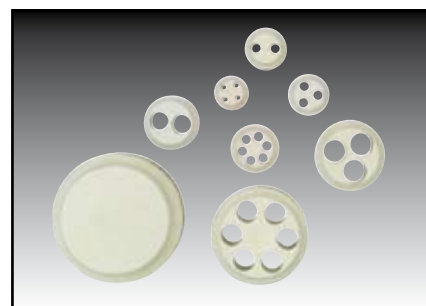


RoHS
compliance



The cable fitting offers excellent strain relief and has a vibration-resistant cap nut. The multi-insert KV-ME enables several cables to be routed through one cable fitting.

- Very high protection class
- Easy to mount
- Large clamping range
- Includes sealing ring on connecting thread

**WKM**198

RoHS
compliant



Type KV-ME (multi-insert)

RoHS
compliant



-40 to +100 °C, transient 120 °C



Elastomer

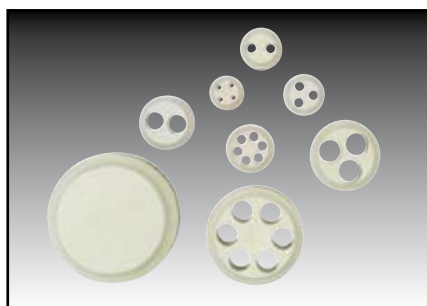


IP 65

The KV-ME multi-insert can be used both in WKK cable fittings and in WKM cable fittings. This enables several cables to be routed through one fitting. The fitted seal insert in the cable fitting is simply swapped for the KV-ME multi-insert.

The cable diameter may be up to 20 % less than the diameter of the hole, but must not undershoot the hole diameter by less than 1mm.

- Variable
- More cables through one fitting
- High protection class



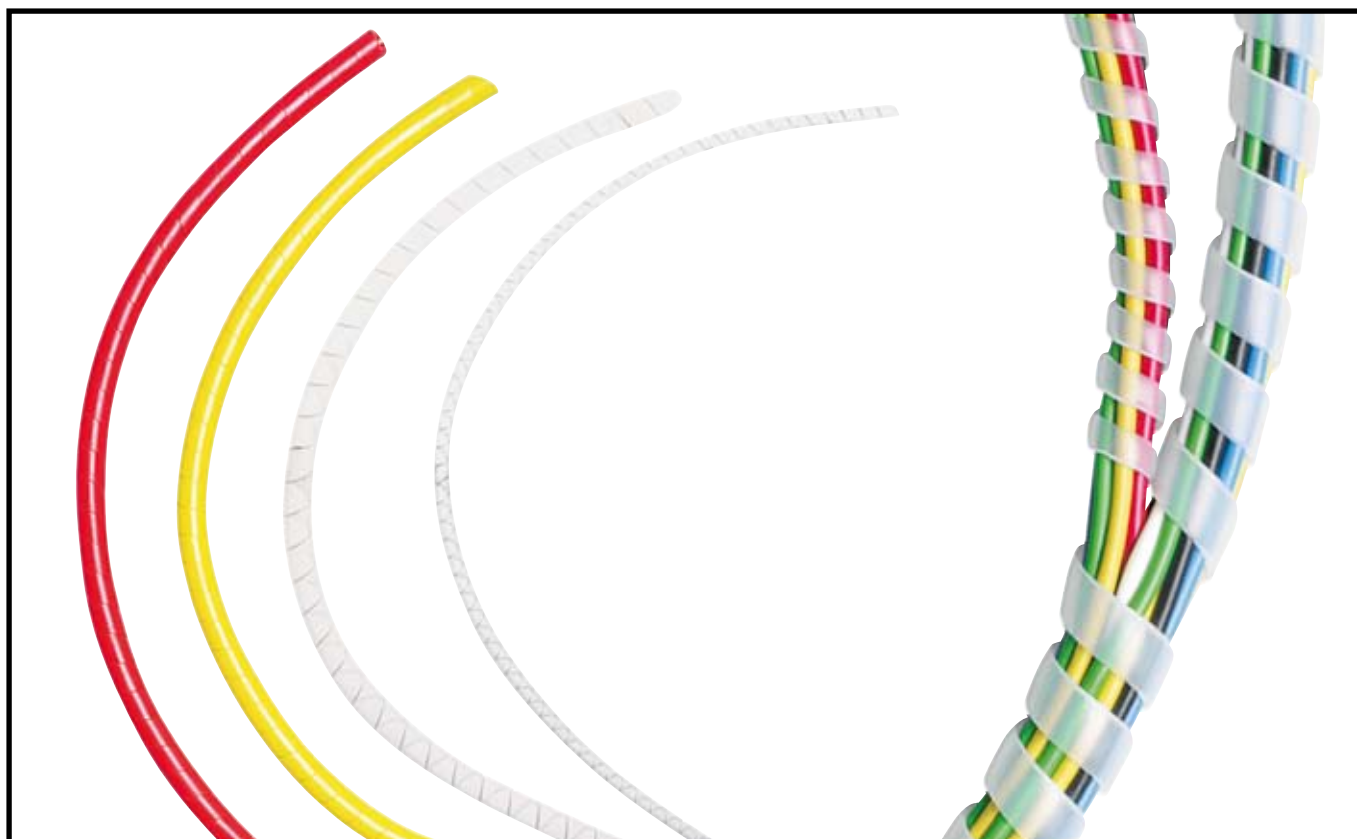
KV-ME

Type	Order no.	Number x Ø mm	Suitable for metric	Suitable for Pg	Suitable for NPT	Pack qty
KV-ME M16/Pg09-4x1,4	8358221000	4 x 1.4	M 16	Pg 09	NPT 3/8"	50
KV-ME M16/Pg09-2x3	8358221200	2 x 3	M 16	Pg 09	NPT 3/8"	50
KV-ME M16/Pg11-2x3	8358221400	2 x 3	M 16	Pg 11	-	50
KV-ME M16/Pg11-2x4	8358221600	2 x 4	M 16	Pg 11	-	50
KV-ME M16/Pg11-3x3	8358221800	3 x 3	M 16	Pg 11	-	50
KV-ME M20/Pg13.5-2x5	8558222000	2 x 5	M 20	Pg 13.5	NPT 1/2"	50
KV-ME M20/Pg13.5-3x2	8558222200	3 x 2	M 20	Pg 13.5	NPT 1/2"	50
KV-ME M20/Pg13.5-3x4	8358222400	3 x 4	M 20	Pg 13.5	NPT 1/2"	50
KV-ME M20/Pg13.5-6x3	8358222600	6 x 3	M 20	Pg 13.5	NPT 1/2"	50
KV-ME M20/Pg16-2x6	8358222800	2 x 6	M 20	Pg 16	-	50
KV-ME M20/Pg16-3x3	8358223000	3 x 3	M 20	Pg 16	-	50
KV-ME M20/Pg16-3x4	8358223200	3 x 4	M 20	Pg 16	-	50
KV-ME M20/Pg16-3x5,6	8358223400	3 x 5.6	M 20	Pg 16	-	50
KV-ME M20/Pg16-4x4	8358223600	4 x 4	M 20	Pg 16	-	50
KV-ME M20/Pg16-5x4	8358223800	5 x 4	M 20	Pg 16	-	50
KV-ME M20/Pg16-6x4	8358224000	6 x 4	M 20	Pg 16	-	50
KV-ME M25/Pg21-2x8	8358224200	2 x 8	M 25	Pg 21	NPT 3/4"	50
KV-ME M25/Pg21-3x7	8358224400	3 x 7	M 25	Pg 21	NPT 3/4"	50
KV-ME M25/Pg21-4x6	8358224600	4 x 6	M 25	Pg 21	NPT 3/4"	50
KV-ME M32/Pg29-6x6,5	838224800	6 x 6.5	M 32	Pg 29	-	50
KV-ME M32/Pg29-4x9	8358225000	4 x 9	M 32	Pg 29	-	25
KV-ME M40/Pg36-blank	8358228400	-	M 40	Pg 36	NPT 1 1/2"	25

Accessories



Advantages



You won't get far without accessories

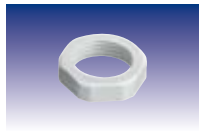
A comprehensive range of accessories is available, including lock nuts, reducing bushes, various fasteners, cable ties, etc. Different materials, thread types and thread sizes ensure a wide range of uses for many applications.



- ✓ Large range of accessories
- ✓ Different materials
- ✓ Various thread types and sizes
- ✓ Universal
- ✓ Easy handling

Overview

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Type KGM, GM

Lock nut made of plastic and metal.

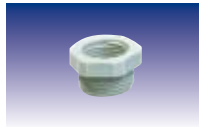
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Type BSTK, BST

Blanking plates made of plastic and metal.

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Type KRR, RR, ER, EG

Reducing bushes and extensions made of plastic and metal.

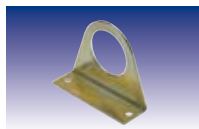
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Type OR/NBR

O-ring designed for various threads

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Type BWM

Metal mounting bracket for metric and PG threads.

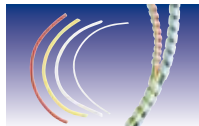
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Type SS, SSG

Metal conduit clamps

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Type SB, SBF

Spiral strips, plastic.

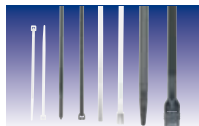
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Type BN

Plastic blind rivets.

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Type KB, KBM, BF

Cable ties made of plastic and metal.

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Type SH, KH

Holder for screwing in or gluing, to fix cables in place.

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Type KBL

Cable tie rail made of plastic for affixing and organising cables.



Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	IP protection class	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.									
KGM	Polyamide	-30 °C	+100 °C	VO	✓		✓	✓	✓	✓	✓	✓
GM	Brass, nickel-plated						✓	✓	✓	✓	✓	✓
BSTK	Polyamide	-30 °C	+100 °C	HB	✓	IP 54 IP 65	✓	✓	✓	✓	✓	✓
BST	Brass, nickel-plated				✓	IP 54 IP 65	✓	✓	✓	✓	✓	✓
KRR	Polyamide	-30 °C	+100 °C	HB	✓		✓	✓	✓	✓	✓	✓
RR	Brass, nickel-plated				✓		✓	✓	✓	✓	✓	✓
ER / EG	Brass, nickel-plated				✓		✓	✓	✓	✓	✓	✓
OR-NBR (O-ring)	NBR	-25 °C	+120 °C		✓		✓	✓	✓	✓	✓	✓
BWM	Galvanised sheet steel				✓		✓	✓	✓	✓	✓	✓
Conduit clamp SS	Sheet steel, bright galvanised						✓	✓	✓	✓	✓	✓
Conduit clamp SSG	Galvanised sheet steel; EPDM				✓		✓	✓	✓	✓	✓	✓
Spiral tape SB / SBF	SB: Polyethylene SBF: Non-inflammable polyethylene	-60 °C	+85 °C	VO only type SBF	✓		✓	✓	✓	✓	✓	✓
Fixing rivets, type BN	Hostalene	-60 °C	+80 °C		✓		✓	✓	✓	✓	✓	✓

** = not certified

Material data

Type	Material	Temperature		Fire classification UL 94	RoHS Compliant	Halogen-free	Phosphorous-free	Cadmium-free	Asbestos-free	Lead-free	Silicone-free
		Min.	Max.								
Cable ties KB	Polyamide 6.6	natural: -25 °C black: -40 °C	natural: 85 °C black: 106 °C	VO		✓	✓	✓	✓	✓	✓
Cable ties KBM	Stainless steel 1.4301	natural: -25 °C black: -40 °C	natural: -25 °C black: -40 °C	VO		✓	✓	✓	✓	✓	✓
Cable ties BF	Polyamide 6.6	-25 °C	+85 °C			✓	✓	✓	✓	✓	✓
SH screwed holder	Polyamide	-40 °C	+85 °C			✓	✓	✓	✓	✓	✓
Screwed and adhesive holder KH	Polyamide	-40 °C	+85 °C			✓	✓	✓	✓	✓	✓
Cable tie rail KBL	Polyamide PA 6	-40 °C	+80 °C		✓	✓	✓	✓	✓	✓	✓

** = not certified



Type KGM (plastic lock nut)

RoHS
compliant



-30 to +100 °C, transient +130 °C

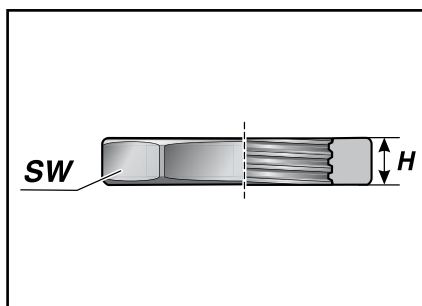


Polyamide



V0

Plastic lock nut made from self-extinguishing polyamide with metric or Pg thread.



KGM

Type	Order no.	Colour	Internal thread	H mm	SW mm	Pack qty
Metric version						
KGM-M12x1.5	83727250	black	M12x1.5	5.0	17	100
KGM-M16x1.5	83727252	black	M16x1.5	5.0	22	100
KGM-M20x1.5	83727254	black	M20x1.5	6.0	26	100
KGM-M25x1.5	83727256	black	M25x1.5	6.0	32	100
KGM-M32x1.5	83727258	black	M32x1.5	7.0	41	100
KGM-M40x1.5	83727260	black	M40x1.5	7.0	50	50
KGM-M50x1.5	83727262	black	M50x1.5	8.0	60	50
KGM-M63x1.5	83727264	black	M63x1.5	8.0	75	50
KGM-M12x1.5	83727210	grey	M12x1.5	5.0	17	100
KGM-M16x1.5	83727212	grey	M16x1.5	5.0	22	100
KGM-M20x1.5	83727214	grey	M20x1.5	6.0	26	100
KGM-M25x1.5	83727216	grey	M25x1.5	6.0	32	100
KGM-M32x1.5	83727218	grey	M32x1.5	7.0	41	100
KGM-M40x1.5	83727220	grey	M40x1.5	7.0	50	50
KGM-M50x1.5	83727222	grey	M50x1.5	8.0	60	50
KGM-M63x1.5	83727224	grey	M63x1.5	8.0	75	50
Pg version						
KGM-Pg 07	83722250	black	Pg 07	5.0	19	100
KGM-Pg 09	83722252	black	Pg 09	5.0	22	100
KGM-Pg 11	83722254	black	Pg 11	5.0	24	100
KGM-Pg 13.5	83722256	black	Pg 13.5	6.0	27	100
KGM-Pg 16	83722258	black	Pg 16	6.0	30	100
KGM-Pg 21	83722260	black	Pg 21	6.5	36	100
KGM-Pg 29	83722262	black	Pg 29	7.0	46	50
KGM-Pg 36	83722264	black	Pg 36	7.5	60	25
KGM-Pg 42	83722266	black	Pg 42	8.0	65	25

RoHS
compliant

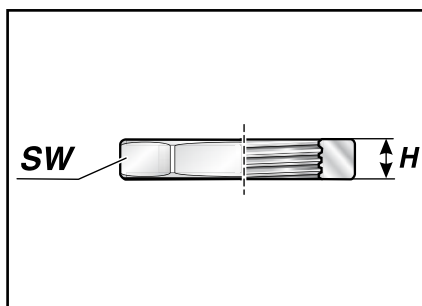




RoHS
compliant



Lock nut made of metal with metric or Pg thread.



GM

210

Type BSTK (plastic dummy plug)

RoHS
compliant



-30 to +100 °C, transient +130 °C



Polyamide

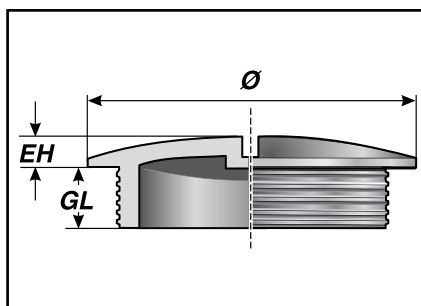


HB



IP 54 IP 65 with additional sealing ring
type OR

Dummy plug made of plastic with metric or Pg thread.
IP 65 protection rating is achieved using additional O-ring type OR.
(O-ring not included in delivery)



BSTK

Type	Order no.	Colour	Outside thread	EH mm	GL mm	Ø mm	Pack qty
Metric version							
BSTK-M12x1.5	83726450	black	M12x1.5	3.0	6.0	15.0	100
BSTK-M16x1.5	83726452	black	M16x1.5	3.5	6.0	20.0	100
BSTK-M20x1.5	83726454	black	M20x1.5	4.0	6.0	24.0	100
BSTK-M25x1.5	83726456	black	M25x1.5	4.5	8.0	30.0	100
BSTK-M32x1.5	83726458	black	M32x1.5	4.5	8.0	37.0	100
BSTK-M40x1.5	83726460	black	M40x1.5	5.5	8.0	46.0	50
BSTK-M50x1.5	83726462	black	M50x1.5	5.5	10.0	56.0	50
BSTK-M63x1.5	83726464	black	M63x1.5	4.5	12.0	70.0	50
BSTK-M12x1.5	83726410	grey	M12x1.5	3.0	6.0	15.0	100
BSTK-M16x1.5	83726412	grey	M16x1.5	3.5	6.0	20.0	100
BSTK-M20x1.5	83726414	grey	M20x1.5	4.0	6.0	24.0	100
BSTK-M25x1.5	83726416	grey	M25x1.5	4.5	8.0	30.0	100
BSTK-M32x1.5	83726418	grey	M32x1.5	4.5	8.0	37.0	100
BSTK-M40x1.5	83726420	grey	M40x1.5	5.5	8.0	46.0	50
BSTK-M50x1.5	83726422	grey	M50x1.5	5.5	10.0	56.0	50
BSTK-M63x1.5	83726424	grey	M63x1.5	4.5	12.0	70.0	50
Pg version							
BSTK-Pg 07	83721410	grey	Pg 07	1.5	6.0	15.0	100
BSTK-Pg 09	83721412	grey	Pg 09	2.5	6.0	19.0	100
BSTK-Pg 11	83721414	grey	Pg 11	3.0	6.0	22.0	100
BSTK-Pg 13.5	83721416	grey	Pg 13.5	3.5	6.0	25.0	100
BSTK-Pg 16	83721418	grey	Pg 16	3.5	6.0	27.0	100
BSTK-Pg 21	83721420	grey	Pg 21	3.5	8.0	33.0	100
BSTK-Pg 29	83721422	grey	Pg 29	3.5	8.0	44.0	100
BSTK-Pg 36	83721424	grey	Pg 36	5.0	10.0	55.0	50
BSTK-Pg 42	83721426	grey	Pg 42	6.0	10.0	62.0	50
BSTK-Pg 48	83721428	grey	Pg 48	5.0	12.0	69.0	50



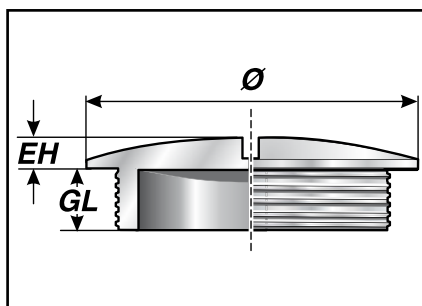
Type BST (metal dummy plug)



IP

IP 54 IP 65 with additional sealing ring
type OR

Dummy plug made of metal with metric or Pg thread.
IP 65 protection rating is achieved using additional O-ring type OR.
(O-ring not included in delivery)



BST

212

Type KRR (plastic reducing bush)

RoHS
compliant



-30 to +100 °C, transient +130 °C

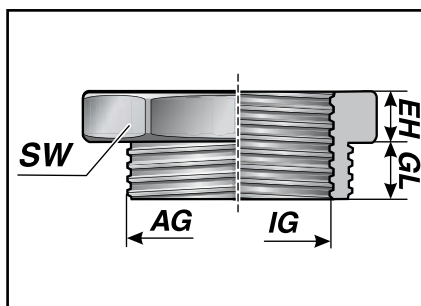
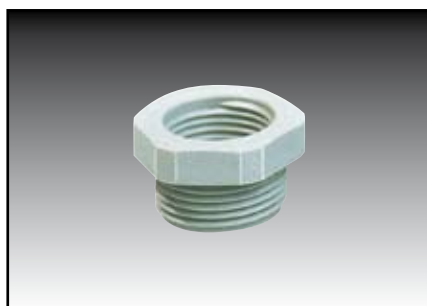


Polyamide



HB

Thread reducing bush made of plastic with metric or Pg thread.
O-ring not included in delivery.



KRR

Type	Order no.	Colour	Outside thread ET	Internal thread IT	EH mm	GL mm	SW mm	Pack qty
Metric/metric version								
KRR-M20/M12	83727450	black	M20x1.5	M12x1.5	4.0	8.0	24	100
KRR-M20/M16	83727452	black	M20x1.5	M16x1.5	4.0	8.0	24	100
KRR-M25/M12	83727454	black	M25x1.5	M12x1.5	6.0	8.0	30	100
KRR-M25/M16	83727456	black	M25x1.5	M16x1.5	6.0	8.0	30	100
KRR-M25/M20	83727458	black	M25x1.5	M20x1.5	6.0	8.0	30	100
KRR-M32/M12	83727460	black	M32x1.5	M12x1.5	6.0	10.0	36	50
KRR-M32/M16	83727462	black	M32x1.5	M16x1.5	6.0	10.0	36	50
KRR-M32/M20	83727464	black	M32x1.5	M20x1.5	6.0	10.0	36	50
KRR-M32/M25	83727466	black	M32x1.5	M25x1.5	6.0	10.0	36	50
KRR-M40/M16	83727468	black	M40x1.5	M16x1.5	6.0	10.0	46	50
KRR-M40/M20	83727470	black	M40x1.5	M20x1.5	6.0	10.0	46	50
KRR-M40/M25	83727472	black	M40x1.5	M25x1.5	6.0	10.0	46	50
KRR-M40/M32	83727474	black	M40x1.5	M32x1.5	6.0	10.0	46	50
KRR-M50/M20	83727476	black	M50x1.5	M20x1.5	6.0	12.0	55	25
KRR-M50/M25	83727478	black	M50x1.5	M25x1.5	6.0	12.0	55	25
KRR-M50/M32	83727480	black	M50x1.5	M32x1.5	6.0	12.0	55	25
KRR-M50/M40	83727482	black	M50x1.5	M40x1.5	6.0	12.0	55	25
KRR-M63/M25	83727484	black	M63x1.5	M25x1.5	6.0	12.0	68	25
KRR-M63/M32	83727486	black	M63x1.5	M32x1.5	6.0	12.0	68	25
KRR-M63/M40	83727488	black	M63x1.5	M40x1.5	6.0	12.0	68	25
KRR-M63/M50	83727490	black	M63x1.5	M50x1.5	6.0	12.0	68	25
KRR-M20/M12	83727400	grey	M20x1.5	M12x1.5	4.0	8.0	24	100
KRR-M20/M16	83727402	grey	M20x1.5	M16x1.5	4.0	8.0	24	100
KRR-M25/M12	83727404	grey	M25x1.5	M12x1.5	6.0	8.0	30	100
KRR-M25/M16	83727406	grey	M25x1.5	M16x1.5	6.0	8.0	30	100
KRR-M25/M20	83727408	grey	M25x1.5	M20x1.5	6.0	8.0	30	100
KRR-M32/M12	83727410	grey	M32x1.5	M12x1.5	6.0	10.0	36	50



RoHS
compliant

Type RR (metal reducing bush)

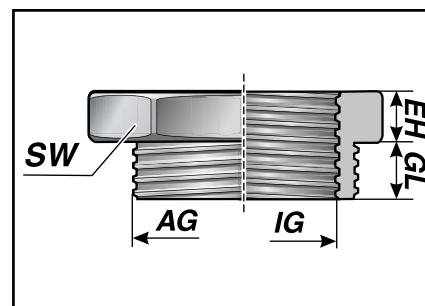
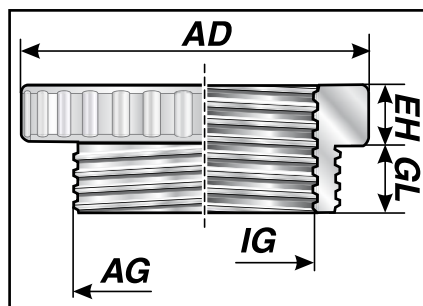
RoHS
compliant



Brass, nickel-plated

Thread reducing bush made of metal with metric or Pg thread.
Knurled or hexagon version, depending on type.

- Metric/metric
- Metric/Pg
- Pg/Pg



RR

Type	Order no.	Outside thread ET	Internal thread IT	EH mm	GL mm	AD mm	SW mm	Pack qty
Metric/metric version (without O-ring)								
RR-M16/M12	83727610	M16x1.5	M12x1.5	2.5	6.0	20.0	-	100
RR-M20/M12	83727612	M20x1.5	M12x1.5	2.5	6.5	24.0	-	100
RR-M20/M16	83727614	M20x1.5	M16x1.5	2.5	6.5	24.0	-	100
RR-M25/M16	83727616	M25x1.5	M16x1.5	3.0	7.0	30.0	-	100
RR-M25/M20	83727618	M25x1.5	M20x1.5	3.0	7.0	30.0	-	100
RR-M32/M20	83727620	M32x1.5	M20x1.5	3.5	8.0	39.0	-	50
RR-M32/M25	83727622	M32x1.5	M25x1.5	3.5	8.0	39.0	-	50
RR-M40/M25	83727624	M40x1.5	M25x1.5	3.5	9.0	50.0	-	25
RR-M40/M32	83727626	M40x1.5	M32x1.5	3.5	9.0	50.0	-	25
RR-M50/M32	83727628	M50x1.5	M32x1.5	4.0	10.0	57.0	-	25
RR-M50/M40	83727630	M50x1.5	M40x1.5	4.0	10.0	57.0	-	25
RR-M63/M40	83727632	M63x1.5	M40x1.5	4.0	10.0	64.0	-	10
RR-M63/M50	83727634	M63x1.5	M50x1.5	4.0	10.0	64.0	-	10
Metric/Pg version (with O-ring on external thread)								
RR-M16 / Pg7	83727810	M16x1.5	Pg 7	3.0	5.0	-	17	100
RR-M20 / Pg9	83727812	M20x1.5	Pg 9	3.0	6.0	-	22	100
RR-M25 / Pg9	83727814	M25x1.5	Pg 9	3.0	7.0	-	27	100
RR-M25 / Pg11	83727816	M25x1.5	Pg 11	3.0	7.0	-	27	100
RR-M25 / Pg13,5	83727818	M25x1.5	Pg 13.5	3.0	7.0	-	27	100
RR-M32 / Pg13,5	83727820	M32x1.5	Pg 13.5	3.0	8.0	-	34	50
RR-M32 / Pg16	83727822	M32x1.5	Pg 16	3.0	8.0	-	34	50
RR-M32 / Pg21	83727824	M32x1.5	Pg 21	3.0	8.0	-	34	50
RR-M40 / Pg16	83727826	M40x1.5	Pg 16	4.0	8.0	-	43	25
RR-M40 / Pg21	83727828	M40x1.5	Pg 21	4.0	8.0	-	43	25
RR-M40 / Pg29	83727830	M40x1.5	Pg 29	4.0	8.0	-	43	25
RR-M50 / Pg21	83727832	M50x1.5	Pg 21	4.0	9.0	-	55	25



RoHS
compliant



Type ER/EG (metal extension)



Brass, nickel-plated

Thread extension made of metal with metric or Pg thread.

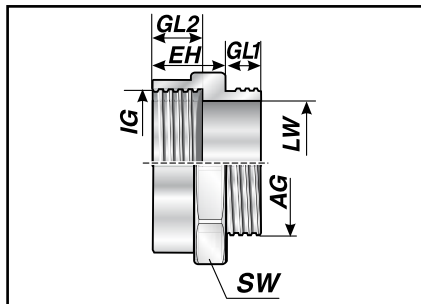
Round or hexagon version, depending on type.

Some with O-ring on external thread.

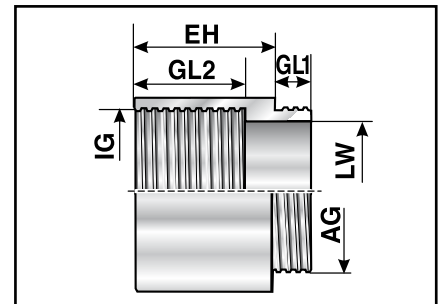
- Metric/metric
- Metric/Pg
- Pg/Pg



ER



ER



EG

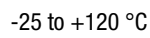
[illegible]



RoHS
compliant

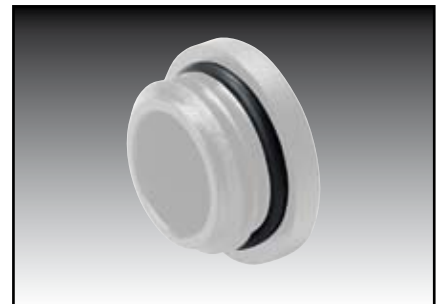


RoHS
compliant



For thread type:

- Metric
- Pg
- NPT



OR-NBR





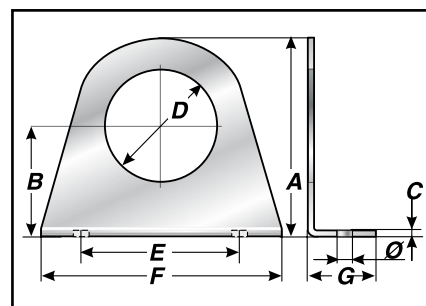
Type BWM (angle bracket)



Galvanised sheet steel

Universal holder for fastening fittings to equipment and machinery.

- Quick and easy fastening
- For Pg and metric fittings
- Fittings secured with lock nut



BWM

220

Spiral tape, type SB / SBF

RoHS
compliant



-60 to +85 °C



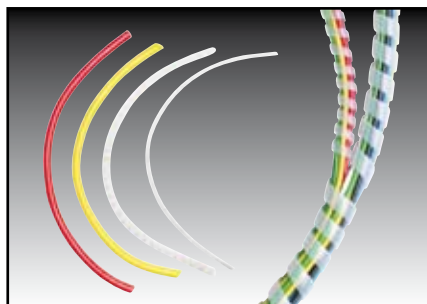
SB: Polyethylene

SBF: Non-inflammable polyethylene



V0 only type SBF

Spiral tapes are used to bundle cable harnesses efficiently and simply. The spiral tapes also protect the insulation of the wires. Branches of single wires or looms of cables may be made at any place. Bundling in the range from 2 - 100 mm is possible with just three sizes. The SBF consists of flame-retardant material.



SB...

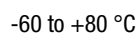
Type	Order no.	Colour	Bundle range mm	inside mm	external mm	Weight kg / 100 m	Pack m
SB 12	87621010	Natural colour	2 - 12	1.5	3.0	0.5	50
SB 50	87621012	Natural colour	5 - 50	4.0	6.0	1.5	100
SB 50	87621210	Yellow	5 - 50	4.0	6.0	1.5	100
SB 50	87621250	Orange	5 - 50	4.0	6.0	1.5	100
SB 100	87621014	Natural colour	12 - 100	9.0	12.0	4.0	50
SB 100	87621212	Yellow	12 - 100	9.0	12.0	4.0	50
SB 100	87621252	Orange	12 - 100	9.0	12.0	4.0	50
SBF 12 *	87621050	White	2 - 12	1.5	3.0	0.5	50
SBF 50 *	87621052	White	5 - 50	4.0	6.0	1.5	100
SBF 100 *	87621054	White	12 - 100	9.0	12.0	4.0	50

* not halogen-free





RoHS
compliant



Plastic expansion rivets for the quick installation of components, e.g. cable ducts.



BNW tool

[illegible]

Cable ties KB / KBM



natural colours: -25 to +85 °C
black: -40 to +105 °C



KB: Polyamide 6.6
KBM: Stainless steel 1.4301



KB black: V0
KKB: V0



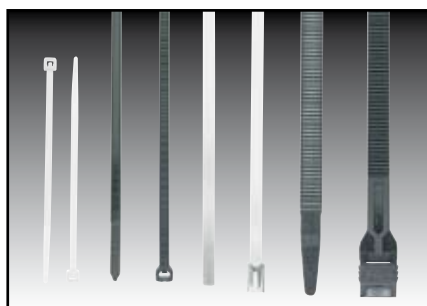
Cable tie in black are
UV-stabilised

Cable ties are a reliable method for the economic bundling and fastening of cables, cable harnesses, tubes, conduits and other components.

The black cable ties are suitable for outdoor applications.

The cable tie KKB 28 is equipped with a special locking mechanism and is especially suitable for heavy-duty applications.

The KBM metal cable tie is ideally used for EMC solutions. It creates greater contact surface area for discharging sheath currents.



KB...

Type	Order no.	Colour	Length mm	Width mm	Bundle range approx. mm	Tensile strength max. N	Pack qty
KB 15	87661251	black	75	2.2	15	60	1000
KB 20	87661252	black	98	2.5	20	60	1000
KB 22	87661254	black	130	2.9	22	80	1000
KB 25	87661256	black	140	3.6	25	130	1000
KB 30	87661260	black	160	4.5	30	180	1000
KB 45	87661262	black	178	4.8	45	220	1000
KB 50	87661264	black	200	2.9	50	80	1000
KB 55	87661266	black	200	4.8	50	220	1000
KB 75	87661268	black	290	4.8	75	220	100
KB 100	87661270	black	360	4.8	100	220	100
KB 110	87661272	black	370	7.8	110	540	100
KB 15	87661210	Natural colour	75	2.2	15	60	1000
KB 20	87661214	Natural colour	98	2.5	20	60	1000
KB 22	87661218	Natural colour	130	2.9	22	80	1000
KB 25	87661222	Natural colour	140	3.6	25	130	1000
KB 30	87661226	Natural colour	160	4.5	30	180	1000
KB 45	87661230	Natural colour	178	4.8	45	220	1000
KB 50	87661234	Natural colour	200	2.9	50	80	1000
KB 55	87661238	Natural colour	200	4.8	50	220	1000
KB 75	87661242	Natural colour	290	4.8	75	220	100
KB 100	87661246	Natural colour	360	4.8	100	220	100
KB 110	87661248	Natural colour	370	7.8	110	540	100
Recommended assembly tool for cable ties up to 6 mm wide: KBW 1K							
Recommended assembly tool for cable ties up to 8 mm wide: KKBW							

[illegible]

BF Cable ties



-25 to +85 °C

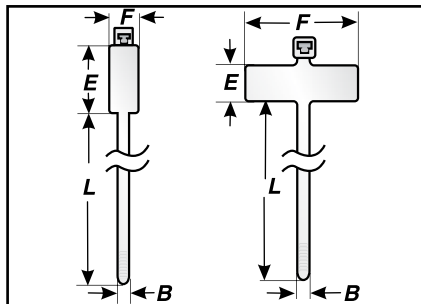


Polyamide 6.6

Cable tie with title block. Both ink pens or permanent waterproof markers can be used.

BF20 (Fig., left) title block lengthways along cable

BF45 (Fig., right) title block across cable

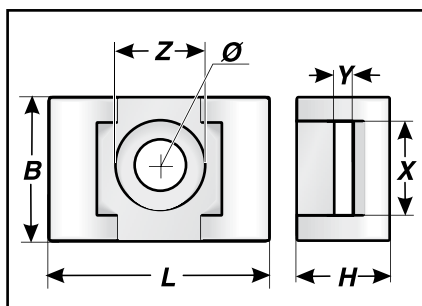


BF...

[illegible]



The SH screw-down holder is used to fix individual cables cost-effectively. It can be screwed or riveted to any surface.

[illegible]

Screwed and adhesive holder KH

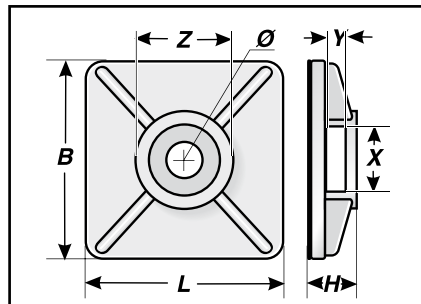
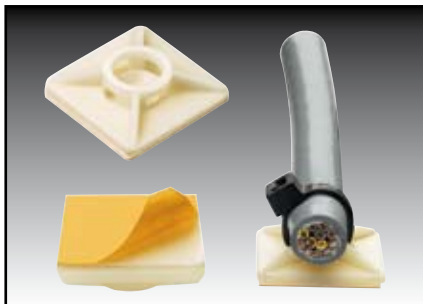


-40 to +85 °C



Polyamide

Adhesive holder, plastic. The retention force can be increased by additional fastening with a screw. If pressure sensitive adhesives are used, the surface must be smooth and free of dust and grease. Contaminated surfaces must be cleaned with proper cleaning agents.

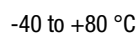


KH...

[illegible]

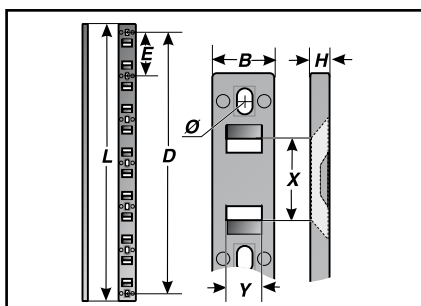


RoHS
compliant



Polyamide PA 6

Quick and easy fitting of cables.
Cable ties may be pushed on if a rail is already fitted.



KBL...

[illegible]

Tools

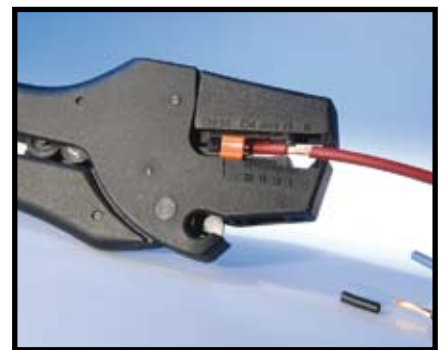


Advantages



**They make
your life
easier**

Tools that you need for your workshop and production halls. To make work easier and increase productivity and quality. You'll find cable stripping tools, cable shears and cable stripping knives. Tensioning gun for plastic and metal cable ties.



- ✓ Makes work easier
- ✓ Increased quality
- ✓ Increased productivity

Overview

Page 234



Type BNW

Metal tool for installation of BN blind rivets.

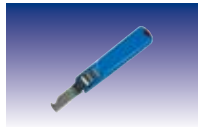
Page 235



Type KS

Metal cable shears.

Page 236



Type KM

Cable stripping knife for removing cable sheaths.

Page 237



Type UAZ

Stripping tongs for removing cable sheaths from individual wires.

Page 238



Type KBW

Tool for installation of plastic cable ties with automatic cutting mechanism.

Page 238



Type KKBW

Tool for installation of plastic cable ties with manual cutting mechanism.

Page 239



Type KBWM

Tool for installation of plastic cable ties with manual cutting mechanism.





Only this tool brings out the full economical effect of the BN fixing rivet. The tools are matched to the size of the rivets.

234

Cable shears



Steel

Sturdy version of cable shears. Suitable for removing cable sheathing and braided shields. EW-PAP cable protection conduit with metal braiding can be processed with these shears.

[illegible]



Special cable stripping knife for stripping of wiring.

236

Stripping tongs

Stripping tongs for single wires up to a diameter of 2.5 mm². A slider is used to adjust the stripping length. The stripping tongs possess an integrated cutting mechanism.

[illegible]



Tools for mounting of plastic cable ties.

-

238

Cable tie tool for metal ties



Steel

Cable tie tools intended for metal cable ties of type KBM, with manual cutting mechanism.

- Robust metal tool

[illegible]



Punching tools



Advantages



The best way to perfect cut-outs

For years, Murrplastik Systemtechnik has been developing easy-to-assemble, maintenance-free connection systems for the routing of lines and cable.

Thanks to our practical punching tools, you now have the option of quickly and easily realising the appropriate control cabinet cut-outs for our cable and cable fittings, cable entry panels (KDP) and cable entry systems (KDL). You can choose between three different hydraulic punches and a wide range of punching tools. Punching tools are available for sheet steel and for stainless steel applications.



- ✓ Compact construction
- ✓ For workshop and assembly
- ✓ Long service life
- ✓ Easy handling
- ✓ Precise cut-outs
- ✓ Compatible with many other systems

Overview

Page 244



Type SW-HG

Manual hydraulic punch, straight

Page 244



Type SW-HW

Manual hydraulic punch, angled 90° and swivels 360°

Page 245



Type SW-HF

Foot-operated hydraulic punch

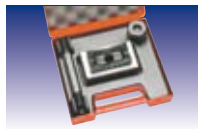
Page 246



Type SW-WS

Punching tool set, round holes

Page 248



Type SW-WR

Punching tool, rectangular holes

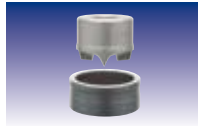
Page 249



Type SW-WQ

Punching tool, square holes

Page 247



Type SW-WE

Punching tool, round holes

Page 251



Type SW-WD

Punching tool for SUB-MIN-D plug

Page 252



Type SW-ASN

Special nibbling tool, universal



Hydraulic manual punch, types SW-HG and SW-HW

Practical manual punch without additional conduit and cylinder, ideal for workshop and assembly.

- Hydraulic punch made of high-strength aluminium
- Overload protection via overpressure valve
- Ergonomic handle, springs back automatically

SW-HW version:

The angle head can be pivoted 360° for better handling.



SW-HG



SW-HW

Type	Order no.	Weight kg	Punching force kN	Operating pressure bar	Pack qty
Compact hydraulic manual punch, straight					
SW-HG hydraulic manual punch	87801010	1.6	75	650	1
Compact hydraulic manual punch with pivoting head					
SW-HW hydraulic manual angle punch	87801012	1.9	75	650	1
consisting of:					
1 pce compact hydraulic manual punch					
2 pce Tension bolt Ø 9.5 x 19.0 mm; Ø 19.0 x 19.0 x 120 mm					
1 pce Spacer bushing set (3-pce.)					
1 pce tap drill 11.0 mm					
1 pce transport case					
Punching performance, round hole perforator:					
up to Ø85 mm max. 2.0 mm sheet steel; up to Ø64 mm max. 3.0 mm or max. 2.0 stainless steel sheet					
Punching performance, square hole perforator:					
112 x 36 mm / 91x 36 mm / 86 x 36 mm up to max. 2.0 mm sheet steel					
Replacement parts					
SW-WE-ZS 9.5 x 19,0 mm tension bolt	87801410				1
SW-WE-ZS 11.1 x 19,0 mm tension bolt	87801412				1
SW-WE-ZS 19.0 x 19.0 x 120 mm tension bolt	87801414				1
SW-WE-ZS 19.0 x 19.0 x 165 mm tension bolt	87801416				1
SW-WS-DS 3-pce. spacer bushing set	87801430				1
SW-WE-VB 10.0 mm tap-size drill	87801420				1
SW-WE-VB 11.0 mm tap-size drill	87801422				1
SW-WE-VB 11.5 mm tap-size drill	87801424				1

Hydraulic punch with foot pump, type SW-HF

Practical hydraulic punch with foot pump; ideal for use in the workshop.
 The foot pump does not require use of the hands, leaving both hands free for exact positioning and punching at the control cabinet. The support frame of the foot pump is splayed. This provides for stable, anti-tip working.
 - Overload protection via installed pump safety valve



SW-HF

Type	Order no.	Weight kg	Punching force kN	Operating pressure bar	Pack qty
Hydraulic punch with foot pump					
SW-HF hydraulic punch with foot pump	87801014	13.9	100	700	1
consisting of:					
1 pce hydraulic cylinder with quick coupling					
1 pce Hydraulic conduit 2.8 m					
2 pce tension bolt 9.5 x 19.0 mm; 19.0 x 19.0 x 120 mm					
1 pce Spacer bushing set (5-pce.)					
1 pce tap drill 11.0 mm					
1 pce sheet steel transport case					
Punching performance, round hole perforator:					
up to Ø85 mm max. 2.0 mm sheet steel; up to Ø64 mm max. 3.0 mm or max. 2.0 stainless steel sheet					
Punching performance, square hole perforator:					
112 x 36 mm / 91x 36 mm / 86 x 36 mm up to max. 2.0 mm sheet steel					
Replacement parts					
SW-WE-ZS 9.5 x 19,0 mm tension bolt	87801410				1
SW-WE-ZS 11.1 x 19,0 mm tension bolt	87801412				1
SW-WE-ZS 19,0 x 19,0 mm tension bolt	87801414				1
SW-WS-DS 5-pce. spacer bushing set	87801432				1
SW-WE-VB 10.0 mm tap-size drill	87801420				1
SW-WE-VB 11.0 mm tap-size drill	87801422				1
SW-WE-VB 11.5 mm tap-size drill	87801424				1



 Steel

[illegible]

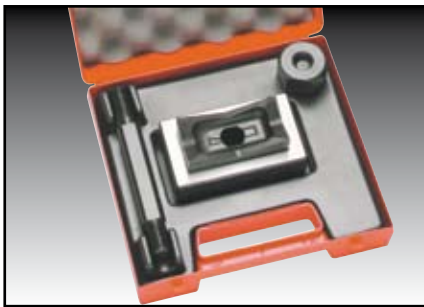
Punching tools type SW-WR; -WQ



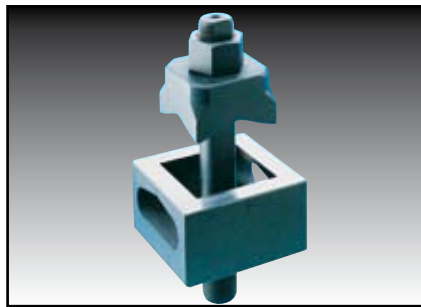
Steel

Several punching tools for the creation of square or rectangular cut-outs. These hole punches are delivered a plastic transport case. Also ideal for mounting use. Corresponding tension bolt is included in the delivery.

During the punching process, the attachment points for the screw holes are centred.



SW-WR...



SW-WQ...

[illegible]

[illegible]



Punching tool type SW-WD



Steel

Punching tool for creation of SUB-MIN-D plug cut-outs (9 to 50 poles). Simple and quick creation of these cut-outs, e.g. for connection of data transmission cables.



SW-WD...

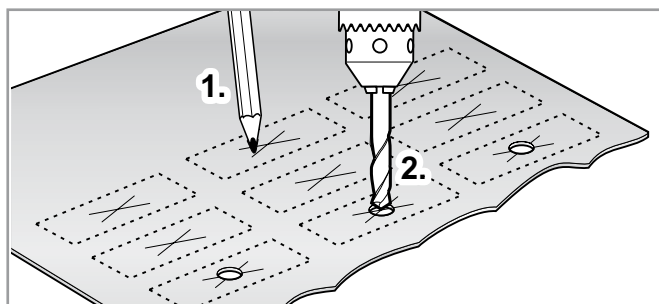
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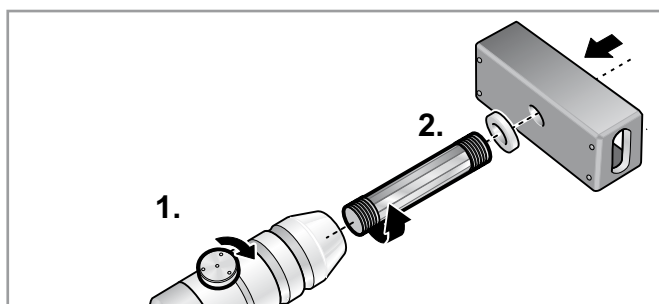
Universal punching tool for creation of various cut-out sizes and shapes. Tools with hole punch width 15 and 20 mm.



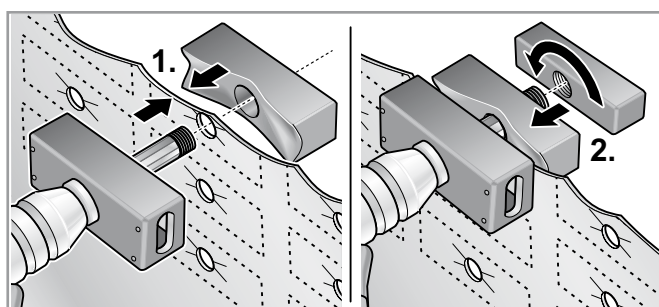
Assembly



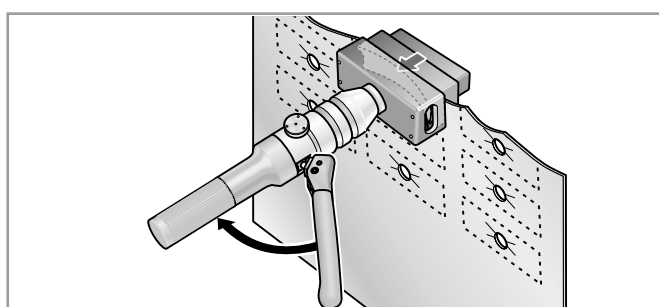
Establish cut-out dimensions and mark drilling points for the tension bolt. Ensure sufficient distance between the cut-outs. Drill hole for tension bolt.



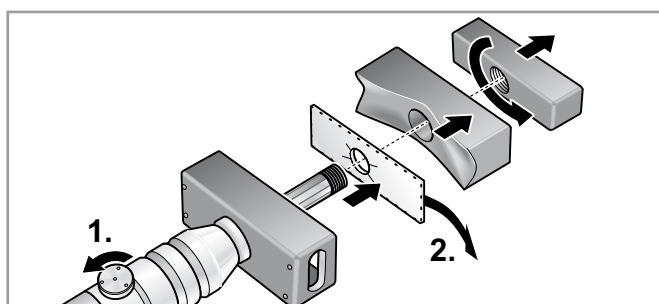
Screw in corresponding tension screw into the tool head and close the valve on the punching tool. Push on appropriate spacer and die.



Insert tension screw into drill hole. Stick or screw stamp onto tension bolt. Secure with lock nut where needed. Align die and draw in lock nut.



Activate hydraulic mechanism until the press cut is completed. Then actuate 3-4 further strokes. This ensures an easier removal of the plate from the die. Caution: If excessive force is required, inspect the hydraulic tool and punching tool! Observe the tool's operating instructions.

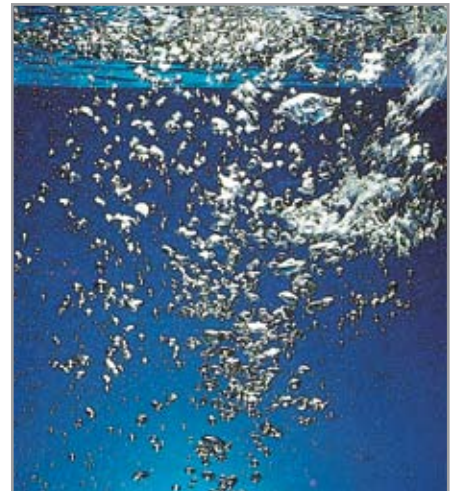


Remove hydraulic tool from the cut-out. Open valve and remove lock nut and stamp. Remove plate from the die.





Appendix



Protective classes EN 60529

IP protection classes

An important element for housings is protection of integrated elements against drilling, foreign particles and water. The various protective abilities are divided into IP protection classes (IP = International Protection). The framework conditions that a

protection class must guarantee are laid out in DIN 40050 and IEC-EN 60529. IP protection classes are indicated through a two digit code (IPXX). The first digit indicates protection against contact and foreign particles, the second the

water protection factor. Class IP65 is therefore completely protected against touching, is dust-proof (first digit = 6) and protected in all directions against water jets from a nozzle. (Second digit = 5).

First

Digit Contact protection

Foreign particle protection

Second

Digit Water protection

0	no particular protection	
1	against large body surfaces	large foreign particles, Diameter >50mm 
2	against fingers or similarly large objects	medium-sized foreign particles, Diameter >12 mm 
3	against tools, wires and similar with a thickness of >2.5 mm	small foreign particles, Diameter >2.5 mm 
4	against tools, wires and similar with a thickness of >1 mm	small foreign particles, Diameter >1 mm 
5	complete protection	Dust-proof, dust accumulation is permissible, but must be in amounts that do not impede the function of the device 
6	complete protection	Dust-tight 

0	no particular protection	
1	against vertical falling drops of water	
2	against diagonal falling drops of water (up to 15° deviation from the vertical)	
3	against spraying water (any direction up to 60° deviation from the vertical)	
4	against spraying water from all directions	
5	against water jets from a nozzle from any direction	
6	against flooding e.g. for use on the deck of a ship	
7	against submersion from 15 cm up to 1 m in depth	
8	against long submersion under pressure	

Protective classes NEMA

Protective classes NEMA

In the US, protective classes are not organised by IP class, but rather according to the NEMA standard (National Electrical Manufacturers Association). The following table serves for conversion of NEMA classes into the corresponding IP

class. This table may not be used to convert IP classes into NEMA classes, however!

IEC 529	NEMA Enclosure Type									
Enclosure Type	1	2	3	3R	3S	4	4X	6	12	13
IP10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP31			✓	✓	✓	✓	✓	✓	✓	✓
IP32			✓	✓	✓	✓	✓	✓	✓	✓
IP33			✓		✓	✓	✓	✓	✓	✓
IP40			✓		✓	✓	✓	✓	✓	✓
IP41			✓		✓	✓	✓	✓	✓	✓
IP42			✓		✓	✓	✓	✓	✓	✓
IP43			✓		✓	✓	✓	✓	✓	✓
IP50			✓		✓	✓	✓	✓	✓	✓
IP51			✓		✓	✓	✓	✓	✓	✓
IP52			✓		✓	✓	✓	✓	✓	✓
IP53			✓		✓	✓	✓	✓	✓	✓
IP54			✓		✓	✓	✓	✓	✓	✓
IP55			✓		✓	✓	✓	✓	✓	✓
IP56			✓		✓	✓	✓	✓	✓	✓
IP60			✓		✓	✓	✓	✓	✓	✓
IP61			✓		✓	✓	✓	✓	✓	✓
IP62			✓		✓	✓	✓	✓	✓	✓
IP63			✓		✓	✓	✓	✓	✓	✓
IP64			✓		✓	✓	✓	✓	✓	✓
IP65			✓			✓	✓	✓	✓	✓
IP66						✓	✓	✓		
IP67								✓		

Fire classifications

Fire classifications based on UL 94

Fire classification HB

The material is slowly burned in the horizontal fire test. The rate of combustion must not exceed 3 inches/min. for wall thicknesses of up to 3 mm, and 1.5 inches/min. for wall thicknesses over 3 mm. Any materials exceeding these combustion rate limits are not registered by UL.

Fire classification V2

In the vertical combustion test, self-extinguishing must occur after an average of 25 seconds (individual values not to exceed 30 seconds). Any dripping material may ignite cotton wool located underneath. However, any possible afterburn shall not exceed 60 seconds.

Fire classification V1

In the vertical fire test, self-extinguishing must also occur after an average of 25 seconds (single values not to exceed 30 seconds). However, any material dropping off must not ignite cotton wool placed underneath. Any afterglow must not exceed 30 seconds.

Fire classification V0

In the vertical fire test, self-extinguishing must also occur on average in less than 5 seconds (single values not to exceed 10 seconds). However, any possible drop-offs shall not ignite the cotton wool. Any possible afterburn shall not exceed 30 seconds.

Fire classification according to DIN 5510

Combustion class S4

Test procedure: acc. to DIN 54 837

Requirements:

- Length of the destroyed area:
≤ 20 cm
- No afterburn

Products may also be assigned to combustion class S4 if afterburning occurs within the burnt testing area and the average duration of afterburning does not exceed 10 seconds. If afterburning occurs

in the undamaged area of the test piece, the product must not be assigned to combustion class S4.

If the afterburning of a test object lasts longer 120 seconds, such products must not be assigned to combustion class S4 (note: Pursuant to DIN 54837 a burning object must be extinguished immediately if the time of observation exceed 120 seconds).

Guidelines

What's meant by these abbreviations?

The use of specific materials in automobiles as well as electric and electronic devices is restricted and/or forbidden by various European

guidelines. Various associations and fabricators have published their own lists of materials considered undesirable.

Directive 2002/95/EC (RoHS)

(RoHS = Restriction of the use of certain Hazardous Substances in electrical and electronic equipment)

The guidelines limiting specific hazardous materials in electric and electronic devices categorised the following materials and their compounds as dangerous: lead, mercury, cadmium, chrome 6, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE).

VDA lists (VDA = Verband der Automobilindustrie in Deutschland)

Alongside the legal stipulations, there are also a variety of material and declaration lists prescribed by various associations and fabricators. They contain materials and material groups that are undesirable or forbidden from the corresponding processing branch for a variety of reasons. Several of the most well-known lists are shown in the following, their content drawn from other sources and in some cases expanded: VDA list 232-101 for

materials requiring declaration; Bosch standard N 2580. The VDA list is part of the ILRS list («List for materials in automobile manufacture requiring declaration--substances in components and raw materials») that is used in the IMDS (International Material Data System).

Directive 2000/53/EC (RoHS)

(ELV = End-of-Life vehicles)

The heavy metals listed in the ordinance (ELV) are a portion of those named in the RoHS guidelines, including lead, mercury, cadmium, chrome 6.

WEEE guidelines 2002/96/EG

(WEEE = Waste from Electric and Electronic Equipment)

Goal of the guidelines is the avoidance of waste from electric and electronic devices, as well as their recovery and recycling. They require selective handling of used devices with specific critical materials, as named in the guideline appendices.

General information



Materials

The use and combination of widely varied materials like plastics of all types, elastomers or metals means that Murrplastik products can be used in a variety of situations.



Fire behaviour

Self-extinguishing materials and material alloys allow for the use of plastics in critical areas. The products or the raw material are normally certified and classified according to UL 94 or DIN 5510. See also «FIRE CLASSIFICATIONS» in the APPENDIX.



Approvals

Our products boast a large number of approvals and certifications, e.g. VDE, UL/UR, CSA, DB, SNCF, BS,... Note the specifications in the catalogue and product data sheets.



Chemical Properties

Reactions with chemical substances differ according to the individual plastics and elastomers. For more information, see «CHEMICAL RESISTANCES» in the APPENDIX. A large database with more than 1600 chemical substances can be accessed on the internet under www.murrplastik.de.



Temperatures specifications

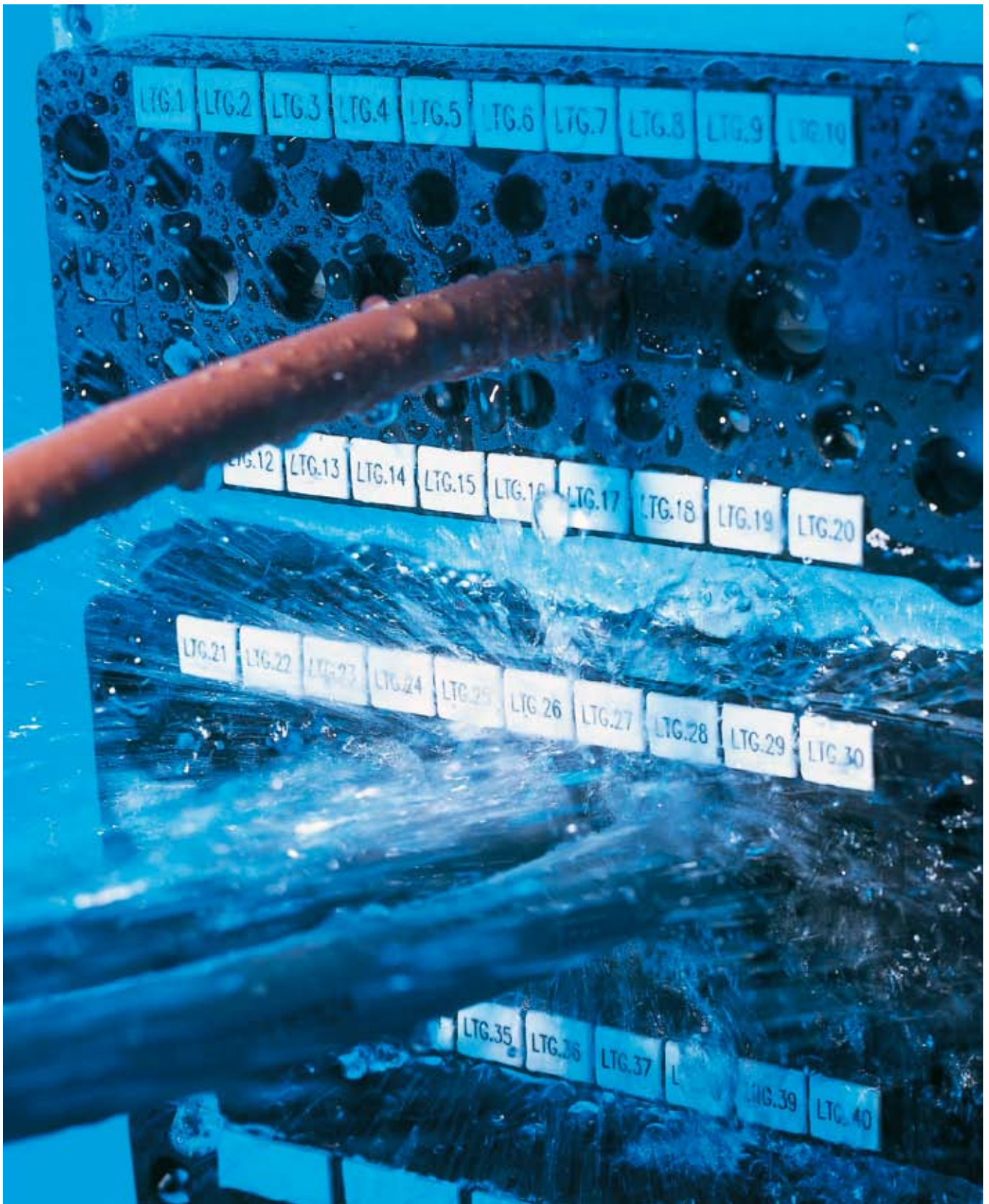
The temperature ranges quoted for the individual products must be noted in application. «SHORT PERIODS» refers to a total duration of up to 500 hours. Thereafter, the properties of the plastics may change.



IP protection class

The IP protective class indicates a product's vulnerability to foreign particles and moisture. The values are also related to static applications. With dynamic applications, the protection class may change. For more information, see «PROTECTION CLASSES» in the APPENDIX.

To help you make better comparisons!



Chemical resistance

Chemical	Concentration %	Temperature + °C	V4A	V2A	AlMg3	EPDM	NBR	PAG	TPU	PPA	TPE	PC	GFK
Exhaust gases containing carbon oxide	any	60			0				+		+		
Exhaust gases containing carbon dioxide	any	60			0				+		+		
Acetaldehyde	100	20			+	0	-	0	+	0	+		
Acetone	100	20	+	+	+	+	-	+	-	+	-	-	-
Ethyl acrylate/acrylic resin enamel	100	20				0	-	-		-			
Ethyl ether	100	20			+	-	-	+	-	+	-		
Ethyl alcohol, aqueous	10	20			+	+	+	0	+	0	+		
Ethylene chloride	100	20			0	0	0		-		-		
Ethylene oxide, aqueous	100	20			+	0	-						
Alum, aqueous	diluted	40	+	+	0	+	0						
Allyl alcohol	96	20			0			0	-	0	-		
Aluminium chloride, aqueous	diluted	40			0	+	+		+		+		
Aluminium sulphate, aqueous	diluted	40	+	+	0	+	+		+		+		
Formic acid, aqueous	10	20	+	+	-	+	0	0	-	0	-	-	+
Ammonia, aqueous	any	20	+	+	+	+	+	+	0	+	0	-	-
Ammonium chloride, aqueous	any	60			0	+	+			+		+	
Ammonium nitrate, aqueous	diluted	40	+	+	+	+	+			+		+	
Ammonium sulphate, aqueous	diluted	40	+	+	0	+	+			+		+	
Aniline, pure	100	20	+	+	0	-	-		0	-	0	-	
Aniline chlorohydrate, aqueous	saturated	20											
Benzaldehyde, aqueous													
Benzine	100	20	+	+	+	-	+	+	+	+	+	0	+
Benzol	100	20	+	+	0	-	-	+	-	+	-	-	-
Benzoic acid	any	40				-	-		+		+		
Bleaching lye	12.5 Cl	20	+	+		+	+	-		-			
Boron	50	40			+			0		0			
Borax, aqueous	diluted	40	+	+		+	0	0		0			
Boracic acid, aqueous	diluted	40	+	+	0	+	+	0	-	0	-		
Bromine, liquid	100	20	-	-	-	-	-	-	-	-	-		
Hydrobromic acid, aqueous	10	40			-	0	0	-	-	-	-		
Butane diol	10	20						+	0	+	0		
Butanol	100	20				+	-		+		+		+
Butyl acetate	100	20			+	0	-		-		-		
Butyl alcohol	100	20			0	+	+		0		0		
Calcium chloride, aqueous	any	40	+	+	0	+	+	+	+	+	+	+	+
Calcium nitrate, aqueous	50	40			+	+	+		+		+		
Chlorine	any	20	-	-	0	0	-	-	-	-	-		
Methyl chloride	100	20				0	-						
Chlorine alum, aqueous	diluted	40			0								
Cyclohexanol	100	20				-	0	+	-	+	-		
Iron chloride, aqueous	10	40	0	-	-	+	+	0	+	0	+		
Crystallisable acetic acid	100	20	+	+	0	0	-						
Acetic acid	10	20	+	+	0	+	0	0	0	0	0	+	+
Potassium ferrocyanide, aqueous	any	60	+	+									
Fluorine	50	40			0	0		-		-			
Formaldehyde, aqueous	diluted	40	+	+	0	0	0	+	0	+	0		+
Glucose, aqueous	any	20			+	+	+		+		+		
Urea, aqueous	10	40	+	+	+	+	+		+		+		
Hydroxylamine sulphate, aqueous	12	35							+		+		
Caustic potash solution	50	20				+	+	+	0	+	0	-	-
Potassium chloride, aqueous	any	60			0	+	+	0	0	0	0		

The information provided above helps initial choices be made. However, it is not intended as a guarantee of particular properties of the products or their suitability for a particular application. It does not release the buyer from the duty of carrying out suitability checks.

Chemical resistance

Chemical	Concentration %	Temperature + °C	V4A	V2A	AlMg3	EPDM	NBR	PA6	TPU	PPA	TPE	PC	GFK
Potassium chloride, aqueous	any	20	+	+	0	+	+	0	+	0	+	+	+
Potassium dichromate, aqueous	40	20			+	+	0		+		+		
Potassium nitrate	any	20	+	+	+	+	+	0	+	0	+		
Potassium permanganate, aqueous	6	20	+	+	+	+	0		-		+		
Potassium persulphate, aqueous	diluted	40			0				+		+		
Hydrosilicofluoric acid	30	20	+	+		0	0						
Salt solution	any	40				+	+		+		+		
Carbon oxide	100	60			+				+		+		
Carbon dioxide	100	60	+	+		0	+		+		+		
Cresol, aqueous	90	20			0	-	0	-	-	-	-		
Copper chloride, aqueous	saturated	20	-	-	-	+	+		+		+		
Copper sulphate, aqueous	any	40	+	+	-	+	+		+		+		
Magnesium chloride, aqueous	any	20	+	+	0	+	+	0	+	0	+		
Magnesium carbonate	any	20	+	+	+				+		+		
Methyl alcohol	100	20				+	+		0		0		
Methylene chloride	100	20			0	-	0	0	-	0	-	-	-
Lactic acid, aqueous	50	20	+	+	0	0	-	+	0	+	0	+	+
Soda lye, aqueous	10	20	+	+		+	0	+	0	+	0	-	+
Sodium chlorate, aqueous	any	20	0	0		+	+	0		0			
Nickel chloride, aqueous	any	20	+	+	-			0	+	0	+		
Nickel sulphate, aqueous	any	20	+	+	-	+	+	0	+	0	+		
Nitroglycerine	diluted	20			+								
Oils and greases		20	+	+	+	0	+	+	+	+	+		
Oleic acid	100	20			0	-	0	+	0	+	0		
Oxalic acid	saturated	20	0	0	0	0	0	0	0	0	0		
Ozone	100	20			0	+	-	0	0	0	0		
Petroleum			+	+	+	-	+		+		+		
Phosgene, liquid	100	20			0				-		-		
Phosphorus pentoxide	100	20	+	+	0								
Phosphoric acid, aqueous	diluted	20	+	+	0	+	0	-	0	-	+		
Photographic developer		40	+	+									
Potash, aqueous	saturated	40	+	+		+	+		+		+		
Mercury		60	+	+	0	+	+	+	+	+	+		
Nitric acid, aqueous	6	20	+	+	0	+	0	-	-	-	-	+	+
Hydrochloric acid	10	30-40	0	0		+	0						
Hydrochloric acid, aqueous	10	20	+	+		+	0	-	-	-	-		
Carbon bisulphide	100	20	+	+	+	-	-	0	+	0	+	-	-
Sodium sulphide, aqueous	diluted	40											
Sulphuric acid	10	20	+	0	0	+	+	-	+	-	+	+	-
Seawater		40	+	0				+	+	+	+	+	+
Soap solution, aqueous	concentrated	20	+	+		+	+	0	+	0	+	0	+
Carbon tetrachloride	100	20	+	+	0	-	0	+	+	+	+		+
Trichloroethylene	100	20	+	+		-	0	0	-	0	-	-	-
Toluene	100	20	+	+	+	-	0	+	+	+	+	-	-
Vinyl acetate	100	20			+	+	+		-		-		
Hydrogen	100	60			+	+	+	+	+	+	+		
Xylene	100	20	+	+	+	-	-	+	+	+	+	-	+
Zinc chloride, aqueous	diluted	60	0	-	0	+	+	0	+	0	+		
Zinc sulphate, aqueous	diluted	60	+	+	0	+	+		+		+	+	+
Tin chloride, aqueous	diluted	40	+	+	-	0	+		+		+		
Citric acid	10	40	+	+	0	+	+		0		0	+	+

+ resistant

o resistant to a limited extent

- not resistant



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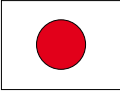
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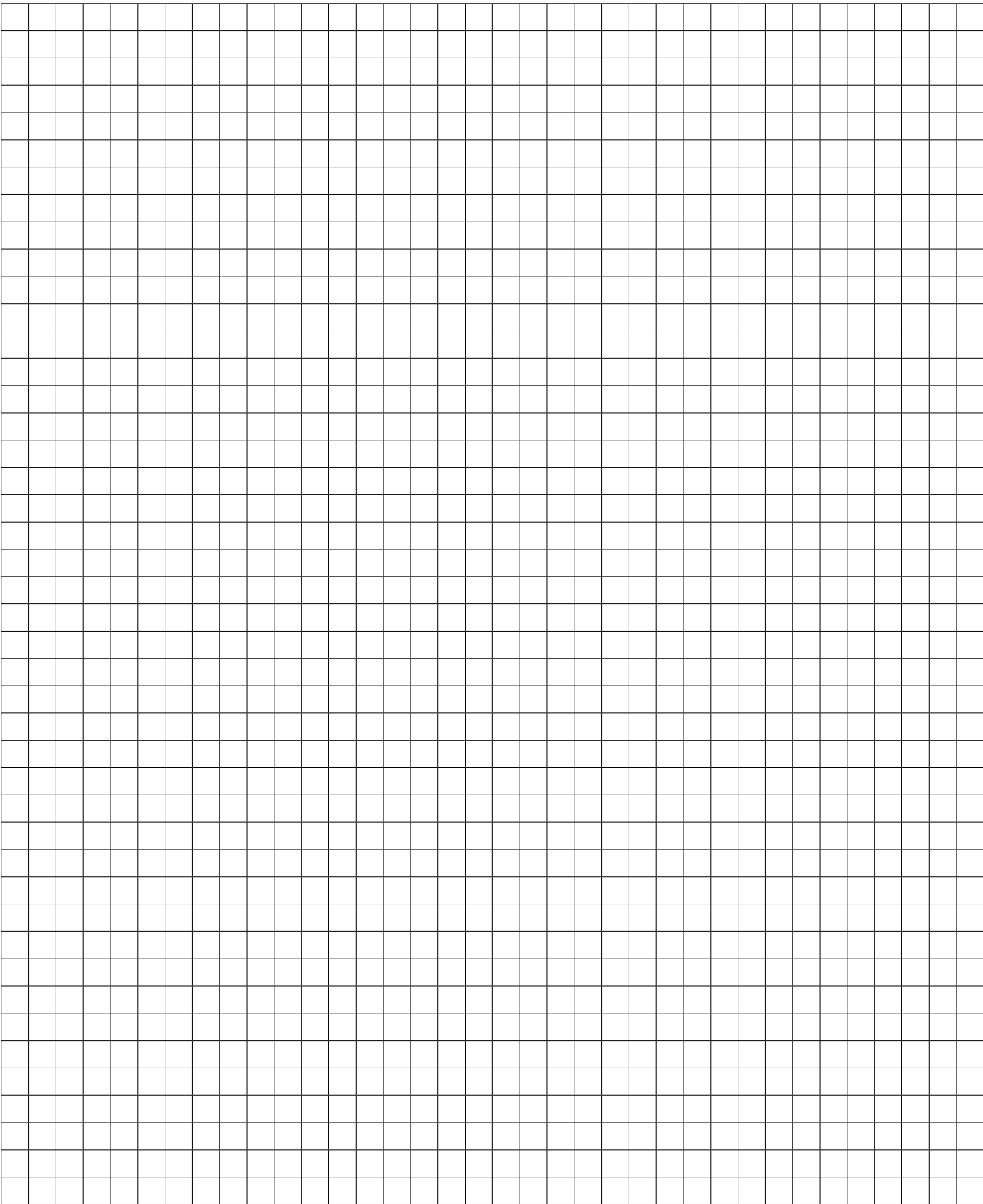


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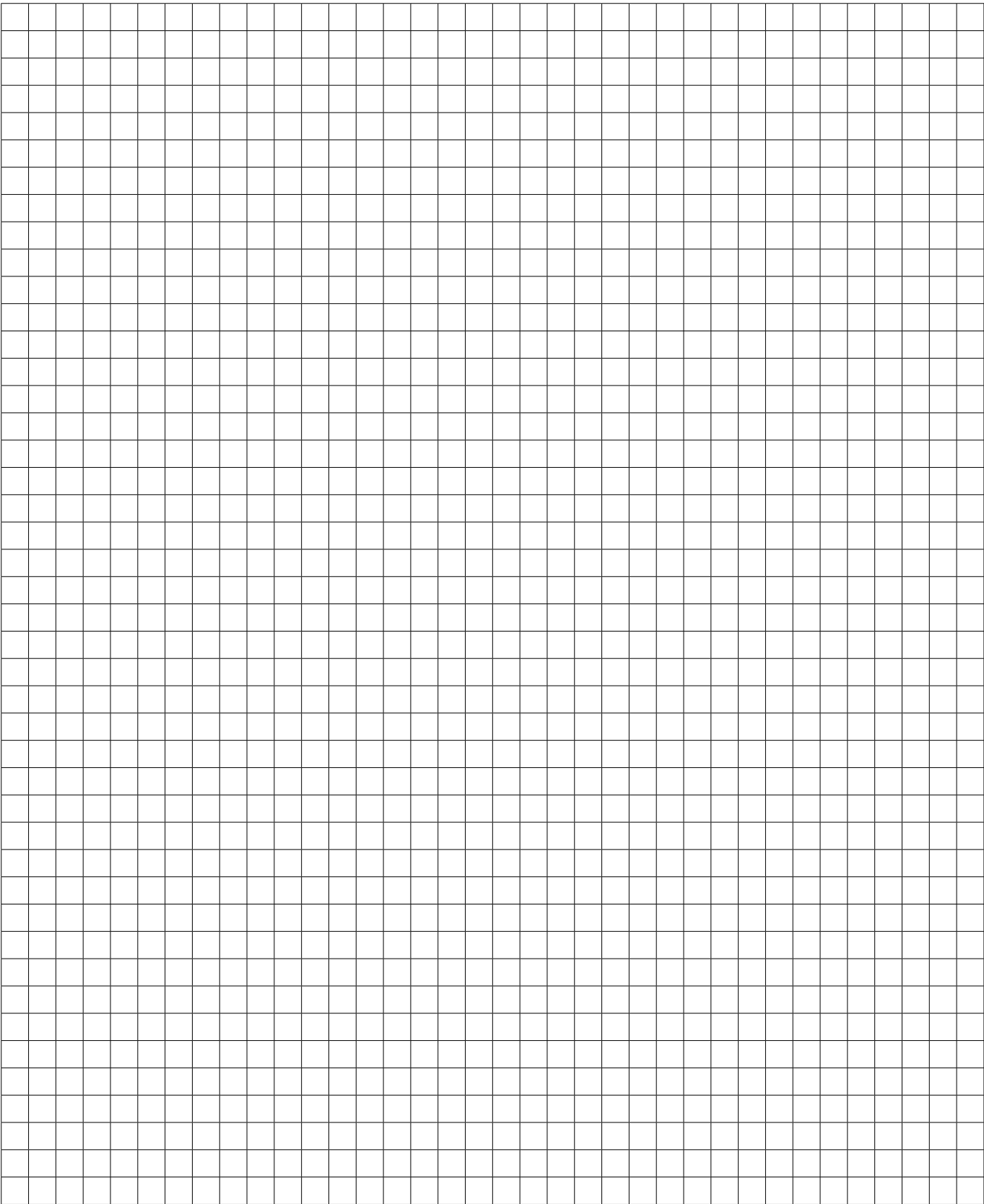
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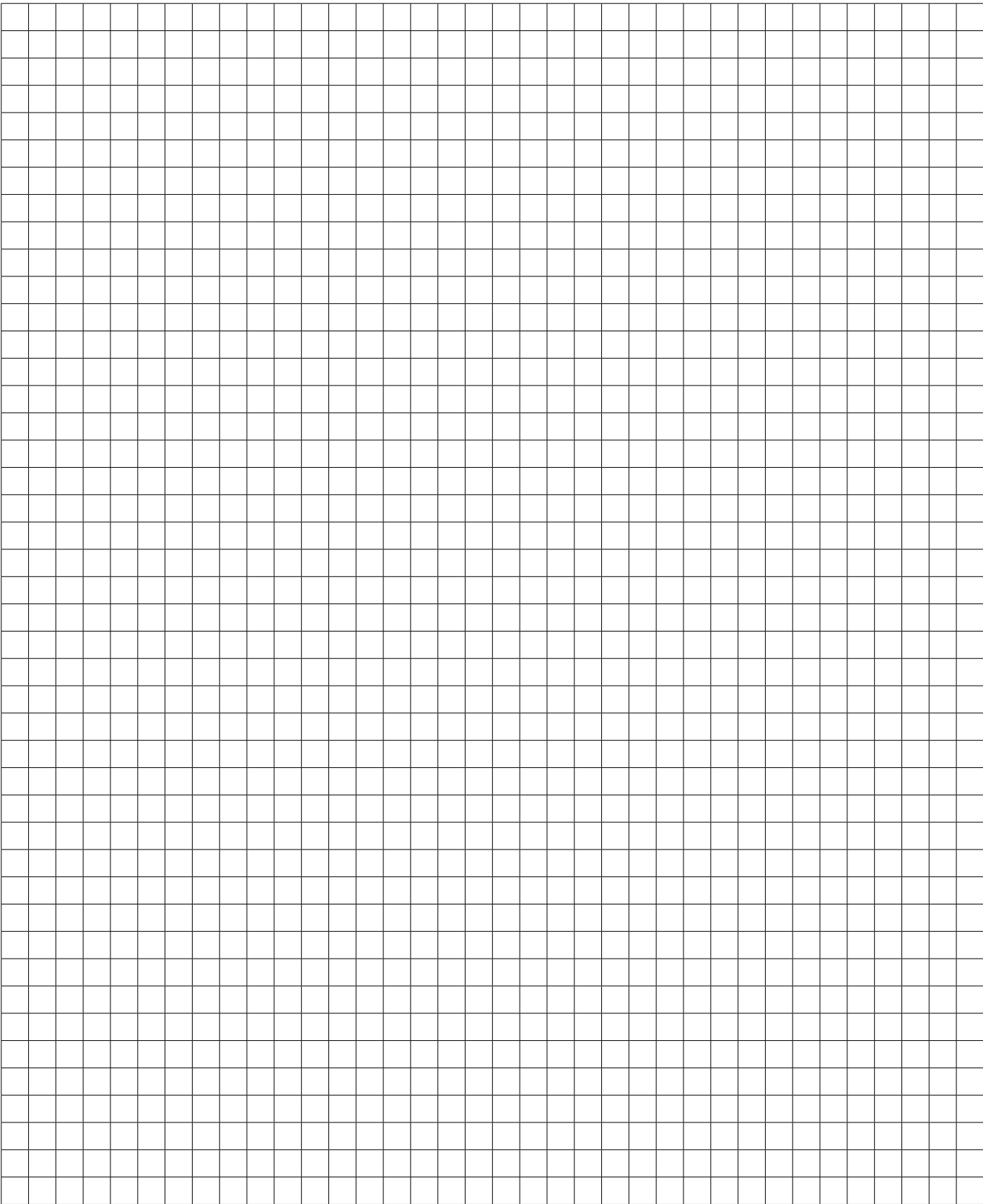
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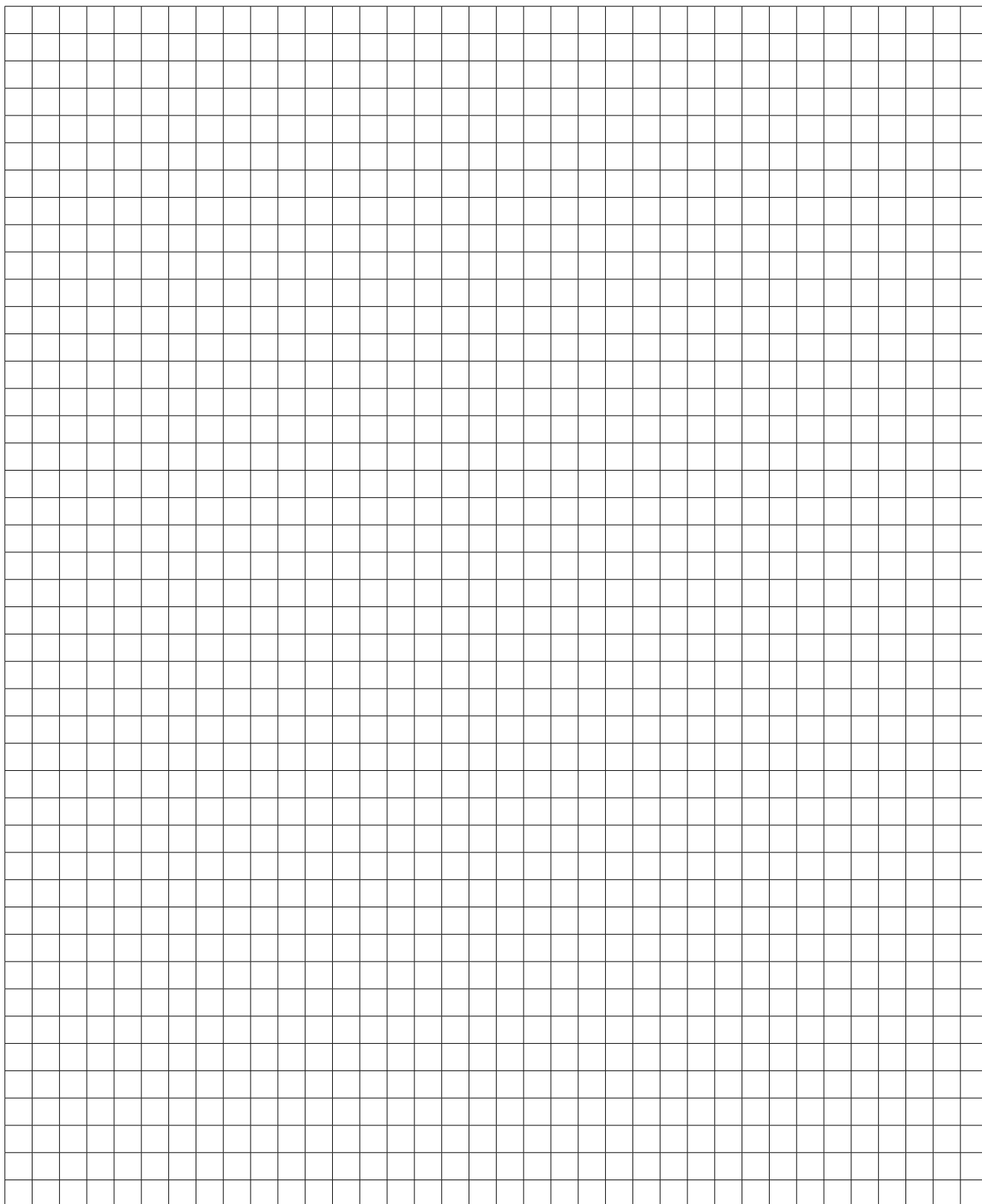




Notes

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ATG/E	20	KBW/M	239
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		KD/SG	34
BF	227	KDL...-EMV	48
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BPV	68	KDP 100	142
BST	212	KDP 105	148
BSTK	211	KDP 134	151
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BTK/E	21	KDP BP	161
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KAF/K	180	KV-ME	202
KAF/NI	179		
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KB	225		
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