

Simply Smart Systems

# Railroad and rail transport

• Cable fitting  
**M-PRO**

**Products for rail vehicles**

tested according to  
EN 45545-2  
EN 45545-3  
NFPA 130

**murrplastik®**  
Simply Smart Systems







The brand murrplastik®

# Industry-focused Future-proof Customized

Manufacturing is the driving force in our fast-moving, connected world. More so than nearly any other sector of the economy, industry lies at the heart of continuous innovation and change. To survive long term, you have to be able to react to ever-changing developments and conditions flexibly and with foresight. The highest level of economic know-how is just as indispensable here as powerful machines and reliable production facilities.

With over 60 years of experience in the development, production and sale of smart cable management systems and individual components, at murrplastik® we support companies worldwide in optimizing their work processes.

**For the customers, this means protected investments, long-lasting machines and shorter downtimes as the basis for a future-proof, up-to-date corporate development.**





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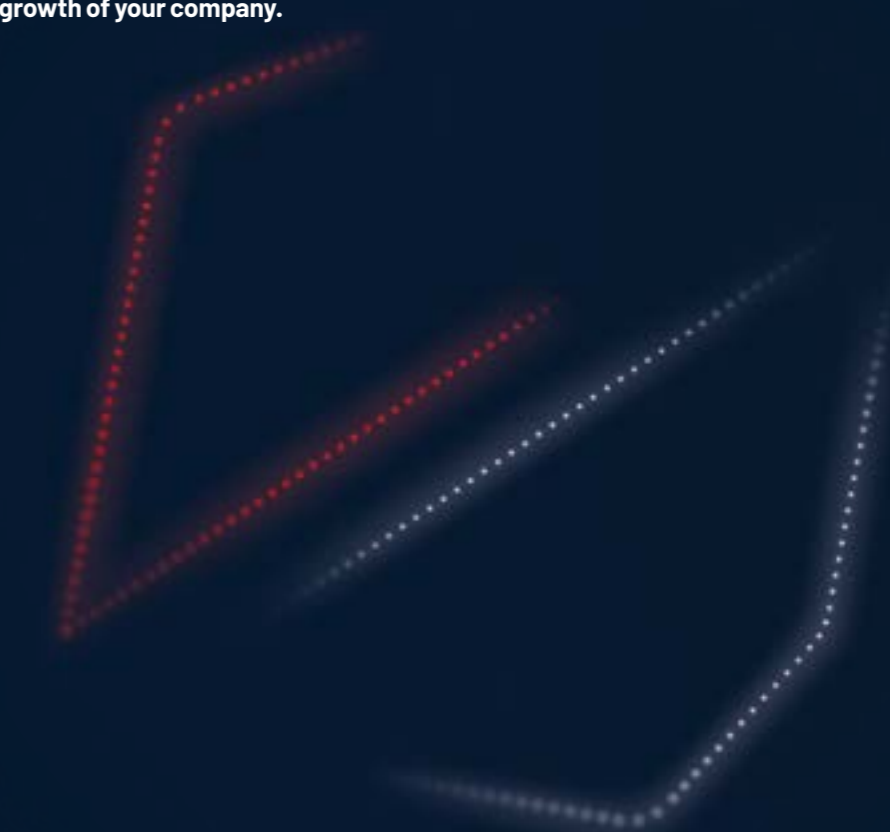


# We create room for progress Simply Smart Systems

Building on the development of the first computer-assisted labeling system and our decades of experience in the field of intelligent cable management, murrplastik® offers not only individual solutions but also complete cable management solutions - everything from one source.

In close cooperation with our experts, we will find the optimum solution for you and your requirements. Comprehensive consulting is just as much a part of our service portfolio as the rapid implementation, maintenance and support of the systems in case of a service issue.

**That is how we can ensure the basis for the modern, future-proof, progressive growth of your company.**





## Fire protection according to EN 45545-2 standard

According to the EN 45545-2 standard, murrplastik® products for rail vehicles meet the requirements for:

- **Oxygen index**  
according to T01 EN ISO 4589-2:01
- **Smoke proof tightness**  
according to T 10.03 EN ISO 5659:25 kWm<sup>2</sup>
- **Toxicity**  
according to T 12 NF X70-100-1 and -2 600°C

The values are recorded in the classes R22 and R23 depending on their installation site. The classification is made in the hazard levels HL 1; HL 2; HL 3. Hazard level HL 3 is the class with the highest requirements.

Abbreviation requirements	Test method reference	Parameter unit	Requirement Definition	HL1	HL2	HL3
<b>R 22</b>	T01 EN ISO 4589.2:01	Oxygen content vol.%	Minimum	28	28	32
	T10.03 EN ISO 5659-2: 25 kWm <sup>2</sup>	DS max. no dimensions	Maximum	600	300	150
	T12 NF X70-100-1 and -2 600°C (1112 °F)	CITNLP no dimensions	Maximum	1.2	0.9	0.75
<b>R 23</b>	T01 EN ISO 4589.2:01	Oxygen content vol.%	Minimum	28	28	32
	T10.03 EN ISO 5659-2: 25 kWm <sup>2</sup>	DS max. no dimensions	Maximum	-	600	300
	T12 NF X70-100-1 and -2 600°C (1112 °F)	CITNLP no dimensions	Maximum	-	1.8	1.5

Product group	Requirement set R 22			Requirement set R 23		
	Oxygen index	Smoke proof tightness	Toxicity	Oxygen index	Smoke proof tightness	Toxicity
<b>Fitting systems</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Conduit systems</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Conduit systems highly flexible</b>	HL 2	HL 2	HL 3	HL 2	HL 3	HL 3
<b>Cable entry system</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Strain relief</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Energy chains</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Heat-shrink conduit for labeling</b>	HL 3	HL 3	HL 3	HL 3	HL 3	HL 3
<b>Other Labeling</b>	Based on Table 2 R 26					

## Requirements for non-listed components According to the exposed area and location in the vehicle

Exposed area	Location	Requirement set in table 5
> 0.20 m <sup>2</sup>	inside	R 1
> 0.20 m <sup>2</sup>	outside	R 7
≤ 0.20 m <sup>2</sup>	inside	R 22
≤ 0.20 m <sup>2</sup>	outside	R 23

The detailed classification reports for each product can be downloaded from the catalog pages via QR codes and interactive download links.





## Fire closure W, I, E according to EN 45545-3

The EN 45545 standard provides for additional tests for products subject to fire closure. The tests were carried out according to the principles of DIN EN 1363-1.

### ROOM INTEGRITY -E-

The room integrity defines the period of time over which a component or control cabinet must be flameproof. The E-value indicates the length of time a component or enclosure will remain flameproof.

### THERMAL INSULATION -I-

The I-value indicates the duration of the thermal insulation, i.e. the time until a temperature increase above 180 °C occurs on the product on the side facing away from the fire.

### Heat radiation -W-

The W-value indicates the duration of heat radiation, i.e. the minutes until the specified heat radiation of 15 kW/m<sup>2</sup> is exceeded on the side facing away from the fire.

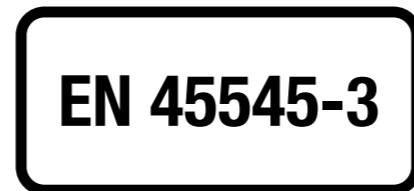
The products are tested in vertical and horizontal installation position.

Our cable entry systems and the cable protection system are subject to this standard.

With the solutions in the area of cable entry system and cable protection system we exceed the required values of T= 15 min

<b>Cable protection systems</b>	<b>E20</b>
<b>Cable entry systems</b>	<b>E60; I45; W45</b>

To fix the position of the cables, strain reliefs must be provided at a distance of 200 mm from the room integrity.



## Fire protection in accordance with North American standards

In addition to the European standard EN 45545, murrplastik completed testing of the range for rail vehicles in accordance with North American fire protection standards in 2023:

### NFPA 130:2020

Standard for Fixed Guideway Transit and Passenger Rail Systems  
Chapter 8 - Vehicles

### ASTM E 162:2016

Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy source

### ASTM E 1354:2017

Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter

### ASTM E 662:2017

Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials

### Bombardier SMP 800-C Rev. 6:2009.08.31

Toxic Gas Generation from Material Combustion

### BSS 7239:1988

Test method for toxic gas generation by materials on combustion  
Determination of the concentration of cyanide, chloride, and fluoride ions in solutions from combustion

The detailed test reports for each product can be downloaded from the catalog pages via QR codes and interactive download links.







# Set your course for success

**Every day, millions of people and goods travel by rail.**

To get from A to B smoothly, good organization is necessary, as is the use of reliable materials and technology.

• Conduit fitting  
**M-PRO**





# We combine quality and performance

As the only company specializing in cable management systems, murrplastik® produces all our products for rail transport in compliance with the European fire protection standard DIN EN 45545-2 with 3x HL3 as well as in accordance with EN 45545-3 for room integrity, thermal insulation and thermal radiation.

To ensure the longest possible service life of rail vehicles and to protect human life, we offer particularly high-quality, resistant materials and products for both indoor and outdoor use.



Product details and information at a click

[murrplastik.de/hero-produkt/m-pro/](https://murrplastik.de/hero-produkt/m-pro/)



## Highly dense and cable-friendly.

Our innovative conduit fitting series M-PRO convinces not only with its high density and cable-protecting inner sides, but also with its high fire protection, optimum ease of assembly, impact and tear-out resistance, as well as a wide range of variants.

Conduit fitting  
**M-PRO**

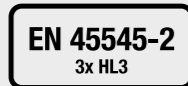


# Opt for the premium class:

Our innovative conduit fitting series M-PRO convinces not only with its high density and cable-protecting inner sides, but also with its high fire protection, optimum ease of assembly, impact and tear-out resistance, as well as a wide range of variants.

### Features:

- Highly dense up to IP68 at 6 bar and IP69K
- Cable-friendly, without sharp edges
- Allows very high packing density
- Highest fire protection



Conduit fitting M-PRO



Product details and information at a click

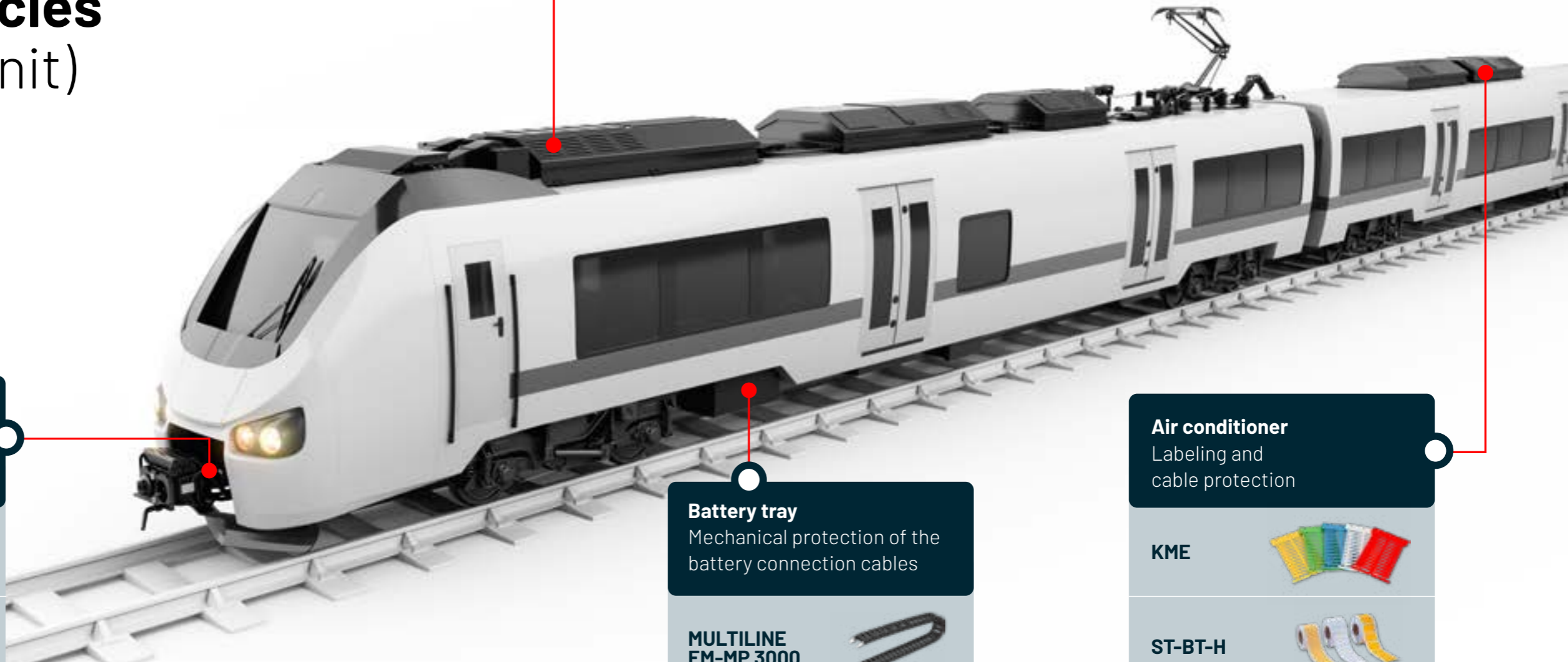
[murrplastik.de/hero-produkt/m-pro/](http://murrplastik.de/hero-produkt/m-pro/)

\* under review





# Professional cable management in rail vehicles (multiple unit)



**Inverter**  
Efficient cable labeling and cable entry

KDL/E+ 

KS & KTH/Q 

mp-LM 3 

**Automatic coupling**  
High mechanical stress and impact resistance

EW-PRT 

M-PRO P-VG-M 

UH-S 

KSM 


**Battery tray**  
Mechanical protection of the battery connection cables


MULTILINE EM-MP 3000 


EVOCHAIN PLUS EN-MP 45.1/2 


EST stainless steel typesplate 

**Air conditioner**  
Labeling and cable protection

KME 

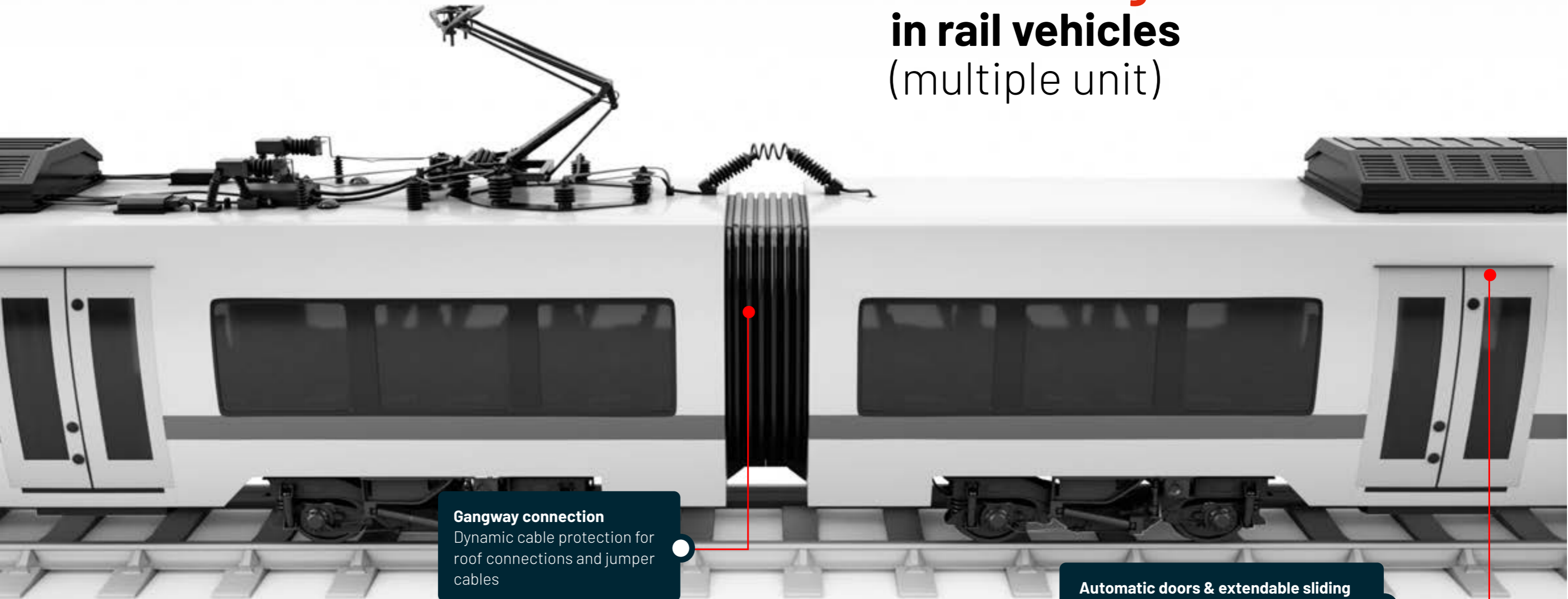
ST-BT-H 

KDP/EN-RA 

GF-P 



# Professional cable management in rail vehicles (multiple unit)



### Gangway connection

Dynamic cable protection for roof connections and jumper cables

EW-PRT



M-PRO P-CVG



UH-S



### Automatic doors & extendable sliding steps

Installation space optimized cable protection for high opening cycles

EN-MP 10.3



EN-MP 14



EN-MP 15





# Professional cable management in rail vehicles (electric locomotive)

## Driver's cab

Clear cable management and labeling

SAT-GF



UHE



KS & KTH/Q



**Bogie** Sophisticated cable protection with EMC option under extreme conditions

P-CVG-EMV



EW-PAB



UH-S



**Inverter** Room integrity in accordance with EN 45545-3 and efficient labeling technologies

KDP/EN-RA



KAF



KS



Terminal block labeling



## Cables in the interior

Space-saving, clearly arranged and with high installation convenience

ZL strain relief



EWL-PAB



KMH/Q



## Cable duct in the machine room

Top functionality with an excellent price-performance ratio

Edge protection profile



EWL-PAB



Plug-in fitting type MSV



Braided conduit Type GF-P



# Conduits and Fittings

## Corrugated conduits

**EWL-PAB** - flexible and lightweight design for railroad applications.

**EW-PRT** - robust and cold-resistant design for high-frequency mechanical loads in outdoor use

The protection conduits meet the specifications of EN 45545-2 with a Class R22 and R23 ranking according to hazard level 3x HL3 resp. HL2

## Fittings

The M-PRO fitting series was developed together with leading rail vehicle manufacturers.

### Featured advantages of the conduit fitting systems:

- High tightness IP 68 up to 6 bar and at the same time IP 69 K without further attachments according to DIN EN 60529.
- Quick assembly:  
Insert conduit, snap-in → ready.
- No parts can get lost → Delivered completely assembled.
- Clamping along entire circumference, ensuring maximum tensile strength

All fittings meet the specifications of EN 45545-2 with a Class R22 and R23 ranking according to hazard level 3x HL3.

## Room integrity according to DIN EN 1363-1:2012-10

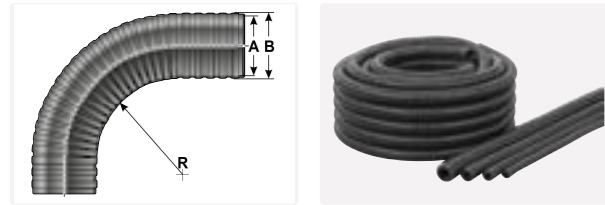
In EN 45545, the room integrity according to DIN EN 1363 1:2012-10 has a special significance. This defines the period of time over which a control cabinet or component must ensure flame tightness. The RAB 30 room integrity strip, allowed murrplastik to pass testing at the MPA Dresden. The requirement was a minimum of E20.

This ensures that a control cabinet or a component will meet the room integrity requirements as specified in DIN EN 1363-1:2012-10, when using RAB 30 and a M-PRO fitting.

The system is rounded off by the stable holders. They may be mounted linked together and therefore take up less space. Since their tops swivel or may be completely removed, they have clear installation benefits compared to the competition.

This product also meets the requirements of EN 45545-2 3x HL3.





**Product information**

The EWL-PAB cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The affordable EWL-PAB cable protection conduits are characterized by their excellent self-extinguishing properties and high crush and impact resistance. For static applications involving low to medium mechanical loads.

- Applications:
- Plant engineering
  - Mechanical engineering
  - Vehicle engineering

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X24 cable protection conduit EWL-PAB (PA6)	

**Material properties**

- Material properties**  
Material: Modified polyamide PA 6
- High angle consistency**  
Crush resistance: >550 N  
Tread: 50 x 50 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C
- Crush resistance: >950 N  
Tread: 100 x 100 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

- Flexural fatigue strength**  
Cycles: >16000  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at -45 °C

- Impact strength**  
Tier: 3  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at -25 °C

- System tear-out strength**  
System tear-out strength: >310 N  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

**Thermal properties**

- Temperature / temperature range**  
-45 °C - 120 °C, short-term: 160 °C

**Chemical resistance**

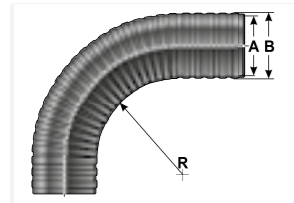
- Resistant to:**  
Alcohols, mineral oils, greases, fuels

**Fire behavior**

- Fire behavior** Fire classification according to UL 94: VO self-extinguishing
- Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.61  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)
- Classification: Ds (max.) R22 / R23 HL3  
Value: 68  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)
- Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2
- Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

Article	Order No.	Color	UV	metric	PG	NW	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	PU m
EWL-PAB 06	83164152	Black	✓				6.9	10	23	1.5	100
EWL-PAB M10/P07	83164154	Black	✓	M10	PG07	NW 7	8.55	11.5	20	1.8	100
EWL-PAB M12/P09	83164156	Black	✓	M12	PG09	NW 10	9.9	13	20	2.2	100
EWL-PAB M16/P11	83164158	Black	✓	M16	PG11	NW 12	12.2	15.7	25	2.9	100
EWL-PAB M18/P13	83164161	Black	✓	M18	PG13	NW 13	14.2	18.4	40	4.0	100
EWL-PAB M20/P16S	83164164	Black	✓	M20	PG16	NW 17	16.5	20.9	45	5.4	100
EWL-PAB M20/P16	83164162	Black	✓	M20	PG16	NW 17	15.6	21.2	50	5.0	100
EWL-PAB M25/P21S	83164167	Black	✓	M25	PG21	NW 23	23.1	28.3	50	7.4	100
EWL-PAB M25/P21	83164166	Black	✓	M25	PG21	NW 23	22.1	28.5	55	9.6	100
EWL-PAB M32/P29S	83164169	Black	✓	M32	PG29	NW 29	28.5	34.5	60	10.6	50
EWL-PAB M32/P29	83164168	Black	✓	M32	PG29	NW 29	27.8	34.5	70	10.8	50
EWL-PAB M40/P36S	83164171	Black	✓	M40	PG36	NW 36	36.2	42.1	75	12.8	25
EWL-PAB M40/P36	83164170	Black	✓	M40	PG36	NW 36	35	42.6	80	12.8	25
EWL-PAB M50/P48S	83164173	Black	✓	M50	PG48	NW 48	47.5	54.5	90	17.0	25
EWL-PAB M50/P48	83164172	Black	✓	M50	PG48	NW 48	46.3	53.9	100	17.0	25
EWL-PAB 56	83164176	Black	✓			NW 56	56.3	70	160	30.0	25
EWL-PAB 70	83164175	Black	✓			NW 70	66	78.8	200	40.0	25
EWL-PAB 06	83164178	Gray	*				6.9	10	23	1.5	100
EWL-PAB M10/P07	83164180	Gray	*	M10	PG07	NW 7	08:55	11.5	20	1.8	100
EWL-PAB M12/P09	83164182	Gray	*	M12	PG09	NW 10	9.9	13	20	2.2	100
EWL-PAB M16/P11	83164184	Gray	*	M16	PG11	NW 12	12.2	15.7	25	2.9	100
EWL-PAB M18/P13	83164186	Gray	*	M18	PG13	NW 13	14.2	18.4	40	4.0	100
EWL-PAB M20/P16S	83164189	Gray	*	M20	PG16	NW 17	16.5	20.9	45	5.4	100
EWL-PAB M20/P16	83164188	Gray	*	M20	PG16	NW 17	15.6	21.2	50	6.3	100
EWL-PAB M25/P21S	83164191	Gray	*	M25	PG21	NW 23	23.1	28.3	50	7.4	100
EWL-PAB M25/P21	83164190	Gray	*	M25	PG21	NW 23	22.1	28.5	55	9.6	100
EWL-PAB M32/P29S	83164193	Gray	*	M32	PG29	NW 29	28.5	34.5	60	10.6	50
EWL-PAB M32/P29	83164192	Gray	*	M32	PG29	NW 29	27.8	34.5	70	10.8	50
EWL-PAB M40/P36S	83164195	Gray	*	M40	PG36	NW 36	36.2	42.1	75	12.8	25
EWL-PAB M40/P36	83164194	Gray	*	M40	PG36	NW 36	35	42.6	80	12.8	25
EWL-PAB M50/P48S	83164197	Gray	*	M50	PG48	NW 48	47.5	54.5	90	17.0	25
EWL-PAB M50/P48	83164196	Gray	*	M50	PG48	NW 48	46.3	53.9	100	17.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities on request



**Product information**

Experience the innovation of EW-PRT cable protection conduits, specially designed for demanding cable protection. Made from innovative polyamide 12, they offer outstanding UV protection and exceptional resistance to mechanical impact. Their excellent fire protection properties meet the highest requirements in the rail transportation sector, performing reliably even under extreme conditions down to -50°C. Ideal for use in environments that require robust and secure solutions.

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X35 cable protection conduit EW-PRT (PA12)	

Article	Order No.	Color	metric	PG	NW	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	PU m
EW-PRT 06 <sup>1)</sup>	83181850	Black				6.4	9.8	20	68	1.5	50
EW-PRT M10/P07	83181852	Black	M10	PG07	NW 7	8.5	11.5	22	75	2.8	50
EW-PRT M12/P09	83181854	Black	M12	PG09	NW 10	9.8	12.4	26	85	3.0	50
EW-PRT M16/P11	83181856	Black	M16	PG11	NW 12	12	15.7	38	105	3.8	50
EW-PRT M20/P16	83181858	Black	M20	PG16	NW 17	15.7	21.1	52	185	6.6	50
EW-PRT M25/P21	83181862	Black	M25	PG21	NW 23	22.4	28.3	64	235	9.9	50
EW-PRT M32/P29	83181866	Black	M32	PG29	NW 29	27.5	34.5	77	285	13.5	25
EW-PRT M40/P36	83181868	Black	M40	PG36	NW 36	36	42.5	91	315	17.0	25
EW-PRT M50/P48	83181870	Black	M50	PG48	NW 48	46.2	53.9	112	355	22.5	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities on request

**Material properties**

**Material properties**  
Material: Modified polyamide PA 12

**High angle consistency**  
Crush resistance: >300 N  
Tread: 50 x 50 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

Crush resistance: >450 N  
Tread: 100 x 100 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

**Flexural fatigue strength**  
Cycles: >1,000,000  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at -45 °C

**Impact strength**  
Tier: 4  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at -25 °C

**System tear-out strength**  
System tear-out strength: >230 N  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Fire behavior**

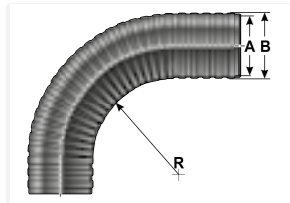
**Fire behavior** Fire classification according to UL 94: V2 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.25  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 180  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)  
  
Classification: LOI R22 / R23 HL3  
Value: ≥28 % <32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239  
Bombardier SMP 800-C





## Product information

The EWT-PAB cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. Due to its excellent fire protection properties and very low smoke emission, this product can be used in railway technology and for static applications with medium to high mechanical stress.

- The EWT-PAB cable protection conduits consist of a two-part, slotted conduit system and are characterized by the following advantages:
- The cable protection conduits can be opened and closed again at any time.
- Mounting of pre-assembled cables
- Retrofitting or repair in mechanical and plant engineering

## Information, conformities and approvals



Article	Order No.	Color	UV	metric	PG	NW	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	PU m
EWT-PAB M10/P07	83164650	Black	✓	M10	PG07	NW 7	5.7	11.5	70	3.7	50
EWT-PAB M12/P09	83164652	Black	✓	M12	PG09	NW 10	7.9	12.9	75	4.2	50
EWT-PAB M16/P11	83164654	Black	✓	M16	PG11	NW 12	10	16.2	100	6.4	50
EWT-PAB M20/P16	83164656	Black	✓	M20	PG16	NW 17	13.7	21	120	9.3	50
EWT-PAB M25/P21	83164658	Black	✓	M25	PG21	NW 23	19.8	28.4	170	13.0	50
EWT-PAB M32/P29	83164660	Black	✓	M32	PG29	NW 29	25	34.2	180	18.0	25
EWT-PAB M40/P36	83164662	Black	✓	M40	PG36	NW 36	32.3	43.5	200	24.0	25
EWT-PAB M50/P48	83164664	Black	✓	M50	PG48	NW 48	44	54.8	240	32.5	25

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X24 cable protection conduit EWT-PAB (PA6)	

## Material properties

**Material properties**  
Material: Modified polyamide PA 6

**High angle consistency**  
Crush resistance: >650 N  
Tread: 50 x 50 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

Crush resistance: >1,000 N  
Tread: 100 x 100 mm  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

**Flexural fatigue strength**  
Cycles: >1,200  
Testing method: Based on IEC EN 61386  
Test value: not specified  
Test conditions: not specified

**Impact strength**  
Level: not specified  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at -25 °C

**System tear-out strength**  
System tear-out strength: >540 N  
Testing method: Based on IEC EN 61386  
Test value: M25/P21  
Test conditions: Testing at 23 °C

## Thermal properties

**Temperature / temperature range**  
-40 °C - 120 °C, short-term: 160 °C

## Chemical resistance

**Resistant to:**  
Alcohols, mineral oils, greases, fuels

## Fire behavior

**Fire behavior** Fire classification according to UL 94: VO self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.61  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 68  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

## Type ET-EN (end grommet)

GO TO PRODUCT

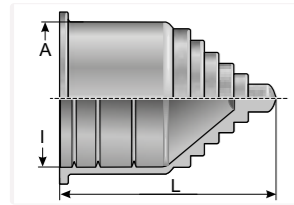


### Product information

The type ET end grommet is made of TPE and is used, for example, to close off the open end of a protective conduit, or as centering device for exiting lines.

The end grommet features the following advantages:

- Opening of end grommet variable (depending on the cable diameter used)
- Easy assembly
- Fixing of end grommet to the cable protection conduit using ribs around the inside
- Approved for railway technology (EN 45545-2)



### Information, conformities and approvals



Article	Order No.	Color	UV	Suitable for Murrflex	A mm	I mm	L mm	Cable Ø mm	PU Pcs.
ET-EN P07	83723480	Black	✓	M10/P7	13	10	29	1 / 8	50
ET-EN P09	83723482	Black	✓	M12/P9	16	13	32.5	1 / 10	50
ET-EN P11	83723484	Black	✓	M16/P11(S)	19	15.8	36.5	4 / 12	50
ET-EN P16	83723486	Black	✓	M20/P16(S)	25	21.2	37.5	6 / 16.5	50
ET-EN P21	83723488	Black	✓	M25/P21(S)	32	28.5	40.2	6 / 23	25
ET-EN P29	83723490	Black	✓	M32/P29(S)	39	34.5	44.2	6 / 29	25
ET-EN P36	83723492	Black	✓	M40/P36(S)	46	42.5	46	10 / 37	25
ET-EN P48	83723494	Black	✓	M50/P48(S)	59	54.5	52	10 / 47	10

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X15 End Grommet ET-EN</p>	

### Material properties



**Material properties**  
Material: Thermoplastic elastomer

### Thermal properties



**Temperature / temperature range**  
-40 °C - 100 °C, short-term: 120 °C

### Chemical resistance



**Resistant to:**  
Weak acids, alcohols, alkalis, greases

### Fire behavior



**Fire behavior** Fire classification  
according to UL 94: V0 self-extinguishing



**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.19  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 108  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2



## Type GF-P (braided conduit)

GO TO PRODUCT



### Product information

The GF-P braided conduits are made of specially modified polyester. With this material and the special braiding, the conduit is extremely durable and elastic in both the radial and axial directions. It can be used to bundle and protect a large number of cables and individual wires of all types. The elastic braiding means that configuration of the conduit can be very variable. The SAT-GF conduit connection serves as an end piece for the braided conduits.

Additional advantages of the GF-P braided conduit include:

- Very good mechanical and thermal resistance
- Good chemical resistance
- Very low levels of smoke gas
- Very high abrasion resistance

Specification:  
EN 45545-2 3x HL3

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Braided conduit type GF-P	

### Material properties



**Material properties**  
Material: Modified polyester

### Thermal properties



**Temperature / temperature range**  
-55 °C - 150 °C, short-term: 175 °C

### Chemical resistance



**Resistant to:**  
Weak acids, alcohols, alkalis, greases

### Fire behavior



**Fire behavior** Fire classification  
according to UL 94: V2 self-extinguishing

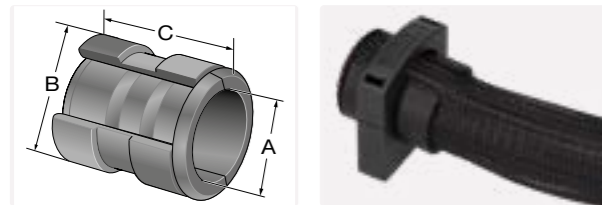


**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.1  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 132  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: 34,5 %  
Testing method: ISO 4589-2

Article	Order No.	Color	UV	Nominal width NW	Suitable for SAT-GF	Size range mm	Surface covering in %	Weight kg/100m	PU m
GF-P 3	83342008	Black	✓	4		2 / 6	93	0.41	200
GF-P 4	83342010	Black	✓	4		3 / 7	93	0.58	200
GF-P 6	83342012	Black	✓	6		5 / 9	86	0.7	200
GF-P 8	83342014	Black	✓	8		7 / 12	87	0.74	200
GF-P 10	83342016	Black	✓	10	SAT-GF M16/P11	8 / 15	77	0.91	200
GF-P 12	83342018	Black	✓	12	SAT-GF M16/P11	8 / 15	74	0.94	200
GF-P 16	83342020	Black	✓	16	SAT-GF M20/P16	12 / 24	80	1.5	100
GF-P 20	83342022	Black	✓	20	SAT-GF M20/P16	16 / 32	75	1.75	100
GF-P 22	83342024	Black	✓	22	SAT-GF M25/P21	18 / 33	84	1.9	100
GF-P 30	83342026	Black	✓	30	SAT-GF M32/P29	28 / 37	78	2.65	100
GF-P 40	83342028	Black	✓	40	SAT-GF M40/P36	32 / 45	77	3.18	50
GF-P 50	83342030	Black	✓	50	SAT-GF M50/P48	30 / 55	79	3.88	50
GF-P 70	83342032	Black	✓	70		60 / 88	87	5.94	50



**Product information**

The SAT-GF serves as an end piece for the braided conduits GFand GF-P. It consists of an outer sleeve and a separable inner sleeve and can therefore also be retrofitted. The braided conduit can therefore also be combined with the UHE conduit holder or the m-fix conduit fitting using the SAT-GF connection.

Advantages:

- Retrofitting without tools
- Seamless insertion of the braided conduit into a housing
- Cable protection with low weight

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X4 Conduit connection SAT-GF</p>	

Article	Order No.	Color	Suitable for GF-P	A mm	B mm	C mm	PU Pcs.
SAT-GF M16/P11	83651606	Black	10 / 12	8.6	14.5	27	50
SAT-GF M20/P16	83651608	Black	16 / 20	13.8	20.5	27	50
SAT-GF M25/P21	83651610	Black	22	18	28	33	50
SAT-GF M32/P29	83651612	Black	22 / 30	23.1	33.5	33	25
SAT-GF M40/P36	83651614	Black	30 / 40	29.1	41.8	46	25
SAT-GF M50/P48	83651616	Black	40 / 50	41.1	53.8	53	25

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6

**Thermal properties**

**Temperature / temperature range**  
-40 °C - 110 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, greases, fuels, mineral oils,

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C



## Type GF-P-LS

GO TO PRODUCT



### Product information

The self-retracting fabric conduit with longitudinal slot provides excellent mechanical protection against abrasion for your lines. First off it prevents rattling even better, plus it can be installed at any place and at any time.

Additional advantages of the GF-P-LS braided conduit include:

- High mechanical protection
- Light-weight / low mass
- High flexibility
- Great chemical resistance
- Flame resistant

Specification:

- EN 45545-2 2x HL3 1X HL2

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Braided conduit type GF-P-LS	

Article	Order No.	Color	UV	Nominal width NW	Size range mm	Weight kg/100m	PU m
GF-P-LS-5	83342110	Black	✓	5	3 / 5	1.71	25
GF-P-LS-8	83342112	Black	✓	8	5 / 8	2.12	25
GF-P-LS-10	83342114	Black	✓	10	8 / 10	2.43	25
GF-P-LS-13	83342116	Black	✓	13	10 / 13	2.54	25
GF-P-LS-16	83342118	Black	✓	16	13 / 16	3.38	25
GF-P-LS-19	83342120	Black	✓	19	16 / 19	3.38	25
GF-P-LS-25 <sup>1)</sup>	83342122	Black	✓	25	22 / 25	4.81	25
GF-P-LS-29	83342124	Black	✓	29	26 / 29	5.18	25
GF-P-LS-32	83342126	Black	✓	32	29 / 32	6.35	25
GF-P-LS-38	83342128	Black	✓	38	32 / 44	7.56	25
GF-P-LS-50	83342130	Black	✓	50	44 / 50	7.56	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities on request

### Material properties



**Material properties**  
Material: Modified polyester

### Thermal properties



**Temperature / temperature range**  
-55 °C - 150 °C, short-term: 175 °C

### Chemical resistance



**Resistant to:**  
Weak acids, alcohols, alkalis, greases

### Fire behavior



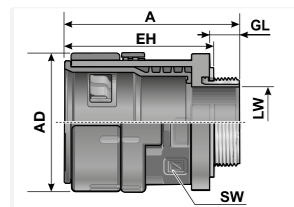
**Fire behavior**  
Fire classification UL 224 / FMV SS302  
self-extinguishing type B



**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.11  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 213  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: 34.0 %  
Testing method: ISO 4589-2



**Product information**

The highly dense and cable-friendly M-PRO P-VG-M conduit fitting with metal external thread is used for the quick and safe connection of corrugated conduits. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

- Further advantages:
- Tool-free assembly / disassembly of corrugated conduits
  - High packing density
  - High tear-out strength
  - Vibration, shock and impact resistant

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M_PRO series	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25kW/m<sup>2</sup>)

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C



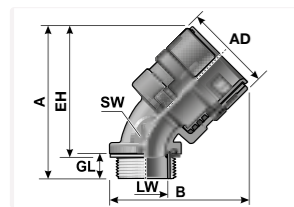
Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	EH mm	AD mm	GL mm	LW mm	SW mm	PU Pcs.
<b>Metric metal thread</b>												
P-VG/L M12/07-M	83401252	Black	✓	M12x1.5	M10/P07	44.5	33.5	23.7	12	7.2	22	4
P-VG M12/09-M	83401253	Black	✓	M12x1.5	M12/P09	37.5	33.5	25	5	7.2	23	4
P-VG/L M12/09-M	83401254	Black	✓	M12x1.5	M12/P09	44.5	33.5	25	12	7.2	23	4
P-VG M16/09-M	83401255	Black	✓	M16x1.5	M12/P09	37.5	33.5	25	5	10.5	23	4
P-VG/L M16/09-M	83401256	Black	✓	M16x1.5	M12/P09	44.5	33.5	25	12	10.5	23	4
P-VG/L M16/11-M	83401258	Black	✓	M16x1.5	M16/P11	49.7	38.7	27.9	12	10.5	24	4
P-VG/L M20/11-M	83401260	Black	✓	M20x1.5	M16/P11	49.7	38.7	27.9	12	14.6	24	4
P-VG M20/16-M	83401262	Black	✓	M20x1.5	M20/P16	47.5	42.5	33.7	6	14.6	30	4
P-VG/L M20/16-M	83401263	Black	✓	M20x1.5	M20/P16	53.5	42.5	33.7	12	14.6	30	4
P-VG/L M25/16-M	83401265	Black	✓	M25x1.5	M20/P16	54.5	43	33.7	13	19	30	4
P-VG/L M25/21-M	83401268	Black	✓	M25x1.5	M25/P21	58.5	47	41.6	13	19	36	4
P-VG/L M32/21-M	83401270	Black	✓	M32x1.5	M25/P21	59.5	47	41.6	14	26	36	2
P-VG/L M32/29-M	83401272	Black	✓	M32x1.5	M32/P29	66.5	54	51	14	26	46	2
P-VG/L M40/29-M	83401274	Black	✓	M40x1.5	M32/P29	70.5	55	51	17	32	46	2
P-VG/L M40/36-M	83401276	Black	✓	M40x1.5	M40/P36	73.5	58.5	60	17	32	55	2
P-VG/L M50/36-M	83401278	Black	✓	M50x1.5	M40/P36	73.5	58.5	60	17	41.2	55	2
P-VG/L M50/48-M	83401280	Black	✓	M50x1.5	M50/P48	76.4	61.4	73	17	41.2	65	2
P-VG/L M63/48-M	83401282	Black	✓	M63x1.5	M50/P48	76.4	61.4	73	17	50.3	65	2
<b>PG metal thread</b>												
P-VG/L PG09/09-M	83401653	Black	✓	PG 09	M12/P09	44.5	33.5	25	12	9.6	23	4
P-VG/L PG11/11-M	83401657	Black	✓	PG 11	M16/P11	49.7	38.7	27.9	12	12.5	24	4
P-VG/L PG13.5/16-M	83401662	Black	✓	PG 13.5	M20/P16	54.5	42.5	33.7	13	14.5	30	4
P-VG/L PG16/16-M	83401663	Black	✓	PG 16	M20/P16	54.5	42.5	33.7	13	16.5	30	4
P-VG/L PG21/21-M	83401666	Black	✓	PG 21	M25/P21	59.5	47	41.6	14	22	36	4
P-VG/L PG29/29-M	83401669	Black	✓	PG 29	M32/P29	67.5	55	51	14	30	46	2
P-VG/L PG36/36-M	83401671	Black	✓	PG 36	M40/P36	73.5	58.5	60	17	40	55	2
P-VG/L PG48/48-M	83401673	Black	✓	PG 48	M50/P48	76.4	61.4	73	17	50	65	2



**Product information**

The highly dense and cable-friendly M-PRO P-VW 45°-M conduit fitting with metal external thread in 45° angle is used for the quick and safe connection of corrugated conduits. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

- Further advantages:
- Tool-free assembly / disassembly of corrugated conduits
  - High packing density
  - High tear-out strength
  - Vibration, shock and impact resistant



**Information, conformities and approvals**



Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	EH mm	AD mm	GL mm	LW mm	B mm	SW mm	PU Pcs.
<b>Metric metal thread</b>													
P-VW/L 45-M25/21-M	83403266	Black	✓	M25x1.5	M25/P21	76.5	65	41.6	13	17	68	24	4
P-VW/L 45-M32/29-M	83403270	Black	✓	M32x1.5	M32/P29	87.3	74.8	51	14	23.2	80.9	30	2
P-VW/L 45-M40/29-M	83403272	Black	✓	M40x1.5	M32/P29	91.3	76.3	51	17	29.5	85.4	36	2
P-VW/L 45-M50/36-M	83403276	Black	✓	M50x1.5	M40/P36	100.7	85.7	60	17	38.4	97.6	50	2

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#)      **Classification reports according to EN 45545-2 / NFPA 130**  
 Product relevance: Material X4 M-PRO series conduit fittings

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#)      **UNIFE Manufacturer's Declaration**  
 Product relevance: Sealing insert of the M\_PRO series

**Material properties**

**Material properties**  
 Material: Modified polyamide PA 6, Thermoplastic elastomer

**Thermal properties**

**Temperature / temperature range**  
 -50 °C - 120 °C, short-term: 140 °C

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Protection class**

**IP protection rating**  
 IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Chemical resistance**

**Resistant to:**  
 Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Fire property according to NFPA 130**  
 ASTM E 162, ASTM E 1354, ASTM E 662  
 Boeing BSS 7239, Boeing BSS 7242  
 Bombardier SMP 800-C

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire properties as per EN 45545-2**  
 Classification: C.I.T. R22 / R23 HL3  
 Value: 0.58  
 Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
 Value: 57  
 Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
 Value: ≥ 32 %  
 Testing method: ISO 4589-2

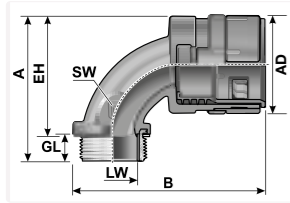




**Product information**

The highly dense and cable-friendly M-PRO P-VW 90°-M conduit fitting with metal external thread in 90° angle is used for the quick and safe connection of corrugated conduits. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

- Further advantages:
- Tool-free assembly / disassembly of corrugated conduits
  - High packing density
  - High tear-out strength
  - Vibration, shock and impact resistant



**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M_PRO series	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

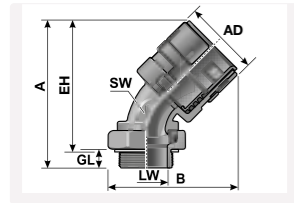
**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	EH mm	AD mm	GL mm	LW mm	B mm	SW mm	PU Pcs.
<b>Metric metal thread</b>													
P-VW/L 90-M12/09-M	83405254	Black	✓	M12x1.5	M12/P09	50.7	39.7	25	12	5.5	63.8	11	4
P-VW/L 90-M16/11-M	83405258	Black	✓	M16x1.5	M16/P11	52.6	41.6	27.9	12	8.9	66	15	4
P-VW/L 90-M20/16-M	83405263	Black	✓	M20x1.5	M20/P16	58.1	47.1	33.7	12	12.5	73.8	19	4
P-VW/L 90-M25/21-M	83405268	Black	✓	M25x1.5	M25/P21	66.2	54.4	41.6	13	17	84.1	24	4
P-VW/L 90-M32/29-M	83405272	Black	✓	M32x1.5	M32/P29	76.4	63.7	51	14	23.2	100.4	30	2
P-VW/L 90-M40/36-M	83405276	Black	✓	M40x1.5	M40/P36	91	76	59.3	17	29.9	113.7	41	2
P-VW/L 90-M50/48-M	83405280	Black	✓	M50x1.5	M50/P48	104.3	89.3	71	17	38.8	128.8	50	2
<b>PG metal thread</b>													
P-VW/L 90-PG09/09-M	83405653	Black	✓	PG 09	M12/P09	50.7	39.7	25	12	7.8	63.3	14	4
P-VW/L 90-PG16/16-M	83405663	Black	✓	PG 16	M20/P16	59.1	47.1	33.7	13	14.3	77	21	4
P-VW/L 90-PG21/21-M	83405666	Black	✓	PG 21	M25/P21	67.2	54.7	41.6	14	19.8	87.8	28	4
P-VW/L 90-PG29/29-M	83405668	Black	✓	PG 29	M32/P29	77.4	64.9	51	14	26.5	104.9	34	2
P-VW/L 90-PG36/36-M	83405670	Black	✓	PG 36	M40/P36	91	76	59.3	17	36.2	118.7	46	2
P-VW/L 90-PG48/48-M	83405672	Black	✓	PG 48	M50/P48	105.3	90.3	71	17	47.1	135.3	60	2



**Product information**

The highly dense and cable-friendly M-PRO P-DVW 45°-M conduit fitting with metal external thread in 45° angle is used for the quick and safe connection of corrugated conduits. The 360° rotatable fitting has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

Further advantages:

- Tool-free assembly / disassembly of corrugated conduits
- High packing density
- High tear-out strength
- Vibration, shock and impact resistant

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M_PRO series	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	EH mm	AD mm	GL mm	LW mm	B mm	SW mm	PU Pcs.
<b>Metric metal thread</b>													
P-DVW/L 45-M12/07-M	83443251	Black	✓	M12x1.5	M10/P07	66.5	55.5	23.7	12	7	46.5	22	4
P-DVW/L 45-M16/09-M	83443253	Black	✓	M16x1.5	M12/P09	68.4	57.4	25	12	11	49.9	26	4
P-DVW/L 45-M20/11-M	83443255	Black	✓	M20x1.5	M16/P11		64.4	27.9	12	14	56.7	30	4
P-DVW/L 45-M20/16-M	83443257	Black	✓	M20x1.5	M20/P16	81	70	33.7	12	14.9	61.5	30	4
P-DVW/L 45-M25/21-M	83443260	Black	✓	M25x1.5	M25/P21	89.6	78.1	41.6	13	20	71.2	36	4
P-DVW/L 45-M32/29-M	83443263	Black	✓	M32x1.5	M32/P29	102.3	89.8	51	14	27.5	85.9	46	2
P-DVW/L 45-M40/36-M	83443266	Black	✓	M40x1.5	M40/P36	114.7	99.7	60	17	28.2	93.1	46	2
P-DVW/L 45-M50/48-M	83443268	Black	✓	M50x1.5	M50/P48	126.3	111.3	71	17	43.2	112.1	65	2
<b>PG metal thread</b>													
P-DVW 45-PG16/16-M	83443663	Black	✓	PG 16	M20/P16	76	70	33.7	7	14.9	61.5	30	4
P-DVW 45-PG29/29-M	83443670	Black	✓	PG 29	M32/P29	96.3	89.8	51	8	28.2	85.9	46	2
P-DVW 45-PG36/36-M	83443673	Black	✓	PG 36	M40/P36	106.7	99.7	60	9	37	103.6	65	2

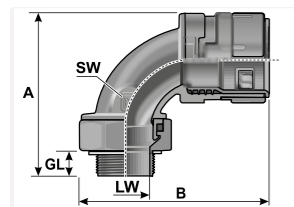


**Product information**

The highly dense and cable-friendly M-PRO P-DVW 90°-M conduit fitting with metal external thread in 90° angle is used for the quick and safe connection of corrugated conduits. The 360° rotatable fitting has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

Further advantages:

- Tool-free assembly / disassembly of corrugated conduits
- High packing density
- High tear-out strength
- Vibration, shock and impact resistant



**Information, conformities and approvals**



Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	EH mm	AD mm	GL mm	LW mm	B mm	SW mm	PU Pcs.
<b>Metric metal thread</b>													
P-DVW/L 90-M16/09-M	83445253	Black	✓	M16x1.5	M12/P09	61.9	50.9	25	12	11	66.3	26	4
P-DVW/L 90-M20/16-M	83445257	Black	✓	M20x1.5	M20/P16	71.3	60.3	33.7	12	14.9	77	30	4
P-DVW/L 90-M25/16-M	83445258	Black	✓	M25x1.5	M20/P16	72.3	60.8	33.7	13	17	80.3	36	4
P-DVW/L 90-M25/21-M	83445260	Black	✓	M25x1.5	M25/P21	79.4	67.9	41.6	13	20	87.3	36	4
P-DVW/L 90-M32/29-M	83445263	Black	✓	M32x1.5	M32/P29	91.4	78.9	51	14	27.5	105.4	46	2
P-DVW/L 90-M40/36-M	83445266	Black	✓	M40x1.5	M40/P36	105.3	90.3	60	17	28.2	114.2	46	2
P-DVW/L 90-M50/36-M	83445267	Black	✓	M50x1.5	M40/P36	105.3	90.3	60	17	38.4	124.7	65	2
P-DVW/L 90-M50/48-M	83445268	Black	✓	M50x1.5	M50/P48	118.3	103.3	71	17	43.2	134.8	65	2

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#)      **Classification reports according to EN 45545-2 / NFPA 130**

Product relevance: Material X4 M-PRO series conduit fittings

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#)      **UNIFE Manufacturer's Declaration**

Product relevance: Sealing insert of the M\_PRO series

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

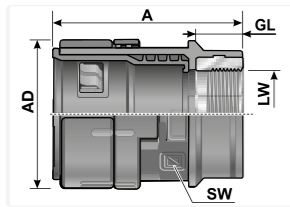
**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C





### Product information

The highly dense and cable-friendly M-PRO P-IVG-M conduit fitting with metal internal thread is used for the quick and safe connection of corrugated conduits. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

- Further advantages:
- Tool-free assembly / disassembly of corrugated conduits
  - High packing density
  - High tear-out strength
  - Vibration, shock and impact resistant

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M_PRO series	

### Material properties

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

### Protection class

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

### Thermal properties

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

### Chemical resistance

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

### Conformity

ECE 324 R 118: Annex 6+8

### Fire behavior

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

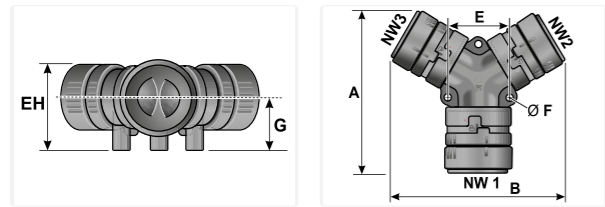
**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	A mm	AD mm	GL mm	LW mm	SW mm	PU Pcs.
<b>Metric metal inside threading</b>											
P-IVG M12/09-M	83451054	Black	✓	M12x1.5	M12/P09	42.4	25	8	10	23	4
P-IVG M16/11-M	83451058	Black	✓	M16x1.5	M16/P11	47.7	27.9	9	13	24	4
P-IVG M20/16-M	83451064	Black	✓	M20x1.5	M20/P16	52	33.7	10	18	30	4
P-IVG M25/21-M	83451068	Black	✓	M25x1.5	M25/P21	57.3	41.6	10	23	36	4
P-IVG M32/29-M	83451072	Black	✓	M32x1.5	M32/P29	64.5	51	11	30	46	2
P-IVG M40/36-M	83451076	Black	✓	M40x1.5	M40/P36	69.5	60	13	38	55	2
P-IVG M50/48-M	83451080	Black	✓	M50x1.5	M50/P48	75.4	73	15	48	65	2
<b>PG Metal internal thread</b>											
P-IVG PG09/09-M	83451152	Black	✓	PG 09	M12/P09	43.4	25	9	11.5	23	4
P-IVG PG11/11-M	83451154	Black	✓	PG 11	M16/P11	48.7	28.4	10	13.5	24	4
P-IVG PG16/16-M	83451158	Black	✓	PG 16	M20/P16	53.3	33.7	10	18	30	4
P-IVG PG21/21-M	83451159	Black	✓	PG 21	M25/P21	58.3	41.6	11	25	36	4
P-IVG PG29/29-M	83451160	Black	✓	PG 29	M32/P29	66.5	51	13	31	46	2
P-IVG PG36/36-M	83451161	Black	✓	PG 36	M40/P36	72.5	60	15	39	55	2
P-IVG PG48/48-M	83451162	Black	✓	PG 48	M50/P48	79.4	73	17.5	50.5	65	2



**Product information**

The highly dense and cable-protecting M-PRO P-VT/S star plug-in distributor is used for coupling corrugated conduits. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

- Further advantages:
- Tool-free assembly / disassembly of corrugated conduits
  - High tear-out strength
  - Vibration, shock and impact resistant

**Information, conformities and approvals**



Article	Order No.	Color	UV	For Murrflex with NW1 / NW2 / NW3	A mm	B mm	EH mm	E mm	F mm	G mm	PU Pcs.
P-VT/S 07/07/07	83702850	Black	✓	07 / 07 / 07	76	86.5	28	24	4.5	15	2
P-VT/S 09/07/07	83702853	Black	✓	09 / 07 / 07	76.5	86.5	28.5	24	4.5	15	2
P-VT/S 09/09/09	83702856	Black	✓	09 / 09 / 09	76.5	87	28.5	24	4.5	15	2
P-VT/S 11/09/09	83702859	Black	✓	11 / 09 / 09	82	88	36	26.5	4.5	20	2
P-VT/S 11/11/11	83702862	Black	✓	11 / 11 / 11	82	97	36	26.5	4.5	20	2
P-VT/S 16/11/11	83702865	Black	✓	16 / 11 / 11	93	101.5	42	34	5.5	23.5	2
P-VT/S 16/16/16	83702868	Black	✓	16 / 16 / 16	96	110	42	34	5.5	23.5	2
P-VT/S 21/16/16	83702880	Black	✓	21 / 16 / 16	106	114.5	50.5	41.5	5.5	28.5	2
P-VT/S 21/21/21	83702883	Black	✓	21 / 21 / 21	110	125	50.5	41.5	5.5	28.5	2
P-VT/S 29/21/21	83702886	Black	✓	29 / 21 / 21	121.5	130.5	60	48	6.5	34.5	1
P-VT/S 29/29/29	83702889	Black	✓	29 / 29 / 29	127.5	145.5	60	48	6.5	34.5	1
P-VT/S 36/29/29	83702892	Black	✓	36 / 29 / 29	136.5	150	70	57	6.5	39	1
P-VT/S 36/36/36	83702895	Black	✓	36 / 36 / 36	140	159.5	70	57	6.5	39	1

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#) **Classification reports according to EN 45545-2 / NFPA 130**  
 Product relevance: Material X4 M-PRO series conduit fittings

**Link**      **Description / product relevance**      **QR-Code**

[PDF Download](#) **UNIFE Manufacturer's Declaration**  
 Product relevance: Sealing insert of the M\_PRO series

**Material properties**

**Material properties**  
 Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
 IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
 -50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
 Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

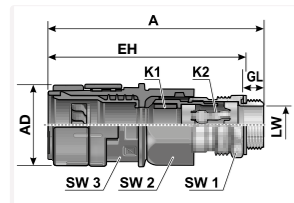
**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
 Classification: C.I.T. R22 / R23 HL3  
 Value: 0.58  
 Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
 Value: 57  
 Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
 Value: ≥ 32 %  
 Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
 ASTM E 162, ASTM E 1354, ASTM E 662  
 Boeing BSS 7239, Boeing BSS 7242  
 Bombardier SMP 800-C



**Product information**

The highly dense and cable-friendly M-PRO P-CVG-EMV conduit fitting with metal external thread and integrated cable fitting with strain relief in EMC version is used for the quick and safe connection of corrugated conduits and cables. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

Further advantages:

- Tool-free assembly / disassembly of corrugated conduits
- High packing density
- High tear-out strength
- Vibration, shock and impact resistant

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M-PRO series	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
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**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
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Bombardier SMP 800-C

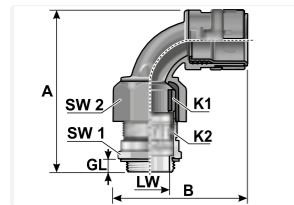


Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	PU Pcs.
<b>Metric metal thread / EMC version</b>						
P-CVG/L M12/09-EMV	83421054	Black	✓	M12x1.5	M12/P09	4
P-CVG/L M16/11-EMV	83421058	Black	✓	M16x1.5	M16/P11	4
P-CVG/L M20/16-EMV	83421064	Black	✓	M20x1.5	M20/P16	4
P-CVG/L M25/21-EMV	83421070	Black	✓	M25x1.5	M25/P21	4
P-CVG/L M32/29-EMV	83421074	Black	✓	M32x1.5	M32/P29	2
P-CVG/L M40/36-EMV	83421078	Black	✓	M40x1.5	M40/P36	2
P-CVG/L M50/48-EMV	83421082	Black	✓	M50x1.5	M50/P48	2

**Dimension table**

Article	Order No.	A mm	EH mm	AD mm	GL mm	LW mm	Cable clamping range (K1) mm	Shielding clamping range (K2) mm	SW 1 / 2 / 3 mm
<b>Metric metal thread / EMC version</b>									
P-CVG/L M12/09-EMV	83421054	64.55	59.6	25	6	6.7	3 - 6.5	2 - 5	14 / 18 / 23
P-CVG/L M16/11-EMV	83421058	73.75	68.8	27.9	6	10.3	5 - 10	3.5 - 8	20 / 24 / 24
P-CVG/L M20/16-EMV	83421064	86.2	79.2	33.5	8	14.5	7.5 - 14	5.5 - 11.5	24 / 30 / 30
P-CVG/L M25/21-EMV	83421070	92.8	86.3	40.95	8	18.5	10 - 18	7 - 14	30 / 36 / 36
P-CVG/L M32/29-EMV	83421074	109.9	102.4	50.6	9	25.3	16 - 25	12 - 20	40 / 46 / 46
P-CVG/L M40/36-EMV	83421078	121.8	114.8	58.9	9	32.8	22 - 32	18 - 27	50 / 60 / 55
P-CVG/L M50/48-EMV	83421082	135.45	128.5	70.6	9	38.5	30 - 38	26 - 34	58 / 70 / 65





**Product information**

The highly dense and cable-friendly M-PRO P-CVW 90°-EMV conduit fitting with metal external thread and integrated cable fitting with strain relief in 90° angle is used for the quick and safe connection of corrugated conduits and cables. It has excellent chemical resistance and is also suitable for outdoor use due to its UV and weathering resistance.

Further advantages:

- Tool-free assembly / disassembly of corrugated conduits
- High packing density
- High tear-out strength
- Vibration, shock and impact resistant

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 M-PRO series conduit fittings	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>UNIFE Manufacturer's Declaration</b> Product relevance: Sealing insert of the M_PRO series	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Thermoplastic elastomer

**Protection class**

**IP protection rating**  
IP54, IP66, IP66K, IP67, IP67M, IP68 up to 6 bar (30 min), IP69K

**Thermal properties**

**Temperature / temperature range**  
-50 °C - 120 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, mineral oils, greases, fuels, alkalis, weak acids

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: EN 17084

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

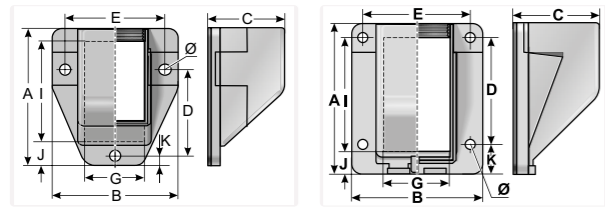
**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C



Article	Order No.	Color	UV	Connecting thread	Suitable for Murrflex	PU Pcs.
<b>Metric metal thread / EMC version</b>						
P-CVW/L 90-M12/09-EMV	83421452	Black	✓	M12x1.5	M12/P09	4
P-CVW/L 90-M16/11-EMV	83421454	Black	✓	M16x1.5	M16/P11	4
P-CVW/L 90-M20/16-EMV	83421457	Black	✓	M20x1.5	M20/P16	4
P-CVW/L 90-M25/21-EMV	83421460	Black	✓	M25x1.5	M25/P21	4
P-CVW/L 90-M32/29-EMV	83421462	Black	✓	M32x1.5	M32/P29	2
P-CVW/L 90-M40/36-EMV	83421464	Black	✓	M40x1.5	M40/P36	2
P-CVW/L 90-M50/48-EMV	83421466	Black	✓	M50x1.5	M50/P48	2

**Dimension table**

Article	Order No.	A mm	EH mm	AD mm	GL mm	B mm	Cable clamping range (K1) mm	Shielding clamping range (K2) mm	SW 1 / 2 mm
<b>Metric metal thread / EMC version</b>									
P-CVW/L 90-M12/09-EMV	83421452	69.6	64.6	25	6	61.7	3 - 6.5	2 - 5	14 / 18
P-CVW/L 90-M16/11-EMV	83421454	76.4	71.4	27.9	6	67	5 - 10	3.5 - 8	20 / 24
P-CVW/L 90-M20/16-EMV	83421457	90.5	83.5	33.5	8	76.5	7.5 - 14	5.5 - 11.5	24 / 30
P-CVW/L 90-M25/21-EMV	83421460	100.7	94.2	41.6	8	86.8	10 - 18	7 - 14	30 / 36
P-CVW/L 90-M32/29-EMV	83421462	121	113.5	51	9	104.9	16 - 25	12 - 20	40 / 46
P-CVW/L 90-M40/36-EMV	83421464	140.3	133.3	59.3	9	122.2	22 - 32	18 - 27	50 / 60
P-CVW/L 90-M50/48-EMV	83421466	164.1	157.1	71	9	136.3	30 - 38	26 - 34	58 / 70



**Product information**

The KFW bulkhead fittings are made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free. With the KFW/D and KFW/X bulkhead fittings, the cable protection conduits EW with standard corrugation and EWX with high corrugation can be directly mounted. The KFW bulkhead fittings feature the following advantages:

- System divided in two for very quick and easy installation of cables
- Subsequent installation of cables is simplified by the removable upper part
- Gasket included in delivery
- No extra fittings are required

Specification:  
• EN 45545-2 3x HL3

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X4 KFW/D Bulkhead fitting	

Article	Order No.	Color	UV	Suitable for Murrflex	A mm	B mm	C mm	D mm	E mm	G mm	I mm	J mm	K mm	Ø mm	PU Pcs.
KFW/D 11	83561850	Black	✓	M16/P11	49	47	35	29	37	22.5	27	11	4.5	4.3	10
KFW/D 16	83561852	Black	✓	M20/P16(S)	49	47	35	29	37	22.5	27	11	4.5	4.3	10
KFW/D 21	83561854	Black	✓	M25/P21(S)	69	65	44	41.5	51.5	30	42.5	15	6	6	10
KFW/D 29	83561856	Black	✓	M32/P29(S)	90	78	55	64.5	64.5	40	68	9	16	6.5	10
KFW/D 36	83561858	Black	✓	M40/P36(S)	99	94	66	79.5	79.5	48.5	74.5	9.5	10	6.5	10
KFW/D 48	83561860	Black	✓	M50/P48(S)	116	101	76	87.5	87.5	68.5	89.5	9.5	16	6.5	10
KFW/D 11	83561810	Gray	✗	M16/P11	49	47	35	29	37	22.5	27	11	4.5	4.3	10
KFW/D 16	83561812	Gray	✗	M20/P16(S)	49	47	35	29	37	22.5	27	11	4.5	4.3	10
KFW/D 21	83561814	Gray	✗	M25/P21(S)	69	65	44	41.5	51.5	30	42.5	15	6	6	10
KFW/D 29	83561816	Gray	✗	M32/P29(S)	90	78	55	64.5	64.5	40	68	9	16	6.5	10
KFW/D 36	83561818	Gray	✗	M40/P36(S)	99	94	66	79.5	79.5	48.5	74.5	9.5	10	6.5	10
KFW/D 48	83561820	Gray	✗	M50/P48(S)	116	101	76	87.5	87.5	68.5	89.5	9.5	16	6.5	10

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6, Neoprene (CR)

**IP protection rating**  
IP65

**Thermal properties**

**Temperature / temperature range**  
-40 °C - 110 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, greases, fuels, mineral oils

**Fire behavior**

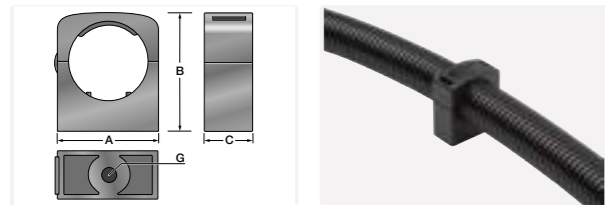
**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.58  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 57  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C



**Product information**

The UHE holder is a one-piece corrugated conduit holder in which the lid is connected to the holder by a film hinge. It is manufactured from a specially modified Polyamide. The material is halogen, phosphor and cadmium-free. The holder is used to fix cable protection conduits to equipment and machinery.

- The UHE holder features the following advantages:
- Quick assembly thanks to single-hole fixing
  - Protective conduits only need to be snapped on, which makes them excellent for overhead installations.
  - Optimum connection of conduit to holder thanks to double webs of holder
  - Optimized axial strain relief of the corrugated conduit achieved with integrated double webs
  - Highest degree of retention power.
  - Suitable for all Murrflex corrugated conduit profiles.

**Information, conformities and approvals**



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X27 One-piece conduit holder UHE	

**Material properties**

**Material properties**  
Material: Modified polyamide PA 6

**Thermal properties**

**Temperature / temperature range**  
-40 °C - 110 °C, short-term: 140 °C

**Chemical resistance**

**Resistant to:**  
Alcohols, greases, fuels, mineral oils

**Conformity**

ECE 324 R 118: Annex 6+8

**Fire behavior**

**Fire behavior** Fire classification according to UL 94: V0 self-extinguishing

**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.49  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

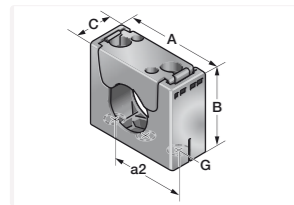
Classification: Ds (max.) R22 / R23 HL3  
Value: 137  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

**Fire property according to NFPA 130**  
ASTM E 162, ASTM E 1354, ASTM E 662  
Boeing BSS 7239, Boeing BSS 7242  
Bombardier SMP 800-C

Article	Order No.	Color	UV	G suitable for	A mm	B mm	C mm	PU Pcs.
UHE P07	83621850	Black	✓	M4	17	21.5	15	100
UHE P09	83621852	Black	✓	M5	20.5	24.5	15	100
UHE P11	83621854	Black	✓	M5	24	27	15	100
UHE P16	83621856	Black	✓	M6	30	33	15	100
UHE P21	83621858	Black	✓	M6	38.5	42	15	100
UHE P29	83621860	Black	✓	M6	45.5	48	15	50
UHE P36	83621862	Black	✓	M6	55.5	56	15	50
UHE P48	83621864	Black	✓	M6	67.5	68	15	50
UHE P07	83621810	Gray	✗	M4	17	21.5	15	100
UHE P09	83621812	Gray	✗	M5	20.5	24.5	15	100
UHE P11	83621814	Gray	✗	M5	24	27	15	100
UHE P16	83621816	Gray	✗	M6	30	33	15	100
UHE P21	83621818	Gray	✗	M6	38.5	42	15	100
UHE P29	83621820	Gray	✗	M6	45.5	48	15	50
UHE P36	83621822	Gray	✗	M6	55.5	56	15	50
UHE P48	83621824	Gray	✗	M6	67.5	68	15	50





### Product information

The stable UH-S holder is made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The UH-S holders, which can be strung together and stacked, are ideally suited to applications with special requirements in terms of stability. Equipped with the appropriate cable protection conduits, the UH-S holders offer excellent performance in terms of stability, flexibility of use and durability – even under high dynamic loads.

The UH-S holders M20/P16 to M63/P56 feature the following advantages:

- Safe closing of the holder with no tools required
- Machine safe, can only be opened with a tool
- The upper part can also be secured with screws if necessary
- Lower part can be pre-assembled
- Suitable for all Murrflex corrugated conduit profiles.

The UH-S holders in the sizes M10/P07 to M16/P11 are to be fixed with two screws, screws are not included in the delivery.

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X9 Stable holder UH-S	

Article	Order No.	Color	UV	Suitable for Murrflex	G suitable for	A mm	B mm	C mm	a2 mm	PU Pcs.
UH-S M10/P07	83641444	Black	✓	M10/P07	M5	35	26	14.6	20	15
UH-S M12/P09	83641446	Black	✓	M12/P09	M5	35	26	15	20	15
UH-S M16/P11	83641448	Black	✓	M16/P11(S)	M6	43	26	17	26	15
UH-S M20/P16	83641450	Black	✓	M20/P16(S)	M8	70	52	30	45	15
UH-S M25/P21	83641452	Black	✓	M25/P21(S)	M8	70	52	30	45	15
UH-S M32/P29	83641454	Black	✓	M32/P29(S)	M8	85	66	30	60	10
UH-S M40/P36	83641456	Black	✓	M40/P36	M8	85	66	30	60	10
UH-S M50/P48	83641458	Black	✓	M50/P48	M8	115	86	30	90	5
UH-S M63/P56	83641460	Black	✓	NW56	M8	115	86	30	90	5
Connector for UH-S <sup>1)</sup>	83641490	Red	✗							10

<sup>1)</sup> suitable for UH-S M20/P16 – UH-S M63/P56

### Material properties

**Material properties**  
Material: Modified polyamide PA 6

### Thermal properties

**Temperature / temperature range**  
-40 °C - 110 °C, short-term: 140 °C

### Chemical resistance

**Resistant to:**  
Alcohols, greases, fuels, mineral oils

### Fire behavior

**Fire behavior** Fire classification according to UL94: V0, 5VA, self-extinguishing

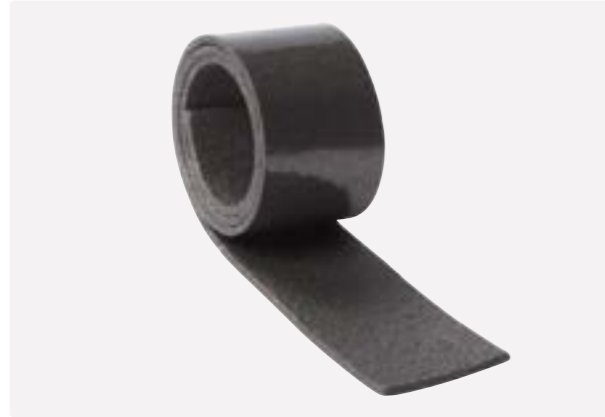
**Fire properties as per EN 45545-2**  
Classification: C.I.T. R22 / R23 HL3  
Value: 0.49  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL3  
Value: 74  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL3  
Value: ≥ 32 %  
Testing method: ISO 4589-2

## Type RAB

GO TO PRODUCT

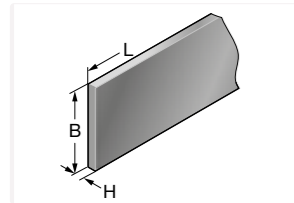


### Product information

The RAB 30 room integrity strip is made of a special reactive material. The flexible material expands in three dimensions from about 190° C, producing a thick foam in the event of a fire that seals off the opening into which the RAB 30 is inserted.

#### Applications:

- In conjunction with the murrplastik m-top conduit fittings with metal thread
- Control cabinet or control box, preferably for the railway industry



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	UNIFE Manufacturer's Declaration Product relevance: Room integrity strip type RAB	

### Material properties



Material properties  
Material: Reactive material on graphite basis

Article	Order No.	Color	B mm	L mm	H mm	PU Pcs.
RAB 30 room integrity strip, 25 m	83725001	Black	30	25000	2	25
RAB 30 room integrity strip	83980350	Black	30	500	2	10

## Edge protection profile

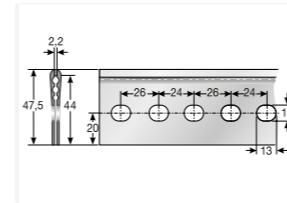
GO TO PRODUCT



### Product information

The KSP 47.5 edge protection profile is manufactured of specially modified thermoplastic rubber. Materials are self-extinguishing, halogen-free and tested according to EN 45545-2 standards.

Exceptional mechanical properties characterize the edge protection profile, it is abrasion-proof and fixed on a pre-set hole pattern.



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	Classification reports according to EN 45545-2 Product relevance: Material X22 Edge protection profile KSP 47.5	

### Material properties



Material properties  
Material: Thermoplastic elastomer

### Thermal properties



Temperature / temperature range  
-10 °C - 85 °C

### Chemical resistance



Resistant to:  
Weak acids, alkalis

### Fire behavior



Fire behavior  
Fire classification according to UL94: V0



Fire properties as per EN 45545-2  
Classification: C.I.T. R22 / R23 HL2  
Value: 0.18  
Testing method: NF X 70-100-1/-2 600°C (1112 °F)

Classification: Ds (max.) R22 / R23 HL2  
Value: 117  
Testing method: ISO 5659-2 (25KW/m<sup>2</sup>)

Classification: LOI R22 / R23 HL2  
Value: ≥28 % <32 %  
Testing method: ISO 4589-2

Article	Order No.	Color	PU m
Edge protection profile 47.5 mm <sup>1)</sup>	83980105	Black	25

<sup>1)</sup> Shore hardness A 78



# Cable entry systems and holders

## Cable entry systems

Cable entry systems are used wherever there is a high packing density of cables and cords that need to be led through control cabinets or component walls.

A large number of different cables with greatly varying diameters may be led through a very tight space through the walls of a control cabinet with a high degree of protection (IP 65 and higher). All cable entries with the add-on -EN meet the fire protection requirements of EN 45545-2 3x HL3.

The requirements for fire closure according to EN 45545-3 as per DIN EN 1363-1:2012-10 are met by the cable entry systems with special fire protection elements. This far exceeds the required values of T= 15 min: E60; I45; W45.

## Cable entry plates

Cable entry plates are available in a wide range of variants for cables without connectors. With "KDP on Demand", we are the only company in the world to offer cable entry systems that are completely customized: in size, shape, material and hole pattern, also for small series. Cable entry plates can be designed as fire protection bulkheads with room integrity mats.



## Cable Entry Systems

Cable entry systems are split systems that allow pre-assembled cables with connectors to be inserted into a housing, for example. All systems are matched to standard cutout sizes of 16- or 24-pin connectors from Harting and Wieland. A room integrity set is also available for cable entry systems, which provides a fireproof seal for the device housing in the event of a fire.

## Strain relief

Strain reliefs as universal cable holder systems enable defined routing and fastening of cables and wires. They are available in several sizes depending on the number of cables and with different mounting options. The inserted metal sleeves allow them to be fixed directly with screws or rivets. The slot nut version facilitates quick and universal mounting on various C-rails. In the version as a cable fixing plate, they are simply snapped onto 35 mm standard top hat rails. All our cable retaining system products, ZL... and KAF..., are in compliance with the requirements of EN 45545-2 3x HL3.

## EMC components

Precisely fitting EMC modules are available for all cable entry and cable retaining systems, as well as discharge plates and cable fixing plates that reliably dissipate interference. In addition, a wide range of other EMC components can be selected.

## KDP on Demand Your custom cable entry plate

**Any number of cable entry variations can be realized upon request**

Whether octagonal, round or oval, whether 1 x 1 cm (0.39 x 0.39 in) or 1.5 x 3 cm (1.64 to 3.28 yd / 4.92 to 9.84 ft), whether for 111 cable entries and/or 888 cable fittings, whether for cables with or without connectors, whether for ribbon cables, electric high-power cables or pneumatic hoses, or for any combination of the above: With the "Cable Entry on Demand" Murrplastik Systemtechnik offers the first cable entry system that is completely customizable in terms of size, shapes and features.

**Request, order and delivery within just a few days**

The "KDP on Demand" can be configured in just a few steps on [www.mp4you.de](http://www.mp4you.de). You may also submit a CAD drawing with all the technical specifications online.

Details, such as specifications of the desired cut-out sizes and shapes, the hole pattern, the number of cables to be fed in, and all the required information about cable diameters may be transferred in this way.

Furthermore, additional information on the throughput of pre-assembled cables, an added strain relief, a firewall or an EMC moduis always available.



Last but not least you will need to define the type and size of fastening mechanism or the housing seal you will require. After the production order has been issued, the delivery withing Europe will take place within a few working days.



## KDP on Demand Technical data:

Materials	<ul style="list-style-type: none"> <li>Stainless steel, aluminum, plastic</li> </ul>
Plate size	<ul style="list-style-type: none"> <li>min. 10 x 10 mm</li> <li>max. 3000 x 1500 mm</li> </ul>
Forms	<ul style="list-style-type: none"> <li>everything possible</li> </ul>
Rating	<ul style="list-style-type: none"> <li>max. ø 50 mm</li> <li>min. ø 1 mm</li> </ul>
Assembly method	<ul style="list-style-type: none"> <li>bolted</li> </ul>
Tightness	<ul style="list-style-type: none"> <li>up to IP 69 K</li> </ul>
Option	<ul style="list-style-type: none"> <li>Additional room integrity mats acc. to EN 45545-3 available</li> <li>Precisely fitting EMC modules possible</li> </ul>

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2</b> Product relevance: Material XI1 Elastomer in KDP/EN • KDP/EN-RA 24	





## Cable entry plate plastic type KDP/EN

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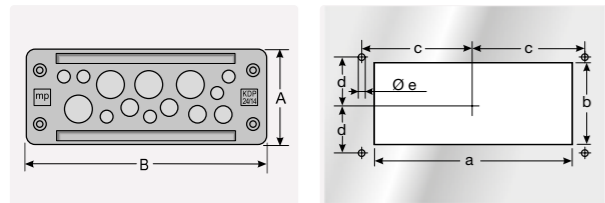


### Product information

Plastic cable entry plate with two elastomer plates

- Approved for railway technology (EN 45545-2 / 3x HL3 / NFPA 130)
- Economical connection technology for tool-free wiring of equipment and machinery
- The alternative to cable fittings
- Very good strain relief
- Protection class: IP 65
- Thermal stability: -60 °C to +70 °C
- Material: Frame: Polyamide 6.6 / Seal: TPU/NBR/EPDM
- RoHS compliant
- UV resistant
- Made in Germany

In railroad technology mounting is only permissible by screwing on  
Suitable for standard cut-outs for 24-pin industrial connectors



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X9 KDP/EN • KDP/EN-RA 24	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2</b> Product relevance: Material X11 Elastomer in KDP/EN • KDP/EN-RA 24	

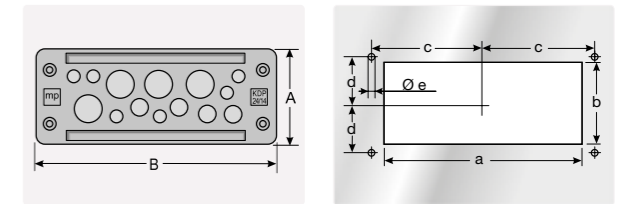
Article	Order No.	Color	No. of openings	Openings number / Ø mm	Cut-out	PU Pcs.
KDP/EN 24/11	87301210	Black	11	4x 3 mm - 6.5 mm 4x 5 mm - 9.2 mm 3x 14 mm - 20 mm	24-pole	1
KDP/EN 24/12	87301220	Black	12	12x 8 mm - 12 mm	24-pole	1
KDP/EN 24/13	87301230	Black	13	2x 3 mm - 5.5 mm 6x 4.1 mm - 8.1 mm 4x 9 mm - 14 mm 1x 14 mm - 20 mm	24-pole	1
KDP/EN 24/14	87301240	Black	14	6x 3 mm - 6.5 mm 4x 5 mm - 9.2 ° 4x 9.6 mm - 15.9 mm	24-pole	1
KDP/EN 24/17	87301250	Black	17	17x 5 mm - 9.2 mm	24-pole	1
KDP/EN 24/17-1	87301251	Black	17	11x 3 mm - 6.5 mm 1x 4.1 mm - 8.1 mm 5x 8 mm - 12.5 mm	24-pole	1
KDP/EN 24/22	87301260	Black	22	16x 3 mm - 6.5 mm 4x 5 mm - 9.2 mm 2x 8 mm - 12.5 mm	24-pole	1

## Cable entry plate plastic type KDP/EN



Article	Order No.	Color	No. of openings	Openings number / Ø mm	Cut-out	PU Pcs.
KDP/EN 24/23	87301270	Black	23	23x 4.1 mm - 8.1 mm	24-pole	1
KDP/EN 24/29	87301280	Black	29	29x 3 mm - 6.5 mm	24-pole	1
KDP/EN 24/80	87301290	Black	80	78x 1.5 mm - 2.6 mm 2x 2.5 mm - 5 mm	24-pole	1

## Cable entry plate plastic type KDP/EN

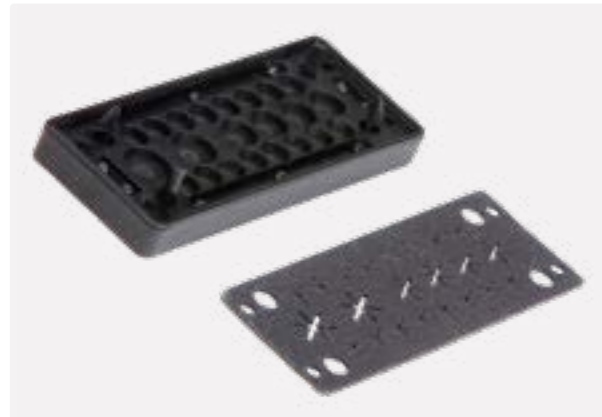


### Dimension table

Article	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/EN 24/11	87301210	15	147	59	112	36	65	16	5.5
KDP/EN 24/12	87301220	15	147	59	112	36	65	16	5.5
KDP/EN 24/13	87301230	15	147	59	112	36	65	16	5.5
KDP/EN 24/14	87301240	15	147	59	112	36	65	16	5.5
KDP/EN 24/17	87301250	15	147	59	112	36	65	16	5.5
KDP/EN 24/17-1	87301251	15	147	59	112	36	65	16	5.5
KDP/EN 24/22	87301260	15	147	59	112	36	65	16	5.5
KDP/EN 24/23	87301270	15	147	59	112	36	65	16	5.5
KDP/EN 24/29	87301280	15	147	59	112	36	65	16	5.5
KDP/EN 24/80	87301290	15	147	59	112	36	65	16	5.5

## KDP/EN-RA cable entry plate, plastic

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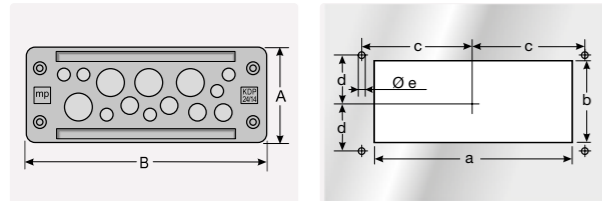


### Product information

Cable entry plate made of modified polyamide 6 especially for the railway industry

- Approved for railway technology (EN 45545-2 / 3x HL3 / NFPA 130)
- Economical connection technology for tool-free wiring of equipment and machinery
- Very good strain relief
- Protection class: IP 65
- Thermal stability: -60 °C to +70 °C
- Material: Frame: Polyamide 6 / Seal: EPDM
- RoHS compliant
- UV resistant
- Made in Germany

The fire protection mat, enclosed in the supply, reacts at temperatures exceeding 160 °C (320 °F) by expanding and thereby closing off the opening completely fire resistant.  
In railroad technology mounting is only permissible by screwing on  
Suitable for standard cut-outs for 24-pin industrial connectors



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X9 KDP/EN • KDP/EN-RA 24	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2</b> Product relevance: Material X11 Elastomer in KDP/EN • KDP/EN-RA 24	

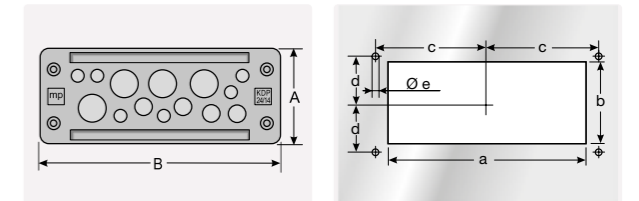
Article	Order No.	Color	No. of openings	Openings number / Ø mm	Cut-out	PU Pcs.
KDP/EN-RA 24/11	87301215	Black	11	4x 3 mm - 6.5 mm 4x 5 mm - 9.2 mm 3x 14 mm - 20 mm	24-pole	1
KDP/EN-RA 24/12	87301225	Black	12	12x 8 mm - 12 mm	24-pole	1
KDP/EN-RA 24/13	87301235	Black	13	2x 3 mm - 5.5 mm 6x 4.1 mm - 8.1 mm 4x 9 mm - 14 mm 1x 14 mm - 20 mm	24-pole	1
KDP/EN-RA 24/14	87301245	Black	14	6x 3 mm - 6.5 mm 4x 5 mm - 9.2 mm 4x 9.6 mm - 15.9 mm	24-pole	1
KDP/EN-RA 24/17	87301255	Black	17	17x 5 mm - 9.2 mm	24-pole	1
KDP/EN-RA 24/17-1	87301256	Black	17	11x 3 mm - 6.5 mm 1x 4.1 mm - 8.1 mm 5x 8 mm - 12.5 mm	24-pole	1
KDP/EN-RA 24/22	87301265	Black	22	16x 3 mm - 6.5 mm 4x 5 mm - 9.2 ° 2x 8 mm - 12.5 mm	24-pole	1

## KDP/EN-RA cable entry plate, plastic



Article	Order No.	Color	No. of openings	Openings number / Ø mm	Cut-out	PU Pcs.
KDP/EN-RA 24/23	87301275	Black	23	23x 4.1 mm - 8.1 mm	24-pole	1
KDP/EN-RA 24/29	87301285	Black	29	29x 3 mm - 6.5 mm	24-pole	1
KDP/EN-RA 24/80	87301295	Black	80	78x 1.5 mm - 2.6 mm 2x 2.5 mm - 5 mm	24-pole	1

## KDP/EN-RA cable entry plate, plastic



### Dimension table

Article	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/EN-RA 24/11	87301215	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/12	87301225	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/13	87301235	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/14	87301245	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/17	87301255	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/17-1	87301256	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/22	87301265	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/23	87301275	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/29	87301285	15	147	59	112	36	65	16	5.5
KDP/EN-RA 24/80	87301295	15	147	59	112	36	65	16	5.5

## Cable entry plate type KDP EMV Module

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### Product information

The KDP 24 EMV module is designed to dissipate conducted and field induced interference. The KDP 24 EMV modules are used in conjunction with the cable entry plates type KDP/X 24 and KDP/N 24 in order to ensure optimum performance, the EMC module is assembled in combination with the cable entry plate KDP/...24. While the EMC module makes direct contact with the enclosure wall on the inside of the enclosure, the KDP/... 24 cable entry plate provides mechanical protection against dust and liquids from the environment.

The special advantages of the KDP 24 EMV modules are:

- Cable-friendly 360° shield contacting
- Large contact area with short distance
- Very easy assembly
- Compact and slim design
- Visible contact area
- Stainless steel construction

### Information, conformities and approvals



Article	Order No.	Color	Suitable for	PU Pcs.
KDP 24/10 EMV module	87664008	Material color	KDP/xx 24/10	1
KDP 24/11 EMV module	87664010	Material color	KDP/xx 24/11	1
KDP 24/12 EMV module	87664020	Material color	KDP/xx 24/12	1
KDP 24/13 EMV module	87664030	Material color	KDP/xx 24/13	1
KDP 24/14 EMV module	87664040	Material color	KDP/xx 24/14	1
KDP 24/17 EMV module	87664050	Material color	KDP/xx 24/17	1
KDP 24/17-1 EMV module	87664051	Material color	KDP/xx 24/17-1	1
KDP 24/22 EMV module	87664060	Material color	KDP/xx 24/22	1
KDP 24/23 EMV module	87664070	Material color	KDP/xx 24/23	1
KDP 24/29 EMV module	87664080	Material color	KDP/xx 24/29	1

## KDP/EN-RA cable entry plate, metal

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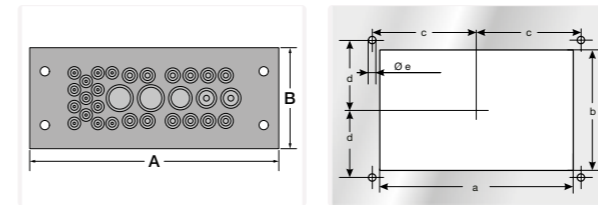
### Product information

The KDP/EN cable entry plates are cable entry and retaining systems for cables and pneumatic hoses, used in control cabinets or plant construction specifically in the railway industry. Wherever quick assembly, cable-protecting and high packing density are required, the cable insertion system is used.

The special benefits of the KDP/EN metal are:

- Enormous time savings in assembly
- High packing density
- Protection category IP 65
- Approved for railway technology (EN 45545-2 / 3x HL3 / NFPA 130)

- Other variants are available on request -



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2</b> Product relevance: Material X11 Elastomer in KDP/EN • KDP/EN-RA 24	

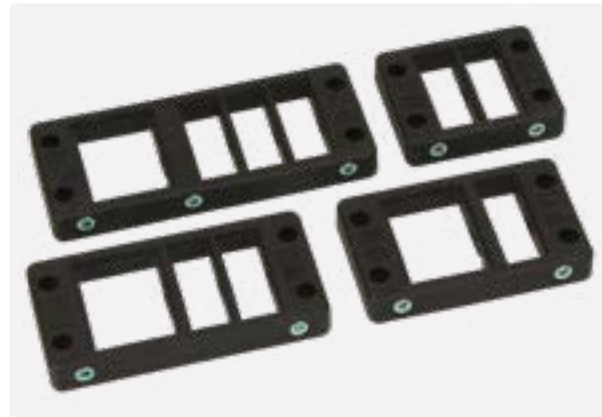
Article	Order No.	Color	No. of openings	Openings number / Ø	PU Pcs.
cablequick® KDP/EN-RA 60/30, Alu	87664201	Light gray	30	13x 1 mm - 3.5 mm 12x 3 mm - 5 mm 2x 4 mm - 8 mm 1x 6 mm - 10 mm 2x 8 mm - 12 mm	1
cablequick® KDP/EN-RA 120/59, Alu	87664202	Light gray	59	22x 1 mm - 3.5 mm 15x 3.5 mm - 6.5 mm 14x 6 mm - 10 mm 2x 8 mm - 12 mm 6x 16 mm - 24 mm	1

### Dimension table

Article	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
cablequick® KDP/EN-RA 60/30, Alu	87664201	148	60	110	46	65	16	5.5
cablequick® KDP/EN-RA 120/59, Alu	87664202	288	120	240	80	137	36	5.5

## KDL/E+ cable entry system

GO TO PRODUCT

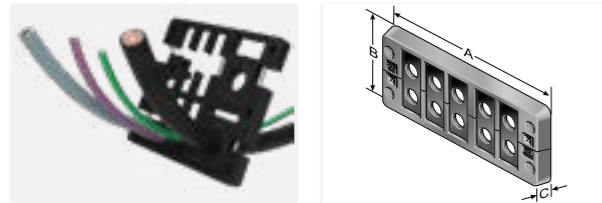


### Product information

The flexible cable entry system for the insertion of pre-assembled cables with a frame closed at the top.

- Stackable
- Easy assembly
- High packing density
- Integrated strain relief
- Protection class: IP 65
- Thermal stability: -40 °C - +100 °C
- Fire classification: V0
- RoHS compliant
- UV resistant
- Made in Germany

Suitable grommet: KDT/ZE und KDT/ZE+



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X32 KDL/E+</p>	

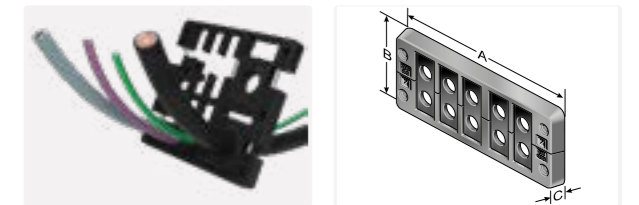
Article	Order No.	Color	No. of grommets small/large	For Ø mm	Dimension table	Cut-out	PU Pcs.
<b>For standard cut-out size 6</b>							
KDL/E+ 6/1	87121156	Black	0 / 1	16 - 32	DIM_A	6-pole	1
KDL/E+ 6/4	87121154	Black	4 / 0	3 - 16	DIM_A	6-pole	1
<b>For standard cut-out size 10</b>							
KDL/E+ 10/3	87121152	Black	2 / 1	3 - 32	DIM_A	10-pole	1
KDL/E+ 10/6	87121150	Black	6 / 0	3 - 16	DIM_A	10-pole	1
<b>For standard cut-out size 16</b>							
KDL/E+ 16/2	87121164	Black	0 / 2	16 - 32	DIM_A	16-pole	1
KDL/E+ 16/5	87121162	Black	4 / 1	3 - 32	DIM_A	16-pole	1
KDL/E+ 16/8	87121160	Black	8 / 0	3 - 16	DIM_A	16-pole	1
<b>For standard cut-out size 24</b>							
KDL/E+ 24/4	87121110	Black	2 / 2	3 - 32	DIM_A	24-pole	1
KDL/E+ 24/7	87121120	Black	6 / 1	3 - 32	DIM_A	24-pole	1
KDL/E+ 24/10	87121130	Black	10 / 0	3 - 16	DIM_A	24-pole	1

## KDL/E+ cable entry system



Article	Order No.	Color	No. of grommets small/large	For Ø mm	Dimension table	Cut-out	PU Pcs.
<b>For standard width size 24, stacked</b>							
KDL/E+ 24/8	87121112	Black	4 / 4	3 - 32	DIM_D		1
KDL/E+ 24/12	87121114	Black	6 / 6	3 - 32	DIM_E		1
KDL/E+ 24/14	87121122	Black	12 / 2	3 - 32	DIM_D		1
KDL/E+ 24/21	87121124	Black	18 / 3	3 - 32	DIM_E		1
KDL/E+ 24/20	87121132	Black	20 / 0	3 - 16	DIM_D		1
KDL/E+ 24/30	87121134	Black	30 / 0	3 - 16	DIM_E		1
KDL/E+ 24/11	87121140	Black	8 / 3	3 - 32	DIM_D		1
KDL/E+ 24/17	87121142	Black	16 / 1	3 - 32	DIM_D		1

## KDL/E+ cable entry system



### Dimension table

Article	Order No.	A mm	B mm	C mm	a mm	b mm	c mm	d mm	e mm
<b>For standard cut-out size 6</b>									
KDL/E+ 6/1	87121156	74	60	15	46	36	29	16	5.5
KDL/E+ 6/4	87121154	74	60	15	46	36	29	16	5.5
<b>For standard cut-out size 10</b>									
KDL/E+ 10/3	87121152	99	60	15	65	36	41.5	16	5.5
KDL/E+ 10/6	87121150	99	60	15	65	36	41.5	16	5.5
<b>For standard cut-out size 16</b>									
KDL/E+ 16/2	87121164	119	60	15	86	36	51.5	16	5.5
KDL/E+ 16/5	87121162	119	60	15	86	36	51.5	16	5.5
KDL/E+ 16/8	87121160	119	60	15	86	36	51.5	16	5.5
<b>For standard cut-out size 24</b>									
KDL/E+ 24/4	87121110	146	60	15	112	36	65	16	5.5
KDL/E+ 24/7	87121120	146	60	15	112	36	65	16	5.5
KDL/E+ 24/10	87121130	146	60	15	112	36	65	16	5.5
<b>For standard width size 24, stacked</b>									
KDL/E+ 24/8	87121112	146	114	15	112	90	65	43	5.5
KDL/E+ 24/12	87121114	146	168	15	112	144	65	70	5.5
KDL/E+ 24/14	87121122	146	114	15	112	90	65	43	5.5
KDL/E+ 24/21	87121124	146	168	15	112	144	65	70	5.5
KDL/E+ 24/20	87121132	146	114	15	112	90	65	43	5.5
KDL/E+ 24/30	87121134	146	168	15	112	144	65	70	5.5
KDL/E+ 24/11	87121140	146	114	15	112	90	65	43	5.5
KDL/E+ 24/17	87121142	146	114	15	112	90	65	43	5.5



## Cable entry grommet type KDT/ZE+

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### Product information

Cable entry grommet for pre-assembled cables in connection with cable entry system KDL/E+

- Approved for railway technology (except special grommets)
- The grommets are retrofitted around the cable
- Strain relief even better with simple cable ties
- Thermal stability: -40°C to 100 °C (special grommets: -40°C to 80°C)
- Fire classification: V0 (special grommets: HB)
- RoHS compliant
- UV resistant
- Made in Germany

### Information, conformities and approvals



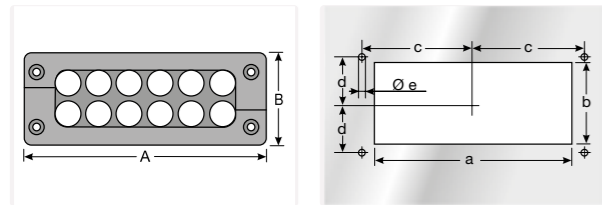
Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X15 Grommets in KDL/E+</p>	

Article	Order No.	Color	For Ø mm	For opening small / large	PU Pcs.
<b>Grommet small</b>					
KDT/ZE+ 03	87121310	Black	3 - 4	yes / no	10
KDT/ZE+ 04	87121312	Black	4 - 5	yes / no	10
KDT/ZE+ 05	87121314	Black	5 - 6	yes / no	10
KDT/ZE+ 06	87121316	Black	6 - 7	yes / no	10
KDT/ZE+ 07	87121318	Black	7 - 8	yes / no	10
KDT/ZE+ 08	87121320	Black	8 - 9	yes / no	10
KDT/ZE+ 09	87121322	Black	9 - 10	yes / no	10
KDT/ZE+ 10	87121324	Black	10 - 11	yes / no	10
KDT/ZE+ 11	87121326	Black	11 - 12	yes / no	10

## KDT/ZE+ cable entry grommet



Article	Order No.	Color	For Ø mm	For opening small / large	PU Pcs.
KDT/ZE+ 12	87121328	Black	12 - 13	yes / no	10
KDT/ZE+ 13	87121330	Black	13 - 14	yes / no	10
KDT/ZE+ 14	87121332	Black	14 - 15	yes / no	10
KDT/ZE+ 15	87121334	Black	15 - 16	yes / no	10
<b>Grommet large</b>					
KDT/ZE+ 16	87121336	Black	16 - 17	no / yes	10
KDT/ZE+ 17	87121338	Black	17 - 18	no / yes	10
KDT/ZE+ 18	87121340	Black	18 - 19	no / yes	10
KDT/ZE+ 19	87121342	Black	19 - 20	no / yes	10
KDT/ZE+ 20	87121344	Black	20 - 21	no / yes	10
KDT/ZE+ 21	87121346	Black	21 - 22	no / yes	10
KDT/ZE+ 22	87121348	Black	22 - 23	no / yes	10
KDT/ZE+ 23	87121350	Black	23 - 24	no / yes	10
KDT/ZE+ 24	87121352	Black	24 - 25	no / yes	10
KDT/ZE+ 25	87121354	Black	25 - 26	no / yes	10
KDT/ZE+ 26	87121356	Black	26 - 27	no / yes	10
KDT/ZE+ 27	87121358	Black	27 - 28	no / yes	10
KDT/ZE+ 28	87121360	Black	28 - 29	no / yes	10
KDT/ZE+ 29	87121362	Black	29 - 30	no / yes	10
KDT/ZE+ 30	87121364	Black	30 - 31	no / yes	10
KDT/ZE+ 31	87121366	Black	31 - 32	no / yes	10
<b>Dummy grommets</b>					
BTK/E+ dummy grommet small	87121380	Black			10
BTG/E+ dummy grommet large	87121370	Black		no / yes	10
<b>Multiple grommet - only for cables without connectors</b>					
KDT/ZE+ flex 03-13	87121372	Black	3 - 13	yes / no	4
KDT/ZE+ flex 13-30	87121374	Black	13 - 30	no / yes	4



## Product information

The robust cable entry system for the feed-through of pre-assembled cables!

- Approved for railway technology (EN 45545-2 / 3x HL3 / NFPA 130)
- 2-piece or 3-piece frame
- Easy assembly
- High packing density for up to 48 cables
- Integrated strain relief
- Protection class: IP 65 (with suitable grommets and cables)
- Thermal stability: -60 °C – +100 °C
- Fire classification: V0
- Material: Frame: PA / Block: TPE
- RoHS compliant
- UV resistant
- Made in Germany

Fits standard cutouts for 24-, 16-, 10- and 6-pin industrial connectors as well as two special sizes (single row and round M50)  
suitable grommet: KDT/X-EN

## Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X9 KDL/D-EN	

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X15 Grommets/grommet block in KDL/D-EN	

Article	Order No.	Color	No. of grommets small/large	Cut-out	PU Pcs.
<b>For standard cut-out size 24</b>					
KDL/D-EN 24/12	87141110	Black	12 / 0	24-pole	1
KDL/D-EN 24/9	87141122	Black	8 / 1	24-pole	1
KDL/D-EN 24/8	87141118	Black	6 / 2	24-pole	1
KDL/D-EN 24/4	87141114	Black	0 / 4	24-pole	1
<b>For standard cut-out size 16</b>					
KDL/D-EN 16/8	87141126	Black	8 / 0	16-pole	1
KDL/D-EN 16/7	87141130	Black	6 / 1	16-pole	1
KDL/D-EN 16/3	87141134	Black	0 / 3	16-pole	1
KDL/D-EN 16/2	87141132	Black	0 / 2	16-pole	1



Article	Order No.	Color	No. of grommets small/large	Cut-out	PU Pcs.
<b>For standard cut-out size 10</b>					
KDL/D-EN 10/6	87141138	Black	6 / 0	10-pole	1
KDL/D-EN 10/5	87141142	Black	4 / 1	10-pole	1
KDL/D-EN 10/2	87141139	Black	0 / 2	10-pole	1
<b>For standard cut-out size 6</b>					
KDL/D-EN 6/4	87141144	Black	4 / 0	6-pole	1
<b>Special size</b>					
KDL/D-EN 1/6	87141148	Black	6 / 0		1

## Dimension table

Article	Order No.	Installation height mm	A mm	B mm	a mm	b mm	e mm
<b>For standard cut-out size 24</b>							
KDL/D-EN 24/12	87141110	18	148	58	112	36	5.5
KDL/D-EN 24/9	87141122	18	148	58	112	36	5.5
KDL/D-EN 24/8	87141118	18	148	58	112	36	5.5
KDL/D-EN 24/4	87141114	18	148	58	112	36	5.5
<b>For standard cut-out size 16</b>							
KDL/D-EN 16/8	87141126	18	121	58	86	36	5.5
KDL/D-EN 16/7	87141130	18	121	58	86	36	5.5
KDL/D-EN 16/3	87141134	18	121	58	86	36	5.5
KDL/D-EN 16/2	87141132	18	121	58	86	36	5.5
<b>For standard cut-out size 10</b>							
KDL/D-EN 10/6	87141138	18	101	58	65	36	5.5
KDL/D-EN 10/5	87141142	18	101	58	65	36	5.5
KDL/D-EN 10/2	87141139	18	101	58	65	36	5.5
<b>For standard cut-out size 6</b>							
KDL/D-EN 6/4	87141144	18	74	58	46	36	5.5
<b>Special size</b>							
KDL/D-EN 1/6	87141148	18	148	38	112	17	5.5

## KDT/X-EN cable entry grommet

GO TO PRODUCT



### Product information

2-piece cable entry grommet for pre-assembled cables in connection with cable entry system KDL/D-EN and KDL/H-EN

- Approved for railway technology (EN 45545-2 / 3x HL / NFPA 130)
- Pre-assembled cables can be easily inserted or fed through e.g. in control cabinets.
- The grommets are retrofitted around the cable
- Thermal stability: -30 °C – +100 °C
- Fire classification: V0
- Material: TPE
- RoHS compliant
- UV resistant
- Made in Germany

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X15 Grommets/grommet block in KDL/D-EN	

Article	Order No.	Color	For Ø mm	For opening small / medium / large	No. of openings	PU Pcs.
<b>Grommet small</b>						
KDT/X-EN 02	87141310	Black	2 - 3	yes / no / no	1	12
KDT/X-EN 03	87141312	Black	3 - 4	yes / no / no	1	12
KDT/X-EN 04	87141314	Black	4 - 5	yes / no / no	1	12
KDT/X-EN 05	87141316	Black	5 - 6	yes / no / no	1	12
KDT/X-EN 06	87141318	Black	6 - 7	yes / no / no	1	12
KDT/X-EN 07	87141320	Black	7 - 8	yes / no / no	1	12
KDT/X-EN 08	87141322	Black	8 - 9	yes / no / no	1	12
KDT/X-EN 09	87141324	Black	9 - 10	yes / no / no	1	12
KDT/X-EN 10	87141326	Black	10 - 11	yes / no / no	1	12
KDT/X-EN 11	87141328	Black	11 - 12	yes / no / no	1	12

## Type KDT/X-EN cable entry grommet

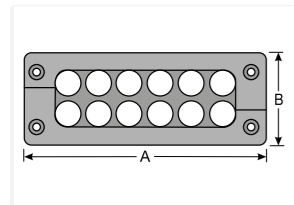


Article	Order No.	Color	For Ø mm	For opening small / medium / large	No. of openings	PU Pcs.
<b>Grommet medium</b>						
KDT/X-EN 12	87141330	Black	12 - 13	no / yes / no	1	4
KDT/X-EN 13	87141332	Black	13 - 14	no / yes / no	1	4
KDT/X-EN 14	87141334	Black	14 - 15	no / yes / no	1	4
KDT/X-EN 15	87141336	Black	15 - 16	no / yes / no	1	4
KDT/X-EN 16	87141338	Black	16 - 17	no / yes / no	1	4
KDT/X-EN 17	87141340	Black	17 - 18	no / yes / no	1	4
KDT/X-EN 18	87141342	Black	18 - 19	no / yes / no	1	4
KDT/X-EN 19	87141344	Black	19 - 20	no / yes / no	1	4
KDT/X-EN 20	87141346	Black	20 - 21	no / yes / no	1	4
KDT/X-EN 21	87141348	Black	21 - 22	no / yes / no	1	4
<b>Grommet large</b>						
KDT/X-EN 22	87141350	Black	22 - 23	no / no / yes	1	4
KDT/X-EN 23	87141352	Black	23 - 24	no / no / yes	1	4
KDT/X-EN 24	87141354	Black	24 - 25	no / no / yes	1	4
KDT/X-EN 25	87141356	Black	25 - 26	no / no / yes	1	4
KDT/X-EN 26	87141358	Black	26 - 27	no / no / yes	1	4
KDT/X-EN 27	87141360	Black	27 - 30	no / no / yes	1	4
KDT/X-EN 28	87141362	Black	28 - 29	no / no / yes	1	4
KDT/X-EN 29	87141364	Black	29 - 30	no / no / yes	1	4
<b>Dummy grommet</b>						
BTK/X-EN dummy grommet	87141370	Black		yes / no / no		12
BTG/X-EN dummy grommet	87141366	Black		no / yes / no		4
<b>Multi-line grommet 2-line</b>						
KDT/X-EN 2x4	87141393	Black		yes / no / no		12
<b>Multi-line grommet 4-line</b>						
KDT/X-EN 4x4 <sup>1)</sup>	87141394	Black		yes / no / no		12

<sup>1)</sup> no UR-approval / unused openings can be closed off with type VST sealing plugs

## Type RAS room integrity set

GO TO PRODUCT



### Product information

The RAS Room integrity set is used in conjunction with the KDL/C or KDL/D and KDL/H cable entry plates. Because the system can be split apart the RAS room integrity system can be completely retrofitted on the inside of the housing. The fire protection mat reacts at temperatures exceeding 160°C (320 °F) by expanding and thereby closing off the opening completely fire resistant.

Special benefits of the RAS room integrity system are:

- Approved for railway technology (EN 45545-2 / 3x HL3 / NFPA 130)
- Room integrity (firewall)
- Completely splittable system
- Quick and easy assembly

### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<b>Classification reports according to EN 45545-2 / NFPA 130</b> Product relevance: Material X9 RAS room integrity set	

Article	Order No.	Color	Suitable for	Cut-out	PU Pcs.
RAS 24/12	87141111	Black	KDL/D 24/12	24-pole	1
RAS 24/9	87141123	Black	KDL/D 24/9	24-pole	1
RAS 24/8	87141119	Black	KDL/D 24/8	24-pole	1
RAS 24/4	87141115	Black	KDL/D 24/4	24-pole	1
RAS 16/8	87141127	Black	KDL/D 16/8	16-pole	1
RAS 16/7	87141131	Black	KDL/D 16/7	16-pole	1
RAS 16/3	87141135	Black	KDL/D 16/3	16-pole	1
RAS 16/2	87141133	Black	KDL/D 16/2	16-pole	1
RAS 10/6	87141137	Black	KDL/D 10/6	10-pole	1
RAS 10/5	87141143	Black	KDL/D 10/5	10-pole	1

## Type RAS room integrity set



Article	Order No.	Color	Suitable for	Cut-out	PU Pcs.
RAS 10/2	87141140	Black	KDL/D 10/2	10-pole	1
RAS 6/4	87141145	Black	KDL/D 6/4	6-pole	1

### Dimension table

Article	Order No.	Installation height mm	A mm	B mm
RAS 24/12	87141111	15	148	58
RAS 24/9	87141123	15	148	58
RAS 24/8	87141119	15	148	58
RAS 24/4	87141115	15	148	58
RAS 16/8	87141127	15	121	58
RAS 16/7	87141131	15	121	58
RAS 16/3	87141135	15	121	58
RAS 16/2	87141133	15	121	58
RAS 10/6	87141137	15	101	58
RAS 10/5	87141143	15	101	58
RAS 10/2	87141140	15	101	58
RAS 6/4	87141145	15	74	58



## Strain relief type ZL-AH

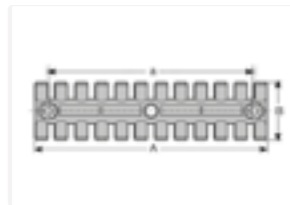
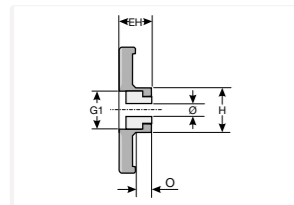
GO TO PRODUCT



### Product information

The ZL-AH strain relief plates are based on the ZL strain relief plate. By inserting the aluminum sleeve, the ZL strain relief plate is free of fastening forces.

- Approved for railway technology (EN 45545-2 / NFPA 130)



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X9 Strain relief ZL-AH • ZL-MH</p>	

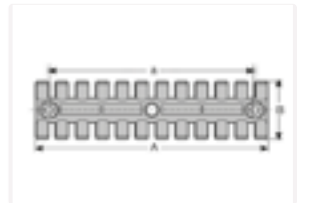
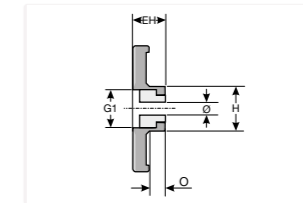
Article	Order No.	Color	Quantity of cables	PU Pcs.
<b>with aluminum sleeve, assembly with M4 screws</b>				
ZL-AH 39/4	87701255	Black	3	1
ZL-AH 60/4	87701256	Black	4	1
ZL-AH 87/4	87701257	Black	6	1
ZL-AH 103/4	87701258	Black	7	1
ZL-AH 121/4	87701259	Black	8	1
ZL-AH 140/4	87701260	Black	9	1
ZL-AH 180/4	87701261	Black	12	1
<b>with aluminum sleeve, assembly with M5 screws</b>				
ZL-AH 39	87701230	Black	3	1
ZL-AH 60	87701232	Black	4	1
ZL-AH 87	87701234	Black	6	1
ZL-AH 103	87701236	Black	7	1
ZL-AH 121	87701238	Black	8	1
ZL-AH 140	87701240	Black	9	1
ZL-AH 180	87701242	Black	12	1

## Strain relief type ZL-AH



Article	Order No.	Color	Quantity of cables	PU Pcs.
<b>with aluminum sleeve, assembly with M6 screws</b>				
ZL-AH 39/6	87701262	Black	3	1
ZL-AH 60/6	87701263	Black	4	1
ZL-AH 87/6	87701264	Black	6	1
ZL-AH 103/6	87701265	Black	7	1
ZL-AH 121/6	87701266	Black	8	1
ZL-AH 140/6	87701267	Black	9	1
ZL-AH 180/6	87701268	Black	12	1

## Strain relief type ZL-AH



### Dimension table

Article	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	O mm	Ø mm
<b>with aluminum sleeve, assembly with M4 screws</b>									
ZL-AH 39/4	87701255	38.5	19.5	40	10	12	14	6	4.2
ZL-AH 60/4	87701256	59.5	43.5	40	10	12	14	6	4.2
ZL-AH 87/4	87701257	86.5	68	40	10	12	14	6	4.2
ZL-AH 103/4	87701258	102.5	84	40	10	12	14	6	4.2
ZL-AH 121/4	87701259	121	102.5	40	10	12	14	6	4.2
ZL-AH 140/4	87701260	139.5	121	40	10	12	14	6	4.2
ZL-AH 180/4	87701261	180	157	42	11.5	12	16	8.5	4.2
<b>with aluminum sleeve, assembly with M5 screws</b>									
ZL-AH 39	87701230	38.5	19.5	40	10	12	14	6	5.5
ZL-AH 60	87701232	59.5	43.5	40	10	12	14	6	5.5
ZL-AH 87	87701234	86.5	68	40	10	12	14	6	5.5
ZL-AH 103	87701236	102.5	84	40	10	12	14	6	5.5
ZL-AH 121	87701238	121	102.5	40	10	12	14	6	5.5
ZL-AH 140	87701240	139.5	121	40	10	12	14	6	5.5
ZL-AH 180	87701242	180	157	42	11.5	12	16	8.5	5.5
<b>with aluminum sleeve, assembly with M6 screws</b>									
ZL-AH 39/6	87701262	38.5	19.5	40	10	12	14	6	6.5
ZL-AH 60/6	87701263	59.5	43.5	40	10	12	14	6	6.5
ZL-AH 87/6	87701264	86.5	68	40	10	12	14	6	6.5
ZL-AH 103/6	87701265	102.5	84	40	10	12	14	6	6.5
ZL-AH 121/6	87701266	121	102.5	40	10	12	14	6	6.5
ZL-AH 140/6	87701267	139.5	121	40	10	12	14	6	6.5
ZL-AH 180/6	87701268	180	157	42	11.5	12	16	8.5	6.5

## Strain relief type ZL-MH

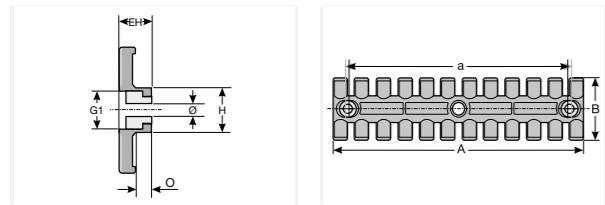
GO TO PRODUCT



### Product information

The ZL-MH strain relief plates are based on the ZL strain relief plate. By inserting the brass sleeve, the ZL strain relief plate is free of fastening forces.

- Approved for railway technology (EN 45545-2 / NFPA 130)



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X9 Strain relief ZL-AH • ZL-MH</p>	

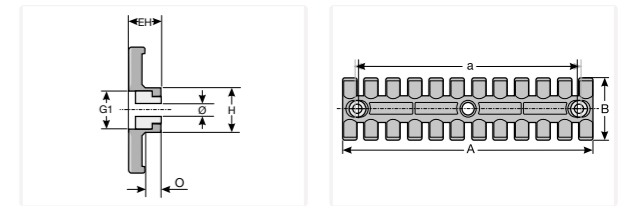
Article	Order No.	Color	Quantity of cables	PU Pcs.
<b>with brass sleeve, assembly with M5 screws</b>				
ZL-MH 39	87701210	Black	3	1
ZL-MH 39, PU 50	87701211	Black	3	50
ZL-MH 60	87701212	Black	4	1
ZL-MH 87	87701214	Black	6	1
ZL-MH 103	87701216	Black	7	1
ZL-MH 121	87701218	Black	8	1
ZL-MH 140	87701220	Black	9	1
ZL-MH 140, PU 50	87701221	Black	9	50
ZL-MH 180	87701222	Black	12	1
<b>with brass sleeve, assembly with M6 screws</b>				
ZL-MH 39/6	87701270	Black	3	1
ZL-MH 60/6	87701272	Black	4	1
ZL-MH 60, PU 50	87701213	Black	4	50
ZL-MH 70/6	87701274	Black	5	1

## Strain relief type ZL-MH



Article	Order No.	Color	Quantity of cables	PU Pcs.
ZL-MH 87/6	87701278	Black	6	1
ZL-MH 87, PU 50	87701215	Black	6	50
ZL-MH 103/6	87701282	Black	7	1
ZL-MH 121/6	87701284	Black	8	1
ZL-MH 140/6	87701286	Black	9	1
ZL-MH 180/6	87701288	Black	12	1

## Strain relief type ZL-MH



### Dimension table

Article	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	O mm	Ø mm
<b>with brass sleeve, assembly with M5 screws</b>									
ZL-MH 39	87701210	38.5	19.5	40	10	12	14	3.9	5.5
ZL-MH 39, PU 50	87701211	38.5	19.5	40	10	12	14	3.9	5.5
ZL-MH 60	87701212	59.5	43.5	40	10	12	14	3.9	5.5
ZL-MH 87	87701214	86.5	68	40	10	12	14	3.9	5.5
ZL-MH 103	87701216	102.5	84	40	10	12	14	3.9	5.5
ZL-MH 121	87701218	121	102.5	40	10	12	14	3.9	5.5
ZL-MH 140	87701220	139.5	121	40	10	12	14	3.9	5.5
ZL-MH 140, PU 50	87701221	139.5	121	40	10	12	14	3.9	5.5
ZL-MH 180	87701222	180	157	42	11.5	12	16	3.9	5.5
<b>with brass sleeve, assembly with M6 screws</b>									
ZL-MH 39/6	87701270	38.5	19.5	40	10	12	14	3.9	6.5
ZL-MH 60/6	87701272	59.5	43.5	40	10	12	14	3.9	6.5
ZL-MH 60, PU 50	87701213	59.5	43.5	40	10	12	14	3.9	6.5
ZL-MH 70/6	87701274	69.5	43.5	40	10	12	14	3.9	6.5
ZL-MH 87/6	87701278	86.5	68	40	10	12	14	3.9	6.5
ZL-MH 87, PU 50	87701215	86.5	68	40	10	12	14	3.9	6.5
ZL-MH 103/6	87701282	102.5	84	40	10	12	14	3.9	6.5
ZL-MH 121/6	87701284	121	102.5	40	10	12	14	3.9	6.5
ZL-MH 140/6	87701286	139.5	121	40	10	12	14	3.9	6.5
ZL-MH 180/6	87701288	180	157	42	11.5	12	16	3.9	6.5

## Cable fixing plate type KAF

GO TO PRODUCT

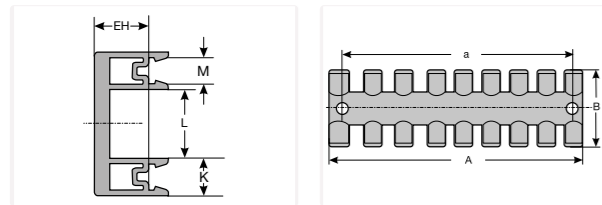


### Product information

The KAF cable fixing plate is suitable for simultaneously holding and relieving the strain of cables in the control cabinet.

Designed to be mounted on a standard 35 mm top-hat rail (EN 50022; Niedax 2934;2936) or on a C-rail (Niedax 2970;2971). The assembly is done by simply snapping on.

- Approved for railway technology (EN 45545-2 / NFPA 130)



### Information, conformities and approvals



Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	Classification reports according to EN 45545-2 / NFPA 130 Product relevance: Material X9 KAF cable fixing plate	

Article	Order No.	Color	Quantity of cables	PU Pcs.
KAF 11	87201010	Black	1	1
KAF 75	87201014	Black	5	1
KAF 140	87201018	Black	9	1

### Dimension table

Article	Order No.	A mm	B mm	a mm	EH mm	K mm	L mm	M mm
KAF 11	87201010	11.5	40		11	13.5	12	9.3
KAF 75	87201014	75	40	63	11	13.5	12	9.3
KAF 140	87201018	139.5	40	127.8	11	13.5	12	9.3

## Strain relief on C-rails



### General information

The strain relief plates ZL-C, ZL-SW, ZL-AM and ZL-DB are based on the strain relief plate ZL. They are used for fixing of and providing strain relief to components such as wire bundles and conduits on C-rails, using cable ties.



The pressed-in brass washers prevent the cold flow properties of the plastic under heavy and permanent vibration and center the strain relief. Suitable slot nuts and bolts enable simple assembly on various C-rails.

- Very fast installation
- Orderly routing of the cable
- Simple and effective strain relief through cable ties
- Approved for railway technology (EN 45545-2)
- Partly with thread coating and self-locking lock nut

	ZL-C	ZL-SW	ZL-AM	ZL-DB
Inside width C-rails	21 mm	27 mm	22 - 27 mm	30 - 36 mm
Slot width	11 mm	12 mm	16 mm	20 mm
Lengths	39 mm - 180 mm	39 mm - 180 mm	39 mm - 180 mm	40 mm
Width	40 mm	40 mm	40 mm	52.5 mm
Screw & slot nut	Steel, metric thread	Stainless steel 1.4301, metric thread	Stainless steel 1.4301, UNC thread	Steel, metr. Thread Slot nut made of PA 6.6
Securing		Micro-encapsulated PreCOTE thread coating	Micro-encapsulated PreCOTE thread coating	Self-locking lock nut
go to webshop	<a href="#">go to product</a>	<a href="#">go to product</a>	<a href="#">go to product</a>	<a href="#">go to product</a>



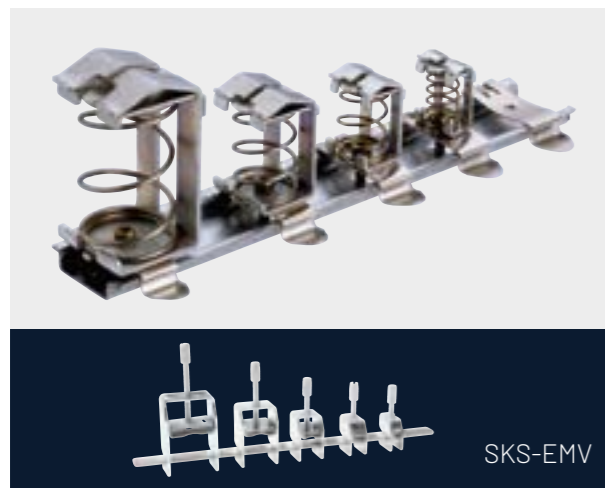
## EMC components with excellent discharge



### SHIELD CLIPS EMC

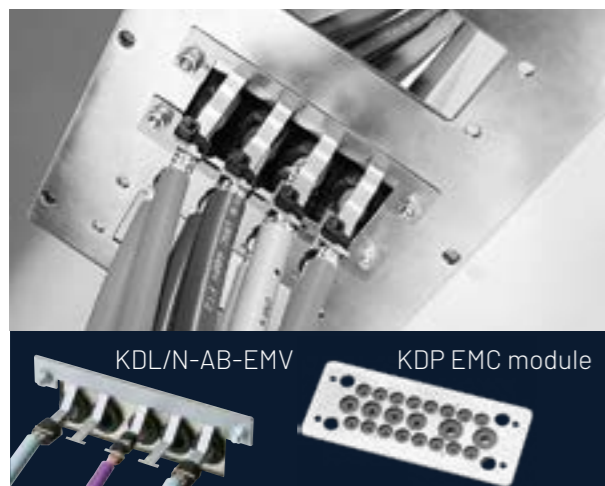
The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies. All products are characterized by their very easy handling.

- Spring action provides uninterrupted contact pressure with the shield.
- High conductivity
- Excellent discharge of high-frequency noise current



### SHIELDING CLAMPS

The **shielding clamp** may be used where the shield of individual cables must be connected with the ground 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.



### DISCHARGE PLATES

The **discharge plate** is suitable in conjunction with all variants of the cable entry plate KDL and the standard types of the cable entry plate KDP for discharging interference that may occur on the cable shields. The discharge plate should be installed on the inside of the control cabinet, directly to the fixing points of the cable entry system.

In addition, the **KDP EMC module** also provides you with a precisely fitting, cable-protecting and extremely compact solution for cable entry plates.

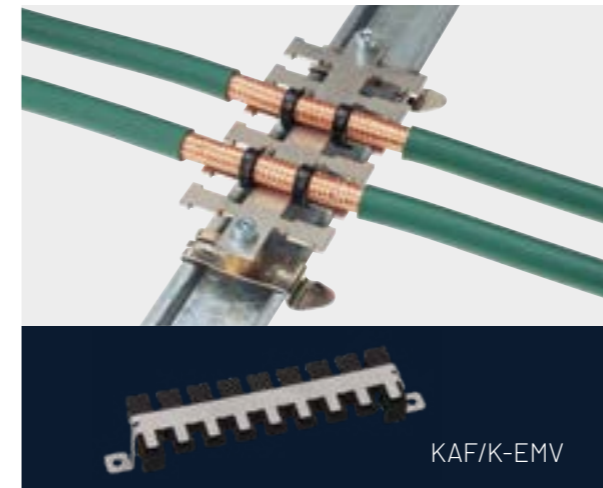


### DIVISIBLE CABLE ENTRY SYSTEMS

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

Field-related interferences are securely discharged by the metalization.

The types KDL 16 /xx-EMV fit 16-pin cut-outs for connectors from Harting or Wieland. For 24-pin cut-outs for connectors there are the types KDL 24 /xx-EMV.



### CABLE FIXING PLATES

The cable fixing plate KAF/SF is suitable for discharging interferences which may occur on cable sheaths. The earth/ground contact is provided through a special snap-on foot for the 35 mm top-hat rail (EN50022). Stripping the cable in the area of the KAF/SF and clamping in the KAF/SF achieves a contact to the KAF/SF. The snap-on clip produces a low-resistance ground contact. The use of two connecting points ensures a good discharge regardless of the position of the cable on the KAF/SF.

- Fits on 35-mm top-hat rail (EN50022)
- Simply snap-on
- Also available are discharge plates for KAF cable fixing plates and ZL strain reliefs



### CONDUIT FITTINGS M-PRO-EMV

The M-PRO fitting series was developed together with leading rail vehicle manufacturers.

- High level of tightness at IP 68 to 6 bar and at the same time IP 69 K without any add-on components to DIN EN 60529
- Quick assembly: Insert conduit, snap-in → ready
- No parts can get lost → Delivered completely assembled
- Clamping along entire circumference, ensuring maximum tensile strength

All fittings meet the specifications of EN 45545-2 with a Class R22 and R23 ranking according to hazard level 3xHL3 as well as NFPA130.



# Labeling of single wires, cables, conduits and devices



## Labeling

We are the only manufacturer worldwide to offer all labeling technologies as well as the "Label on Demand" service. Our labels can be used in a variety of ways: For single wires, cables, switchgear, terminals, type plates, push buttons, conduits as well as control and signal devices.

## Ensuring you meet the standard

European standard EN 60204 (VDE 0113 Part 1) stipulates the unique identification of cables, components and terminal blocks in control cabinets.

This identification must be legible into the long term and undetachable. Labeling systems from murrplastik meet these requirements.

## murrplastik can be used to label

- Single wires
- Terminals
- Switchgear
- Device locations
- Control and signal devices
- Components
- Type plates

from a wide range of manufacturers.

Subsequent marking of cables and wires is also possible.

All data processing is done by the mp-UniversalMarkingSoftware. Data import routines for CAD/CAE packages support the project-specific import of labeling information.

murrplastik has a wide range of direct and subsequent wire and cable labeling products.

## Properties of the murrplastik products

- Extremely durable
- Resistant to environment influences and mechanical stress
- Undetachable
- Wide range of attachment options
- Label retrofitting possible
- Variety of shapes and equipment
- Labeling with QR and bar codes

## Labeling material

- Label sleeves
- Label holders
- Label plates
- Single wire labeling without grommets
- Type plates
- Sheet labels
- Cable ties and accessories





## Engraving material

- Alu-, Duo-, Triomatt multi-layer material
- Anodized aluminum
- Stainless steel



## Labeling - Material & Application



Material	Application
 <p><b>KTH AND KTH/Q label sleeve</b></p> <ul style="list-style-type: none"> <li>• Halogen-free</li> <li>• High packing density</li> </ul> <p><b>KMH/Q label holder</b></p> <ul style="list-style-type: none"> <li>• Halogen-free</li> <li>• High packing density with label KS</li> </ul>	
 <p><b>KME label</b></p> <ul style="list-style-type: none"> <li>• Halogen-free</li> <li>• One-piece, closed</li> <li>• Soft component to adapt to the cable diameter</li> </ul> <p><b>KME/L label holder</b></p> <ul style="list-style-type: none"> <li>• Halogen-free</li> <li>• Soft component to adapt to the cable diameter</li> <li>• flexible label exchange with label KS0</li> </ul>	
 <p><b>KCL/ECO label</b></p> <ul style="list-style-type: none"> <li>• direct cable labeling</li> </ul> <p><b>KSM label and KCM/ECO label</b></p> <ul style="list-style-type: none"> <li>• direct and subsequent cable labeling with cable ties</li> </ul> <p><b>ESK stainless steel labels</b></p> <ul style="list-style-type: none"> <li>• direct and subsequent cable labeling with cable ties</li> </ul>	



Material	Application
 <p><b>Self-adhesive sheet labels</b></p> <ul style="list-style-type: none"> <li>• Thermal transfer labels</li> <li>• Ink Jet labels</li> <li>• Laser label foil</li> </ul>	
 <p><b>ST-BT-H heat-shrink tube</b></p> <ul style="list-style-type: none"> <li>• Polyolefin, pre-perforated</li> <li>• Halogen-free, thin-walled</li> <li>• Thermal transfer printing</li> <li>• Shrink ratio 2:1</li> <li>• Vehicle category Ia according to BS 6853 (1999)</li> <li>• Fire resistance ASTM D 635-HB</li> </ul>	
 <p><b>Aluminum, Duomatt and Triomatt multi-layer materials</b></p> <ul style="list-style-type: none"> <li>• Different carrier material</li> <li>• Numerous geometries / hole patterns</li> <li>• With self-adhesive foil / adhesive film</li> </ul> <p><b>Anodized aluminum</b></p> <ul style="list-style-type: none"> <li>• Numerous geometries / hole patterns</li> <li>• With self-adhesive foil / adhesive film</li> </ul> <p><b>Stainless steel</b></p> <ul style="list-style-type: none"> <li>• Type plates / smaller formats</li> <li>• Laser labeling for demanding environments</li> </ul>	





## Labeling - Hardware

Hardware	Advantages
<p><b>mp LM Series</b> Laser Marking</p>  <p> <b>Laser</b></p>	<ul style="list-style-type: none"> <li>• Permanent, durable labeling via carbonization or laser engraving</li> <li>• Mapping of QR and barcodes</li> <li>• Processing in series with high productivity and labeling speed</li> <li>• Minimal operating costs, no consumables</li> <li>• No-touch labeling</li> <li>• Minimal maintenance required</li> <li>• USB and Ethernet interface</li> </ul> <p><b>Possible to process a range of different materials:</b></p> <ul style="list-style-type: none"> <li>• Polypropylene</li> <li>• Stainless steel, including type plates</li> <li>• Anodized aluminum</li> <li>• Multi-layer material</li> <li>• Laser labels</li> </ul>

<p><b>mp IM Series</b> INK-Jet Marking</p>  <p> <b>Inkjet</b></p>	<ul style="list-style-type: none"> <li>• Razor-sharp quality in 300 dpi</li> <li>• Long-term labeling</li> <li>• High productivity and labeling speeds</li> <li>• Serial possible</li> <li>• Free selection of true type fonts</li> <li>• USB / Ethernet interface</li> </ul>
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Hardware	Advantages
<p><b>mp TM Series</b> Thermal transfer Marking</p>  <p> <b>Thermal transfer</b></p>	<ul style="list-style-type: none"> <li>• Large output volume</li> <li>• Outstanding print quality</li> <li>• Very good durability of the labeling</li> <li>• Easy handling</li> <li>• Large label range</li> <li>• USB and Ethernet interface</li> <li>• Optionally with cutter</li> </ul>

<p><b>mp PM Series</b> Plotter Marking</p>  <p> <b>Plotter with engraving option</b></p>	<ul style="list-style-type: none"> <li>• Suitable for universal use</li> <li>• High-quality labeling</li> <li>• Labeling of electric, pneumatic and mechanical components</li> <li>• All plotters in the mp-PM series can be converted to engraving machines</li> <li>• Simple conversion</li> <li>• Extensive selection of engraving materials</li> </ul>
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## Labeling - Technologies

Murrplastik Systemtechnik is the only company that offers all labeling technologies in its product portfolio (laser, printing, plotting and engraving). All technologies can be controlled with a single software (mp-UniversalMarkingSoftware).

The portfolio of our labeling devices ranges from transportable devices for the service sector to stationary units with various equipment options for continuous professional use. We have the right hardware for every

labeling need. Our labels for subsequent labeling KNC, KNQ and KSM made of polycarbonate can be labeled with murrplastik labeling technologies plotting, laser and inkjet. The KSM labels made of polypropylene are exclusively suitable for laser labeling with the devices of the mp-LM series.



## mp-UniversalMarkingSoftware

The mp-UniversalMarkingSoftware offers you many features and functions for the simple and optimal creation of labeling projects.

- Support of common graphic formats (bmp, png, jpg, wmf, hpgl, plt)
- Enhanced symbol library
- Data import from a range of CAD
- Data management via project explorer

### All in all, your benefits include:

- Process optimization
- Time saving
- Cost reduction
- Clear-cut workflows

### Selection of printed/non-printed datasets

Targeted selection of already printed/not yet printed datasets, so as to optimise your workflows.

### Status bar icons

Direct access to frequently used program modules such as system parameters, printer settings, parameter editor via icons in the status bar.

## REQUIREMENTS

### Operating system

- WIN 8
- WIN 8.1
- WIN 10
- WIN 11

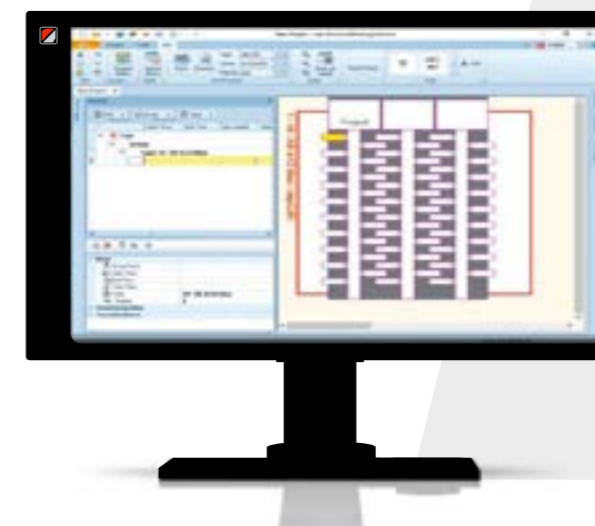
### Hardware

According to hardware specification of the operating system

### Product information

In addition to its contemporary graphical interface the mp-UniversalMarkingSoftware provides several added value for the user. These are:

- Interactive work
- Improved performance
- More stable system
- Improved user guidance
- Interactive print preview





# Energy chains

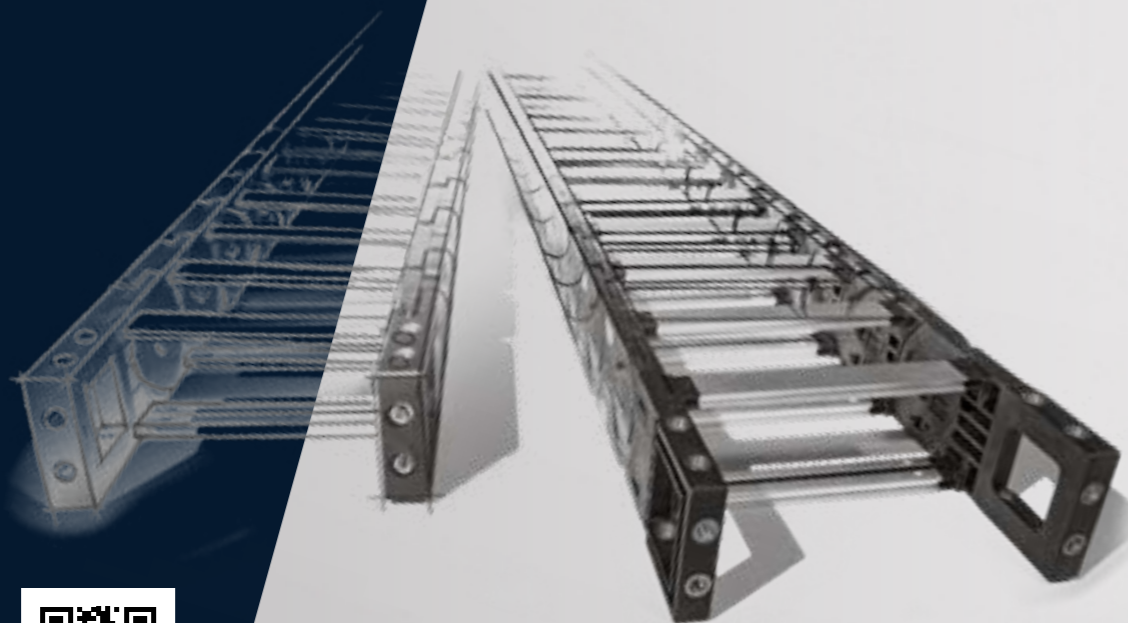
Our energy chains are used wherever there are wires and cables that have to be flexibly guided. For example, door controls and slide-out battery trays.

On request, these products may be manufactured of a material that meets the requirements of EN 45545-2 3x HL3.

## murrplastik CHAINBUILDER

- Quick selection of the right energy chain for your application
- User friendly configuration of mounting components such as separators, shelves, chain brackets and strain relief
- Optional direct entry of the order key with subsequent configuration option
- Automatic generation of the 3D CAD model by means of an interface to Cadenas
- Save, load and manage your configurations.

Link	Description / product relevance	QR-Code
<a href="#">PDF Download</a>	<p><b>Classification reports according to EN 45545-2 / NFPA 130</b></p> <p>Product relevance: Material X9 Energy chains with designation EN</p>	



[murrplastik.com](http://murrplastik.com)

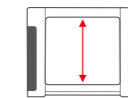


### EN-MP 10.3

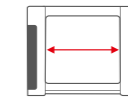


#### Advantages

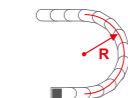
- Chain bracket with strain relief
- Can be easily shortened and lengthened
- Very flexible, high torsion



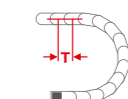
**Inside height**  
10 mm



**Available interior widths**  
6-31 mm



**Available radii**  
18-38 mm



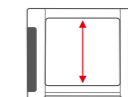
**Grid**  
15 mm

### EN-MP 18.1/2

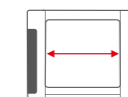


#### Advantages

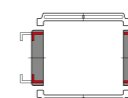
- Chain bracket with strain relief
- Can be easily shortened and lengthened



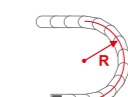
**Inside height**  
18 mm



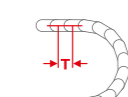
**Available interior widths**  
15-70 mm



**Loading side**  
Inside or outside bend

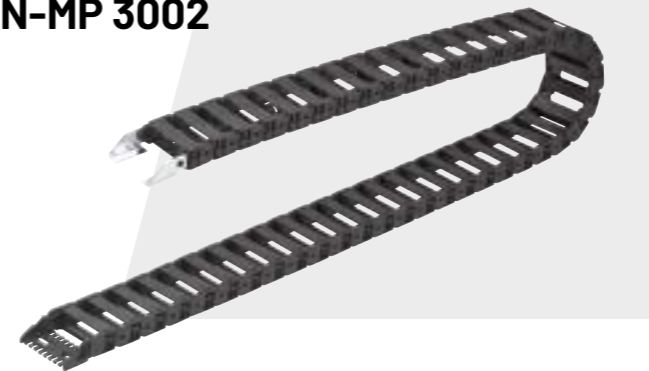


**Available radii**  
28-78 mm



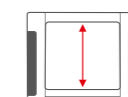
**Grid**  
33 mm

### EN-MP 3002



#### Advantages

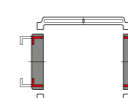
- Low-cost variant
- Chain bracket with strain relief



**Inside height**  
26 mm



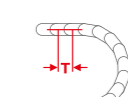
**Available interior widths**  
26-125 mm



**Loading side**  
Inside bend



**Available radii**  
50-300 mm



**Grid**  
45 mm

Other sizes available on request



Service

# Working together to develop and implement solutions. The complete solution.

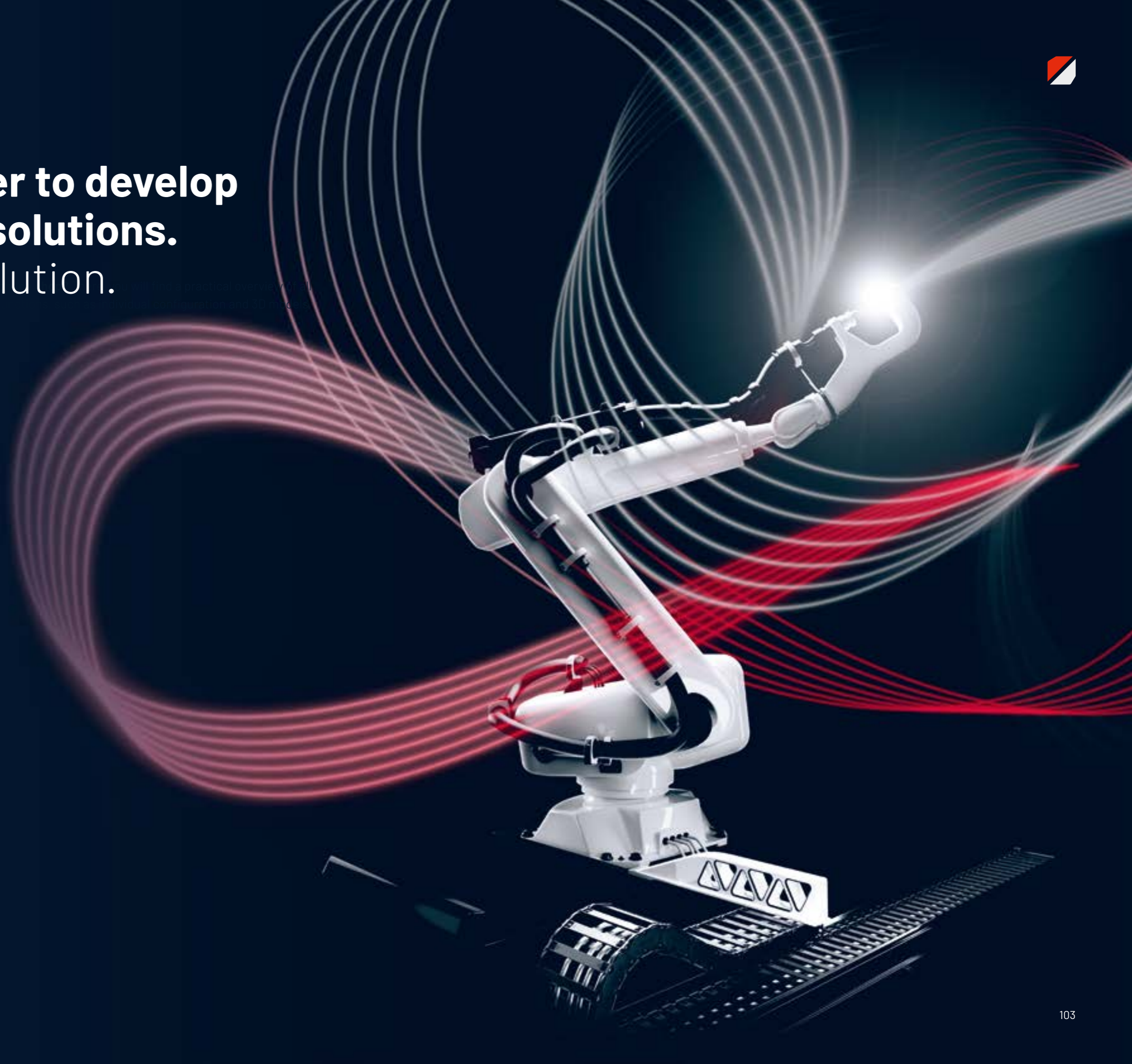
## Strong together. murrplastik® at your side

In our complex and fast-moving world, the development of innovative solutions and a comprehensive understanding of the challenges of tomorrow determine which companies will continue to be successful in the future.

**Our promise:**  
**Customized system solutions in an  
automated world.**

In addition to the fast and uncomplicated provision of individually manufactured components and complete systems, we work on your projects with you.

**Together with our experts from different departments, we develop the perfect solution for your requirements and ensure long-term growth.**

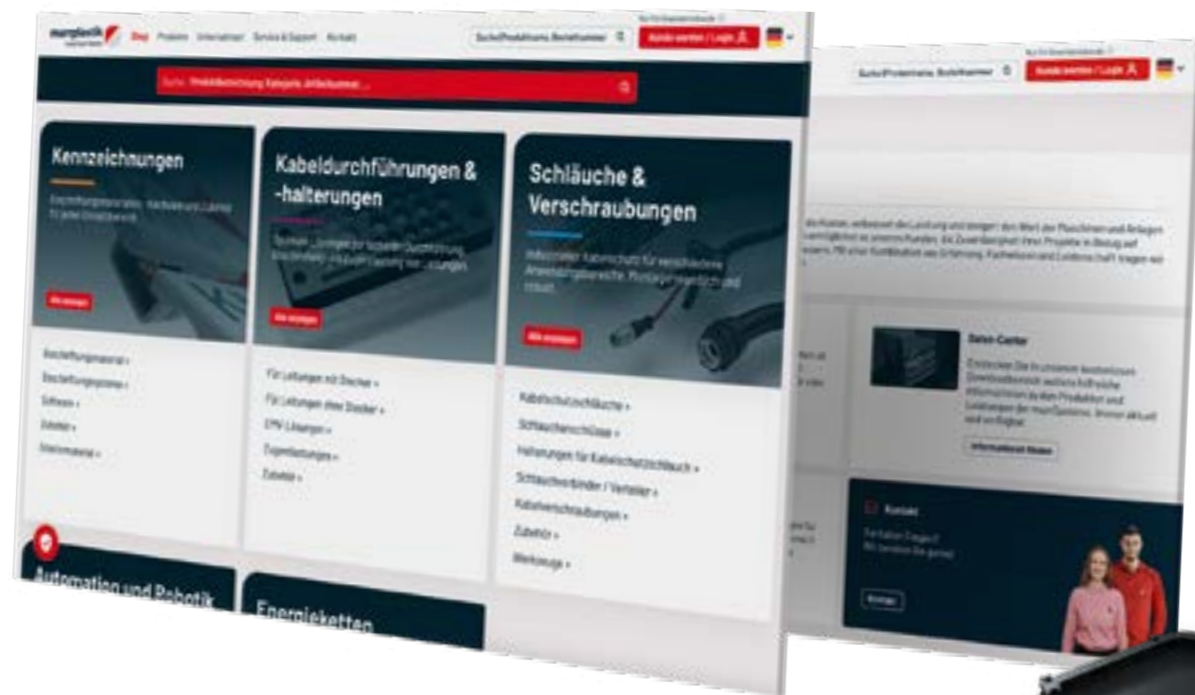




# Simply Smart Systems

## shop.murrplastik.de

**Are you already familiar with the murrplastik® online shop?** There, you will find a practical overview of all our products. Additional information and smart functions, such as individual configuration and 3D models, will help you in your selection and ordering.

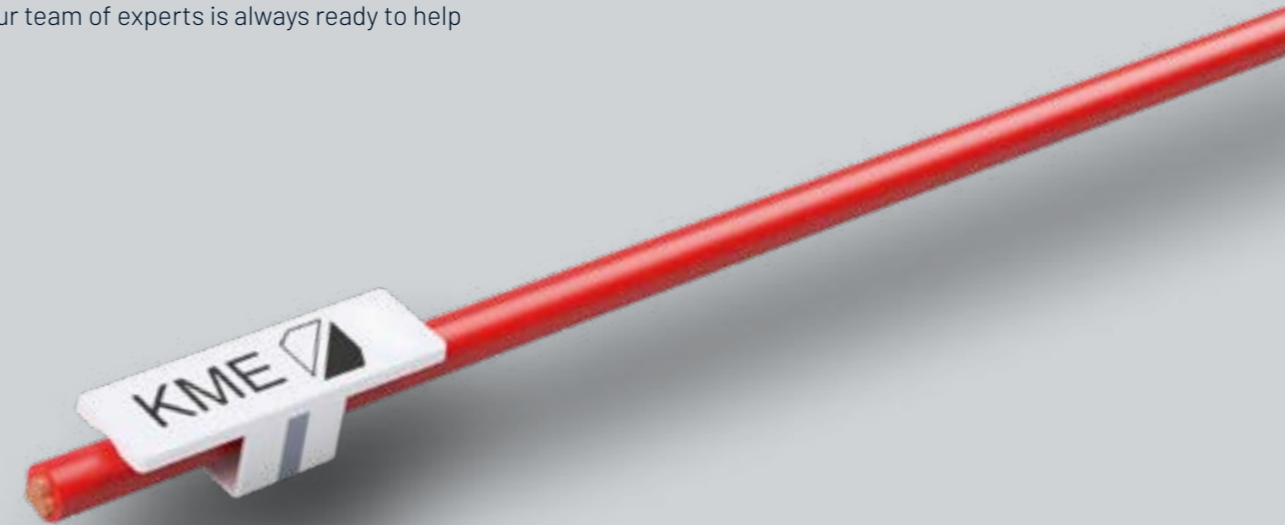


### Award-winning Performance

Our innovative strength impresses not only our customers. Several products have received the German Innovation Award. What a distinguished way to highlight our experts' outstanding performance.

### Your benefits at a glance:

- ✓ **Subscribe** – Order your products at your own pace and in the quantity you need
- ✓ **Set your desired delivery date**  
Choose your individual delivery dates easily and conveniently
- ✓ **Create quotations** – Easily create and save your own quotation
- ✓ **Express shipping for urgent deliveries**  
We are there for you, even when it has to go quickly
- ✓ **CAD-Data** – View and download individual 3D models of your desired product
- ✓ **Order again** – Store your orders under "My account" to quickly find and duplicate any orders already placed
- ✓ **Product details** – see all relevant details about our products at a glance
- ✓ **Service & Support** – If you have any questions, our team of experts is always ready to help



### Our range for railroad and rail transport at a click



Energy chains, labeling systems, cable entry systems, corrugated conduits and more. The innovative world of murrplastik® is just a click away. Simply open **shop.murrplastik.de** in your browser or scan the QR code.

[shop.murrplastik.de](https://shop.murrplastik.de)



The brand **murrplastik**<sup>®</sup>

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