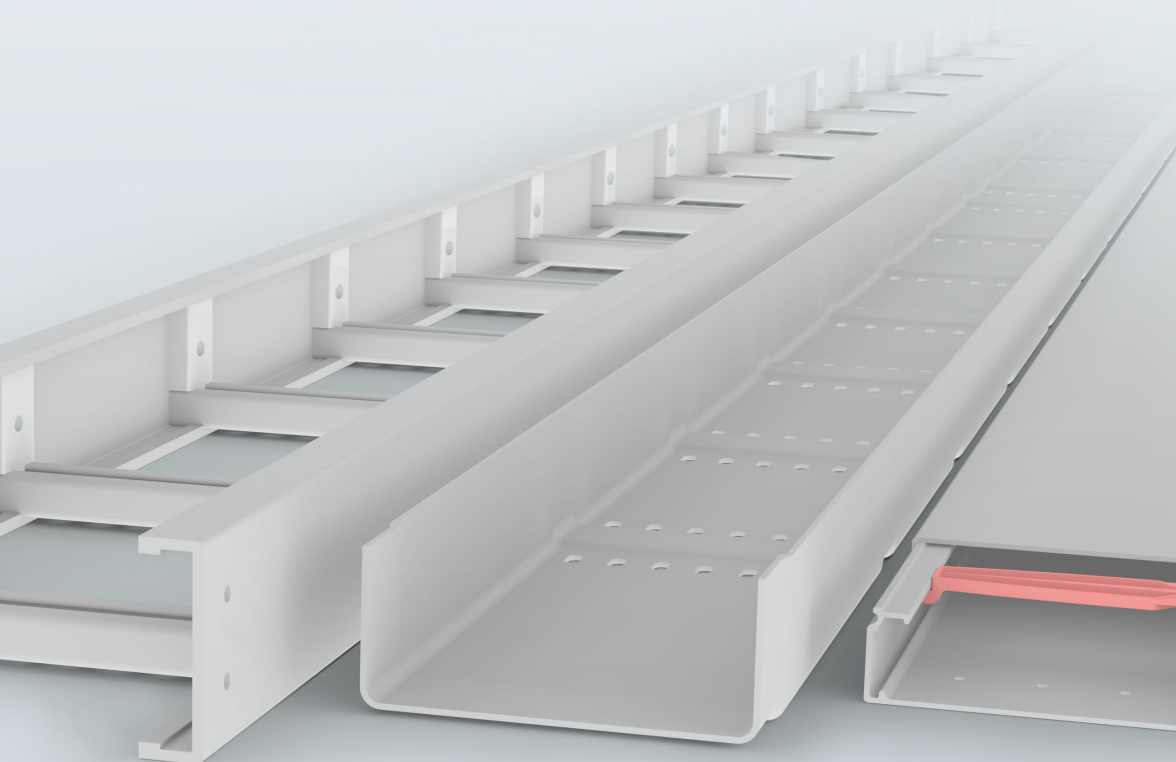


GRP

CABLE SUPPORT SYSTEMS



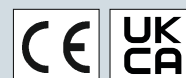
from 2025

New in the assortment	35 Side rail height in mm	60/-15 Operating temperature	Hardware
Discontinued model	1 Wire diameter in mm	Fast install	Installation instructions
Halogen-free	78/170 Cover hole and depth in mm	750°C Glow wire test acc. DIN EN 60695-2-10 / VDE 0471-2-10	Reference note
Silicone-free	30 Pipe diameter in mm	acc. DIN EN 60695-2-11 / VDE 0471-2-11	Information pages

All products in this catalog are classified according to the EAN code (13 digits). The first 7 digits indicate the country (40 = Germany) and the manufacturer's code (13339 = Niedax). The following six digits are the product code.
Example EAN code of the product TK 60.85 = 40 13339 183708



Please ask for the certifications VDE/UL



BIM-Data on request

Steel

B Steel, bare
V Steel, electro galvanised according to DIN EN ISO 19598, blue passivated, (connecting elements galvanised according to DIN EN ISO 4042)
VC Steel, electro galvanised according to DIN EN ISO 19598, blue passivated and powdercoated
VZL Steel, electro galvanised, passivated, top layer sealed
G Steel, electro galvanised according to DIN EN ISO 19598, thick-film passivated, (connecting elements galvanised according to DIN EN ISO 4042)
S Steel, pre-galvanised according to DIN EN 10346
F Steel, hot dip galvanised according to DIN EN ISO 1461 (replacement for DIN 50 976), (connecting elements hot dip galvanised according to DIN EN ISO 10684)
SB Steel, black-oxide finish
FG Steel, geomet® galvanised
DV Steel, wire galvanised according to DIN EN 10244
C1 Epoxy Coating, halogen-free
C COLOR Steel, pre-galvanised and powder coated

C	STANDARD COLOUR	SURFACE IN ALUMINIUM		GRP - COLOURS			
	VW	N	P				
Complete model-No for the colour identity	traffic white RAL 9016 on stock	aluminium natural anodized	aluminium plate-finished	pebble grey RAL 7032	traffic yellow RAL 1023	signal yellow RAL 1003	ruby red RAL 3003

Other RAL colours on request. For possible colour divergences we assume no liability.

F1 Steel, zinc coating and chromate Steel, zinc coating & chromate Thickness of zinc is between 8-12 microns, electrolytic galvanizing & additionally chromated. Corrosion resistance measured by using a salt spray test acc. to DIN 50021 (ASTM-B117-90) at least 72 hours.	F6 Natural colour Untreated material against corrosion.
F2 Steel, hot dip galvanised Thickness of zinc between 50-70 microns, after immersion machining in a bath of molten zinc.	F7 Steel, plastic coating EVA (Ethylene Vinyl Acetate Copolymer Saponifies, Levasint®) resistance to fire according to DIN 4102.
F3 Stainless steel (material code: 1.4401 [316]) Indoor use / Outdoor in humid environments and moderately aggressive.	F8 Steel, mechanical zinc plated / passivated High quality coating. Corrosion resistance measured by means of a test salt spray according to DIN 50 021 (ASTM-B117-90) is at least 500 hours.
F4 Steel, coated Dekor-lacquer interior use in dry environments and not corrosive.	F9 Steel, mechanical zinc plated / passivated High quality coating. Corrosion resistance measured by means of a test salt spray according to DIN 50021 (ASTM-B117-90) is at least 600 hours.
F5 Brass For indoor use only.	F10 Steel, electrical mechanical / passivated Zinc coating thickness of 5 microns, electrolytically applied and clear passivated according to BS EN 12329 2000 FE/ZN5/A.

AL Aluminium, N = naturally anodized, P = mill-finished, C = powdercoated in RAL colours

P Electrotechnical Porcelain, halogen-free **MS** Brass **CU** Copper

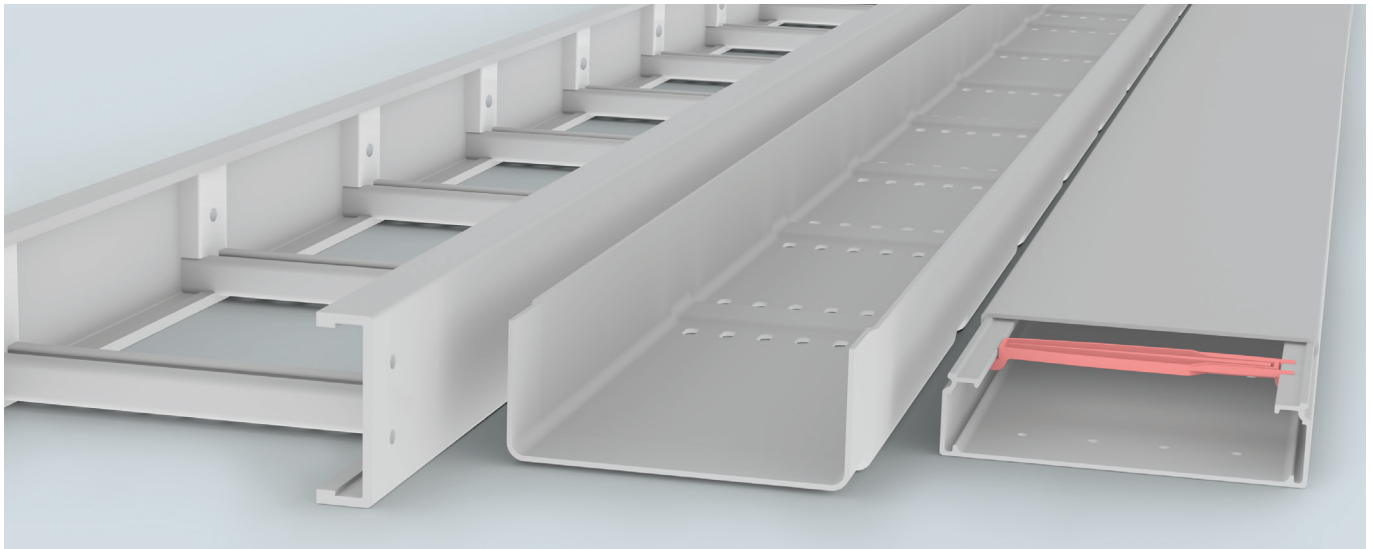
Stainless Steel



E1 Material code: 1.4016	E4 Material code: 1.4404/AISI 316L	E7 Material code: 1.4547	E10 Material code: 1.4307/AISI 304L
E2 Material code: 1.4310	E5 Material code: 1.4571/AISI 316Ti	E8 Material code: 1.4430	E11 Material code: 1.4034
E3 Material code: 1.4301/AISI 304	E6 Material code: 1.4529	E9 Material code: 1.4362	E12 Material code: 1.4462

Plastics/Elastomer

K01 PA - Polyamide, halogen-free	K14 POM - Polyoxymethylene, halogen-free
K02 PS - Polystyrene, impact resistant, halogen-free	K15 SBR - Styrene Butadiene Rubber, halogen-free
K03 PE - Polyethylene, halogen-free	K16 CR/NBR - Chloroprene/Nitrile Butadiene Rubber, halogenated
K04 PP - Polypropylene, halogen-free	K17 CR/SBR - Chloroprene/Styrene Butadiene Rubber, halogenated
K05 PC - Polycarbonate, halogen-free	K18 TPE - Thermoplastic Elastomers, halogen-free
K06 SBR/NBR - Styrene Butadiene Nitrile Rubber, halogen-free	K19 FS 31 - Moulding material 31 (Phenolic Resin), halogen-free
K07 CR - Neoprene (Chloroprene Rubber), halogen-free	K20 SI - Silicone Rubber, halogen-free
K08 NBR - Nitrile Butadiene Rubber, halogen-free	K21 PUR - Polyurethanes, halogen-free
K09 PVC-hard - Polyvinyl Chloride Hard, halogenated	K22 PET - Polyethylene Terephthalate, halogen-free
K10 PVC-soft - Polyvinyl Chloride Soft, halogenated	K23 UP-GF - Glass Fiber Reinforced Polyester, halogen-free
K11 ABS - Acrylonitrile Butadiene Styrene, halogen-free	K24 PBT - Polybutylene Terephthalate, halogen-free
K12 ASA - Acrylic Acid Ester-Styrene-Acrylonitrile Graft Copolymer, halogen-free	



GRP CABLE SUPPORT SYSTEMS

Cable support systems made of glass fibre reinforced plastic are part of the Niedax product portfolio and are manufactured by the subsidiary Ebo Systems in France. Ebo Systems has been part of the Niedax Group since 2010 and is one of the global market leaders in the field of GRP cable support systems. Ebo Systems was founded in 1959 in Adliswil, Switzerland. In 1972, a new production facility was built in Villers-La-Montagne in France, close to the Luxembourg border, which is still the main production site today.

FLEXIBILITY, SERVICE AND CUSTOMER PROXIMITY

are our top priorities! We achieve these characteristics not least through good organisation and logistics. Operating from our central warehouse at Ebo Systems, strategically located at the heart of Europe near the Luxembourg border, we ensure nationwide supply. Global orientation in all major markets is also of great importance. With our own sales companies, production facilities and our international corporate partners, we can provide the best references.

PLEASE NOTE

- The coefficient of linear expansion α indicates the increase (decrease) in length that the unit of length of a body experiences at a temperature change by 1 K. α Steel = $0,012 \times 10^{-3} \text{ K}^{-1}$, α Aluminium = $0,024 \times 10^{-3} \text{ K}^{-1}$, α PVC = $0,072 \times 10^{-3} \text{ K}^{-1}$
 α GRP pressed = $0,040 \times 10^{-3} \text{ K}^{-1}$, α GRP pultruded = $0,008 \times 10^{-3} \text{ K}^{-1}$
 $\Delta l = l \text{ Channel} \times \alpha \times \Delta \vartheta$, Δl : Length change, α : Coefficient of linear expansion, $\Delta \vartheta$: Temperature difference in K
- If there is an accumulation of power cables, pay attention to heating, see DIN VDE 0298 Part 4.
- For the installation of our electrical installation trunking systems, the installer regulations DIN VDE 0100-410 and DIN VDE 0100-540 must be observed.
- Fittings and joint connectors must be additionally supported at the joints with the load specifications given. Otherwise the position of the joint is independent of the bracket position.
- The permissible load capacity is reduced by the "weight per metre" when using covers.
- As a matter of principle, cable trays/ladders must not be walked on and laterally loaded (e.g. by applied ladders).
- The occurring brackets support load is calculated as follows, assuming an evenly distributed cable load and continuous beams:
 Support load $F = (\text{cable load} + \text{dead weight of components}) \times \text{support span}$.
 The dead weight of the components used in each case (cable trays/ladders, fittings, brackets, etc.) can be taken from the tables. It is particularly important to note that the anchoring forces that occur are usually many times greater than the support loads themselves due to the leverage effect. The introduction of these forces into the structure as well as the type of anchoring must always be coordinated with the construction planning or site management.
- To ensure safe handling, the use of suitable protective clothing is required for transport and processing.
- Slight deviations of the illustrations from the articles are possible. However, the function and interaction are given.

SUBSIDIARIES WORLDWIDE



This catalogue will give you an overview of our extensive product range in the field of GRP systems. We will also be happy to provide you with advice and support:

Further information and contact details as well as an overview of all Niedax Group catalogues can be found at:

+33 382 440 107

info@ebo-systems.com

www.ebo-systems.com

Cable Support Systems in Glass Reinforced Polyester

are characterized by their extreme resistance because no other material is as strong as fiberglass reinforced polyester. In extreme conditions such as heat, sunlight (UV), cold or exposure to chemicals, material performs its function and for many years.

Qualities and advantages

- high temperature resistance (-80 ° C à +130 ° C)
- high mechanical resistance
- high chemical resistance
- high dielectric strength
- corrosion resistance
- extremely insulating material
- halogen free
- UV resistance
- food security
- low weight
- low thermal conductivity
- simple and without burr when changes
- extraordinary long lifetime
- self-extinguishing material
- no electrolytic corrosion
- no need to earth
- without toxic fumes
- optimal transportation and handling

The GRP cable support systems offer maximum flexibility and cost-effectiveness. The wide-ranging programme guarantees that the different applications for line and cable routing are covered. Special dimensions are possible on request.

Accessories specially adapted to the systems as well as the large range of standard fittings enable a simple and flexible installation technique. This means that horizontal and vertical changes of direction can be made on site without any problems.

Ebo has been certified since 1994 according to ISO 9001.

What does it mean for you as a client:



- ongoing evaluation and classification of suppliers
- the systematic control of raw materials and semi-finished goods receipt
- a regular review of technical data of materials in the laboratory
- perfect control of the manufacturing
- monitoring of the manufacturing process
- final inspection before shipment

Other certificates are available on our web site: www.niedax.com

- When processing our GRP products, we recommend wearing protective clothing: Safety gloves, safety goggles, filter mask and long-sleeved cotton shirts and trousers, to avoid possible skin irritation due to dusts.

SYSTEMS AT A GLANCE

Cable Trays System K² In the side heights 50 - 600 mm

- Mechanical strength due to special resin mixture
- Made of pressed fiber mats with long glass fibers
- Self-adjusting socket connection, no screws required
- 20 Cable tray dimensions with and without perforation
- 187 Fittings available
- Maximum fastening spacing 1.5 m

Application areas

including sewage treatment plants, PV/solar plants, chemical industry, onshore/offshore, tunnels, solar and photovoltaic facilities, industrial plants, power stations, mines, agricultural operations and food production



Cable Trays System KP In the side heights 60 - 300 mm

- Made from pultruded glass fibers
- With clip connector, no screws necessary
- Automatic regulation of the expansion distance using clip connector KPGH...
- Cable trays with and without perforation
- Snap-on and form-fitting lid
- Maximum fastening spacing 4 m

Application areas

including sewage treatment plants, PV/solar plants, chemical industry, onshore/offshore, tunnels, solar and photovoltaic facilities, industrial plants, power stations, mines, agricultural operations and food production



Cable Ladder System UL In the side heights 150 - 900 mm

- Made from pultruded glass fibers
- 30 Cable ladder dimensions
- Delivery assembled as standard
- Screwless assembly possible on site
- Considerable reduction in freight costs
- No metal connecting parts through patented clamp fastening of the rungs
- No damage to the cables during cable pulling
- Higher vibration resistance
- Turned rungs possible
- Fittings for all requirements
- Maximum fastening spacing 5 m

Application areas

including sewage treatment plants, PV/solar plants, chemical industry, onshore/offshore, tunnels, solar and photovoltaic facilities, industrial plants, power stations, mines, agricultural operations and food production



Cable Routing Ducts System LFG ↑40 ↓ ↑50 ↓ ↑80 ↓ In the side heights 57 - 300 mm K23

- Made from pultruded glass fibers
- 8 Channel dimensions
- Secure cable retention using clamp technology
- Extreme resistance

Application areas

including sewage treatment plants, stables, refineries, onshore, offshore platforms, PV systems, tunnel constructions, on building sites or in the food industry

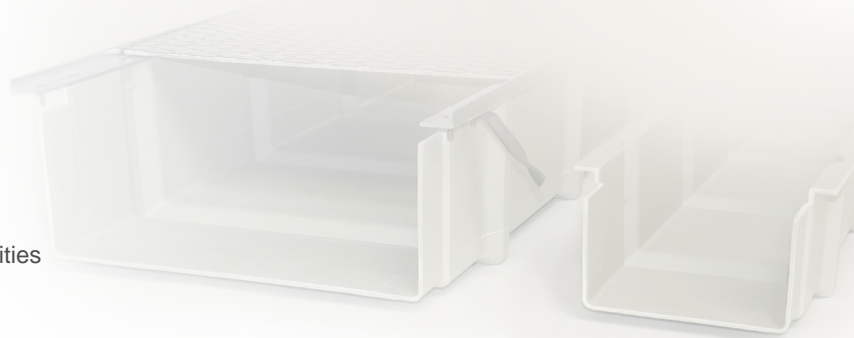


Walkable Floor Duct System BK/BKS ↑140 ↓ ↑155 ↓ ↑176 ↓ ↑191 ↓ In the side heights 200 - 400 mm K23

- Made from pressed glass fiber mats
- Socket connection, no screws necessary
- Pre-assembled fixing anchors
- Frost-resistant and particularly resistant to loads

Application areas

including bridge structures, tunnels, mines or port facilities



Stand System SP ↑150 ↓ In the side heights 150 - 250 mm K23

- Made from pultruded glass fibers
- Electrically non-conductive, no earthing required
- Low dead weight
- Electrical strength 30 kV with certificate from IPH Berlin

Application areas

including rail transport and rail technology



Handrail Systems TUBE and MC K23

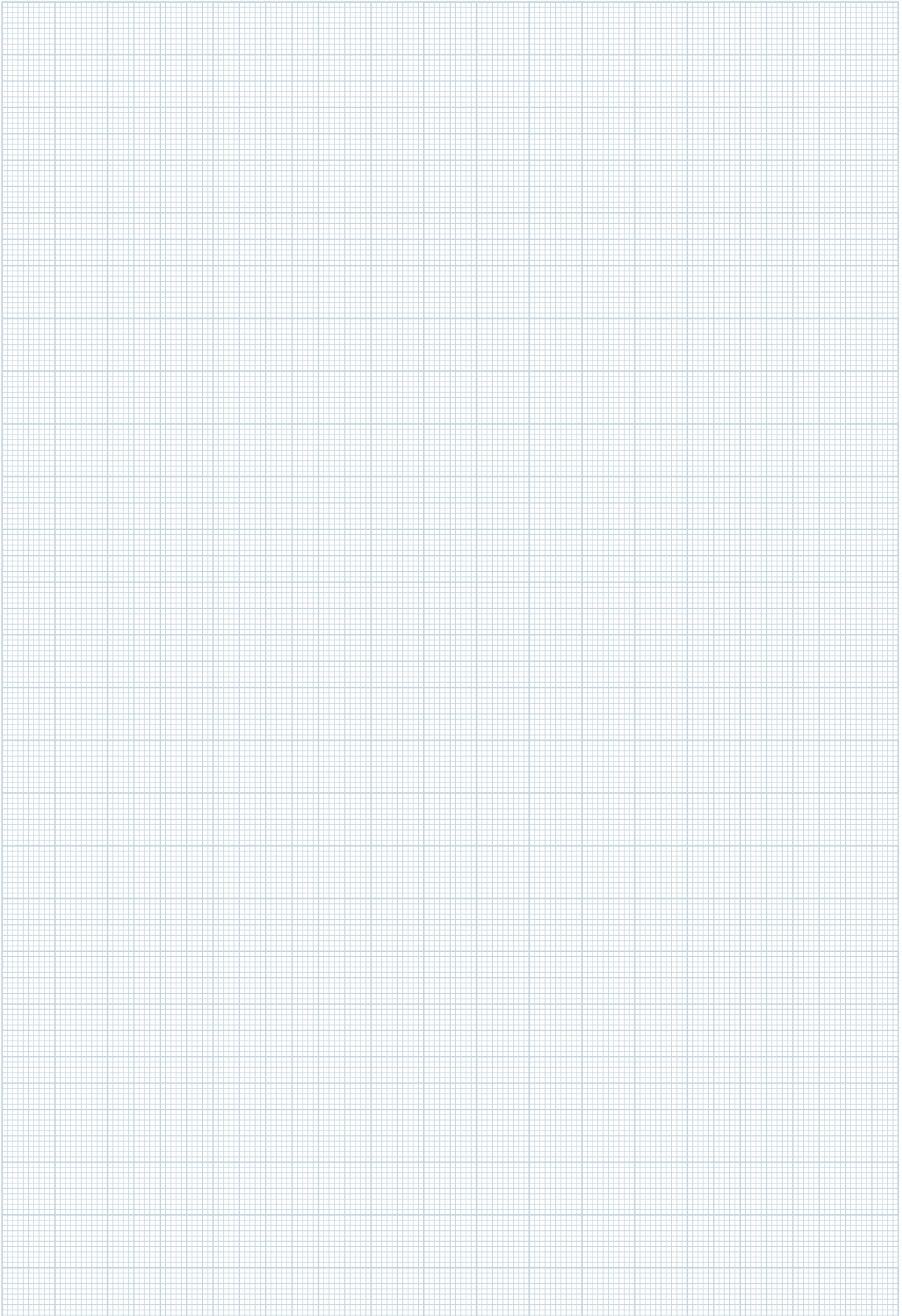
- Made from pultruded glass fibers
- Normal flammability and self-extinguishing
- Low thermal conductivity
- Maximum fastening spacing 1.5 m

Application areas

including industrial and tunnel systems



NOTES



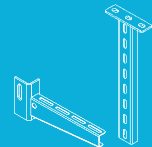
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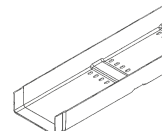
Support System

- Overhead Hanger- and Wall Brackets
- Brackets
- Supports
- Overhead Hangers
- Profiles
- Screw Head Plates
- C-Profiles



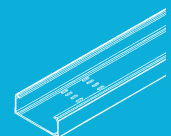
Cable Tray System K²

- Cable Trays
- Barrier Strips
- Fittings
- Covers
- Accessories



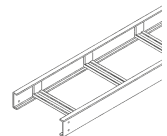
Cable Tray System KP

- Cable Trays
- Barrier Strips
- Fittings
- Covers
- Accessories



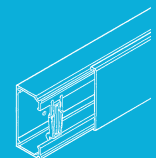
Cable Ladder System UL

- Cable Ladder
- Barrier Strips
- Fittings
- Covers
- Accessories



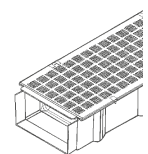
Cable Routing Ducts System LFG

- Cable Routing Ducts
- Barrier Strips
- Fittings
- Accessories



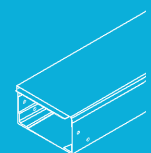
Walkable Floor Duct System BK/BKS

- Cable Trays
- Barrier Strips
- Covers
- Accessories



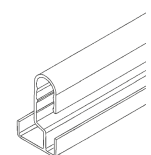
Stand System SP

- Cable laying system for rail transport



Handrail Systems TUBE and MC

- Handrail Profiles
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DFW 100.900	968220	156	HU 5050/250 C1KG	967124	27	KKBA 50.300	953875	43
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DFW 150.200	968244	156	HU 5050/300 C1KG	967131	27	KKBA 80.150	953899	53
DFW 150.300	968251	156	HU 5050/300 E5	945702	26	KKBA 80.200	953905	53
DFW 150.400	968268	156	HU 5050/400	858767	26	KKBA 80.250	953912	53
DFW 150.450	968275	156	HU 5050/400 C1KG	967148	27	KKBA 80.300	953929	53
DFW 150.500	968282	156	HU 5050/400 E5	945764	26	KKBA 80.400	953936	53
DFW 150.600	968299	156	HU 5050/500	858781	26	KKBA 80.500	953943	53
DFW 150.750	968305	156	HU 5050/500 C1KG	967155	27	KKBA 80.600	953950	53
DFW 150.900	968312	156	HU 5050/500 E5	945771	26	KKBAD 110.100	956753	69
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DFW 53.400	968053	156	HU 5050/700	858828	26	KKBAD 110.500	956791	69
DFW 53.500	968060	156	HU 5050/700 C1KG	967179	27	KKBAD 110.600	956807	69
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FKM 6X16 E4	962693	102	KK 110.400	952175	55	KKBAD 80.100	956678	69
FKM 6X16 E4	962693	159	KK 110.500	952182	55	KKBAD 80.150	956678	96
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LFG 40.060	948567	166	U 5050/1200 C1KG	967353	29	UL 80.400	958122	117
LFG 50.100	948574	166	U 5050/1200 F	918744	28	UL 80.400/3	958139	117
LFG 50.150	948581	166	U 5050/1500 C1KG	967360	29	UL 80.500	958146	117
LFG 50.200	948598	166	U 5050/1500 F	918768	28	UL 80.500/3	958153	117
LFG 80.100	948604	166	U 5050/2000 C1KG	967377	29	UL 80.600	958160	117
LFG 80.150	948611	166	U 5050/2000 F	918782	28	UL 80.600/3	958177	117
LFG 80.200	948628	166	U 5050/300 C1KG	967384	29	ULB 100.150	958672	132
LFG 80.300	948635	166	U 5050/300 E5L	965977	28	ULB 100.200	958689	132
LFGAC 40.060	967605	168	U 5050/300 F	918560	28	ULB 100.300	958696	132
LFGAC 50.100	948833	168	U 5050/3000 F	859306	28	ULB 100.400	958702	132
LFGAC 50.150	948840	168	U 5050/400 C1KG	967391	29	ULB 100.450	958719	132
LFGAC 50.200	948857	168	U 5050/400 E5L	965984	28	ULB 100.500	958726	132
LFGAC 80.100	948864	168	U 5050/400 F	918584	28	ULB 100.600	958733	132
LFGAC 80.150	948871	168	U 5050/500 C1KG	967407	29	ULB 100.750	958757	132
LFGAC 80.200	948888	168	U 5050/500 E5L	965991	28	ULB 100.900	958771	132
LFGAC 80.300	948895	168	U 5050/500 F	918607	28	ULB 150.150	958788	143
LFGIC 40.060	948758	168	U 5050/600 C1KG	967414	29	ULB 150.200	958795	143
LFGIC 50.100	948765	168	U 5050/600 E5L	966004	28	ULB 150.300	958801	143
LFGIC 50.150	948772	168	U 5050/600 F	918621	28	ULB 150.400	958818	143
LFGIC 50.200	948789	168	U 5050/6000 E5L	966035	28	ULB 150.450	958825	143
LFGIC 80.100	948796	168	U 5050/6000 F	859320	28	ULB 150.500	958832	143
LFGIC 80.150	948802	168	U 5050/700 C1KG	967421	29	ULB 150.600	958849	143
LFGIC 80.200	948819	168	U 5050/700 F	918645	28	ULB 150.750	958863	143
LFGIC 80.300	948826	168	U 5050/800 C1KG	967438	29	ULB 150.900	958887	143
LFGKH 100	948710	167	U 5050/800 E5L	966011	28	ULB 53.150	958559	113
LFGKH 150	948727	167	U 5050/800 F	918669	28	ULB 53.200	958566	113
LFGKH 200	948734	167	U 5050/900 C1KG	967445	29	ULB 53.300	958573	113
LFGKH 300	948741	167	U 5050/900 F	918683	28	ULB 53.400	958580	113
LFGKH 60	948703	167	UL 100.150	958184	126	ULB 53.500	958597	113
LFGT 50	948659	168	UL 100.150/3	958191	126	ULB 53.600	958603	113
LFGT 50/M	968343	168	UL 100.200	958207	126	ULB 80.150	958610	123
LFGT 80	948666	168	UL 100.200/3	958214	126	ULB 80.200	958627	123
LFGT 80/M	968350	168	UL 100.300	958221	126	ULB 80.300	958634	123
LFGWC 40.060	948901	169	UL 100.300/3	958238	126	ULB 80.400	958641	123
LFGWC 50.100	948918	169	UL 100.400	958245	126	ULB 80.500	958658	123
LFGWC 50.150	948925	169	UL 100.400/3	958252	126	ULB 80.600	958665	123
LFGWC 50.200	948932	169	UL 100.450	958269	126	ULBA 100.150	959013	134
LFGWC 80.100	948949	169	UL 100.450/3	958276	126	ULBA 100.200	959020	134
LFGWC 80.150	948956	169	UL 100.500	958283	126	ULBA 100.300	959037	134
LFGWC 80.200	948963	169	UL 100.500/3	958290	126	ULBA 100.400	959044	134
LFGWC 80.300	948970	169	UL 100.600	958306	126	ULBA 100.450	959051	134
MP 110	963034	63	UL 100.600/3	958313	126	ULBA 100.500	959068	134
MP 50	963010	43	UL 100.750	958344	126	ULBA 100.600	959075	134
MP 80	963027	53	UL 100.750/3	958351	126	ULBA 100.750	959099	134
PR M860/PA6	968398	201	UL 100.900	958382	126	ULBA 100.900	959112	134
PR-MC 10	965489	200	UL 100.900/3	958399	126	ULBA 150.150	959129	145
PR-MC 10 GH	968367	200	UL 150.150	958405	137	ULBA 150.200	959136	145
PR-MC 10 GM	968374	201	UL 150.150/3	965168	137	ULBA 150.300	959143	145
PR-MC 10 KE	968381	201	UL 150.200	958412	137	ULBA 150.400	959150	145
PR-MC 22	965496	202	UL 150.200/3	965175	137	ULBA 150.450	959167	145
PR-MC 22 BA	966158	205	UL 150.300	958429	137	ULBA 150.500	959174	145
PR-MC 22 HBV	966219	204	UL 150.300/3	965182	137	ULBA 150.600	959181	145
PR-MC 22 KE	966172	202	UL 150.400	958436	137	ULBA 150.750	959204	145
PR-MC 22 KE/C	966196	203	UL 150.400/3	965199	137	ULBA 150.900	959228	145
PR-MC 22 KE/CP	966202	204	UL 150.450	958443	137	ULBA 53.150	958894	114
PR-MC 22 KE/P	966189	203	UL 150.450/3	965205	137	ULBA 53.200	958900	114
PR-MC 30	965502	206	UL 150.500	958450	137	ULBA 53.300	958917	114

LIST OF ITEMS

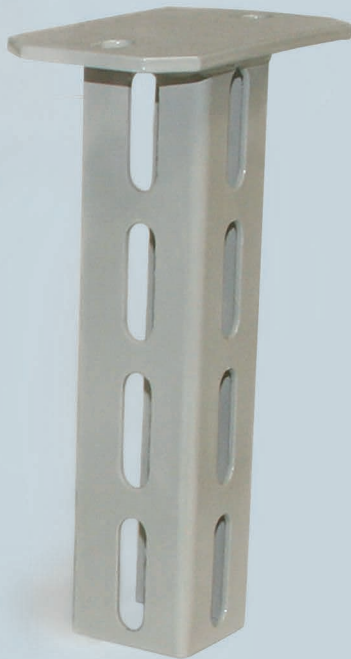
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ULBA 53.500	958931	114	ULGH 80/150	229390	119	ULL 53.200	104055	109
ULBA 53.600	958948	114	ULGV 100	960255	136	ULL 53.200/3	105915	109
ULBA 80.150	958955	123	ULGV 150	960262	147	ULL 53.300	104062	109
ULBA 80.200	958962	123	ULGV 53	960231	115	ULL 53.300/3	105922	109
ULBA 80.300	958979	123	ULGV 80	960248	125	ULL 53.400	104079	109
ULBA 80.400	958986	123	ULIH 100 E4	960217	129	ULL 53.400/3	105939	109
ULBA 80.500	958993	123	ULIH 150 E4	960224	140	ULL 53.500	104086	109
ULBA 80.600	959006	123	ULIH 53 E4	960194	111	ULL 53.500/3	105946	109
ULBAD 100.150	957538	151	ULIH 80 E4	960200	120	ULL 53.600	104093	109
ULBAD 100.200	957545	151	ULIV 100 E4	960293	136	ULL 53.600/3	105953	109
ULBAD 100.300	957552	151	ULIV 150 E4	960309	147	ULL 80.150	105649	118
ULBAD 100.400	957569	151	ULIV 53 E4	960279	116	ULL 80.150/3	105960	118
ULBAD 100.450	957576	151	ULIV 80 E4	960286	125	ULL 80.200	104116	118
ULBAD 100.500	957583	151	ULKE 100.150	965526	128	ULL 80.200/3	105977	118
ULBAD 100.600	957590	151	ULKE 100.200	965533	128	ULL 80.300	104123	118
ULBAD 100.750	957613	151	ULKE 100.300	965540	128	ULL 80.300/3	105984	118
ULBAD 100.900	957637	151	ULKE 100.400	965557	128	ULL 80.400	104130	118
ULBAD 150.150	059089	152	ULKE 100.450	965564	128	ULL 80.400/3	105991	118
ULBAD 150.200	059096	152	ULKE 100.500	965571	128	ULL 80.500	104147	118
ULBAD 150.300	059119	152	ULKE 100.600	965588	128	ULL 80.500/3	106011	118
ULBAD 150.400	059126	152	ULKE 100.750	965601	128	ULL 80.600	104154	118
ULBAD 150.450	059133	152	ULKE 100.900	965625	128	ULL 80.600/3	106028	118
ULBAD 150.500	059140	152	ULKE 150.150	965632	139	ULLB 100.150	104161	133
ULBAD 150.600	059157	152	ULKE 150.200	965649	139	ULLB 100.200	104178	133
ULBAD 150.750	059164	152	ULKE 150.300	965656	139	ULLB 100.300	104185	133
ULBAD 150.900	059171	152	ULKE 150.400	965663	139	ULLB 100.400	104192	133
ULBAD 53.150	059188	150	ULKE 150.450	965670	139	ULLB 100.450	104215	133
ULBAD 53.200	059195	150	ULKE 150.500	965687	139	ULLB 100.500	104222	133
ULBAD 53.300	059218	150	ULKE 150.600	965694	139	ULLB 100.600	104239	133
ULBAD 53.400	059225	150	ULKE 150.750	965717	139	ULLB 100.750	104253	133
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ULBAD 80.150	059256	150	ULKE 53.200	965755	109	ULLB 150.200	104291	144
ULBAD 80.200	059263	150	ULKE 53.300	965762	109	ULLB 150.300	104314	144
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ULBAD 80.400	059287	150	ULKE 53.500	965786	109	ULLB 150.450	104338	144
ULBAD 80.500	059294	150	ULKE 53.600	965793	109	ULLB 150.500	104345	144
ULBAD 80.600	059317	150	ULKE 80.150	965809	118	ULLB 150.600	104352	144
ULBD 150	957422	149	ULKE 80.200	965816	118	ULLB 150.750	104376	144
ULBD 200	957439	149	ULKE 80.300	965823	118	ULLB 150.900	104390	144
ULBD 300	957446	149	ULKE 80.400	965830	118	ULLB 53.150	104413	114
ULBD 400	957453	149	ULKE 80.500	965847	118	ULLB 53.200	104420	114
ULBD 450	957460	149	ULKE 80.600	965854	118	ULLB 53.300	104437	114
ULBD 500	957477	149	ULKG	960316	158	ULLB 53.400	104444	114
ULBD 600	957484	149	ULL 100.150	103867	127	ULLB 53.500	104451	114
ULBD 750	957507	149	ULL 100.150/3	106189	127	ULLB 53.600	104468	114
ULBD 900	957521	149	ULL 100.200	103874	127	ULLB 80.150	104475	123
ULBG 100.150	967681	133	ULL 100.200/3	106196	127	ULLB 80.200	104482	123
ULBG 100.200	967698	133	ULL 100.300	094578	127	ULLB 80.300	104499	123
ULBG 100.300	967704	133	ULL 100.300/3	106219	127	ULLB 80.400	104512	123
ULBG 100.400	967711	133	ULL 100.400	103881	127	ULLB 80.500	104529	123
ULBG 100.450	967728	133	ULL 100.400/3	106226	127	ULLB 80.600	104536	123
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ULBG 150.200	967780	144	ULL 100.600/3	106257	127	ULLBA 100.500	106622	135
ULBG 150.300	967797	144	ULL 100.750	103928	127	ULLBA 100.600	106639	135
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ULBG 150.450	967810	144	ULL 100.900	103942	127	ULLBA 100.900	106677	135
ULBG 150.500	967827	144	ULL 100.900/3	106295	127	ULLBA 150.150	106684	146
ULBG 150.600	967834	144	ULL 150.150	103959	138	ULLBA 150.200	106691	146
ULBG 150.750	967841	144	ULL 150.150/3	106318	138	ULLBA 150.300	106714	146
ULBG 150.900	967858	144	ULL 150.200	103966	138	ULLBA 150.400	106721	146
ULBGD 150	967940	149	ULL 150.200/3	106325	138	ULLBA 150.450	106738	146
ULBGD 200	967957	149	ULL 150.300	103973	138	ULLBA 150.500	106745	146
ULBGD 300	967964	149	ULL 150.300/3	106332	138	ULLBA 150.600	106752	146
ULBGD 400	967971	149	ULL 150.400	103980	138	ULLBA 150.750	106769	146
ULBGD 450	968329	149	ULL 150.400/3	106349	138	ULLBA 150.900	106790	146
ULBGD 500	967988	149	ULL 150.450	103997	138	ULLBA 53.150	106431	114
ULBGD 600	967995	149	ULL 150.450/3	106356	138	ULLBA 53.200	106448	114
ULBGD 750	968008	149	ULL 150.500	104017	138	ULLBA 53.300	106455	114
ULBGD 900	968015	149	ULL 150.500/3	106363	138	ULLBA 53.400	106462	114
ULGH 100	960170	128	ULL 150.600	094592	138	ULLBA 53.500	106486	114
ULGH 100/150	094745	129	ULL 150.600/3	106370	138	ULLBA 53.600	106479	114
ULGH 150	960187	139	ULL 150.750	104031	138	ULLBA 80.150	106493	124
ULGH 150/150	094844	140	ULL 150.750/3	106394	138	ULLBA 80.200	106516	124
ULGH 53	960156	110	ULL 150.900	094615	138	ULLBA 80.300	106523	124
ULGH 53/150	229383	110	ULL 150.900/3	106424	138	ULLBA 80.400	106530	124



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ULLBA 80.600	106554	124	ULLX 150.600	105090	143	ULTE 53.600	959280	112
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ULLBG 100.200	105625	134	ULLX 150.900	105144	143	ULTE 80.200	959303	121
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ULLBG 100.450	105588	134	ULLX 53.300	105175	113	ULTE 80.500	959334	121
ULLBG 100.500	105571	134	ULLX 53.400	105182	113	ULTE 80.600	959341	121
ULLBG 100.600	105564	134	ULLX 53.500	105199	113	ULTED 150	957644	152
ULLBG 100.750	105557	134	ULLX 53.600	105212	113	ULTED 200	957651	152
ULLBG 100.900	105540	134	ULLX 80.150	105229	122	ULTED 300	957668	152
ULLBG 150.150	105533	145	ULLX 80.200	105236	122	ULTED 400	957675	152
ULLBG 150.200	105526	145	ULLX 80.300	105243	122	ULTED 450	957682	152
ULLBG 150.300	105519	145	ULLX 80.400	105250	122	ULTED 500	957699	152
ULLBG 150.400	105496	145	ULLX 80.500	105267	122	ULTED 600	957705	152
ULLBG 150.450	105489	145	ULLX 80.600	105274	122	ULTED 750	957729	152
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ULLBG 150.750	105458	145	ULRU 100.150	960026	135	ULTL 150	958542	141
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ULLTE 100.500	104581	131	ULRU 150.100	960088	146	ULX 100.400	959723	131
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ULLTE 100.750	104628	131	ULRU 150.200	960101	146	ULX 100.500	959747	131
ULLTE 100.900	104642	131	ULRU 150.300	960118	146	ULX 100.600	959754	131
ULLTE 150.150	104659	142	ULRU 150.400	960125	146	ULX 100.750	959778	131
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ULLX 100.450	104956	132	ULTE 150.400	959495	141	ULXD 300	957774	153
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ULLX 100.600	104970	132	ULTE 150.500	959518	141	ULXD 450	957798	153
ULLX 100.750	104994	132	ULTE 150.600	959525	141	ULXD 500	957804	153
ULLX 100.900	105021	132	ULTE 150.750	959549	141	ULXD 600	957811	153
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ULLX 150.400	105069	143	ULTE 53.300	959259	112	WWU 150/8 E5	728909	159
ULLX 150.450	105076	143	ULTE 53.400	959266	112			

GRP CABLE SUPPORT SYSTEMS





SUPPORT SYSTEM

- Overhead Hanger- and Wall Brackets
- Profiles
- Brackets
- Screw Head Plates
- Supports
- C-Profiles
- Overhead Hangers

Compatible with the individual channel types, the various support structures are also offered in several surface finishes. The product range extends from hot-dip galvanised steel, epoxy polyester resin-coated hot-dip galvanised steel, stainless steel to glass fibre-reinforced plastic.

Different dimensions with corresponding hole patterns as well as various load capacities from light to very heavy versions give you a free hand for individual fastening to floors, walls and ceilings.

System overview Overhead Hanger- and Wall Bracket

SYSTEM	Overhead Hanger- and Wall Bracket, medium duty	KTAM...	P. 22
	Overhead Hanger- and Wall Bracket, standard	KTA...	P. 22
	Overhead Hanger- and Wall Bracket, epoxied, standard	KTA...	P. 23
	GRP-Bracket, pressed	FPAM...	P. 23
	GRP-Bracket, pultruded	FPAP...	P. 24
	GRP-Bracket, pultruded, Z-profile, adjustable	FPCO...	P. 25
	GRP-Support, pultruded, adjustable	FPPS	P. 25
	Overhead Hanger, U-profile	HU 5050/...	P. 26
	Overhead Hanger, epoxied, U-profile	HU 5050/...	P. 27
	Overhead Hanger-Distance Profile	HDS...	P. 28
	Profile U 5050	U 5050/...	P. 28
	Profile U 5050, epoxied	U 5050/...	P. 29
	Screw Head Plate	KU...	P. 29
	Screw Head Plate, epoxied	KU 5050 C1KG	P. 29
	GRP-Overhead Hanger, pultruded, C-profile	FPES...	P. 30
	GRP-Overhead Hanger, pultruded, double C-profile	FPDS...	P. 30
ACCESSORIES	Anchor Bolt, incl. sliding nut with serration and washer	FPBGV 10 E4	P. 30
	GRP C-Profile, pultruded, C-profile, slot width 15 mm, with 2 end holes	FPAR...	P. 31
	Protective Cap	KA 100-600	P. 23
	Protective Cap	SKU 5050	P. 27

Special designs on request.

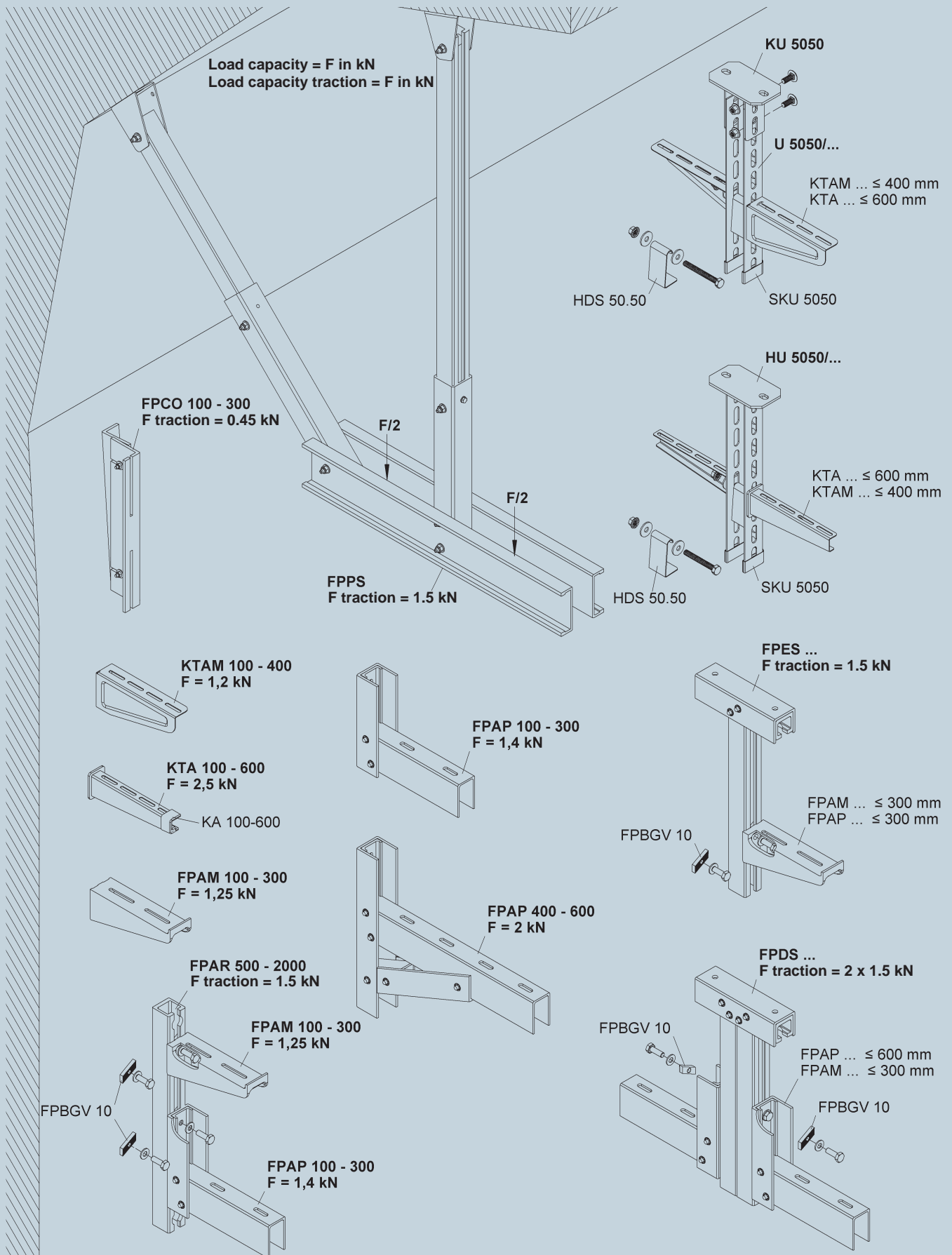
The designations "medium duty" and "standard" have been assigned to the products for easier communication.

- When planning the system, the respective load-bearing capacity specifications must be included in the calculation. Assuming an evenly distributed cable load and continuous beams, the support load of the boom is calculated as follows:

Support load $F = (\text{cable load} + \text{dead weight of components}) \times \text{span}$

The dead weight of the individual components (trough, fittings, cantilever etc.) can be taken from the tables. Please note that the anchoring forces that occur are usually many times greater than the support loads themselves due to the leverage effect.

The introduction of these forces into the structure and the type of anchoring must always be agreed with the site management.



SUPPORT SYSTEM

Overhead Hanger- and Wall Bracket

medium duty

	Model No.	Height H	Length L	Load capacity at L/2	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	kN				
E5	KTAM 100 E5	60	110	1,2	2 FLM 6X12 E5	728305	16,56	20 pcs.
E5	KTAM 200 E5	80	210	1,2	2 FLM 6X12 E5	728404	30,66	20 pcs.
E5	KTAM 300 E5	85	310	1,2	2 FLM 6X12 E5	728503	44,38	20 pcs.
E5	KTAM 400 E5	115	410	1,2	2 FLM 6X12 E5	728602	74,04	20 pcs.

for a wall and overhead hanger mounting

Warning: different models for various lengths

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

Please order the necessary fastening accessories separately:

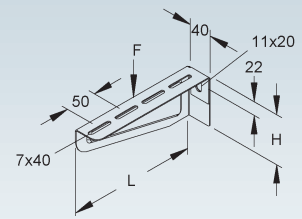
for cable trays KK... und KP...: 2 FKM 6X20 E4

for overhead hanger HU 5050/...: 1 HDS 50.50

for profile U 5050/...: 1 HDS 50.50



GRP 221



Overhead Hanger- and Wall Bracket

standard

	Model No.	Height H	Width B	Length L	Load capacity at L/2	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	kN				
F	KTA 100	45	40	110	2,5	2 FLM 6X12	186907	15,52	20 pcs.
F	KTA 150	45	40	160	2,5	2 FLM 6X12	187003	19,79	20 pcs.
F	KTA 200	55	40	210	2,5	2 FLM 6X12	187102	27,41	20 pcs.
F	KTA 250	55	40	260	2,5	2 FLM 6X12	187201	32,50	20 pcs.
F	KTA 300	65	50	310	2,5	2 FLM 6X12	187300	59,08	20 pcs.
F	KTA 350	65	50	360	2,5	2 FLM 6X12	187409	66,35	20 pcs.
F	KTA 400	75	50	410	2,5	2 FLM 6X12	187508	79,06	20 pcs.
F	KTA 450	75	50	460	2,5	2 FLM 6X12	187607	88,02	10 pcs.
F	KTA 500	90	50	510	2,5	2 FLM 6X12	187706	111,01	10 pcs.
F	KTA 550	90	50	560	2,5	2 FLM 6X12	187805	133,95	10 pcs.
F	KTA 600	90	50	610	2,5	2 FLM 6X12	187904	127,42	10 pcs.
E5	KTA 100 E5	45	40	110	2,5	2 FLM 6X12 E5	842605	14,48	20 pcs.
E5	KTA 200 E5	55	40	210	2,5	2 FLM 6X12 E5	842629	25,35	20 pcs.
E5	KTA 300 E5	65	50	310	2,5	2 FLM 6X12 E5	842643	54,71	20 pcs.
E5	KTA 400 E5	75	50	410	2,5	2 FLM 6X12 E5	842667	70,19	20 pcs.
E5	KTA 500 E5	90	50	510	2,5	2 FLM 6X12 E5	917402	109,82	10 pcs.
E5	KTA 600 E5	110	50	610	2,5	2 FLM 6X12 E5	917426	131,69	10 pcs.

for a wall and overhead hanger mounting

Attention: Different versions for different lengths.

For more information, see installation information.

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

Please order the necessary fastening accessories separately:

for cable trays KK... and KP...: 2 FKM 6X20 E4

for cable ladders UL...: 2 ULKG, 2 BKM 6X30 E4, 2 UGM 6 E5

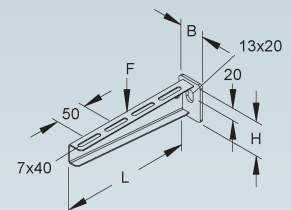
alternative 2 HSK 10 E5, 2 BKM 6X30 E4, 2 UGM 6 E5

for overhead hanger HU 5050/...: 1 HDS 50.50

for profile U 5050/...: 1 HDS 50.50



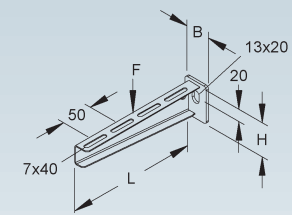
GRP 221



Overhead Hanger- and Wall Bracket

epoxied, standard

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Load capacity at L/2 kN	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
C1	KTA 100 C1KG	7032	45	40	110	2,5	2 FLM 6X12 E5	967209	16,25	1 pc.
C1	KTA 150 C1KG	7032	45	40	160	2,5	2 FLM 6X12 E5	967216	19,78	1 pc.
C1	KTA 200 C1KG	7032	55	40	210	2,5	2 FLM 6X12 E5	967223	28,61	1 pc.
C1	KTA 250 C1KG	7032	55	40	260	2,5	2 FLM 6X12 E5	967230	33,46	1 pc.
C1	KTA 300 C1KG	7032	65	50	310	2,5	2 FLM 6X12 E5	967247	61,50	1 pc.
C1	KTA 350 C1KG	7032	65	50	360	2,5	2 FLM 6X12 E5	967254	68,97	1 pc.
C1	KTA 400 C1KG	7032	75	50	410	2,5	2 FLM 6X12 E5	967261	82,31	1 pc.
C1	KTA 450 C1KG	7032	75	50	460	2,5	2 FLM 6X12 E5	967278	91,51	1 pc.
C1	KTA 500 C1KG	7032	90	50	510	2,5	2 FLM 6X12 E5	967285	115,47	1 pc.
C1	KTA 550 C1KG	7032	90	50	560	2,5	2 FLM 6X12 E5	967292	139,54	1 pc.
C1	KTA 600 C1KG	7032	90	50	610	2,5	2 FLM 6X12 E5	967308	132,54	1 pc.



for a wall and overhead hanger mounting

**Attention: Different versions for different lengths.
For more information, see installation information.**

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

Please order the necessary fastening accessories separately:
for cable trays KK... und KP...: 2 FKM 6X20 E4
for cable ladders UL...: 2 ULKG, 2 BKM 6X30 E4, 2 UGM 6 E5
alternative 2 HSK 10 E5, 2 BKM 6X30 E4, 2 UGM 6 E5
for overhead hanger HU 5050/...: 1 HDS 50.50
for profile U 5050/...: 1 HDS 50.50

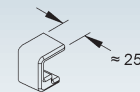
Protective Cap

Model No.	Colour	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K10	KA 100-600	yellow	347056	1,4	10 pcs.

to protect the profile ends

The end caps must be prescribed in areas where the risk of hazard is important!

Used for: overhead hanger- and wall brackets:
KTA 100-600, KTA 100-600 E5 and KTA 100-600 C1KG



GRP-Bracket

pressed

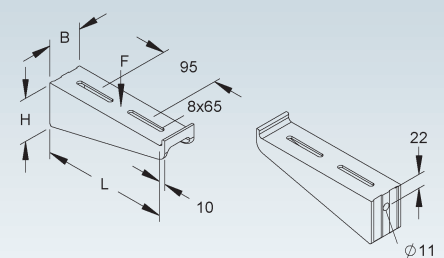
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Load capacity at L/2 kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K23	FPAM 100	7032	50	55	110	1,25	955848	17	1 pc.
K23	FPAM 150	7032	60	55	155	1,25	955855	18	1 pc.
K23	FPAM 200	7032	70	55	204	1,25	955862	36	1 pc.
K23	FPAM 300	7032	90	52	304	1,25	955879	50	1 pc.

for a wall and ceiling mounting

Used for: overhead hangers FPES... and FPDS...

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

Please order the necessary fastening accessories separately:
for cable trays KK... and KP...: 2 FKM 6X20 E4
for overhead hangers FPES... and FPDS...: 1 FPBGV 10 E4
for C-profile FPAR...: 1 FPBGV 10 E4



SUPPORT SYSTEM

GRP-Bracket

pultruded

Model No.	Colour similar RAL	Height H mm	Length L mm	Load capacity at L/2 kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 FPAP 100/AC	7032	210	110	1,4	955725	47,0	1 pc.
K23 FPAP 150/AC	7032	210	160	1,4	955732	54,5	1 pc.
K23 FPAP 200/AC	7032	210	210	1,4	955749	58,5	1 pc.
K23 FPAP 250/AC	7032	210	260	1,4	955756	65,0	1 pc.
K23 FPAP 300/AC	7032	210	310	1,4	955763	72,2	1 pc.

for a wall and ceiling mounting

AC = made with extra durable acrylic resin

Used for: overhead hangers FPES... and FPDS...

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

Please order the necessary fastening accessories separately:

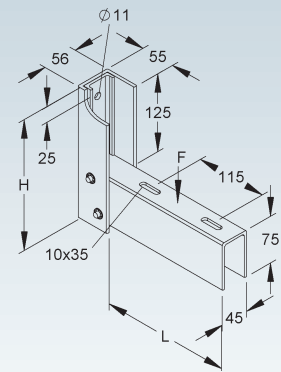
for cable trays KK... and KP...: 2 FKM 6X20 E4

for cable ladders UL...: 2 ULKG, 2 SKM 10X30 E4

alternative 2 HSK 10 E5, 2 SKM 10X30 E4

for overhead hangers FPES... and FPDS...: 1 FPBGV 10 E4

for C-profile FPAR...: 1 FPBGV 10 E4



GRP-Bracket

pultruded

Model No.	Colour similar RAL	Height H mm	Length L mm	Load capacity at L/2 kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 FPAP 400/AC	7032	365	410	2	955770	161,5	1 pc.
K23 FPAP 500/AC	7032	365	510	2	955787	174,5	1 pc.
K23 FPAP 600/AC	7032	365	610	2	955794	186,0	1 pc.

for a wall and ceiling mounting

AC = made with extra durable acrylic resin

Used for: overhead hangers FPES... and FPDS...

The load data relative to the carrying capacity are only valid if the bolting with the supporting base is sufficient, particularly in case of assembly on ceiling supports according to the mounting instructions.

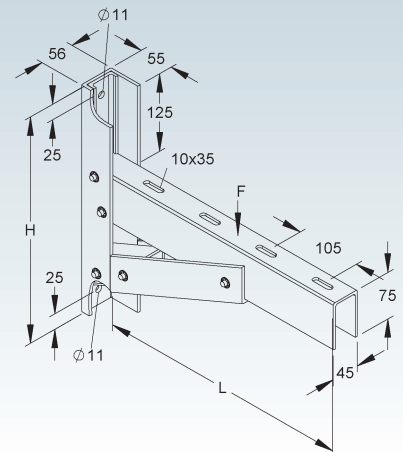
Please order the necessary fastening accessories separately:

for cable trays KK... and KP...: 2 FKM 6X20 E4

for cable ladders UL...: 2 ULKG, 2 SKM 10X30 E4

alternative 2 HSK 10 E5, 2 SKM 10X30 E4

for overhead hangers FPES... and FPDS...: 1 FPBGV 10 E4



GRP-Bracket

pultruded, Z-profile, adjustable

Model No.	Colour similar RAL	Height H mm	Cable tray width B mm	Adjustment range A Degrees (°)	Load capacity F kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 FPCO 100/AC	7032	250	100	0 - 16	0,45	963102	55	1 pc.
K23 FPCO 150/AC	7032	300	150	0 - 13	0,45	963119	68	1 pc.
K23 FPCO 200/AC	7032	350	200	0 - 10	0,45	963126	77	1 pc.
K23 FPCO 300/AC	7032	450	300	0 - 7	0,45	963133	100	1 pc.

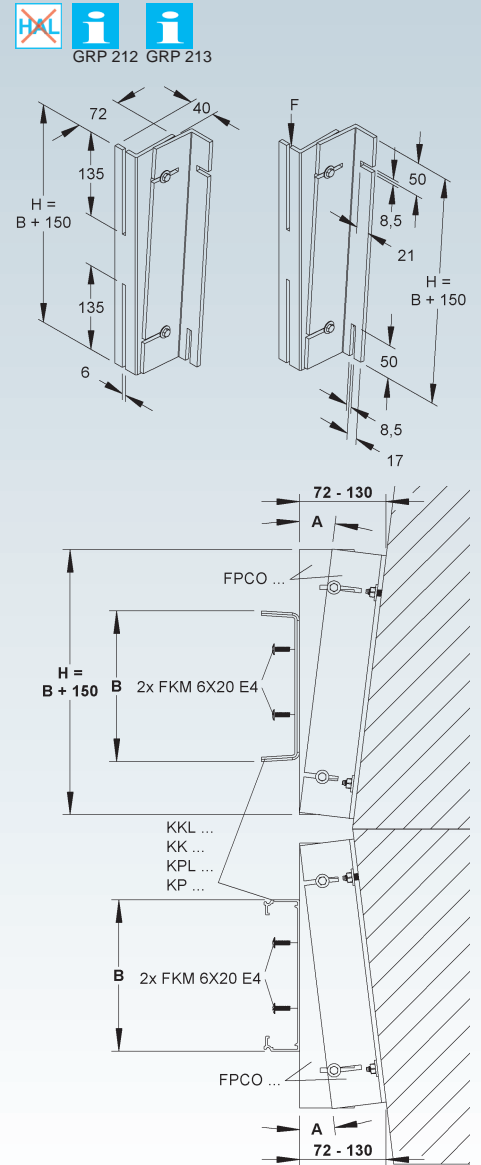
for mounting on sloping walls, e.g. of concrete pipes and tunnels, as well as for horizontal upright mounting of the cable trays

AC = made with extra durable acrylic resin

Used for: cable trays KK... and KP...

The load-bearing capacity data only apply with sufficient anchoring to the load-bearing substrate and a support spacing of ≤ 1.5 m.

Please order the necessary fastening accessories separately:
for cable trays KK... and KP...: 2 FKM 6X20 E4



GRP-Support

pultruded, adjustable

Model No.	Colour similar RAL	Load capacity F in traction kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 FPFS	7032	1,5	963140	210	1 pc.

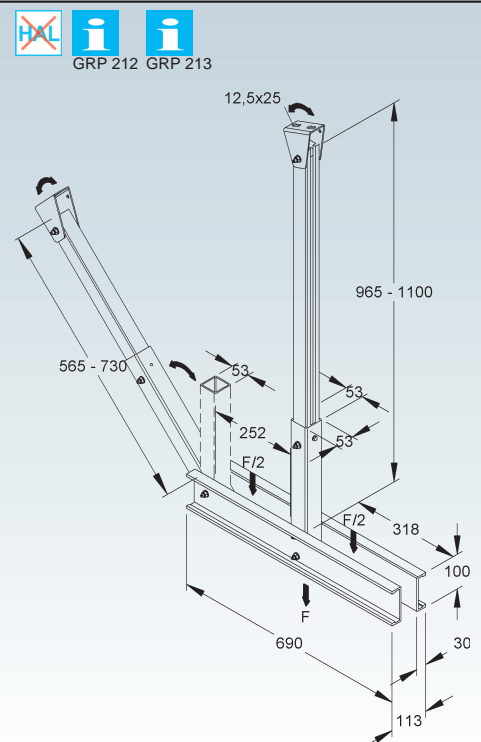
for suspending cable trays and cable ladders and for fixing luminaires

The support is universal.

Used for: cable trays KK..., KP... and cable ladder UL...

The load-bearing capacity specifications are only valid with sufficient anchoring to the load-bearing substrate. The introduction of the loads into the structure must be agreed with the site management. The applicable guidelines and regulations must be observed.

Please order the necessary fastening accessories separately:
for cable trays KK... and KP...: 2 FKM 6X20 E4
for cable ladder UL...: 2 ULKG, 2 SKM 10X30 E4
alternative 2 HSK 10 E5, 2 SKM 10X30 E4



SUPPORT SYSTEM

Overhead Hanger

U-profile

	Model No.	Total length L	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm			
F	HU 5050/200	205	858705	93,08	1 pc.
F	HU 5050/250	255	858729	105,23	1 pc.
F	HU 5050/300	305	858743	117,38	1 pc.
F	HU 5050/400	405	858767	141,67	1 pc.
F	HU 5050/500	505	858781	165,97	1 pc.
F	HU 5050/600	605	858804	190,27	1 pc.
F	HU 5050/700	705	858828	214,57	1 pc.
F	HU 5050/800	805	858842	238,87	1 pc.
F	HU 5050/900	905	858866	263,16	1 pc.
F	HU 5050/1000	1005	858880	287,46	1 pc.
F	HU 5050/1100	1105	858903	311,76	1 pc.
F	HU 5050/1200	1205	858927	336,06	1 pc.
F	HU 5050/1500	1505	858941	408,96	1 pc.
F	HU 5050/2000	2005	858965	530,44	1 pc.
E5	HU 5050/200 E5	205	945757	86,02	1 pc.
E5	HU 5050/300 E5	305	945702	108,47	1 pc.
E5	HU 5050/400 E5	405	945764	130,93	1 pc.
E5	HU 5050/500 E5	505	945771	153,38	1 pc.
E5	HU 5050/600 E5	605	945788	175,84	1 pc.
E5	HU 5050/800 E5	805	965953	220,75	1 pc.
E5	HU 5050/1000 E5	1005	965960	265,66	1 pc.

Total length = U profile length, included fixing plate.

HU 5050/200, has limited space for equipment in cable trays (bracket length & height)

Used for: ceiling support and wall bracket KTA... and KTAM...

In order to avoid the deformation of ceiling support during the mounting of brackets, it is necessary for mechanical reason, to take into account of the thickness of the ceiling support when screwing the hexagonal bolts.

For structural reasons and to enable the protective cap to be fitted without any problems, the bracket must be fitted at a distance of $x=50$ mm (lower edge of bracket to end of suspended support), above the end of the suspended support.

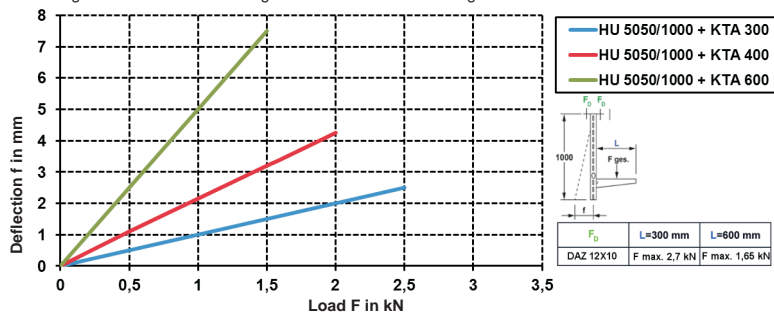
Serie of oblong holes (13x40 mm) on 3 profile sides.

If the bracket is fixed on one side to the overhead hanger, the closed side of the bracket should preferably be aligned with the profile web of the overhead hanger.

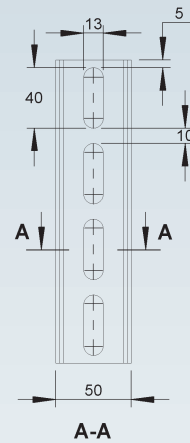
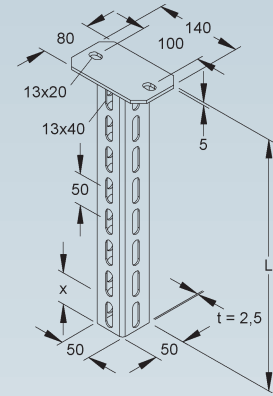
The load-bearing capacity specifications are only valid with sufficient anchoring to the load-bearing substrate. The introduction of the loads into the structure must be agreed with the site management. The applicable guidelines and regulations must be observed.

1. the cross-section values refer to the perforated area of the profile.

Load diagram: deflection of the hanger in case of one-sided charges



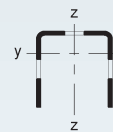
With approximately the same symmetrical load introduction, a deflection is hardly measurable.



1.

$$I_y = 8 \text{ cm}^4$$

$$I_z = 11,7 \text{ cm}^4$$



$$W_y = 2,53 \text{ cm}^3$$

$$W_z = 4,7 \text{ cm}^3$$



Overhead Hanger

epoxied, U-profile

Model No.	Colour similar RAL	Total length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
C1 HU 5050/200 C1KG	7032	205	967100	96,80	1 pc.
C1 HU 5050/250 C1KG	7032	255	967124	109,44	1 pc.
C1 HU 5050/300 C1KG	7032	305	967131	122,07	1 pc.
C1 HU 5050/400 C1KG	7032	405	967148	147,34	1 pc.
C1 HU 5050/500 C1KG	7032	505	967155	172,61	1 pc.
C1 HU 5050/600 C1KG	7032	605	967162	197,88	1 pc.
C1 HU 5050/700 C1KG	7032	705	967179	223,15	1 pc.
C1 HU 5050/800 C1KG	7032	805	967186	248,42	1 pc.
C1 HU 5050/900 C1KG	7032	905	967193	273,69	1 pc.
C1 HU 5050/1000 C1KG	7032	1005	967063	298,96	1 pc.
C1 HU 5050/1100 C1KG	7032	1105	967070	324,23	1 pc.
C1 HU 5050/1200 C1KG	7032	1205	967087	349,50	1 pc.
C1 HU 5050/1500 C1KG	7032	1505	967094	425,31	1 pc.
C1 HU 5050/2000 C1KG	7032	2005	967117	551,66	1 pc.

Total length = U profile length, included fixing plate.

HU 5050/200, has limited space for equipment in cable trays (bracket length & height)

Used for: overhead hanger- and wall bracket KTA...

In order to avoid the deformation of ceiling support during the mounting of brackets, it is necessary for mechanical reason, to take into account of the thickness of the ceiling support when screwing the hexagonal bolts.

For static reasons and to enable the protective caps to be fitted without any problems, the bracket must be mounted at a distance of $x=50$ mm (lower edge of bracket - end of overhead hanger), above the end of the overhead hanger.

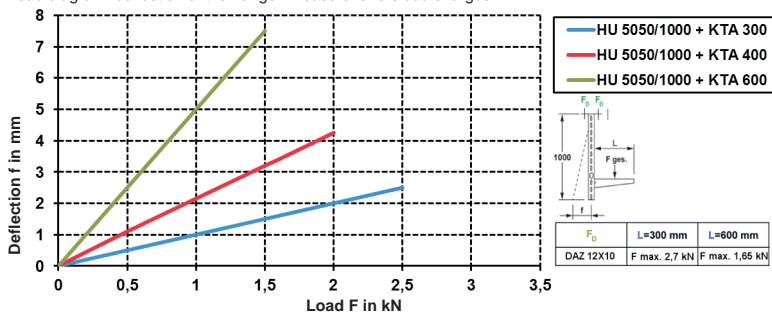
Serie of oblong holes (13x40 mm) on 3 profile sides.

If the bracket is attached to the overhead hanger profile on one side, it is preferable to attach the closed side of the bracket in alignment with the profile web of the overhead hanger.

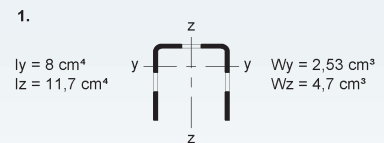
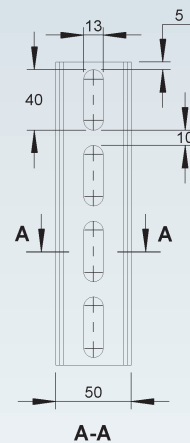
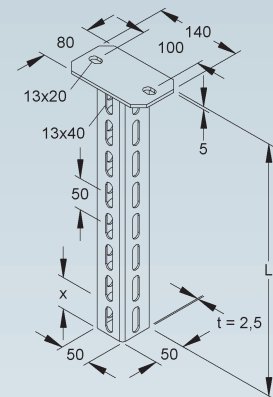
The load-bearing capacity specifications are only valid with sufficient anchoring to the load-bearing substrate. The introduction of the loads into the structure must be agreed with the site management. The applicable guidelines and regulations must be observed.

1. the cross-section values refer to the perforated area of the profile.

Load diagram: deflection of the hanger in case of one-sided charges



With approximately the same symmetrical load introduction, a deflection is hardly measurable.



Protective Cap

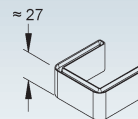
Model No.	Colour	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K03 SKU 5050	yellow	188390	1,38	20 pcs.

to protect the profile ends

The end caps must be prescribed in areas where the risk of hazard is important!

Used for: profile U 5050/... and overhead hanger HU 5050/...

To ensure that the protective cap can be fitted without any problems, a distance of at least 50 mm from the end of the profile must be kept free.



SUPPORT SYSTEM

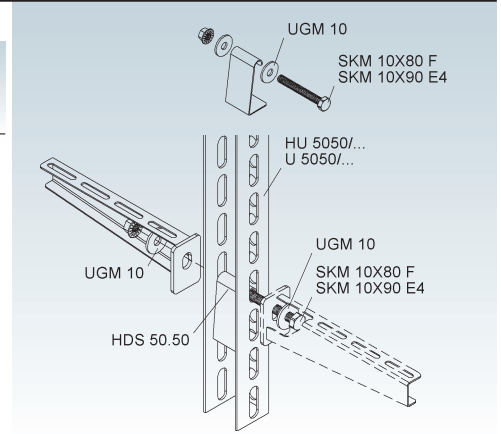
Overhead Hanger-Distance Profile

Model No.	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
F HDS 50.50 F	1 SKM 10X80 F, 2 UGM 10 F	931705	16,52	50 pcs.
E5 HDS 50.50 E5	1 SKM 10X90 E4, 2 UGM 10 E5	962266	16,37	50 pcs.

Used for: profile U 5050/... and overhead hanger HU 5050/...

In order to prevent deformation of the overhead hanger profile when fitting brackets, the overhead hanger distance profile with hexagonal bolt must be taken into account for static reasons.

If the bracket is fixed on one side to the overhead hanger, the closed side of the outrigger should preferably be aligned with the profile web of the overhead hanger.



Overhead Hanger-Distance Profile

epoxied

Model No.	Colour similar RAL	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
C1 HDS 50.50 C1KG	7032	1 SKM 10X90 E4, 2 UGM 10 E5	967056	7,5	10 pcs.

Used for: profile U 5050/... C1KG and overhead hanger HU 5050/... C1KG

In order to prevent deformation of the overhead hanger profile when fitting brackets, the overhead hanger distance profile with hexagonal bolt must be taken into account for static reasons.



GRP 212 GRP 213



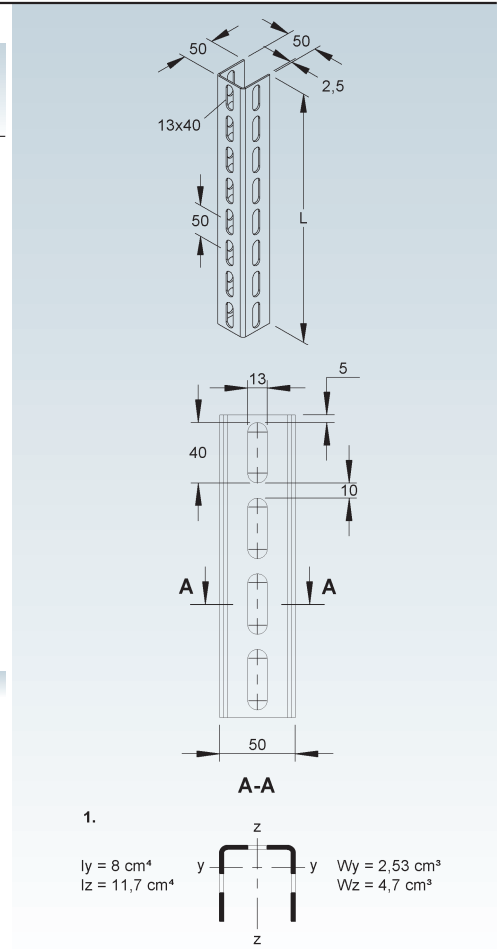
Profile U 5050

Model No.	Length L	EAN code	Weight in kg per 100 pcs./m	Smallest packaging unit
	mm			
F U 5050/300 F	300	918560	72,90	1 pc.
F U 5050/400 F	400	918584	97,20	1 pc.
F U 5050/500 F	500	918607	121,50	1 pc.
F U 5050/600 F	600	918621	145,79	1 pc.
F U 5050/700 F	700	918645	170,09	1 pc.
F U 5050/800 F	800	918669	194,38	1 pc.
F U 5050/900 F	900	918683	218,68	1 pc.
F U 5050/1000 F	1000	918706	242,98	1 pc.
F U 5050/1100 F	1100	918720	267,28	1 pc.
F U 5050/1200 F	1200	918744	291,58	1 pc.
F U 5050/1500 F	1500	918768	364,47	1 pc.
F U 5050/2000 F	2000	918782	242,98	2 m
F U 5050/3000 F	3000	859306	242,98	3 m
F U 5050/6000 F	6000	859320	242,98	6 m
E5 U 5050/300 E5L	300	965977	67,37	1 pc.
E5 U 5050/400 E5L	400	965984	89,82	1 pc.
E5 U 5050/500 E5L	500	965991	112,28	1 pc.
E5 U 5050/600 E5L	600	966004	134,73	1 pc.
E5 U 5050/800 E5L	800	966011	179,64	1 pc.
E5 U 5050/1000 E5L	1000	966028	224,55	1 pc.
E5 U 5050/6000 E5L	6000	966035	224,55	6 m

for creating overhead hangers and supporting structures with system components

Serie of oblong holes (13x40 mm) on 3 profile sides.

1. the cross-section values refer to the perforated area of the profile.



Profile U 5050

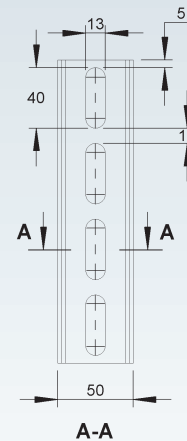
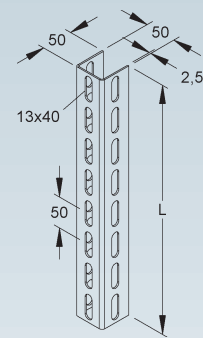
epoxied

Model No.	Colour similar RAL	Length L mm	EAN code	Weight in kg per 100 pcs./m	Smallest packaging unit
C1 U 5050/300 C1KG	7032	300	967384	75,81	1 pc.
C1 U 5050/400 C1KG	7032	400	967391	101,08	1 pc.
C1 U 5050/500 C1KG	7032	500	967407	126,36	1 pc.
C1 U 5050/600 C1KG	7032	600	967414	151,63	1 pc.
C1 U 5050/700 C1KG	7032	700	967421	176,90	1 pc.
C1 U 5050/800 C1KG	7032	800	967438	202,16	1 pc.
C1 U 5050/900 C1KG	7032	900	967445	227,43	1 pc.
C1 U 5050/1000 C1KG	7032	1000	967339	252,70	1 pc.
C1 U 5050/1100 C1KG	7032	1100	967346	277,97	1 pc.
C1 U 5050/1200 C1KG	7032	1200	967353	303,24	1 pc.
C1 U 5050/1500 C1KG	7032	1500	967360	379,05	1 pc.
C1 U 5050/2000 C1KG	7032	2000	967377	252,70	2 m

for creating overhead hangers and supporting structures with system components

Serie of oblong holes (13x40 mm) on 3 profile sides

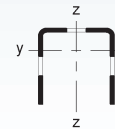
1. the cross-section values refer to the perforated area of the profile.



1.

$$I_y = 8 \text{ cm}^4$$

$$I_z = 11,7 \text{ cm}^4$$



$$W_y = 2,53 \text{ cm}^3$$

$$W_z = 4,7 \text{ cm}^3$$

Screw Head Plate

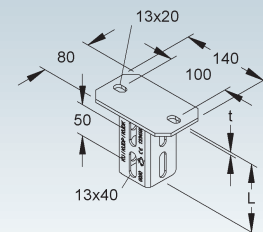
Model No.	Total length L mm	Thickness of head plates (t) mm	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
F KU 5050	110	5	2 FLM 10X25 F	191956	86,33	1 pc.
E5 KU 5050 E5	105	5	2 SKM 10X25 E5	967322	80,39	1 pc.

for mounting on straight ceilings

Total length = length of the U-profile including the head plate

Used for: profile U 5050/...

Three-sided slotted hole arrangement 13x40 mm in the connecting profile.



Screw Head Plate

epoxied

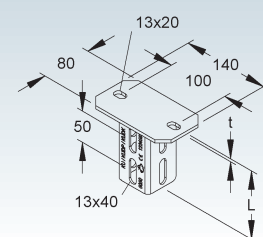
Model No.	Colour similar RAL	Total length L mm	Thickness of head plates (t) mm	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
C1 KU 5050 C1KG	7032	105	5	2 SKM 10X25 E5	967315	89,46	1 pc.

for mounting on straight ceilings

Total length = length of the U-profile including the head plate

Used for: profile U 5050/... C1KG

Three-sided slotted hole arrangement 13x40 mm in the connecting profile.



SUPPORT SYSTEM

GRP-Overhead Hanger

pultruded, C-profile

	Model No.	Colour similar RAL	Length L	total length L1	Load capacity F in traction	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
			mm	mm				
K23	FPES 200/AC	7032	200	255	1,5	955923	75	1 pc.
K23	FPES 300/AC	7032	300	355	1,5	955930	92	1 pc.
K23	FPES 400/AC	7032	400	455	1,5	955947	110	1 pc.
K23	FPES 500/AC	7032	500	555	1,5	955954	127	1 pc.

for a mounting on 1 side of the support

FPES 200/AC has a limited amount of space for cable tray fitting (length of the overhead hanger - height of the bracket).

AC = made with extra durable acrylic resin

Used for: brackets FPAM.../AC ≤ 300 mm length and FPAP.../AC ≤ 600 mm length

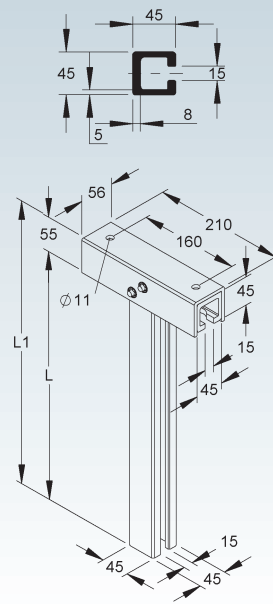
The tensile load specifications are only valid with sufficient anchoring to the load-bearing substrate.

The introduction of the loads into the structure must be coordinated with the site management.

The applicable guidelines and regulations must be observed.

Other lengths are available on request.

Required fixing accessories FPBGV 10 E4 (please order separately).



GRP-Overhead Hanger

pultruded, double C-profile

	Model No.	Colour similar RAL	Length L	total length L1	Load capacity F in traction	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
			mm	mm				
K23	FPDS 200/AC	7032	200	255	2 x 1,5	955886	76	1 pc.
K23	FPDS 300/AC	7032	300	355	2 x 1,5	955893	96	1 pc.
K23	FPDS 400/AC	7032	400	455	2 x 1,5	955909	175	1 pc.
K23	FPDS 500/AC	7032	500	555	2 x 1,5	955916	205	1 pc.

to mount on the both support sides

FPDS 200/AC has a limited amount of space for cable tray fitting (length of the overhead hanger - height of the bracket).

AC = made with extra durable acrylic resin

Used for: brackets FPAM.../AC ≤ 300 mm length and FPAP.../AC ≤ 600 mm length

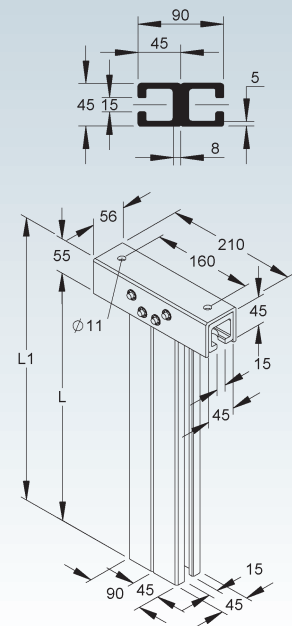
The tensile load specifications are only valid with sufficient anchoring to the load-bearing substrate.

The introduction of the loads into the structure must be coordinated with the site management.

The applicable guidelines and regulations must be observed.

Other lengths are available on request.

Required fixing accessories FPBGV 10 E4 (please order separately).



Anchor Bolt

incl. sliding nut with serration and washer

	Model No.	Thread M	Length L	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
			mm			
E4	FPBGV 10 E4	10	30	962662	6,6	1 pc.

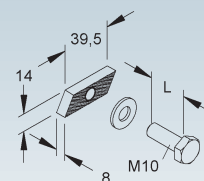
for fixing the brackets to the C-profile 45 x 45 mm with 15 mm slot width

Used for: bracket FPAM.../AC and FPAP.../AC on overhead hanger FPES.../AC and FPDS.../AC and for C-profile FPAR.../AC

Can be used at any point in the profile.

Especially for connections that have to transmit vertical loads via friction, it is essential to pay attention to the screw tightening torque and check it with a torque spanner!

Recommended screw tightening torque 30 Nm

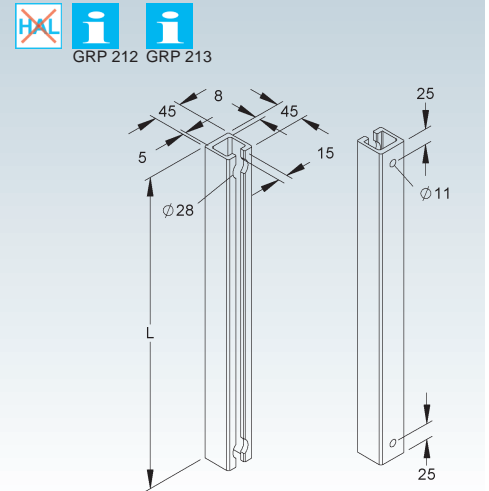


GRP C-Profile

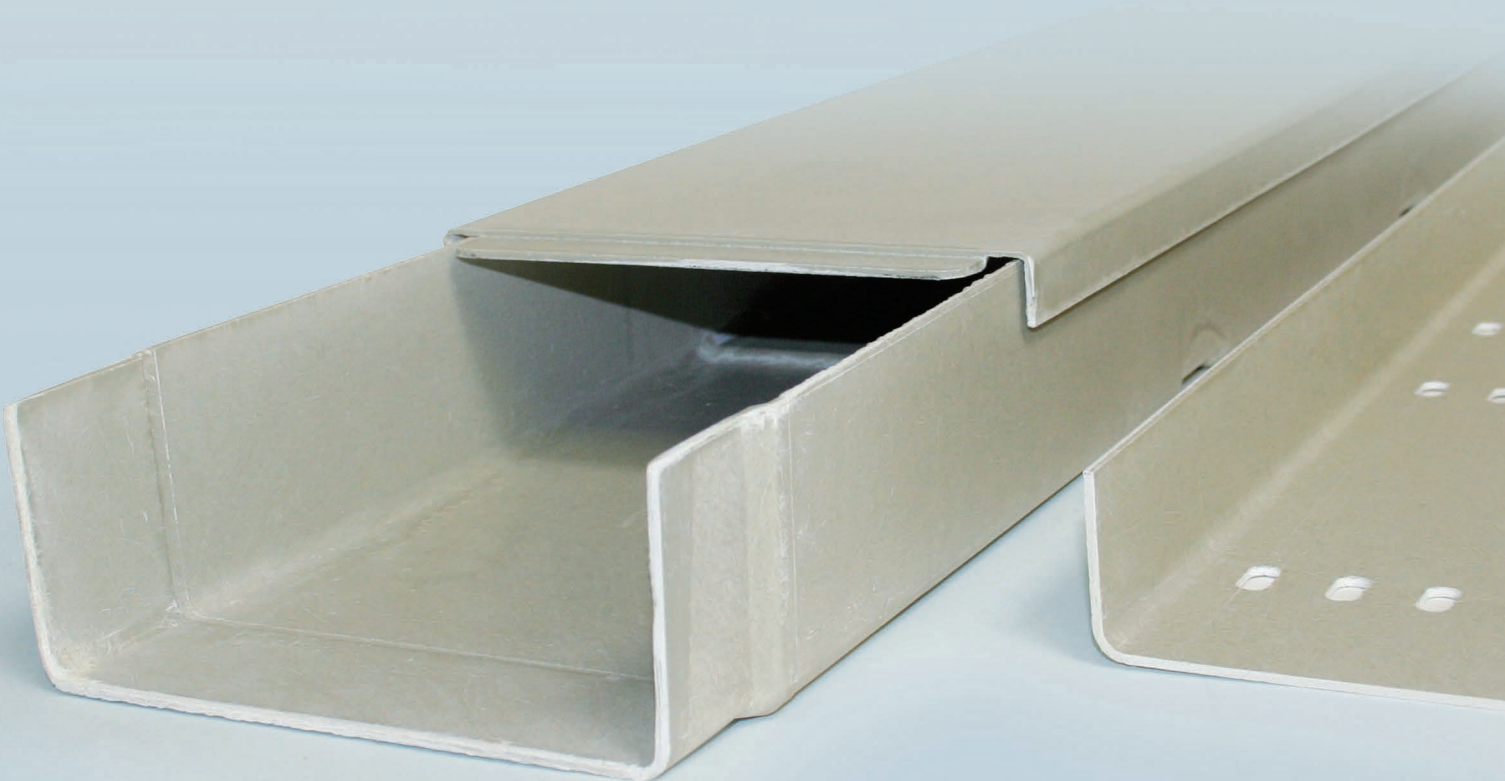
pultruded, C-profile, slot width 15 mm, with 2 end holes

Model No.	Colour similar RAL	Length L mm	Load capacity F in traction kN	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 FPAR 500/AC	7032	500	1,5	955961	52	1 pc.
K23 FPAR 750/AC	7032	750	1,5	955978	76	1 pc.
K23 FPAR 1000/AC	7032	1000	1,5	955985	168	1 pc.
K23 FPAR 2000/AC	7032	2000	1,5	955992	244	1 pc.

AC = made with extra durable acrylic resin



GRP CABLE SUPPORT SYSTEMS



CABLE TRAY SYSTEM K²

























































































in the side heights    

- Cable Trays
- Covers
- Barrier Strips
- Accessories
- Fittings

The K² GRP cable tray system from Ebo made of pressed glass fibre mats impresses with its time-saving and screwless assembly. Thanks to the moulded socket connection, the system components can be easily and quickly plugged together at a maximum fastening distance of up to 1.5 m. This socket connection is also self-regulating, which means that the expansion distance is always maintained.

CABLE TRAY SYSTEM K²

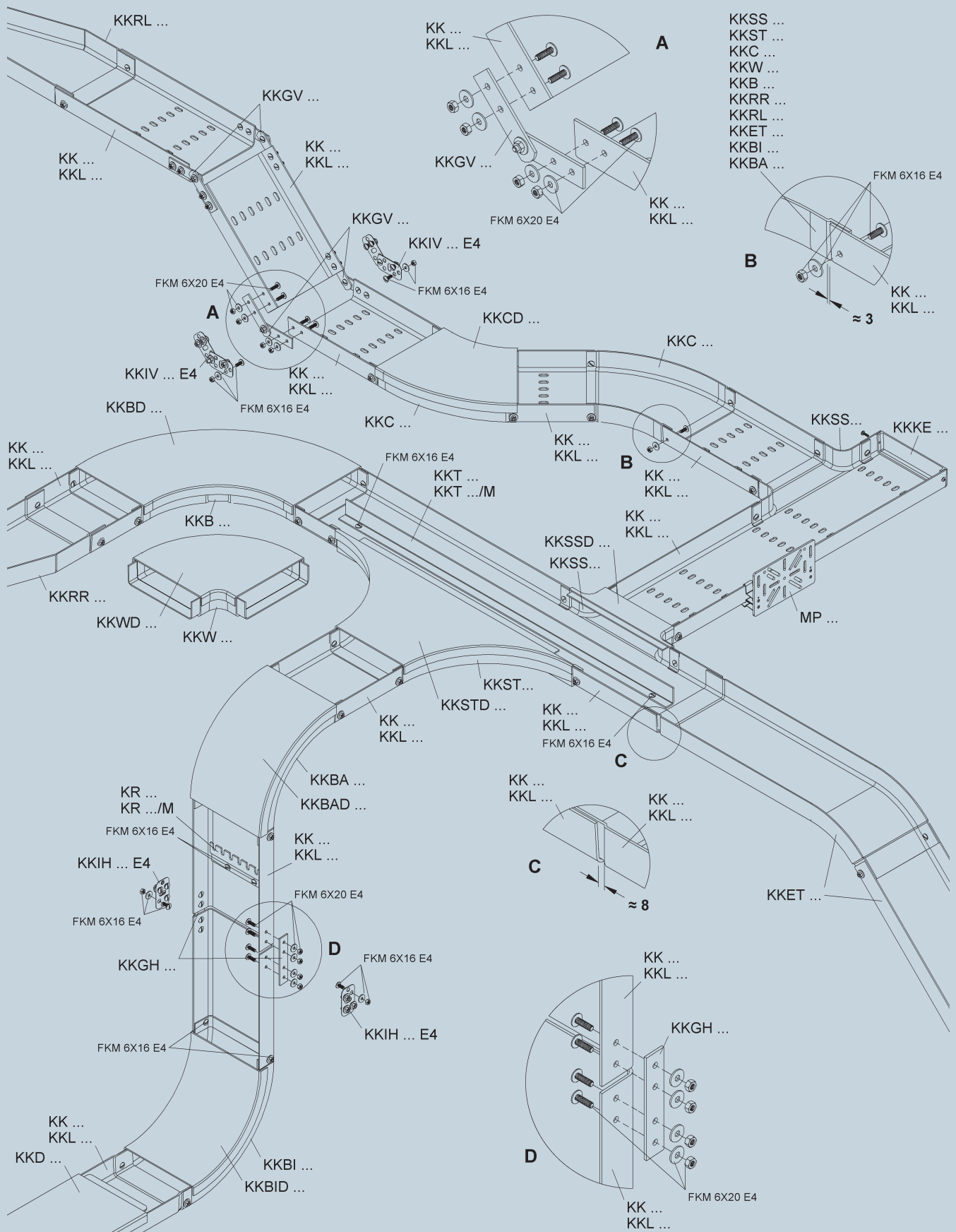
System overview of the side heights

SYSTEM					
GRP-Cable Tray, pressed, with bottom perforation	KKL...	 P. 36	 P. 37	 P. 44	 P. 54
GRP-Cable Tray, pressed, without bottom perforation	KK...	 P. 36	 P. 37	 P. 45	 P. 55
GRP-End Cover, pressed	KKKE...	 —	 P. 38	 P. 45	 P. 55
GRP-Splice Plate, pressed, horizontal, screwable	KKGH...	 —	 P. 38	 P. 46	 P. 56
Splice Plate horizontal, screwable	KKIH...	 —	 P. 38	 P. 46	 P. 56
GRP-Barrier Strip, pressed	KKT...	 —	 P. 39	 P. 47	 P. 57
GRP-Extension T-Piece, small, pressed	KKSS...	 —	 P. 39	 P. 47	 —
GRP-Extension T-Piece, large, pressed	KKST...	 —	 P. 39	 P. 47	 P. 57
GRP-Elbow 45°, pressed	KKC...	 —	 P. 40	 P. 48	 P. 57/58
GRP-Elbow 45°, pressed, inner radius R 600	KKC...	 —	 —	 P. 48	 P. 58
GRP-Elbow 90°, small, pressed	KKW...	 —	 P. 40	 P. 49	 P. 58
GRP-Elbow 90°, large, pressed	KKB...	 —	 P. 40	 P. 49	 P. 59
GRP-Elbow 90°, large, pressed, inner radius R 600	KKB...	 —	 —	 P. 50	 P. 59
GRP-Reduction, right, pressed	KKRR...	 —	 P. 41	 P. 50	 P. 60
GRP-Reduction, left, pressed	KKRL...	 —	 P. 41	 P. 50	 P. 60
GRP-Joint Connector, pressed, vertical, screwable	KKGV...	 —	 P. 41	 P. 51	 P. 60
Joint Connector, vertical, screwable	KKIV...	 —	 P. 42	 P. 51	 P. 61
GRP-Floor, pressed	KKET...	 —	 P. 42	 P. 52	 P. 62
GRP-Vertical Inside Elbow, pressed	KKBI...	 —	 P. 43	 P. 52	 P. 62
GRP-Vertical Outside Elbow, pressed	KKBA...	 —	 P. 43	 P. 53	 P. 63
GRP-Mounting Plate, pressed	MP...	 —	 P. 43	 P. 53	 P. 63
ACCESSORIES					
Cover Clamp	DF...	P. 72			
Cover Clamp	DF 1060 E4	P. 73			
GRP-Cable Rack, pressed	KR...	P. 74			
Separat Bolt	TB	P. 74*			
Cup Screw	FKM...	P. 74*			
Flat Head Bolt similar to DIN EN ISO 1580	FKM...	P. 75*			
Hexagon Screw acc. to DIN EN ISO 4017	SKM...	P. 75*			

The covers of the cable tray system K² can be found from page 64.

* Can be used with all side heights





CABLE TRAY SYSTEM K²

GRP-Cable Tray

pressed, with unperforated side rails, with bottom perforation, with moulded-on flap

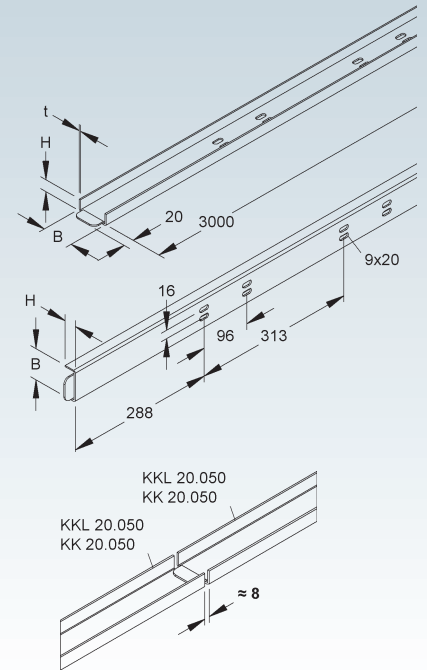
Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KKL 20.050	7032	23	60	3	954	0,02	952205	49	3 m

An expansion distance of approx. 8 mm must be taken into account.

Due to the expansion of the material, pay attention to the following during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a Ø 9 mm through hole in the tray for the FKM 6X20 E4 screws.

Article available in various resin mixtures.



GRP-Cable Tray

pressed, with unperforated side rails, without bottom perforation, with moulded-on flap

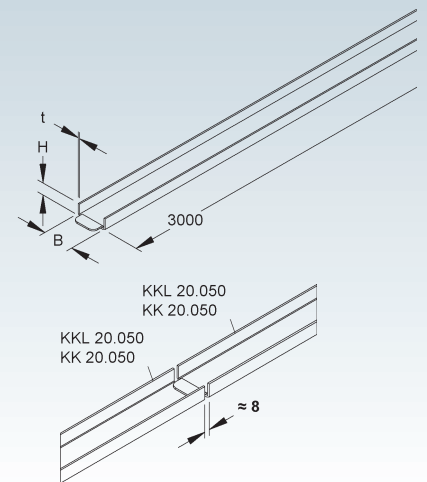
Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KK 20.050	7032	23	60	3	954	0,02	952007	50	3 m

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-Cable Tray

pressed, with unperforated side rails, with bottom perforation, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	KKL 50.050	7032	50	50	3	1496	0,05	952212	66,4	3 m
K23	KKL 50.100	7032	50	100	3	3696	0,3	952229	94,6	3 m
K23	KKL 50.150	7032	50	150	3	5896	0,3	952236	128,0	3 m
K23	KKL 50.200	7032	50	200	3	8096	0,3	952243	137,4	3 m
K23	KKL 50.300	7032	50	300	3	12496	0,3	952250	210,0	3 m

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

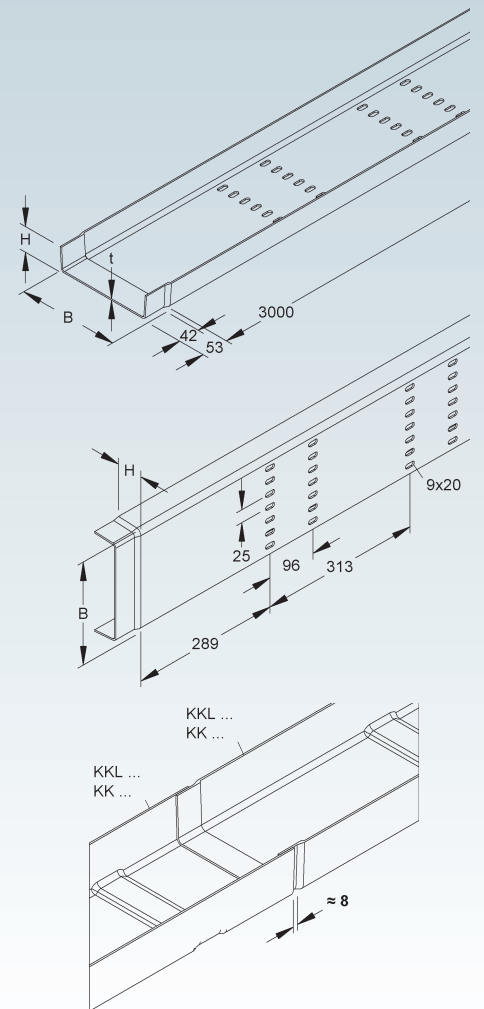
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-Cable Tray

pressed, with unperforated side rails, without bottom perforation, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	KK 50.050	7032	50	50	3	1496	0,05	952014	70	3 m
K23	KK 50.100	7032	50	100	3	3696	0,3	952021	98	3 m
K23	KK 50.150	7032	50	150	3	5896	0,3	952038	125	3 m
K23	KK 50.200	7032	50	200	3	8096	0,3	952045	152	3 m
K23	KK 50.300	7032	50	300	3	12496	0,3	952052	210	3 m

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

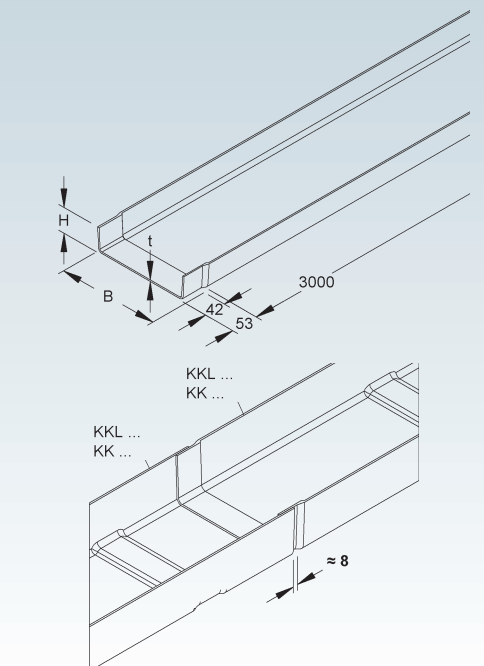
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-End Cover

pressed

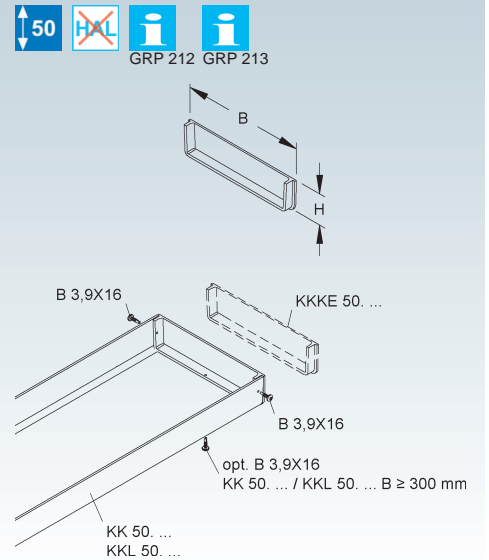
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKKE 50.050	7032	50	50	955190	2,0	1 pc.
K23 KKKE 50.100	7032	50	100	955206	6,0	1 pc.
K23 KKKE 50.150	7032	50	150	955213	4,0	1 pc.
K23 KKKE 50.200	7032	50	200	955220	11,5	1 pc.
K23 KKKE 50.300	7032	50	300	955237	17,0	1 pc.

for covering the cable tray ends

Used for: GRP-cable trays KK 50... and KKL 50...

Article available in various resin mixtures.

Required fixing accessories at least 2 self-drilling screws size 3.9X16 mm in the recommended stainless steel material classes 1.4116, 1.4122 and 1.4034 are required.



GRP-Splice Plate

pressed, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KKGH 50	7032	25	3	955626	2,4	1 pair

for a longitudinally aligned connection of cable trays and fittings at the joint with 50 mm edge height

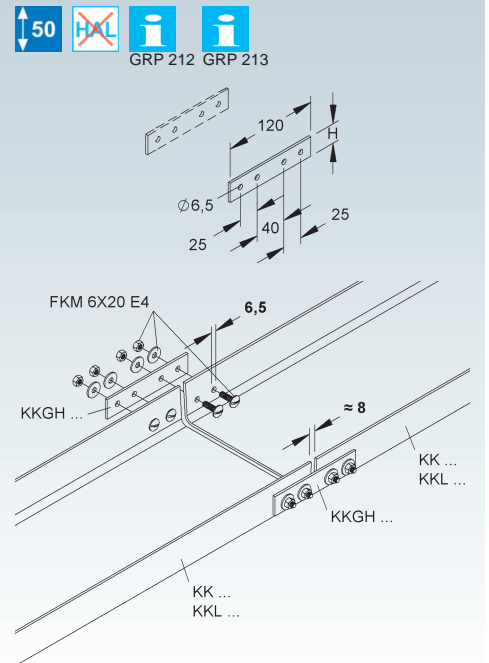
Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



Splice Plate

horizontal, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KKIH 50 E4	38	0,8	955657	1,4	1 pair

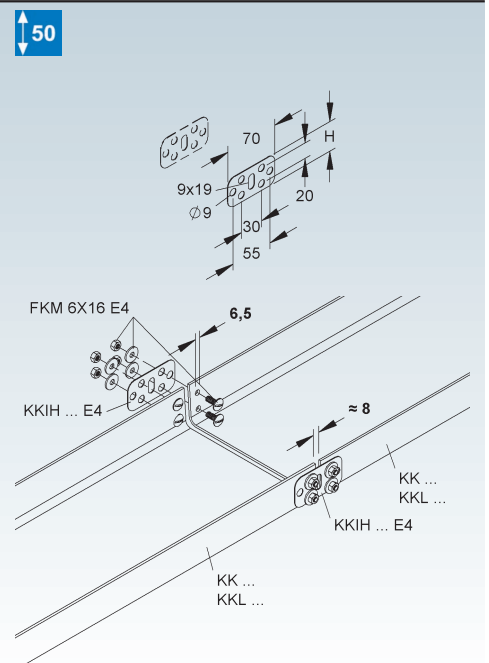
for horizontal changes of direction and a connection of the cable trays and fittings with 50 mm edge height that is aligned at the joint in the longitudinal direction.

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



GRP-Barrier Strip

pressed

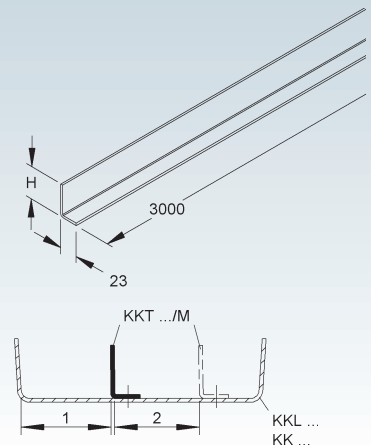
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KKT 50	7032	42	953028	38	3 m
K23 KKT 50/M	7032	42	953059	38	3 m

for separating lines and cables with different functions and/or voltages

The barrier strip **KKT 50** is supplied loose and must be screwed to the cable tray on site. Requirement: 3 pieces FKM 6X16 E4 per delivery length (please order separately). The **KKT 50/M** version is pre-assembled (riveted) at the factory when the cable tray is ordered. When ordering, please state the corresponding compartment size.

Used for: GRP-cable trays KK 50... and KKL 50...

Article available in various resin mixtures.



GRP-Extension T-Piece, small

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKSS 50.050	7032	50	50	954780	15	1 pc.
K23 KKSS 50.100	7032	50	100	954797	10	1 pc.
K23 KKSS 50.150	7032	50	150	954803	20	1 pc.
K23 KKSS 50.200	7032	50	200	954810	25	1 pc.
K23 KKSS 50.300	7032	50	300	954827	30	1 pc.

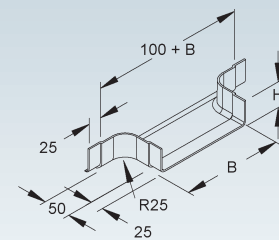
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the extension T-piece is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be bolted to each cable tray access with 2 FKM 6X16 E4, each in the side rails (please order separately).

Article available in various resin mixtures.



GRP-Extension T-Piece, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKST 50.100	7032	50	100	954575	60,0	1 pc.
K23 KKST 50.150	7032	50	150	954582	67,7	1 pc.
K23 KKST 50.200	7032	50	200	954599	76,6	1 pc.
K23 KKST 50.300	7032	50	300	954605	100,0	1 pc.

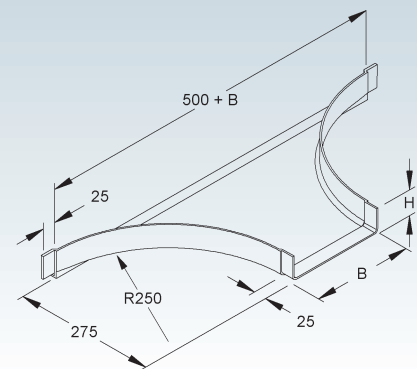
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the extension T-piece is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be bolted to each cable tray access with 2 FKM 6X16 E4, each in the side rails (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Elbow 45°

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKC 50.100	7032	50	100	100	953400	20	1 pc.
K23 KKC 50.150	7032	50	150	175	953417	25	1 pc.
K23 KKC 50.200	7032	50	200	200	953424	30	1 pc.
K23 KKC 50.300	7032	50	300	225	953431	60	1 pc.

for the production of 45° horizontally angled cable trays

The versions **KKC 50.150** and **KKC 50.300** are provided with a riveted sleeve on one side.

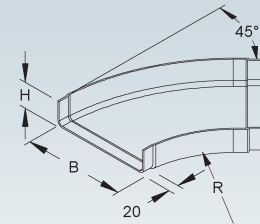
Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

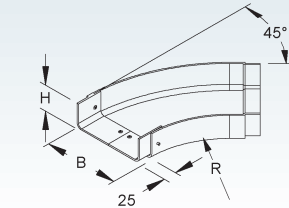
Article available in various resin mixtures.



KKC 50.100
KKC 50.200



KKC 50.150
KKC 50.300



GRP-Elbow 90°, small

pressed, with unperforated side rails, with moulded connector

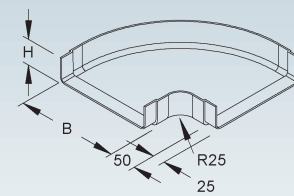
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKW 50.050	7032	50	50	953646	10	1 pc.
K23 KKW 50.100	7032	50	100	953653	21	1 pc.
K23 KKW 50.150	7032	50	150	953660	35	1 pc.
K23 KKW 50.200	7032	50	200	953677	40	1 pc.
K23 KKW 50.300	7032	50	300	953684	80	1 pc.

for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Elbow 90°, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Distance C mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKB 50.100	7032	50	100	125	100	953165	37,0	1 pc.
K23 KKB 50.150	7032	50	150	200	175	953172	60,0	1 pc.
K23 KKB 50.200	7032	50	200	225	200	953189	70,0	1 pc.
K23 KKB 50.300	7032	50	300	250	225	953196	134,8	1 pc.

for making horizontal 90° corner joints of cable trays

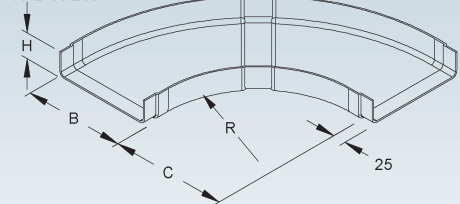
Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

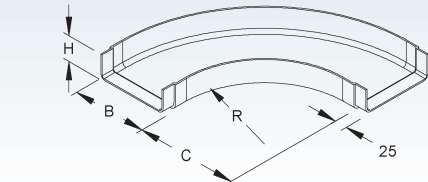
Article available in various resin mixtures.



KKB 50.100
KKB 50.200



KKB 50.150
KKB 50.300



GRP-Reduction, right

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKRR 50.200	7032	50	200	955022	90	1 pc.
K23 KKRR 50.300	7032	50	300	955039	114	1 pc.

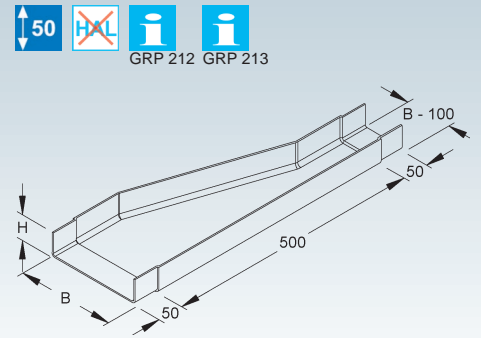
for reducing continuous cable trays, 100 mm reduction to the right side

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Reduction, left

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKRL 50.200	7032	50	200	954919	90	1 pc.
K23 KKRL 50.300	7032	50	300	954926	114	1 pc.

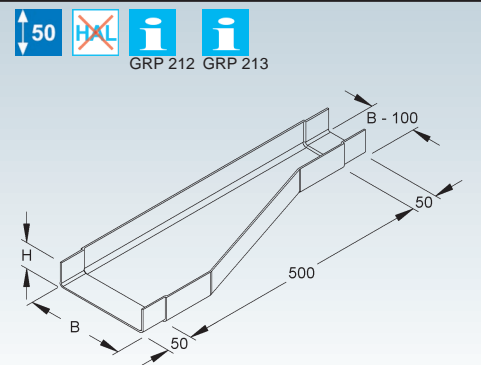
for reducing continuous cable trays, 100 mm reduction to the left side

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Joint Connector

pressed, vertical, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KKGV 50	7032	25	3	955138	5	1 pair

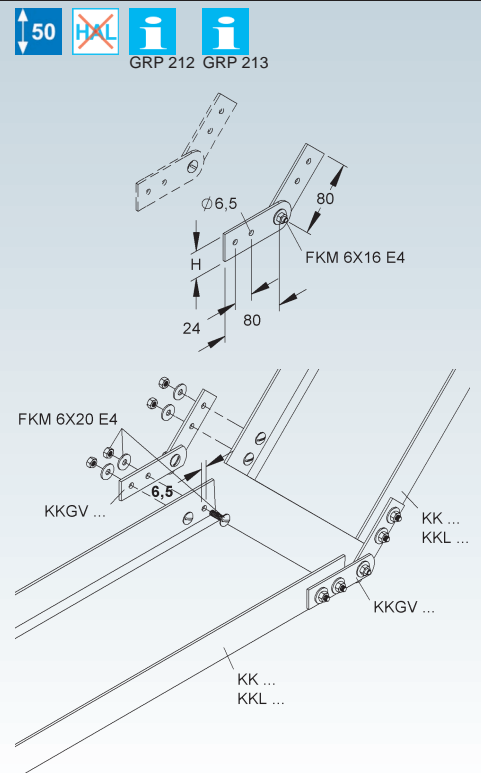
for creating vertical angle connections of continuous cable trays with 50 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 50... and KKL 50...

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



CABLE TRAY SYSTEM K²

Joint Connector

vertical, screwable

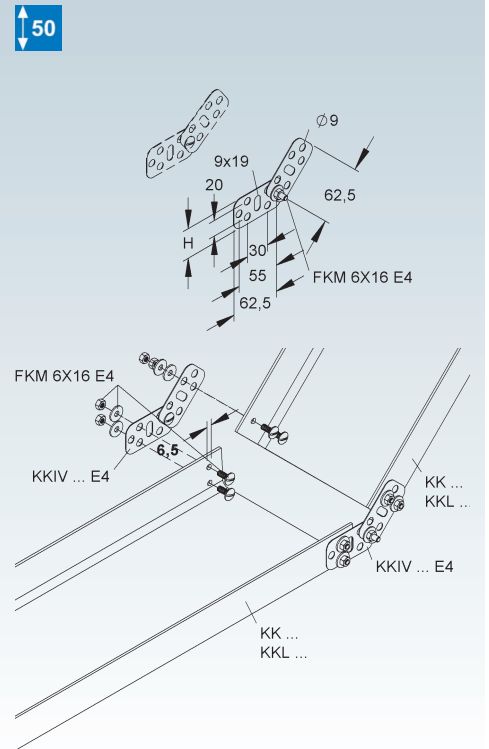
Model No.	Height H	Material thickness (t)	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
	mm	mm			
E4 KKIV 50 E4	38	0,8	955169	3	1 pair

for creating vertical angle connections of continuous cable trays with 50 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 50... and KKL 50...

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



GRP-Floor

pressed, 2-piece, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H	Width B	Height H1	Height H2	Height H3	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm	mm			
K23 KKET 50.100	7032	50	100	160	480	800	954339	210	1 pc.
K23 KKET 50.150	7032	50	150	160	480	800	954346	216	1 pc.
K23 KKET 50.200	7032	50	200	160	480	800	954353	259	1 pc.
K23 KKET 50.300	7032	50	300	160	480	800	954360	263	1 pc.

for the vertical height offset

By cutting the individual parts to length, variable adaptation to local conditions is possible.

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the floor is supported at each cable tray access point and centrally with brackets.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Depending on the standard variants used (see assembly drawing), different lengths of the floor result depending on the height.

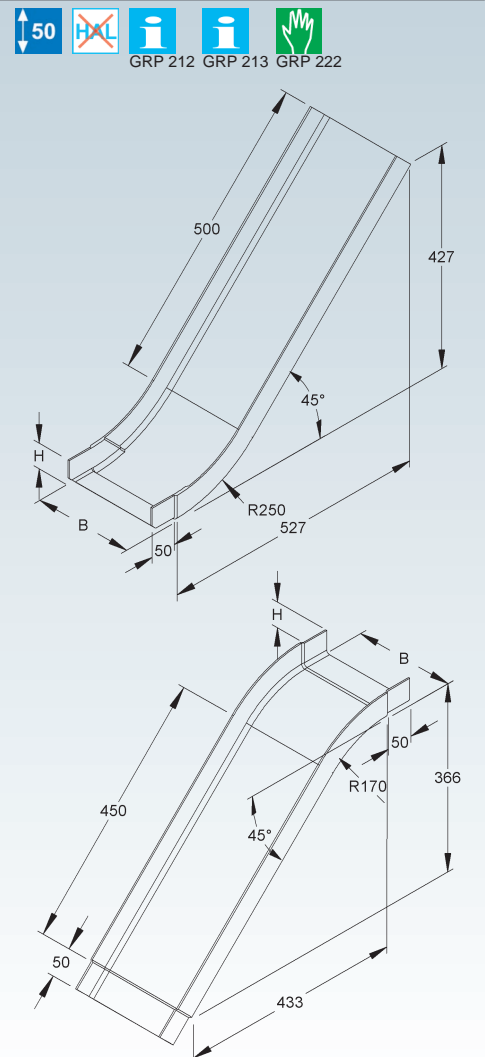
H1 = 160 mm => L1 = 780 mm (one component shortened)

H2 = 480 mm => L2 = 1100 mm

H3 = 800 mm => L3 = 970 mm

Delivery: unassembled

Article available in various resin mixtures.



GRP-Vertical Inside Elbow

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBI 50.050	7032	50	50	954025	11,7	1 pc.
K23 KKBI 50.100	7032	50	100	954032	37,5	1 pc.
K23 KKBI 50.150	7032	50	150	954049	61,0	1 pc.
K23 KKBI 50.200	7032	50	200	954056	77,0	1 pc.
K23 KKBI 50.300	7032	50	300	954063	90,9	1 pc.

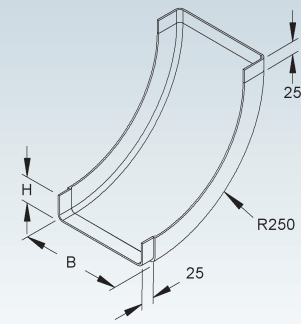
for the production of vertically 90° rising cable trays

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the vertical inside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Vertical Outside Elbow

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBA 50.050	7032	50	50	953837	11,5	1 pc.
K23 KKBA 50.100	7032	50	100	953844	32,0	1 pc.
K23 KKBA 50.150	7032	50	150	953851	34,9	1 pc.
K23 KKBA 50.200	7032	50	200	953868	51,0	1 pc.
K23 KKBA 50.300	7032	50	300	953875	74,0	1 pc.

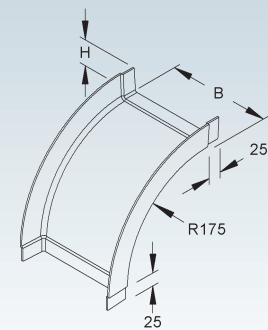
for the production of vertically 90° falling cable trays

Used for: GRP-cable trays KK 50... and KKL 50...

During installation, ensure that the vertical outside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Mounting Plate

pressed, easy to snap on, with pre-assembled fixing clamps

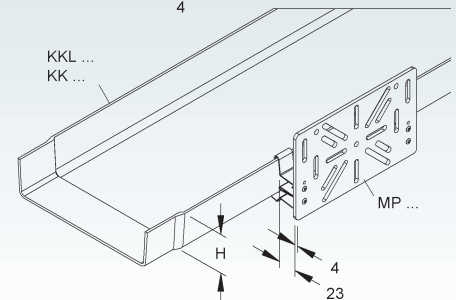
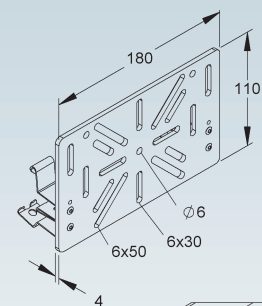
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 MP 50	7032	50	963010	17	1pc.

for the installation of equipment or junction boxes

The mounting plate is made of UP-GF material, the fixing clamps of stainless steel, material no. 1.4404, AISI 316L.

Used for: GRP-cable trays KK 50... and KKL 50...

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Cable Tray

pressed, with unperforated side rails, with bottom perforation, with moulded connector, with transverse bottom reinforcements (5 mm)



Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	KKL 80.100	7032	80	100	3	6120	0,5	952267	122,0	3 m
K23	KKL 80.150	7032	80	150	3	9576	0,5	952274	161,0	3 m
K23	KKL 80.200	7032	80	200	3	13320	0,5	952281	180,0	3 m
K23	KKL 80.250	7032	80	250	3	16776	0,5	952298	218,7	3 m
K23	KKL 80.300	7032	80	300	3	20520	0,5	952304	281,0	3 m
K23	KKL 80.400	7032	80	400	4	27720	1,0	952311	380,0	3 m
K23	KKL 80.500	7032	80	500	4	34920	1,0	952328	480,0	3 m
K23	KKL 80.600	7032	80	600	4	42120	1,0	952335	540,0	3 m

Due to the transverse reinforcements, the cable tray is also approved for use with high-frequency cables according to UTE C15-900 (application class D, frequency 16 MHz).
L=fixing distance (m)

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

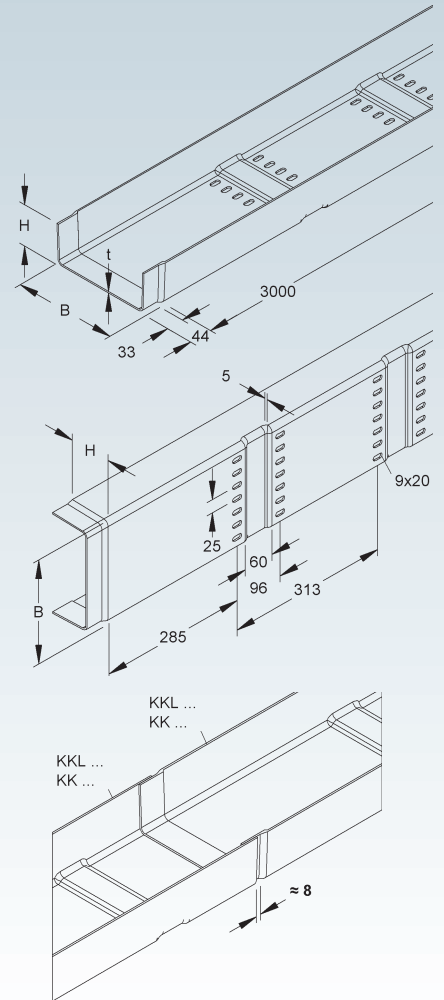
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-Cable Tray

pressed, with unperforated side rails, without bottom perforation, with moulded connector, with transverse bottom reinforcements (5 mm)

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KK 80.100	7032	80	100	3	6120	0,5	952069	127	3 m
K23 KK 80.150	7032	80	150	3	9576	0,5	952076	165	3 m
K23 KK 80.200	7032	80	200	3	13320	0,5	952083	195	3 m
K23 KK 80.250	7032	80	250	3	16776	0,5	952090	220	3 m
K23 KK 80.300	7032	80	300	3	20520	0,5	952106	230	3 m
K23 KK 80.400	7032	80	400	4	27720	1,0	952113	390	3 m
K23 KK 80.500	7032	80	500	4	34920	1,0	952120	460	3 m
K23 KK 80.600	7032	80	600	4	42120	1,0	952137	470	3 m

Due to the transverse reinforcements, the cable tray is also approved for use with high-frequency cables according to UTE C15-900 (application class D, frequency 16 MHz).
L=fixing distance (m)

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

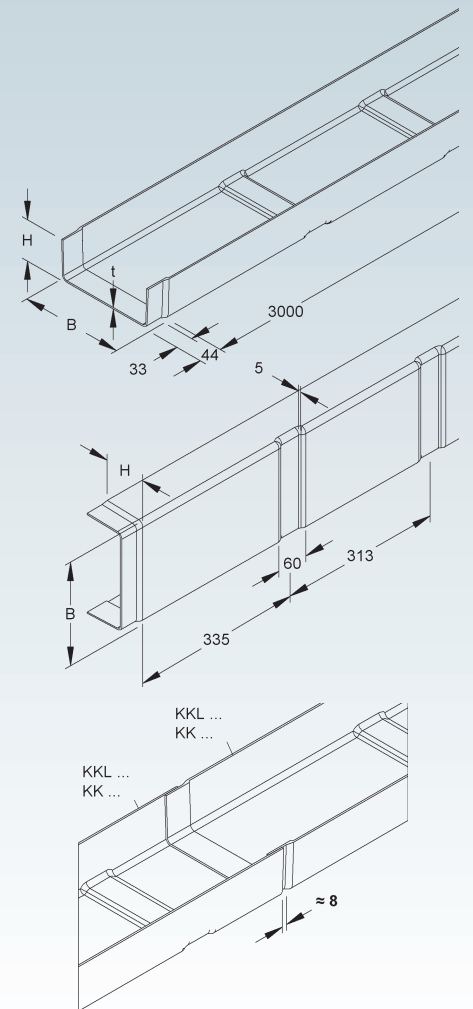
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-End Cover

pressed

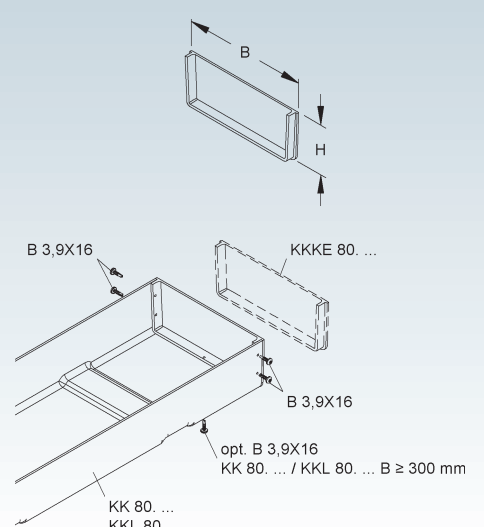
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKKE 80.100	7032	80	100	955244	6,0	1 pc.
K23 KKKE 80.150	7032	80	150	955251	9,0	1 pc.
K23 KKKE 80.200	7032	80	200	955268	12,0	1 pc.
K23 KKKE 80.250	7032	80	250	955275	14,0	1 pc.
K23 KKKE 80.300	7032	80	300	955282	17,5	1 pc.
K23 KKKE 80.400	7032	80	400	955299	21,0	1 pc.
K23 KKKE 80.500	7032	80	500	955305	26,0	1 pc.
K23 KKKE 80.600	7032	80	600	955312	35,0	1 pc.

for covering the cable tray ends

Used for: GRP-cable trays KK 80... and KKL 80...

Article available in various resin mixtures.

Required fixing accessories at least 4 self-drilling screws size 3.9X16 mm in the recommended stainless steel material classes 1.4116, 1.4122 and 1.4034 are required.



CABLE TRAY SYSTEM K²

GRP-Splice Plate

pressed, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KKGH 80	7032	55	3	955633	3,7	1 pair

for a longitudinally aligned connection of cable trays and fittings at the joint with 80 mm edge height

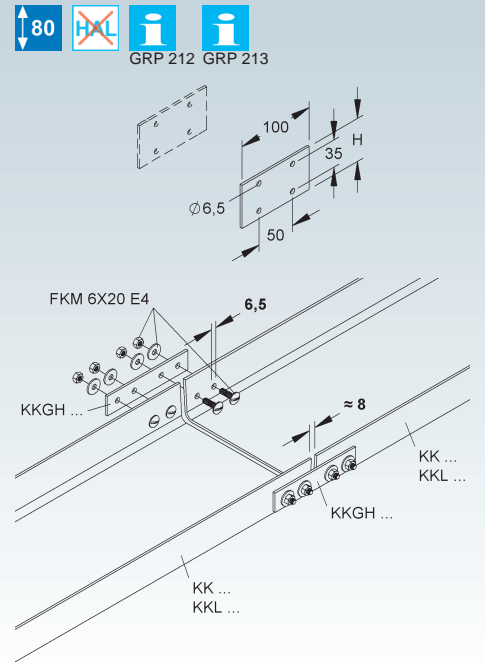
Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



Splice Plate

horizontal, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KKIH 80 E4	65	0,8	955664	3,6	1 pair

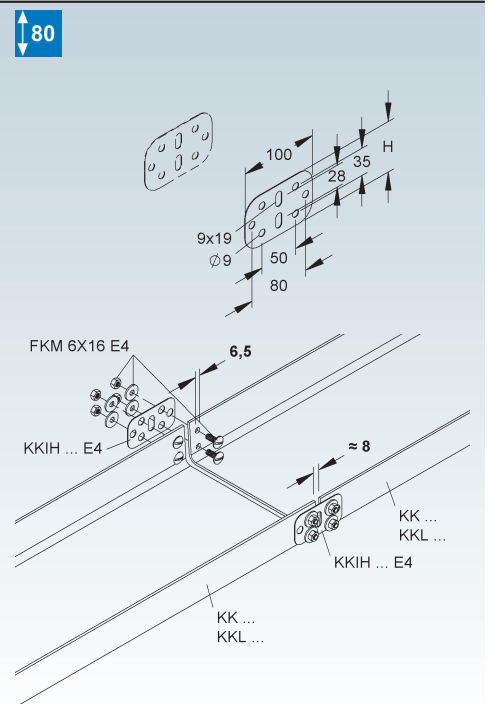
for horizontal changes of direction and a connection of the cable trays and fittings with 80 mm edge height that is aligned at the joint in the longitudinal direction.

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



GRP-Barrier Strip

pressed

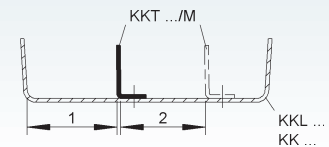
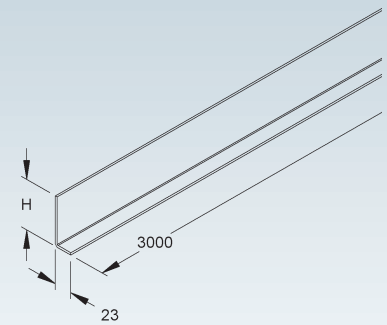
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KKT 80	7032	65	953035	40	3 m
K23 KKT 80/M	7032	65	953066	40	3 m

for separating lines and cables with different functions and/or voltages

The barrier strip KKT 80 is supplied loose and must be screwed to the cable tray on site. Requirement: 3 pieces FKM 6X16 E4 per delivery length (please order separately). The KKT 80/M version is pre-assembled (riveted) at the factory when the cable tray is ordered. When ordering, please state the corresponding compartment size.

Used for: GRP-cable trays KK 80... and KKL 80...

Article available in various resin mixtures.



GRP-Extension T-Piece, small

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKSS 80.100	7032	80	100	954834	18	1 pc.
K23 KKSS 80.150	7032	80	150	954841	27	1 pc.
K23 KKSS 80.200	7032	80	200	954858	22	1 pc.
K23 KKSS 80.250	7032	80	250	954865	28	1 pc.
K23 KKSS 80.300	7032	80	300	954872	32	1 pc.

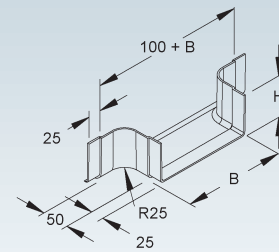
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the extension T-piece is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Extension T-Piece, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKST 80.100	7032	80	100	954612	78,0	1 pc.
K23 KKST 80.150	7032	80	150	954629	88,0	1 pc.
K23 KKST 80.200	7032	80	200	954636	90,0	1 pc.
K23 KKST 80.250	7032	80	250	954643	101,0	1 pc.
K23 KKST 80.300	7032	80	300	954650	108,5	1 pc.
K23 KKST 80.400	7032	80	400	954667	130,0	1 pc.
K23 KKST 80.500	7032	80	500	954674	145,0	1 pc.
K23 KKST 80.600	7032	80	600	954681	164,0	1 pc.

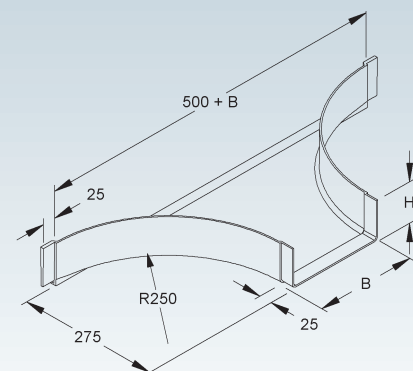
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the extension T-piece is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Elbow 45°

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm			
K23	KKC 80.100	7032	80	100	953448	22,0	1 pc.
K23	KKC 80.150	7032	80	150	953455	29,5	1 pc.
K23	KKC 80.200	7032	80	200	953462	50,0	1 pc.
K23	KKC 80.250	7032	80	250	953479	70,0	1 pc.
K23	KKC 80.300	7032	80	300	953486	100,0	1 pc.

for the production of 45° horizontally angled cable trays

The versions **KKC 80.150**, **KKC 80.250** and **KKC 80.300** are provided with a riveted sleeve on one side.

Used for: GRP-cable trays KK 80... and KKL 80...

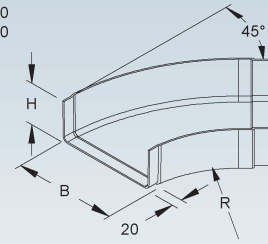
During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm, an additional middle support should be provided.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

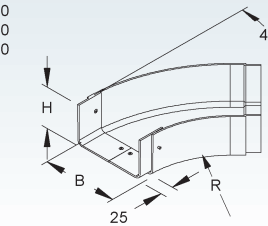
Article available in various resin mixtures.



KKC 80.100
KKC 80.200



KKC 80.150
KKC 80.250
KKC 80.300



GRP-Elbow 45°

pressed, with unperforated side rails, with integrated perforated connector straps and transverse reinforcements (5 mm)

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23	KKC 80.400	7032	80	395	176	953493	151	1 pc.
K23	KKC 80.500	7032	80	495	176	953509	280	1 pc.
K23	KKC 80.600	7032	80	595	176	953516	300	1 pc.

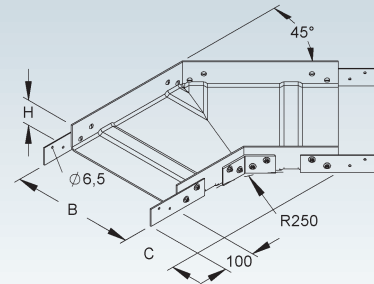
for the production of 45° horizontally angled cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Elbow 45°

pressed, with unperforated side rails, with integrated perforated connector plates, transverse reinforcements (5 mm) as well as with large inner radius R 600 mm

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23	KKC 80.100-R600	7032	80	95	264	141067	160	1 pc.
K23	KKC 80.200-R600	7032	80	195	264	141074	200	1 pc.
K23	KKC 80.300-R600	7032	80	295	264	141081	260	1 pc.
K23	KKC 80.400-R600	7032	80	395	264	141098	400	1 pc.
K23	KKC 80.500-R600	7032	80	495	264	141104	480	1 pc.
K23	KKC 80.600-R600	7032	80	595	264	141111	570	1 pc.

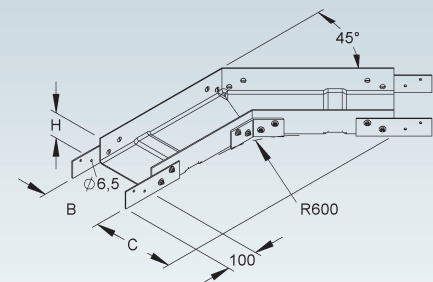
for the production of 45° horizontally angled cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm and/or the width > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, small

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKW 80.100	7032	80	100	953691	27	1 pc.
K23 KKW 80.150	7032	80	150	953707	35	1 pc.
K23 KKW 80.200	7032	80	200	953714	53	1 pc.
K23 KKW 80.250	7032	80	250	953721	62	1 pc.
K23 KKW 80.300	7032	80	300	953738	86	1 pc.
K23 KKW 80.400	7032	80	400	953745	125	1 pc.
K23 KKW 80.500	7032	80	500	953752	195	1 pc.
K23 KKW 80.600	7032	80	595	953769	240	1 pc.

for making horizontal 90° corner joints of cable trays

The version **KKW 80.600** is provided with riveted sockets on both sides and with transverse reinforcements (5 mm) in the bottom.

Used for: GRP-cable trays KK 80... and KKL 80...

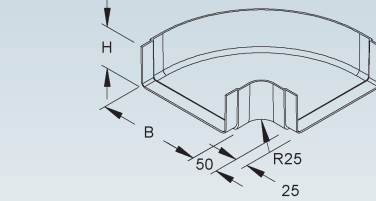
During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

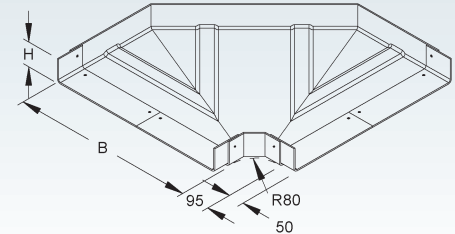
Article available in various resin mixtures.



KKW 80.100 - ... 500



KKW 80.600



GRP-Elbow 90°, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23 KKB 80.100	7032	80	100	125	100	953202	41,5	1 pc.
K23 KKB 80.150	7032	80	150	200	175	953219	43,5	1 pc.
K23 KKB 80.200	7032	80	200	225	200	953226	90,0	1 pc.
K23 KKB 80.250	7032	80	250	300	275	953233	146,5	1 pc.
K23 KKB 80.300	7032	80	300	250	225	953240	170,0	1 pc.

for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

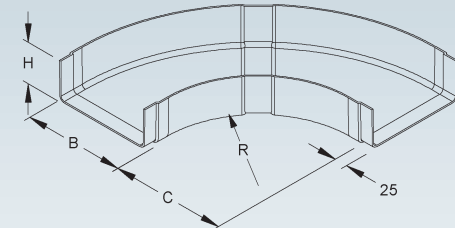
During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

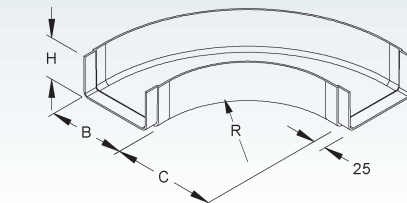
Article available in various resin mixtures.



KKB 80.100
KKB 80.200



KKB 80.150
KKB 80.250
KKB 80.300



GRP-Elbow 90°, large

pressed, with unperforated side rails, with integrated perforated connector tabs and transverse reinforcements (5 mm)

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23 KKB 80.400	7032	80	395	425	250	953257	272	1 pc.
K23 KKB 80.500	7032	80	495	425	250	953264	377	1 pc.
K23 KKB 80.600	7032	80	595	425	250	953271	442	1 pc.

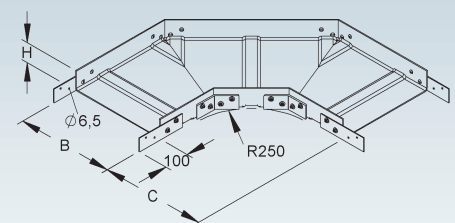
for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Elbow 90°, large

pressed, with unperforated side rails, with integrated perforated connector plates, transverse reinforcements (5 mm) as well as with large inner radius R 600 mm

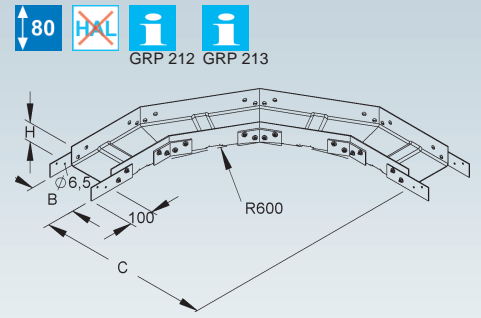
Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23 KKB 80.100-R600	7032	80	95	720	600	140947	270	1 pc.
K23 KKB 80.200-R600	7032	80	195	720	600	140954	360	1 pc.
K23 KKB 80.300-R600	7032	80	295	720	600	140961	450	1 pc.
K23 KKB 80.400-R600	7032	80	395	720	600	140978	680	1 pc.
K23 KKB 80.500-R600	7032	80	495	720	600	140985	830	1 pc.
K23 KKB 80.600-R600	7032	80	595	720	600	140992	980	1 pc.

for making horizontal 90° corner joints of cable trays, inner spar radius R 600 mm

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm and/or the width > 400 mm, an additional middle support should be provided. To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Reduction, right

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKRR 80.200	7032	80	200	955046	92	1 pc.
K23 KKRR 80.300	7032	80	300	955053	124	1 pc.
K23 KKRR 80.400	7032	80	400	955060	165	1 pc.
K23 KKRR 80.500	7032	80	500	955077	190	1 pc.
K23 KKRR 80.600	7032	80	600	955084	220	1 pc.

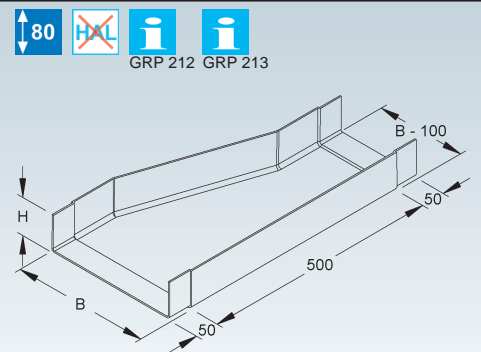
for reducing continuous cable trays, 100 mm reduction to the right side

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Reduction, left

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKRL 80.200	7032	80	200	954933	92	1 pc.
K23 KKRL 80.300	7032	80	300	954940	114	1 pc.
K23 KKRL 80.400	7032	80	400	954957	163	1 pc.
K23 KKRL 80.500	7032	80	500	954964	184	1 pc.
K23 KKRL 80.600	7032	80	600	954971	220	1 pc.

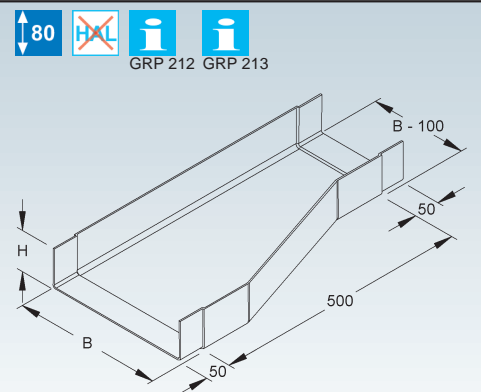
for reducing continuous cable trays, 100 mm reduction to the left side

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Joint Connector

pressed, vertical, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KKGV 80	7032	55	3	955145	9	1 pair

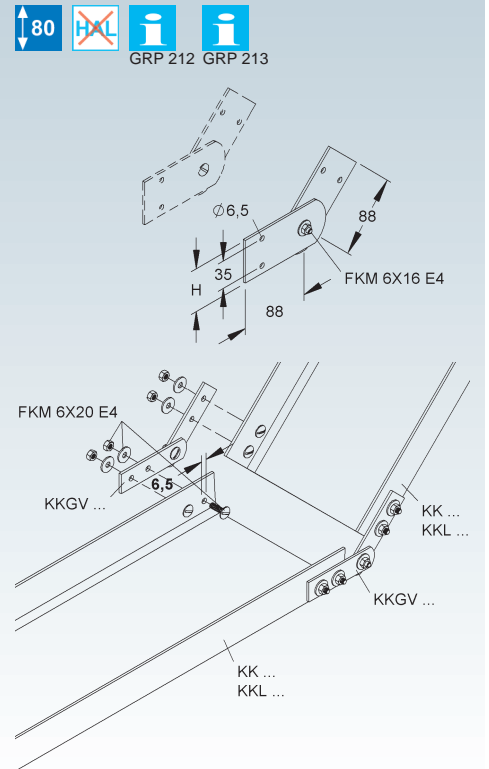
for creating vertical angle connections of continuous cable trays with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 80... and KKL 80...

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



Joint Connector

vertical, screwable

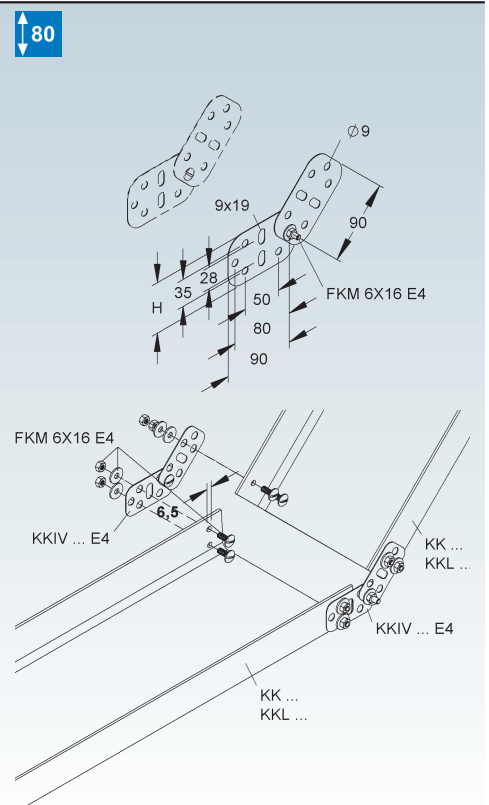
Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KKIV 80 E4	65	0,8	955176	8	1 pair

for creating vertical angle connections of continuous cable trays with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 80... and KKL 80...

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



CABLE TRAY SYSTEM K²

GRP-Floor

pressed, 2-piece, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Height H1 mm	Height H2 mm	Height H3 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKET 80.100	7032	80	100	160	480	800	954377	190	1 pc.
K23 KKET 80.150	7032	80	150	160	480	800	954384	250	1 pc.
K23 KKET 80.200	7032	80	200	160	480	800	954391	259	1 pc.
K23 KKET 80.250	7032	80	250	160	480	800	954407	340	1 pc.
K23 KKET 80.300	7032	80	300	160	480	800	954414	344	1 pc.
K23 KKET 80.400	7032	80	400	160	480	800	954421	420	1 pc.
K23 KKET 80.500	7032	80	500	160	480	800	954438	500	1 pc.
K23 KKET 80.600	7032	80	600	160	480	800	954445	596	1 pc.

for the vertical height offset

By cutting the individual parts to length, variable adaptation to local conditions is possible.

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the floor is supported at each cable tray access point and centrally with brackets. If the width is > 400 mm, an additional central support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Depending on the standard variants used (see assembly drawing), different lengths of the floor result depending on the height.

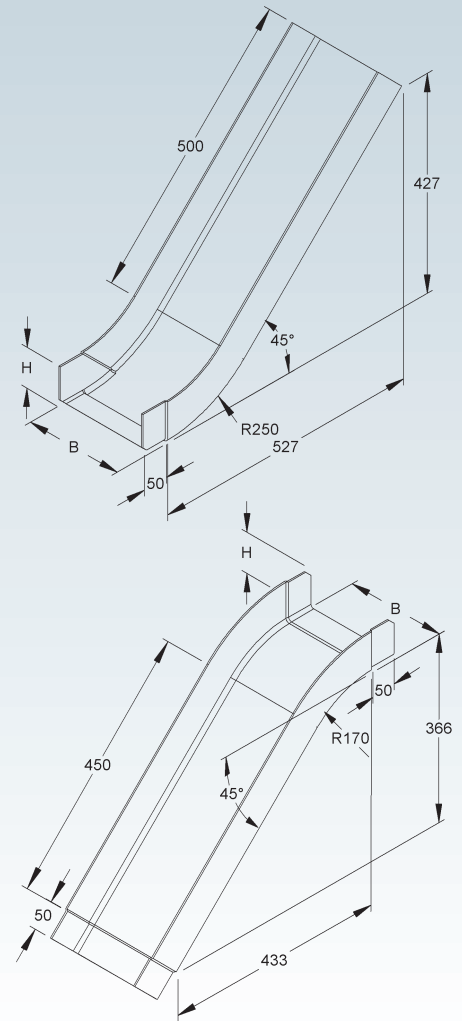
H1 = 160 mm => L1 = 780 mm (one component shortened)

H2 = 480 mm => L2 = 1100 mm

H3 = 800 mm => L3 = 970 mm

Delivery: unassembled

Article available in various resin mixtures.



GRP-Vertical Inside Elbow

pressed, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBI 80.100	7032	80	100	954070	53	1 pc.
K23 KKBI 80.150	7032	80	150	954087	64	1 pc.
K23 KKBI 80.200	7032	80	200	954094	75	1 pc.
K23 KKBI 80.250	7032	80	250	954100	90	1 pc.
K23 KKBI 80.300	7032	80	300	954117	102	1 pc.
K23 KKBI 80.400	7032	80	400	954124	123	1 pc.
K23 KKBI 80.500	7032	80	500	954131	145	1 pc.
K23 KKBI 80.600	7032	80	600	954148	170	1 pc.

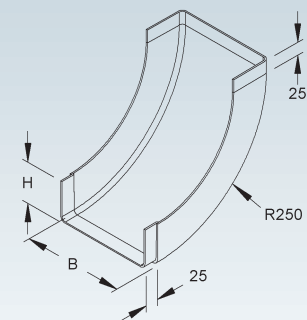
for the production of vertically 90° rising cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the vertical inside elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Vertical Outside Elbow

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBA 80.100	7032	80	100	953882	46	1 pc.
K23 KKBA 80.150	7032	80	150	953899	55	1 pc.
K23 KKBA 80.200	7032	80	200	953905	62	1 pc.
K23 KKBA 80.250	7032	80	250	953912	73	1 pc.
K23 KKBA 80.300	7032	80	300	953929	74	1 pc.
K23 KKBA 80.400	7032	80	400	953936	100	1 pc.
K23 KKBA 80.500	7032	80	500	953943	113	1 pc.
K23 KKBA 80.600	7032	80	600	953950	134	1 pc.

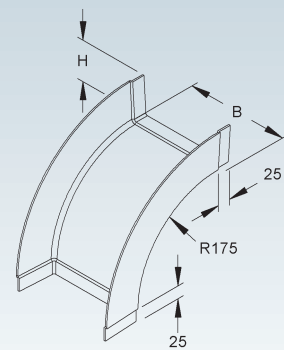
for the production of vertically 90° falling cable trays

Used for: GRP-cable trays KK 80... and KKL 80...

During installation, ensure that the vertical outside elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Mounting Plate

pressed, easy to snap on, with pre-assembled fixing clamps

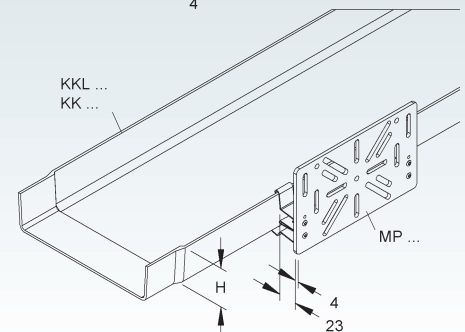
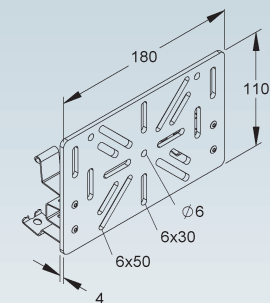
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 MP 80	7032	80	963027	17	1 pc.

for the installation of equipment or junction boxes

The mounting plate is made of UP-GF material, the fixing clamps of stainless steel, material no. 1.4404, AISI 316L.

Used for: GRP-cable trays KK 80... and KKL 80...

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Cable Tray

pressed, with unperforated side rails, with bottom perforation, with moulded connector, with transverse bottom reinforcements (5 mm)



Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KKL 110.100	7032	110	100	4	7956	1,2	952342	230	3 m
K23 KKL 110.200	7032	110	200	4	18156	1,2	952359	300	3 m
K23 KKL 110.300	7032	110	300	4	28356	1,2	952366	370	3 m
K23 KKL 110.400	7032	110	400	4	38556	1,2	952373	440	3 m
K23 KKL 110.500	7032	110	500	4	48756	1,4	952380	510	3 m
K23 KKL 110.600	7032	110	600	4	58956	1,6	952397	580	3 m

Due to the transverse reinforcements, the cable tray is also approved for use with high-frequency cables according to UTE C15-900 (application class D, frequency 16 MHz).
L=fixing distance (m)

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

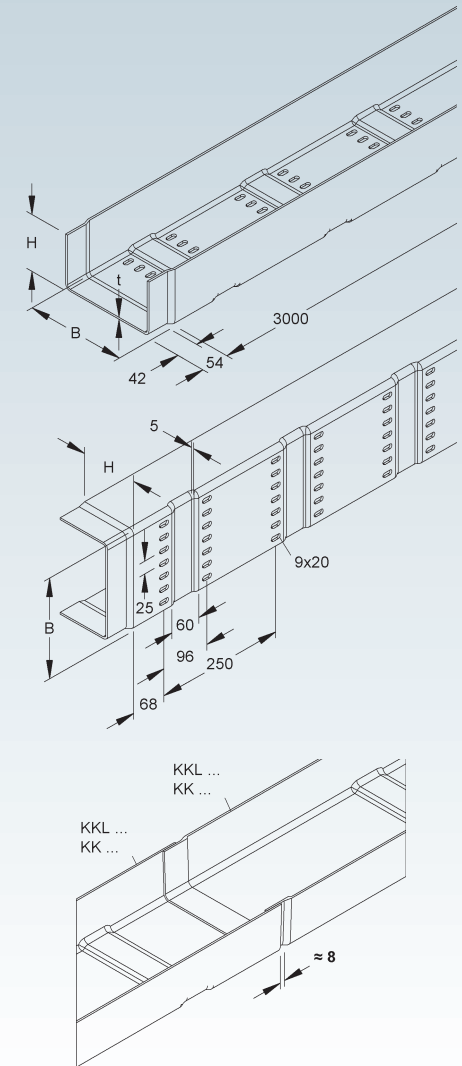
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed near the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-Cable Tray

pressed, with unperforated side rails, without bottom perforation, with moulded connector, with transverse bottom reinforcements (5 mm)

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Usable cross section mm ²	Load capacity F at L=1.5 m kN/m	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KK 110.100	7032	110	100	4	7956	1,2	952144	230	3 m
K23 KK 110.200	7032	110	200	4	18156	1,2	952151	300	3 m
K23 KK 110.300	7032	110	300	4	28356	1,2	952168	380	3 m
K23 KK 110.400	7032	110	400	4	38556	1,2	952175	450	3 m
K23 KK 110.500	7032	110	500	4	48756	1,4	952182	520	3 m
K23 KK 110.600	7032	110	600	4	58956	1,6	952199	600	3 m

Due to the transverse reinforcements, the cable tray is also approved for use with high-frequency cables according to UTE C15-900 (application class D, frequency 16 MHz).
L=fixing distance (m)

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fixing distance between the brackets. If this distance is not maintained, the deflection can increase by up to 30%.

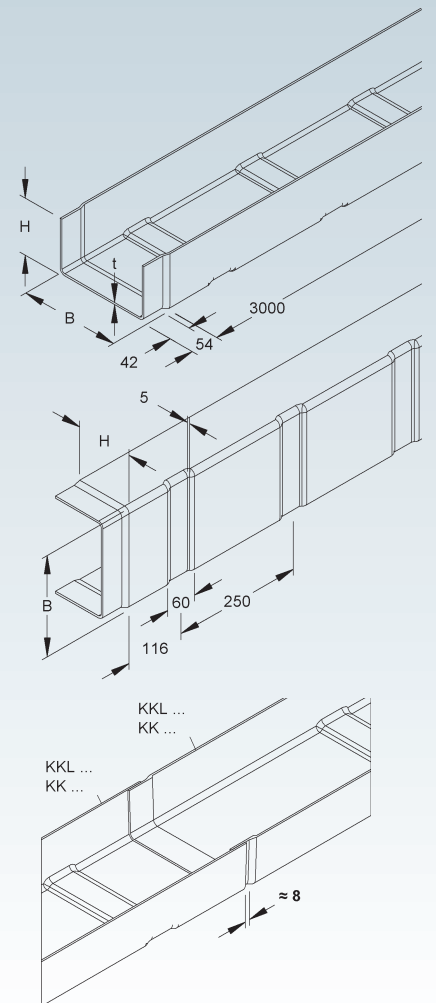
The permissible load at a support distance of 1.5 m can be found in the table.

An expansion distance of 8 mm must be taken into account.

Due to the expansion of the material, the following must be observed during assembly:

- The cable tray should not be screwed near the joint.
- When screwing the cable tray onto the brackets, always drill a through hole of Ø 9 mm for the FKM 6X20 E4 screws in the tray.

Article available in various resin mixtures.



GRP-End Cover

pressed, three-part, riveted

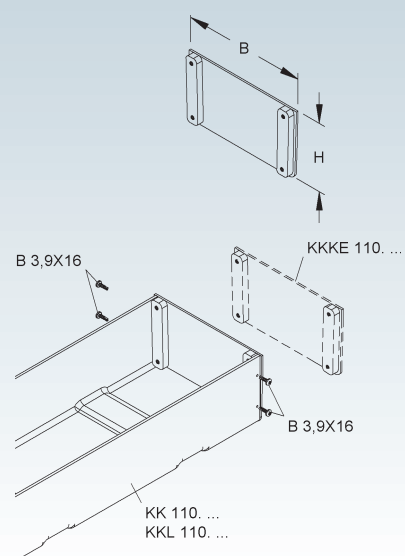
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKKE 110.100	7032	110	100	955329	10,4	1 pc.
K23 KKKE 110.200	7032	110	200	955336	18,6	1 pc.
K23 KKKE 110.300	7032	110	300	955343	25,5	1 pc.
K23 KKKE 110.400	7032	110	400	955350	33,5	1 pc.
K23 KKKE 110.500	7032	110	500	955367	40,4	1 pc.
K23 KKKE 110.600	7032	110	600	955374	48,5	1 pc.

for covering the cable tray ends

Used for: GRP-cable trays KK 110... and KKL 110...

Article available in various resin mixtures.

Required fixing accessories at least 4 self-drilling screws size 3.9X16 mm in the recommended stainless steel material classes 1.4116, 1.4122 and 1.4034 are required.



CABLE TRAY SYSTEM K²

GRP-Splice Plate

pressed, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KKGH 110	7032	89	3	955640	2	1 pair

for a longitudinally aligned connection of cable trays and fittings at the joint with 110 mm edge height

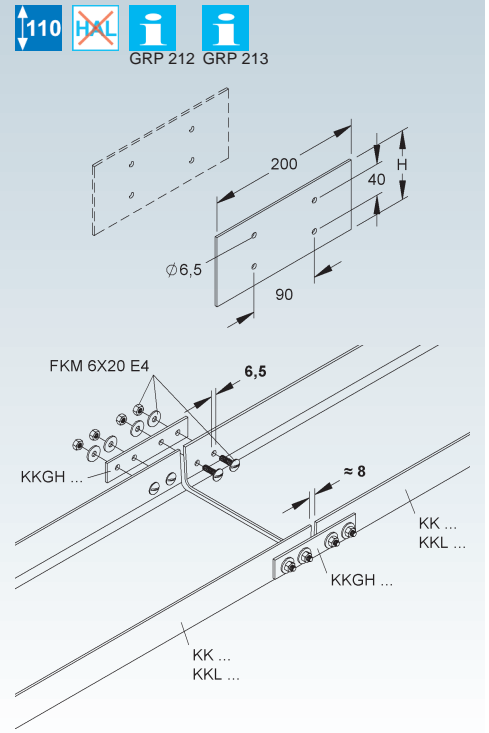
Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



Splice Plate

horizontal, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KKIH 110 E4	80	1,5	955671	16,6	1 pair

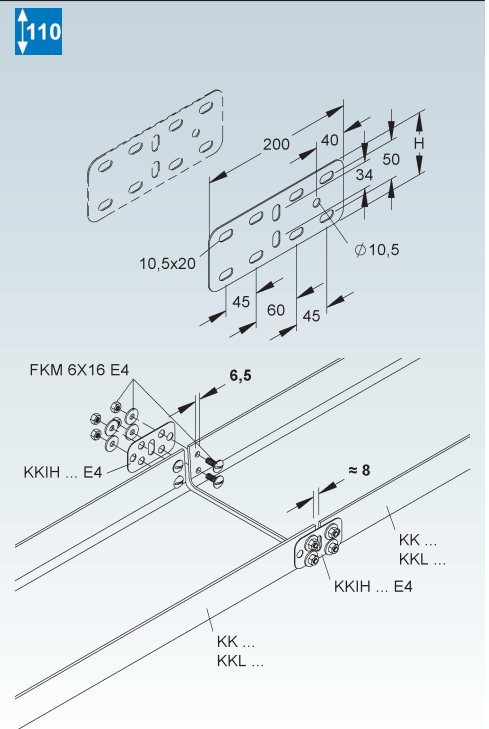
for horizontal changes of direction and a connection of the cable trays and fittings with 110 mm edge height that is aligned at the joint in the longitudinal direction.

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, an expansion distance of approx. 8 mm must be taken into account.

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



GRP-Barrier Strip

pressed

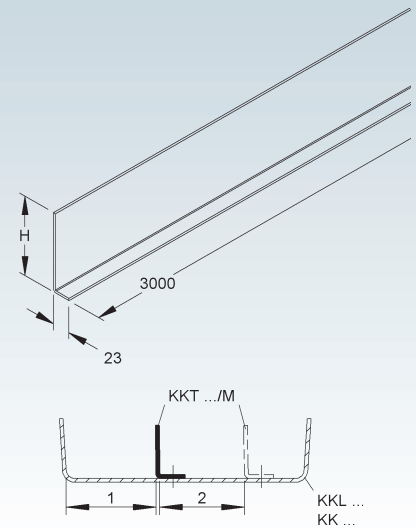
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KKT 110	7032	102	953042	40	3 m
K23 KKT 110/M	7032	102	953073	40	3 m

for separating lines and cables with different functions and/or voltages

The barrier strip KKT 110 is supplied loose and must be screwed to the cable tray on site. Requirement: 3 pieces FKM 6X16 E4 per delivery length (please order separately). The KKT 110/M version is pre-assembled (riveted) at the factory when the cable tray is ordered. When ordering, please state the corresponding compartment size.

Used for: GRP-cable trays KK 110... and KKL 110...

Article available in various resin mixtures.



GRP-Extension T-Piece, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKST 110.100	7032	110	100	954698	78,0	1 pc.
K23 KKST 110.200	7032	110	200	954704	120,0	1 pc.
K23 KKST 110.300	7032	110	300	954711	128,5	1 pc.
K23 KKST 110.400	7032	110	400	954728	200,0	1 pc.
K23 KKST 110.500	7032	110	500	954735	170,0	1 pc.
K23 KKST 110.600	7032	110	600	954742	190,0	1 pc.

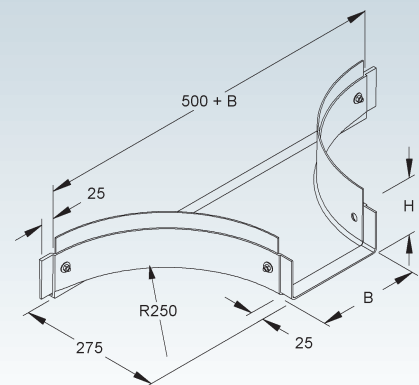
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, make sure that the extension T-piece is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 45°

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKC 110.100	7032	110	100	100	953523	22,0	1 pc.
K23 KKC 110.200	7032	110	200	200	953530	65,0	1 pc.
K23 KKC 110.300	7032	110	300	225	953547	108,5	1 pc.

for the production of 45° horizontally angled cable trays

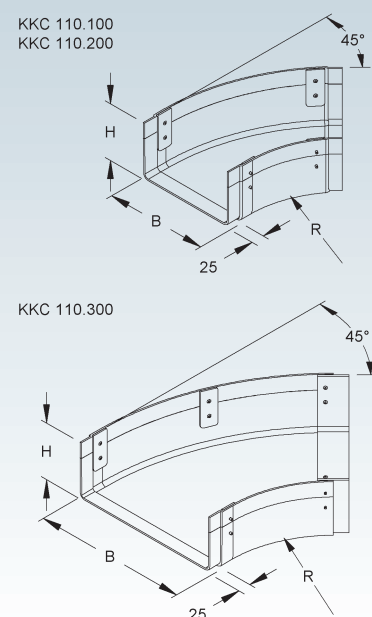
The KKC 110.300 version has a riveted sleeve on one side.

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Elbow 45°

pressed, with unperforated side rails, with integrated perforated connector straps and transverse reinforcements (5 mm)

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
		mm	mm	mm	mm				
K23	KKC 110.400	7032	110	395	176	250	953554	197	1 pc.
K23	KKC 110.500	7032	110	495	176	250	953561	313	1 pc.
K23	KKC 110.600	7032	110	595	176	250	953578	342	1 pc.

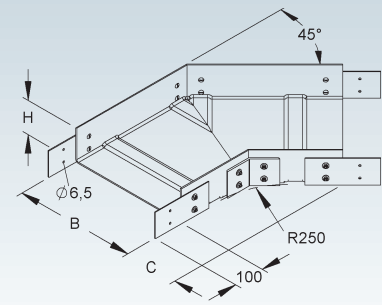
for the production of 45° horizontally angled cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 45°

pressed, with unperforated side rails, with integrated perforated connector plates, transverse reinforcements (5 mm) as well as with large inner radius R 600 mm

Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
		mm	mm	mm	mm				
K23	KKC 110.100-R600	7032	110	95	264	600	141005	240	1 pc.
K23	KKC 110.200-R600	7032	110	195	264	600	141012	310	1 pc.
K23	KKC 110.300-R600	7032	110	295	264	600	141029	380	1 pc.
K23	KKC 110.400-R600	7032	110	395	264	600	141036	460	1 pc.
K23	KKC 110.500-R600	7032	110	495	264	600	141043	550	1 pc.
K23	KKC 110.600-R600	7032	110	595	264	600	141050	640	1 pc.

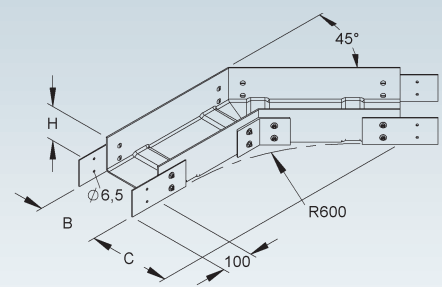
for the production of 45° horizontally angled cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm and/or the width > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, small

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23	KKW 110.100	7032	110	953776	40	1 pc.
K23	KKW 110.200	7032	110	953783	70	1 pc.
K23	KKW 110.300	7032	110	953790	86	1 pc.
K23	KKW 110.400	7032	110	953806	125	1 pc.
K23	KKW 110.500	7032	110	953813	195	1 pc.
K23	KKW 110.600	7032	110	953820	240	1 pc.

for making horizontal 90° corner joints of cable trays

The version KKW 110.600 is provided with riveted sockets on both sides and with transverse reinforcements (5 mm) in the bottom.

Used for: GRP-cable trays KK 110... and KKL 110...

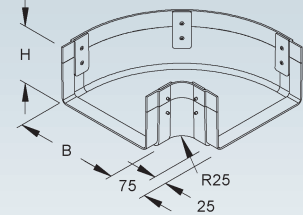
During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

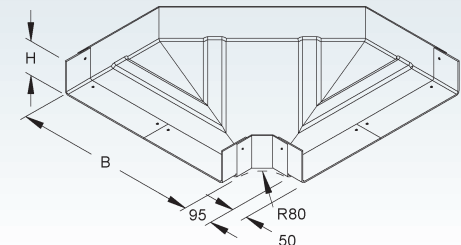
Article available in various resin mixtures.



KKW 110.100 - ... 500



KKW 110.600



GRP-Elbow 90°, large

pressed, with unperforated side rails, with moulded connector

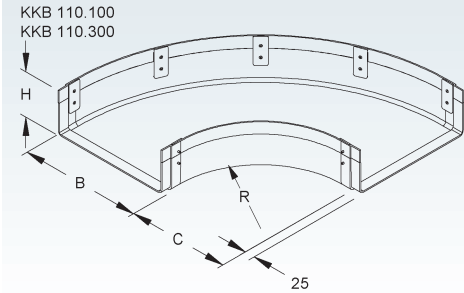
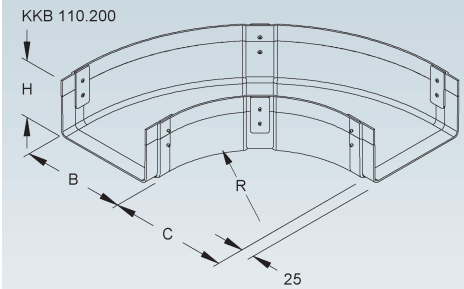
Model No.	Colour similar RAL	Height H mm	Width B mm	Distance C mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKB 110.100	7032	110	100	125	100	953288	98,0	1 pc.
K23 KKB 110.200	7032	110	200	225	200	953295	132,5	1 pc.
K23 KKB 110.300	7032	110	300	250	225	953301	217,0	1 pc.

for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, large

pressed, with unperforated side rails, with integrated perforated connector tabs and transverse reinforcements (5 mm)

Model No.	Colour similar RAL	Height H mm	Width B mm	Distance C mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKB 110.400	7032	110	395	425	250	953318	360	1 pc.
K23 KKB 110.500	7032	110	495	425	250	953325	490	1 pc.
K23 KKB 110.600	7032	110	595	425	250	953332	434	1 pc.

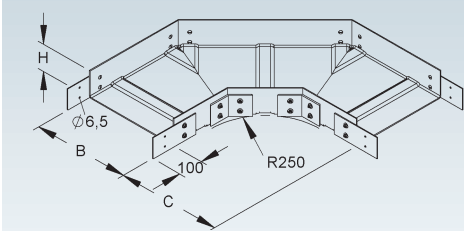
for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the arch is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, large

pressed, with unperforated side rails, with integrated perforated connector plates, transverse reinforcements (5 mm) as well as with large inner radius R 600 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	Distance C mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKB 110.100-R600	7032	110	95	720	600	140787	420	1 pc.
K23 KKB 110.200-R600	7032	110	195	720	600	140794	530	1 pc.
K23 KKB 110.300-R600	7032	110	295	720	600	140800	660	1 pc.
K23 KKB 110.400-R600	7032	110	395	720	600	140817	790	1 pc.
K23 KKB 110.500-R600	7032	110	495	720	600	140824	940	1 pc.
K23 KKB 110.600-R600	7032	110	595	720	600	140831	1100	1 pc.

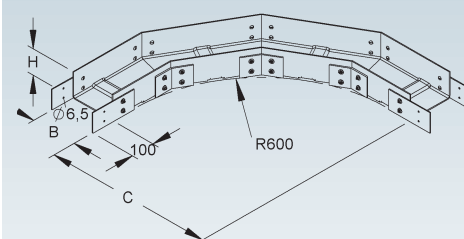
for making horizontal 90° corner joints of cable trays, inner spar radius R 600 mm

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. If the radius is > 250 mm and/or the width > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM K²

GRP-Reduction, right

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKRR 110.200	7032	110	200	962549	100	1 pc.
K23 KKRR 110.300	7032	110	300	955091	124	1 pc.
K23 KKRR 110.400	7032	110	400	955107	160	1 pc.
K23 KKRR 110.500	7032	110	500	955114	180	1 pc.
K23 KKRR 110.600	7032	110	600	955121	240	1 pc.

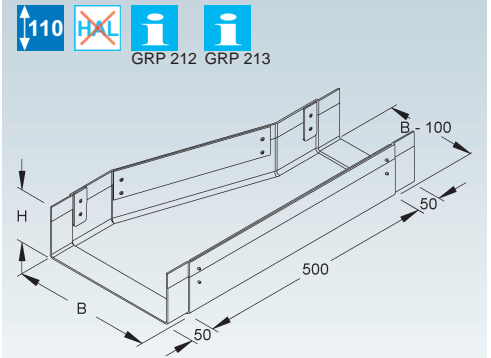
for reducing continuous cable trays, 100 mm reduction to the right side

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Reduction, left

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	length of cover	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm			
K23 KKRL 110.200	7032	110	200	500	962532	100	1 pc.
K23 KKRL 110.300	7032	110	300	500	954988	124	1 pc.
K23 KKRL 110.400	7032	110	400	500	954995	200	1 pc.
K23 KKRL 110.500	7032	110	500	500	955008	195	1 pc.
K23 KKRL 110.600	7032	110	600	500	955015	220	1 pc.

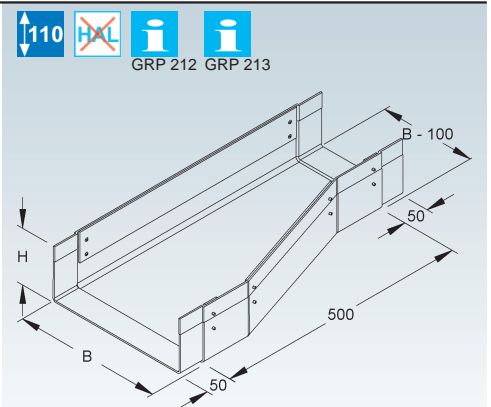
for reducing continuous cable trays, 100 mm reduction to the left side

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the reduction is supported with brackets at each cable tray access point.

To ensure a correct installation, the connectors must be fixed laterally by 2 FKM 6X16 E4 on each tray end (to be ordered separately).

Article available in various resin mixtures.



GRP-Joint Connector

pressed, vertical, screwable

Model No.	Colour similar RAL	Height H	Material thickness (t)	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
		mm	mm			
K23 KKGV 110	7032	89	3	955152	19	1 pair

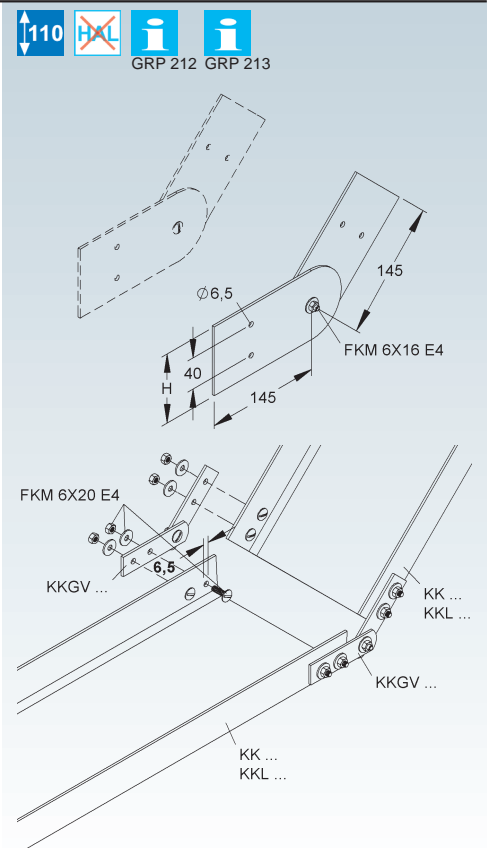
for creating vertical angle connections of continuous cable trays with 110 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 110... and KKL 110...

Article available in various resin mixtures.

Required fixing accessories: 8 pieces FKM 6X20 E4 (to be ordered separately)



Joint Connector

vertical, screwable

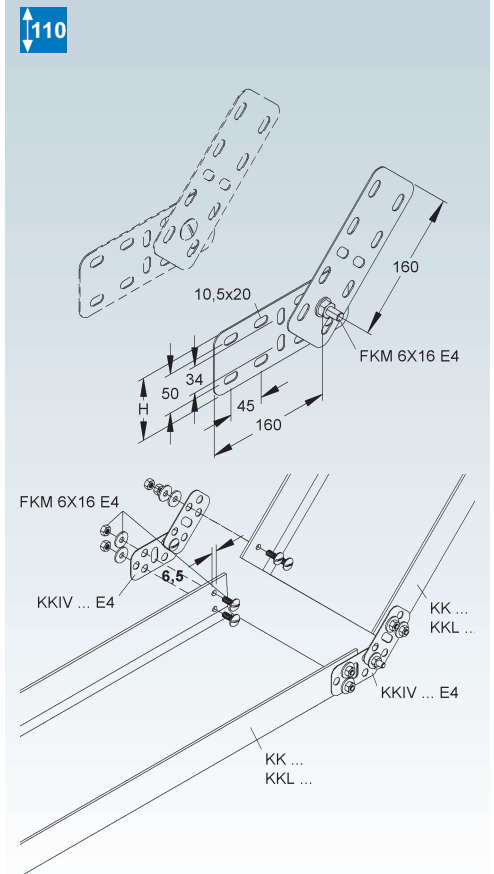
Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KKIV 110 E4	80	1,5	955183	36	1 pair

for creating vertical angle connections of continuous cable trays with 110 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KK 110... and KKL 110...

Required fixing accessories: 8 pieces FKM 6X16 E4 (to be ordered separately)



CABLE TRAY SYSTEM K²

GRP-Floor

pressed, 2-piece, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H	Width B	Height H1	Height H2	Height H3	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm	mm			
K23 KKET 110.100	7032	110	100	160	480	800	954452	190	1 pc.
K23 KKET 110.200	7032	110	200	160	480	800	954469	210	1 pc.
K23 KKET 110.300	7032	110	300	160	480	800	954476	344	1 pc.
K23 KKET 110.400	7032	110	400	160	480	800	954483	420	1 pc.
K23 KKET 110.500	7032	110	500	160	480	800	954490	480	1 pc.
K23 KKET 110.600	7032	110	600	160	480	800	954506	596	1 pc.

for the vertical height offset

By cutting the individual parts to length, variable adaptation to local conditions is possible.

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the floor is supported at each cable tray access point and centrally with brackets. If the width is > 400 mm, an additional central support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Depending on the standard variants used (see assembly drawing), different lengths of the floor result depending on the height.

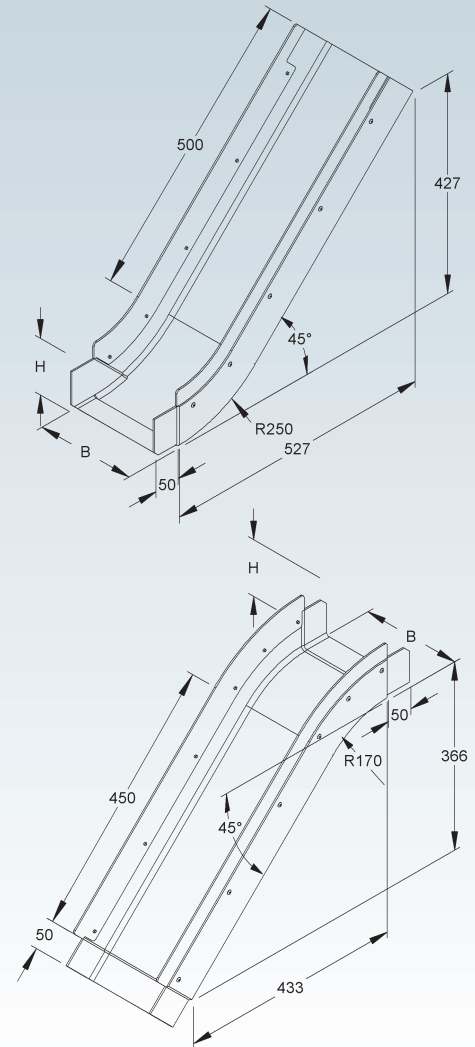
H1 = 160 mm => L1 = 780 mm (one component shortened)

H2 = 480 mm => L2 = 1100 mm

H3 = 800 mm => L3 = 970 mm

Delivery: unassembled

Article available in various resin mixtures.



GRP-Vertical Inside Elbow

pressed, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKBI 110.100	7032	110	100	954155	53	1 pc.
K23 KKBI 110.200	7032	110	200	954162	100	1 pc.
K23 KKBI 110.300	7032	110	300	954179	123	1 pc.
K23 KKBI 110.400	7032	110	400	954186	143	1 pc.
K23 KKBI 110.500	7032	110	500	954193	175	1 pc.
K23 KKBI 110.600	7032	110	600	954209	170	1 pc.

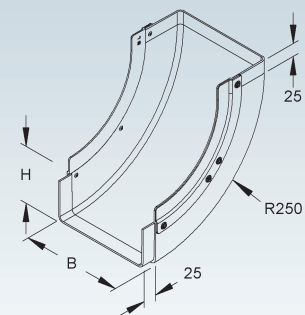
for the production of vertically 90° rising cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the vertical inside elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Vertical Outside Elbow

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBA 110.100	7032	110	100	953967	46	1 pc.
K23 KKBA 110.200	7032	110	200	953974	82	1 pc.
K23 KKBA 110.300	7032	110	300	953981	110	1 pc.
K23 KKBA 110.400	7032	110	400	953998	130	1 pc.
K23 KKBA 110.500	7032	110	500	954001	205	1 pc.
K23 KKBA 110.600	7032	110	600	954018	138	1 pc.

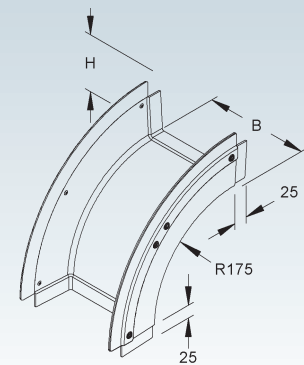
for the production of vertically 90° falling cable trays

Used for: GRP-cable trays KK 110... and KKL 110...

During installation, ensure that the vertical outside elbow is supported with brackets at each cable tray access point. If the width is > 400 mm, an additional middle support should be provided.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X16 E4 (please order separately).

Article available in various resin mixtures.



GRP-Mounting Plate

pressed, easy to snap on, with pre-assembled fixing clamps

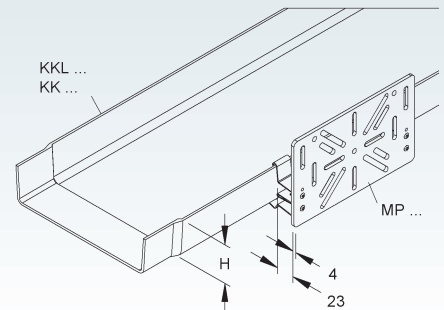
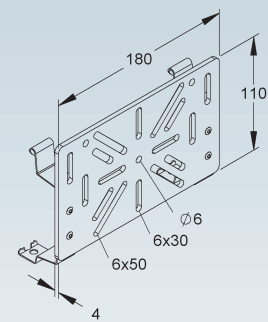
Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 MP 110	7032	110	963034	17	1 pc.

for the installation of equipment or junction boxes

The mounting plate is made of UP-GF material, the fixing clamps of stainless steel, material no. 1.4404, AISI 316L.

Used for: GRP-cable trays KK 110... and KKL 110...

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER K²

GRP-Cover for Cable Tray/ladder

pressed, with moulded flap

Model No.	Colour similar RAL	Width inside B	Material thickness (t)	Height bead H1	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm	mm	mm			
K23 KKD 50	7032	55	2,75	-	956104	50	3 m
K23 KKD 100	7032	100	3,00	-	956111	80	3 m
K23 KKD 150	7032	150	3,00	-	956128	105	3 m
K23 KKD 200	7032	200	3,00	-	956135	130	3 m
K23 KKD 250	7032	250	3,00	-	956142	160	3 m
K23 KKD 300	7032	300	3,00	-	956159	190	3 m
K23 KKD 400	7032	400	3,00	12	956166	245	3 m
K23 KKD 500	7032	500	3,00	12	956180	300	3 m
K23 KKD 600	7032	600	3,00	12	956197	360	3 m

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

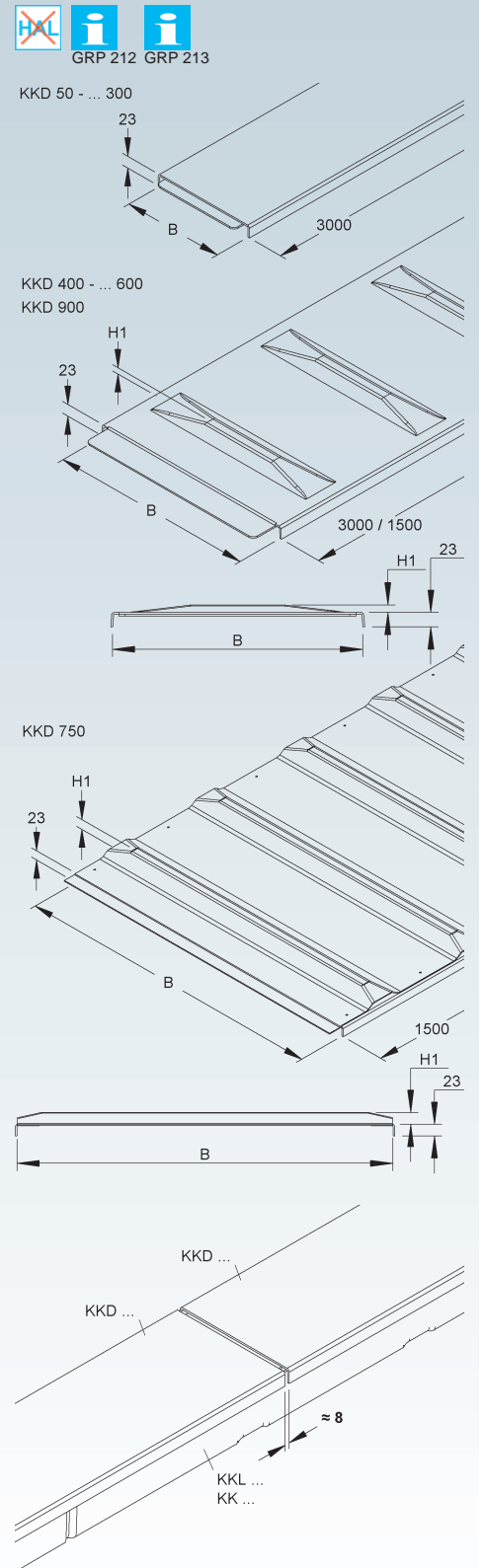
Used for: GRP-cable trays KK..., KKL... with edge height 50, 80 and 110 mm as well as GRP-cable ladders UL..., ULL... with edge height 53, 80, 100 and 150 mm

To ensure proper and stable installation, make sure that the joints of the covers have a minimum distance of approx. 8 mm and are offset from the joint of the cable trays/cable ladders.

The fastening can be carried out with cover clamps DF ... E4 in the cable tray system K² and in the cable ladder system UL with cover clamp DF... E4, cover fastening DFUB 5.5X19 E4 or DF M, 2 pieces per metre (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 45°

pressed

Model No.	Colour similar RAL	Width inside B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm			
K23 KKCD 100	7032	100	956456	12	1 pc.
K23 KKCD 150	7032	150	956463	23	1 pc.
K23 KKCD 200	7032	200	956470	33	1 pc.
K23 KKCD 250	7032	250	956487	50	1 pc.
K23 KKCD 300	7032	300	956494	51	1 pc.

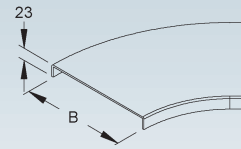
Used for: GRP-elbow 45° KKC... and KPC.../P with edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 45°

pressed, 2-part, with beads pressed out upwards

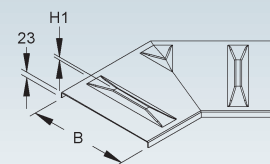
Model No.	Colour similar RAL	Width inside B	Height bead H1	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKCD 400	7032	400	12	956500	138	1 pc.
K23 KKCD 500	7032	500	12	956517	150	1 pc.
K23 KKCD 600	7032	600	12	956524	173	1 pc.

Used for: GRP-elbow 45° KKC... with edge height 80 and 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 45°

pressed, 2-piece

Model No.	Colour similar RAL	Width inside B	Height bead H1	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KKCD 100-R600	7032	100	-	141128	60	1 pc.
K23 KKCD 200-R600	7032	200	-	141135	100	1 pc.
K23 KKCD 300-R600	7032	300	-	141142	160	1 pc.
K23 KKCD 400-R600	7032	400	12	141159	220	1 pc.
K23 KKCD 500-R600	7032	500	12	141166	280	1 pc.
K23 KKCD 600-R600	7032	600	12	141173	340	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

Used for: GRP-elbow 45° KKC...-R600 with edge height 80 and 110 mm

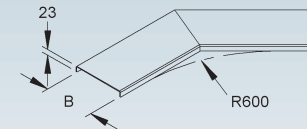
The cover can be fixed with cover clamps DF.... E4, alternating with at least 4 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

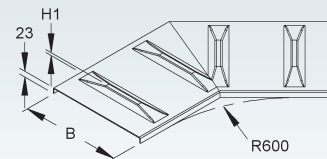
Article available in various resin mixtures.



KKCD 100-R600 - ...300-R600



KKCD 400-R600 - ...600-R600



CABLE TRAY SYSTEMS COVER K²

GRP-Cover for Elbow 90°, small

pressed

Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKWD 50	7032	50	-	956531	6,0	1 pc.
K23 KKWD 100	7032	100	-	956548	11,5	1 pc.
K23 KKWD 150	7032	150	-	956555	21,0	1 pc.
K23 KKWD 200	7032	200	-	956562	31,0	1 pc.
K23 KKWD 250	7032	250	-	956579	41,5	1 pc.
K23 KKWD 300	7032	300	-	956586	60,0	1 pc.
K23 KKWD 400	7032	400	-	956593	93,0	1 pc.
K23 KKWD 500	7032	500	-	956609	125,0	1 pc.
K23 KKWD 600	7032	600	12	956616	187,0	1 pc.

For stability reasons, the cover **KKWD 600** is beaded. The beads are pressed out towards the top.

Used for: GRP-elbow 90°, small KKW... with edge height 50, 80 and 110 mm

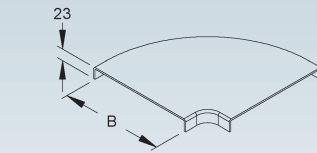
The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

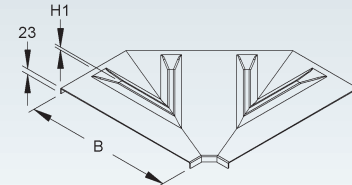
Article available in various resin mixtures.



KKWD 50 - ... 500



KKWD 600



GRP-Cover for Elbow 90°, large

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBD 100	7032	100	956371	19,5	1 pc.
K23 KKBD 150	7032	150	956388	43,0	1 pc.
K23 KKBD 200	7032	200	956395	68,0	1 pc.
K23 KKBD 250	7032	250	956401	97,0	1 pc.
K23 KKBD 300	7032	300	956418	115,0	1 pc.

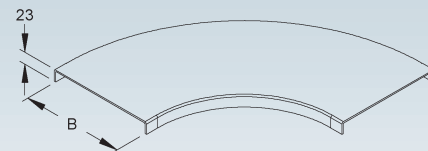
Used for: GRP-elbow 90°, large KKB.../P with edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 90°, large

pressed, 3-part, with beads pressed out upwards

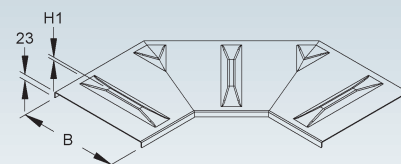
Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBD 400	7032	400	12	956425	241	1 pc.
K23 KKBD 500	7032	500	12	956432	334	1 pc.
K23 KKBD 600	7032	600	12	956449	403	1 pc.

Used for: GRP-elbow 90°, large KKB... with edge height 80 and 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 6 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 90°, large

pressed, 4-piece

Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBD 100-R600	7032	100	-	140848	100	1 pc.
K23 KKBD 200-R600	7032	200	-	140855	180	1 pc.
K23 KKBD 300-R600	7032	300	-	140862	260	1 pc.
K23 KKBD 400-R600	7032	400	12	140879	360	1 pc.
K23 KKBD 500-R600	7032	500	12	140886	470	1 pc.
K23 KKBD 600-R600	7032	600	12	140893	580	1 pc.

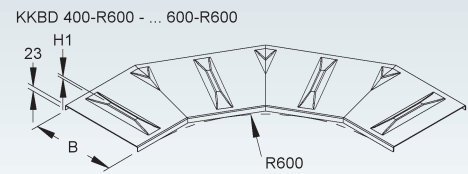
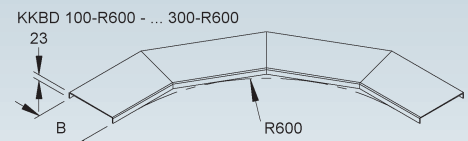
For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

Used for: GRP-elbow 90°, large KKB...-R600 with edge height 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 8 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Inside Elbow

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBID 50.050	7032	50	956814	5	1 pc.
K23 KKBID 50.100	7032	100	956821	20	1 pc.
K23 KKBID 50.150	7032	150	956838	42	1 pc.
K23 KKBID 50.200	7032	200	956845	50	1 pc.
K23 KKBID 50.300	7032	300	956852	63	1 pc.

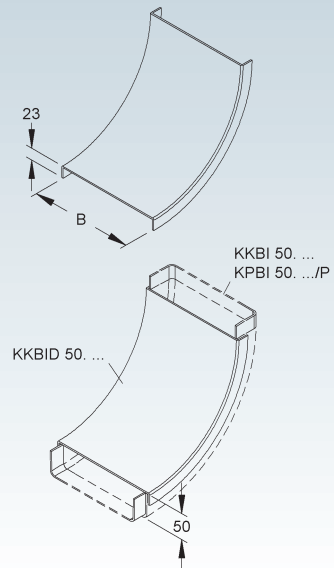
Used for: GRP-vertical inside elbow KKBID... and KPBI.../P of edge height 50 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Inside Elbow

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBID 80.100	7032	100	956869	18,0	1 pc.
K23 KKBID 80.150	7032	150	956876	24,5	1 pc.
K23 KKBID 80.200	7032	200	956883	33,0	1 pc.
K23 KKBID 80.250	7032	250	956890	40,0	1 pc.
K23 KKBID 80.300	7032	300	956906	45,5	1 pc.
K23 KKBID 80.400	7032	400	956913	61,0	1 pc.
K23 KKBID 80.500	7032	500	956920	73,0	1 pc.
K23 KKBID 80.600	7032	600	956937	95,0	1 pc.

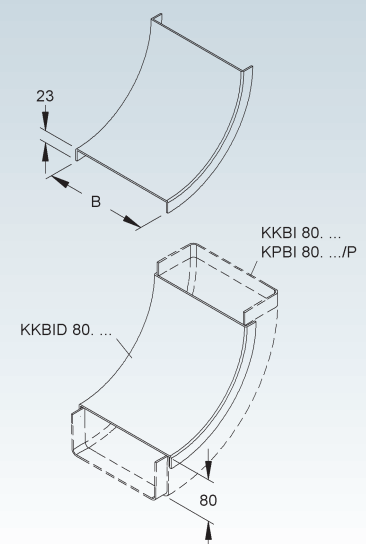
Used for: GRP-vertical inside elbow KKBID... and KPBI.../P of edge height 80 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER K²

GRP-Cover for Vertical Inside Elbow

pressed

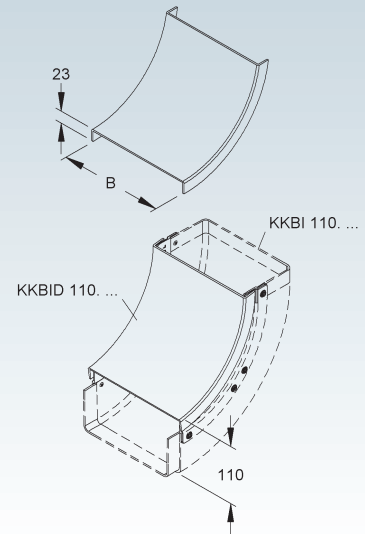
	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBID 110.100	7032	100	956944	18	1 pc.
K23	KKBID 110.200	7032	200	956951	30	1 pc.
K23	KKBID 110.300	7032	300	956968	50	1 pc.
K23	KKBID 110.400	7032	400	956975	100	1 pc.
K23	KKBID 110.500	7032	500	956982	120	1 pc.
K23	KKBID 110.600	7032	600	956999	130	1 pc.

Used for: GRP-vertical inside elbow KKBI... of edge height 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Outside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBAD 50.050	7032	50	956623	7,8	1 pc.
K23	KKBAD 50.100	7032	100	956630	10,0	1 pc.
K23	KKBAD 50.150	7032	150	956647	42,0	1 pc.
K23	KKBAD 50.200	7032	200	956654	51,0	1 pc.
K23	KKBAD 50.300	7032	300	956661	65,0	1 pc.

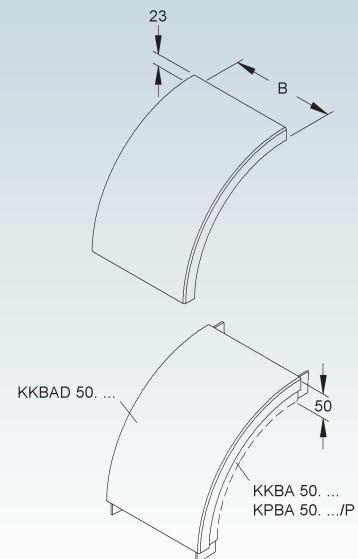
Used for: GRP-vertical outside elbow KKBA... and KPBA.../P of edge height 50 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Outside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBAD 80.100	7032	100	956678	29,5	1 pc.
K23	KKBAD 80.150	7032	150	956685	39,0	1 pc.
K23	KKBAD 80.200	7032	200	956692	51,0	1 pc.
K23	KKBAD 80.250	7032	250	956708	61,0	1 pc.
K23	KKBAD 80.300	7032	300	956715	72,0	1 pc.
K23	KKBAD 80.400	7032	400	956722	90,0	1 pc.
K23	KKBAD 80.500	7032	500	956739	120,0	1 pc.
K23	KKBAD 80.600	7032	600	956746	136,0	1 pc.

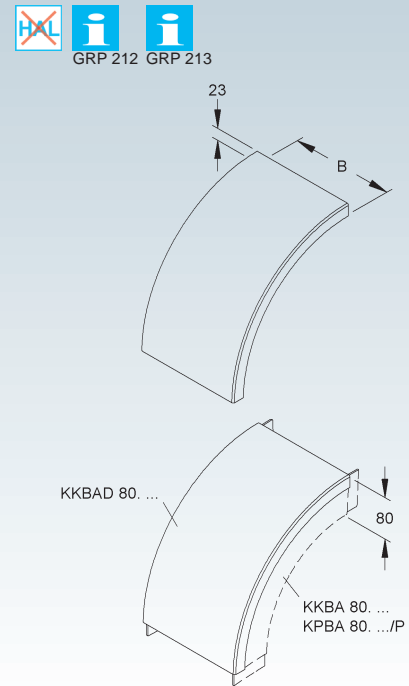
Used for: GRP-vertical outside elbow KKBA... and KPBA.../P of edge height 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Outside Elbow

pressed

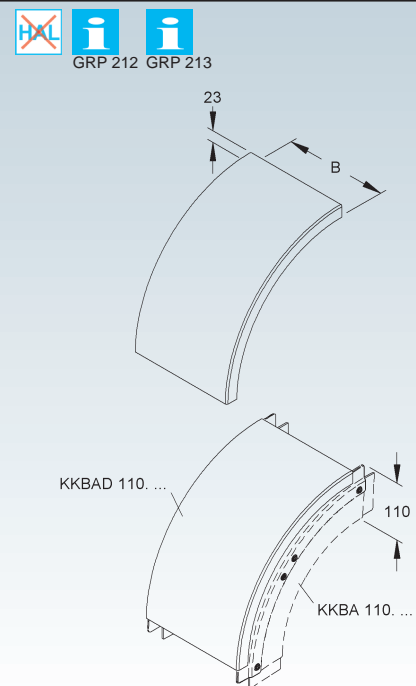
	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBAD 110.100	7032	100	956753	35	1 pc.
K23	KKBAD 110.200	7032	200	956760	50	1 pc.
K23	KKBAD 110.300	7032	300	956777	70	1 pc.
K23	KKBAD 110.400	7032	400	956784	80	1 pc.
K23	KKBAD 110.500	7032	500	956791	120	1 pc.
K23	KKBAD 110.600	7032	600	956807	130	1 pc.

Used for: GRP-vertical outside elbow KKBA... of edge height 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER K²

GRP-Cover for Floor

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKETD 50.100	7032	100	957002	20	1 pc.
K23	KKETD 50.150	7032	150	957019	41	1 pc.
K23	KKETD 50.200	7032	200	957026	40	1 pc.
K23	KKETD 50.300	7032	300	957033	60	1 pc.

One packaging unit consists of:
1x GRP-cover for inside elbow 45°
1x GRP-cover for outside elbow 45°

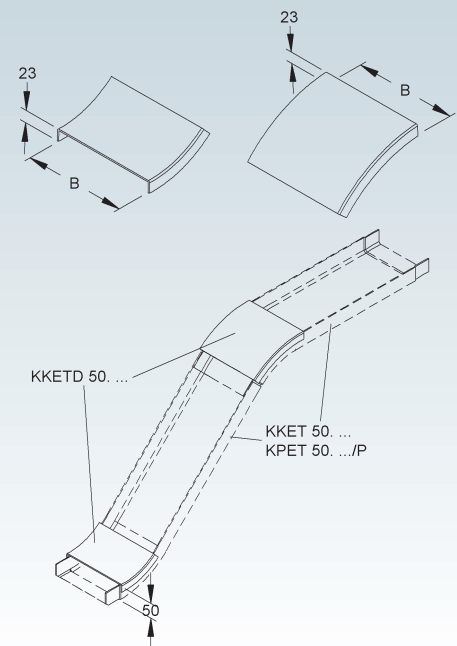
Used for: GRP-floor KKET... and KPET.../P of edge height 50 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces per cover (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Floor

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKETD 80.100	7032	100	957040	23,5	1 pc.
K23	KKETD 80.150	7032	150	957057	31,7	1 pc.
K23	KKETD 80.200	7032	200	957064	40,5	1 pc.
K23	KKETD 80.250	7032	250	957071	44,0	1 pc.
K23	KKETD 80.300	7032	300	957088	47,0	1 pc.
K23	KKETD 80.400	7032	400	957095	61,0	1 pc.
K23	KKETD 80.500	7032	500	957101	98,0	1 pc.
K23	KKETD 80.600	7032	600	957118	120,0	1 pc.

One packaging unit consists of:
1x GRP-cover for inside elbow 45°
1x GRP-cover for outside elbow 45°

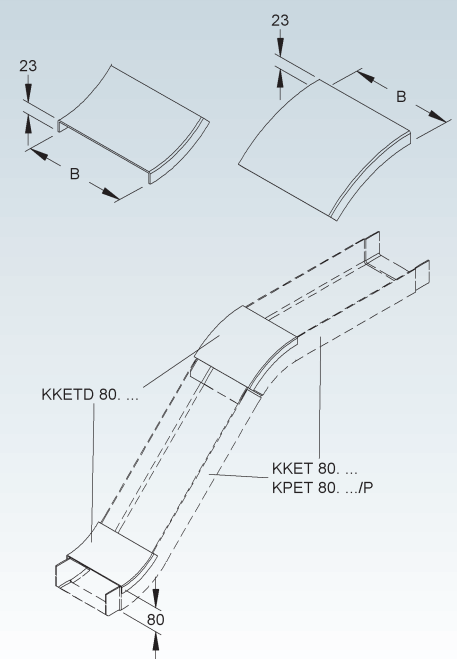
Used for: GRP-floor KKET... and KPET.../P of edge height 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces per cover (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Floor

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKETD 110.100	7032	100	957125	23,5	1 pc.
K23	KKETD 110.200	7032	200	957132	40,0	1 pc.
K23	KKETD 110.300	7032	300	957149	47,0	1 pc.
K23	KKETD 110.400	7032	400	957156	61,0	1 pc.
K23	KKETD 110.500	7032	500	957163	98,0	1 pc.
K23	KKETD 110.600	7032	600	957170	120,0	1 pc.

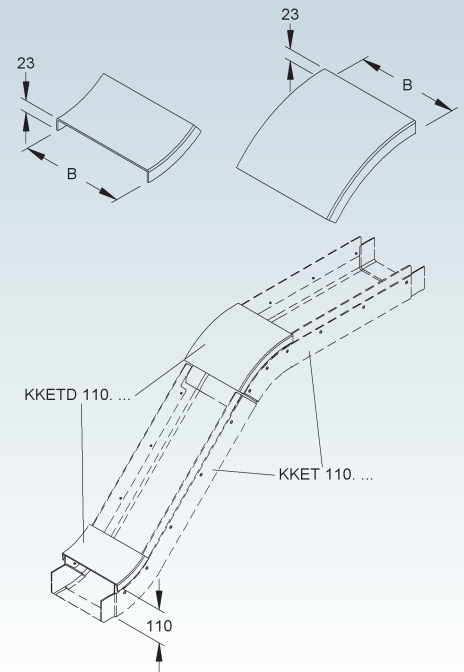
One packaging unit consists of:
1x GRP-cover for inside elbow 45°
1x GRP-cover for outside elbow 45°

Used for: GRP-floor KKET... of edge height 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces per cover (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Extension T-Piece, small

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKSSD 50	7032	50	957262	5,0	1 pc.
K23	KKSSD 100	7032	100	957279	8,0	1 pc.
K23	KKSSD 150	7032	150	957286	9,5	1 pc.
K23	KKSSD 200	7032	200	957293	13,0	1 pc.
K23	KKSSD 250	7032	250	957309	14,5	1 pc.
K23	KKSSD 300	7032	300	957316	15,5	1 pc.

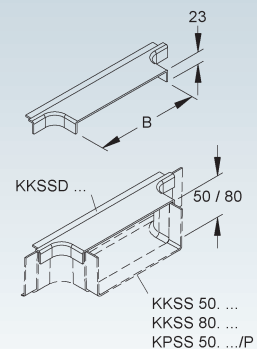
Used for: GRP-extension T-piece, small KKSS... and KPSS.../P of edge height 50 and 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Extension T-Piece, large

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKSTD 100	7032	100	957187	35	1 pc.
K23	KKSTD 150	7032	150	957194	42	1 pc.
K23	KKSTD 200	7032	200	957200	52	1 pc.
K23	KKSTD 250	7032	250	957217	63	1 pc.
K23	KKSTD 300	7032	300	957224	65	1 pc.
K23	KKSTD 400	7032	400	957231	78	1 pc.
K23	KKSTD 500	7032	500	957248	100	1 pc.
K23	KKSTD 600	7032	600	957255	118	1 pc.

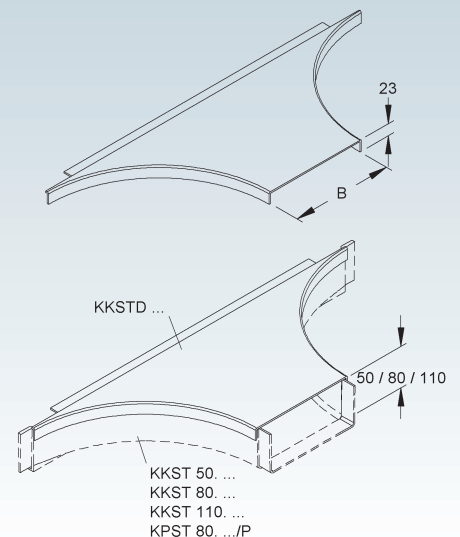
Used for: GRP-extension T-piece, large KKST... and KPST.../P of edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER K²

GRP-Cover for Reduction, right

pressed

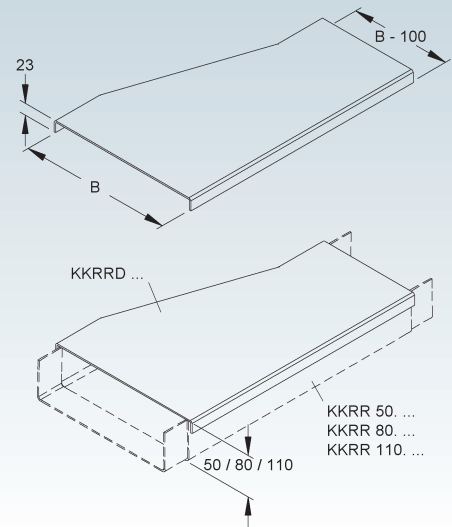
Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	7032	200	957378	50,5	1 pc.
K23	7032	300	957385	79,0	1 pc.
K23	7032	400	957392	119,0	1 pc.
K23	7032	500	957408	131,0	1 pc.
K23	7032	600	957415	160,0	1 pc.

Used for: GRP-reduction, right KKRR... of edge heights 50, 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Reduction, left

pressed

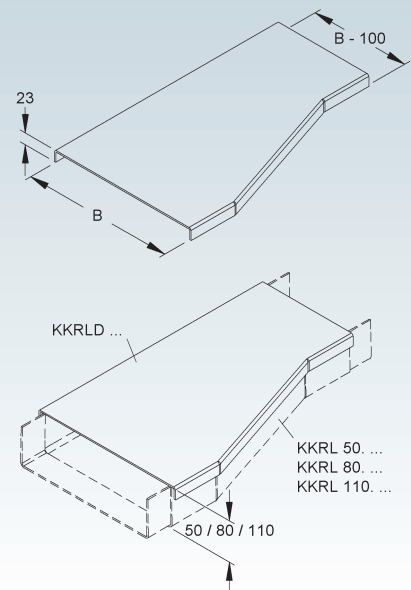
Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	7032	200	957323	49	1 pc.
K23	7032	300	957330	75	1 pc.
K23	7032	400	957347	110	1 pc.
K23	7032	500	957354	147	1 pc.
K23	7032	600	957361	160	1 pc.

Used for: GRP-reduction, left KKRL... of edge heights 50, 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



Cover Clamp

Model No.	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4	55	957873	1,7	50 pcs.
E4	85	957880	2,1	50 pcs.
E4	109	957897	2,3	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable tray/cable ladder cover KKD...

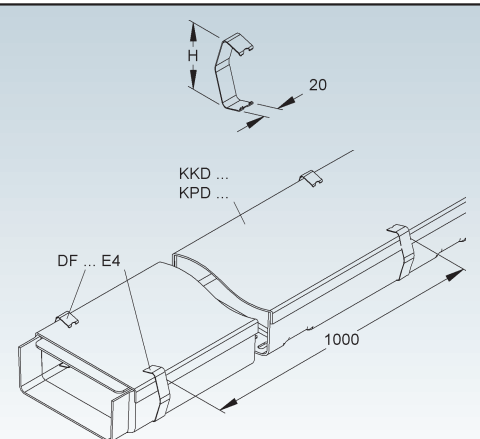
GRP-cable tray cover KPD...

GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., Elbow 90°, small KKWD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...

GRP-reduction, right KKRRD... and GRP-reduction, left KKRLD...

GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased.



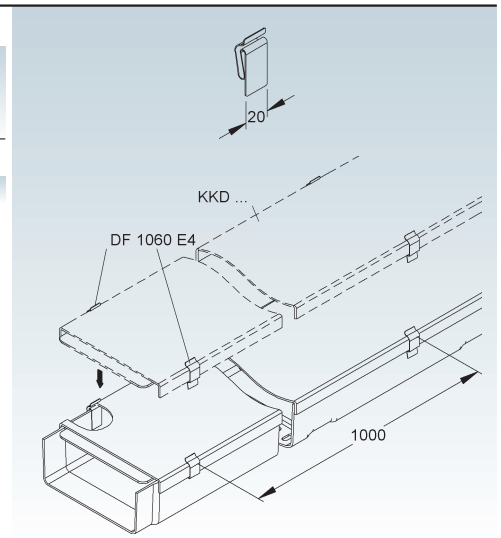
Cover Clamp

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DF 1060 E4	957910	1,1	50 pcs.

for fastening the cable tray covers

Used for: GRP-cable tray cover KKD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased.



CABLE TRAY SYSTEMS ACCESSORIES K²

GRP-Cable Rack

pressed

Model No.	Colour similar RAL	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KR 100	7032	74	955466	2,4	1 pc.
K23 KR 150	7032	124	955473	3,1	1 pc.
K23 KR 200	7032	174	955480	4,0	1 pc.
K23 KR 250	7032	224	955497	6,0	1 pc.
K23 KR 300	7032	274	955503	6,7	1 pc.
K23 KR 400	7032	374	955510	11,0	1 pc.
K23 KR 500	7032	474	955527	16,0	1 pc.
K23 KR 600	7032	574	955534	20,0	1 pc.
K23 KR 100/M	7032	74	955541	2,4	1 pc.
K23 KR 150/M	7032	124	955558	3,1	1 pc.
K23 KR 200/M	7032	174	955565	4,0	1 pc.
K23 KR 250/M	7032	224	955572	6,0	1 pc.
K23 KR 300/M	7032	274	955589	6,7	1 pc.
K23 KR 400/M	7032	374	955596	11,0	1 pc.
K23 KR 500/M	7032	474	955602	16,0	1 pc.
K23 KR 600/M	7032	574	955619	20,0	1 pc.

for fixing the cables in the riser shaft by means of cable ties

The cable rack KR... is supplied loose and must be connected to the trunking on site. Requirement: 2 pieces of FKM... per cable rack.

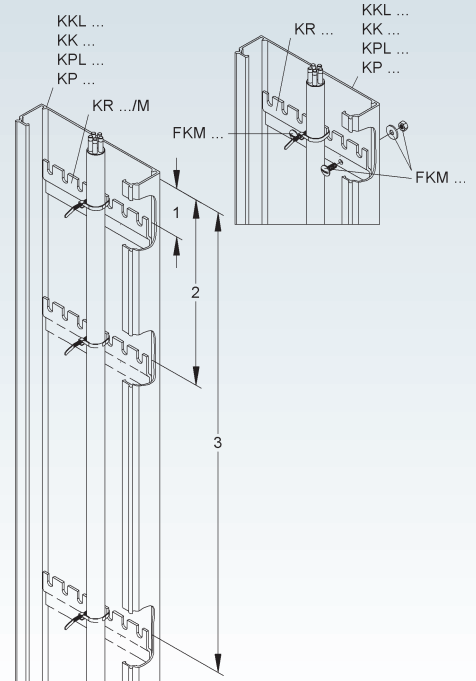
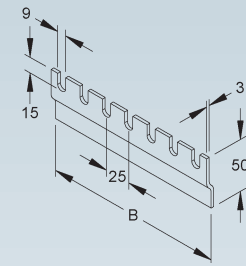
The KR.../M version is factory-fitted when the cable tray is ordered. The position must be specified when ordering.

Used for: GRP-cable trays KK..., KKL..., KP... and KPL... of edge height 50, 80 and 110 mm

In the case of wall/ or ceiling mounting, please note that the duct cannot lie flush with the substrate.

Article available in various resin mixtures.

The mounting straps must be ordered separately



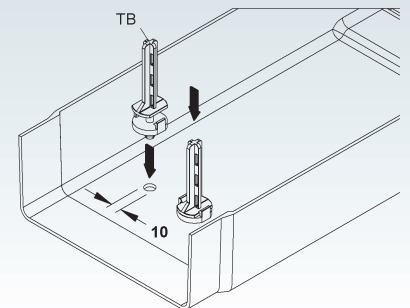
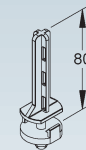
Separat Bolt

Model No.	Colour similar RAL	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 TB	7035	957934	1	1 pc.

for the orderly laying of lines and cables

Not suitable for use in wall-mounted cable ducts.

When mounting, make sure that a Ø 10 mm through hole is required for the separating bolt.

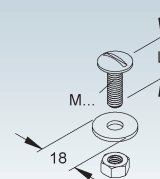


Cup Screw

incl. hexagon nut and washer acc. to DIN EN ISO 7093-1

Model No.	Thread M	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 FKM 6X16 E4	6	16	962693	1,2	100 pcs.
E4 FKM 6X20 E4	6	20	962709	1,4	100 pcs.

Recommended screw tightening torque 7 Nm

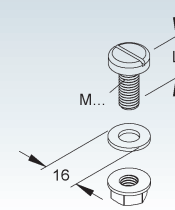


Flat Head Bolt similar to DIN EN ISO 1580

incl. flange nut and washer similar to DIN EN ISO 7089

Model No.	Thread M	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 FKM 8X20 K01	8	20	962716	0,4	100 pcs.

Recommended screw tightening torque 3 Nm



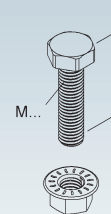
Hexagon Screw acc. to DIN EN ISO 4017

incl. toothed flange nut acc. to DIN EN 1661

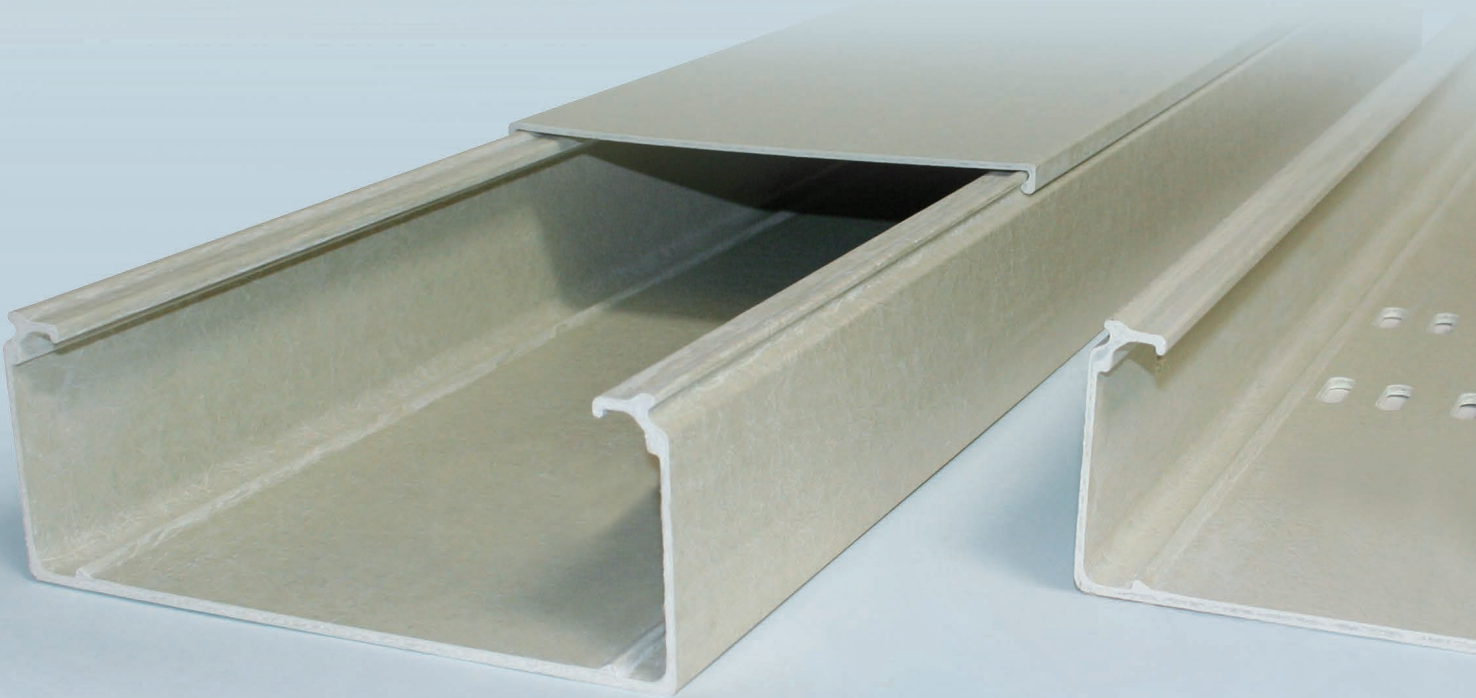
Model No.	Thread M	Length L mm	Strength class screw / nut	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 SKM 10X30 E4	10	30	70 / 80	962730	3,81	50 pcs.
E4 SKM 10X40 E4	10	40	70 / 80	962747	4,55	50 pcs.

The strength classes of the screws are stamped on the screw heads.
Especially for connections that have to transmit vertical loads via friction, it is essential to pay attention to the screw tightening torque and to check it with a torque spanner!
In product combinations (hexagon bolt with nut), the lower strength class is to be used for determining the torque.

Recommended screw tightening torque 30 Nm



GRP CABLE SUPPORT SYSTEMS



CABLE TRAY SYSTEM KP

in the side heights   








































- Cable Trays
- Covers
- Barrier Strips
- Accessories
- Fittings

The KP GRP cable tray system from Ebo, made of pultruded glass fibres, offers maximum flexibility and economy. Thanks to a screwless clip connector, the system components can be easily and quickly plugged together at a maximum fastening distance of up to 4 metres. The clip connection is also self-regulating, which means that the expansion distance is automatically maintained. The cover locks into place and is positively connected to the lower part.



CABLE TRAY SYSTEM KP

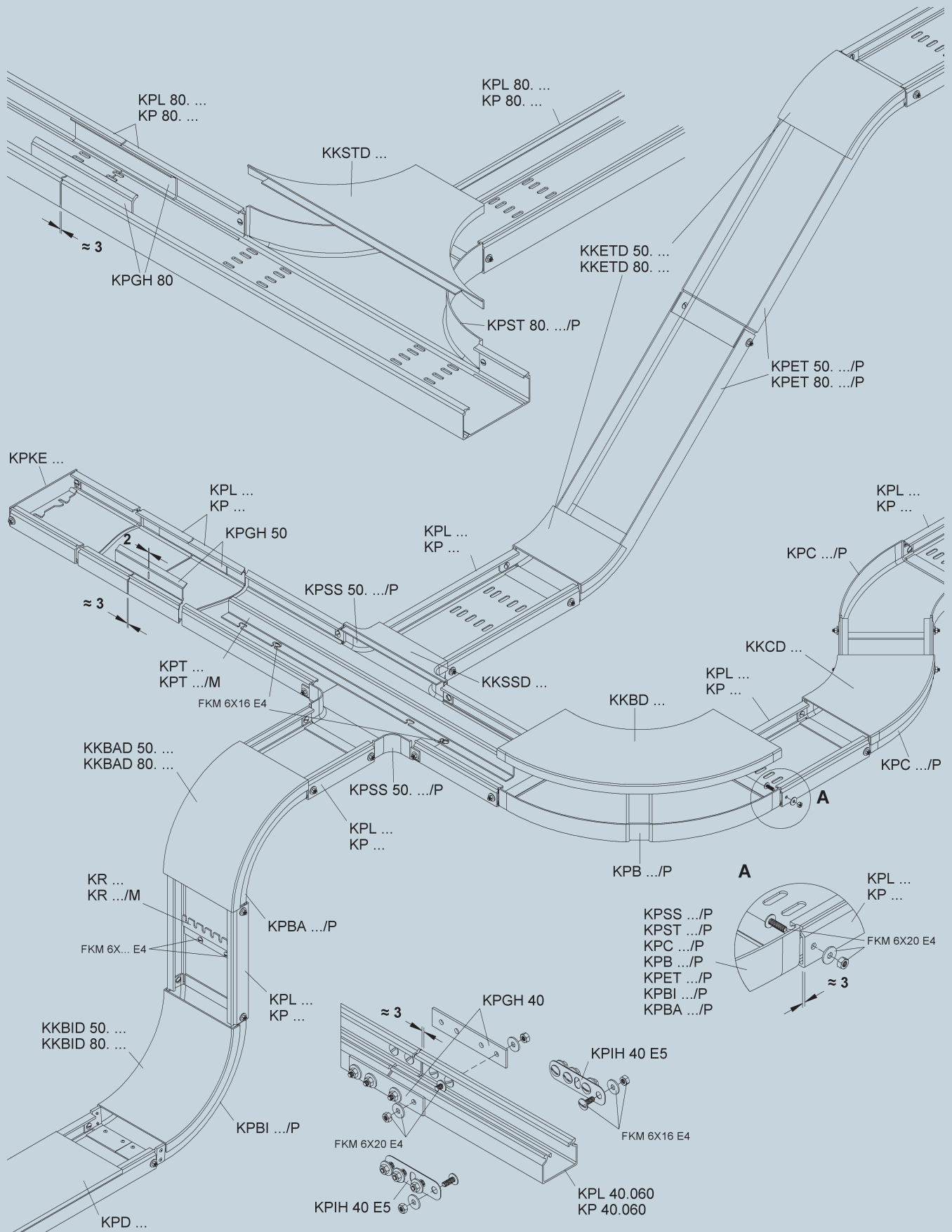
System overview of the side heights

SYSTEM	GRP-Cable Tray, pultruded, with bottom perforation	KPL...	 P. 80	 P. 82	 P. 88
	GRP-Cable Tray, pultruded, without bottom perforation	KP...	 P. 81	 P. 83	 P. 89
	GRP-End Cover, pressed	KPKE...	 P. 83	 P. 83	 P. 89
	GRP-Splice Plate, pressed, horizontal	KPGH...	 P. 84	 P. 84	 P. 90
	Splice Plate, horizontal, screwable	KPIH 40 E4	 P. 84	 —	 —
	GRP-Barrier Strip, pultruded	KPT...	 —	 P. 84	 P. 90
	GRP-Extension T-Piece, small, pressed	KPSS...	 —	 P. 85	 —
	GRP-Elbow 45°, pressed	KPC...	 —	 P. 85	 P. 91
	GRP-Elbow 90°, large, pressed	KPB...	 —	 P. 85	 P. 91
	GRP-Extension T-Piece, large, pressed	KPST...	 —	 —	 P. 90
	GRP-Floor, pressed	KPET...	 —	 P. 86	 P. 92
	GRP-Vertical Inside Elbow, pressed	KPBI...	 —	 P. 86	 P. 92
	GRP-Vertical Outside Elbow, pressed	KPBA...	 —	 P. 87	 P. 93
ACCESSORIES	Cover Clamp	DF...	P. 98		
	Cover Retaining Clamp	DHKL 80.100 E5G	P. 99		
	Cover Fastening	DF M	P. 99*		
	Cover Fastening	DFUB 5.5X19 E4	P. 100*		
	GRP-Cable Rack, pressed	KR...	P. 102*		
	Separat Bolt	TB	P. 102*		
	Cup Screw	FKM...	P. 102*		
	Flat Head Bolt similar to DIN EN ISO 1580	FKM...	P. 103*		
	Hexagon Screw acc. to DIN EN ISO 4017	SKM...	P. 103*		

The covers of the GRP cable tray system KP can be found from page 94.

* Can be used with all side heights





CABLE TRAY SYSTEM KP

GRP-Cable Tray

pultruded, with unperforated side rails, with bottom perforation

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPL 40.060	7032	40	60	3000	2	1776	952557	60	3 m
K23 KPL 40.060/6	7032	40	60	6000	2	1776	952632	60	6 m

Due to the expansion of the material the following must be observed during assembly:

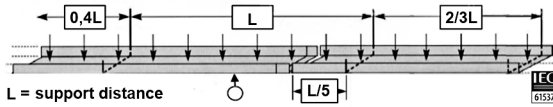
- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, a through hole of Ø 9 mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plates KPGH 40 and KPIH 40 E5 an expansion distance of the cable trays of approx. 3 mm must be taken into account.

Article available in various resin mixtures.

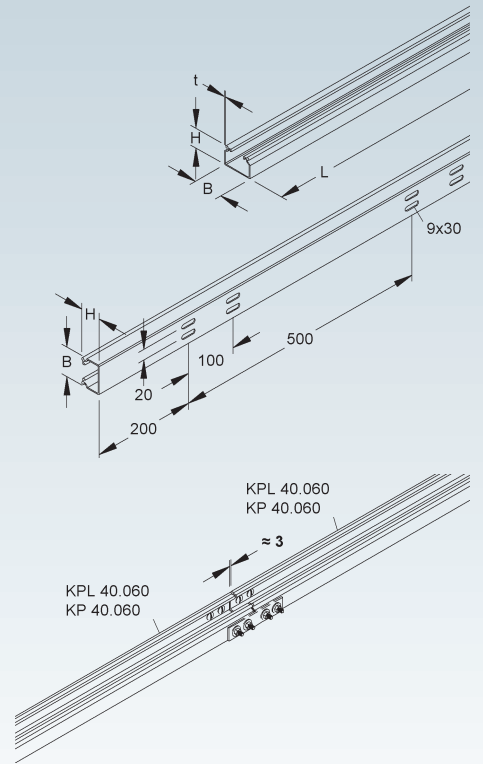
The splice plates KPGH 40 and KPIH 40 E5 are not included in the scope of delivery (please order separately).

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



KP series height 40 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	0,15
	1,5	0,15
6	1	0,15
	1,5	0,15
	2	0,06
	3	0,02

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-Cable Tray

pultruded, with unperforated side rails, without bottom perforation

	Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23	KP 40.060	7032	40	60	3000	2	1776	967612	62	3 m
K23	KP 40.060/6	7032	40	60	6000	2	1776	952472	60	6 m

Due to the expansion of the material the following must be observed during assembly:

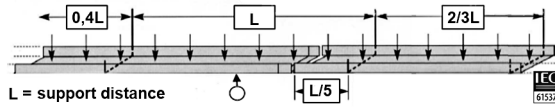
- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, a through hole of $\varnothing 9$ mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plates KPGH 40 and KPIH 40 E5 an expansion distance of the cable trays of approx. 3 mm must be taken into account.

Article also available in ...AC (resin mixture with acrylic resin).

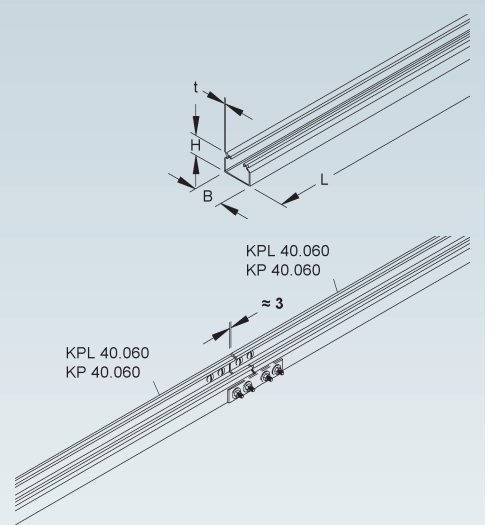
The splice plates KPGH 40 and KPIH 40 E5 are not included in the scope of delivery (please order separately).

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



KP series height 40 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	0,15
	1,5	0,15
6	1	0,15
	1,5	0,15
	2	0,06
	3	0,02

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



CABLE TRAY SYSTEM KP

GRP-Cable Tray

pultruded, with unperforated side rails, with bottom perforation

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPL 50.100	7032	50	100	3000	2,5	3980	952564	104,1	3 m
K23 KPL 50.150	7032	50	150	3000	2,5	6230	952571	130,0	3 m
K23 KPL 50.200	7032	50	200	3000	2,5	8480	952588	166,0	3 m
K23 KPL 50.100/6	7032	50	100	6000	2,5	3980	952649	104,1	6 m
K23 KPL 50.150/6	7032	50	150	6000	2,5	6230	952656	130,0	6 m
K23 KPL 50.200/6	7032	50	200	6000	2,5	8480	952663	166,0	6 m

Due to the expansion of the material the following must be observed during assembly:

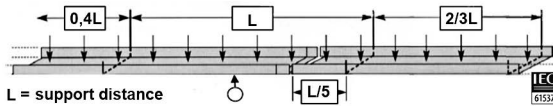
- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, a through hole of $\varnothing 9$ mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plate KPGH 50 the expansion distance of the cable trays of approx. 3 mm is automatically taken into account.

Article available in various resin mixtures.

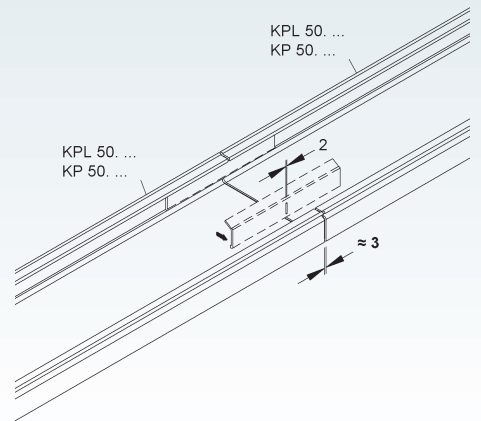
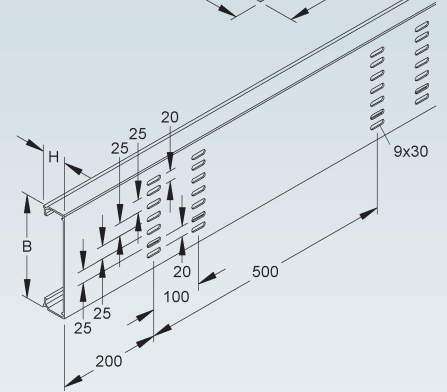
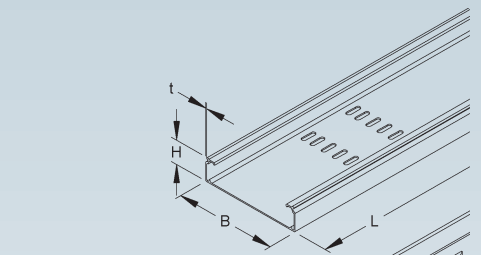
The splice plate KPGH 50 is not included in the scope of delivery (please order separately).

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



KP series height 50 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	0,8
	1,5	0,8
6	1	0,8
	1,5	0,8
	2	0,65
	3	0,2

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-Cable Tray

pultruded, with unperforated side rails, without bottom perforation

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KP 50.100	7032	50	100	3000	2,5	3980	952403	100	3 m
K23 KP 50.150	7032	50	150	3000	2,5	6230	952410	131	3 m
K23 KP 50.200	7032	50	200	3000	2,5	8480	952427	162	3 m
K23 KP 50.100/6	7032	50	100	6000	2,5	3980	952489	100	6 m
K23 KP 50.150/6	7032	50	150	6000	2,5	6230	952496	131	6 m
K23 KP 50.200/6	7032	50	200	6000	2,5	8480	952502	162	6 m

Due to the expansion of the material the following must be observed during assembly:

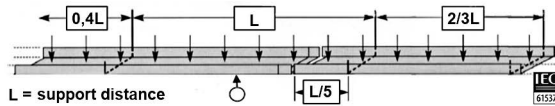
- The cable tray should not be screwed close to or at the joint.
- When screwing the cable tray onto the brackets, a through hole of $\varnothing 9$ mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plate KPGH 50 the expansion distance of the cable trays of approx. 3 mm is automatically taken into account.

Article available in various resin mixtures.

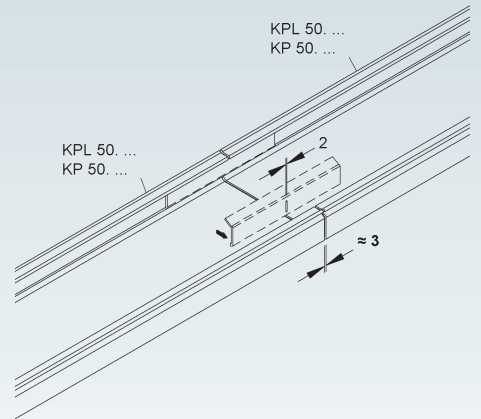
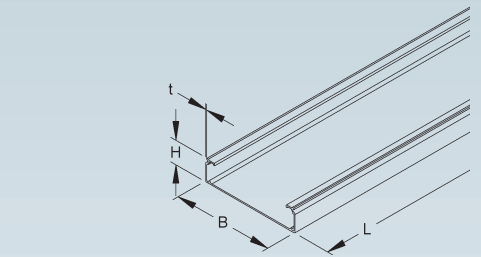
The splice plate KPGH 50 is not included in the scope of delivery (please order separately).

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



KP series height 50 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	0,8
	1,5	0,8
6	1	0,8
	1,5	0,8
	2	0,65
	3	0,2

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-End Cover

pressed

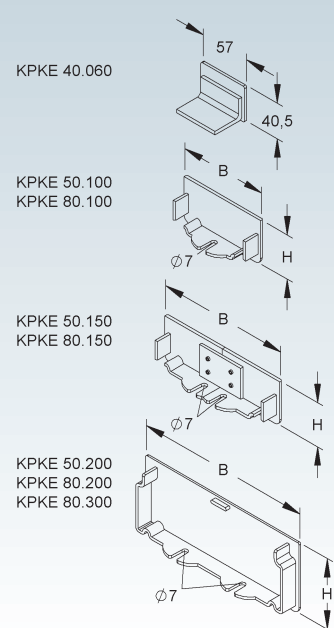
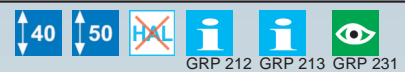
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPKE 40.060	7032	40,5	57	955381	5,5	1 pc.
K23 KPKE 50.100	7032	50,0	100	955398	6,0	1 pc.
K23 KPKE 50.150	7032	50,0	150	955404	9,0	1 pc.
K23 KPKE 50.200	7032	50,0	200	955411	10,0	1 pc.

for covering the cable tray and cable routing duct ends

Used for: GRP-cable trays KP..., KPL... of edge height 40, 50 and 80 mm as well as for GRP-cable routing ducts LFG... of edge height 40, 50 and 80 mm

Article available in various resin mixtures.

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



CABLE TRAY SYSTEM KP

GRP-Splice Plate

pressed, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 40	7032	25	3	955695	4,5	1 pair

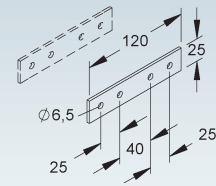
for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 40 mm that is aligned at the joint in the longitudinal direction

Requirement: Please order 1 pair (2 pieces) per joint separately

Used for: GRP-cable trays KP 40..., KPL 40..., cable routing ducts LFG 40... and their fittings
During installation, an expansion distance of approx. 3 mm must be taken into account.

Article available in various resin mixtures.

Required fixing accessories 8 pieces FKM 6X20 E4 (please order separately).



Splice Plate

horizontal, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 KPIH 40 E4	25	0,8	955688	2,3	1 pair

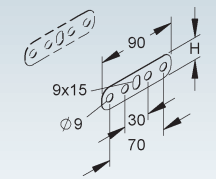
for horizontal changes of direction and a connection of the cable trays with 40 mm edge height that is aligned at the joint in longitudinal direction

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KP 40.060 and KPL 40.060

During installation, an expansion distance of approx. 3 mm must be taken into account.

Required fixing accessories 4 pieces FKM 6X16 E4 (please order separately).



GRP-Splice Plate, clipable

pressed, horizontal

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 50	7032	39	3	955701	6	1 pair

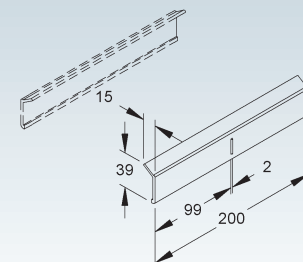
for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 50 mm that is aligned at the joint in the longitudinal direction
for clipping (on both sides) into the sides of cable trays and cable routing ducts

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KP 50..., KPL 50..., cable routing ducts LFG 50... and their fittings

The joint connector automatically positions the two cable trays or cable routing ducts at the correct distance.

Article available in various resin mixtures.



GRP-Barrier Strip

pultruded

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPT 50	7032	37	953127	36	3 m
K23 KPT 50/M	7032	37	953141	36	3 m

for separating lines and cables with different functions and/or voltages

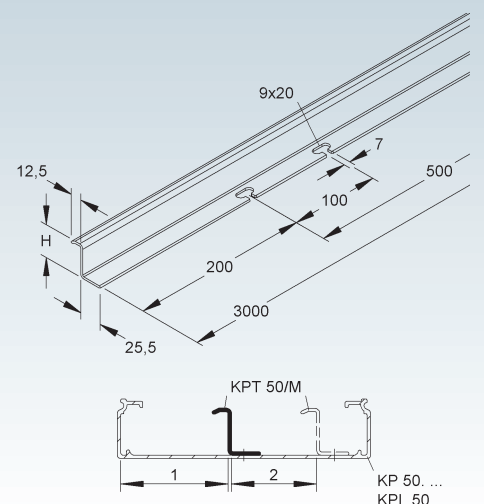
The barrier strip KPT 50 is supplied loose and must be screwed to the cable tray on site.

Requirement: 3 pieces FKM 6X16 E4 per delivery length (please order separately).

The KPT 50/M version is pre-assembled (riveted) at the factory when the cable tray is ordered.
When ordering, please state the corresponding compartment size.

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

Article available in various resin mixtures.



GRP-Extension T-Piece, small

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPSS 50.100/P	7032	50	100	954889	30	1 pc.
K23 KPSS 50.150/P	7032	50	150	954896	35	1 pc.
K23 KPSS 50.200/P	7032	50	200	954902	40	1 pc.

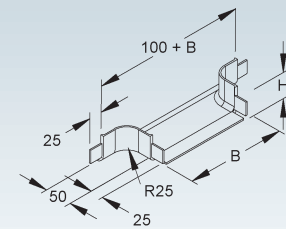
for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the extension T-piece is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 45°

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPC 50.100/P	7032	50	100	100	953585	15	1 pc.
K23 KPC 50.150/P	7032	50	150	175	953592	30	1 pc.
K23 KPC 50.200/P	7032	50	200	200	953608	40	1 pc.

for the production of 45° horizontally angled cable trays

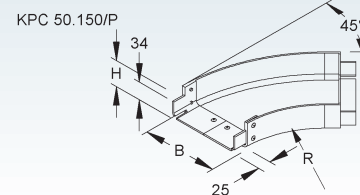
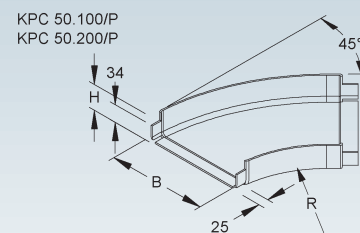
The version KPC 50.150/P is provided with a riveted socket on one side.

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, large

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Distance C mm	Radius R mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPB 50.100/P	7032	50	100	125	100	953349	30	1 pc.
K23 KPB 50.150/P	7032	50	150	200	175	953356	60	1 pc.
K23 KPB 50.200/P	7032	50	200	225	200	953363	80	1 pc.

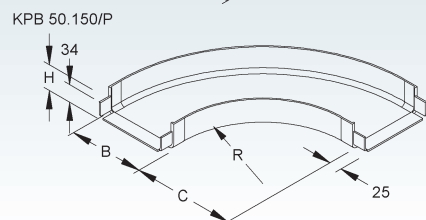
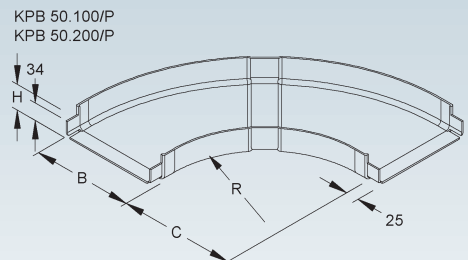
for making horizontal 90° corner joints of cable trays

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM KP

GRP-Floor

pressed, 2-piece, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H mm	Width B mm	Height H1 mm	Height H2 mm	Height H3 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPET 50.100/P	7032	50	100	160	480	800	954513	180	1 pc.
K23 KPET 50.150/P	7032	50	150	160	480	800	954520	184	1 pc.
K23 KPET 50.200/P	7032	50	200	160	480	800	954537	259	1 pc.

for the vertical height offset

By cutting the individual parts to length, variable adaptation to local conditions is possible.

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the floor is supported at each cable tray access point and centrally with brackets.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Depending on the standard variants used (see assembly drawing), different lengths of the floor result depending on the height.

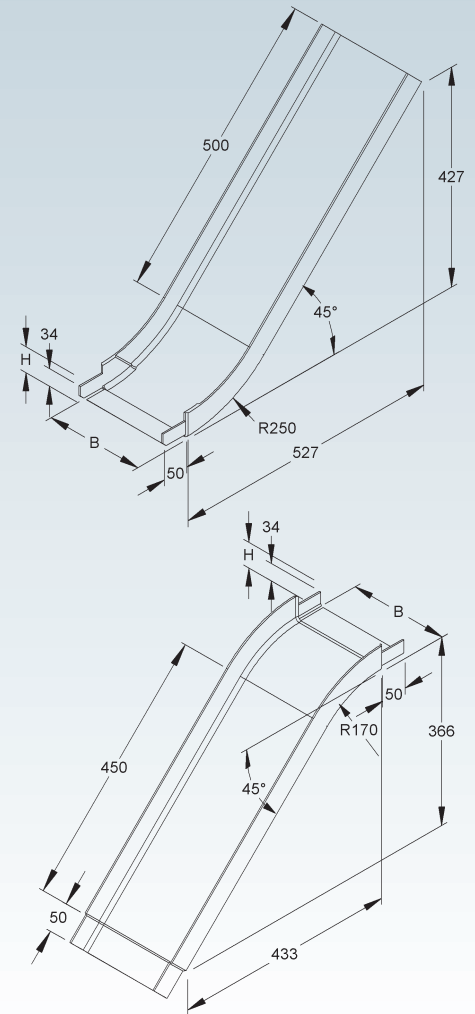
H1 = 160 mm =>L1 = 780 mm (one component shortened)

H2 = 480 mm =>L2 = 1100 mm

H3 = 800 mm =>L3 = 970 mm

Delivery: unassembled

Article available in various resin mixtures.



GRP-Vertical Inside Elbow

pressed, with unperforated side rails, with moulded-on connector and a socket riveted on one side

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPBI 50.100/P	7032	50	100	954278	40	1 pc.
K23 KPBI 50.150/P	7032	50	150	954285	50	1 pc.
K23 KPBI 50.200/P	7032	50	200	954292	60	1 pc.

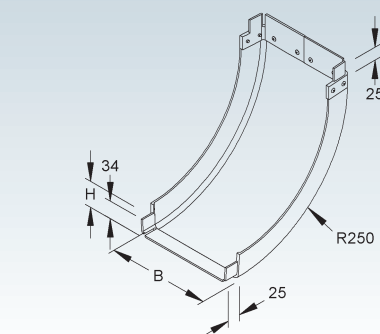
for the production of vertically 90° rising cable trays

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the vertical inside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



GRP-Vertical Outside Elbow

pressed, with unperforated side rails, with moulded connector

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KPBA 50.100/P	7032	50	100	954216	30	1 pc.
K23	KPBA 50.150/P	7032	50	150	954223	40	1 pc.
K23	KPBA 50.200/P	7032	50	200	954230	50	1 pc.

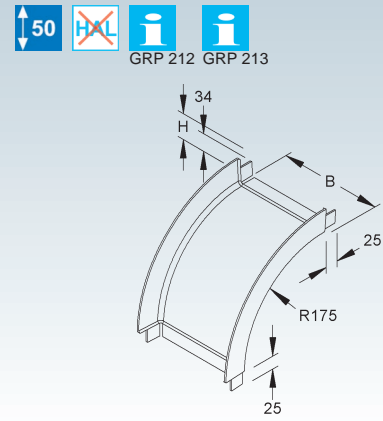
for the production of vertically 90° falling cable trays

Used for: GRP-cable trays KP 50. ... and KPL 50. ...

During installation, ensure that the vertical outside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM KP

GRP-Cable Tray

pultruded, with unperforated side rails, with bottom perforation

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness t mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPL 80.100	7032	80	100	3000	2,5	6940	952595	180	3 m
K23 KPL 80.150	7032	80	150	3000	2,5 - 3,1	10690	952601	200	3 m
K23 KPL 80.200	7032	80	200	3000	2,5 - 3,7	14440	952618	234	3 m
K23 KPL 80.300	7032	80	300	3000	3,2 - 4,5	21940	952625	355	3 m
K23 KPL 80.100/6	7032	80	100	6000	2,5	6940	952670	180	6 m
K23 KPL 80.150/6	7032	80	150	6000	2,5 - 3,1	10690	952687	200	6 m
K23 KPL 80.200/6	7032	80	200	6000	2,5 - 3,7	14440	952694	234	6 m
K23 KPL 80.300/6	7032	80	300	6000	3,2 - 4,5	21940	952700	355	6 m

Due to the expansion of the material the following must be observed during assembly:

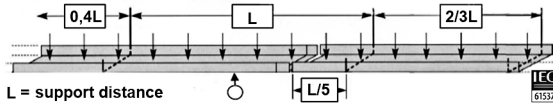
- The cable tray should not be screwed near the joint.
- When screwing the cable tray onto the brackets, a through hole of Ø 9 mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plate KPGH 80 an expansion distance of the cable trays of approx. 3 mm must be taken into account.

Article available in various resin mixtures.

The splice plate KPGH 80 is not included in the scope of delivery (please order separately).

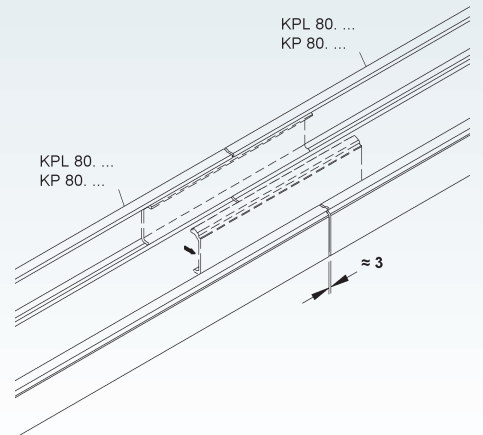
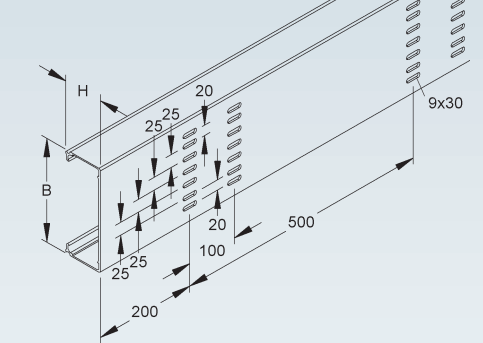
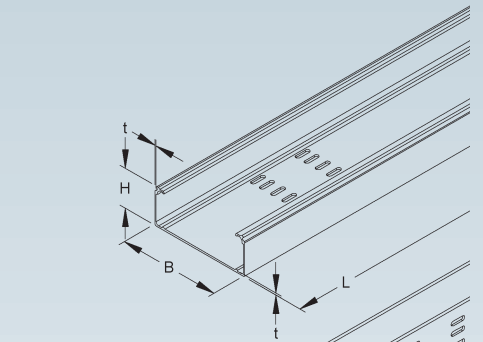
Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



KP series height 80 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	0,7 (1,2*)

*The permissible load information in brackets refers exclusively to the articles KP(L) 80.300... .

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-Cable Tray

pultruded, with unperforated side rails, without bottom perforation

Model No.	Colour similar RAL	Height H	Width B	Length L	Material thickness t	Usable cross section	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm	mm	mm	mm	mm ²			
K23 KP 80.100	7032	80	100	3000	2,5	6940	952434	148	3 m
K23 KP 80.150	7032	80	150	3000	2,5 - 3.1	10690	952441	200	3 m
K23 KP 80.200	7032	80	200	3000	2,5 - 3.7	14440	952458	240	3 m
K23 KP 80.300	7032	80	300	3000	3,2 - 4.5	21940	952465	363	3 m
K23 KP 80.100/6	7032	80	100	6000	2,5	6940	952519	148	6 m
K23 KP 80.150/6	7032	80	150	6000	2,5 - 3.1	10690	952526	200	6 m
K23 KP 80.200/6	7032	80	200	6000	2,5 - 3.7	14440	952533	240	6 m
K23 KP 80.300/6	7032	80	300	6000	3,2 - 4.5	21940	952540	363	6 m

Due to the expansion of the material the following must be observed during assembly:

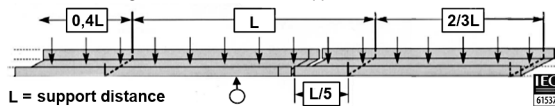
- The cable tray should not be screwed near the joint.
- When screwing the cable tray onto the brackets, a through hole of $\varnothing 9$ mm for the FKM 6X20 E4 screws must always be made in the tray.

When installing the splice plate KPGH 80, an expansion distance of approx. 3 mm must be taken into account.

Article available in various resin mixtures.

The splice plate KPGH 80 is not included in the scope of delivery (please order separately).

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.

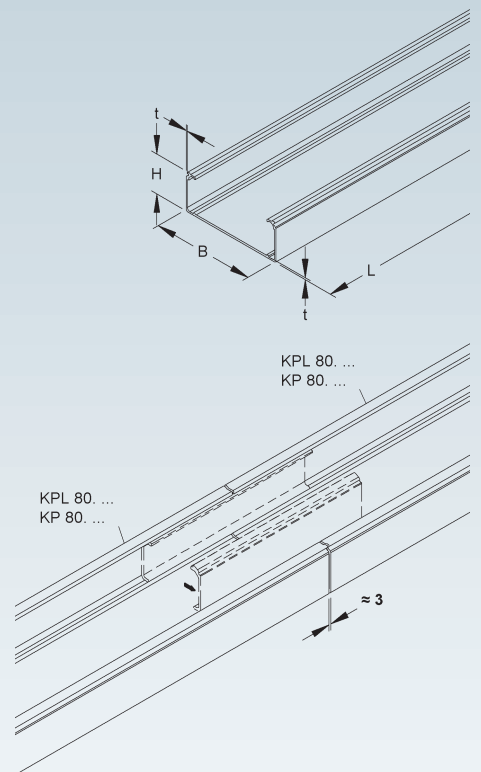


L = support distance

KP series height 80 mm		
Cable tray length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	0,7 (1,2*)

*The permissible load information in brackets refers exclusively to the articles KP(L) 80.300...

Note: The deflection of the cable trays was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-End Cover

pressed

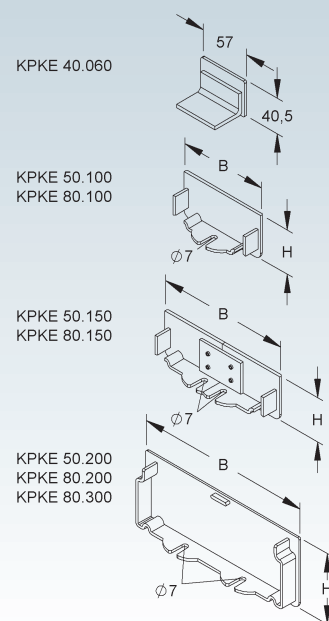
Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KPKE 80.100	7032	80	100	955428	8	1 pc.
K23 KPKE 80.150	7032	80	150	955435	11	1 pc.
K23 KPKE 80.200	7032	80	200	955442	13	1 pc.
K23 KPKE 80.300	7032	80	300	955459	20	1 pc.

for covering the cable tray and cable routing duct ends

Used for: GRP-cable trays KP..., KPL... of edge height 40, 50 and 80 mm as well as for GRP-cable routing ducts LFG... of edge height 40, 50 and 80 mm

Article available in various resin mixtures.

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



CABLE TRAY SYSTEM KP

GRP-Splice Plate, clipable

pultruded, horizontal

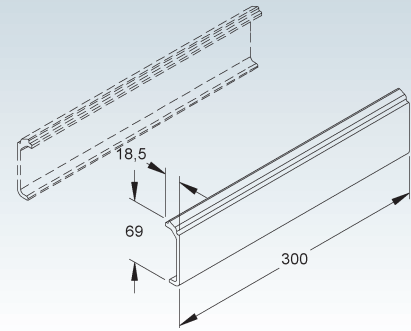
Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 80	7032	69	4	955718	22,5	1 pair

for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 80 mm that is aligned at the joint in the longitudinal direction for clipping (on both sides) into the sides of cable trays and cable routing ducts

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KP 80..., KPL 80..., cable routing ducts LFG 80... and their fittings
During installation, an expansion distance of approx. 3 mm must be taken into account.

Article available in various resin mixtures.



GRP-Barrier Strip

pultruded

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPT 80	7032	65	953134	42	3 m
K23 KPT 80/M	7032	65	953158	42	3 m

for separating lines and cables with different functions and/or voltages

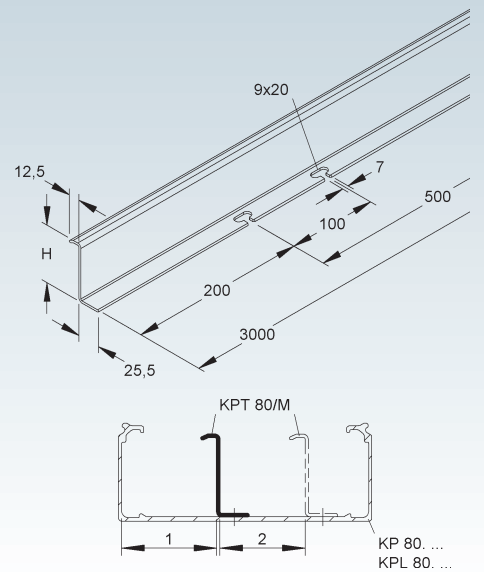
The barrier strip KPT 80 is supplied loose and must be screwed to the cable tray on site.

Requirement: 3 pieces FKM 6X16 E4 per delivery length (please order separately).

The KPT 80/M version is pre-assembled (riveted) at the factory when the cable tray is ordered. When ordering, please state the corresponding compartment size.

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

Article available in various resin mixtures.



GRP-Extension T-Piece, large

pressed, with unperforated side rails, with moulded connector

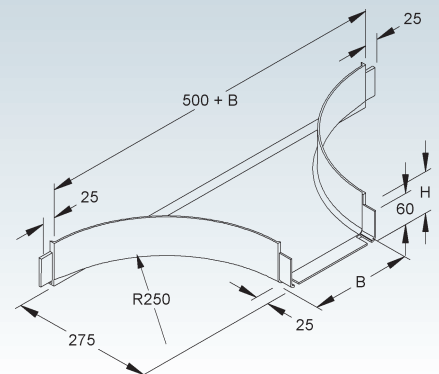
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPST 80.100/P	7032	80	100	954759	78,0	1 pc.
K23 KPST 80.150/P	7032	80	150	967629	78,0	1 pc.
K23 KPST 80.200/P	7032	80	200	954766	90,0	1 pc.
K23 KPST 80.300/P	7032	80	300	954773	108,5	1 pc.

for the production of horizontal 90° T-outlets of cable trays of different as well as equal widths

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the T-piece is supported with brackets at each cable tray access point. To ensure proper installation, the connectors must be bolted to each cable tray access with 4 FKM 6X20 E4, each in the side rails (please order separately).

Article available in various resin mixtures.



GRP-Elbow 45°

pressed, with unperforated side rails, with moulded connector

Model No.	Colour similar RAL	Height H	Width B	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm			
K23 KPC 80.100/P	7032	80	100	100	953615	22	1 pc.
K23 KPC 80.150/P	7032	80	150	175	967636	32	1 pc.
K23 KPC 80.200/P	7032	80	200	200	953622	45	1 pc.
K23 KPC 80.300/P	7032	80	300	225	953639	85	1 pc.

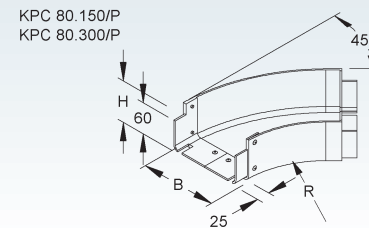
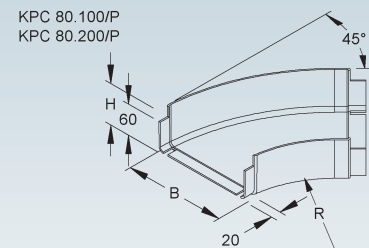
for the production of 45° horizontally angled cable trays

The KPC 80.150/P and KPC 80.300/P versions are fitted with a riveted socket on one side.

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



GRP-Elbow 90°, large

pressed, with unperforated side rails, with moulded connector

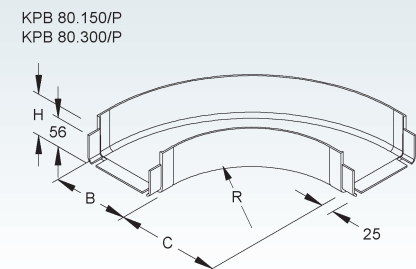
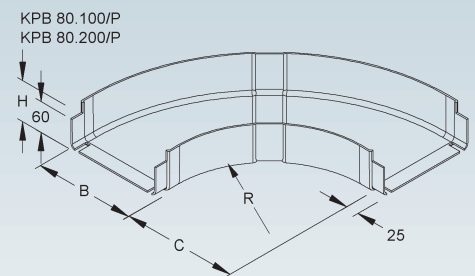
Model No.	Colour similar RAL	Height H	Width B	Distance C	Radius R	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm			
K23 KPB 80.100/P	7032	80	100	125	100	953370	41,5	1 pc.
K23 KPB 80.150/P	7032	80	150	200	175	967643	65,0	1 pc.
K23 KPB 80.200/P	7032	80	200	225	200	953387	90,0	1 pc.
K23 KPB 80.300/P	7032	80	300	250	225	953394	170,0	1 pc.

for making horizontal 90° corner joints

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the elbow is supported with brackets at each cable tray access point. To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEM KP

GRP-Floor

pressed, 2-piece, with unperforated side rails, with moulded-on connector

Model No.	Colour similar RAL	Height H	Width B	Height H1	Height H2	Height H3	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm	mm	mm			
K23 KPET 80.100/P	7032	80	100	160	480	800	954544	190	1 pc.
K23 KPET 80.150/P	7032	80	150	160	480	800	967650	230	1 pc.
K23 KPET 80.200/P	7032	80	200	160	480	800	954551	270	1 pc.
K23 KPET 80.300/P	7032	80	300	160	480	800	954568	350	1 pc.

for the vertical height offset

By cutting the individual parts to length, variable adaptation to local conditions is possible.

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the floor is supported at each cable tray access point and centrally with brackets.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Depending on the standard variants used (see assembly drawing), different lengths of the floor result depending on the height.

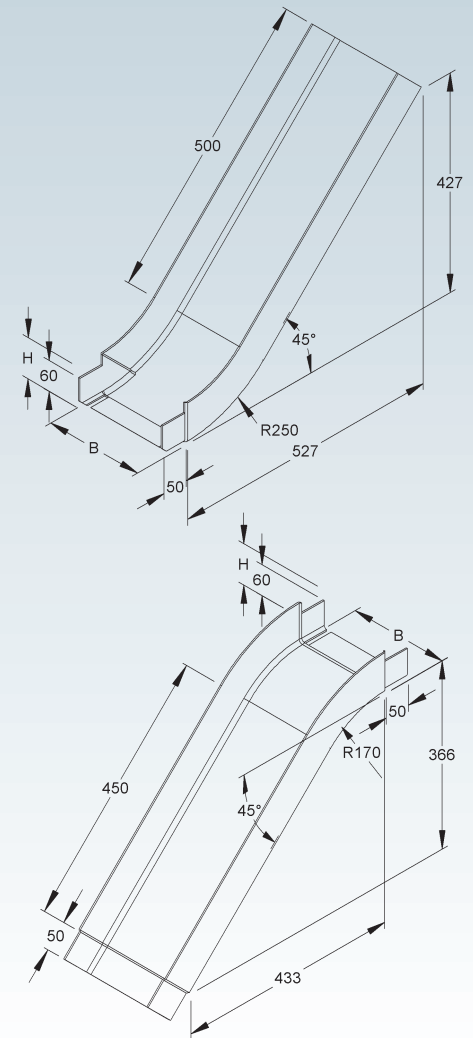
H1 = 160 mm => L1 = 780 mm (one component shortened)

H2 = 480 mm => L2 = 1100 mm

H3 = 800 mm => L3 = 970 mm

Delivery: unassembled

Article available in various resin mixtures.



GRP-Vertical Inside Elbow

pressed, with unperforated side rails, with moulded-on connector and a socket riveted on one side

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 KPBI 80.100/P	7032	80	100	954308	50	1 pc.
K23 KPBI 80.150/P	7032	80	150	967667	65	1 pc.
K23 KPBI 80.200/P	7032	80	200	954315	80	1 pc.
K23 KPBI 80.300/P	7032	80	300	954322	102	1 pc.

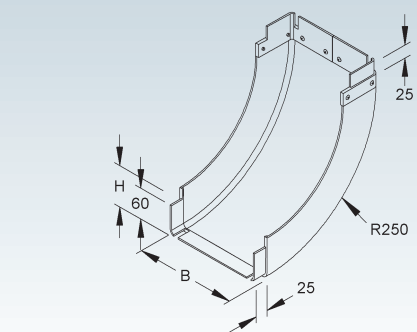
for the production of vertically 90° rising cable trays

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the vertical inside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



GRP-Vertical Outside Elbow

pressed, with unperforated side rails, with moulded connector

	Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
			mm	mm			
K23	KPBA 80.100/P	7032	80	100	954247	40	1 pc.
K23	KPBA 80.150/P	7032	80	150	967674	50	1 pc.
K23	KPBA 80.200/P	7032	80	200	954254	60	1 pc.
K23	KPBA 80.300/P	7032	80	300	954261	80	1 pc.

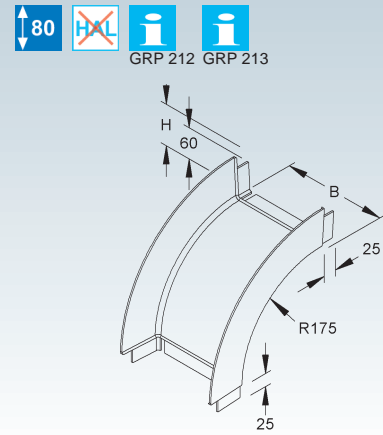
for the production of vertically 90° falling cable trays

Used for: GRP-cable trays KP 80. ... and KPL 80. ...

During installation, ensure that the vertical outside elbow is supported with brackets at each cable tray access point.

To ensure proper installation, the connectors must be screwed to each cable tray access with 2 FKM 6X20 E4 (please order separately).

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER KP

GRP-Cover for Cable Tray

pultruded

Model No.	Colour similar RAL	Width B outside mm	Material thickness (t) mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 KPD 60	7032	60	2,0	956241	29,1	3 m
K23 KPD 100	7032	100	2,5	956258	52,0	3 m
K23 KPD 150	7032	150	2,5	956265	75,0	3 m
K23 KPD 200	7032	200	2,5	956272	100,0	3 m
K23 KPD 300	7032	300	2,5	956289	145,0	3 m

for snapping onto the cable trays

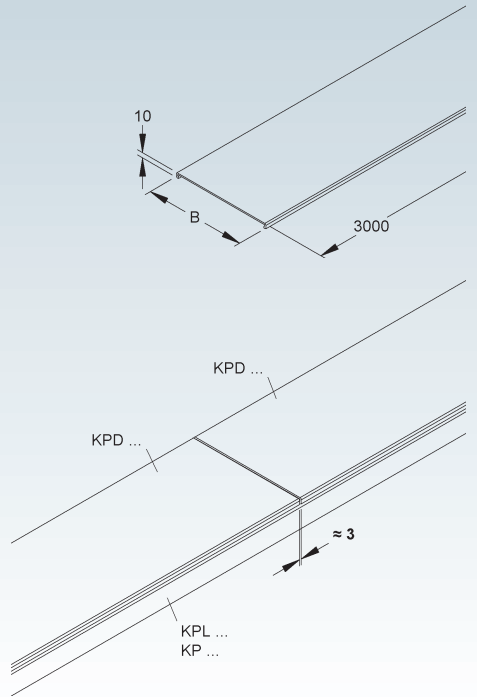
Used for: GRP-cable trays KP... and KPL... of edge heights 40, 50 and 80 mm

To ensure proper and stable installation, make sure that the joints of the covers have a minimum distance of approx. 3 mm and are offset from the joint of the cable trays.

The cover can be fixed with cover clamp DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M, 2 pieces per metre (please order separately).

Due to external influences, such as wind loads, the number of cover retaining springs or cover fixings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 45°

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKCD 100	7032	100	956456	12	1 pc.
K23 KKCD 150	7032	150	956463	23	1 pc.
K23 KKCD 200	7032	200	956470	33	1 pc.
K23 KKCD 300	7032	300	956494	51	1 pc.

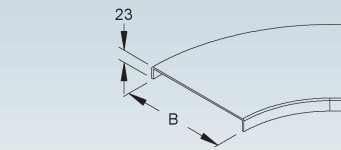
Used for: GRP-elbow 45° KKC... and KPC.../P with edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 90°, large

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKBD 100	7032	100	956371	19,5	1 pc.
K23 KKBD 150	7032	150	956388	43,0	1 pc.
K23 KKBD 200	7032	200	956395	68,0	1 pc.
K23 KKBD 300	7032	300	956418	115,0	1 pc.

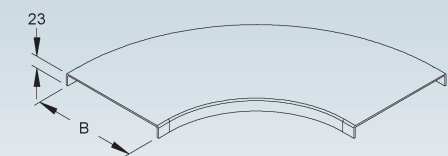
Used for: GRP-elbow 90°, large KKB.../P with edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Inside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBID 50.100	7032	100	956821	20	1 pc.
K23	KKBID 50.150	7032	150	956838	42	1 pc.
K23	KKBID 50.200	7032	200	956845	50	1 pc.
K23	KKBID 50.300	7032	300	956852	63	1 pc.

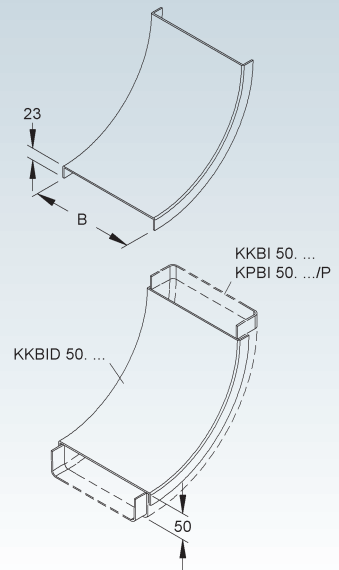
Used for: GRP-vertical inside elbow KKBI... and KPBI.../P of edge height 50 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Vertical Inside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBID 80.100	7032	100	956869	18,0	1 pc.
K23	KKBID 80.150	7032	150	956876	24,5	1 pc.
K23	KKBID 80.200	7032	200	956883	33,0	1 pc.
K23	KKBID 80.300	7032	300	956906	45,5	1 pc.

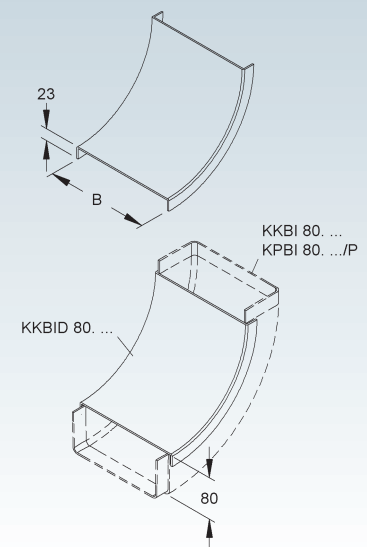
Used for: GRP-vertical inside elbow KKBI... and KPBI.../P of edge height 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER KP

GRP-Cover for Vertical Outside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBAD 50.100	7032	100	956630	10	1 pc.
K23	KKBAD 50.150	7032	150	956647	42	1 pc.
K23	KKBAD 50.200	7032	200	956654	51	1 pc.
K23	KKBAD 50.300	7032	300	956661	65	1 pc.

Used for: GRP-vertical outside elbow KKBA... and KPBA.../P of edge height 50 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

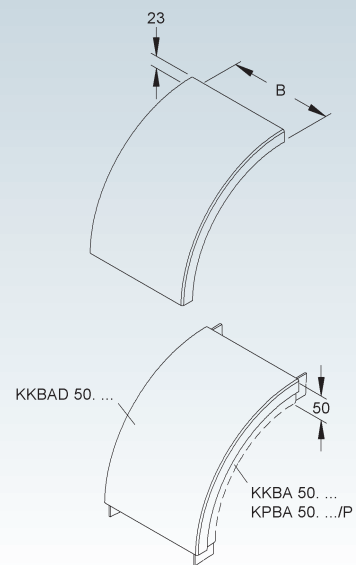
The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP 212 GRP 213



GRP-Cover for Vertical Outside Elbow

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKBAD 80.100	7032	100	956678	29,5	1 pc.
K23	KKBAD 80.150	7032	150	956685	39,0	1 pc.
K23	KKBAD 80.200	7032	200	956692	51,0	1 pc.
K23	KKBAD 80.300	7032	300	956715	72,0	1 pc.

Used for: GRP-vertical outside elbow KKBA... and KPBA.../P of edge height 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces (please order separately).

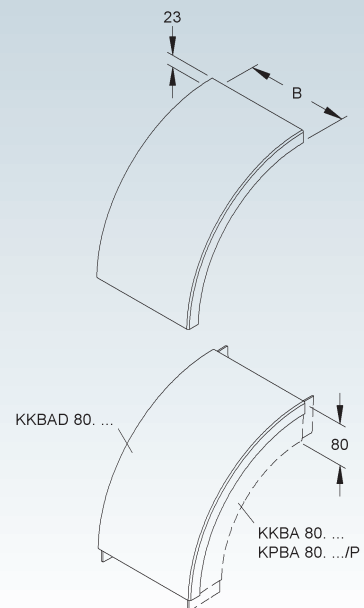
The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP 212 GRP 213



GRP-Cover for Floor

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKETD 50.100	7032	100	957002	20	1 pc.
K23	KKETD 50.150	7032	150	957019	41	1 pc.
K23	KKETD 50.200	7032	200	957026	40	1 pc.

One packaging unit consists of:
1x GRP-cover for inside elbow 45°
1x GRP-cover for outside elbow 45°

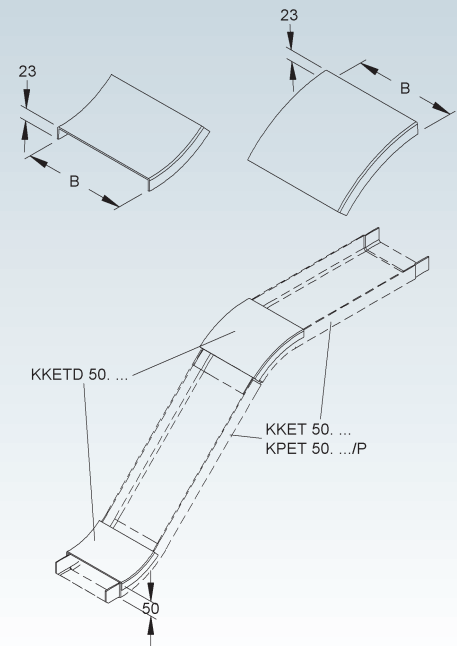
Used for: GRP-floor KKET... and KPET.../P of edge height 50 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces per cover (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Floor

pressed

	Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	KKETD 80.100	7032	100	957040	23,5	1 pc.
K23	KKETD 80.150	7032	150	957057	31,7	1 pc.
K23	KKETD 80.200	7032	200	957064	40,5	1 pc.
K23	KKETD 80.300	7032	300	957088	47,0	1 pc.

One packaging unit consists of:
1x GRP-cover for inside elbow 45°
1x GRP-cover for outside elbow 45°

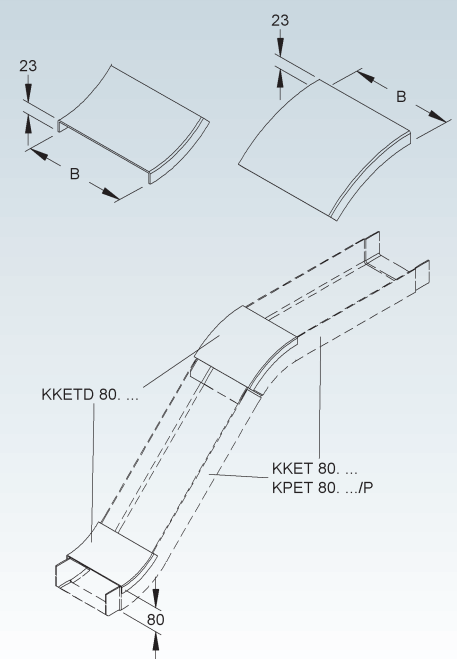
Used for: GRP-floor KKET... and KPET.../P of edge height 80 mm

The cover can be fixed with cover clamps DF.... E4, alternating with at least 2 pieces per cover (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



CABLE TRAY SYSTEMS COVER KP

GRP-Cover for Extension T-Piece, small

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKSSD 100	7032	100	957279	8,0	1 pc.
K23 KKSSD 150	7032	150	957286	9,5	1 pc.
K23 KKSSD 200	7032	200	957293	13,0	1 pc.

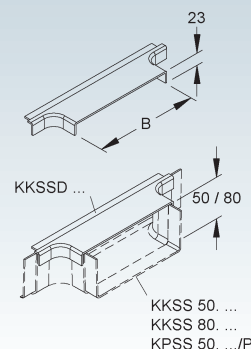
Used for: GRP-extension T-piece, small KKSS... and KPSS.../P of edge height 50 and 80 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Extension T-Piece, large

pressed

Model No.	Colour similar RAL	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KKSTD 100	7032	100	957187	35	1 pc.
K23 KKSTD 150	7032	150	957194	42	1 pc.
K23 KKSTD 200	7032	200	957200	52	1 pc.
K23 KKSTD 300	7032	300	957224	65	1 pc.

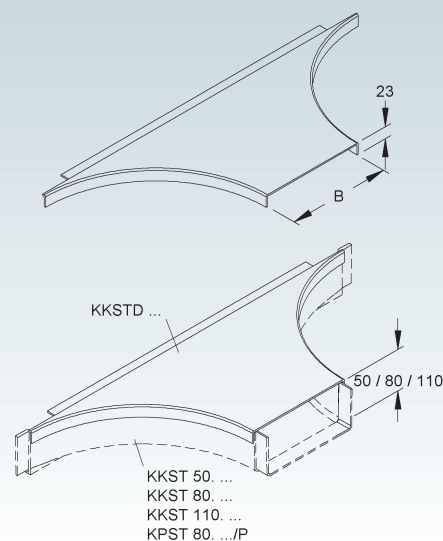
Used for: GRP-extension T-piece, large KKST... and KPST.../P of edge height 50, 80 and 110 mm

The cover can be fixed with cover clamps DF... E4, alternating with at least 2 pieces (please order separately).

The cover can also be fixed in the cable tray system KP with cover fastenings DFUB 5.5X19 E4 or DF M alternating with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



Cover Clamp

Model No.	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DF 50 E4	55	957873	1,7	50 pcs.
E4 DF 80 E4	85	957880	2,1	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable tray/cable ladder cover KKD...

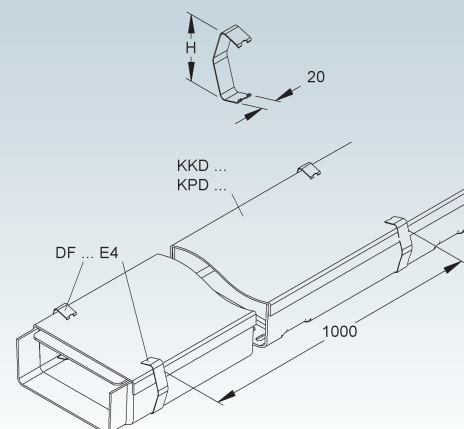
GRP-cable tray cover KPD...

GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., Elbow 90°, small KKWD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...

GRP-reduction, right KKRRD... and GRP-reduction, left KKRLD...

GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased.



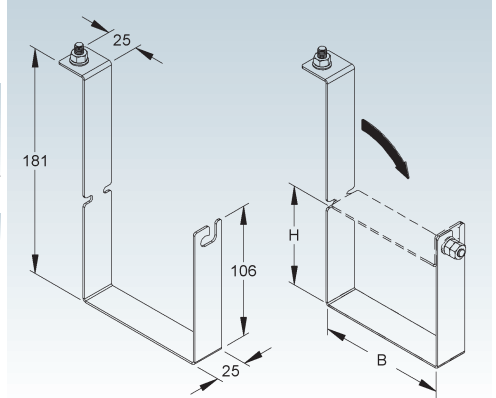
Cover Retaining Clamp

pre-assembled, incl 1 FL 6X16 E5 similar to DIN 603, 1 US M6 E5 DIN EN ISO 7089 and 2 SM 6 E5 DIN EN ISO 4032

Model No.	Height H mm	Width inside B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E5 DHKL 80.100 E5G	80	101	134571	13,09	1 pc.

for fixing the cable tray cover

Due to external influences, such as wind loads, the number of cover clamps must be determined.
The cover retaining clamp is supplied in open condition and can be used several times.



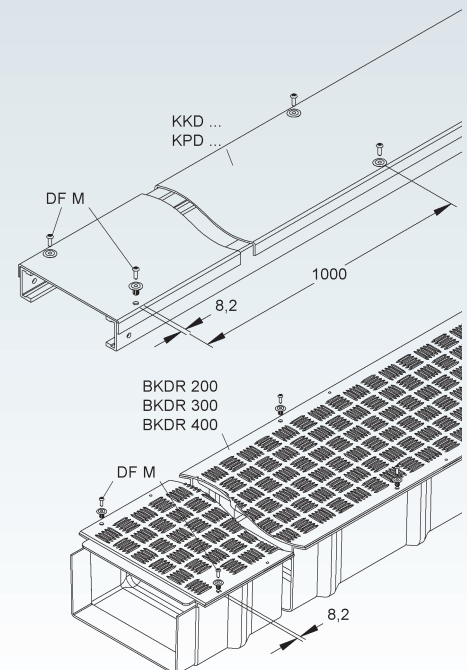
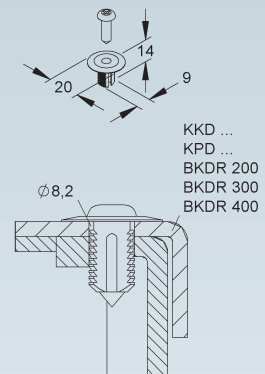
Cover Fastening

Model No.	Colour similar RAL	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 DF M	9005	957927	0,6	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
GRP-cable tray cover KPD...
GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions.
Due to external influences, such as wind loads, the number of cover clamps must be increased.
A Ø 8.2 mm hole is required to fix the cover.



CABLE TRAY SYSTEMS COVER KP

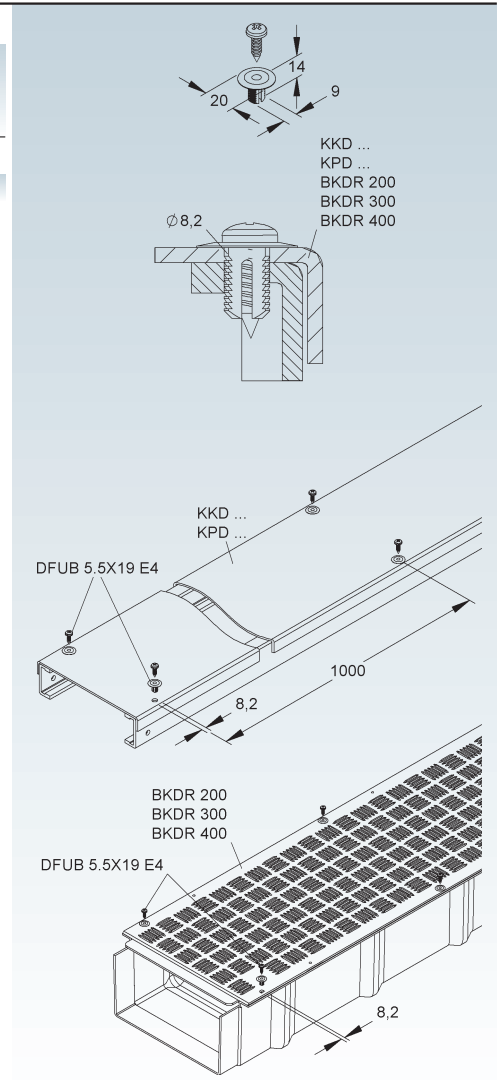
Cover Fastening

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DFUB 5.5X19 E4	062065	0,64	50 pcs.

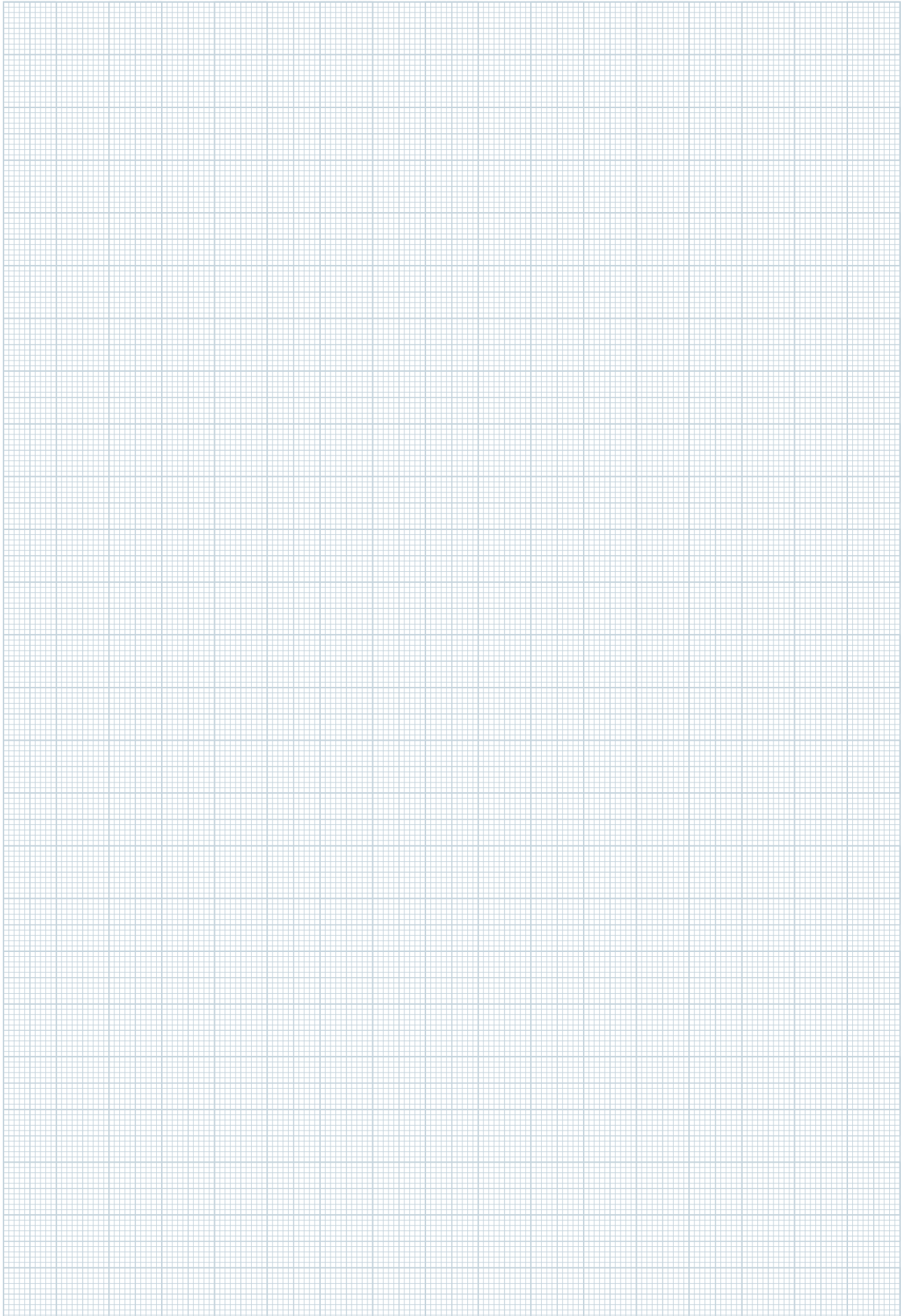
for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
 GRP-cable tray cover KPD...
 GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
 GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
 GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased. A $\varnothing 8.2$ mm hole is required to fix the cover.



NOTES

A large, empty grid area for taking notes, consisting of a fine grid of small squares. The grid is light blue and covers most of the page area below the 'NOTES' header.

CABLE TRAY SYSTEMS ACCESSORIES KP

GRP-Cable Rack

pressed

Model No.	Colour similar RAL	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KR 100	7032	74	955466	2,4	1 pc.
K23 KR 150	7032	124	955473	3,1	1 pc.
K23 KR 200	7032	174	955480	4,0	1 pc.
K23 KR 300	7032	274	955503	6,7	1 pc.
K23 KR 100/M	7032	74	955541	2,4	1 pc.
K23 KR 150/M	7032	124	955558	3,1	1 pc.
K23 KR 200/M	7032	174	955565	4,0	1 pc.
K23 KR 300/M	7032	274	955589	6,7	1 pc.

for fixing the cables in the riser shaft by means of cable ties

The cable rack KR... is supplied loose and must be connected to the trunking on site.

Requirement: 2 pieces of FKM... per cable rack.

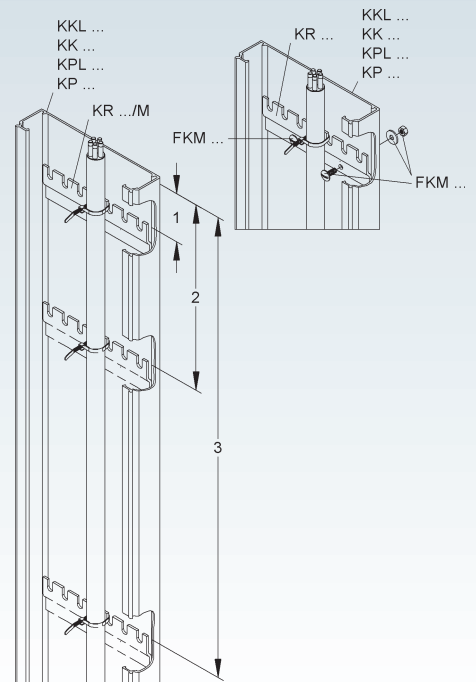
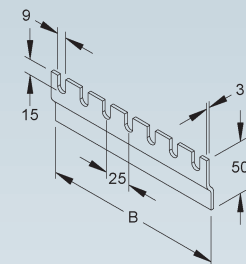
The KR.../M version is factory-fitted when the cable tray is ordered. The position must be specified when ordering.

Used for: GRP-cable trays KK..., KKL..., KP... and KPL... of edge height 50, 80 and 110 mm

In the case of wall/ or ceiling mounting, please note that the duct cannot lie flush with the substrate.

Article available in various resin mixtures.

The mounting straps must be ordered separately



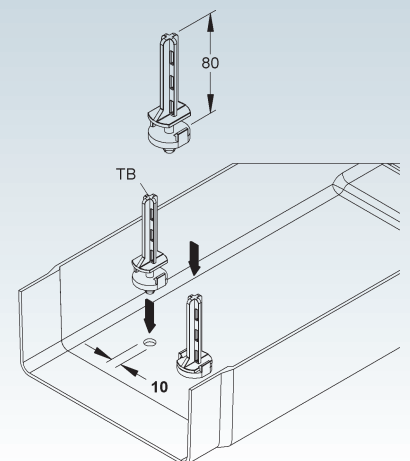
Separat Bolt

Model No.	Colour similar RAL	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 TB	7035	957934	1	1 pc.

for the orderly laying of lines and cables

Not suitable for use in wall-mounted cable ducts.

When mounting, make sure that a Ø 10 mm through hole is required for the separating bolt.

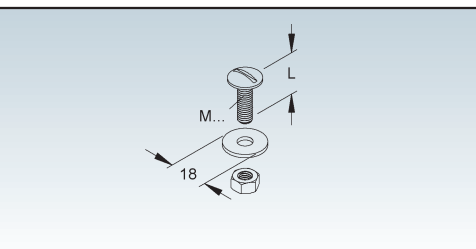


Cup Screw

incl. hexagon nut and washer acc. to DIN EN ISO 7093-1

Model No.	Thread M	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 FKM 6X16 E4	6	16	962693	1,2	100 pcs.
E4 FKM 6X20 E4	6	20	962709	1,4	100 pcs.

Recommended screw tightening torque 7 Nm

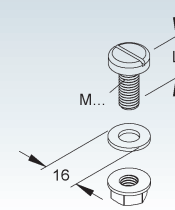


Flat Head Bolt similar to DIN EN ISO 1580

incl. flange nut and washer similar to DIN EN ISO 7089

Model No.	Thread M	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 FKM 8X20 K01	8	20	962716	0,4	100 pcs.

Recommended screw tightening torque 3 Nm



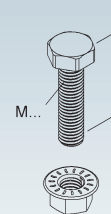
Hexagon Screw acc. to DIN EN ISO 4017

incl. toothed flange nut acc. to DIN EN 1661

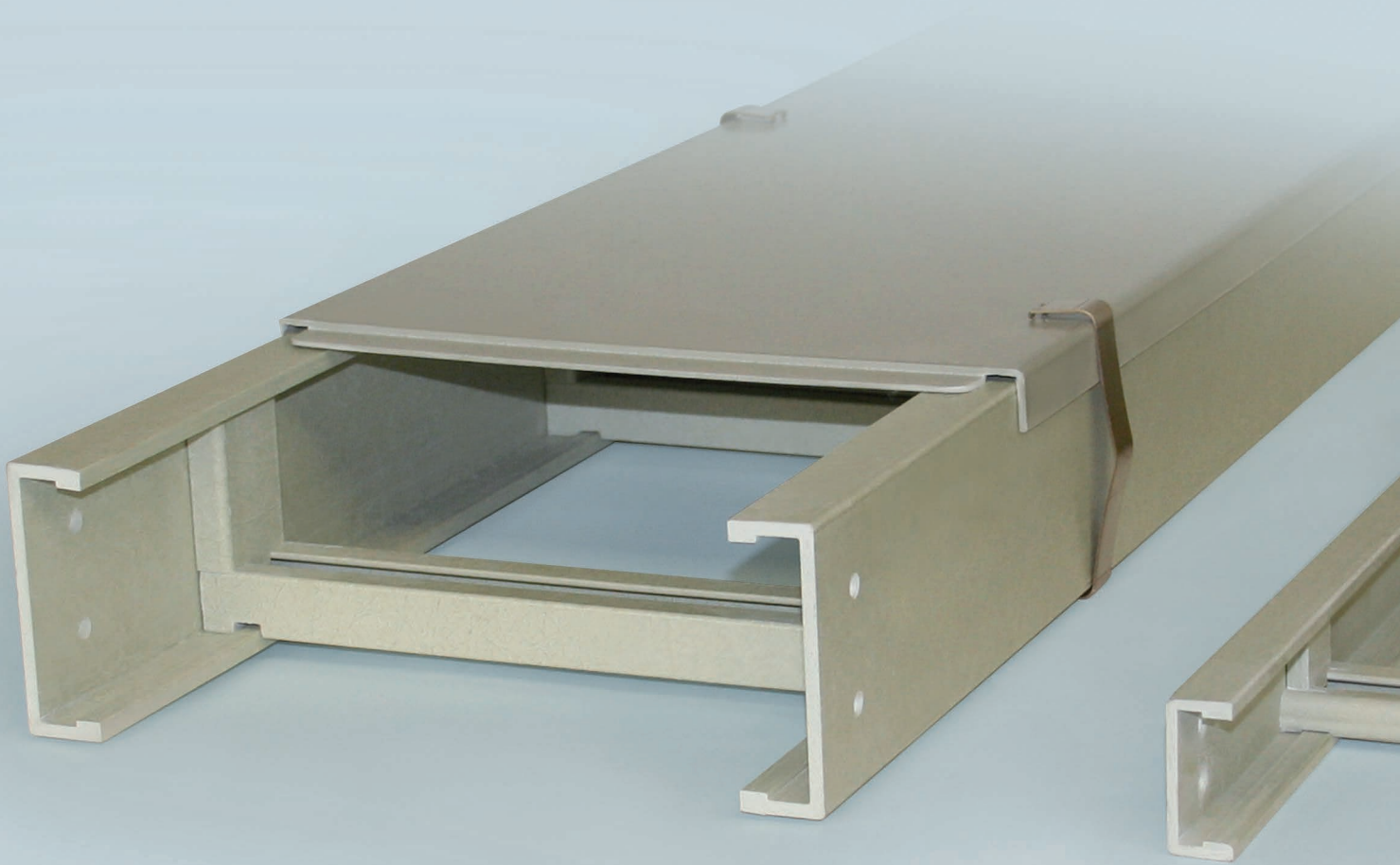
Model No.	Thread M	Length L mm	Strength class screw / nut	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 SKM 10X30 E4	10	30	70 / 80	962730	3,81	50 pcs.
E4 SKM 10X40 E4	10	40	70 / 80	962747	4,55	50 pcs.

The strength classes of the screws are stamped on the screw heads.
Especially for connections that have to transmit vertical loads via friction, it is essential to pay attention to the screw tightening torque and to check it with a torque spanner!
In product combinations (hexagon bolt with nut), the lower strength class is to be used for determining the torque.

Recommended screw tightening torque 30 Nm



GRP CABLE SUPPORT SYSTEMS



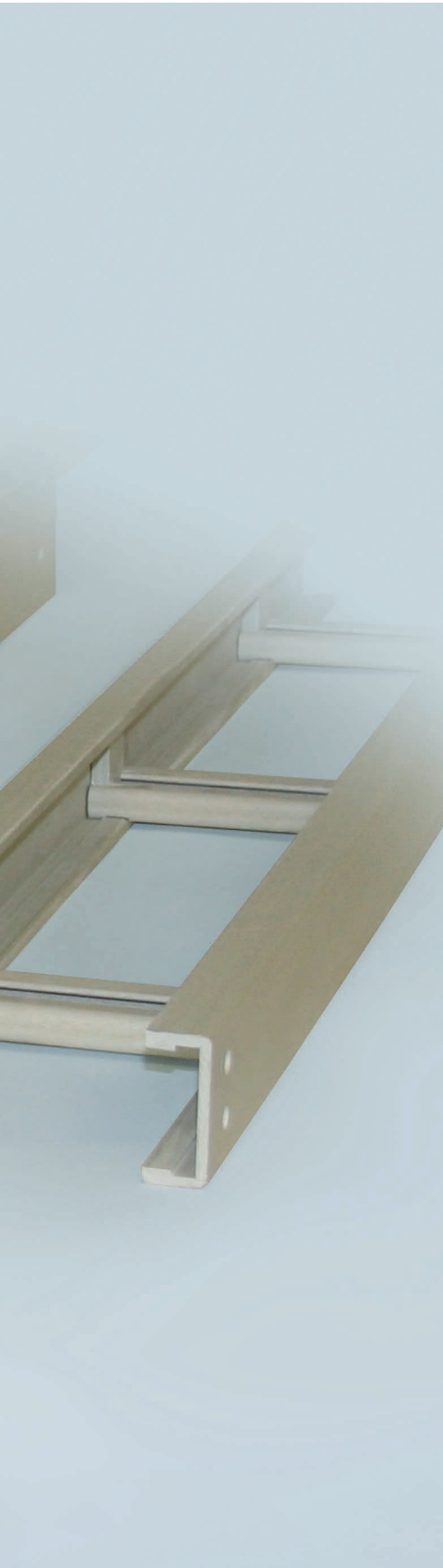
CABLE LADDER SYSTEM UL

in the side heights    

- Cable Ladder
- Covers
- Barrier Strips
- Accessories
- Fittings

















































































For the installation of large cable volumes and cross-sections, the use of GRP cable ladders is recommended, which meet the requirements of industry as well as power station and plant construction, even with fastening distances of up to 5 m.

The patented clamp fastening of the rungs meets the special demand for a resilient, metal-free cable support system. This means that for selected foreign projects, the cable ladder can be shipped in individual parts. The cable ladder is then assembled on site.



CABLE LADDER SYSTEM UL

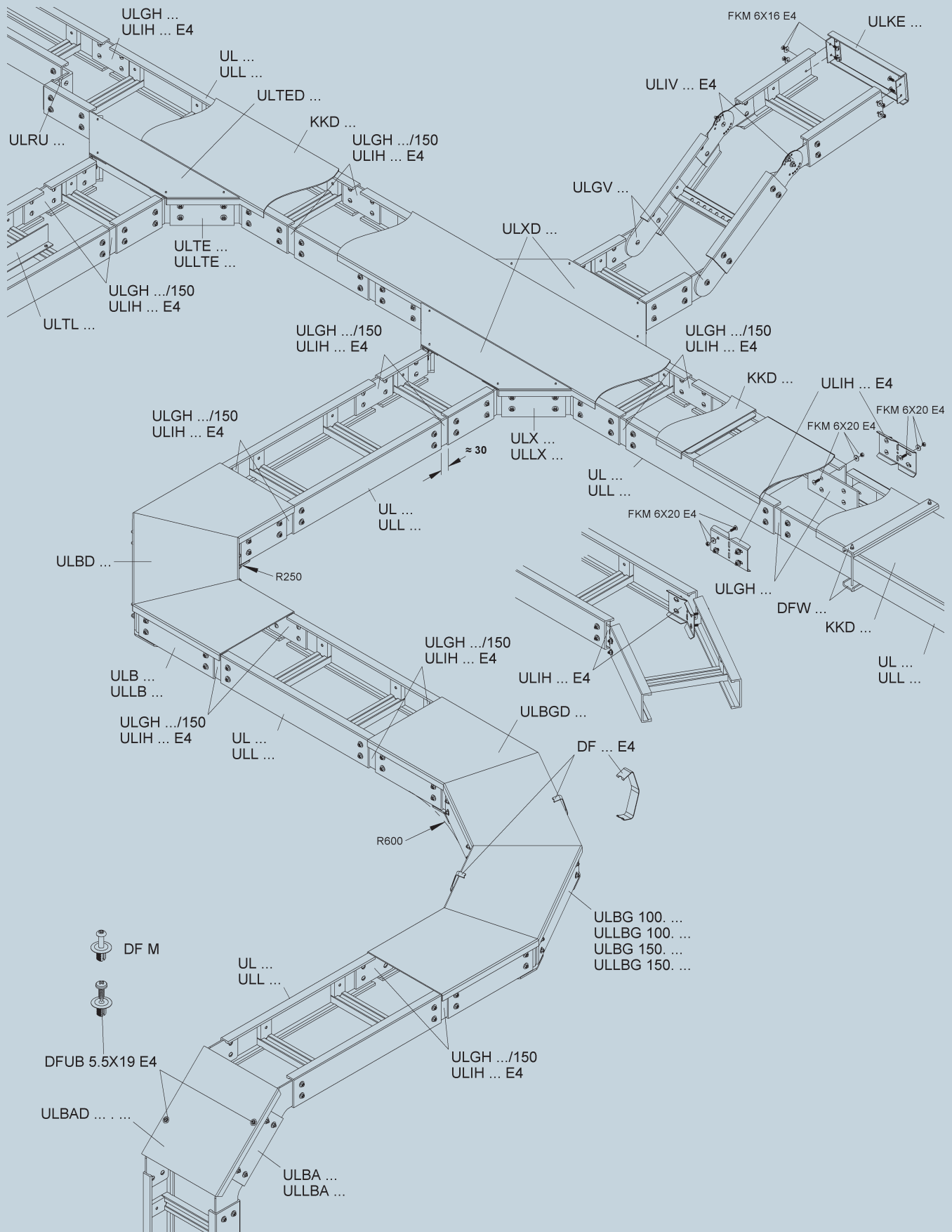
System overview of the side heights

SYSTEM					
GFK-Cable Ladders, pultruded, unperforated C-profile rungs	UL...	 P. 108	 P. 117	 P. 126	 P. 137
GFK-Cable Ladders, pultruded, perforated C-profile rungs	ULL...	 P. 109	 P. 118	 P. 127	 P. 138
GFK-End Cover, pressed	ULKE...	 P. 109	 P. 118	 P. 128	 P. 139
★ GFK-Splice Plate, pultruded, horizontal, screwable	ULGH...	 P. 110	 P. 119	 P. 128/129	 P. 139/140
Splice Plate, screwless, horizontal	ULIH...	 P. 111	 P. 120	 P. 129	 P. 140
GFK-Barrier Strip, pressed	ULTL...	 P. 111	 P. 120	 P. 130	 P. 141
GFK-T-Piece, pultruded, unperforated C-profile rungs	ULTE...	 P. 112	 P. 121	 P. 130	 P. 141
GFK-T-Piece, pultruded, perforated C-profile rungs	ULLTE...	 P. 112	 P. 121	 P. 131	 P. 142
GFK-Crossing, pultruded, unperforated C-profile rungs	ULX...	 P. 113	 P. 122	 P. 131	 P. 142
GFK-Crossing, pultruded, perforated C-profile rungs	ULLX...	 P. 113	 P. 122	 P. 132	 P. 143
GFK-Elbow 90°, pultruded, unperforated C-profile rungs	ULB...	 P. 113	 P. 123	 P. 132	 P. 143
GFK-Elbow 90°, pultruded, perforated C-profile rungs	ULLB...	 P. 114	 P. 123	 P. 133	 P. 144
GFK-Elbow 90°, large, pultruded, unperforated C-profile rungs	ULBG...	 —	 —	 P. 133	 P. 144
GFK-Elbow 90°, large, pultruded, perforated C-profile rungs	ULLBG...	 —	 —	 P. 134	 P. 145
GFK-Elbow 2 x 45°, pultruded, adjustable, unperforated C-profile rungs	ULBA...	 P. 114	 P. 123	 P. 134	 P. 145
GFK-Elbow 2 x 45°, pultruded, adjustable, perforated C-profile rungs	ULLBA...	 P. 114	 P. 124	 P. 135	 P. 146
GFK-Reduction, pultruded	ULRU...	 P. 115	 P. 124	 P. 135	 P. 146
GFK-Joint Connector, pultruded, vertical, screwable	ULGV...	 P. 115	 P. 125	 P. 136	 P. 147
Joint Connector, vertical, screwable	ULIV...	 P. 116	 P. 125	 P. 136	 P. 147
ACCESSORIES					
Cover Clamp	DF...	P. 153			
Cover Fastening	DF M	P. 154*			
Cover fastening	DFUB 5.5X19 E4	P. 155*			
Cover Clamping Ring	DFW...	P. 156			
GFK-Cable Ladder Fastening	ULKG	P. 158*			
★ Profile Clamp	HSK 10 E5	P. 158*			
Cup Screw	BKM 6X30 E4	P. 159*			
Cup Screw	FKM...	P. 159*			
Flat Head Bolt similar to DIN EN ISO 1580	FKM...	P. 159*			
Hexagon Screw acc. to DIN EN ISO 4017	SKM...	P. 159*			
Wall Connection Angle, asymmetrical	WWA 100 E3	P. 159*			
Wall Connection Angle, equal-sided	WWU 150/8 E5	P. 159*			
Mounting Pincer	ULP 100	P. 160*			

The covers of the GRP cable ladder system UL can be found from page 148 onwards.

* Can be used with all side heights





CABLE LADDER SYSTEM UL

GRP-Cable Ladders

pultruded, with unperforated C-profile rungs open at the top, slot width approx. 15 mm

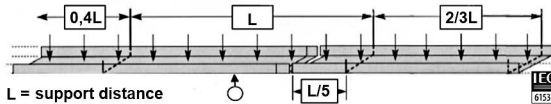
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	UL 53.150/3	7032	53	150	3000	4	3472	957958	108,7	3 m
K23	UL 53.200/3	7032	53	200	3000	4	4872	957972	116,0	3 m
K23	UL 53.300/3	7032	53	300	3000	4	7672	957996	131,0	3 m
K23	UL 53.400/3	7032	53	400	3000	4	10472	958016	145,0	3 m
K23	UL 53.500/3	7032	53	500	3000	4	13272	958030	160,0	3 m
K23	UL 53.600/3	7032	53	600	3000	4	16072	958054	175,0	3 m
K23	UL 53.200	7032	53	200	6000	4	4872	957965	116,0	6 m
K23	UL 53.300	7032	53	300	6000	4	7672	957989	131,0	6 m
K23	UL 53.400	7032	53	400	6000	4	10472	958009	145,0	6 m
K23	UL 53.500	7032	53	500	6000	4	13272	958023	160,0	6 m
K23	UL 53.600	7032	53	600	6000	4	16072	958047	175,0	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

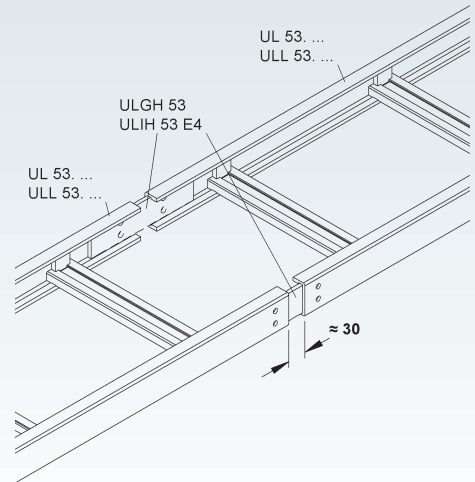
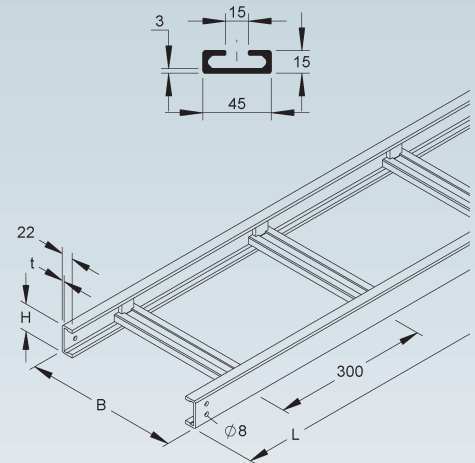
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



UL 53 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	0,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-Cable Ladders

pultruded, with perforated C-profile rungs open at the top, slot width approx. 15 mm

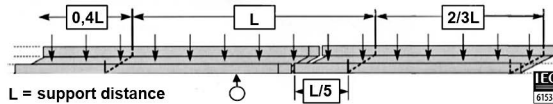
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 ULL 53.150/3	7032	53	150	3000	4	3472	105892	108,7	3 m
K23 ULL 53.200/3	7032	53	200	3000	4	4872	105915	116,0	3 m
K23 ULL 53.300/3	7032	53	300	3000	4	7672	105922	131,0	3 m
K23 ULL 53.400/3	7032	53	400	3000	4	10472	105939	145,0	3 m
K23 ULL 53.500/3	7032	53	500	3000	4	13272	105946	160,0	3 m
K23 ULL 53.600/3	7032	53	600	3000	4	16072	105953	175,0	3 m
K23 ULL 53.200	7032	53	200	6000	4	4872	104055	116,0	6 m
K23 ULL 53.300	7032	53	300	6000	4	7672	104062	131,0	6 m
K23 ULL 53.400	7032	53	400	6000	4	10472	104079	145,0	6 m
K23 ULL 53.500	7032	53	500	6000	4	13272	104086	160,0	6 m
K23 ULL 53.600	7032	53	600	6000	4	16072	104093	175,0	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

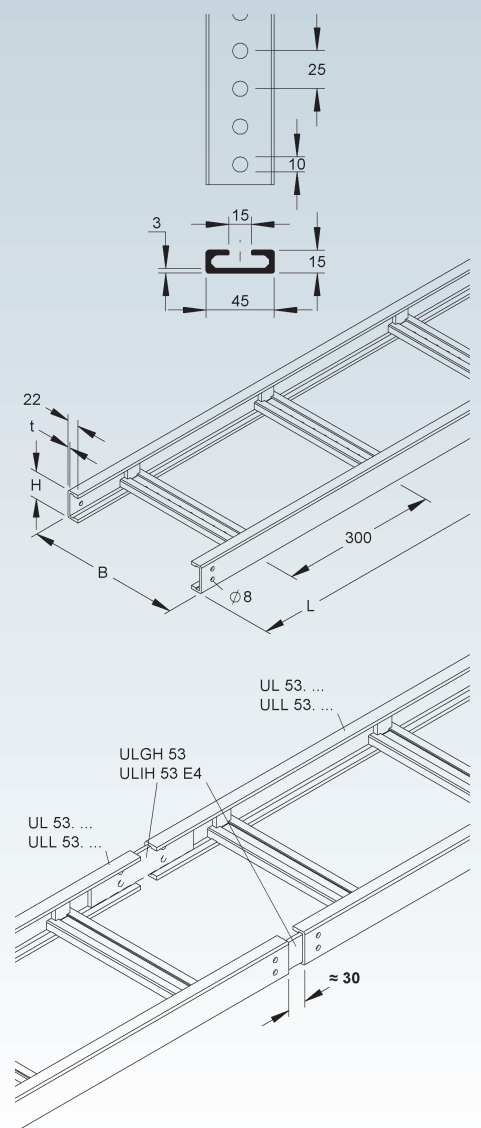
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



ULL 53 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	0,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-End Cover

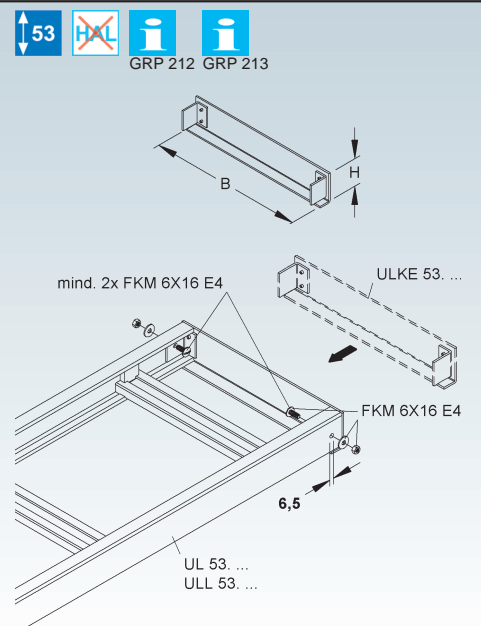
pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULKE 53.150	7032	53	150	965748	5,6	1 pc.
K23 ULKE 53.200	7032	53	200	965755	7,0	1 pc.
K23 ULKE 53.300	7032	53	300	965762	9,8	1 pc.
K23 ULKE 53.400	7032	53	400	965779	12,6	1 pc.
K23 ULKE 53.500	7032	53	500	965786	15,4	1 pc.
K23 ULKE 53.600	7032	53	600	965793	18,2	1 pc.

to cover the cable ladders ends

Used for: GRP-cable ladder UL 53... and ULL 53...

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



CABLE LADDER SYSTEM UL

GRP-Splice Plate

pultruded, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 53	7032	44	6	960156	8,5	1 pair

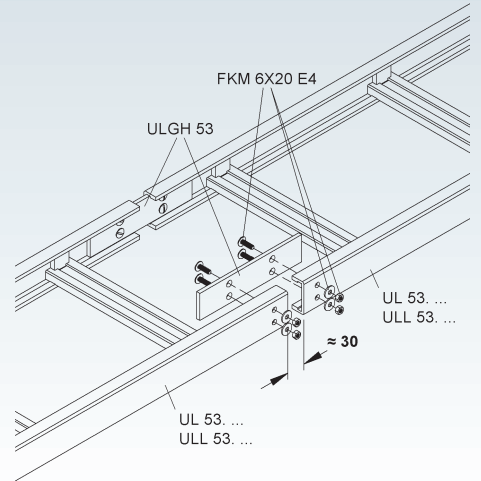
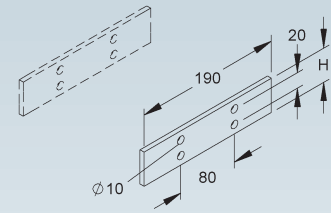
for connecting cable ladders that are horizontally aligned in the longitudinal direction at the joint with 53 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 53... and ULL 53...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



GRP-Splice Plate

pressed, horizontal, screwable, shortened version

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 53/150	7032	44	6	229383	13,28	1 pair

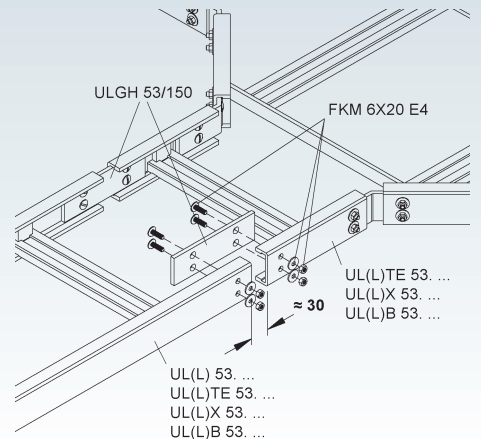
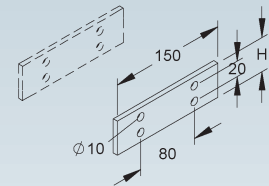
for a connection of the fittings to the cable ladder horizontally aligned in the longitudinal direction at the joint/fittings with 53 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder fittings T-piece UL(L)TE 53... .., crossing UL(L)X 53... .. and elbow 90° UL(L)B 53. ...

When mounting the fittings with the cable ladder/fittings, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Splice Plate

screwless, horizontal

Model No.	Height H	Material thickness (t)	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
	mm	mm			
E4 ULIH 53 E4	45	1	960194	6,1	1 pair

for horizontal changes of direction and for a longitudinally aligned connection of cable ladders and fittings at the joint with 53 mm edge height

Requirement: 1 pair (2 pieces) per joint

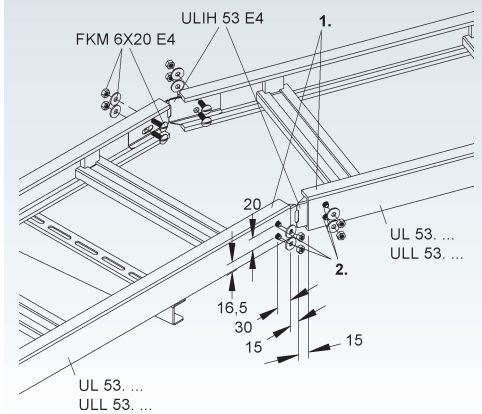
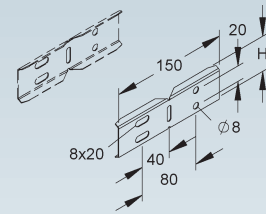
Used for: GRP-cable ladder UL 53. ... and ULL 53. ...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account. Furthermore, it should be noted that the slotted holes of the splice plates are arranged on the side of the joint where the bracket is located. The ULP 100 mounting pincer serve as an assembly aid. The connector holes allow for permanent fastening and ensure that the material can expand.

To ensure proper assembly, 4 screws FKM 6X20 E4 per connector must be fitted for heavy loads.

1. shorten cable ladder rails as required.
2. drill out $\varnothing 8$ mm on site.

53



GRP-Barrier Strip

pressed

Model No.	Colour similar RAL	Height H	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm			
K23 ULTL 53	7032	30	958511	35	3 m

for separating lines and cables with different functions and/or voltages

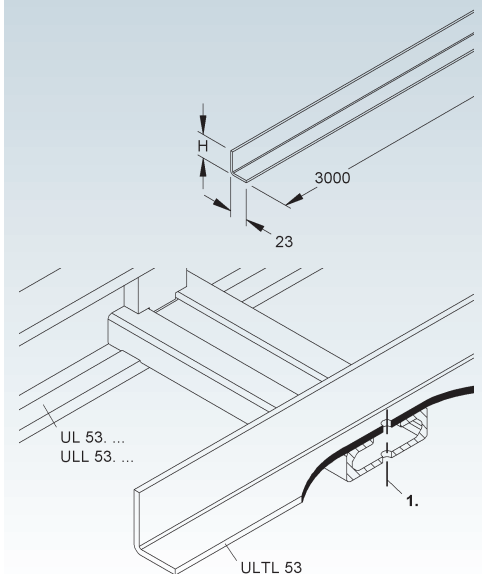
Used for: GRP-cable ladder UL 53. ... and ULL 53. ...

1. fastening is done with self-tapping screws or rivets through the rung to be provided by the customer.

53



GRP 212 GRP 213



CABLE LADDER SYSTEM UL

GRP-T-Piece

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULTE 53.150	7032	53	150	959235	550	1 pc.
K23 ULTE 53.200	7032	53	200	959242	590	1 pc.
K23 ULTE 53.300	7032	53	300	959259	620	1 pc.
K23 ULTE 53.400	7032	53	400	959266	720	1 pc.
K23 ULTE 53.500	7032	53	500	959273	760	1 pc.
K23 ULTE 53.600	7032	53	600	959280	830	1 pc.

for the production of horizontal 90° T-outlets

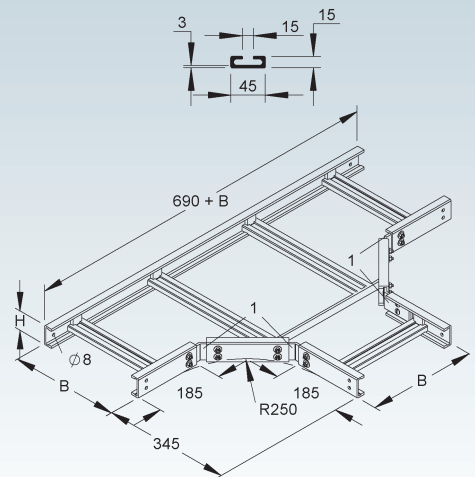
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLTE 53.150	7032	53	150	104772	550	1 pc.
K23 ULLTE 53.200	7032	53	200	104789	590	1 pc.
K23 ULLTE 53.300	7032	53	300	104796	620	1 pc.
K23 ULLTE 53.400	7032	53	400	104819	720	1 pc.
K23 ULLTE 53.500	7032	53	500	104826	760	1 pc.
K23 ULLTE 53.600	7032	53	600	104833	830	1 pc.

for the production of horizontal 90° T-outlets

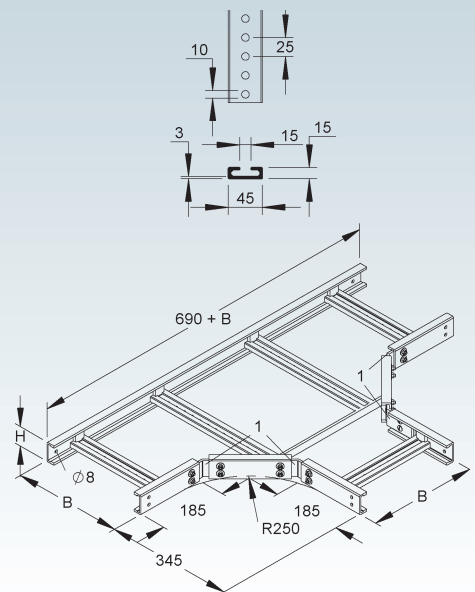
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H	Width B	B+D	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm			
K23 ULX 53.150	7032	53	150	840	959570	687,5	1 pc.
K23 ULX 53.200	7032	53	200	890	959587	738,0	1 pc.
K23 ULX 53.300	7032	53	300	990	959594	775,0	1 pc.
K23 ULX 53.400	7032	53	400	1090	959600	900,0	1 pc.
K23 ULX 53.500	7032	53	500	1190	959617	950,0	1 pc.
K23 ULX 53.600	7032	53	600	1290	959624	1.050,0	1 pc.

for making horizontal 90° crossings

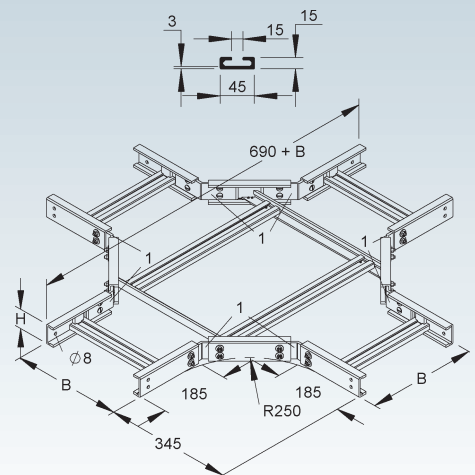
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H	Width B	B+D	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm	mm			
K23 ULLX 53.150	7032	53	150	840	105151	687,5	1 pc.
K23 ULLX 53.200	7032	53	200	890	105168	738,0	1 pc.
K23 ULLX 53.300	7032	53	300	990	105175	775,0	1 pc.
K23 ULLX 53.400	7032	53	400	1090	105182	900,0	1 pc.
K23 ULLX 53.500	7032	53	500	1190	105199	950,0	1 pc.
K23 ULLX 53.600	7032	53	600	1290	105212	1.050,0	1 pc.

for making horizontal 90° crossings

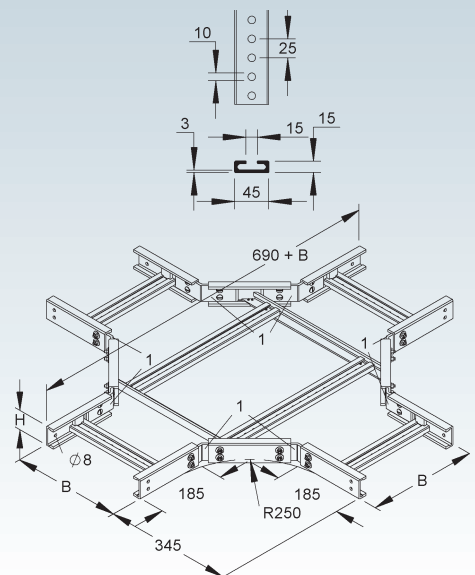
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 ULB 53.150	7032	53	150	958559	160	1 pc.
K23 ULB 53.200	7032	53	200	958566	180	1 pc.
K23 ULB 53.300	7032	53	300	958573	200	1 pc.
K23 ULB 53.400	7032	53	400	958580	270	1 pc.
K23 ULB 53.500	7032	53	500	958597	310	1 pc.
K23 ULB 53.600	7032	53	600	958603	350	1 pc.

for the production of horizontal 90° corner joints

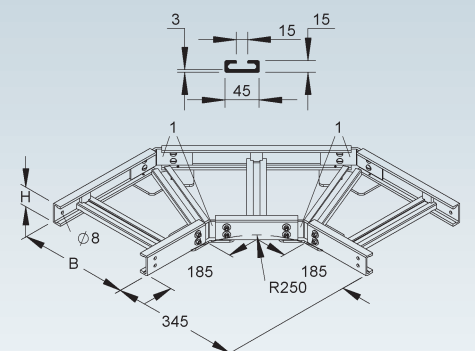
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLB 53.150	7032	53	150	104413	160	1 pc.
K23 ULLB 53.200	7032	53	200	104420	180	1 pc.
K23 ULLB 53.300	7032	53	300	104437	200	1 pc.
K23 ULLB 53.400	7032	53	400	104444	270	1 pc.
K23 ULLB 53.500	7032	53	500	104451	310	1 pc.
K23 ULLB 53.600	7032	53	600	104468	350	1 pc.

for the production of horizontal 90° corner joints

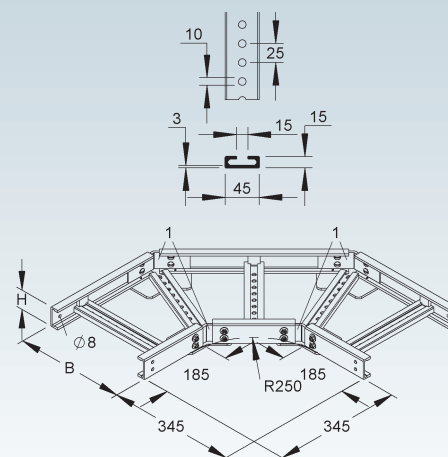
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 53/150 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open unperforated rung made of C-profile with approx. 15 mm slot width

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBA 53.150	7032	53	150	958894	80	1 pc.
K23 ULBA 53.200	7032	53	200	958900	82	1 pc.
K23 ULBA 53.300	7032	53	300	958917	86	1 pc.
K23 ULBA 53.400	7032	53	400	958924	91	1 pc.
K23 ULBA 53.500	7032	53	500	958931	95	1 pc.
K23 ULBA 53.600	7032	53	600	958948	100	1 pc.

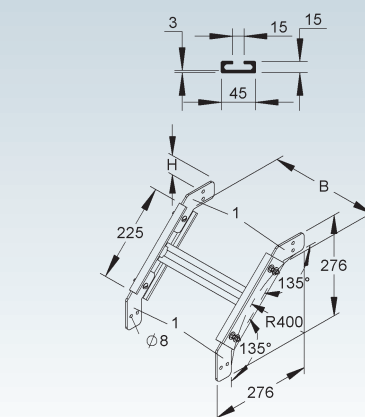
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open perforated rung made of C-profile with approx. 15 mm slot width

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLBA 53.150	7032	53	150	106431	80	1 pc.
K23 ULLBA 53.200	7032	53	200	106448	82	1 pc.
K23 ULLBA 53.300	7032	53	300	106455	86	1 pc.
K23 ULLBA 53.400	7032	53	400	106462	91	1 pc.
K23 ULLBA 53.500	7032	53	500	106486	95	1 pc.
K23 ULLBA 53.600	7032	53	600	106479	100	1 pc.

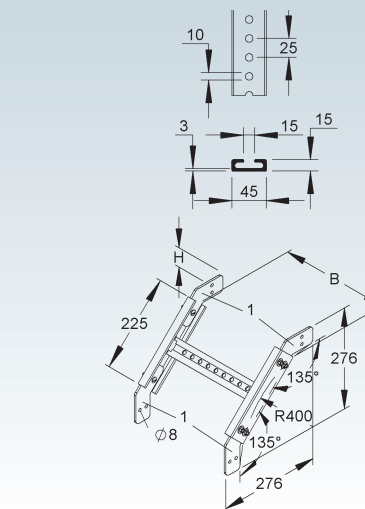
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Reduction

pultruded, with perforated connecting flaps

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULRU 53.100	7032	53	100	959914	33	1 pc.
K23	ULRU 53.150	7032	53	150	959921	37	1 pc.
K23	ULRU 53.200	7032	53	200	959938	43	1 pc.
K23	ULRU 53.300	7032	53	300	959945	50	1 pc.
K23	ULRU 53.400	7032	53	400	959952	64	1 pc.

for reducing and extending continuous cable ladders with 53 mm edge height

Dimension B corresponds to the reduction/extension.

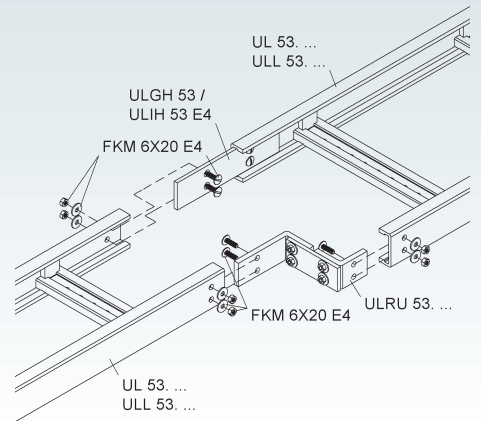
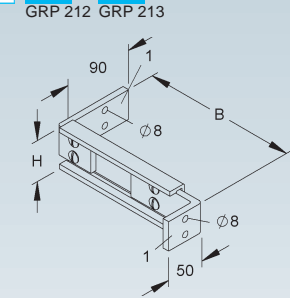
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the reduction, a mounting distance of approx. 30 mm must be taken into account.
- The reduction must be supported with a bracket.
- To ensure proper installation, the reduction and the splice plate must be screwed to the cable ladder transition with 4 FKM 6X20 E4 each.

GRP-reduction with stainless steel connecting straps (1) on request.

The ULGH 53 and ULIH 53 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Joint Connector

pultruded, vertical, screwable

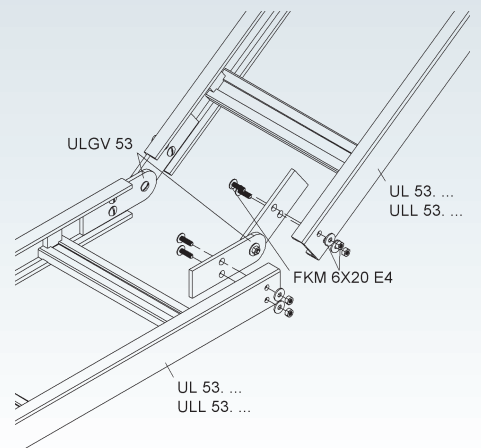
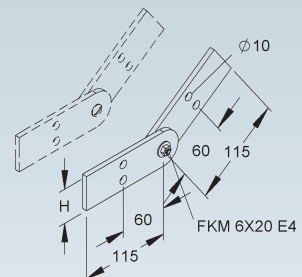
	Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23	ULGV 53	7032	44	6	960231	27,5	1 pair

for creating vertical angle connections of continuous cable ladders with 53 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 53... and ULL 53...

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



CABLE LADDER SYSTEM UL

Joint Connector

vertical, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIV 53 E4	45	1	960279	30	1 pair

for creating vertical angle connections of continuous cable ladders with 53 mm edge height

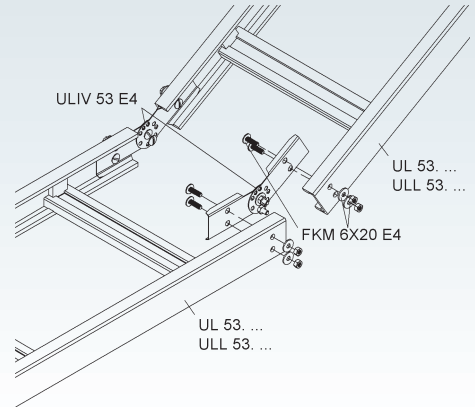
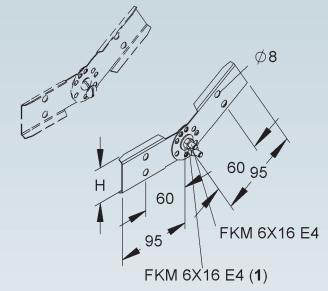
Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 53... and ULL 53...

The adjustment is made in 15° angular steps and must be screwed into the pitch circle with a screw FKM 6X16 E4 (1).

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).

53



GRP-Cable Ladders

pultruded, with unperforated C-profile rungs open at the top, slot width approx. 15 mm

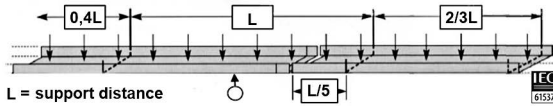
	Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23	UL 80.150/3	7032	80	150	3000	4	6820	958078	223	3 m
K23	UL 80.200/3	7032	80	200	3000	4	9570	958092	230	3 m
K23	UL 80.300/3	7032	80	300	3000	4	15070	958115	245	3 m
K23	UL 80.400/3	7032	80	400	3000	4	20570	958139	260	3 m
K23	UL 80.500/3	7032	80	500	3000	4	26070	958153	275	3 m
K23	UL 80.600/3	7032	80	600	3000	4	31570	958177	290	3 m
K23	UL 80.150	7032	80	150	6000	4	6820	958061	223	6 m
K23	UL 80.200	7032	80	200	6000	4	9570	958085	230	6 m
K23	UL 80.300	7032	80	300	6000	4	15070	958108	245	6 m
K23	UL 80.400	7032	80	400	6000	4	20570	958122	260	6 m
K23	UL 80.500	7032	80	500	6000	4	26070	958146	275	6 m
K23	UL 80.600	7032	80	600	6000	4	31570	958160	290	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

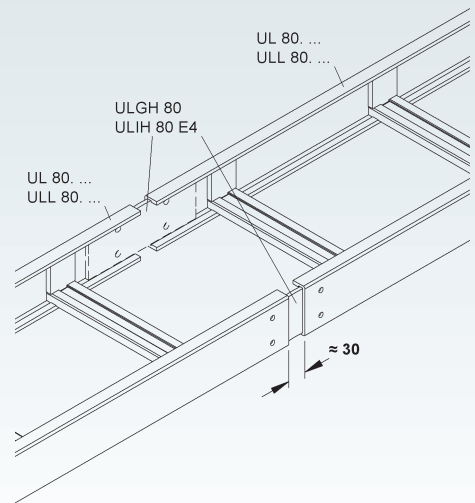
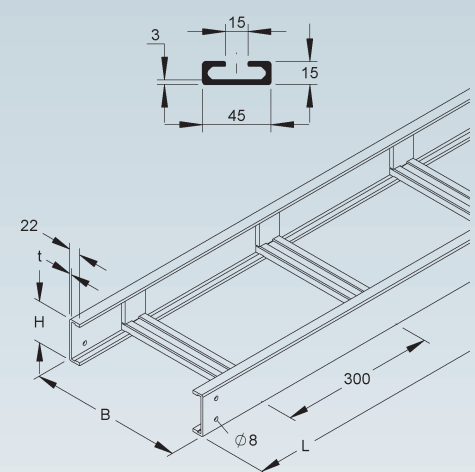
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



UL 80 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	1,6

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



CABLE LADDER SYSTEM UL

GRP-Cable Ladders

pultruded, with perforated C-profile rungs open at the top, slot width approx. 15 mm

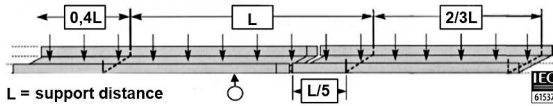
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	ULL 80.150/3	7032	80	150	3000	4	6820	105960	223	3 m
K23	ULL 80.200/3	7032	80	200	3000	4	9570	105977	230	3 m
K23	ULL 80.300/3	7032	80	300	3000	4	15070	105984	245	3 m
K23	ULL 80.400/3	7032	80	400	3000	4	20570	105991	260	3 m
K23	ULL 80.500/3	7032	80	500	3000	4	26070	106011	275	3 m
K23	ULL 80.600/3	7032	80	600	3000	4	31570	106028	290	3 m
K23	ULL 80.150	7032	80	150	6000	4	6820	105649	223	6 m
K23	ULL 80.200	7032	80	200	6000	4	9570	104116	230	6 m
K23	ULL 80.300	7032	80	300	6000	4	15070	104123	245	6 m
K23	ULL 80.400	7032	80	400	6000	4	20570	104130	260	6 m
K23	ULL 80.500	7032	80	500	6000	4	26070	104147	275	6 m
K23	ULL 80.600	7032	80	600	6000	4	31570	104154	290	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

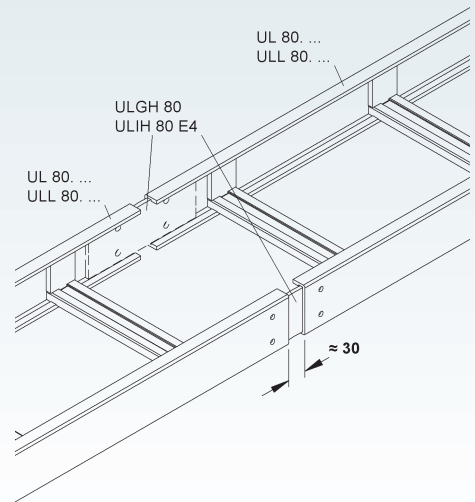
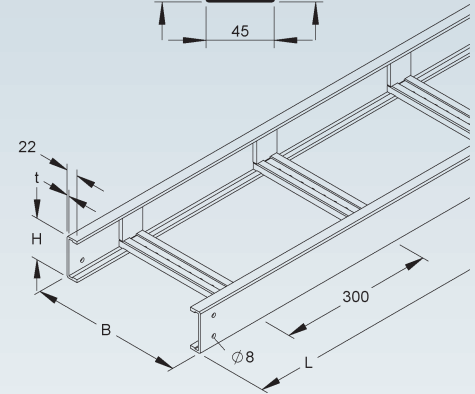
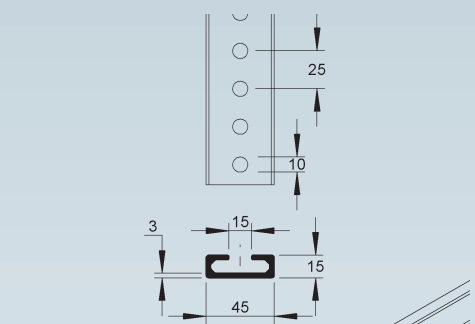
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



ULL 80 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	1,6
	1,5	1,6
6	1	1,6
	1,5	1,6
	2	1,6
	3	1,6

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-End Cover

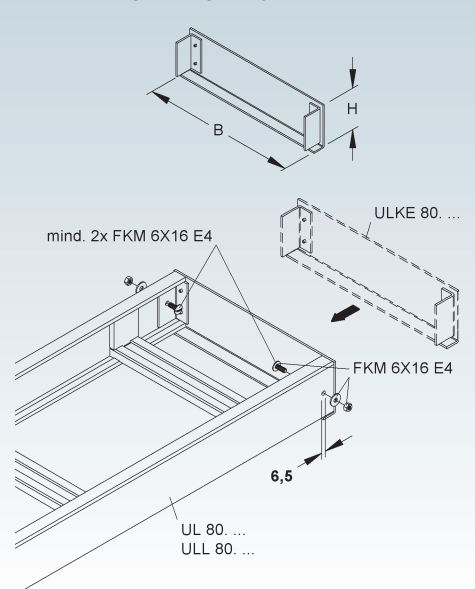
pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K23	ULKE 80.150	7032	80	150	965809	8,5	1 pc.
K23	ULKE 80.200	7032	80	200	965816	10,6	1 pc.
K23	ULKE 80.300	7032	80	300	965823	14,8	1 pc.
K23	ULKE 80.400	7032	80	400	965830	19,1	1 pc.
K23	ULKE 80.500	7032	80	500	965847	23,3	1 pc.
K23	ULKE 80.600	7032	80	600	965854	27,6	1 pc.

to cover the cable ladders ends

Used for: GRP-cable ladder UL 80... and ULL 80...

Required fixing accessories 2 pieces FKM 6X16 E4 (please order separately).



GRP-Splice Plate

pultruded, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 80	7032	71	6	960163	10	1 pair

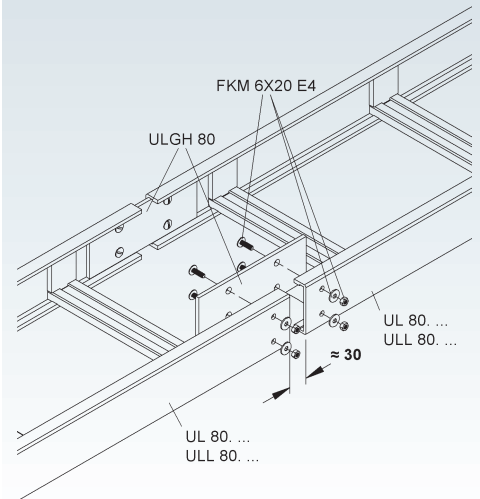
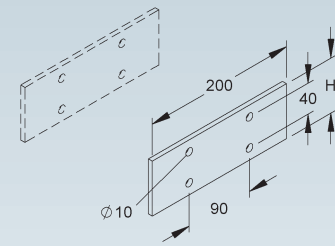
for connecting cable ladders that are horizontally aligned in the longitudinal direction at the joint with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 80... and ULL 80...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



GRP-Splice Plate

pressed, horizontal, screwable, shortened version

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 80/150	7032	71	6	229390	21,83	1 pair

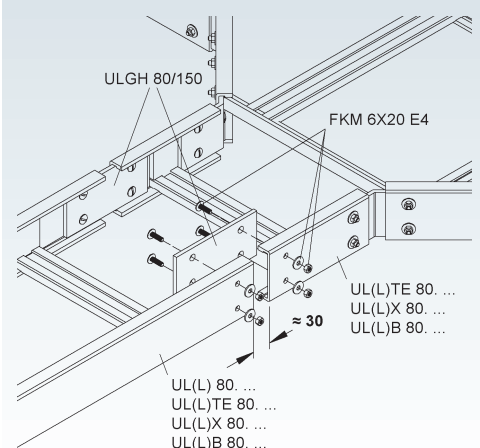
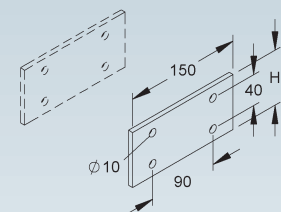
for a connection of the fittings to the cable ladder horizontally aligned in the longitudinal direction at the joint/fittings with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder fittings T-piece UL(L)TE 80... .., crossing UL(L)X 80... .. and elbow 90° UL(L)B 80. ...

When mounting the fittings with the cable ladder/fittings, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



CABLE LADDER SYSTEM UL

Splice Plate

screwless, horizontal

Model No.	Height H	Material thickness (t)	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
	mm	mm			
E4 ULIH 80 E4	72	1	960200	6,1	1 pair

for horizontal changes of direction and for a longitudinally aligned connection of cable ladders and fittings at the joint with 80 mm edge height

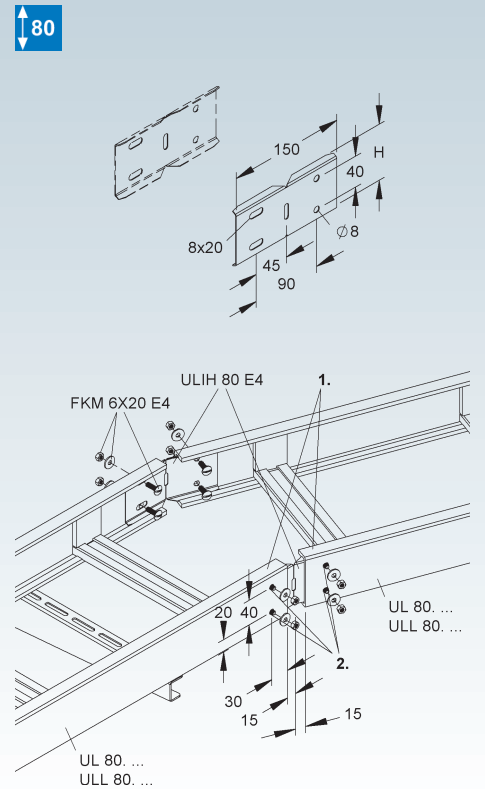
Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 80. ... and ULL 80. ...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account. Furthermore, it should be noted that the slotted holes of the splice plates are arranged on the side of the joint where the bracket is located. The ULP 100 mounting pincer serve as an assembly aid. The connector holes allow for permanent fastening and ensure that the material can expand.

To ensure proper assembly, 4 screws FKM 6X20 E4 per connector must be fitted for heavy loads.

1. shorten cable ladder rails as required.
2. drill out Ø 8 mm on site.



GRP-Barrier Strip

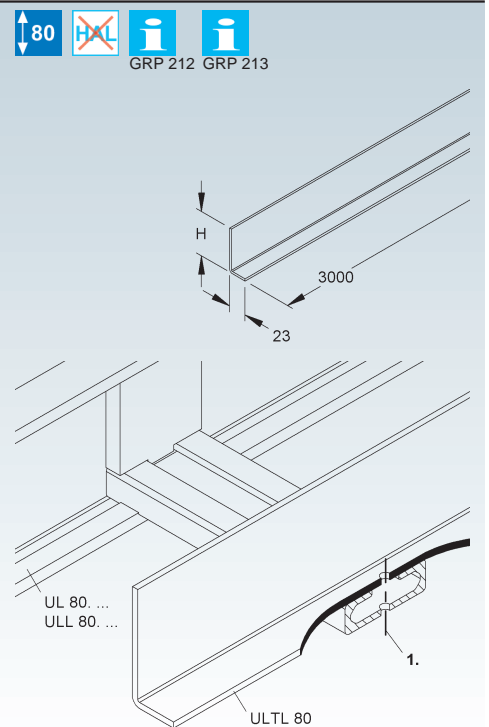
pressed

Model No.	Colour similar RAL	Height H	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm			
K23 ULTL 80	7032	57	958528	38,5	3 m

for separating lines and cables with different functions and/or voltages

Used for: GRP-cable ladder UL 80. ... and ULL 80. ...

1. fastening is done with self-tapping screws or rivets through the rung to be provided by the customer.



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULTE 80.150	7032	80	150	959297	550	1 pc.
K23 ULTE 80.200	7032	80	200	959303	590	1 pc.
K23 ULTE 80.300	7032	80	300	959310	653	1 pc.
K23 ULTE 80.400	7032	80	400	959327	720	1 pc.
K23 ULTE 80.500	7032	80	500	959334	780	1 pc.
K23 ULTE 80.600	7032	80	600	959341	850	1 pc.

for the production of horizontal 90° T-outlets

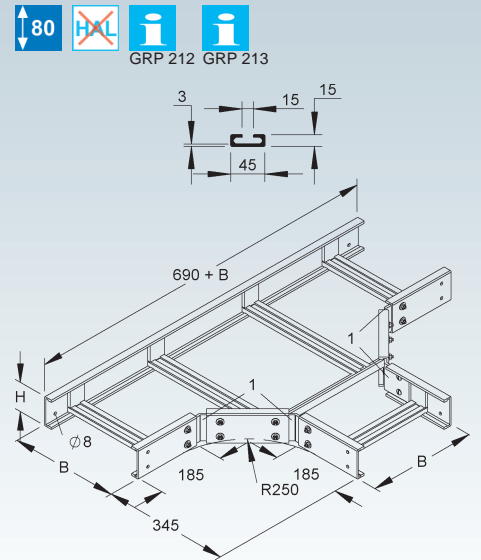
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLTE 80.150	7032	80	150	104840	550	1 pc.
K23 ULLTE 80.200	7032	80	200	104857	590	1 pc.
K23 ULLTE 80.300	7032	80	300	104864	653	1 pc.
K23 ULLTE 80.400	7032	80	400	104871	720	1 pc.
K23 ULLTE 80.500	7032	80	500	104888	780	1 pc.
K23 ULLTE 80.600	7032	80	600	104895	850	1 pc.

for the production of horizontal 90° T-outlets

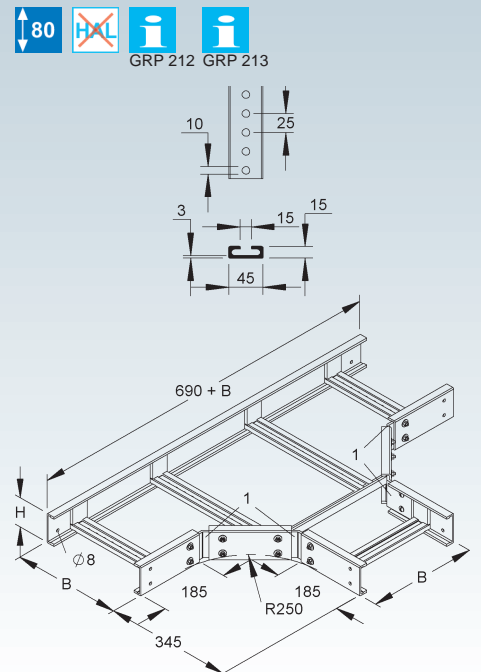
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Crossing

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULX 80.150	7032	80	150	959631	687,5	1 pc.
K23 ULX 80.200	7032	80	200	959648	738,0	1 pc.
K23 ULX 80.300	7032	80	300	959655	816,0	1 pc.
K23 ULX 80.400	7032	80	400	959662	900,0	1 pc.
K23 ULX 80.500	7032	80	500	959679	975,0	1 pc.
K23 ULX 80.600	7032	80	600	959686	820,0	1 pc.

for making horizontal 90° crossings

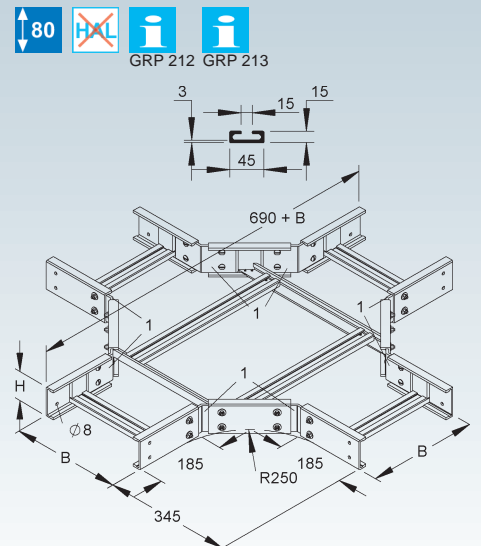
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLX 80.150	7032	80	150	105229	687,5	1 pc.
K23 ULLX 80.200	7032	80	200	105236	738,0	1 pc.
K23 ULLX 80.300	7032	80	300	105243	816,0	1 pc.
K23 ULLX 80.400	7032	80	400	105250	900,0	1 pc.
K23 ULLX 80.500	7032	80	500	105267	975,0	1 pc.
K23 ULLX 80.600	7032	80	600	105274	820,0	1 pc.

for making horizontal 90° crossings

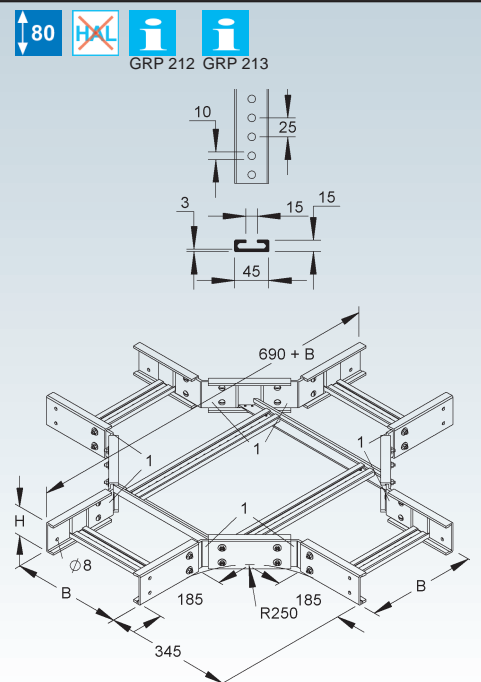
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULB 80.150	7032	80	150	958610	220	1 pc.
K23 ULB 80.200	7032	80	200	958627	240	1 pc.
K23 ULB 80.300	7032	80	300	958634	270	1 pc.
K23 ULB 80.400	7032	80	400	958641	360	1 pc.
K23 ULB 80.500	7032	80	500	958658	400	1 pc.
K23 ULB 80.600	7032	80	600	958665	440	1 pc.

for the production of horizontal 90° corner joints

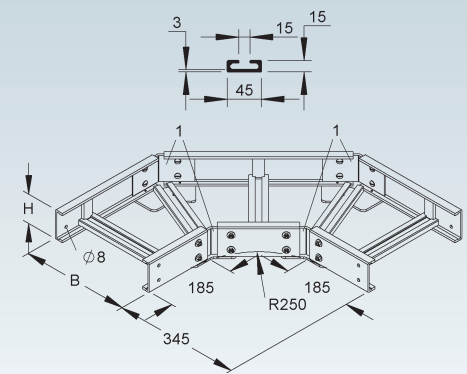
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLB 80.150	7032	80	150	104475	220	1 pc.
K23 ULLB 80.200	7032	80	200	104482	240	1 pc.
K23 ULLB 80.300	7032	80	300	104499	270	1 pc.
K23 ULLB 80.400	7032	80	400	104512	360	1 pc.
K23 ULLB 80.500	7032	80	500	104529	400	1 pc.
K23 ULLB 80.600	7032	80	600	104536	440	1 pc.

for the production of horizontal 90° corner joints

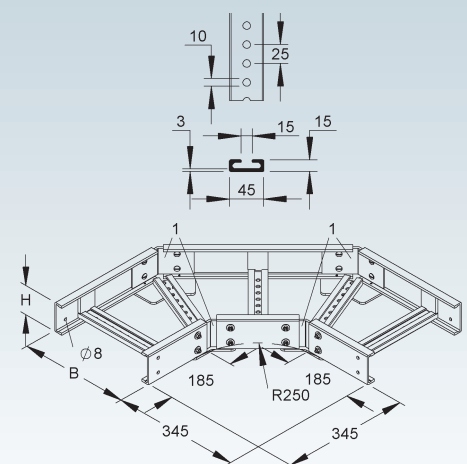
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 80/150 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open unperforated rung made of C-profile with approx. 15 mm slot width.

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBA 80.150	7032	80	150	958955	130	1 pc.
K23 ULBA 80.200	7032	80	200	958962	136	1 pc.
K23 ULBA 80.300	7032	80	300	958979	144	1 pc.
K23 ULBA 80.400	7032	80	400	958986	150	1 pc.
K23 ULBA 80.500	7032	80	500	958993	155	1 pc.
K23 ULBA 80.600	7032	80	600	959006	161	1 pc.

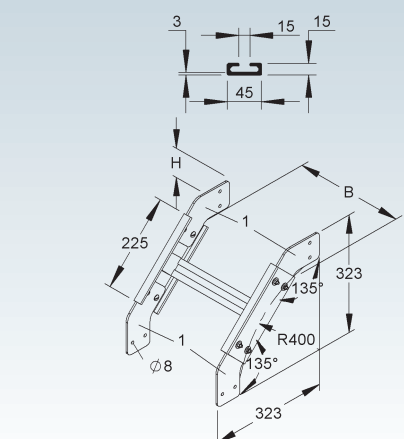
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



CABLE LADDER SYSTEM UL

GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open perforated rung made of C-profile with approx. 15 mm slot width.

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLBA 80.150	7032	80	150	106493	130	1 pc.
K23 ULLBA 80.200	7032	80	200	106516	136	1 pc.
K23 ULLBA 80.300	7032	80	300	106523	144	1 pc.
K23 ULLBA 80.400	7032	80	400	106530	150	1 pc.
K23 ULLBA 80.500	7032	80	500	106547	155	1 pc.
K23 ULLBA 80.600	7032	80	600	106554	161	1 pc.

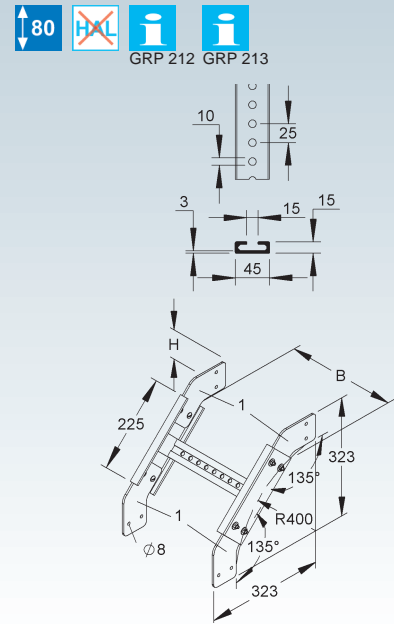
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Reduction

pultruded, with perforated connecting flaps

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULRU 80.100	7032	80	100	959969	42	1 pc.
K23 ULRU 80.150	7032	80	150	959976	46	1 pc.
K23 ULRU 80.200	7032	80	200	959983	51	1 pc.
K23 ULRU 80.300	7032	80	300	959990	63	1 pc.
K23 ULRU 80.400	7032	80	400	960002	71	1 pc.

for reducing and extending continuous cable ladders with 80 mm edge height

Dimension B corresponds to the reduction/extension.

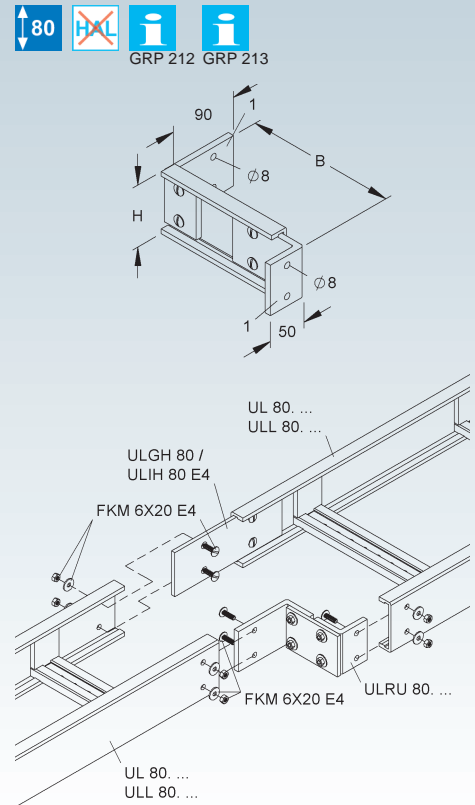
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the reduction, a mounting distance of approx. 30 mm must be taken into account.
- The reduction must be supported with a bracket.
- To ensure proper installation, the reduction and the splice plate must be screwed to the cable ladder transition with 4 FKM 6X20 E4 each.

GRP-reduction with stainless steel connecting straps (1) on request.

The ULGH 80 and ULIH 80 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Joint Connector

pultruded, vertical, screwable

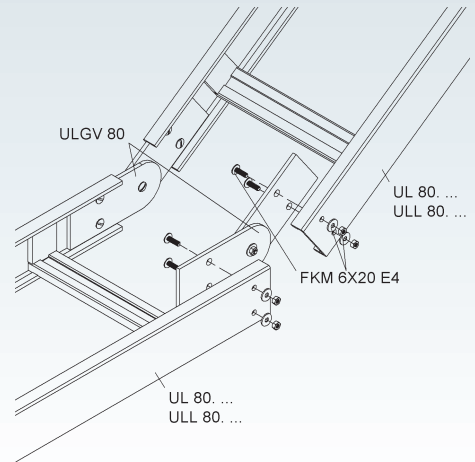
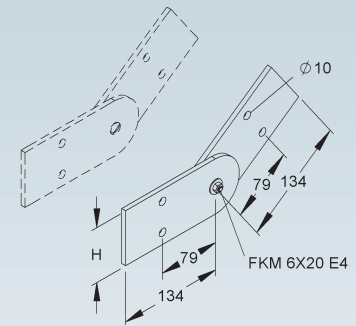
Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGV 80	7032	71	6	960248	27,5	1 pair

for creating vertical angle connections of continuous cable ladders with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 80... and ULL 80...

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Joint Connector

vertical, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIV 80 E4	72	1	960286	30	1 pair

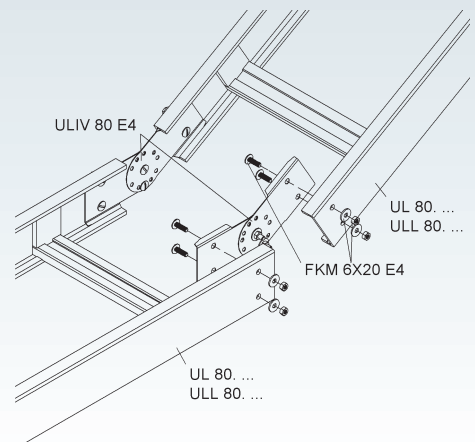
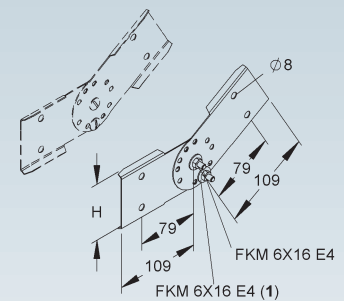
for creating vertical angle connections of continuous cable ladders with 80 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 80... and ULL 80...

The adjustment is made in 15° angular steps and must be screwed into the pitch circle with a screw FKM 6X16 E4 (1).

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



CABLE LADDER SYSTEM UL

GRP-Cable Ladders

pultruded, with upwards open unperforated rungs made of C-profile with approx. 15 mm slot width

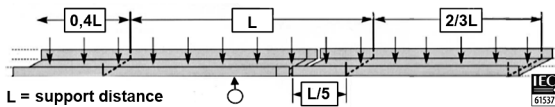
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	UL 100.150/3	7032	100	150	3000	5	6750	958191	312,3	3 m
K23	UL 100.200/3	7032	100	200	3000	5	9875	958214	320,8	3 m
K23	UL 100.300/3	7032	100	300	3000	5	16125	958238	338,6	3 m
K23	UL 100.400/3	7032	100	400	3000	5	22375	958252	356,3	3 m
K23	UL 100.450/3	7032	100	450	3000	5	25500	958276	362,0	3 m
K23	UL 100.500/3	7032	100	500	3000	5	28625	958290	375,0	3 m
K23	UL 100.600/3	7032	100	600	3000	5	34875	958313	392,5	3 m
K23	UL 100.750/3	7032	100	750	3000	5	44250	958351	413,5	3 m
K23	UL 100.900/3	7032	100	900	3000	5	53625	958399	445,1	3 m
K23	UL 100.150	7032	100	150	6000	5	6750	958184	312,3	6 m
K23	UL 100.200	7032	100	200	6000	5	9875	958207	320,8	6 m
K23	UL 100.300	7032	100	300	6000	5	16125	958221	338,6	6 m
K23	UL 100.400	7032	100	400	6000	5	22375	958245	356,3	6 m
K23	UL 100.450	7032	100	450	6000	5	25500	958269	362,0	6 m
K23	UL 100.500	7032	100	500	6000	5	28625	958283	375,0	6 m
K23	UL 100.600	7032	100	600	6000	5	34875	958306	392,5	6 m
K23	UL 100.750	7032	100	750	6000	5	44250	958344	413,5	6 m
K23	UL 100.900	7032	100	900	6000	5	53625	958382	445,1	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

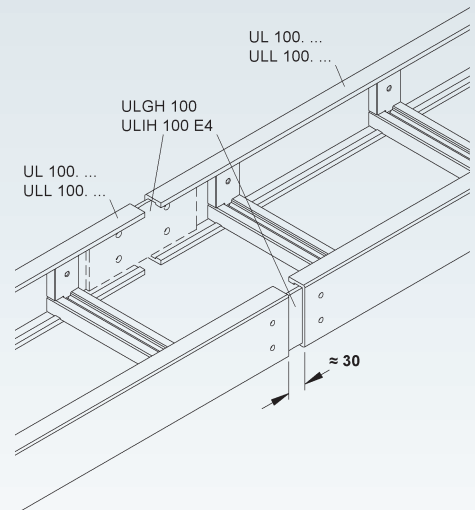
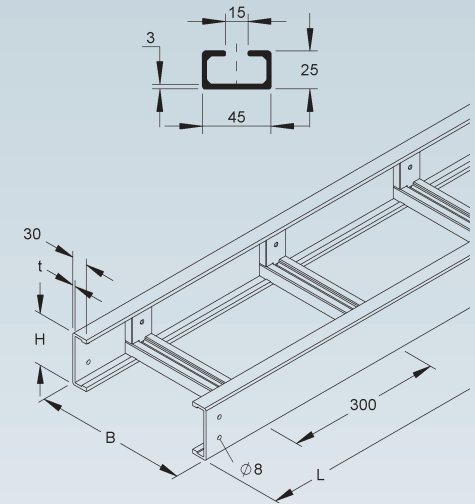
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



UL 100 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	2,5
	1,5	2,5
6	1	2,5
	1,5	2,5
	3	2,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-Cable Ladders

pultruded, with perforated C-profile rungs open at the top, slot width approx. 15 mm

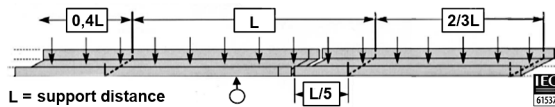
Model No.	Colour similar RAL	Height H	Width B	Length L	Material thickness (t)	Usable cross section	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm	mm	mm	mm	mm ²			
K23 ULL 100.150/3	7032	100	150	3000	5	6750	106189	312,3	3 m
K23 ULL 100.200/3	7032	100	200	3000	5	9875	106196	320,8	3 m
K23 ULL 100.300/3	7032	100	300	3000	5	16125	106219	338,6	3 m
K23 ULL 100.400/3	7032	100	400	3000	5	22375	106226	356,3	3 m
K23 ULL 100.450/3	7032	100	450	3000	5	25500	106233	362,0	3 m
K23 ULL 100.500/3	7032	100	500	3000	5	28625	106240	375,0	3 m
K23 ULL 100.600/3	7032	100	600	3000	5	34875	106257	392,5	3 m
K23 ULL 100.750/3	7032	100	750	3000	5	44250	106271	413,5	3 m
K23 ULL 100.900/3	7032	100	900	3000	5	53625	106295	445,1	3 m
K23 ULL 100.150	7032	100	150	6000	5	6750	103867	312,3	6 m
K23 ULL 100.200	7032	100	200	6000	5	9875	103874	320,8	6 m
K23 ULL 100.300	7032	100	300	6000	5	16125	094578	338,6	6 m
K23 ULL 100.400	7032	100	400	6000	5	22375	103881	356,3	6 m
K23 ULL 100.450	7032	100	450	6000	5	25500	103898	362,0	6 m
K23 ULL 100.500	7032	100	500	6000	5	28625	101016	375,0	6 m
K23 ULL 100.600	7032	100	600	6000	5	34875	094585	392,5	6 m
K23 ULL 100.750	7032	100	750	6000	5	44250	103928	413,5	6 m
K23 ULL 100.900	7032	100	900	6000	5	53625	103942	445,1	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

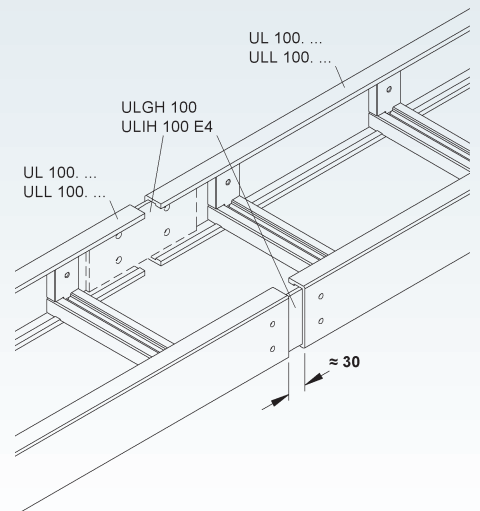
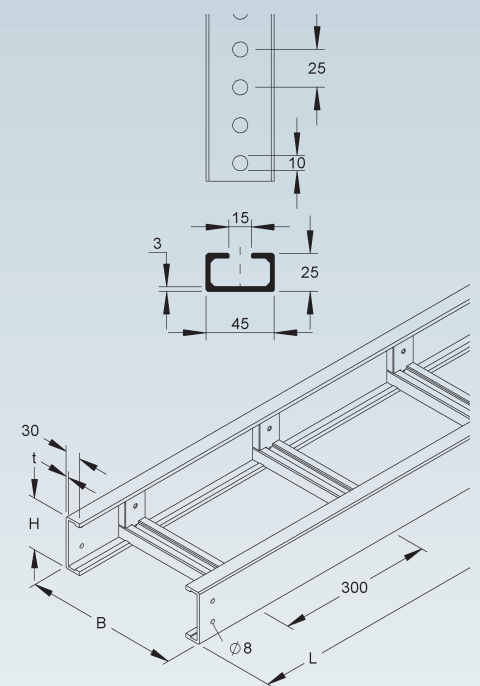
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



ULL 100 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	2,5
	1,5	2,5
6	1	2,5
	1,5	2,5
	3	2,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



CABLE LADDER SYSTEM UL

GRP-End Cover

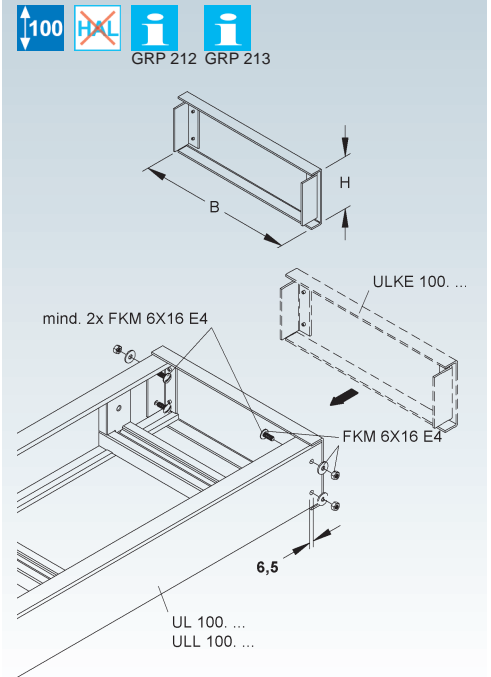
pressed

Model No.	Colour similar RAL	Inside height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
K23 ULKE 100.150	7032	100	150	965526	16	1 pc.
K23 ULKE 100.200	7032	100	200	965533	20	1 pc.
K23 ULKE 100.300	7032	100	300	965540	27	1 pc.
K23 ULKE 100.400	7032	100	400	965557	35	1 pc.
K23 ULKE 100.450	7032	100	450	965564	42	1 pc.
K23 ULKE 100.500	7032	100	500	965571	45	1 pc.
K23 ULKE 100.600	7032	100	600	965588	49	1 pc.
K23 ULKE 100.750	7032	100	750	965601	60	1 pc.
K23 ULKE 100.900	7032	100	900	965625	70	1 pc.

to cover the cable ladders ends

Used for: GRP-cable ladder UL 100... and ULL 100...

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



GRP-Splice Plate

pultruded, horizontal, screwable

Model No.	Colour similar RAL	Height H	Material thickness (t)	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
		mm	mm			
K23 ULGH 100	7032	89	6	960170	3,5	1 pair

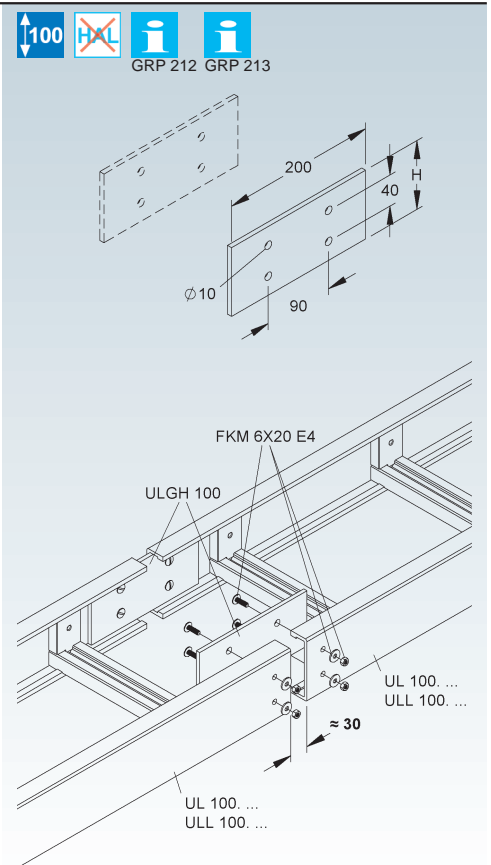
for connecting cable ladders that are horizontally aligned in the longitudinal direction at the joint with 100 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 100... and ULL 100...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



GRP-Splice Plate

pressed, horizontal, screwable, shortened version

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 100/150	7032	89	6	094745	35	1 pair

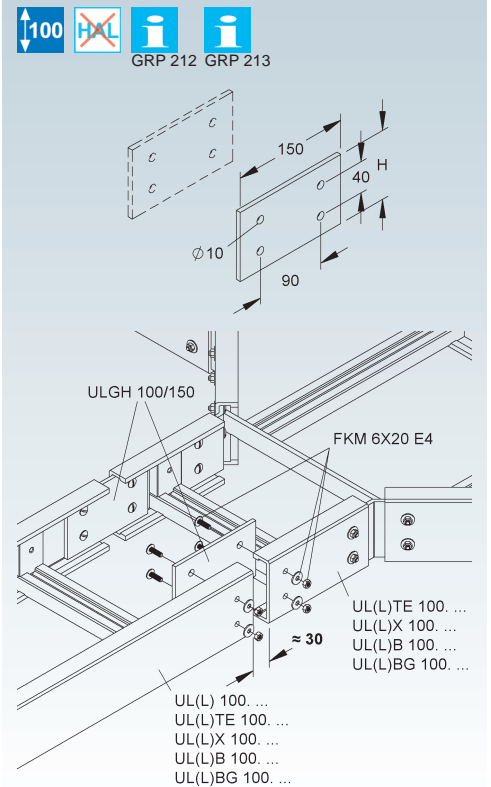
for a connection of the fittings to the cable ladder horizontally aligned in the longitudinal direction at the joint/fittings with 100 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder fittings T-piece UL(L)TE 100... .., crossing UL(L)X 100... .. and elbow 90° UL(L)B 100. ...

When mounting the fittings with the cable ladder/fittings, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Splice Plate

screwless, horizontal

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIH 100 E4	90	1,5	960217	19,5	1 pair

for horizontal changes of direction and for a longitudinally aligned connection of cable ladders and fittings at the joint with 100 mm edge height

Requirement: 1 pair (2 pieces) per joint

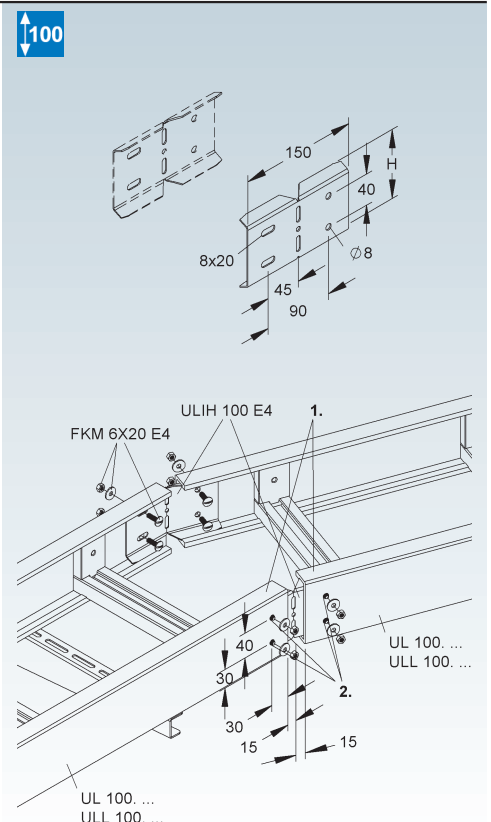
Used for: GRP-cable ladder UL 110. ... and ULL 110. ...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account. Furthermore, it should be noted that the slotted holes of the splice plates are arranged on the side of the joint where the bracket is located. The ULP 100 mounting pincer serve as an assembly aid.

The connector holes allow for permanent fastening and ensure that the material can expand.

To ensure proper assembly, 4 screws FKM 6X20 E4 per connector must be fitted for heavy loads.

1. shorten cable ladder rails as required.
2. drill out Ø 8 mm on site.



CABLE LADDER SYSTEM UL

GRP-Barrier Strip

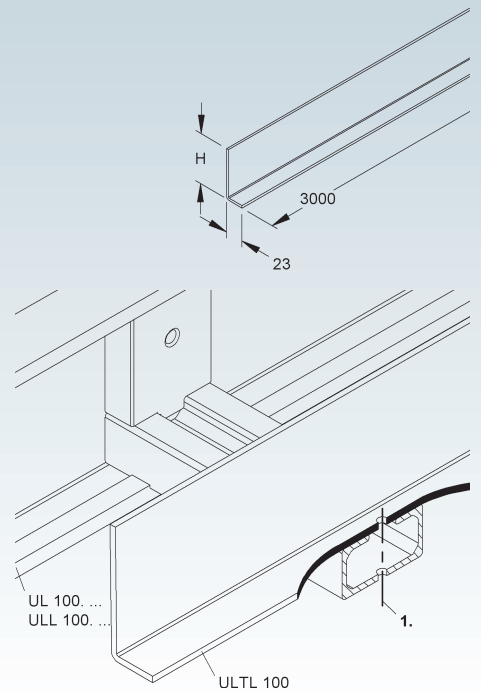
pressed

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 ULTL 100	7032	65	958535	40	3 m

for separating lines and cables with different functions and/or voltages

Used for: GRP-cable ladder UL 100. ... and ULL 100. ...

1. fastening is done with self-tapping screws or rivets through the rung to be provided by the customer.



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULTE 100.150	7032	100	150	959358	520	1 pc.
K23 ULTE 100.200	7032	100	200	959365	550	1 pc.
K23 ULTE 100.300	7032	100	300	959372	653	1 pc.
K23 ULTE 100.400	7032	100	400	959389	720	1 pc.
K23 ULTE 100.450	7032	100	450	959396	750	1 pc.
K23 ULTE 100.500	7032	100	500	959402	780	1 pc.
K23 ULTE 100.600	7032	100	600	959419	850	1 pc.
K23 ULTE 100.750	7032	100	750	959433	950	1 pc.
K23 ULTE 100.900	7032	100	900	959457	1050	1 pc.

for the production of horizontal 90° T-outlets

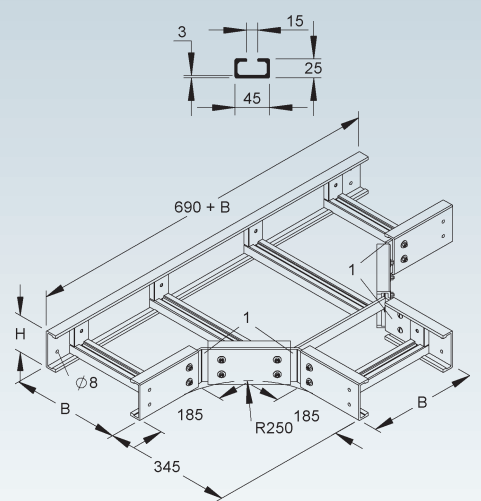
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with unperforated rungs for realising radii R600 and R900 on request
GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULLTE 100.150	7032	100	150	104543	520	1 pc.
K23	ULLTE 100.200	7032	100	200	104550	550	1 pc.
K23	ULLTE 100.300	7032	100	300	104567	653	1 pc.
K23	ULLTE 100.400	7032	100	400	104574	720	1 pc.
K23	ULLTE 100.500	7032	100	500	104581	780	1 pc.
K23	ULLTE 100.600	7032	100	600	104598	850	1 pc.
K23	ULLTE 100.750	7032	100	750	104628	950	1 pc.
K23	ULLTE 100.900	7032	100	900	104642	1050	1 pc.

for the production of horizontal 90° T-outlets

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

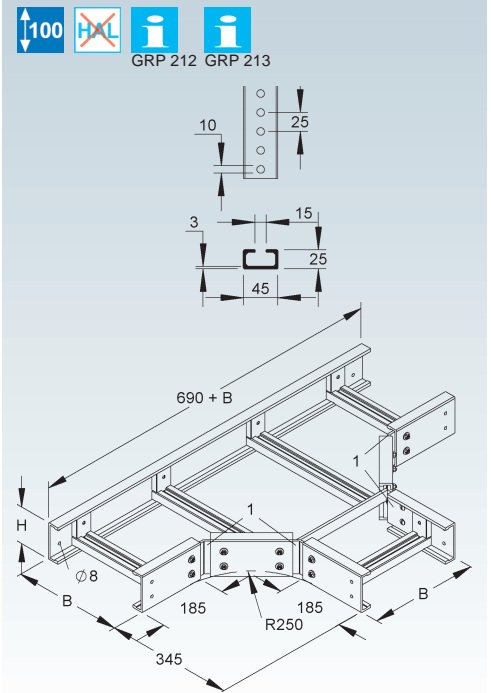
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

GRP-T-piece with perforated rungs for realising radii R600 and R900 on request

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULX 100.150	7032	100	150	959693	710	1 pc.
K23	ULX 100.200	7032	100	200	959709	750	1 pc.
K23	ULX 100.300	7032	100	300	959716	816	1 pc.
K23	ULX 100.400	7032	100	400	959723	900	1 pc.
K23	ULX 100.450	7032	100	450	959730	940	1 pc.
K23	ULX 100.500	7032	100	500	959747	975	1 pc.
K23	ULX 100.600	7032	100	600	959754	1070	1 pc.
K23	ULX 100.750	7032	100	750	959778	1180	1 pc.
K23	ULX 100.900	7032	100	900	959792	1300	1 pc.

for making horizontal 90° crossings

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

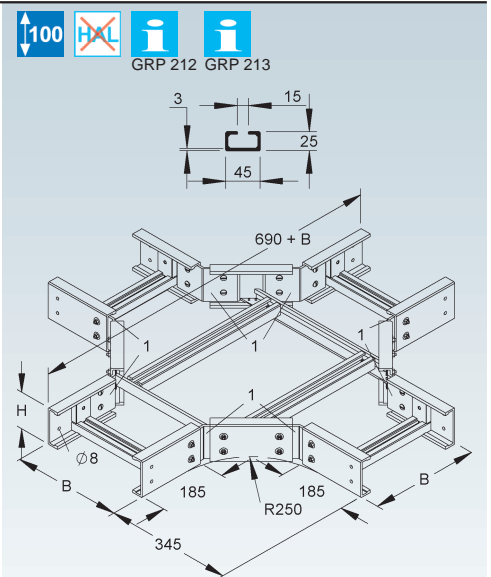
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with unperforated rungs to realise radii R600 and R900 on request.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Crossing

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLX 100.150	7032	100	150	104918	710	1 pc.
K23 ULLX 100.200	7032	100	200	104925	750	1 pc.
K23 ULLX 100.300	7032	100	300	104932	816	1 pc.
K23 ULLX 100.400	7032	100	400	104949	900	1 pc.
K23 ULLX 100.450	7032	100	450	104956	940	1 pc.
K23 ULLX 100.500	7032	100	500	104963	975	1 pc.
K23 ULLX 100.600	7032	100	600	104970	1070	1 pc.
K23 ULLX 100.750	7032	100	750	104994	1180	1 pc.
K23 ULLX 100.900	7032	100	900	105021	1300	1 pc.

for making horizontal 90° crossings

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

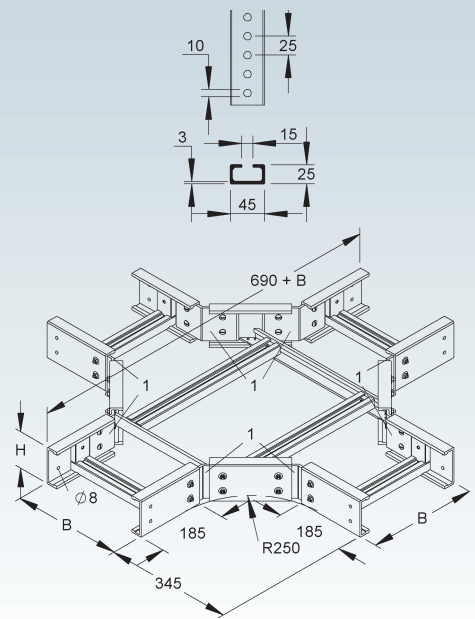
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

GRP crossing with unperforated rungs to realise radii R600 and R900 on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULB 100.150	7032	100	150	958672	320	1 pc.
K23 ULB 100.200	7032	100	200	958689	340	1 pc.
K23 ULB 100.300	7032	100	300	958696	388	1 pc.
K23 ULB 100.400	7032	100	400	958702	470	1 pc.
K23 ULB 100.450	7032	100	450	958719	490	1 pc.
K23 ULB 100.500	7032	100	500	958726	520	1 pc.
K23 ULB 100.600	7032	100	600	958733	570	1 pc.
K23 ULB 100.750	7032	100	750	958757	648	1 pc.
K23 ULB 100.900	7032	100	900	958771	720	1 pc.

for the production of horizontal 90° corner joints

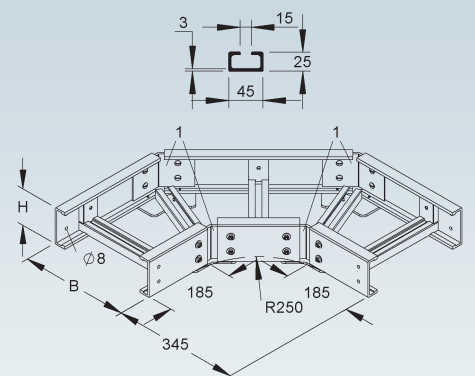
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLB 100.150	7032	100	150	104161	320	1 pc.
K23 ULLB 100.200	7032	100	200	104178	340	1 pc.
K23 ULLB 100.300	7032	100	300	104185	388	1 pc.
K23 ULLB 100.400	7032	100	400	104192	470	1 pc.
K23 ULLB 100.450	7032	100	450	104215	490	1 pc.
K23 ULLB 100.500	7032	100	500	104222	520	1 pc.
K23 ULLB 100.600	7032	100	600	104239	570	1 pc.
K23 ULLB 100.750	7032	100	750	104253	648	1 pc.
K23 ULLB 100.900	7032	100	900	104277	720	1 pc.

for the production of horizontal 90° corner joints

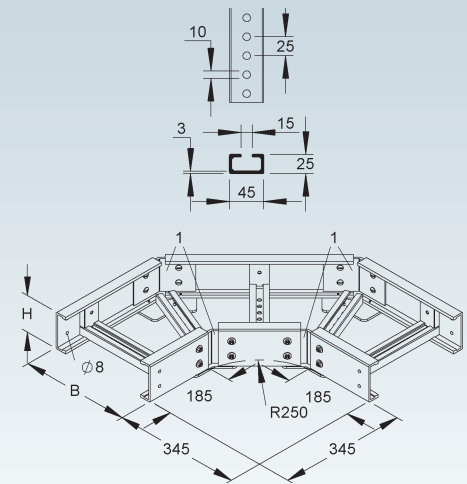
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°, large

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBG 100.150	7032	100	150	967681	542	1 pc.
K23 ULBG 100.200	7032	100	200	967698	564	1 pc.
K23 ULBG 100.300	7032	100	300	967704	693	1 pc.
K23 ULBG 100.400	7032	100	400	967711	755	1 pc.
K23 ULBG 100.450	7032	100	450	967728	786	1 pc.
K23 ULBG 100.500	7032	100	500	967735	817	1 pc.
K23 ULBG 100.600	7032	100	600	967742	879	1 pc.
K23 ULBG 100.750	7032	100	750	967759	976	1 pc.
K23 ULBG 100.900	7032	100	900	967766	1296	1 pc.

for the production of horizontal 90° corner joints

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

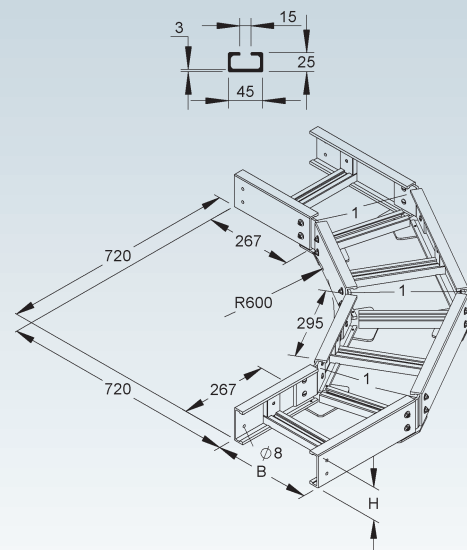
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90°, large with unperforated rungs to realise radius R900 on request.

GRP-elbow 90°, large with stainless steel connecting straps (1) on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Elbow 90°, large

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 15 mm

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
		mm	mm				
K23	ULLBG 100.150	7032	100	150	105632	542	1 pc.
K23	ULLBG 100.200	7032	100	200	105625	564	1 pc.
K23	ULLBG 100.300	7032	100	300	105618	693	1 pc.
K23	ULLBG 100.400	7032	100	400	105595	755	1 pc.
K23	ULLBG 100.450	7032	100	450	105588	786	1 pc.
K23	ULLBG 100.500	7032	100	500	105571	817	1 pc.
K23	ULLBG 100.600	7032	100	600	105564	879	1 pc.
K23	ULLBG 100.750	7032	100	750	105557	976	1 pc.
K23	ULLBG 100.900	7032	100	900	105540	1296	1 pc.

for the production of horizontal 90° corner joints

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

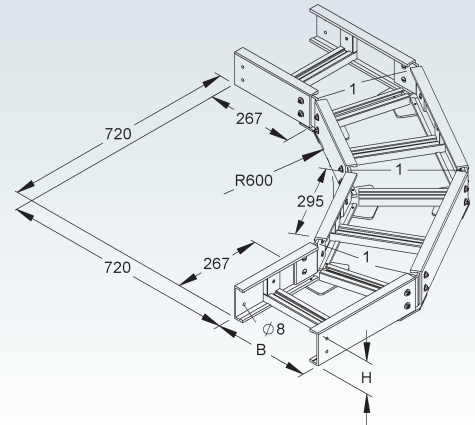
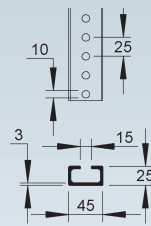
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90°, large with stainless steel connecting straps (1) on request.

GRP-elbow 90°, large with perforated rungs to realise radius R900 on request.

The ULGH 100/150 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open unperforated rung made of C-profile with approx. 15 mm slot width.

Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
		mm	mm				
K23	ULBA 100.150	7032	100	150	959013	220	1 pc.
K23	ULBA 100.200	7032	100	200	959020	212	1 pc.
K23	ULBA 100.300	7032	100	300	959037	217	1 pc.
K23	ULBA 100.400	7032	100	400	959044	223	1 pc.
K23	ULBA 100.450	7032	100	450	959051	226	1 pc.
K23	ULBA 100.500	7032	100	500	959068	228	1 pc.
K23	ULBA 100.600	7032	100	600	959075	234	1 pc.
K23	ULBA 100.750	7032	100	750	959099	242	1 pc.
K23	ULBA 100.900	7032	100	900	959112	251	1 pc.

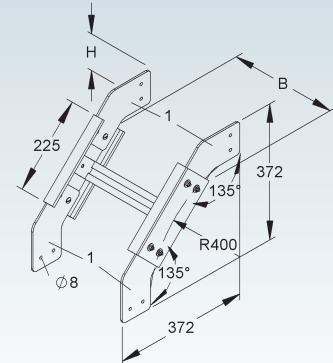
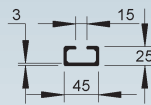
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open perforated rung made of C-profile with approx. 15 mm slot width.

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULLBA 100.150	7032	100	150	106561	220	1 pc.
K23	ULLBA 100.200	7032	100	200	106578	212	1 pc.
K23	ULLBA 100.300	7032	100	300	106585	217	1 pc.
K23	ULLBA 100.400	7032	100	400	106592	223	1 pc.
K23	ULLBA 100.450	7032	100	450	106615	226	1 pc.
K23	ULLBA 100.500	7032	100	500	106622	228	1 pc.
K23	ULLBA 100.600	7032	100	600	106639	234	1 pc.
K23	ULLBA 100.750	7032	100	750	106653	242	1 pc.
K23	ULLBA 100.900	7032	100	900	106677	251	1 pc.

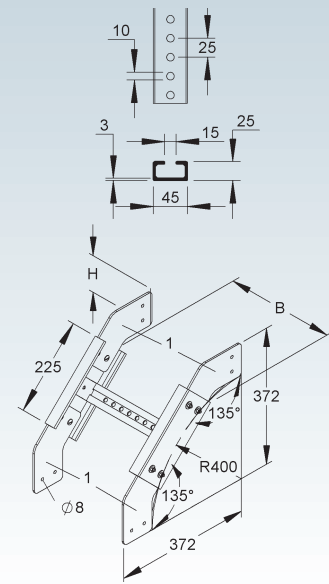
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Reduction

pultruded, with perforated connecting flaps

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULRU 100.100	7032	100	100	960019	51	1 pc.
K23	ULRU 100.150	7032	100	150	960026	55	1 pc.
K23	ULRU 100.200	7032	100	200	960033	65	1 pc.
K23	ULRU 100.300	7032	100	300	960040	78	1 pc.
K23	ULRU 100.400	7032	100	400	960057	95	1 pc.
K23	ULRU 100.500	7032	100	500	960064	109	1 pc.
K23	ULRU 100.600	7032	100	600	960071	117	1 pc.

for reducing and extending continuous cable ladders with 100 mm edge height

Dimension B corresponds to the reduction/extension.

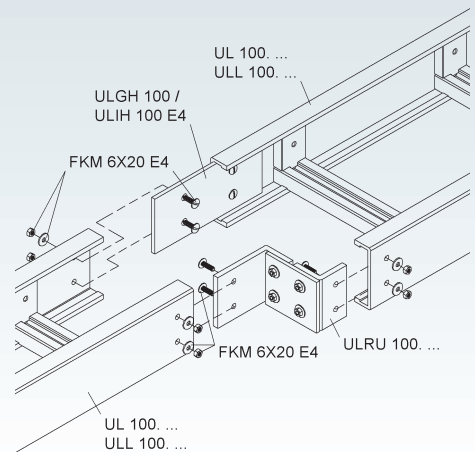
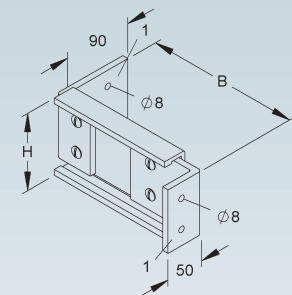
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the reduction, a mounting distance of approx. 30 mm must be taken into account.
- The reduction must be supported with a bracket.
- To ensure proper installation, the reduction and the splice plate must be screwed to the cable ladder transition with 4 FKM 6X20 E4 each.

GRP-reduction with stainless steel connecting straps (1) on request.

The ULGH 100 and ULIH 100 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Joint Connector

pultruded, vertical, screwable

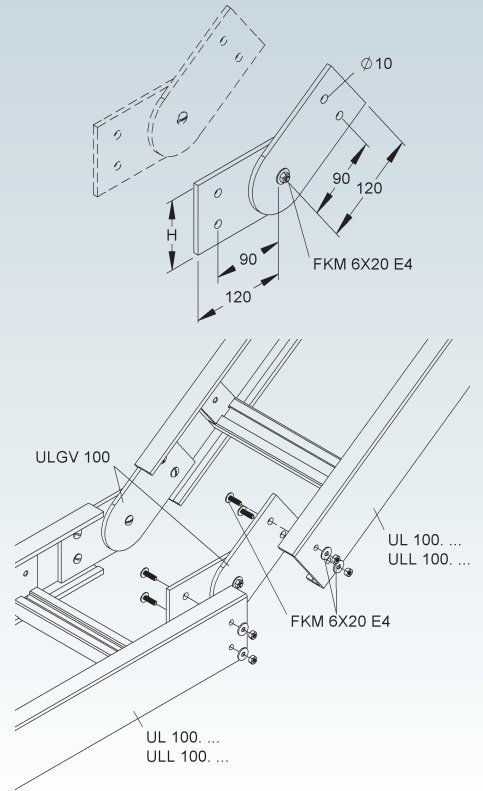
Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGV 100	7032	89	6	960255	27,5	1 pair

for creating vertical angle connections of continuous cable ladders with 100 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 100... and ULL 100...

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Joint Connector

vertical, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIV 100 E4	89	1,5	960293	30	1 pair

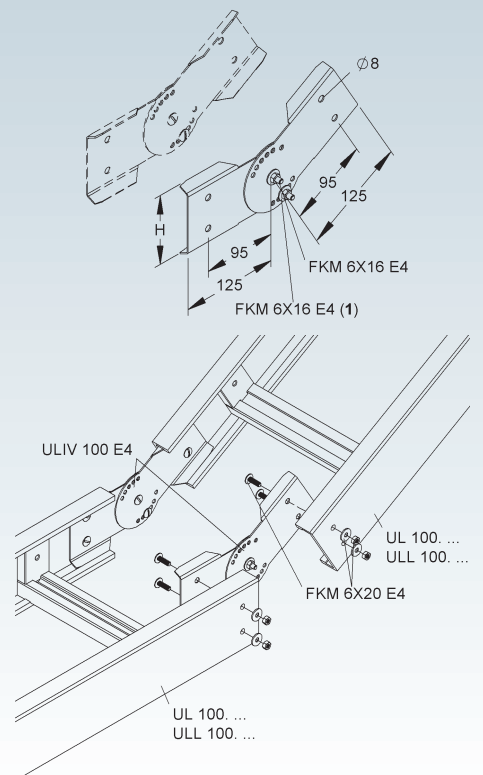
for creating vertical angle connections of continuous cable ladders with 100 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 100... and ULL 100...

The adjustment is made in 15° angular steps and must be screwed into the pitch circle with a screw FKM 6X16 E4 (1).

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



GRP-Cable Ladders

pultruded, with upwards open unperforated rungs made of C-profile with approx. 17 mm slot width

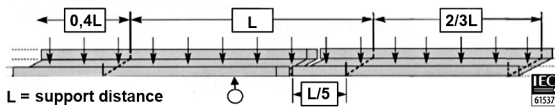
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit	
K23	UL 150.150/3	7032	150	150	3000	6	11449	965168	553,5	3 m
K23	UL 150.200/3	7032	150	200	3000	6	16799	965175	570,3	3 m
K23	UL 150.300/3	7032	150	300	3000	6	27499	965182	603,3	3 m
K23	UL 150.400/3	7032	150	400	3000	6	38199	965199	636,8	3 m
K23	UL 150.450/3	7032	150	450	3000	6	43549	965205	653,6	3 m
K23	UL 150.500/3	7032	150	500	3000	6	48899	965212	670,3	3 m
K23	UL 150.600/3	7032	150	600	3000	6	59599	965229	660,0	3 m
K23	UL 150.750/3	7032	150	750	3000	6	75649	965243	754,1	3 m
K23	UL 150.900/3	7032	150	900	3000	6	91699	965267	804,3	3 m
K23	UL 150.150	7032	150	150	6000	6	11449	958405	553,5	6 m
K23	UL 150.200	7032	150	200	6000	6	16799	958412	570,3	6 m
K23	UL 150.300	7032	150	300	6000	6	27499	958429	603,3	6 m
K23	UL 150.400	7032	150	400	6000	6	38199	958436	636,8	6 m
K23	UL 150.450	7032	150	450	6000	6	43549	958443	653,6	6 m
K23	UL 150.500	7032	150	500	6000	6	48899	958450	670,3	6 m
K23	UL 150.600	7032	150	600	6000	6	59599	958467	660,0	6 m
K23	UL 150.750	7032	150	750	6000	6	75649	958481	754,1	6 m
K23	UL 150.900	7032	150	900	6000	6	91699	958504	804,3	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

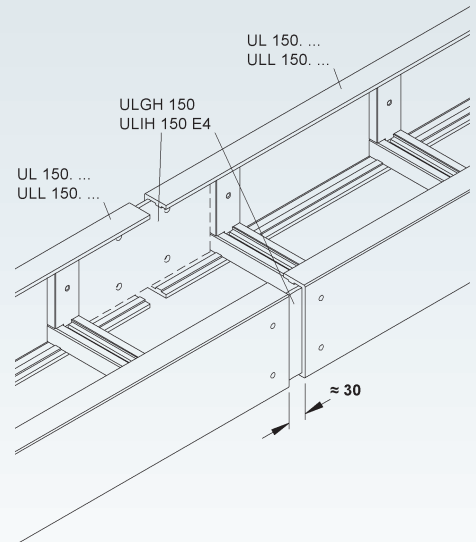
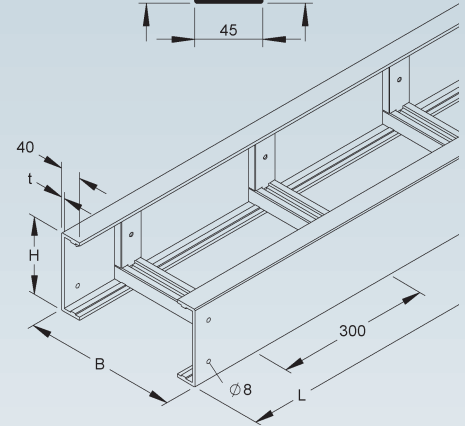
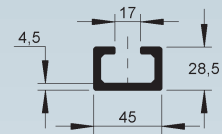
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



UL 150 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	2,5
	1,5	2,5
6	1	2,5
	1,5	2,5
	3	2,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



CABLE LADDER SYSTEM UL

GRP-Cable Ladders

pultruded, with perforated C-profile rungs open at the top, approx. 17 mm slot width

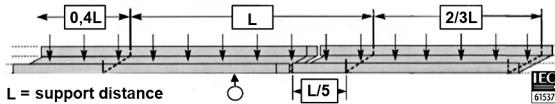
Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 ULL 150.150/3	7032	150	150	3000	6	11449	106318	553,5	3 m
K23 ULL 150.200/3	7032	150	200	3000	6	16799	106325	570,3	3 m
K23 ULL 150.300/3	7032	150	300	3000	6	27499	106332	603,3	3 m
K23 ULL 150.400/3	7032	150	400	3000	6	38199	106349	636,8	3 m
K23 ULL 150.450/3	7032	150	450	3000	6	43549	106356	653,6	3 m
K23 ULL 150.500/3	7032	150	500	3000	6	48899	106363	670,3	3 m
K23 ULL 150.600/3	7032	150	600	3000	6	59599	106370	660,0	3 m
K23 ULL 150.750/3	7032	150	750	3000	6	75649	106394	754,1	3 m
K23 ULL 150.900/3	7032	150	900	3000	6	91699	106424	804,3	3 m
K23 ULL 150.150	7032	150	150	6000	6	11449	103959	553,5	6 m
K23 ULL 150.200	7032	150	200	6000	6	16799	103966	570,3	6 m
K23 ULL 150.300	7032	150	300	6000	6	27499	103973	603,3	6 m
K23 ULL 150.400	7032	150	400	6000	6	38199	103980	636,8	6 m
K23 ULL 150.450	7032	150	450	6000	6	43549	103997	653,6	6 m
K23 ULL 150.500	7032	150	500	6000	6	48899	104017	670,3	6 m
K23 ULL 150.600	7032	150	600	6000	6	59599	094592	660,0	6 m
K23 ULL 150.750	7032	150	750	6000	6	75649	104031	754,1	6 m
K23 ULL 150.900	7032	150	900	6000	6	91699	094615	804,3	6 m

for horizontal installation

The cable ladder has the advantage that the rung is fixed with a metal-free patented clamp fastening and is therefore made of 100% glass fibre reinforced plastic (GRP).

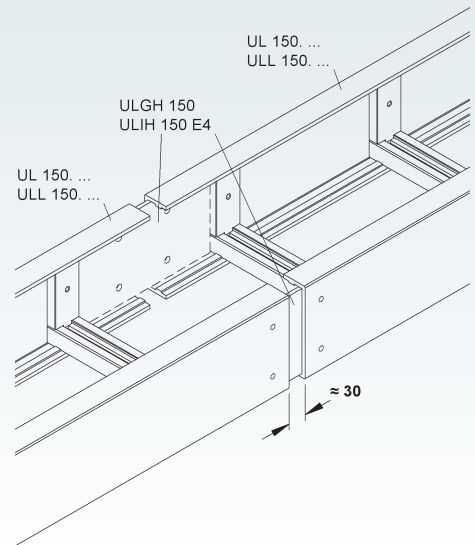
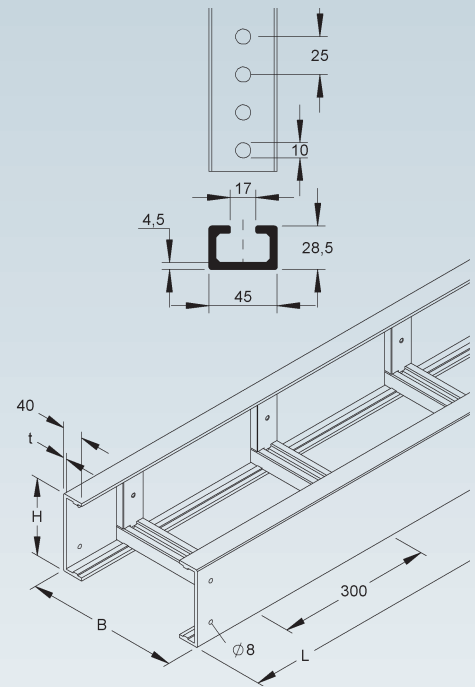
When mounting the cable ladder, an expansion distance of approx. 30 mm must be taken into account.

Please contact us for larger or different support distances. Load values apply to cable tray lengths, mounted in the horizontal plane, horizontal running direction with several support distances.



ULL 150 series - Maximum loads		
Ladder length (m)	Support span (m)	Maximum load (kN/m)
3	1	2,5
	1,5	2,5
6	1	2,5
	1,5	2,5
	3	2,5

Note: The deflection of the cable ladders was measured with a positioning of the connectors of L/5 of the fastening distance between 2 brackets. If this distance is not maintained, the deflection can increase by up to 30%.



GRP-End Cover

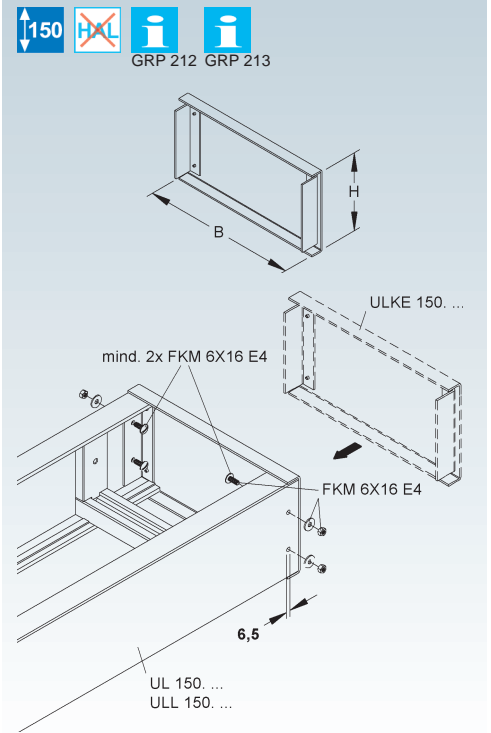
pressed

	Model No.	Colour similar RAL	Inside height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULKE 150.150	7032	150	150	965632	16,4	1 pc.
K23	ULKE 150.200	7032	150	200	965649	20,4	1 pc.
K23	ULKE 150.300	7032	150	300	965656	28,4	1 pc.
K23	ULKE 150.400	7032	150	400	965663	36,3	1 pc.
K23	ULKE 150.450	7032	150	450	965670	40,3	1 pc.
K23	ULKE 150.500	7032	150	500	965687	44,3	1 pc.
K23	ULKE 150.600	7032	150	600	965694	52,2	1 pc.
K23	ULKE 150.750	7032	150	750	965717	64,2	1 pc.
K23	ULKE 150.900	7032	150	900	965731	76,1	1 pc.

to cover the cable ladders ends

Used for: GRP-cable ladder UL 150... and ULL 150...

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



GRP-Splice Plate

pultruded, horizontal, screwable

	Model No.	Colour similar RAL	Height H mm	Length L mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23	ULGH 150	7032	138	250	6	960187	38	1 pair

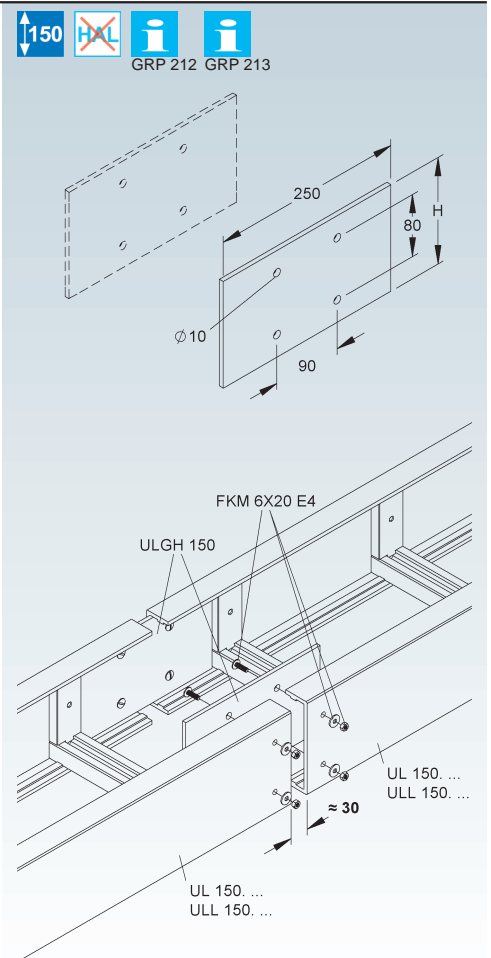
for connecting cable ladders that are horizontally aligned in the longitudinal direction at the joint with 150 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 150... and ULL 150...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



CABLE LADDER SYSTEM UL

GRP-Splice Plate

pressed, horizontal, screwable, shortened version

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGH 150/150	7032	138	6	094844	25	1 pair

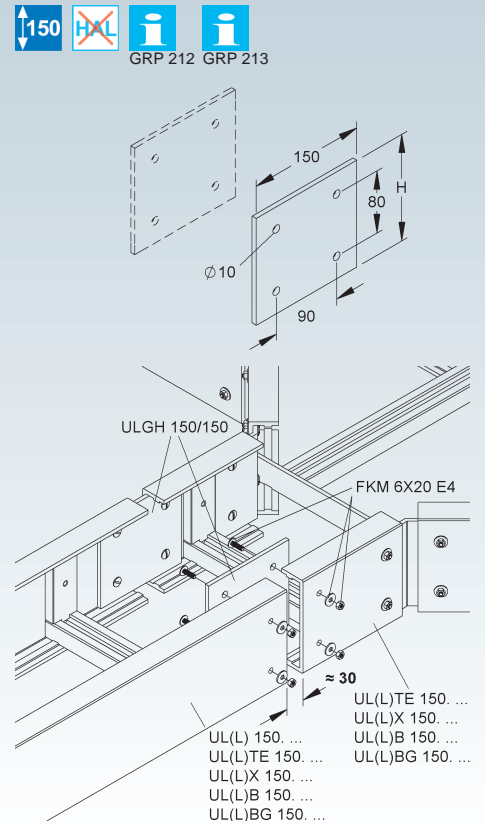
for a connection of the fittings to the cable ladder horizontally aligned in the longitudinal direction at the joint/fittings with 150 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder fittings T-piece UL(L)TE 150... .., crossing UL(L)X 150... .. and elbow 90° UL(L)B 150. ...

When mounting the fittings with the cable ladder/fittings, a mounting distance of approx. 30 mm must be taken into account.

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Splice Plate

screwless, horizontal

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIH 150 E4	138	1,5	960224	27	1pair

for horizontal changes of direction and for a longitudinally aligned connection of cable ladders and fittings at the joint with 150 mm edge height

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable ladder UL 150. ... and ULL 150. ...

When mounting the cable ladder, a mounting distance of approx. 30 mm must be taken into account.

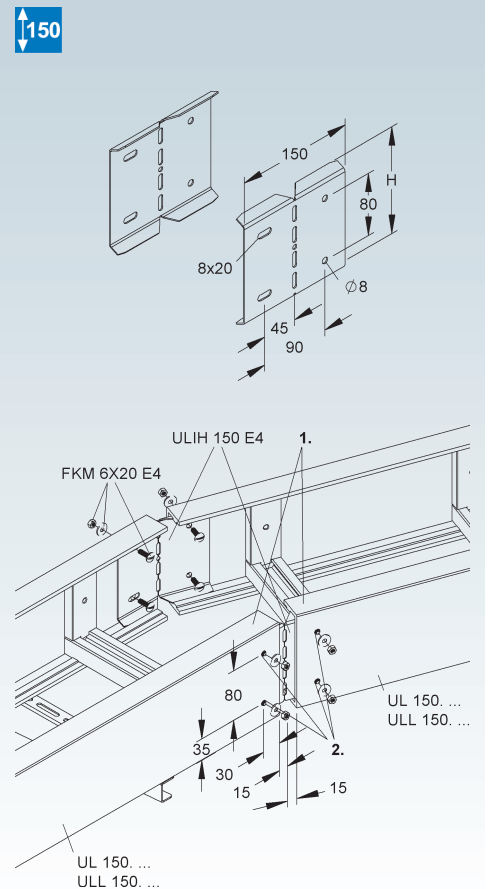
Furthermore, it should be noted that the slotted holes of the splice plates are arranged on the side of the joint where the bracket is located. The ULP 100 mounting pincer serve as an assembly aid.

The connector holes allow for permanent fastening and ensure that the material can expand.

To ensure proper assembly, 4 screws FKM 6X20 E4 per connector must be fitted for heavy loads.

1. shorten cable ladder rails as required.

2. drill out Ø 8 mm on site.



GRP-Barrier Strip

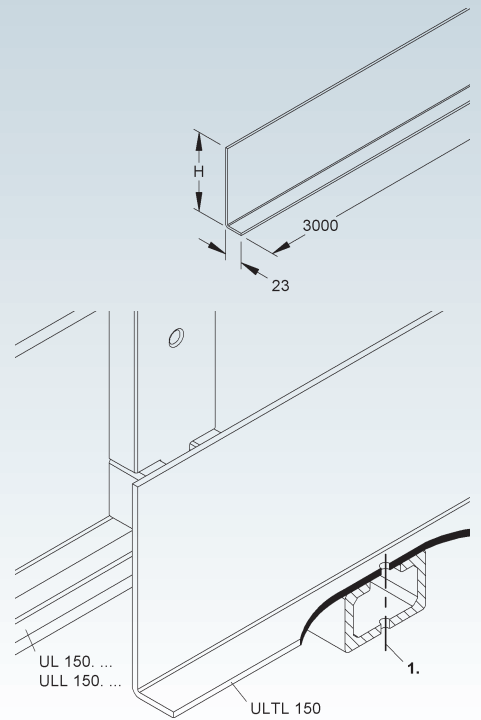
pressed

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 ULTL 150	7032	102	958542	80	3 m

for separating lines and cables with different functions and/or voltages

Used for: GRP-cable ladder UL 150. ... and ULL 150. ...

1. fastening is done with self-tapping screws or rivets through the rung to be provided by the customer.



GRP-T-Piece

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated rungs of C-profile open at the top with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULTE 150.150	7032	150	150	959464	650	1 pc.
K23 ULTE 150.200	7032	150	200	959471	800	1 pc.
K23 ULTE 150.300	7032	150	300	959488	999	1 pc.
K23 ULTE 150.400	7032	150	400	959495	1200	1 pc.
K23 ULTE 150.450	7032	150	450	959501	1300	1 pc.
K23 ULTE 150.500	7032	150	500	959518	1200	1 pc.
K23 ULTE 150.600	7032	150	600	959525	1250	1 pc.
K23 ULTE 150.750	7032	150	750	959549	1660	1 pc.
K23 ULTE 150.900	7032	150	900	959563	1910	1 pc.

for the production of horizontal 90° T-outlets

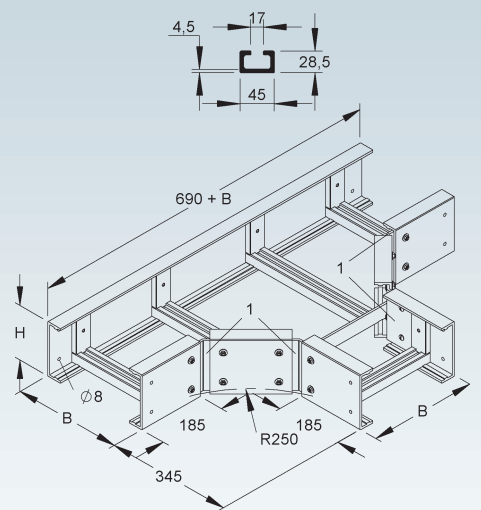
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with unperforated rungs for realising radii R600 and R900 on request
GRP-T-piece with stainless steel connecting straps (1) on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-T-Piece

pultruded, with unperforated side rails, but with connecting perforations as well as with open-topped perforated rungs made of C-profile with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLTE 150.150	7032	150	150	104659	650	1 pc.
K23 ULLTE 150.200	7032	150	200	104666	800	1 pc.
K23 ULLTE 150.300	7032	150	300	104673	999	1 pc.
K23 ULLTE 150.400	7032	150	400	104680	1200	1 pc.
K23 ULLTE 150.450	7032	150	450	104697	1300	1 pc.
K23 ULLTE 150.500	7032	150	500	104710	1200	1 pc.
K23 ULLTE 150.600	7032	150	600	104727	1250	1 pc.
K23 ULLTE 150.750	7032	150	750	104741	1660	1 pc.
K23 ULLTE 150.900	7032	150	900	104765	1910	1 pc.

for the production of horizontal 90° T-outlets

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

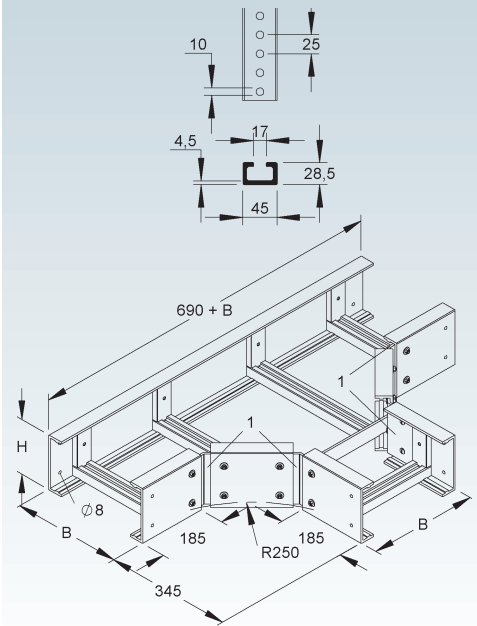
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-T-piece with stainless steel connecting straps (1) on request.

GRP-T-piece with perforated rungs for realising radii R600 and R900 on request

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated rungs of C-profile open at the top with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULX 150.150	7032	150	150	959808	812,5	1 pc.
K23 ULX 150.200	7032	150	200	959815	1.000,0	1 pc.
K23 ULX 150.300	7032	150	300	959822	1.247,0	1 pc.
K23 ULX 150.400	7032	150	400	959839	1.540,0	1 pc.
K23 ULX 150.450	7032	150	450	959846	1.650,0	1 pc.
K23 ULX 150.500	7032	150	500	959853	1.500,0	1 pc.
K23 ULX 150.600	7032	150	600	959860	1.900,0	1 pc.
K23 ULX 150.750	7032	150	750	959884	2.110,0	1 pc.
K23 ULX 150.900	7032	150	900	959907	2.830,0	1 pc.

for making horizontal 90° crossings

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

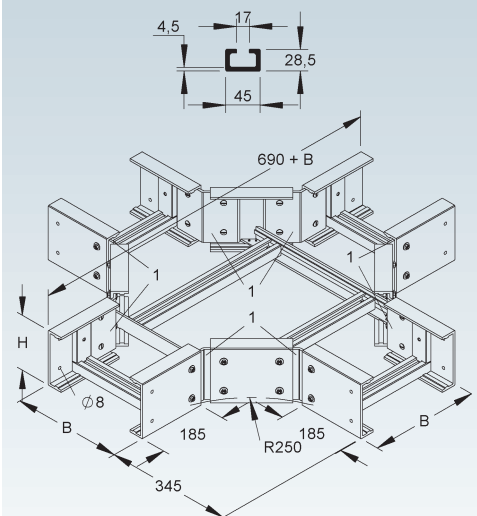
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with unperforated rungs to realise radii R600 and R900 on request.

GRP-crossing with stainless steel connecting straps (1) on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Crossing

pultruded, with unperforated side rails, but with connecting perforations as well as with open-topped perforated rungs made of C-profile with a slot width of approx. 17 mm

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULLX 150.150	7032	150	150	105038	812,5	1 pc.
K23	ULLX 150.200	7032	150	200	105045	1.000,0	1 pc.
K23	ULLX 150.300	7032	150	300	105052	1.247,0	1 pc.
K23	ULLX 150.400	7032	150	400	105069	1.540,0	1 pc.
K23	ULLX 150.450	7032	150	450	105076	1.650,0	1 pc.
K23	ULLX 150.500	7032	150	500	105083	1.500,0	1 pc.
K23	ULLX 150.600	7032	150	600	105090	1.900,0	1 pc.
K23	ULLX 150.750	7032	150	750	105120	2.110,0	1 pc.
K23	ULLX 150.900	7032	150	900	105144	2.830,0	1 pc.

for making horizontal 90° crossings

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

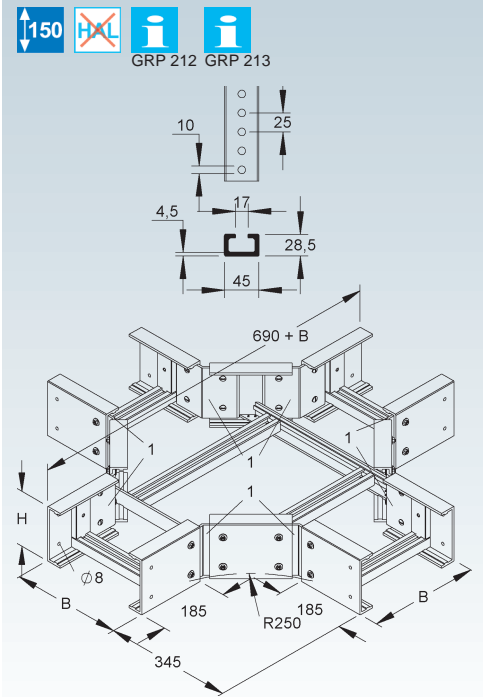
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-crossing with stainless steel connecting straps (1) on request.

GRP-crossing with perforated rungs to realise radii R600 and R900 on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated rungs of C-profile open at the top with a slot width of approx. 17 mm

	Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULB 150.150	7032	150	150	958788	548,7	1 pc.
K23	ULB 150.200	7032	150	200	958795	584,4	1 pc.
K23	ULB 150.300	7032	150	300	958801	656,0	1 pc.
K23	ULB 150.400	7032	150	400	958818	830,0	1 pc.
K23	ULB 150.450	7032	150	450	958825	880,0	1 pc.
K23	ULB 150.500	7032	150	500	958832	930,0	1 pc.
K23	ULB 150.600	7032	150	600	958849	1.050,0	1 pc.
K23	ULB 150.750	7032	150	750	958863	1.068,0	1 pc.
K23	ULB 150.900	7032	150	900	958887	1.087,0	1 pc.

for the production of horizontal 90° corner joints

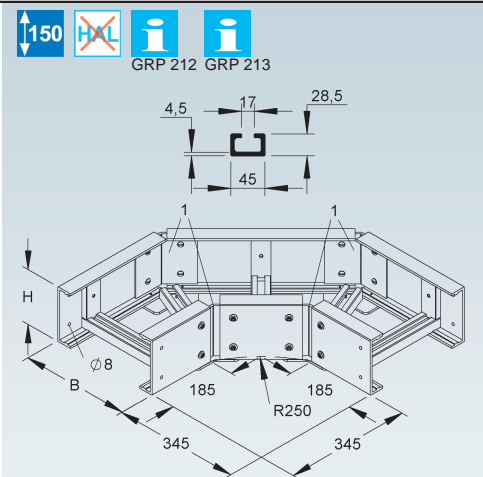
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



CABLE LADDER SYSTEM UL

GRP-Elbow 90°

pultruded, with unperforated side rails, but with connecting perforations as well as with open-topped perforated rungs made of C-profile with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLB 150.150	7032	150	150	104284	548,7	1 pc.
K23 ULLB 150.200	7032	150	200	104291	584,4	1 pc.
K23 ULLB 150.300	7032	150	300	104314	656,0	1 pc.
K23 ULLB 150.400	7032	150	400	104321	830,0	1 pc.
K23 ULLB 150.450	7032	150	450	104338	880,0	1 pc.
K23 ULLB 150.500	7032	150	500	104345	930,0	1 pc.
K23 ULLB 150.600	7032	150	600	104352	1.050,0	1 pc.
K23 ULLB 150.750	7032	150	750	104376	1.068,0	1 pc.
K23 ULLB 150.900	7032	150	900	104390	1.087,0	1 pc.

for the production of horizontal 90° corner joints

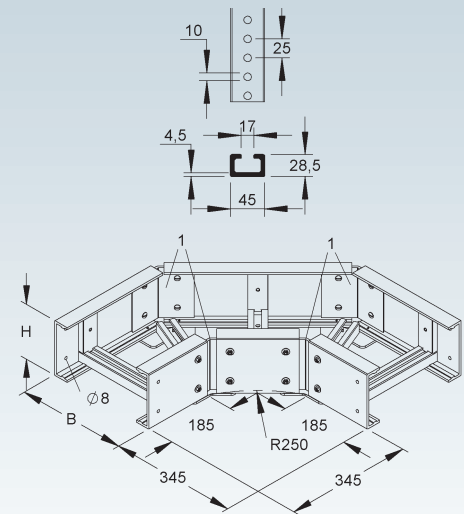
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90° with stainless steel connecting straps (1) on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°, large

pultruded, with unperforated side rails, but with connecting holes as well as with unperforated C-profile rungs open at the top with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBG 150.150	7032	150	150	967773	885	1 pc.
K23 ULBG 150.200	7032	150	200	967780	924	1 pc.
K23 ULBG 150.300	7032	150	300	967797	1116	1 pc.
K23 ULBG 150.400	7032	150	400	967803	1226	1 pc.
K23 ULBG 150.450	7032	150	450	967810	1281	1 pc.
K23 ULBG 150.500	7032	150	500	967827	1336	1 pc.
K23 ULBG 150.600	7032	150	600	967834	1445	1 pc.
K23 ULBG 150.750	7032	150	750	967841	1617	1 pc.
K23 ULBG 150.900	7032	150	900	967858	2180	1 pc.

for the production of horizontal 90° corner joints

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

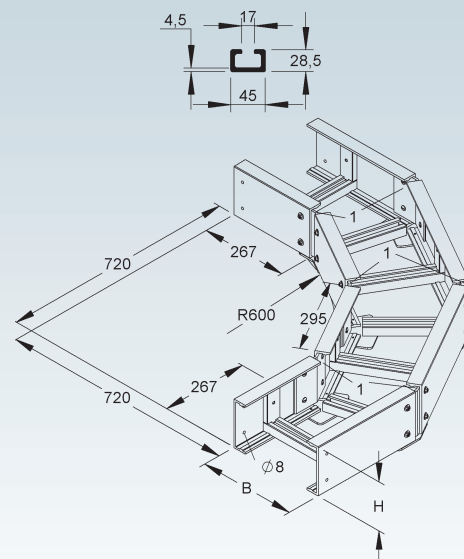
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90°, large with unperforated rungs to realise radius R900 on request.

GRP-elbow 90°, large with stainless steel connecting straps (1) on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 90°, large

pultruded, with unperforated side rails, but with connecting perforations as well as with perforated rungs of C-profile open at the top with a slot width of approx. 17 mm

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLBG 150.150	7032	150	150	105533	885	1 pc.
K23 ULLBG 150.200	7032	150	200	105526	924	1 pc.
K23 ULLBG 150.300	7032	150	300	105519	1116	1 pc.
K23 ULLBG 150.400	7032	150	400	105496	1226	1 pc.
K23 ULLBG 150.450	7032	150	450	105489	1281	1 pc.
K23 ULLBG 150.500	7032	150	500	105472	1336	1 pc.
K23 ULLBG 150.600	7032	150	600	105465	1445	1 pc.
K23 ULLBG 150.750	7032	150	750	105458	1617	1 pc.
K23 ULLBG 150.900	7032	150	900	105441	2180	1 pc.

for the production of horizontal 90° corner joints

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

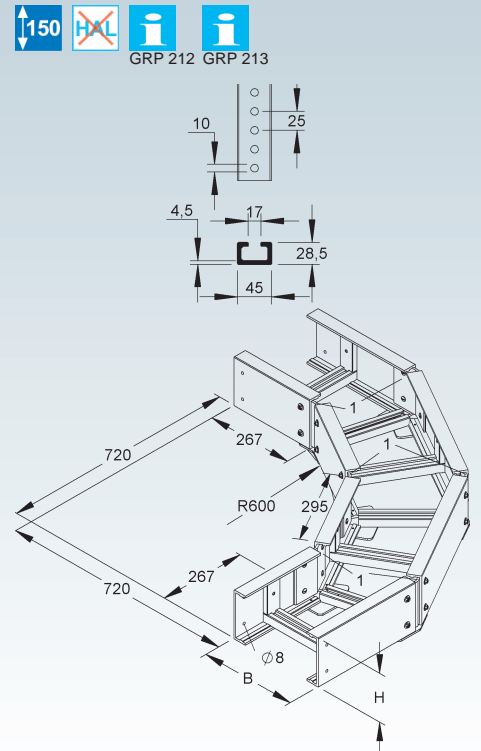
The following must be observed during installation:

- When connecting the fitting, a mounting distance of approx. 30 mm must be taken into account.
- The fitting must be supported with brackets at each cable ladder access point.
- If the radius is > 250 mm and / or the width > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 90°, large with stainless steel connecting straps (1) on request.

GRP-elbow 90°, large with perforated rungs to realise radius R900 on request.

The ULGH 150/150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open unperforated rung made of C-profile with approx. 17 mm slot width

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBA 150.150	7032	150	150	959129	400	1 pc.
K23 ULBA 150.200	7032	150	200	959136	410	1 pc.
K23 ULBA 150.300	7032	150	300	959143	420	1 pc.
K23 ULBA 150.400	7032	150	400	959150	430	1 pc.
K23 ULBA 150.450	7032	150	450	959167	435	1 pc.
K23 ULBA 150.500	7032	150	500	959174	440	1 pc.
K23 ULBA 150.600	7032	150	600	959181	450	1 pc.
K23 ULBA 150.750	7032	150	750	959204	470	1 pc.
K23 ULBA 150.900	7032	150	900	959228	480	1 pc.

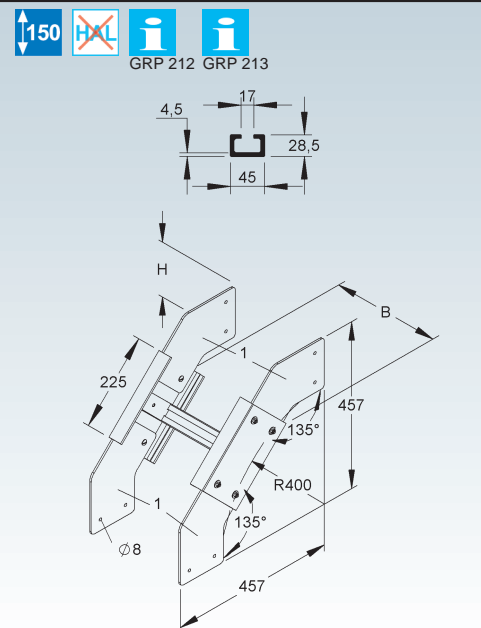
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



CABLE LADDER SYSTEM UL

GRP-Elbow 2 x 45°

pultruded, with unperforated side rail centre pieces, with connector tabs for connection as well as in the centre piece with upward open perforated rung made of C-profile with approx. 17 mm slot width

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULLBA 150.150	7032	150	150	106684	400	1 pc.
K23 ULLBA 150.200	7032	150	200	106691	410	1 pc.
K23 ULLBA 150.300	7032	150	300	106714	420	1 pc.
K23 ULLBA 150.400	7032	150	400	106721	430	1 pc.
K23 ULLBA 150.450	7032	150	450	106738	435	1 pc.
K23 ULLBA 150.500	7032	150	500	106745	440	1 pc.
K23 ULLBA 150.600	7032	150	600	106752	450	1 pc.
K23 ULLBA 150.750	7032	150	750	106769	470	1 pc.
K23 ULLBA 150.900	7032	150	900	106790	480	1 pc.

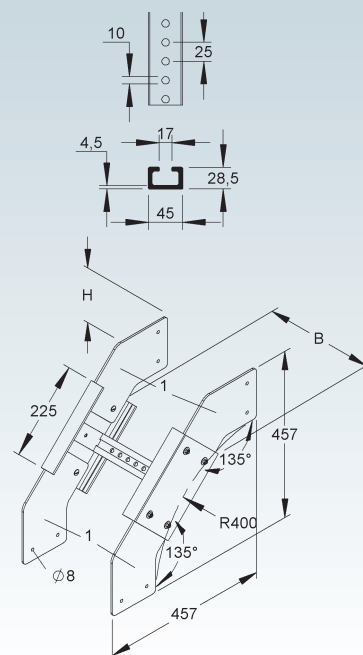
for the production of 2 x 45° vertically falling cable ladder run

The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- The fitting must be supported with brackets at each cable ladder access point.
- If the width is > 400 mm, an additional middle support should be provided.
- To ensure proper installation, the connectors must be screwed with 4 FKM 6X20 E4 at each cable ladder access.

GRP-elbow 2 x 45° with stainless steel connecting straps (1) on request.



GRP-Reduction

pultruded, with perforated connecting flaps

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULRU 150.100	7032	150	100	960088	77	1 pc.
K23 ULRU 150.150	7032	150	150	960095	102	1 pc.
K23 ULRU 150.200	7032	150	200	960101	102	1 pc.
K23 ULRU 150.300	7032	150	300	960118	126	1 pc.
K23 ULRU 150.400	7032	150	400	960125	153	1 pc.
K23 ULRU 150.500	7032	150	500	960132	200	1 pc.
K23 ULRU 150.600	7032	150	600	960149	200	1 pc.

for reducing and extending continuous cable ladders with 150 mm edge height

Dimension B corresponds to the reduction/extension.

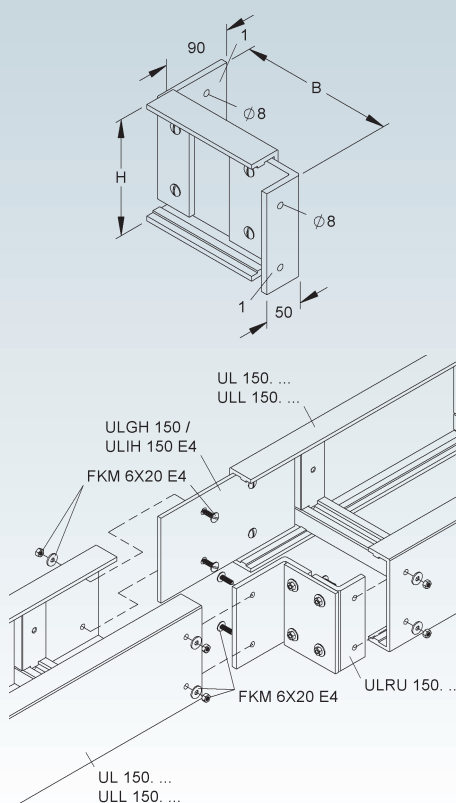
The screws are made of stainless steel E4, material no. 1.4404, AISI 316L.

The following must be observed during installation:

- When connecting the reduction, a mounting distance of approx. 30 mm must be taken into account.
- The reduction must be supported with a bracket.
- To ensure proper installation, the reduction and the splice plate must be screwed to the cable ladder transition with 4 FKM 6X20 E4 each.

GRP-reduction with stainless steel connecting straps (1) on request.

The ULGH 150 and ULIH 150 E4 splice plates are not included in the scope of delivery (please order separately).



GRP-Joint Connector

pultruded, vertical, screwable

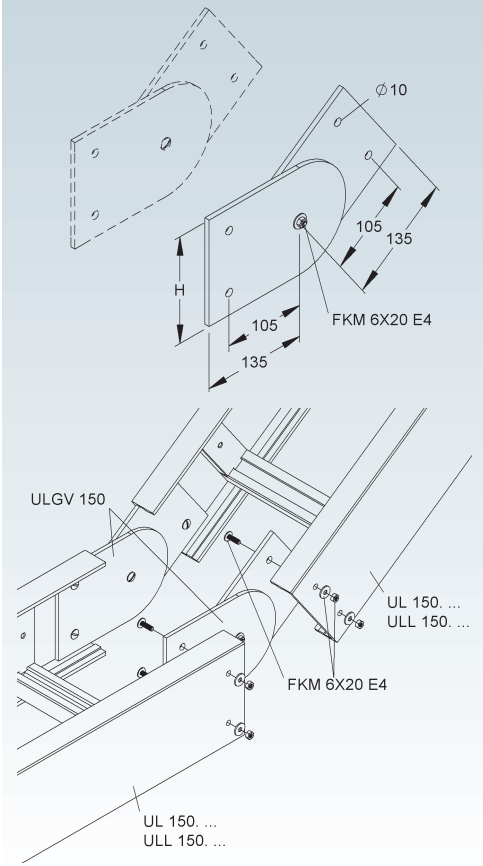
Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 ULGV 150	7032	138	6	960262	27,5	1 pair

for creating vertical angle connections of continuous cable ladders with 150 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 150... and ULL 150...

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



Joint Connector

vertical, screwable

Model No.	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
E4 ULIV 150 E4	138	1,5	960309	30	1 pair

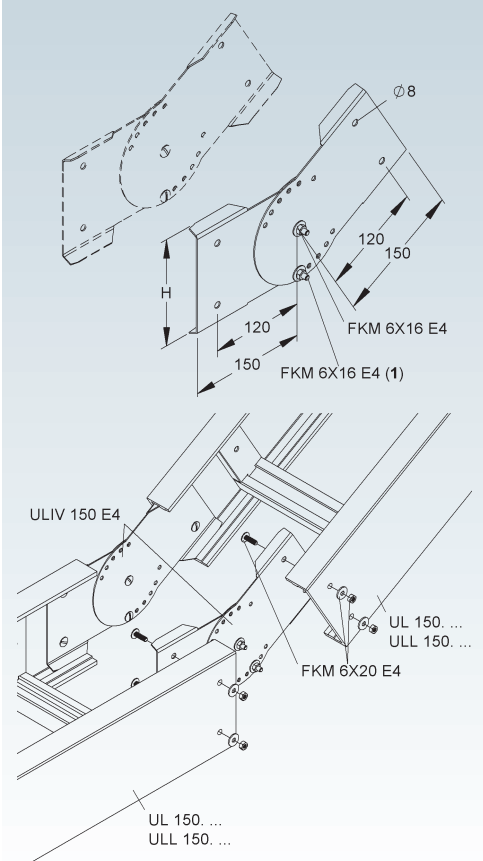
for creating vertical angle connections of continuous cable ladders with 150 mm edge height

Requirement: 1 pair (2 pieces) per joint.

Used for: GRP-cable ladder UL 150... and ULL 150...

The adjustment is made in 15° angular steps and must be screwed into the pitch circle with a screw FKM 6X16 E4 (1).

Required fixing accessories per connector 4 pieces FKM 6X20 E4 (please order separately).



CABLE LADDER SYSTEMS COVER UL

GRP-Cover for Cable Tray/ladder

pressed, with moulded flap

Model No.	Colour similar RAL	Width inside B	Material thickness (t)	Height bead H1	EAN code	Weight in kg per 100 m	Smallest packaging unit
		mm	mm	mm			
K23 KKD 150	7032	150	3	-	956128	105	3 m
K23 KKD 200	7032	200	3	-	956135	130	3 m
K23 KKD 250	7032	250	3	-	956142	160	3 m
K23 KKD 300	7032	300	3	-	956159	190	3 m
K23 KKD 400	7032	400	3	12	956166	245	3 m
K23 KKD 450	7032	450	3	12	956173	275	3 m
K23 KKD 500	7032	500	3	12	956180	300	3 m
K23 KKD 600	7032	600	3	12	956197	360	3 m
K23 KKD 750	7032	752	2	24	956210	500	1.5 m
K23 KKD 900	7032	902	2	22	956234	370	1.5 m

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

The cover KKD 750 consists of two brackets to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

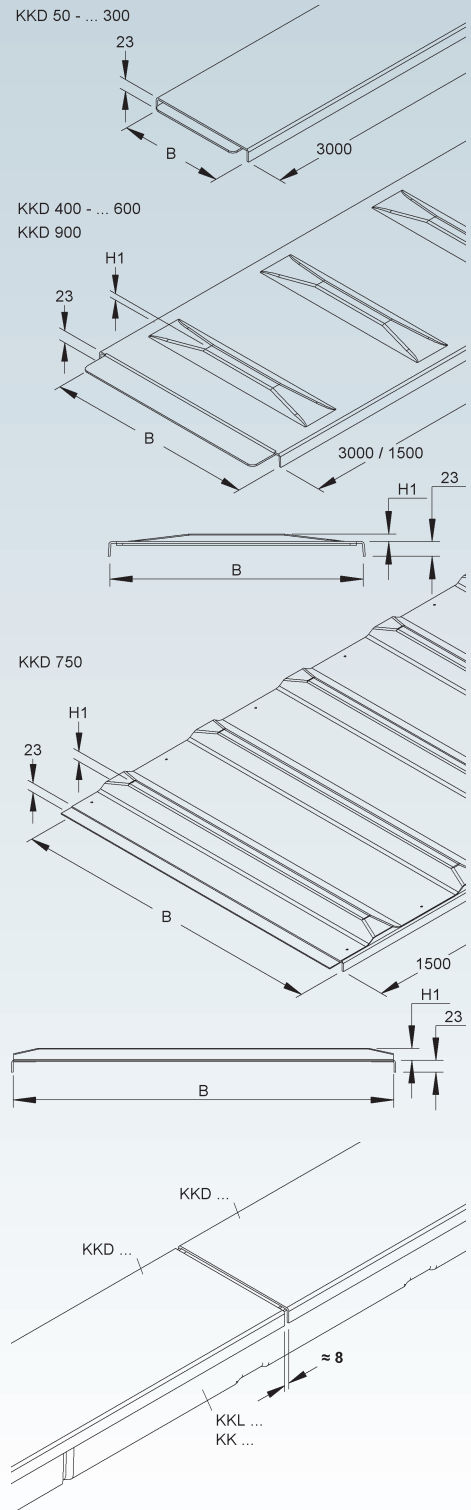
Used for: GRP-cable trays KK..., KKL... with edge height 50, 80 and 110 mm as well as GRP-cable ladders UL..., ULL... with edge height 53, 80, 100 and 150 mm

To ensure proper and stable installation, make sure that the joints of the covers have a minimum distance of approx. 8 mm and are offset from the joint of the cable trays/cable ladders.

The fastening can be carried out with cover clamps DF ... E4 in the cable tray system K² and in the cable ladder system UL with cover clamp DF... E4, cover fastening DFUB 5.5X19 E4 or DF M, 2 pieces per metre (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

Article available in various resin mixtures.



GRP-Cover for Elbow 90°

pressed

Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K23	ULBD 150	7032	150	-	957422	115	1 pc.
K23	ULBD 200	7032	200	-	957439	126	1 pc.
K23	ULBD 300	7032	300	-	957446	210	1 pc.
K23	ULBD 400	7032	400	12	957453	270	1 pc.
K23	ULBD 450	7032	450	12	957460	330	1 pc.
K23	ULBD 500	7032	500	12	957477	380	1 pc.
K23	ULBD 600	7032	600	12	957484	490	1 pc.
K23	ULBD 750	7032	750	25	957507	565	1 pc.
K23	ULBD 900	7032	900	22	957521	683	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

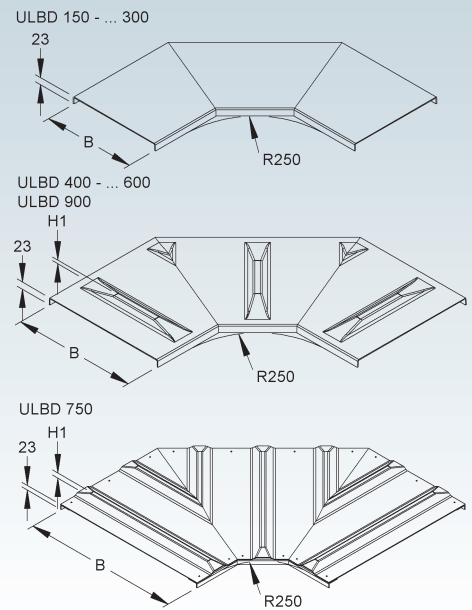
The cover ULBD 750 consists of brackets to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

Used for: GRP-elbow 90° ULB..., ULLB... with edge height 53, 80, 100 and 150 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

GRP-cover for elbow 90° in the radius R900 on request.



GRP-Cover for Elbow 90°, large

pressed

Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K23	ULBGD 150	7032	150	-	967940	115	1 pc.
K23	ULBGD 200	7032	200	-	967957	190	1 pc.
K23	ULBGD 300	7032	300	-	967964	270	1 pc.
K23	ULBGD 400	7032	400	12	967971	310	1 pc.
K23	ULBGD 450	7032	450	12	968329	386	1 pc.
K23	ULBGD 500	7032	500	12	967988	440	1 pc.
K23	ULBGD 600	7032	600	12	967995	530	1 pc.
K23	ULBGD 750	7032	750	25	968008	660	1 pc.
K23	ULBGD 900	7032	900	22	968015	880	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

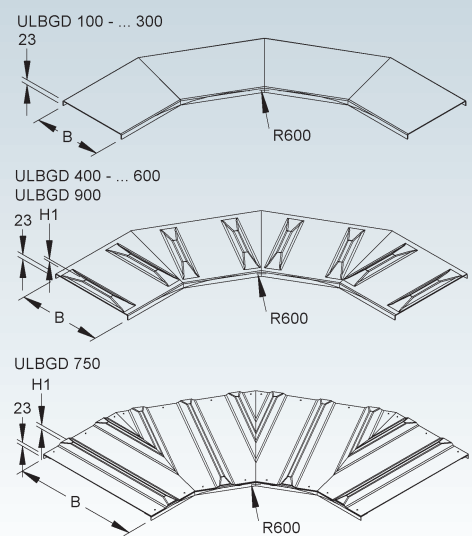
The cover ULBGD 750 consists of brackets to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

Used for: GRP-elbow ULBG..., ULLBG... large with edge height 100 and 150 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

GRP-cover for elbow 90° large in the radius R900 on request.



CABLE LADDER SYSTEMS COVER UL

GRP-Cover for Elbow 2 x 45°

pressed

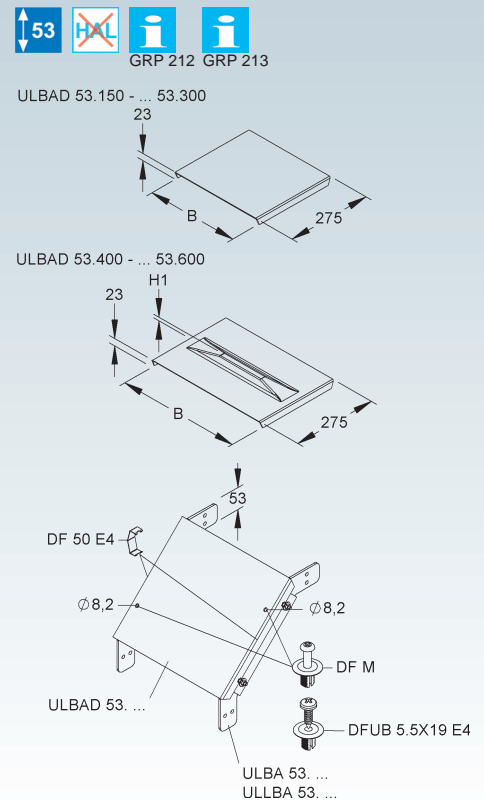
	Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULBAD 53.150	7032	150	-	059188	26,5	1 pc.
K23	ULBAD 53.200	7032	200	-	059195	33,3	1 pc.
K23	ULBAD 53.300	7032	300	-	059218	47,9	1 pc.
K23	ULBAD 53.400	7032	400	12	059225	61,2	1 pc.
K23	ULBAD 53.500	7032	500	12	059232	73,6	1 pc.
K23	ULBAD 53.600	7032	600	12	059249	85,2	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

Used for: GRP-elbow 2 x 45° ULBA..., ULLBA... of edge height 53 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.



GRP-Cover for Elbow 2 x 45°

pressed

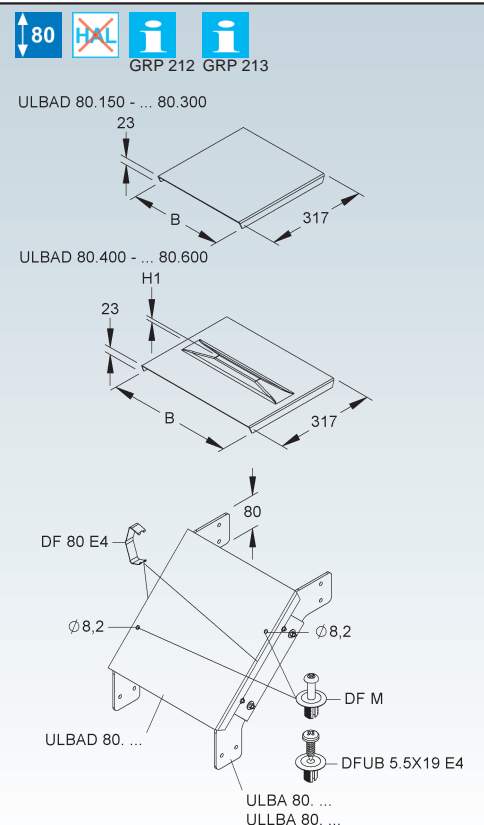
	Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULBAD 80.150	7032	150	-	059256	29,4	1 pc.
K23	ULBAD 80.200	7032	200	-	059263	37,0	1 pc.
K23	ULBAD 80.300	7032	300	-	059270	53,2	1 pc.
K23	ULBAD 80.400	7032	400	12	059287	68,0	1 pc.
K23	ULBAD 80.500	7032	500	12	059294	81,8	1 pc.
K23	ULBAD 80.600	7032	600	12	059317	94,6	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

Used for: GRP-elbow 2 x 45° ULBA..., ULLBA... of edge height 80 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.



GRP-Cover for Elbow 2 x 45°

pressed

	Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23	ULBAD 100.150	7032	150	-	957538	32,9	1 pc.
K23	ULBAD 100.200	7032	200	-	957545	41,3	1 pc.
K23	ULBAD 100.300	7032	300	-	957552	59,5	1 pc.
K23	ULBAD 100.400	7032	400	12	957569	76,1	1 pc.
K23	ULBAD 100.450	7032	450	12	957576	83,7	1 pc.
K23	ULBAD 100.500	7032	500	12	957583	91,4	1 pc.
K23	ULBAD 100.600	7032	600	12	957590	105,8	1 pc.
K23	ULBAD 100.750	7032	750	25	957613	137,1	1 pc.
K23	ULBAD 100.900	7032	900	22	957637	183,1	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

The cover ULBAD 100.750 consists of two angles to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

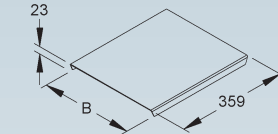
Used for: GRP-elbow 2 x 45° ULBA..., ULLBA... of edge height 100 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

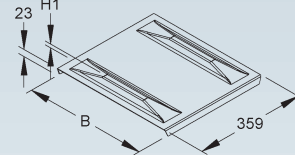
Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.



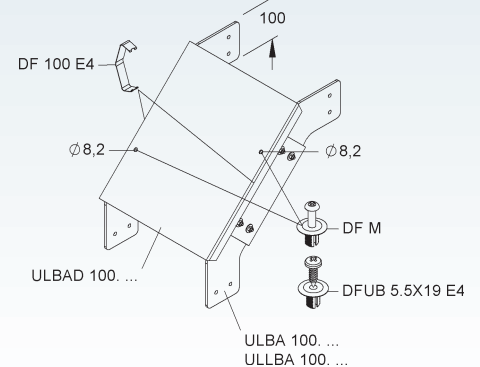
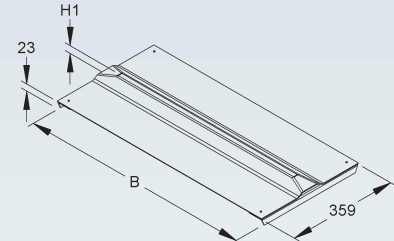
ULBAD 100.150 - ... 100.300



ULBAD 100.400 - ... 100.600
ULBAD 100.900



ULBAD 100.750



CABLE LADDER SYSTEMS COVER UL

GRP-Cover for Elbow 2 x 45°

pressed

Model No.	Colour similar RAL	Width inside B mm	Height bead H1 mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULBAD 150.150	7032	150	-	059089	38,1	1 pc.
K23 ULBAD 150.200	7032	200	-	059096	47,9	1 pc.
K23 ULBAD 150.300	7032	300	-	059119	69,0	1 pc.
K23 ULBAD 150.400	7032	400	12	059126	88,2	1 pc.
K23 ULBAD 150.450	7032	450	12	059133	97,1	1 pc.
K23 ULBAD 150.500	7032	500	12	059140	106,0	1 pc.
K23 ULBAD 150.600	7032	600	12	059157	122,7	1 pc.
K23 ULBAD 150.750	7032	750	25	059164	159,0	1 pc.
K23 ULBAD 150.900	7032	900	22	059171	212,4	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

The cover ULBAD 150.750 consists of two angles to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

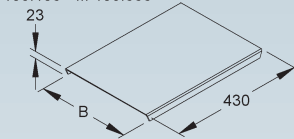
Used for: GRP-elbow 2 x 45° ULBA..., ULLBA... of edge height 150 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

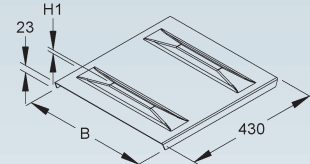


ULBAD 150.150 - ... 150.300

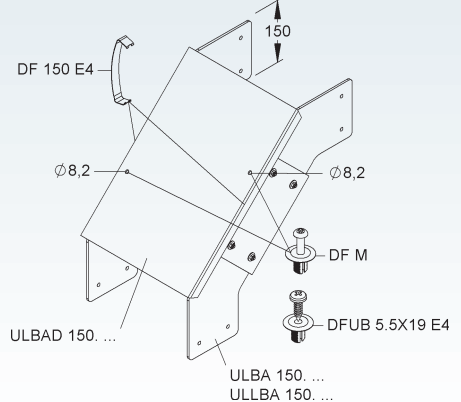
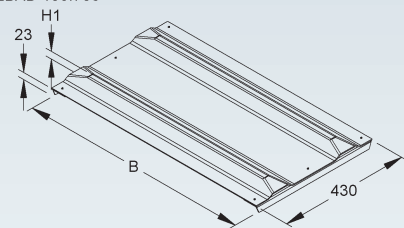


ULBAD 150.400 - ... 150.600

ULBAD 150.900



ULBAD 150.750



GRP-Cover for T-Piece

pressed

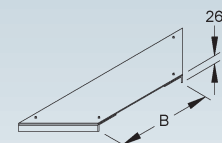
Model No.	Colour similar RAL	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULTED 150	7032	150	957644	51	1 pc.
K23 ULTED 200	7032	200	957651	55	1 pc.
K23 ULTED 300	7032	300	957668	62	1 pc.
K23 ULTED 400	7032	400	957675	69	1 pc.
K23 ULTED 450	7032	450	957682	74	1 pc.
K23 ULTED 500	7032	500	957699	81	1 pc.
K23 ULTED 600	7032	600	957705	88	1 pc.
K23 ULTED 750	7032	750	957729	105	1 pc.
K23 ULTED 900	7032	900	957743	118	1 pc.

Used for: GRP-T-piece ULTE..., ULLTE... of edge height 53, 80, 100 and 150 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

GRP-cover for T-piece in radii R600 and R900 on request.



GRP-Cover for Crossing

pressed, 2-parts

Model No.	Colour similar RAL	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 ULXD 150	7032	150	957750	75	1 pc.
K23 ULXD 200	7032	200	957767	80	1 pc.
K23 ULXD 300	7032	300	957774	90	1 pc.
K23 ULXD 400	7032	400	957781	100	1 pc.
K23 ULXD 450	7032	450	957798	105	1 pc.
K23 ULXD 500	7032	500	957804	110	1 pc.
K23 ULXD 600	7032	600	957811	120	1 pc.
K23 ULXD 750	7032	750	957835	135	1 pc.
K23 ULXD 900	7032	900	957859	150	1 pc.

For stability reasons, the cover is beaded from a width of 400 mm. The beads are pressed out towards the top.

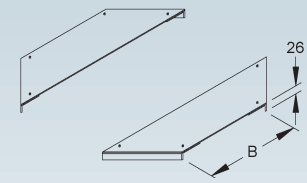
The covers consist of two angles to rest on the cable ladder uprights and with a riveted cover with beads pressed out upwards.

Used for: GRP-crossing ULX..., ULLX... of edge height 53, 80, 100 and 150 mm

The cover can be fixed with cover clamps DF... E4, cover fastenings DFUB 5.5X19 E4 or DF M alternately with at least 2 pieces (please order separately).

Due to external influences, such as wind loads, the number of cover clamps or cover fastenings must be increased.

GRP-cover for crossing in radii R600 and R900 on request.



Cover Clamp

Model No.	Height H mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DF 50 E4	55	957873	1,7	50 pcs.
E4 DF 80 E4	85	957880	2,1	50 pcs.
E4 DF 100 E4	109	957897	2,3	50 pcs.
E4 DF 150 E4	155	957903	3,4	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable tray/cable ladder cover KKD...

GRP-cable tray cover KPD...

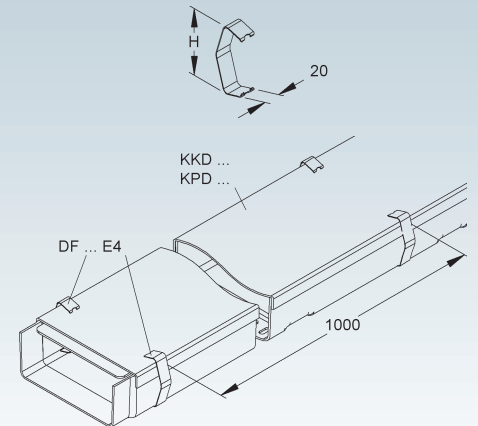
GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., Elbow 90°, small KKWD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...

GRP-reduction, right KKRRD... and GRP-reduction, left KKRLD...

GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions.

Due to external influences, such as wind loads, the number of cover clamps must be increased.



CABLE LADDER SYSTEMS COVER UL

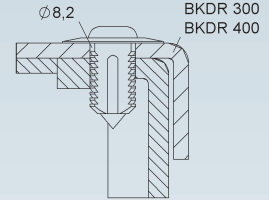
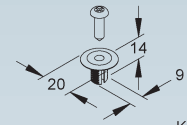
Cover Fastening

Model No.	Colour similar RAL	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 DF M	9005	957927	0,6	50 pcs.

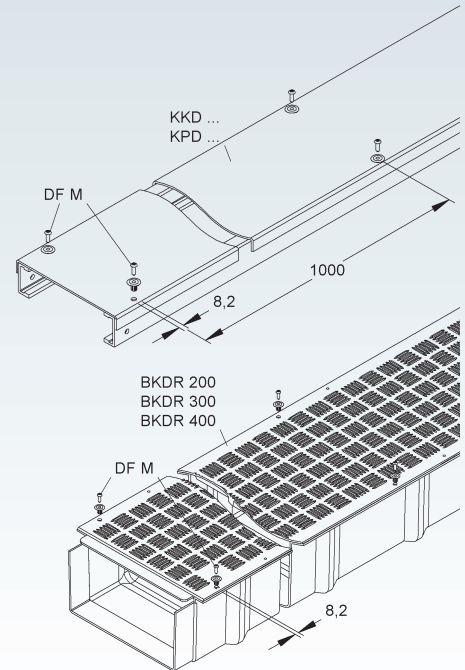
for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
 GRP-cable tray cover KPD...
 GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
 GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
 GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased. A $\varnothing 8.2$ mm hole is required to fix the cover.



KKD ...
 KPD ...
 BKDR 200
 BKDR 300
 BKDR 400



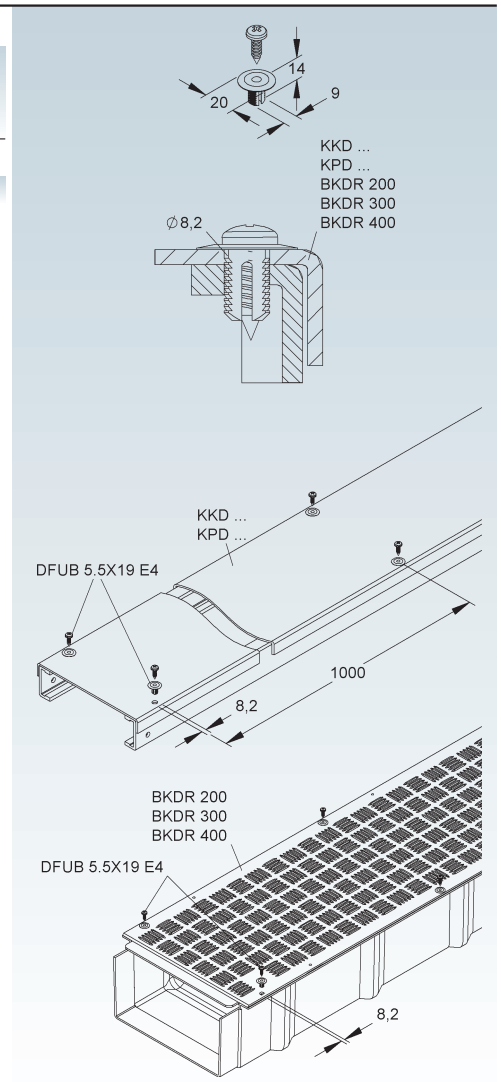
Cover Fastening

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DFUB 5.5X19 E4	062065	0,64	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
 GRP-cable tray cover KPD...
 GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
 GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
 GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased. A $\varnothing 8.2$ mm hole is required to fix the cover.



CABLE LADDER SYSTEMS COVER UL

Cover Clamping Ring

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 DFW 53.150	7032	53	150	968022	31,0	1 pc.
K23 DFW 53.200	7032	53	200	968039	36,6	1 pc.
K23 DFW 53.300	7032	53	300	968046	47,6	1 pc.
K23 DFW 53.400	7032	53	400	968053	58,7	1 pc.
K23 DFW 53.500	7032	53	500	968060	69,8	1 pc.
K23 DFW 53.600	7032	53	600	968077	80,8	1 pc.
K23 DFW 80.150	7032	80	150	968084	31,8	1 pc.
K23 DFW 80.200	7032	80	200	968091	37,3	1 pc.
K23 DFW 80.300	7032	80	300	968107	48,4	1 pc.
K23 DFW 80.400	7032	80	400	968114	59,4	1 pc.
K23 DFW 80.500	7032	80	500	968121	70,5	1 pc.
K23 DFW 80.600	7032	80	600	968138	81,5	1 pc.
K23 DFW 100.150	7032	100	150	968145	32,5	1 pc.
K23 DFW 100.200	7032	100	200	968152	38,0	1 pc.
K23 DFW 100.300	7032	100	300	968169	49,1	1 pc.
K23 DFW 100.400	7032	100	400	968176	60,2	1 pc.
K23 DFW 100.450	7032	100	450	968183	65,7	1 pc.
K23 DFW 100.500	7032	100	500	968190	71,2	1 pc.
K23 DFW 100.600	7032	100	600	968206	82,3	1 pc.
K23 DFW 100.750	7032	100	750	968213	98,9	1 pc.
K23 DFW 100.900	7032	100	900	968220	115,5	1 pc.
K23 DFW 150.150	7032	150	150	968237	33,5	1 pc.
K23 DFW 150.200	7032	150	200	968244	39,0	1 pc.
K23 DFW 150.300	7032	150	300	968251	50,1	1 pc.
K23 DFW 150.400	7032	150	400	968268	61,1	1 pc.
K23 DFW 150.450	7032	150	450	968275	66,6	1 pc.
K23 DFW 150.500	7032	150	500	968282	72,2	1 pc.
K23 DFW 150.600	7032	150	600	968299	83,2	1 pc.
K23 DFW 150.750	7032	150	750	968305	99,8	1 pc.
K23 DFW 150.900	7032	150	900	968312	116,4	1 pc.

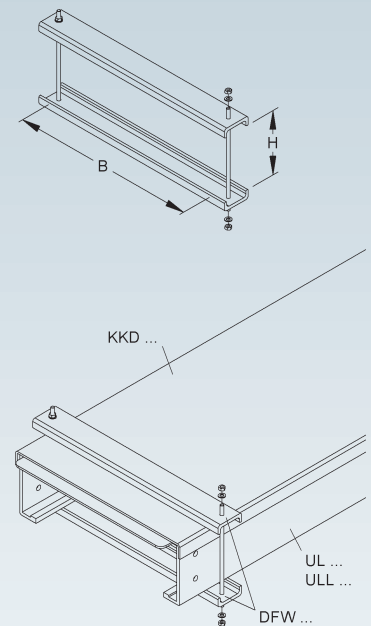
for additional secure cover fastening in case of extreme loads

The rails are made of UP-GF plastic, the threaded rods of stainless steel, material no.: 1.4404, AISI 316 L

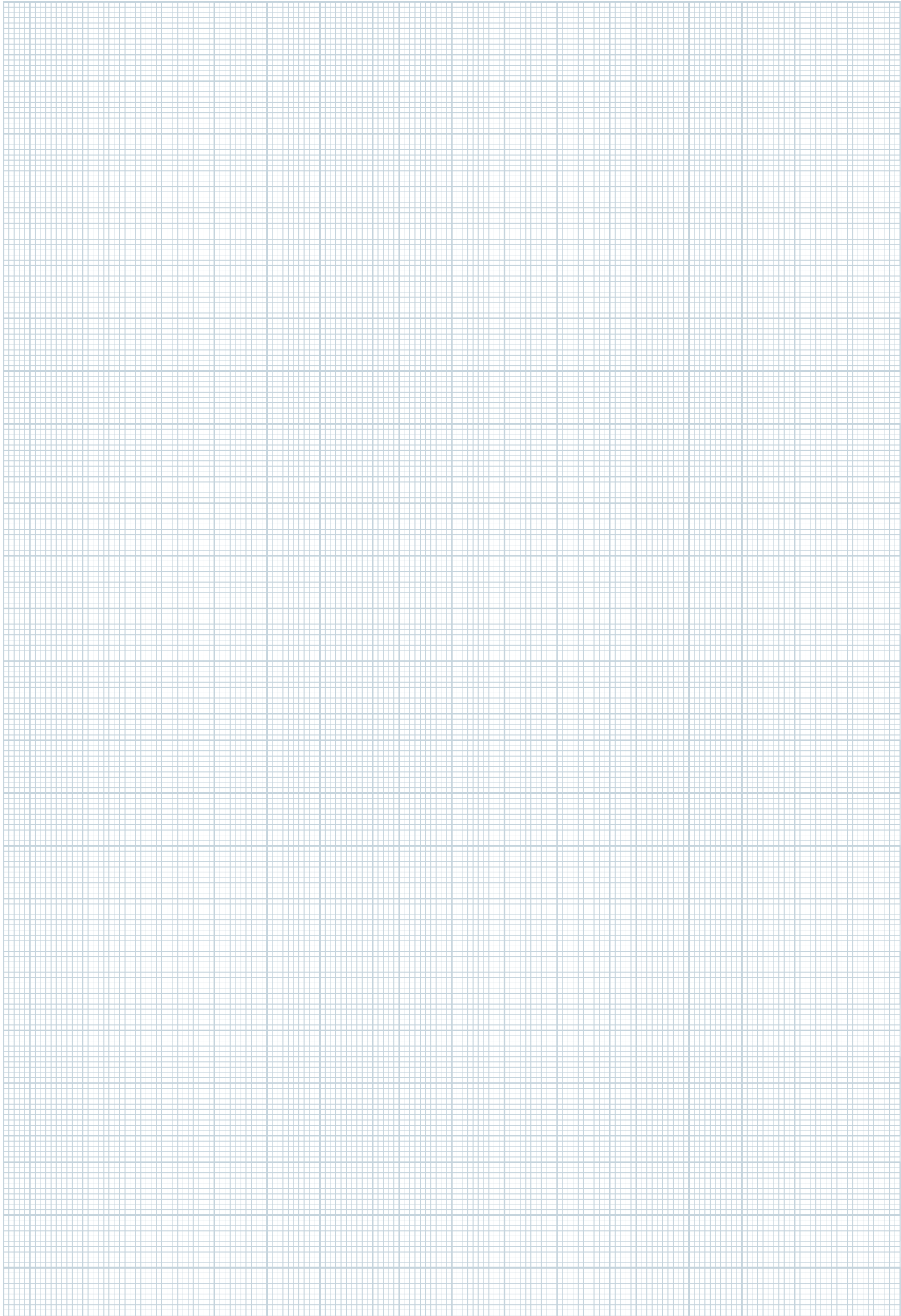
Used for: cable tray and cable ladder covers and their fittings

The cable tray/cable ladder covers can be fastened with 2 pieces per metre, the fittings with 2 pieces. Due to external influences, such as wind loads, the number of cover clamping rings must be increased.

Recommended screw tightening torque 4 Nm



NOTES



CABLE LADDER SYSTEMS ACCESSORIES UL

GRP-Cable Ladder Fastening

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
K23	ULKG	7032	21	57,5	53	960316	3	250 pcs.

for fastening the cable ladders on brackets KTA..., FPAP...

Requirement: 2 pieces per bracket

Used for: GRP-cable ladder UL... and ULL...

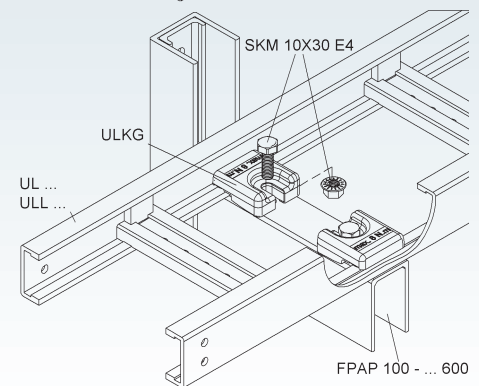
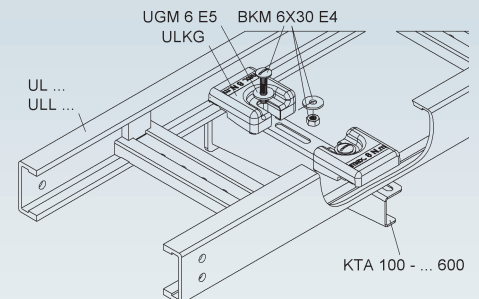
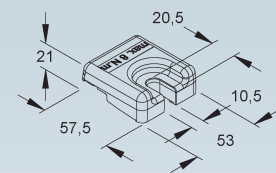
Maximum screw tightening torque 8 Nm

Required fastening accessories for FPAP... please order separately:

2 SKM 10X30 E4 per bracket

Required fastening accessories for KTA... please order separately:

2 BKM 6X30 E4, 2 UGM 6 E5 per bracket



Profile Clamp

Model No.	Height H mm	Material thickness (t) mm	For side rail thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit	
★ E5	HSK 10 E5	10	6	5 - 9	171071	12,98	10 pcs.

for fastening the cable ladders on brackets KTA..., FPAP...

Requirement: 2 pieces per bracket

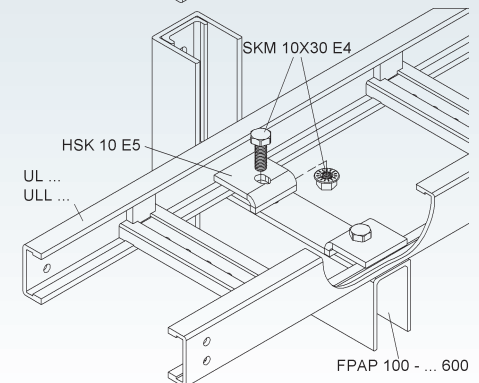
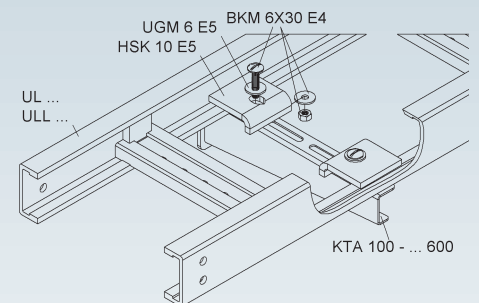
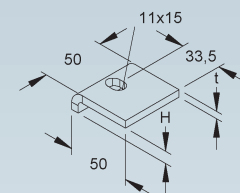
Used for: GRP-cable ladder UL... and ULL...

Required fastening accessories for FPAP... please order separately:

2 SKM 10X30 E4 per bracket

Required fastening accessories for KTA... please order separately:

2 BKM 6X30 E4, 2 UGM 6 E5 per bracket



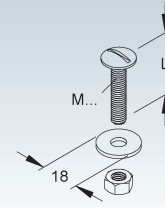
Cup Screw

incl. hexagon nut and washer acc. to DIN EN ISO 7093-1

Model No.	Thread M	Length L	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm			
E4 BKM 6X30 E4	6	30	968336	1,7	100 pcs.

for fixing the cable ladder fastening ULKG and HSK 10 E5 on the brackets KTA...

Recommended screw tightening torque 7 Nm

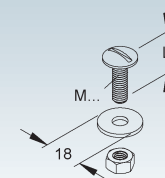


Cup Screw

incl. hexagon nut and washer acc. to DIN EN ISO 7093-1

Model No.	Thread M	Length L	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm			
E4 FKM 6X16 E4	6	16	962693	1,2	100 pcs.
E4 FKM 6X20 E4	6	20	962709	1,4	100 pcs.

Recommended screw tightening torque 7 Nm

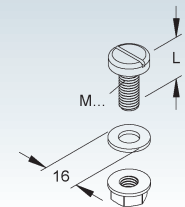


Flat Head Bolt similar to DIN EN ISO 1580

incl. flange nut and washer similar to DIN EN ISO 7089

Model No.	Thread M	Length L	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm			
K01 FKM 8X20 K01	8	20	962716	0,4	100 pcs.

Recommended screw tightening torque 3 Nm

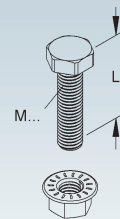


Hexagon Screw acc. to DIN EN ISO 4017

incl. toothed flange nut acc. to DIN EN 1661

Model No.	Thread M	Length L	Strength class screw / nut	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm				
E4 SKM 10X30 E4	10	30	70 / 80	962730	3,81	50 pcs.
E4 SKM 10X40 E4	10	40	70 / 80	962747	4,55	50 pcs.

The strength classes of the screws are stamped on the screw heads.
 Especially for connections that have to transmit vertical loads via friction, it is essential to pay attention to the screw tightening torque and to check it with a torque spanner!
 In product combinations (hexagon bolt with nut), the lower strength class is to be used for determining the torque.
 Recommended screw tightening torque 30 Nm



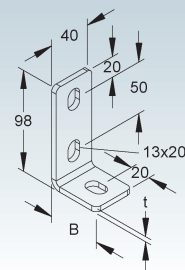
Wall Connection Angle

asymmetrical

Model No.	Width B	Material thickness (t)	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
	mm	mm				
E3 WWA 100 E3	48,5	4	1 FLM 10X25 E3	344345	19,09	50 pcs.

for floor, ceiling and wall mounting

Used for: stainless steel profiles U 50/..., U 4530/..., U 6040/... and anchor channels/profile channels

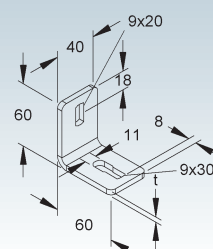


Wall Connection Angle

equal-sided

Model No.	Material thickness (t)	Incl. Accessories	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
	mm				
E5 WWU 150/8 E5	4	1 SKM 8X16 E5	728909	14,62	50 pcs.

for floor, ceiling and wall mounting



CABLE LADDER SYSTEMS ACCESSORIES UL

Mounting Pincer

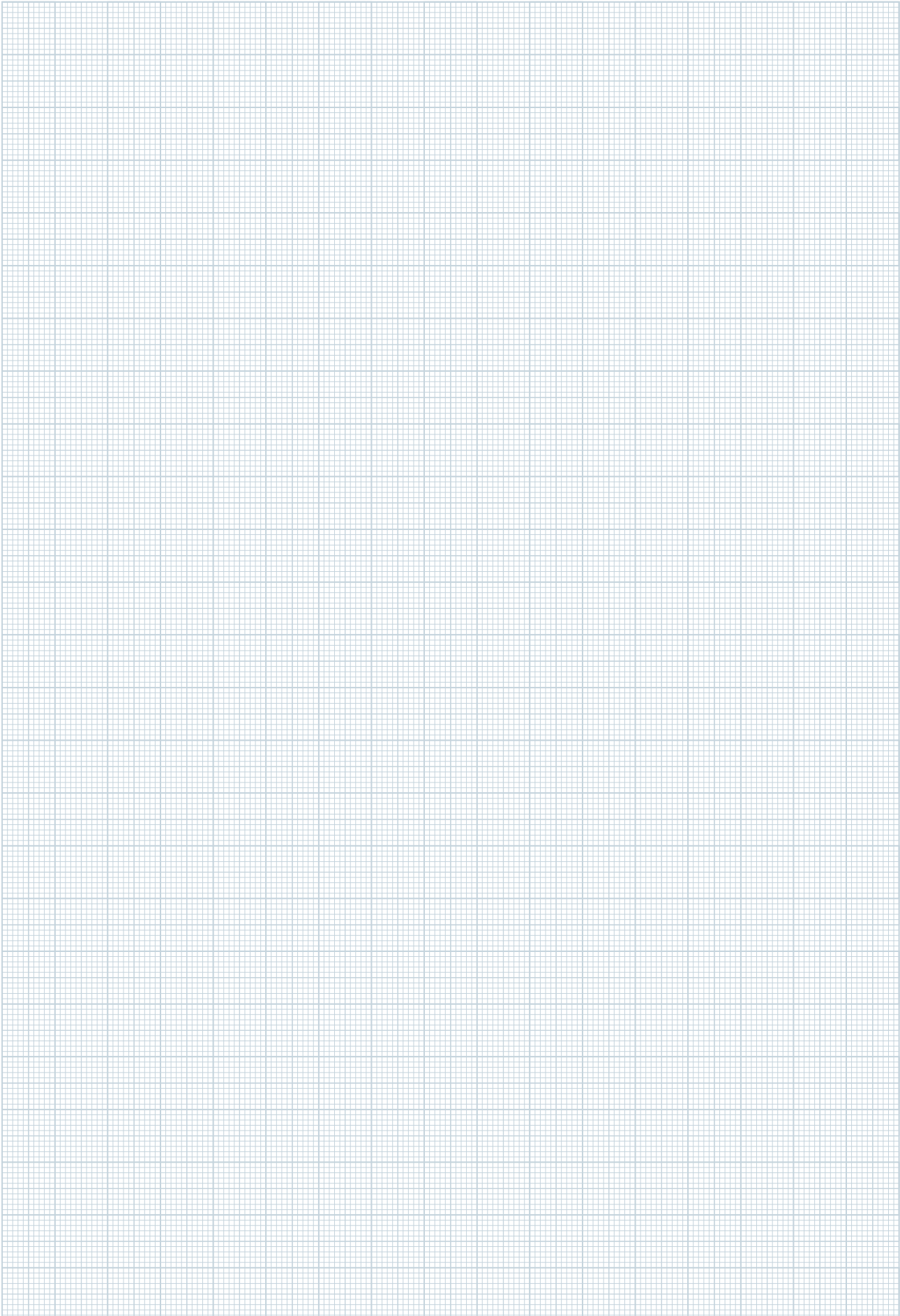
Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
ULP 100	960347	40	1 pc.

for mounting the stainless steel splice plates

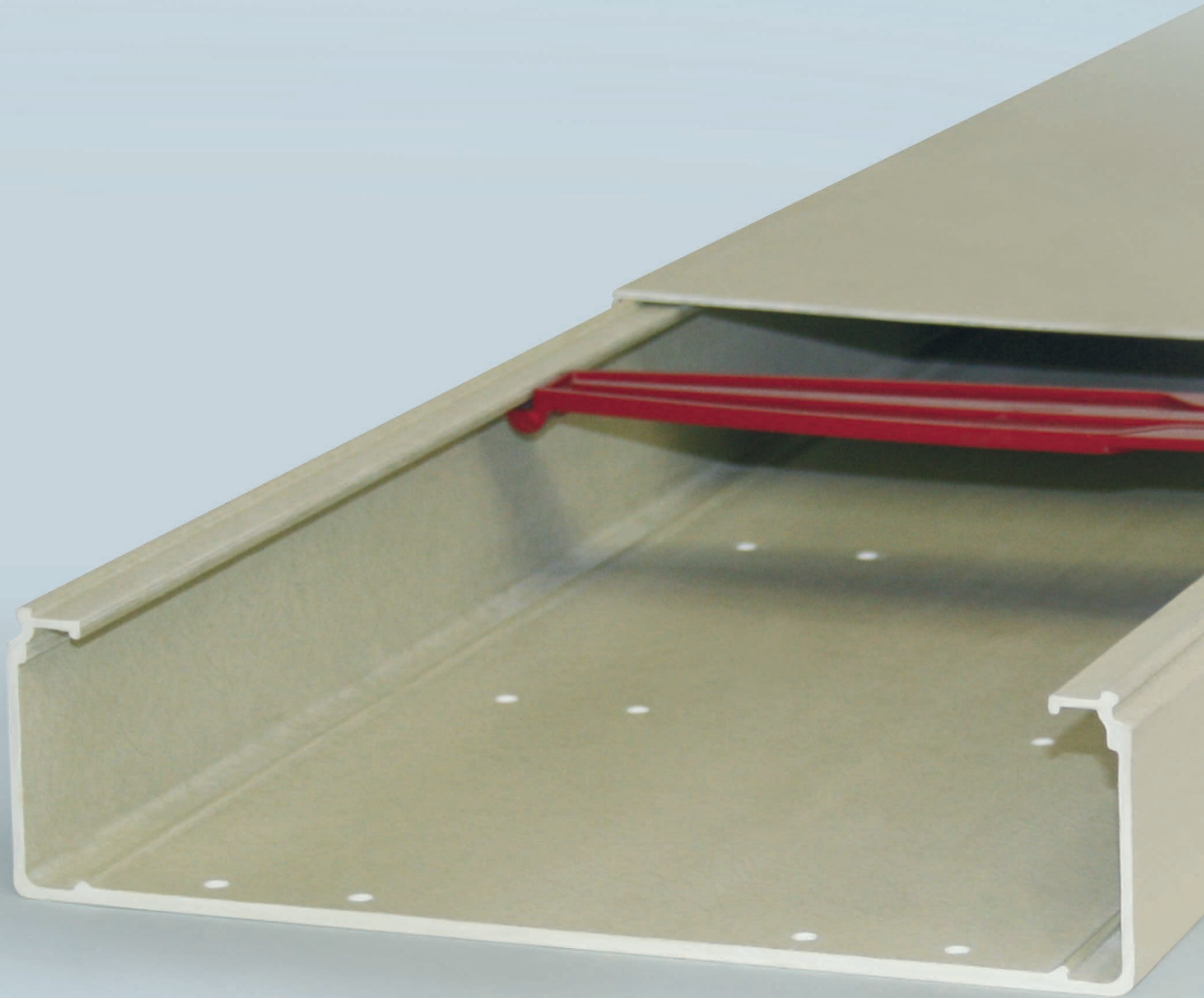
Used for: splice plate ULIH... and joint connector ULIV...



NOTES

A large, empty grid area for taking notes, consisting of a fine grid of light blue lines on a white background. The grid covers most of the page area below the 'NOTES' header.

GRP CABLE SUPPORT SYSTEMS



CABLE ROUTING DUCT SYSTEM LFG

in the side heights   

- Cable Routing Ducts
- Barrier Strips
- Fittings




























The halogen-free LFG cable routing duct system is particularly suitable for use under extreme conditions. Therefore, it is mainly used in areas such as industrial plants, sewage treatment plants, stables, refineries, offshore platforms, PV plants, tunnel constructions, on building sites or in the food industry.

Due to the excellent properties with regard to large temperature fluctuations, weather influences and mechanical resistance, a service life of decades is given.



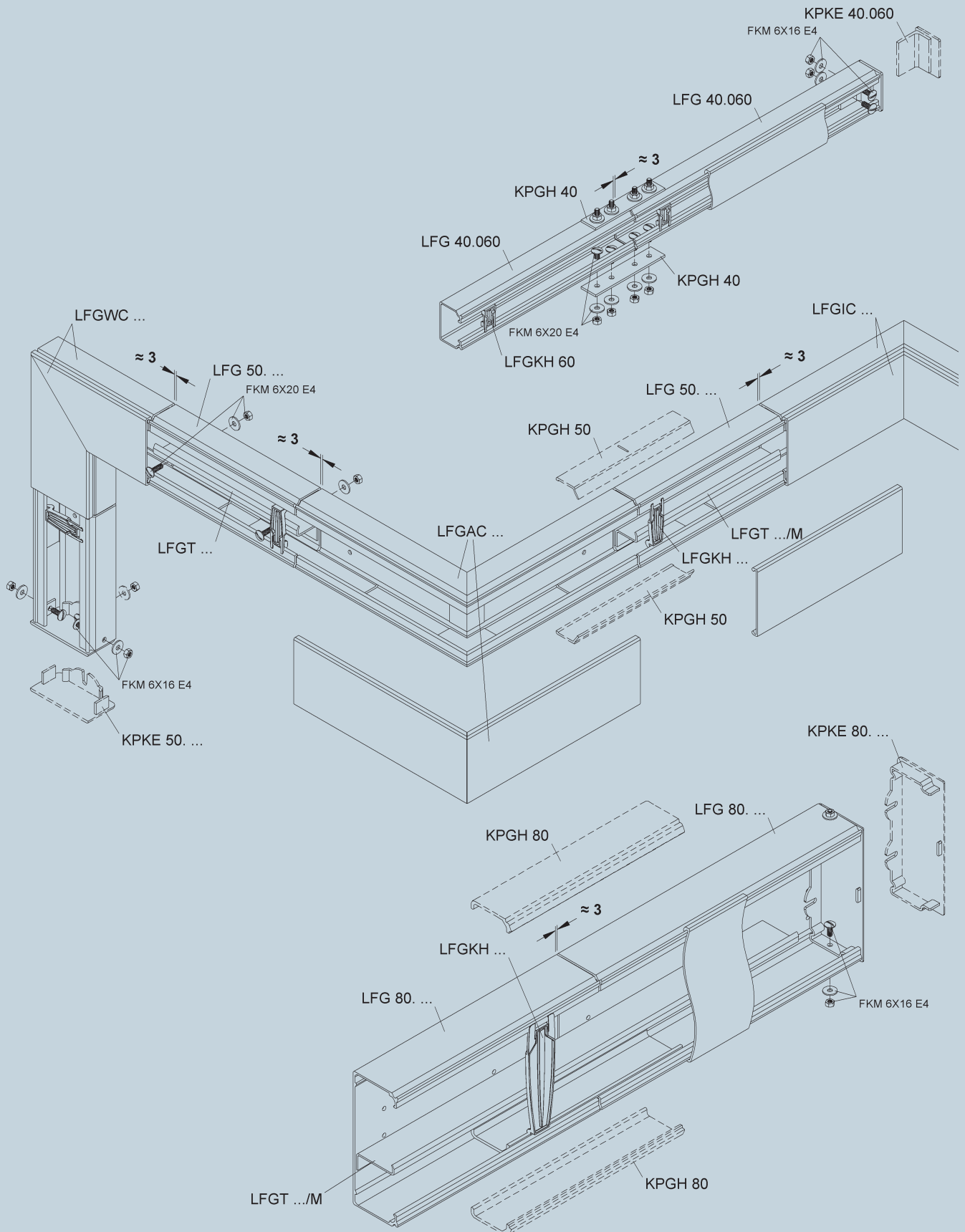
CABLE ROUTING DUCT SYSTEM LFG

System overview of the side heights

SYSTEM	GRP-Cable Routing Duct, pultruded	LFG...	 P. 166	 P. 166	 P. 166
ACCESSORIES	GRP-Splice Plate, pressed	KPGH 40	 P. 166	 —	 —
	GRP-Splice Plate, clipable, pressed	KPGH 50	 —	 P. 166	 —
	GRP-Splice Plate, clipable, pultruded	KPGH 80	 —	 —	 P. 167
	Cable Support Clamp	LFGKH...	 P. 167	 P. 167	 P. 167
	GRP-End Cover, pressed	KPKE...	 P. 167	 P. 167	 P. 167
	GRP-Barrier Strip, pultruded	LFGT...	 —	 P. 168	 P. 168
	GRP-Outside Elbow 90°, pultruded	LFGAC...	 P. 168	 P. 168	 P. 168
	GRP-Inside Elbow 90°, pultruded	LFGIC...	 P. 168	 P. 168	 P. 168
	GRP-Vertical Elbow 90°, pultruded	LFGWC...	 P. 169	 P. 169	 P. 169

All ducts and fittings are supplied with covers.





CABLE ROUTING DUCT SYSTEM LFG

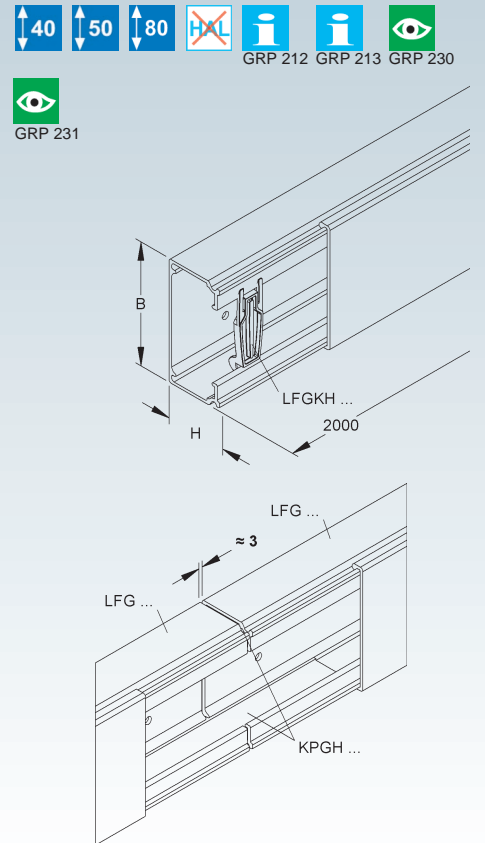
GRP-Cable Routing Duct

pultruded, with bottom perforation, with cover

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness t mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 LFG 40.060	7032	40	57	2,0	948567	92	2 m
K23 LFG 50.100	7032	50	100	2,5	948574	160	2 m
K23 LFG 50.150	7032	50	150	2,5	948581	205	2 m
K23 LFG 50.200	7032	50	200	2,5	948598	265	2 m
K23 LFG 80.100	7032	80	100	2,5	948604	205	2 m
K23 LFG 80.150	7032	80	150	2,5 - 3.1	948611	328	2 m
K23 LFG 80.200	7032	80	200	2,5 - 3.7	948628	424	2 m
K23 LFG 80.300	7032	80	300	3,2 - 4.5	948635	500	2 m

Accessories incl.:

LFG 40.060 - 4 LFGKH 60
 LFG 50.100 - 4 LFGKH 100
 LFG 50.150 - 4 LFGKH 150
 LFG 50.200 - 4 LFGKH 200
 LFG 80.100 - 4 LFGKH 100
 LFG 80.150 - 4 LFGKH 150
 LFG 80.200 - 4 LFGKH 200
 LFG 80.300 - 4 LFGKH 300



GRP-Splice Plate

pressed, horizontal, screwable

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 40	7032	25	3	955695	4,5	1 pair

for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 40 mm that is aligned at the joint in the longitudinal direction

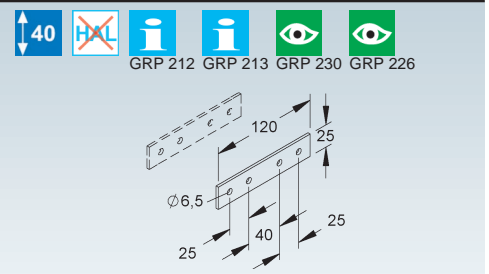
Requirement: Please order 1 pair (2 pieces) per joint separately

Used for: GRP-cable trays KP 40..., KPL 40..., cable routing ducts LFG 40... and their fittings

During installation, an expansion distance of approx. 3 mm must be taken into account.

Article available in various resin mixtures.

Required fixing accessories 8 pieces FKM 6X20 E4 (please order separately).



GRP-Splice Plate, clipable

pressed, horizontal

Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 50	7032	39	3	955701	6	1 pair

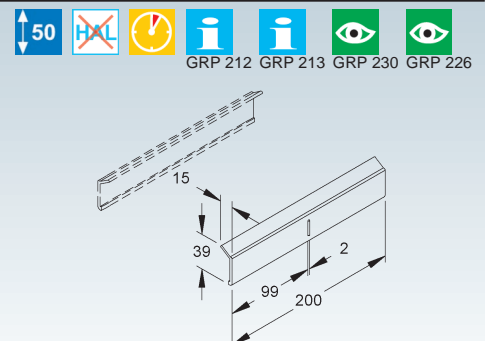
for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 50 mm that is aligned at the joint in the longitudinal direction
 for clipping (on both sides) into the sides of cable trays and cable routing ducts

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KP 50..., KPL 50..., cable routing ducts LFG 50... and their fittings

The joint connector automatically positions the two cable trays or cable routing ducts at the correct distance.

Article available in various resin mixtures.



GRP-Splice Plate, clipable

pultruded, horizontal

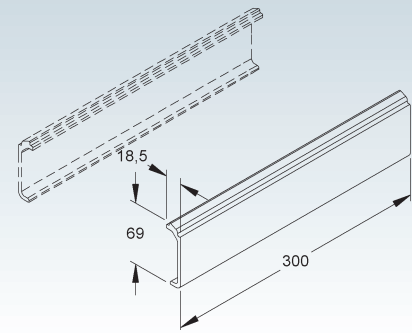
Model No.	Colour similar RAL	Height H mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pairs	Smallest packaging unit
K23 KPGH 80	7032	69	4	955718	22,5	1 pair

for a connection of cable trays and cable routing ducts as well as their fittings with an edge height of 80 mm that is aligned at the joint in the longitudinal direction for clipping (on both sides) into the sides of cable trays and cable routing ducts

Requirement: 1 pair (2 pieces) per joint

Used for: GRP-cable trays KP 80..., KPL 80..., cable routing ducts LFG 80... and their fittings
 During installation, an expansion distance of approx. 3 mm must be taken into account.

Article available in various resin mixtures.



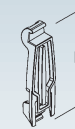
Cable Support Clamp

Model No.	Colour similar RAL	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K05 LFGKH 60	3003	38	948703	0,2	1 pc.
K05 LFGKH 100	3003	75	948710	0,6	1 pc.
K05 LFGKH 150	3003	125	948727	1,6	1 pc.
K05 LFGKH 200	3003	175	948734	2,9	1 pc.
K05 LFGKH 300	3003	275	948741	6,8	1 pc.

for secure cable retention

For additional requirements.

Used for: cable routing duct LFG...



GRP-End Cover

pressed

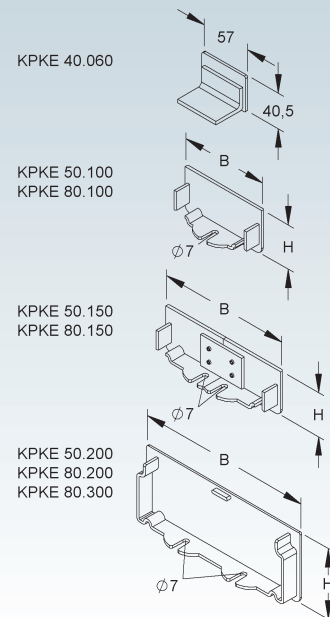
Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 KPKE 40.060	7032	40,5	57	955381	5,5	1 pc.
K23 KPKE 50.100	7032	50,0	100	955398	6,0	1 pc.
K23 KPKE 50.150	7032	50,0	150	955404	9,0	1 pc.
K23 KPKE 50.200	7032	50,0	200	955411	10,0	1 pc.
K23 KPKE 80.100	7032	80,0	100	955428	8,0	1 pc.
K23 KPKE 80.150	7032	80,0	150	955435	11,0	1 pc.
K23 KPKE 80.200	7032	80,0	200	955442	13,0	1 pc.
K23 KPKE 80.300	7032	80,0	300	955459	20,0	1 pc.

for covering the cable tray and cable routing duct ends

Used for: GRP-cable trays KP..., KPL... of edge height 40, 50 and 80 mm as well as for GRP-cable routing ducts LFG... of edge height 40, 50 and 80 mm

Article available in various resin mixtures.

Required fixing accessories min. 2 pieces FKM 6X16 E4 (please order separately).



CABLE ROUTING DUCT SYSTEM LFG

GRP-Barrier Strip

pultruded

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 LFGT 50	7032	37	948659	31	2 m
K23 LFGT 50/M	7032	37	968343	31	2 m
K23 LFGT 80	7032	65	948666	42	2 m
K23 LFGT 80/M	7032	65	968350	42	2 m

for separating lines and cables with different functions and/or voltages

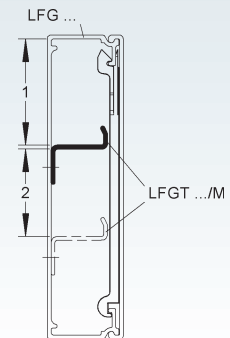
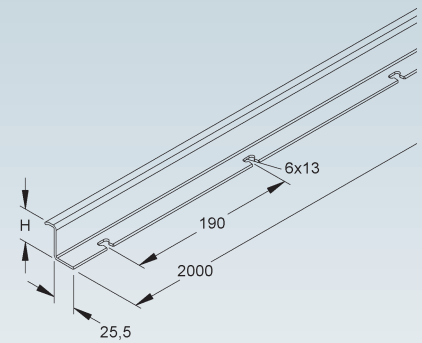
The barrier strips LFGT... are supplied loose and must be screwed to the cable routing duct on site.

Requirement: 2 pieces FKM 6X20 E4 per delivery length (please order separately).

The LFGT.../M versions are pre-assembled (riveted) at the factory when the cable routing trunking is ordered. When ordering, please state the corresponding compartment size.

Used for: cable routing duct LFG...

In the case of wall or ceiling mounting, please note that the duct cannot lie flush with the substrate.

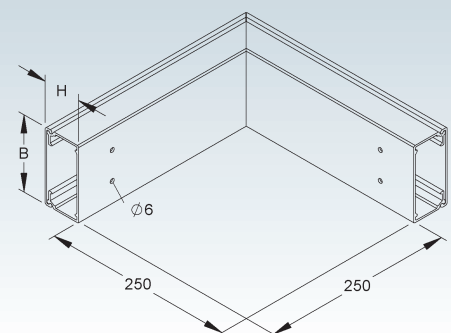


GRP-Outside Elbow 90°

pultruded, with bottom perforation, with cover

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 LFGAC 40.060	7032	40	57	967605	41	1 pc.
K23 LFGAC 50.100	7032	50	100	948833	85	1 pc.
K23 LFGAC 50.150	7032	50	150	948840	114	1 pc.
K23 LFGAC 50.200	7032	50	200	948857	137	1 pc.
K23 LFGAC 80.100	7032	80	100	948864	108	1 pc.
K23 LFGAC 80.150	7032	80	150	948871	154	1 pc.
K23 LFGAC 80.200	7032	80	200	948888	199	1 pc.
K23 LFGAC 80.300	7032	80	300	948895	301	1 pc.

Used for: cable routing duct LFG...

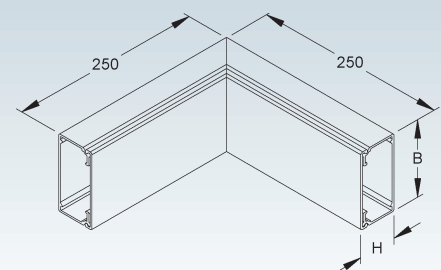


GRP-Inside Elbow 90°

pultruded, with bottom perforation, with cover

Model No.	Colour similar RAL	Height H mm	Width B mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 LFGIC 40.060	7032	40	57	948758	31,0	1 pc.
K23 LFGIC 50.100	7032	50	100	948765	65,0	1 pc.
K23 LFGIC 50.150	7032	50	150	948772	86,0	1 pc.
K23 LFGIC 50.200	7032	50	200	948789	103,0	1 pc.
K23 LFGIC 80.100	7032	80	100	948796	72,0	1 pc.
K23 LFGIC 80.150	7032	80	150	948802	100,0	1 pc.
K23 LFGIC 80.200	7032	80	200	948819	112,8	1 pc.
K23 LFGIC 80.300	7032	80	300	948826	239,5	1 pc.

Used for: cable routing duct LFG...

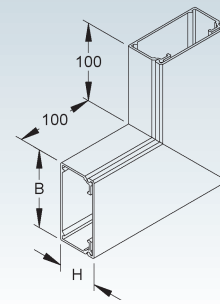


GRP-Vertical Elbow 90°

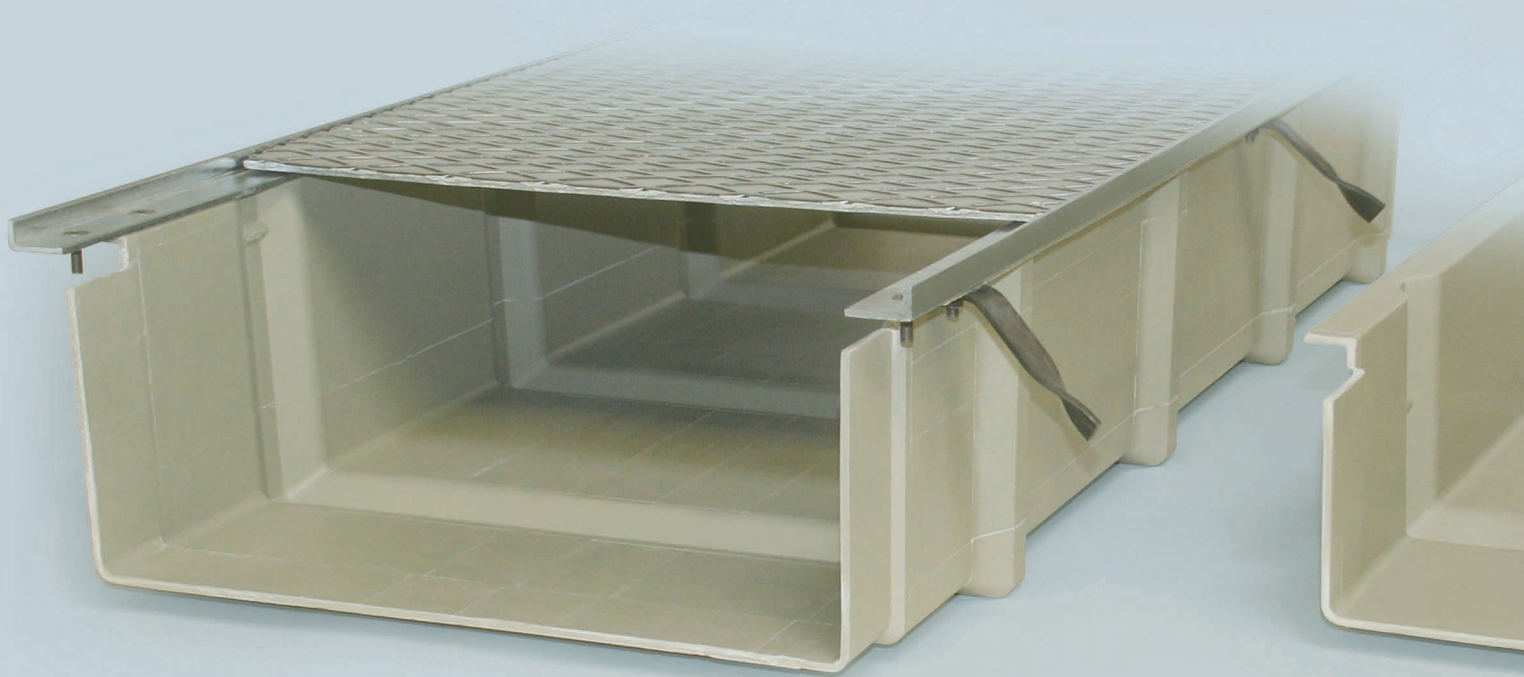
pultruded, with bottom perforation, with cover

	Model No.	Colour similar RAL	Height H	Width B	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
			mm	mm			
K23	LFGWC 40.060	7032	40	57	948901	30	1 pc.
K23	LFGWC 50.100	7032	50	100	948918	61	1 pc.
K23	LFGWC 50.150	7032	50	150	948925	76	1 pc.
K23	LFGWC 50.200	7032	50	200	948932	84	1 pc.
K23	LFGWC 80.100	7032	80	100	948949	72	1 pc.
K23	LFGWC 80.150	7032	80	150	948956	89	1 pc.
K23	LFGWC 80.200	7032	80	200	948963	99	1 pc.
K23	LFGWC 80.300	7032	80	300	948970	200	1 pc.

Used for: cable routing duct LFG...



GRP CABLE SUPPORT SYSTEMS



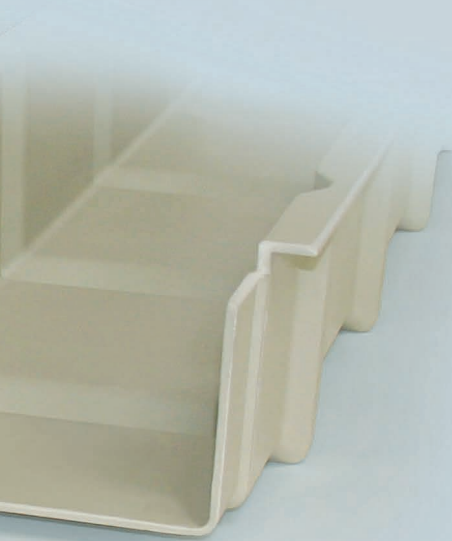
WALKABLE FLOOR DUCT SYSTEM BK/BKS

in the side heights    

- Cable Trays
- Covers
- Barrier Strips
- Accessories

The walkable cable tray system made of GRP has been specially developed for outdoor use for quick and flush laying in the ground or in concrete.

The installation of the 2.5 m long lower sections is carried out by one-man assembly and with screwless socket technology at the joints. For use in concrete, the trunking is equipped with fastening anchors. For the extreme load requirements, steel corrugated sheet covers are offered in different material thicknesses.



WALKABLE FLOOR DUCT SYSTEM BK/BKS

System overview of the side heights

SYSTEM	GRP-Cable Tray, pressed	BK...	 P. 173	 —	 P. 173	 —
	GRP-Barrier Strip, pressed	BKT...	 P. 173	 —	 P. 173	 —
	GRP-Cable Tray, heavy, pressed	BKS...	 —	 P. 178	 —	 P. 178
ACCESSORIES	Cover for GRP-Cable Tray, pressed	BKDR...	P. 174			
	Cover Clamp, with clip function	DF 94-4 E4	P. 174			
	Cover Clamp, with hinge and clip function	DF 94-C E4	P. 175			
	Cover Fastening	DF M	P. 176			
	Cover Fastening	DFUB 5.5X19 E4	P. 177			
	Cover for GRP-Cable Tray	BKDR...	P. 178			



GRP-Cable Tray

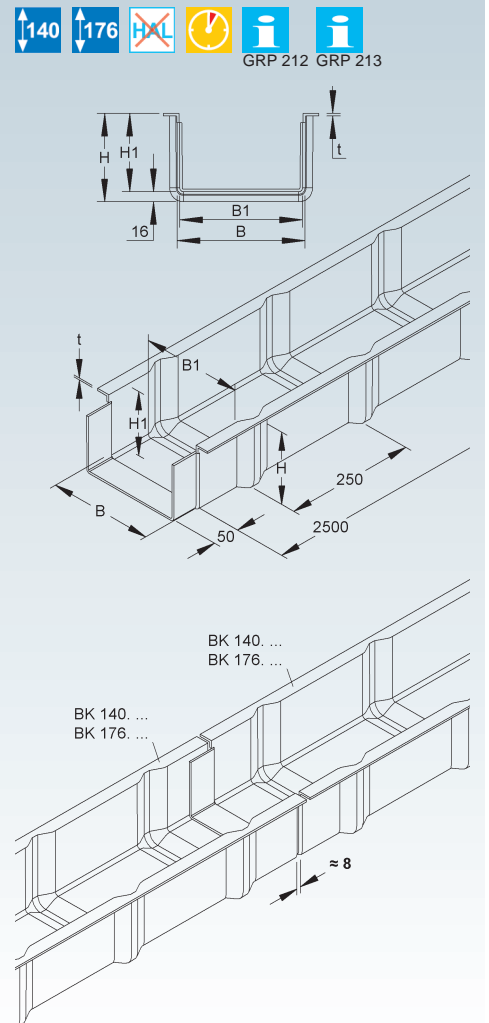
pressed, unperforated, with moulded socket, with transverse reinforcing ribs (16 mm)

Model No.	Colour similar RAL	Height H mm	Height H1 mm	Width B mm	Width B1 mm	Material thickness (t) mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 BK 140.200	7032	140	124	200	192	4	952991	300,64	2.5 m
K23 BK 176.300	7032	176	160	300	292	4	953004	406,30	2.5 m
K23 BK 176.400	7032	176	160	400	392	4	953011	467,70	2.5 m

for installation in and on the floor

Fast processing due to socket connection, thus a screw connection of the GRP-cable trays is not necessary.

When installing the GRP-cable tray, a mounting distance of approx. 8 mm must be taken into account.



GRP-Barrier Strip

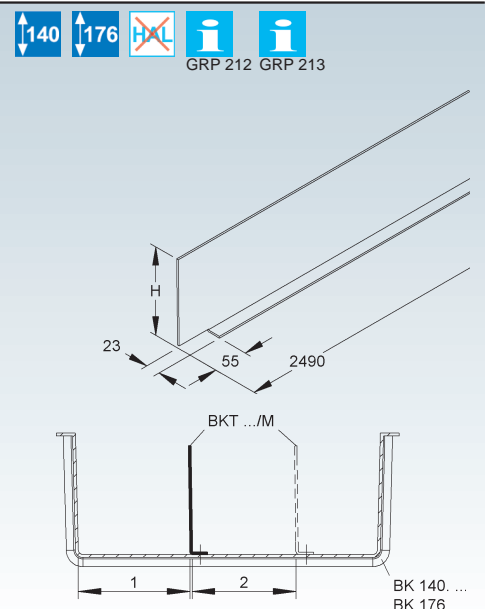
pressed

Model No.	Colour similar RAL	Height H mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 BKT 140	7032	107	057672	49	2.5 m
K23 BKT 140/M	7032	107	057689	50	2.5 m
K23 BKT 176	7032	143	057696	66	2.5 m
K23 BKT 176/M	7032	143	057719	67	2.5 m

for separating lines and cables with different functions and/or voltages

The barrier strip BKT... is supplied loose and must be screwed to the GRP cable tray on site. Requirement: 3 pieces FKM 6X20 E4 per delivery length (please order separately). The BKT.../M version is pre-assembled (riveted) at the factory when the cable tray is ordered. When ordering, please state the corresponding compartment size.

Used for: GRP-cable tray BK 140... and BK 176...



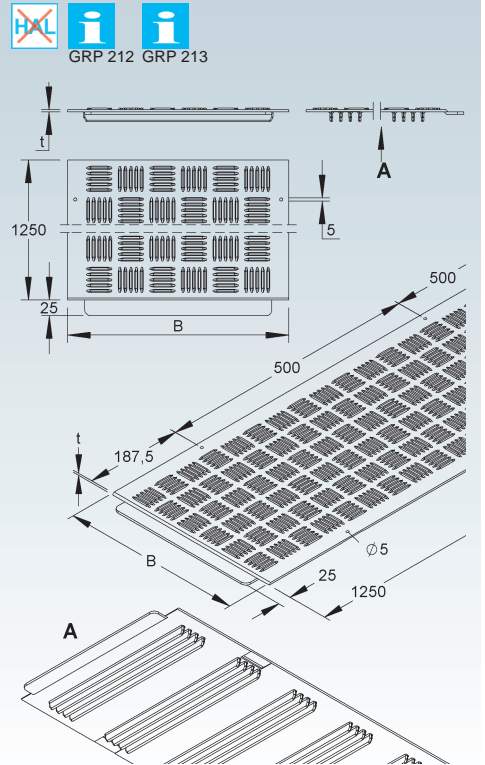
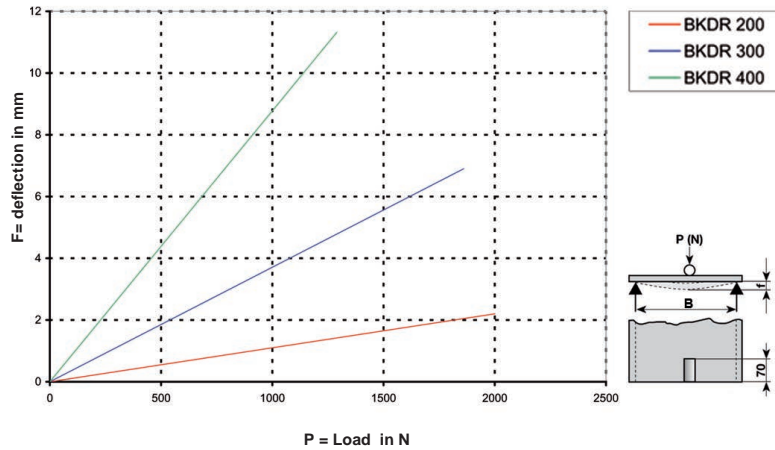
WALKABLE FLOOR DUCT SYSTEM BK/BKS

GRP-Cover for Cable Tray

pressed, with embossed joint cover, with full-surface ribbing

Model No.	Colour similar RAL	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 BKDR 200	7032	250	4	956029	296	1.25 m
K23 BKDR 300	7032	350	4	956036	400	1.25 m
K23 BKDR 400	7032	450	4	948543	528	1.25 m

Used for: GRP-cable tray BK... of edge height 140 mm and 176 mm



Cover Clamp

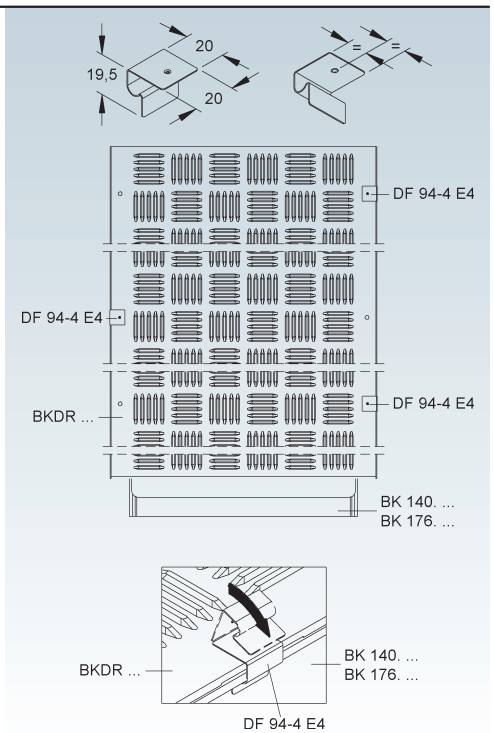
with clip function

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DF 94-4 E4	948550	0,9	1 pc.

for the rigid fixing of the ground duct covers

Requirement: 3 pieces per cover

Used for: GRP-cover for cable tray BKDR 200 - 400



Cover Clamp

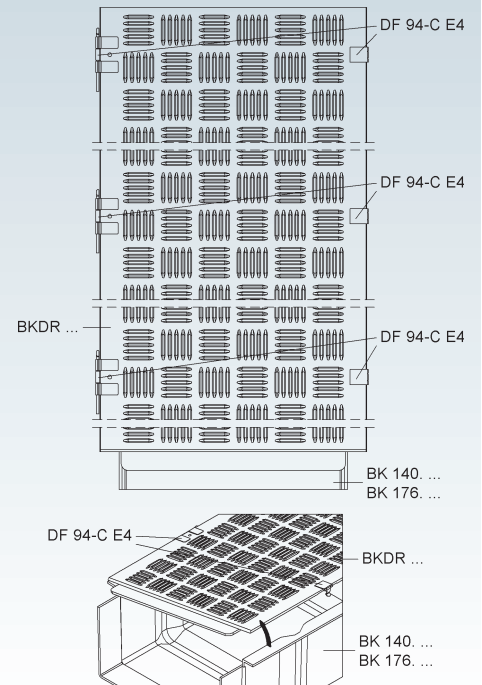
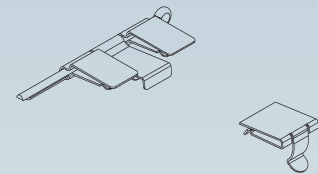
consisting of hinge and retaining spring with clip function

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DF 94-C E4	957866	2,7	1 pc.

for fixing covers on cables trays

Requirement: 3 pieces per cover

Used for: GRP-cover for cable tray BKDR 200 - 400



WALKABLE FLOOR DUCT SYSTEM BK/BKS

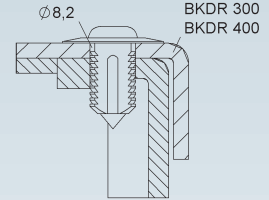
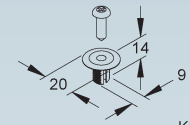
Cover Fastening

Model No.	Colour similar RAL	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 DF M	9005	957927	0,6	50 pcs.

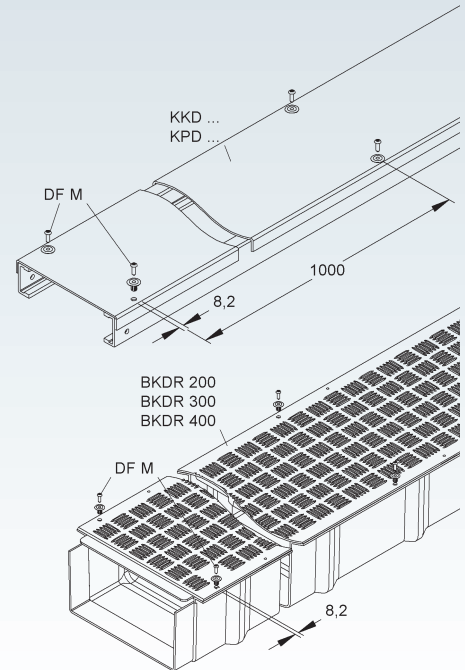
for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
 GRP-cable tray cover KPD...
 GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
 GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
 GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased. A $\varnothing 8.2$ mm hole is required to fix the cover.



KKD ...
 KPD ...
 BKDR 200
 BKDR 300
 BKDR 400



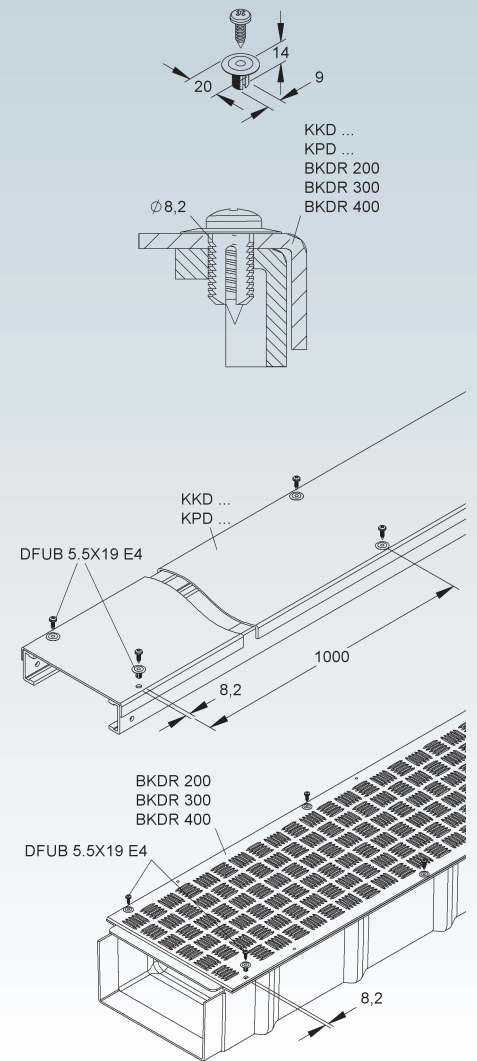
Cover Fastening

Model No.	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 DFUB 5.5X19 E4	062065	0,64	50 pcs.

for fastening the cable tray/cable ladder covers as well as cable tray and cable ladder fitting covers

Used for: GRP-cable ladder cover KKD...
 GRP-cable tray cover KPD...
 GRP-cover for cable tray BKDR 200, BKDR 300, BKDR 400
 GRP-cable tray fitting cover elbow 45° KKCD..., elbow 90° KKBD..., vertical inside elbow KKBID..., vertical outside elbow KKBAD..., floor KKETD..., extension T-piece, small KKSSD..., extension T-piece, large KKSTD...
 GRP-cable ladder fitting cover elbow 90° ULBD..., elbow 90°, large ULBGD..., elbow 2x45° ULBAD..., T-piece ULTED... and crossing ULXD...

When fastening, make sure that 2 pieces per metre are attached alternately under normal conditions. Due to external influences, such as wind loads, the number of cover clamps must be increased. A $\varnothing 8.2$ mm hole is required to fix the cover.



WALKABLE FLOOR DUCT SYSTEM BK/BKS

GRP-Cable Tray, heavy

pressed, unperforated, with moulded socket, with transverse reinforcing ribs (16 mm)

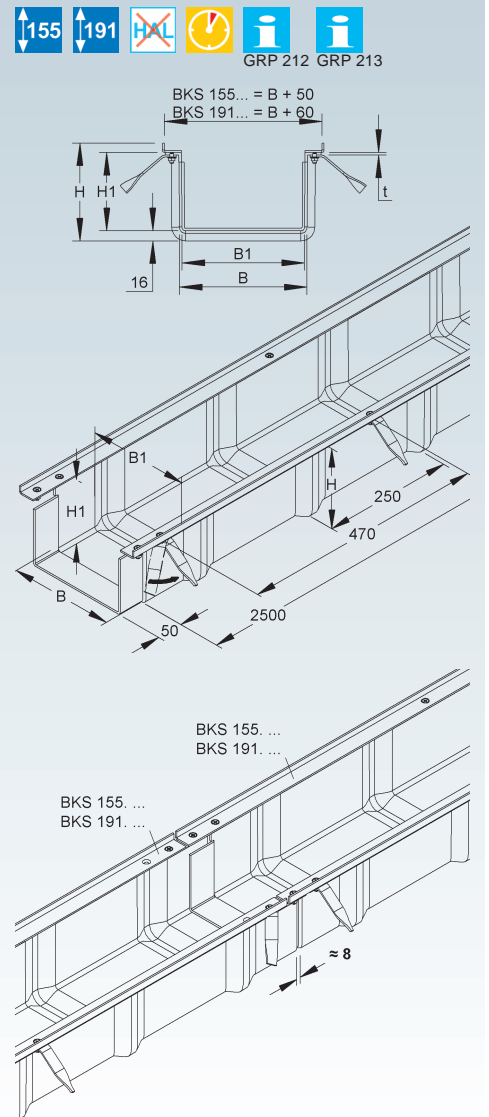
Model No.	Colour similar RAL	Height H mm	Height H1 mm	Width B mm	Width B1 mm	Material thickness (t) mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 BKS 155.200	7032	155	131	200	192	4	962303	590,07	2.5 m
K23 BKS 191.300	7032	191	167	300	292	4	962310	721,96	2.5 m
K23 BKS 191.400	7032	191	167	400	392	4	962327	798,62	2.5 m

for laying in the ground and in concrete

Attention: concrete anchors arranged in pairs, can be swung out

Fast processing due to socket connection, thus a screw connection of the GRP-cable trays is not necessary.

When installing the GRP-cable tray, a mounting distance of approx. 8 mm must be taken into account.

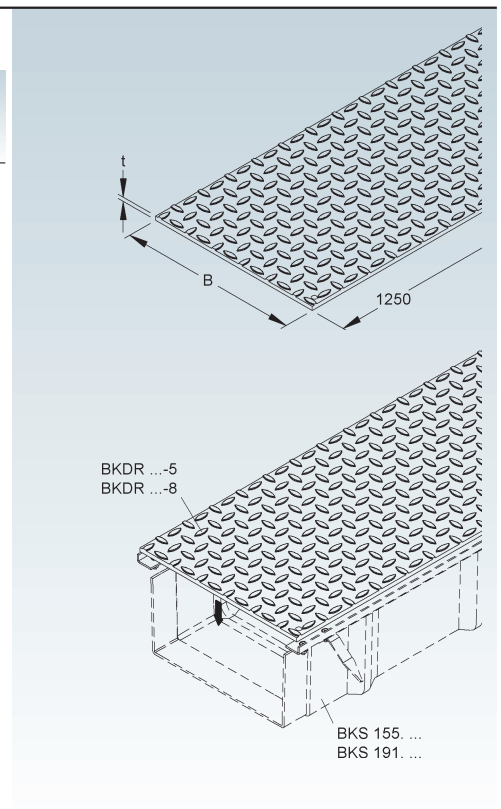
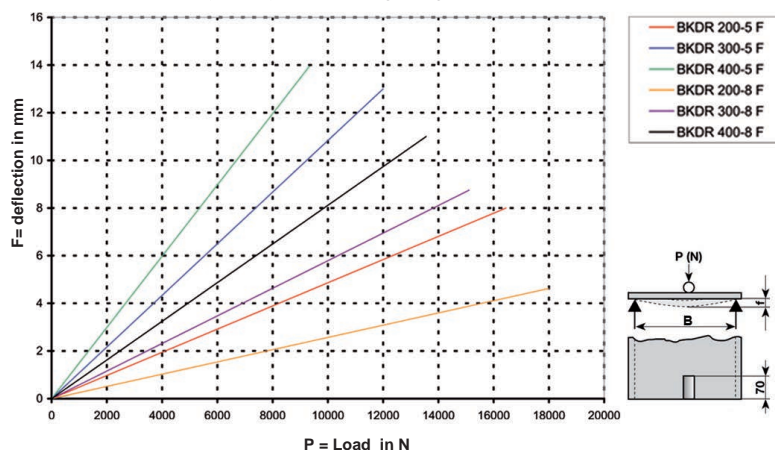


Cover for GRP-Cable Tray

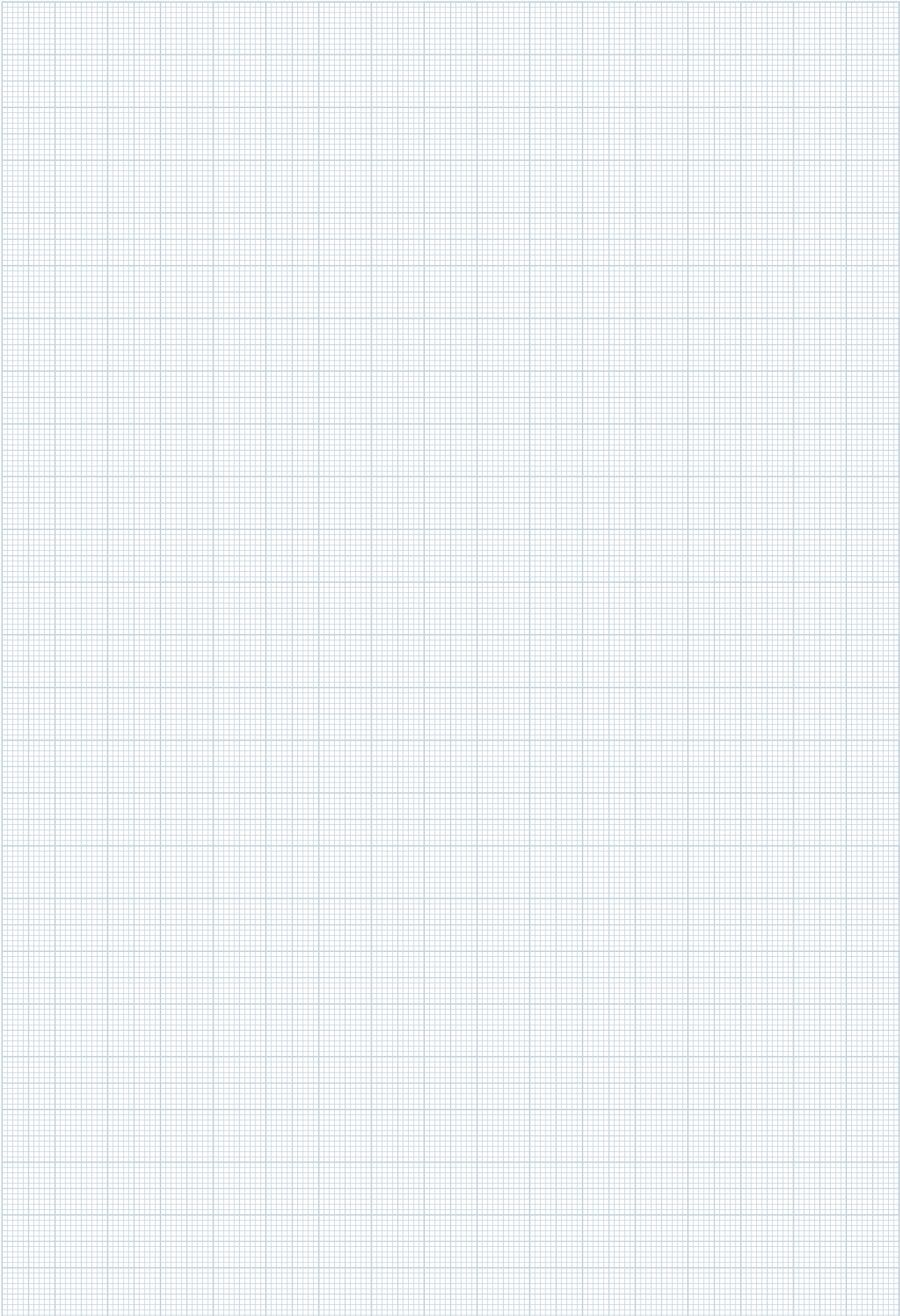
with full-surface chequer plate support

Model No.	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
F BKDR 200-5 F	250	5	956043	1.089,1	1.25 m
F BKDR 300-5 F	350	5	956050	1.524,1	1.25 m
F BKDR 400-5 F	450	5	956067	1.955,9	1.25 m
F BKDR 200-8 F	250	8	956074	1.736,5	1.25 m
F BKDR 300-8 F	350	8	956081	2.430,6	1.25 m
F BKDR 400-8 F	450	8	956098	3.121,4	1.25 m

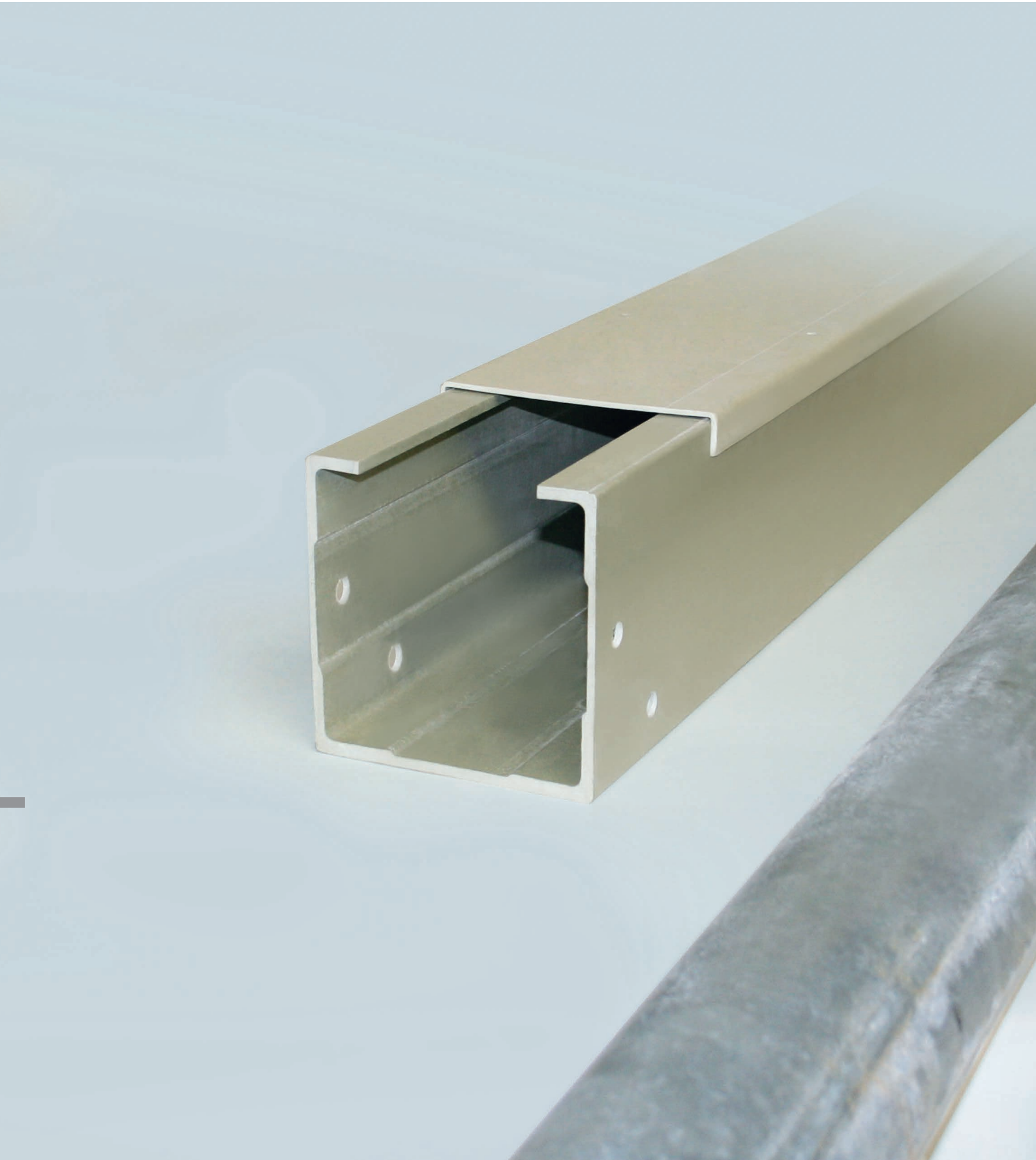
Used for: GRP-cable tray, heavy BKS... of edge height 155 mm and 191 mm



NOTES

A large, empty grid area for taking notes, consisting of a fine grid of light blue lines on a white background.

GRP CABLE SUPPORT SYSTEMS



STAND SYSTEM SP

in the side height  150

■ Cable laying system for rail transport

The innovative cable routing system is particularly suitable for use in infrastructure installations in rough and topographically difficult terrain. With the fastening and support structure made of hot-dip galvanised steel, flexible and economical installation is possible.

The low dead weight of the 6 m long trunking bases, the factory-fitted fixing holes and the factory-preassembled joint connector ensure quick and easy installation.



Stand System SP

Material

- high corrosion resistance
- electrically non-conductive, no earthing required
- dielectric strength 30 kV with certificate of IPH Berlin
- fire class V0 flame retardant according to UL 94
- halogen-free
- UV-resistant
- recyclable

Assembly

- low dead weight
- easy mounting
- all mounting holes factory-made
- delivery length 6 m
- no reworking required with correct prop spacing
- pre-assembled connector allows very quick assembly
- assembly as continuous beam allows deviations in the prop spacing; only the holes in the floor have to be made on site
- stepless height adjustment of the fixing unit
- adaptation to topographical conditions

Load

- high mechanical load capacity



Contact us
for special solutions for your project

The Stand System SP -

a compact unit for the elevation of cable laying on the railway track

- cable tray with overlapping top part
- self-supporting up to 6 m support spacing as continuous beam
- stand pile made of hot-dip galvanised steel tube
- hot-dip galvanised fixing unit with mounting plate
- access-restricting locking technology

STAND SYSTEM SP

Stand System SP

Support and fastening units

The cuff of the head plate allows infinite height adjustment to the horizontal axis. A particularly flexible assembly to rough terrain is made possible by the head plate which can be moved in 3 directions.

The entire fastening system of the Stand System SP consists of only one piece and is therefore easy and quick to assemble.

All screws are size M 10 x 25. The slotted holes in the mounting plate allow compensation in the vertical axis.



Movable head plate adjustable in 3 directions



Standard head plate adjustable in 2 directions

Covers



Cover with overlapping connection

The laterally overlapping cover and the overlapping connection minimise the penetration of water.

A longitudinal expansion gap of 8 mm must be maintained between the covers!

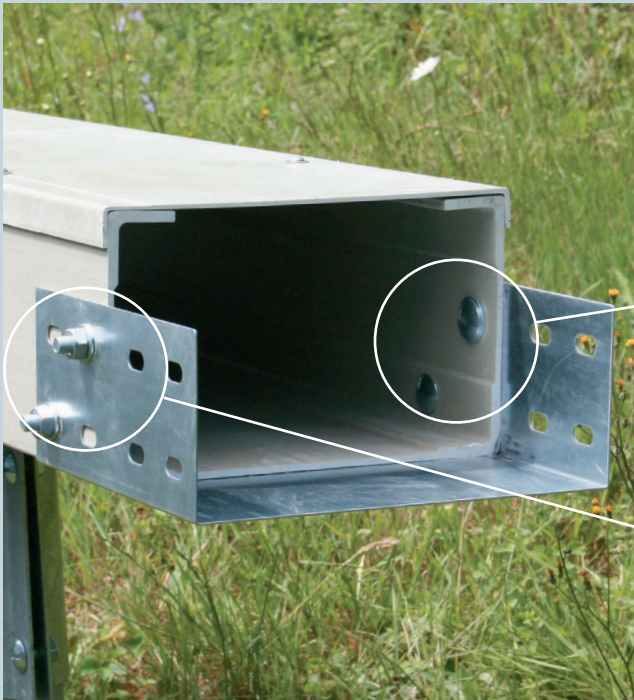
The cover is fastened to the lower part with ISO blind nuts and Torx-TR round-head screws. This special screw connection makes unwanted access more difficult.



Torx-TR round-head screw

Connector

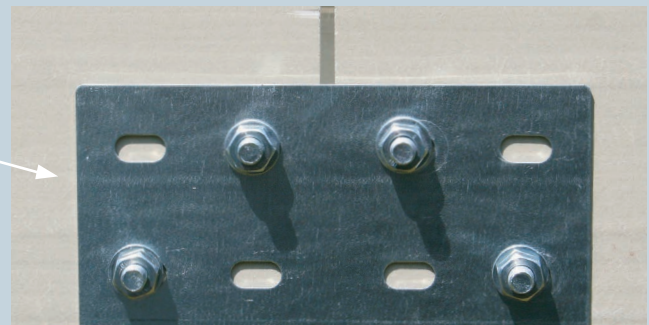
The U-shaped connector, hot-dip galvanised in accordance with DIN EN ISO 1461, is pre-assembled at the factory on one side of each GRP cable tray. The GRP cable trays are only inserted and screwed through the existing holes. The assembly can be carried out by only one person. All screws are flat round-head screws and mounted with the threaded end facing outwards to prevent damage to the cables. A length expansion gap of 8 mm between the individual GRP cable trays must be taken into account!



Factory pre-assembled connector



Mushroom-head bolts, maintained expansion gap



Arrangement of the screws

Barrier strip



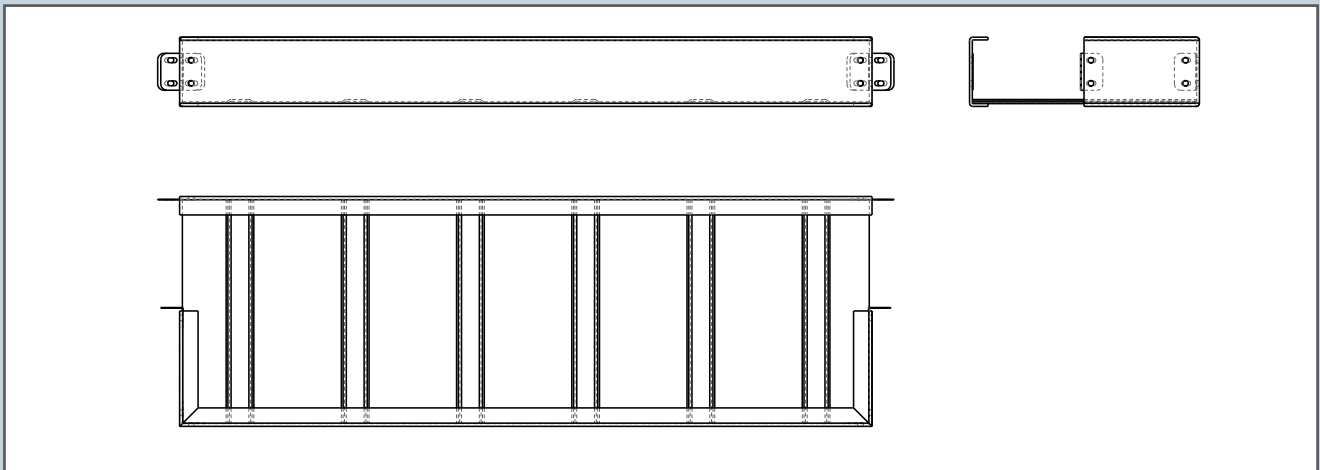
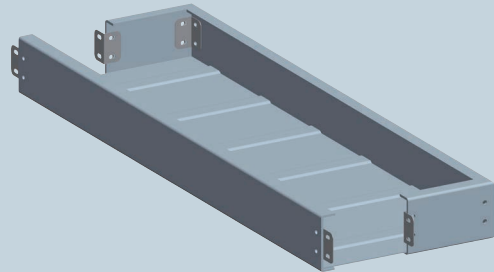
Barrier strip

A barrier strip can be used effortlessly to separate different power ranges. Without additional assembly effort, the barrier strip is held in place by inserting the cables on the lower leg. The barrier strip completely partitions off the trunking compartment from the bottom to the lid.

Stand System SP

Fitting for meshing return circuits

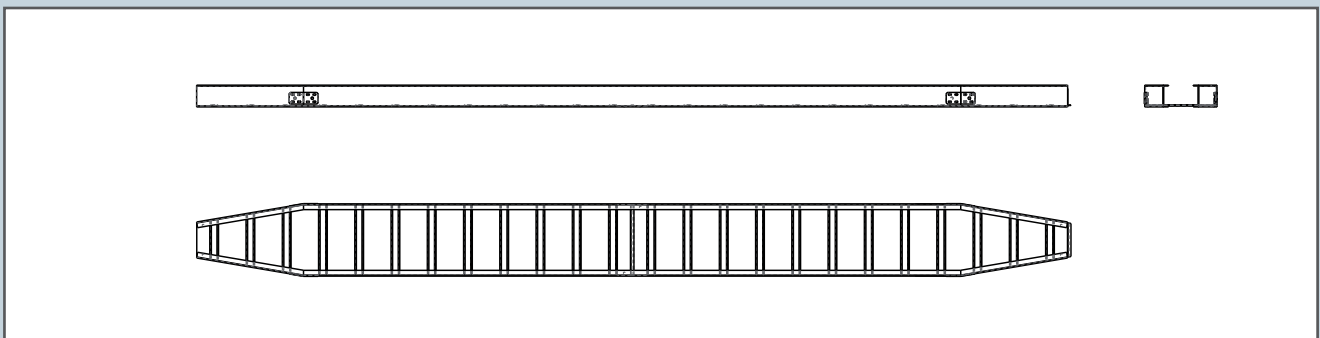
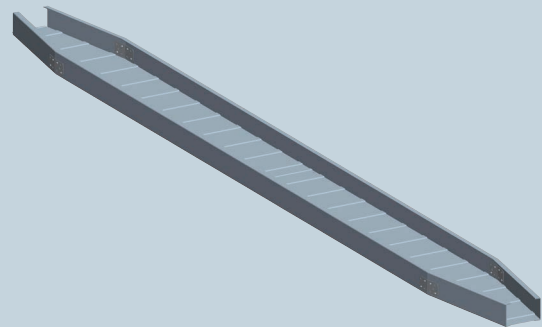
For the meshing of return circuits in the traction current corresponding asymmetrical fittings are inserted into the cable tray section. The rectangular fitting has a width of 500 mm and is 1500 mm long.



Fitting, extension for socket space

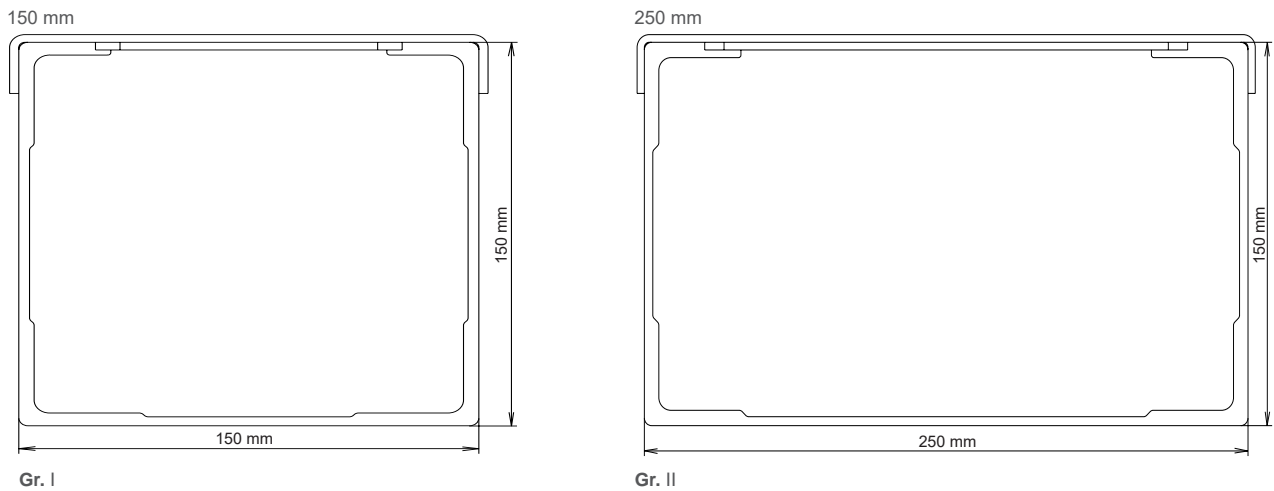
For the creation of repair sleeves, corresponding symmetrical fittings are offered, which are installed in the cable tray section at regular intervals.

The approx. 4.5 m long fitting widens the cable tray for installation to a width of 500 mm for the installation of a repair sleeve. This means that any defective cables only need to be replaced between the two fittings.



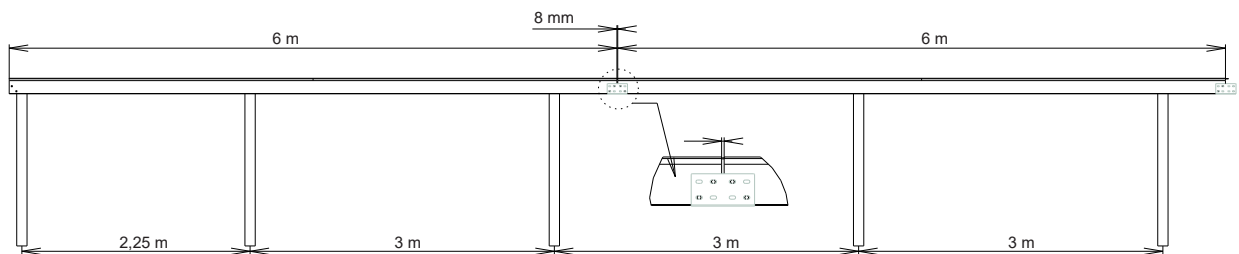
Installation Information

Profile cross-section of the cable trays of the stand system SP



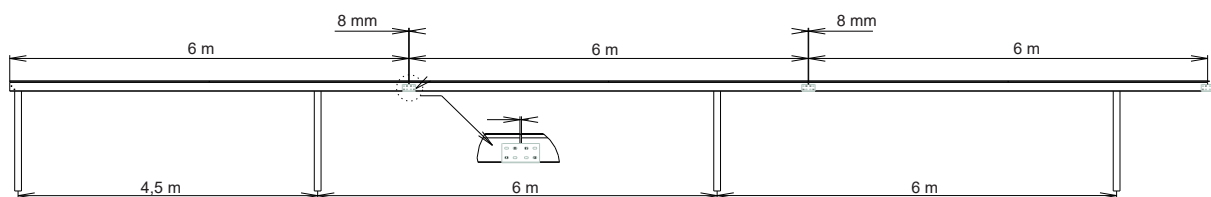
Mounting the stand system SP at a support distance of 3 m

After setting the first support, the second one is set at a distance of approx. 2.25 m according to the floor perforation. All further supports have a distance of 3 m from each other.



Mounting the stand system SP at a support distance of 6 m

After setting the first support, the second one is set at a distance of approx. 4.5 m according to the floor perforation. All further supports have a distance of 6 m from each other.



GRP CABLE SUPPORT SYSTEMS

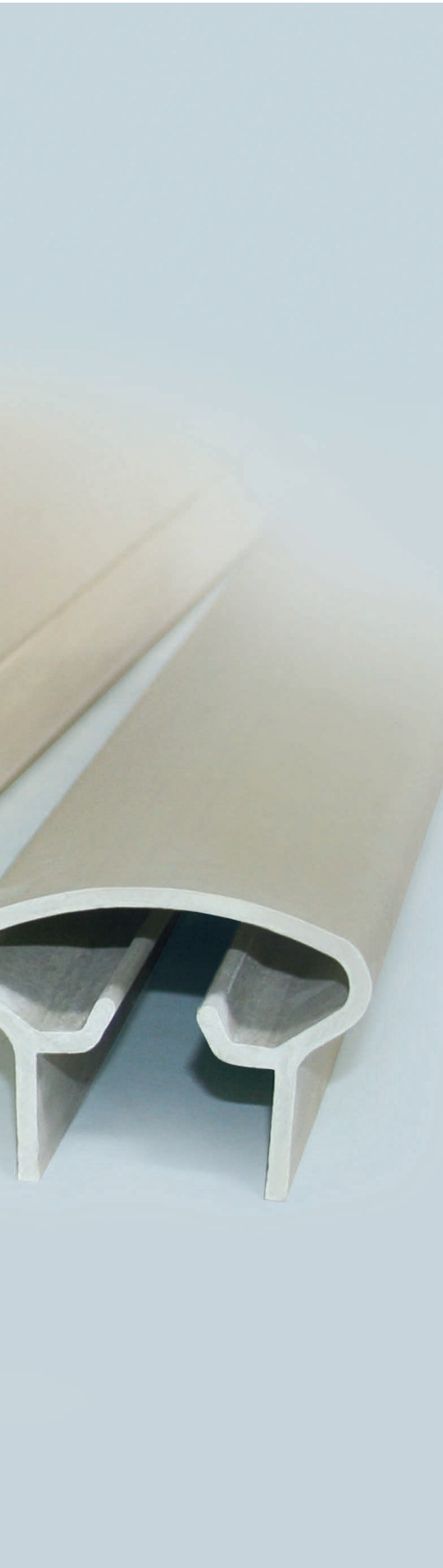


HANDRAIL SYSTEMS TUBE AND MC

- Handrail Profiles
- End Caps
- Accessories

GRP handrails are an essential contribution to self-rescue in industrial and tunnel facilities. Handrail systems specially designed for this area of application are offered for the different requirements.

Thus, it is possible to use the handrail as simple safety equipment in corridors and stairwells. Handrails with integrated, open or closed cable routing and optionally equipable safety lighting are used in a wide variety of areas.

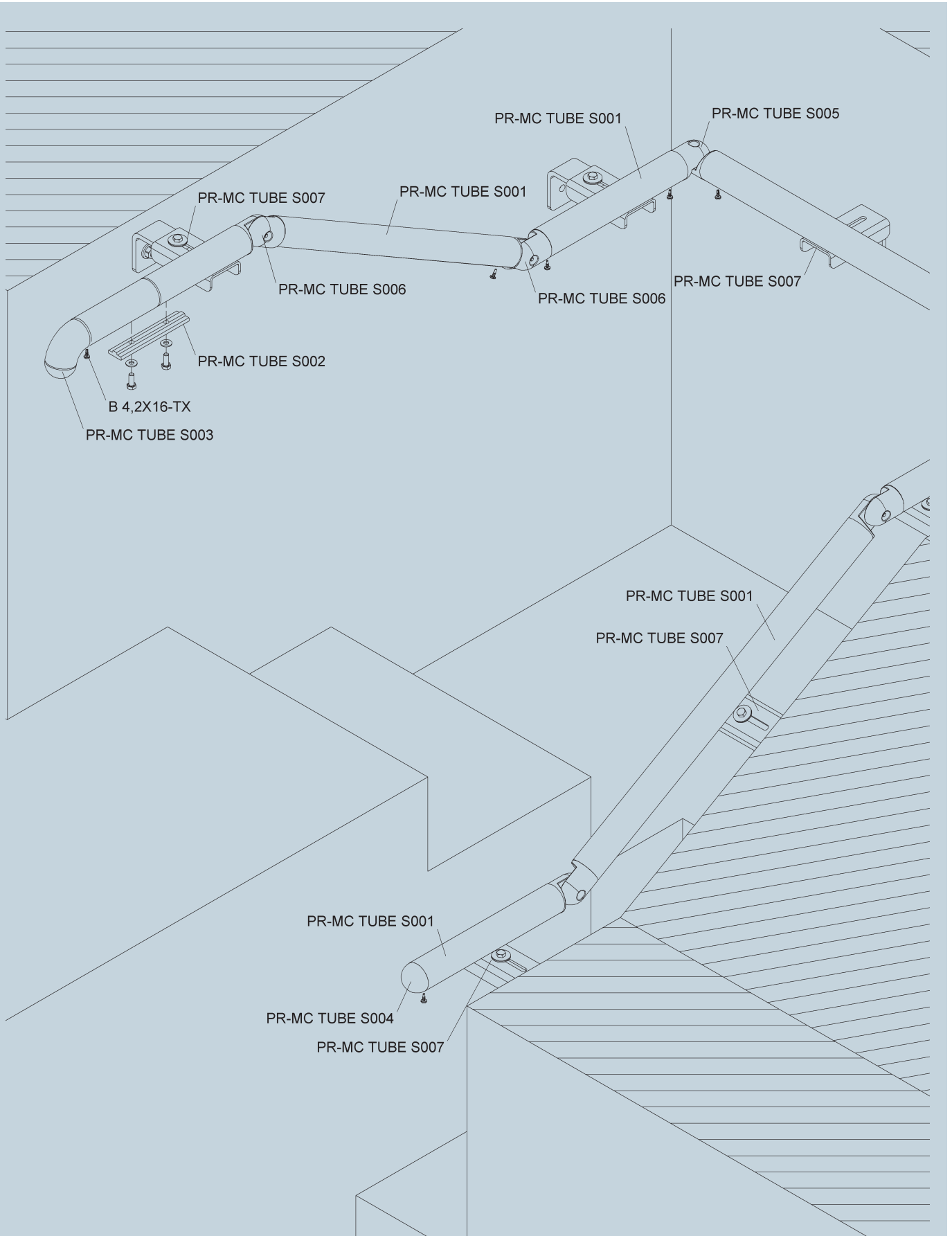


HANDRAIL SYSTEM TUBE

System overview Handrail-System TUBE

SYSTEM	★ GRP-Handrail Profile, pultruded	PR-MC TUBE S001	P. 192
ACCESSORIES	★ GRP-Splice Plate, pultruded	PR-MC TUBE S002	P. 192
	★ Ergonomic End Cap	PR-MC TUBE S003	P. 193
	★ End Cap	PR-MC TUBE S004	P. 193
	★ Joint Connector, horizontal	PR-MC TUBE S005	P. 194
	★ Joint Connector, vertical	PR-MC TUBE S006	P. 195
	★ Wall Mounting Bracket, adjustable	PR-MC TUBE S007	P. 196
	★ Oval-Head Drilling Screw	B 4.2X16-TX E3	P. 196





HANDRAIL SYSTEM TUBE

GRP-Handrail Profile

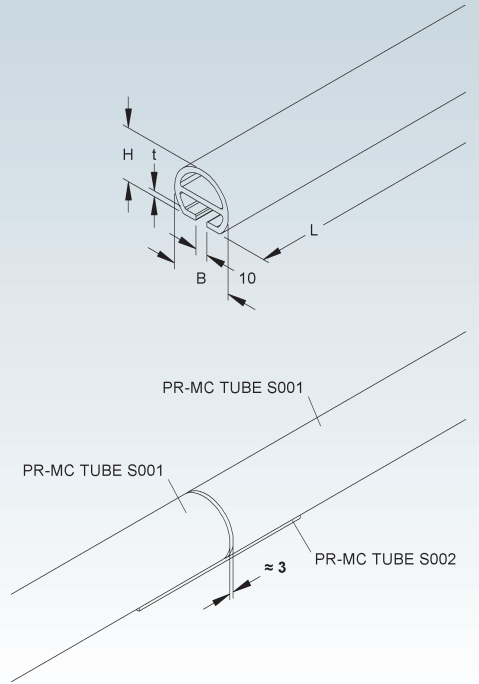
pultruded, ergonomic, half-open shape

Model No.	Colour similar RAL	Height H mm	Width B Ø mm	Material thickness (t) mm	Length L mm	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 PR-MC TUBE S001	1023	43,5	50	4,5	6000	230273	153	6 m

with continuous longitudinal slot on the underside to accommodate the connector and for fastening

During installation, an expansion distance of approx. 3 mm must be taken into account.

Recommended mounting distance ≤ 1.5 m



GRP-Splice Plate

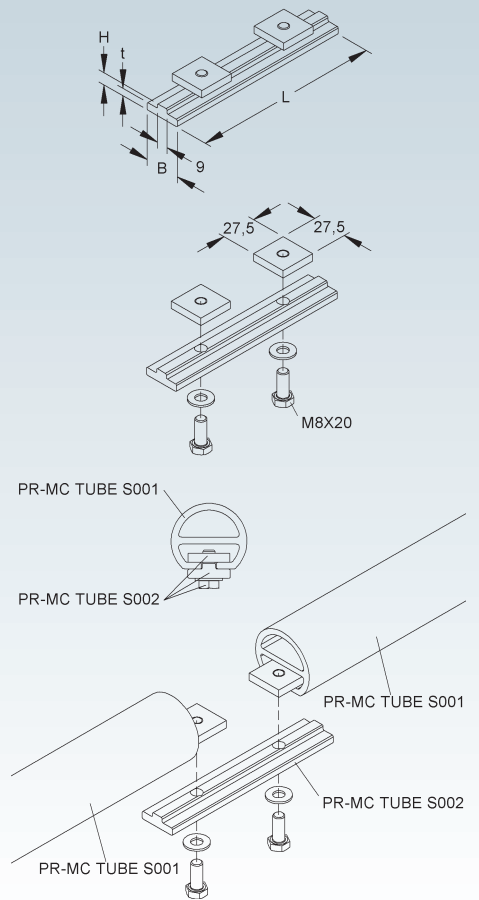
pultruded, incl. accessories

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	Length L mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC TUBE S002	1023	10	28	6	150	230280	16	1 pc.

for aligned longitudinal connection of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC TUBE S001

Delivery unassembled!



Ergonomic End Cap

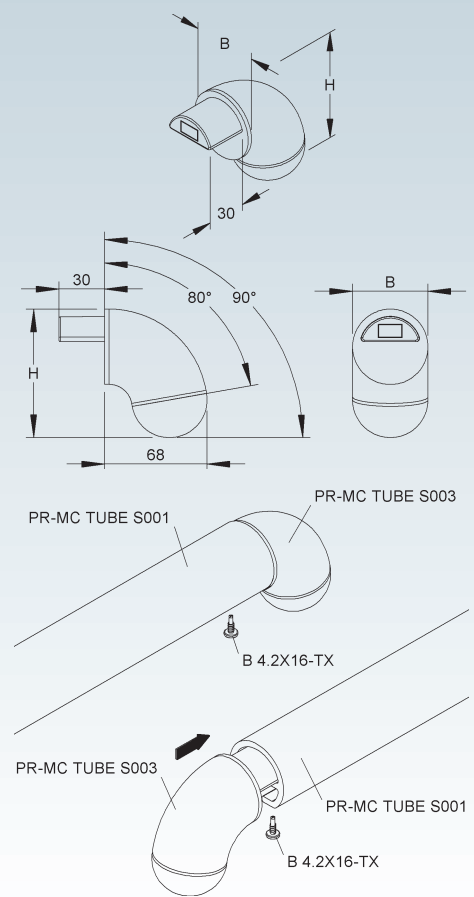
90° angled, round and closed shape

Model No.	Colour	Height H mm	Width B Ø mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
★ K01 PR-MC TUBE S003	black	85	50	230297	9	1 pc.

ergonomic shape for smooth transition to the GRP-handrail to cover the cross-section edge at the beginning/end of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC TUBE S001

The mounting is done with a B 4.2X16-TX E3 self-drilling screw. This is not included in the scope of delivery, please order separately.



End Cap

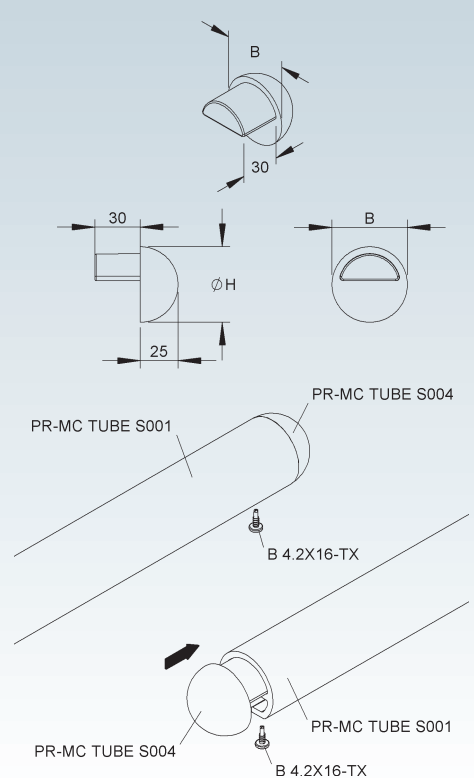
Hemisphere, closed shape

Model No.	Colour	Height H Ø mm	Width B Ø mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
★ K01 PR-MC TUBE S004	black	50	50	230310	3	1 pc.

to cover the cross-section edge at the beginning/end of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC TUBE S001

The mounting is done with a B 4.2X16-TX E3 self-drilling screw. This is not included in the scope of delivery, please order separately.



HANDRAIL SYSTEM TUBE

Joint Connector, horizontal

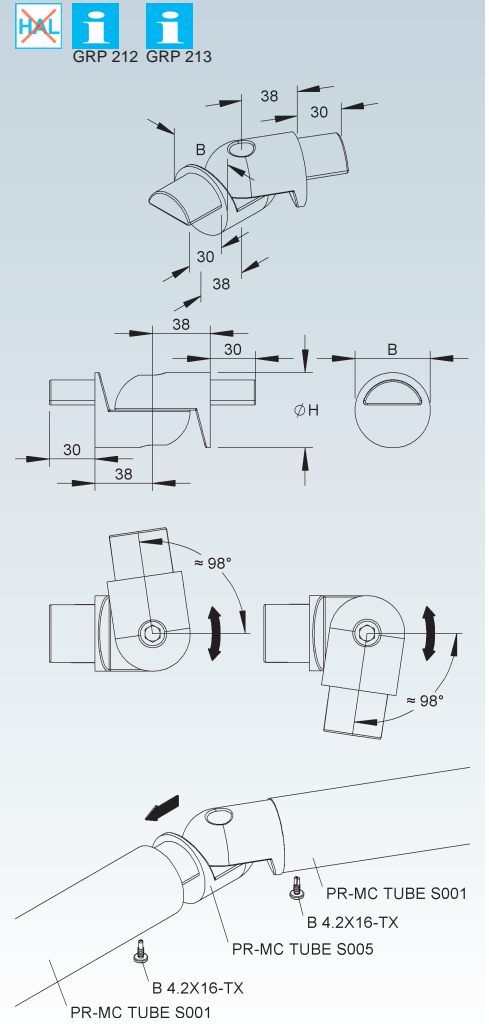
with horizontal adjustment range $\pm \approx 98^\circ$

Model No.	Colour	Height H Ø	Width B Ø	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
		mm	mm			
★ K01 PR-MC TUBE S005	black	50	50	230327	12	1 pc.

for creating horizontal changes of direction of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC TUBE S001

The mounting is done with two B 4.2X16-TX E3 self-drilling screw. These are not included in the scope of delivery, please order separately.



Joint Connector, vertical

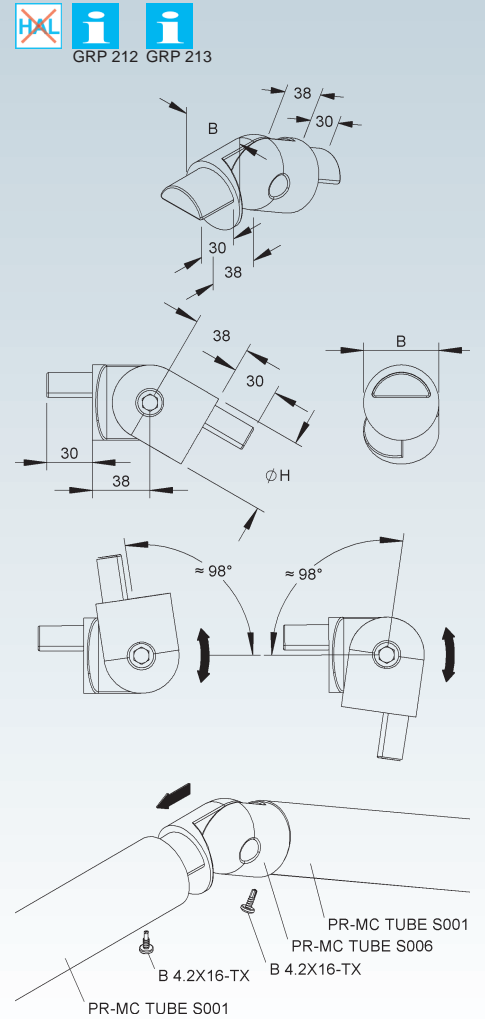
with horizontal adjustment range $\pm \approx 98^\circ$

Model No.	Colour	Height H Ø mm	Width B Ø mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
★ K01 PR-MC TUBE S006	black	50	50	230334	12	1 pc.

for creating vertical changes of direction of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC TUBE S001

The mounting is done with two B 4.2X16-TX E3 self-drilling screw. These are not included in the scope of delivery, please order separately.



HANDRAIL SYSTEM TUBE

Wall Mounting Bracket

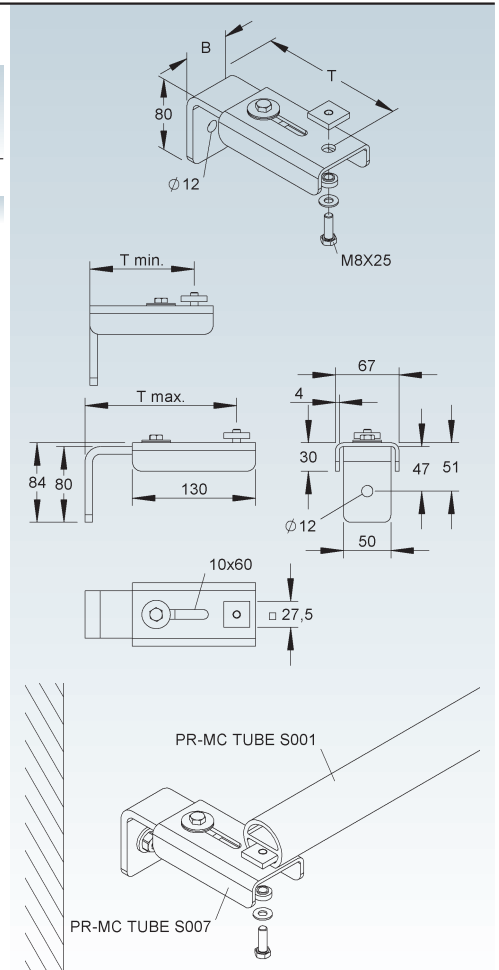
adjustable, incl. accessories

Model No.	Height H mm	Width B mm	Wall distance T min./max. mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
F PR-MC TUBE S007	50	50	110 - 160	230341	102	1 pc.

for the lateral handrail fixing on site

Used for: GRP-handrail profile PR-MC TUBE S001

Recommended mounting distance ≤ 1.5 m



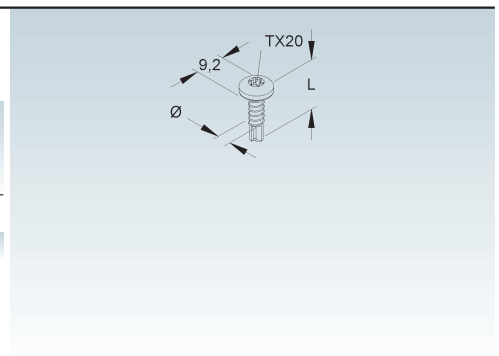
Oval-Head Drilling Screw with Hexagon Socket T20 similar to DIN EN ISO 15481

with drill point and sheet metal screw thread

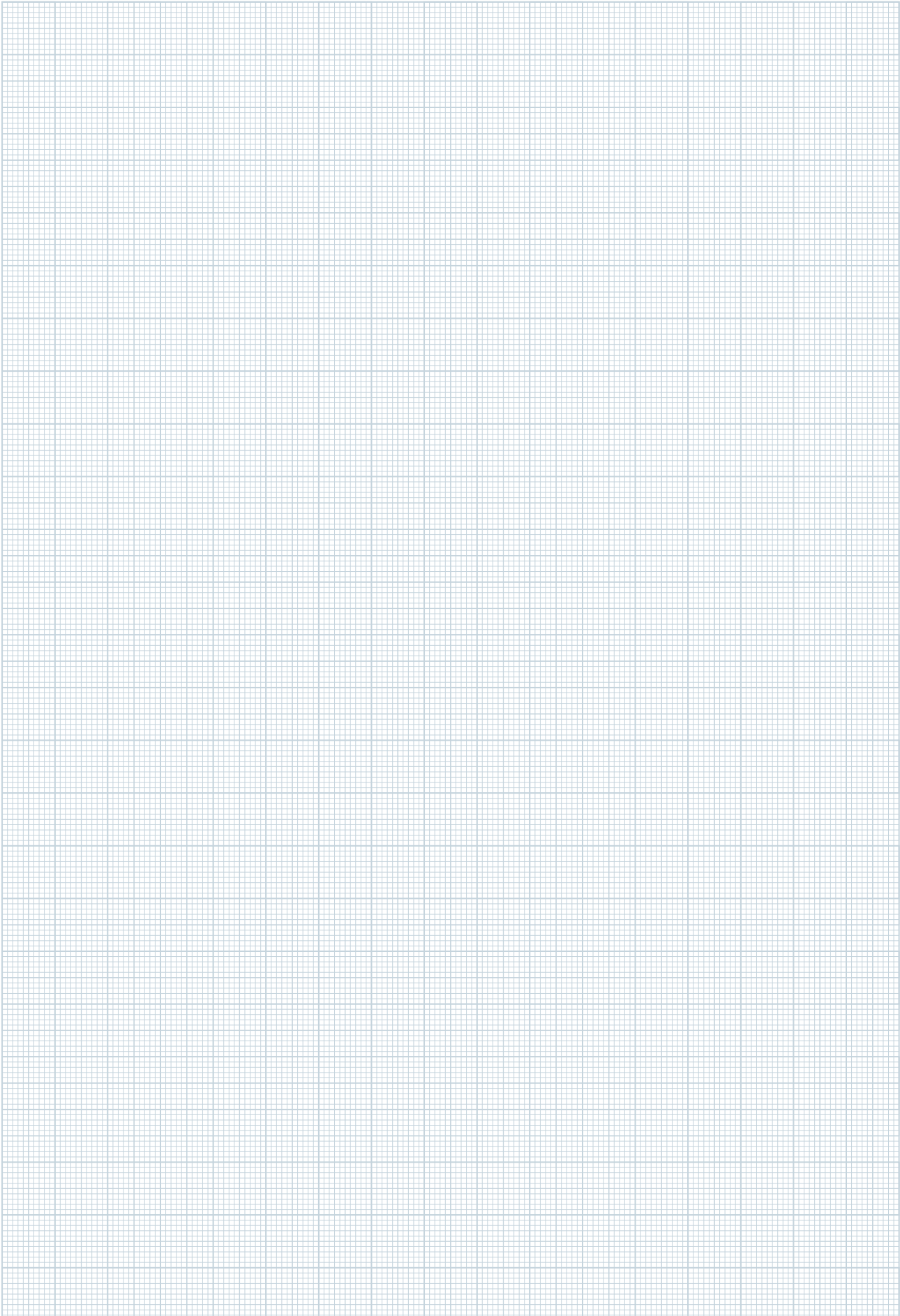
Model No.	Nominal- \varnothing mm	Length L mm	Resistance class	Actuator size	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E3 B 4.2X16-TX E3	4,2	16	-	TX20	230266	0,17	1000 pcs.

for fastening the GRP-handrail profile fittings and end caps

Used for: ergonomic end cap PR-MC TUBE S003, end cap PR-MC TUBE S004, joint connector, horizontal PR-MC TUBE S005 and joint connector, vertical PR-MC TUBE S006
GRP-end cap PR-MC 10 KE, GRP-end cap PR-MC 22 KE, GRP-half end cap PR-MC 22 KE/P and GRP-half end cap PR-MC 30 KE

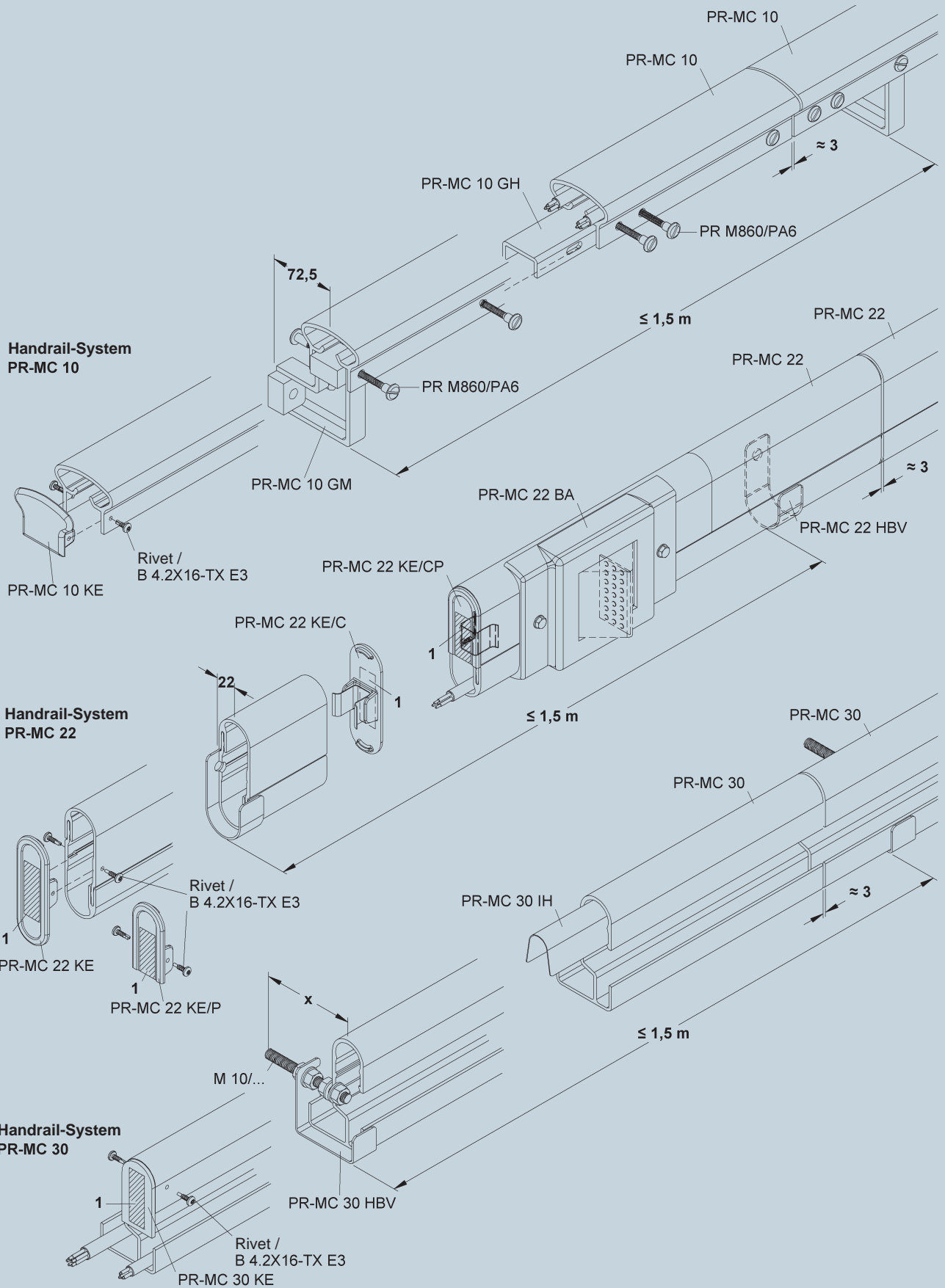


NOTES

A large, empty grid area for taking notes, consisting of a fine grid of light blue lines on a white background. The grid covers most of the page area below the 'NOTES' header.

System overview Handrail-System MC

SYSTEM	GRP-Handrail Profile, pultruded	PR-MC 10	P. 200
	GRP-Handrail Profile, pultruded, two-piece	PR-MC 22	P. 202
ACCESSORIES	GRP-Splice Plate, pultruded	PR-MC 10 GH	P. 200
	GRP-Wall Fastening Angle, pressed	PR-MC 10 GM	P. 201
	GRP-End Cap, pressed	PR-MC 10 KE	P. 201
	Plastic Bolt	PR M860/PA6	P. 201
	GRP-End Cap, pressed	PR-MC 22 KE	P. 202
	GRP-End Cap, clipable, pressed	PR-MC 22 KE/C	P. 203
	GRP-Half End Cap, pressed	PR-MC 22 KE/P	P. 203
	GRP-Half End Cap, clipable, pressed	PR-MC 22 KE/CP	P. 204
	Support Bracket	PR-MC 22 HBV	P. 204
	GRP-Luminaire Support, pressed	PR-MC 22 BA	P. 205
	GRP-Handrail Profile, pultruded	PR-MC 30	P. 206
	Connector, clipbar	PR-MC 30 IH	P. 206
	GRP-Half End Cap, pressed	PR-MC 30 KE	P. 207
	Support Bracket	PR-MC 30 HBV	P. 207
	★ Oval-Head Drilling Screw	B 4.2X16-TX E3	P. 207



HANDRAIL SYSTEM MC

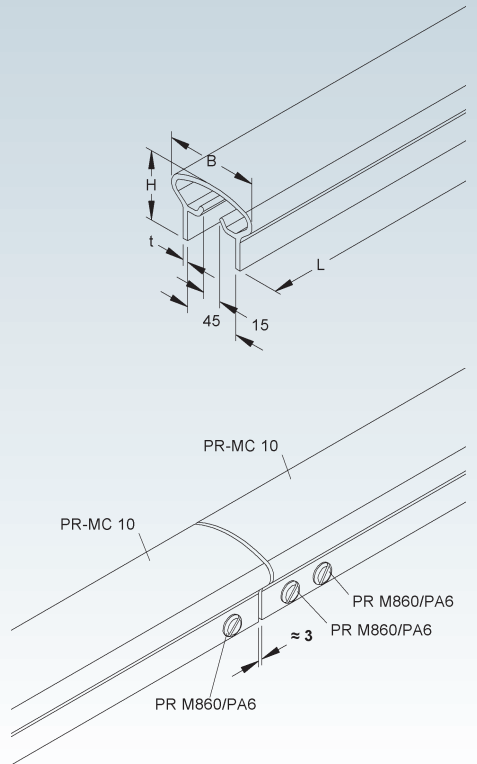
GRP-Handrail Profile

pultruded, with integrated cable duct

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 PR-MC 10	7032	56	75	6000	4	773	965489	135	6 m

with continuous 15 mm wide longitudinal slot on the underside to accommodate the cable for the integrated cable duct
with continuous 45 mm wide longitudinal slot on the underside to accommodate the connector as well as for fastening

During installation, an expansion distance of approx. 3 mm must be taken into account.
Recommended mounting distance ≤ 1.5 m



GRP-Splice Plate

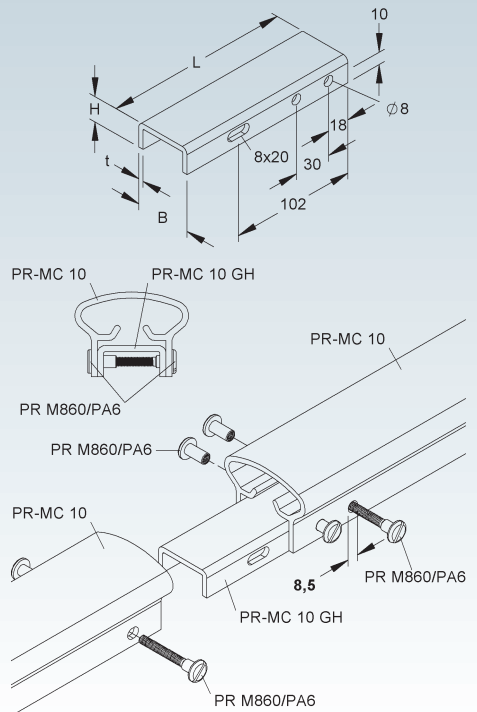
pultruded

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 10 GH	7032	20,5	45	150	4	968367	9	1 pc.

for aligned longitudinal connection of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC 10

The fastening is done with three plastic bolts PR M860/PA6. These are not included in the scope of delivery, please order separately.



GRP-Wall Fastening Angle

pressed

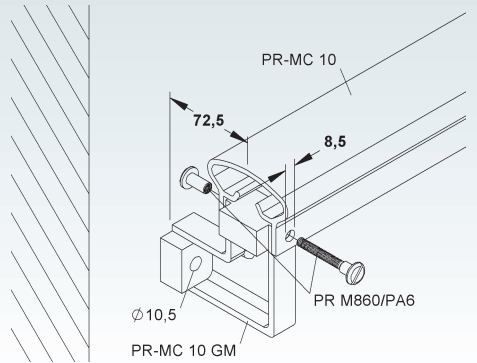
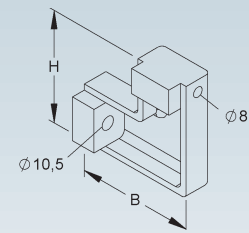
Model No.	Colour similar RAL	Height H mm	Width B mm	Wall distance T fix mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 10 GM	7032	90	95	72,5	968374	15,6	1 pc.

for on-site fastening of the GRP-handrail profile to the structure

Used for: GRP-handrail profile PR-MC 10

Recommended mounting distance ≤ 1.5 m

Fixing with the GRP-handrail profile is done with the plastic bolt PR M860/PA6. This is not included in the scope of delivery, please order separately.



GRP-End Cap

pressed

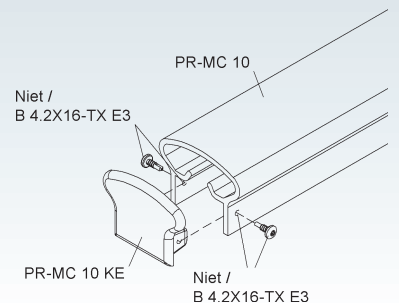
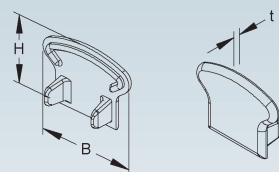
Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 10 KE	7032	55	74	5	968381	10	1 pc.

for covering the GRP-handrail profile ends

Used for: GRP-handrail profile PR-MC 10

The GRP-end cap must be riveted on site.

Alternatively, the fastening can be done with two pan-head screws with hexagon socket B 4.2X16-TX E3. These are not included in the scope of delivery, please order separately.

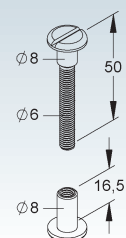


Plastic Bolt

Model No.	Colour	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K01 PR M860/PA6	black	968398	135	1 pc.

for fastening the GRP-handrail profile to the GRP-wall fastening angle and for fastening the GRP-splice plate

Used for: GRP-splice plate PR-MC 10 GH and GRP-wall fastening angle PR-MC 10 GM



HANDRAIL SYSTEM MC

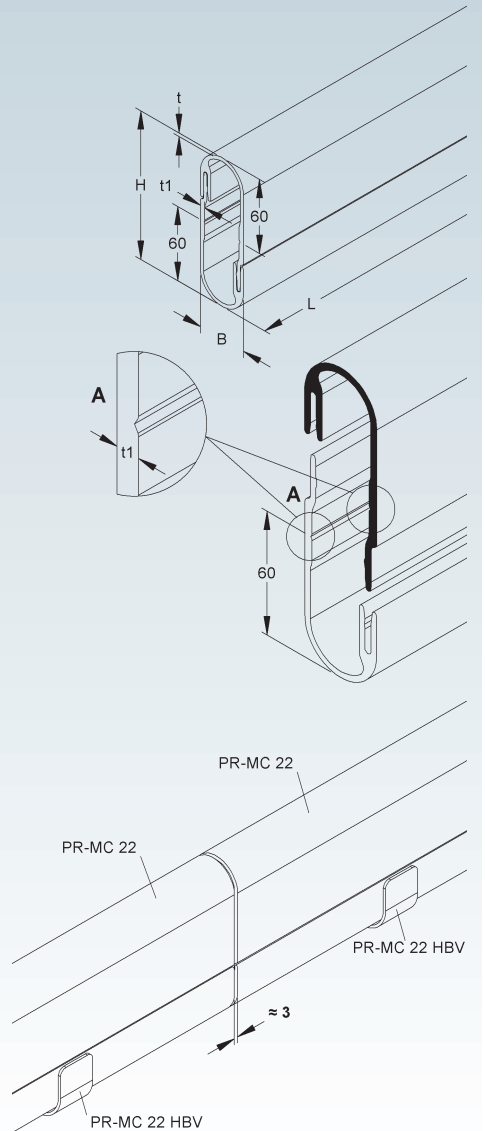
GRP-Handrail Profile

pultruded, two-piece, with integrated cable duct

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thicknesses t/t1 mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 PR-MC 22	7032	120	40	6000	3/4	2720	965496	900	6 m

two identical joining parts result in a form-fitting, oval and closed shape, with continuous notches as drilling aids in the GRP-handrail profile backs of the joining parts for mounting with the E30 retaining bracket on the wall

During installation, an expansion distance of approx. 3 mm must be taken into account.
Recommended mounting distance ≤ 1.5 m



GRP-End Cap

pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 22 KE	7032	118,5	39,5	4	966172	3,4	1 pc.

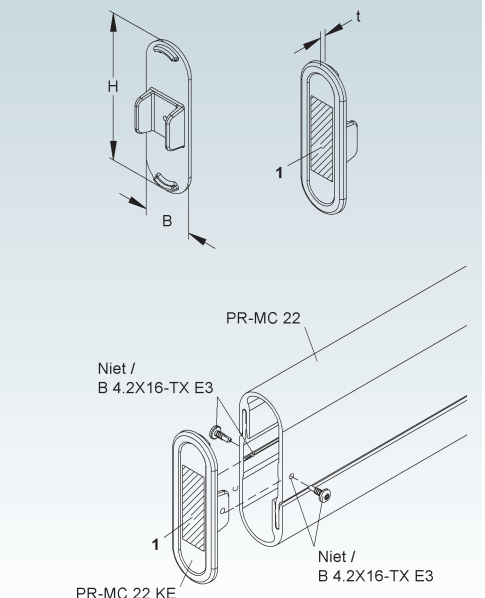
for covering the GRP-handrail profile ends

**Reflectors (1) can be fitted at the factory especially to increase safety!
Please order the reflector separately.**

Used for: GRP-handrail profile PR-MC 22

The GRP-end cap must be riveted on site.

Alternatively, the fastening can be done with two pan-head screws with hexagon socket B 4.2X16-TX E3. These are not included in the scope of delivery, please order separately.



GRP-End Cap, clipable

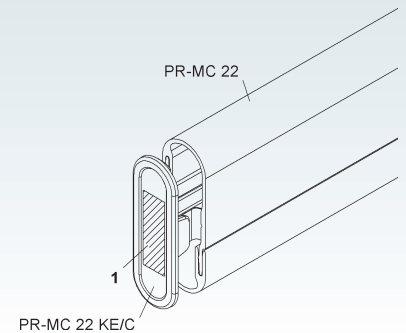
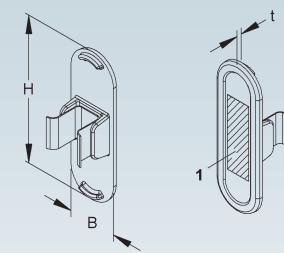
pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 22 KE/C	7032	118,5	39,5	4	966196	3,9	1 pc.

for covering the GRP-handrail profile ends

**Reflectors (1) can be fitted at the factory especially to increase safety!
Please order the reflector separately.**

Used for: GRP-handrail profile PR-MC 22



GRP-Half End Cap

pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 22 KE/P	7032	78,5	39,5	4	966189	1,6	1 pc.

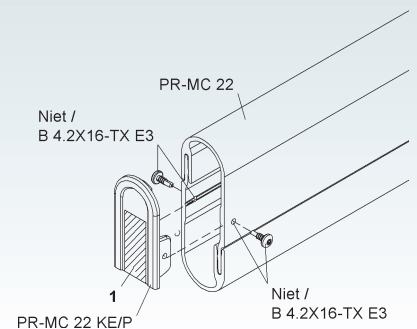
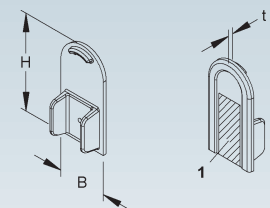
for partial covering of the GRP-handrail profile ends

**Reflectors (1) can be fitted at the factory especially to increase safety!
Please order the reflector separately.**

Used for: GRP-handrail profile PR-MC 22

The GRP-end cap must be riveted on site.

Alternatively, the fastening can be done with two pan-head screws with hexagon socket B 4.2X16-TX E3. These are not included in the scope of delivery, please order separately.



HANDRAIL SYSTEM MC

GRP-Half End Cap, clipable

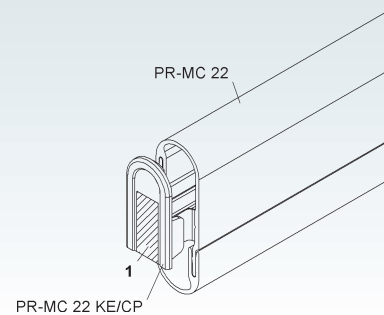
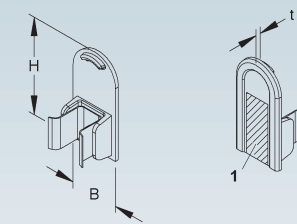
pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 22 KE/CP	7032	78,5	39,5	4	966202	1,8	1 pc.

for partial covering of the GRP-handrail profile ends

**Reflectors (1) can be fitted at the factory especially to increase safety!
Please order the reflector separately.**

Used for: GRP-handrail profile PR-MC 22



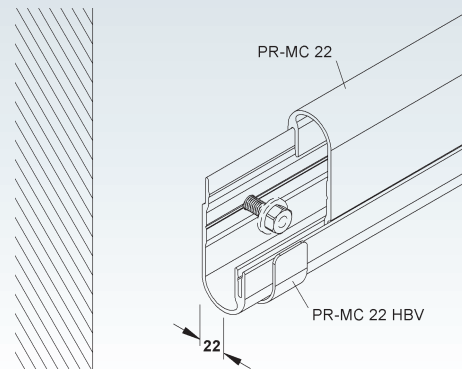
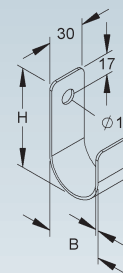
Support Bracket

Model No.	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E3 PR-MC 22 HBV	80	45	2	966219	9	1 pc.

for on-site fastening of the GRP-handrail profile to the structure

Used for: GRP-handrail profile PR-MC 22

Recommended mounting distance ≤ 1.5 m



GRP-Luminaire Support

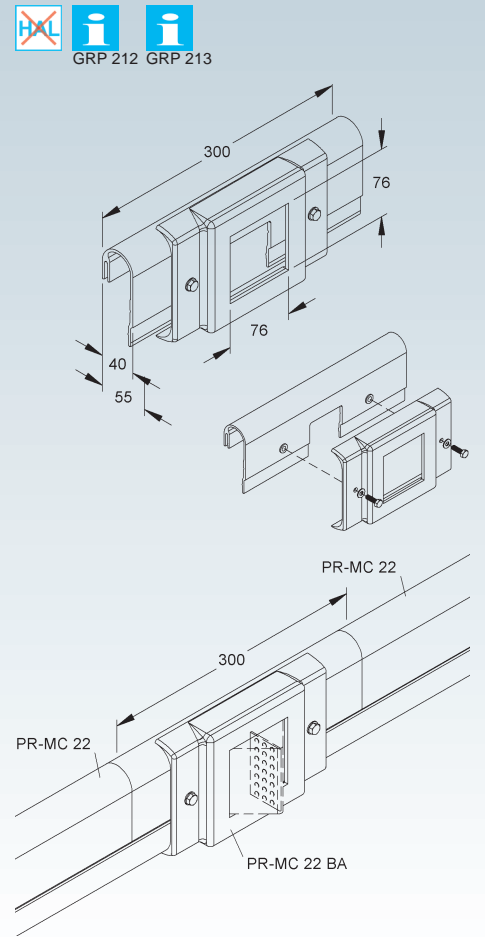
pressed, empty support, can be snapped on

Model No.	Colour similar RAL	installation width mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 22 BA	7032	300	966158	75	1 pc.

for escape route indication on the GRP-handrail profile for recessed luminaires with dimension 76 x 76 mm

Used for: GRP-handrail profile PR-MC 22

Consisting of GRP handrail profile upper part with recess as well as screw-on cover frame to accommodate the escape route luminaire, including fixing material.



HANDRAIL SYSTEM MC

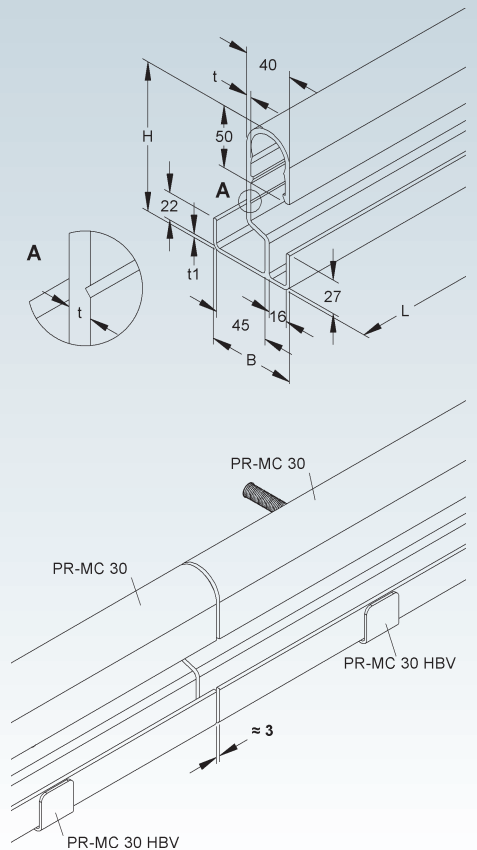
GRP-Handrail Profile

pultruded, with two integrated cable ducts

Model No.	Colour similar RAL	Height H mm	Width B mm	Length L mm	Material thicknesses t/t1 mm	Usable cross section mm ²	EAN code	Weight in kg per 100 m	Smallest packaging unit
K23 PR-MC 30	1003	120	71	6000	4/3	1647	965502	450	6 m

for separate routing of power and low-current cables with continuous notch as drilling aid in the GRP-handrail profile for mounting

During installation, an expansion distance of approx. 3 mm must be taken into account.
Recommended mounting distance ≤ 1.5 m

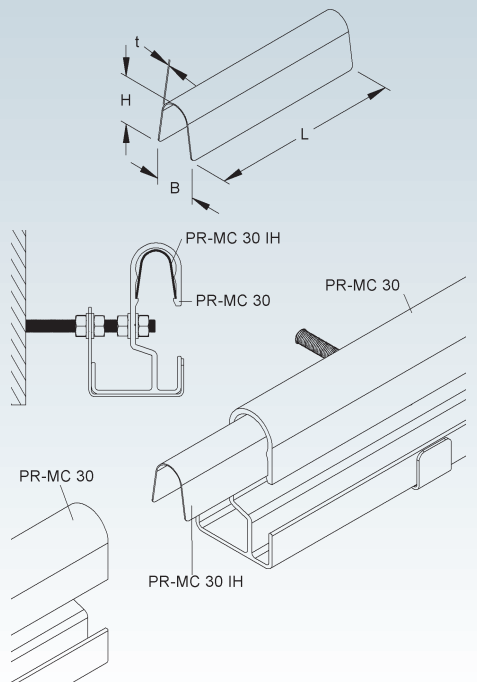


Connector, clipable

Model No.	Height H mm	Width B mm	Length L mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E4 PR-MC 30 IH	28,5	32	150	0,8	966226	9	1 pc.

for aligned longitudinal connection of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC 30



GRP-Half End Cap

pressed

Model No.	Colour similar RAL	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
K23 PR-MC 30 KE	1003	75	39	4	966233	4,1	1 pc.

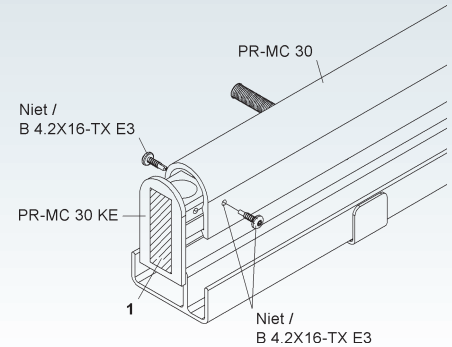
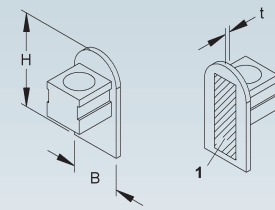
for partial covering of the GRP-handrail profile ends

**Reflectors (1) can be fitted at the factory especially to increase safety!
Please order the reflector separately.**

Used for: GRP-handrail profile PR-MC 30

Alternatively, the fastening can be done with two pan-head screws with hexagon socket B 4.2X16-TX E3. These are not included in the scope of delivery, please order separately.

The GRP-end cap must be riveted on site.



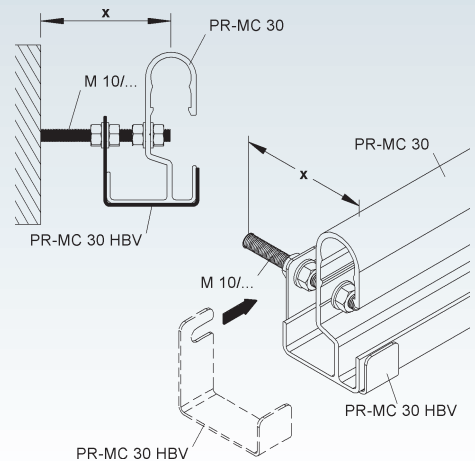
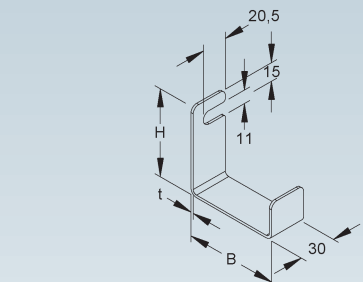
Support Bracket

Model No.	Height H mm	Width B mm	Material thickness (t) mm	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E3 PR-MC 30 HBV	71	75	2	968404	135	1 pc.

for on-site fastening of the GRP-handrail profile

Used for: GRP-handrail profile PR-MC 30

Recommended mounting distance ≤ 1.5 m



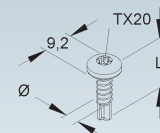
Oval-Head Drilling Screw with Hexagon Socket T20 similar to DIN EN ISO 15481

with drill point and sheet metal screw thread

Model No.	Nominal- \varnothing mm	Length L mm	Resistance class	Actuator size	EAN code	Weight in kg per 100 pcs.	Smallest packaging unit
E3 B 4.2X16-TX E3	4,2	16	-	TX20	230266	0,17	1000 pcs.

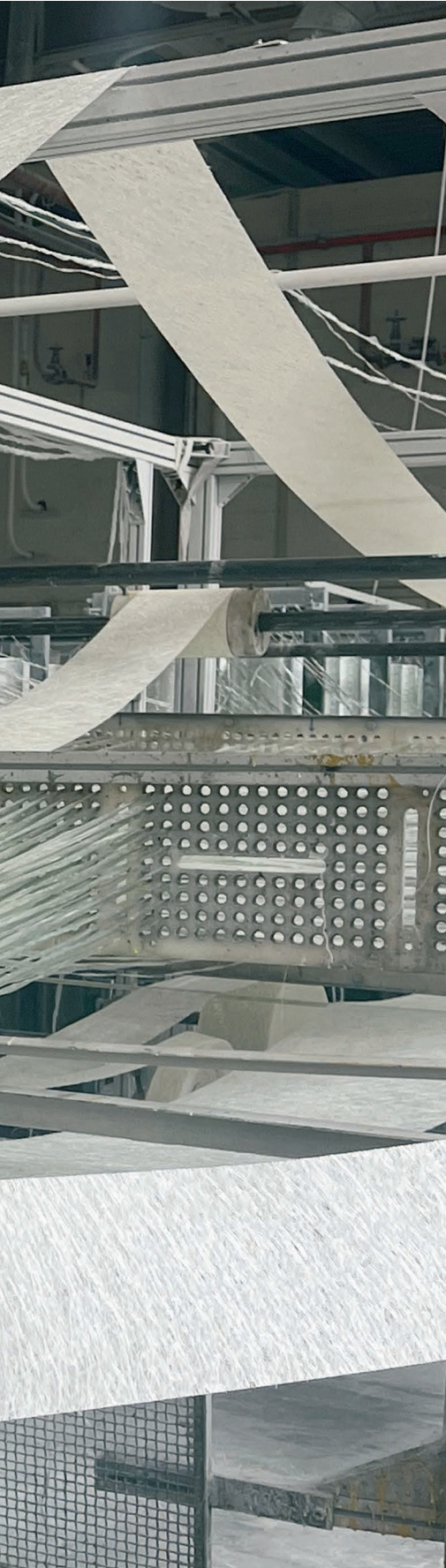
for fastening the GRP-handrail profile fittings and end caps

Used for: ergonomic end cap PR-MC TUBE S003, end cap PR-MC TUBE S004, joint connector, horizontal PR-MC TUBE S005 and joint connector, vertical PR-MC TUBE S006
GRP-end cap PR-MC 10 KE, GRP-end cap PR-MC 22 KE, GRP-half end cap PR-MC 22 KE/P and GRP-half end cap PR-MC 30 KE



GRP CABLE SUPPORT SYSTEMS





INFORMATIONS

- Thermoset resins
- Plastic
- Galvanising types

On the following pages, we have compiled the most important information on EBO brand GRP systems for you.

For further information, we are also happy to be there for you personally. Simply call us on +33 3 82 44 01 07 or send an e-mail to info@ebo-systems.com.



Several of our cable support systems have been tested for electromagnetic compatibility (EMV) by the VDE Institute.

Thermoset resins

The thermoset resins are partly used in the production of the glass fibre reinforced products to bind the fibres together in order to obtain a strong, rigid product after curing. Thermosets are plastics that cannot be deformed after they have cured.

The resin used determines the chemical and physical product properties. It influences the mechanical resistance, the insulating properties, the corrosion resistance, the behaviour under the influence of temperature and the fire behaviour.

For the production of GRP cable support systems, pure resins are not used in practical applications for cost reasons, to safeguard the manufacturing processes and for special designs (colour design, antistatic requirements, etc.). Systems with resin formulations specially tailored to the product are used. Ebo's industrial know-how lies in its ability to formulate the optimum system from a wide range of customer requirements and thus offer a product adapted to the application. The following resins are mainly used in ebo products.

Polyester resin

In the area of standard products and applications, polyester resin is used almost exclusively. It combines all the properties required for GRP cable support systems in an optimal price/performance ratio.

Polyester resin with carbon fibres

For special applications in highly explosive environments, products with antistatic properties are required. To meet these requirements, extremely high-quality polyester resins with carbon additives are used.

Acrylic resin (AC)

The high-quality acrylic resin is used in niche areas where increased demands are made on fire behaviour. The fire behaviour requirements therefore depend on the location where the products are used: In tunnels, outdoors or in trains, everywhere where DFV EN 45545 is required... . Which resins are suitable according to the requirements of the standard should be clarified individually in each case - either standard polyester resin or acrylic resin (AC).

Vinyl ester resin (VY)

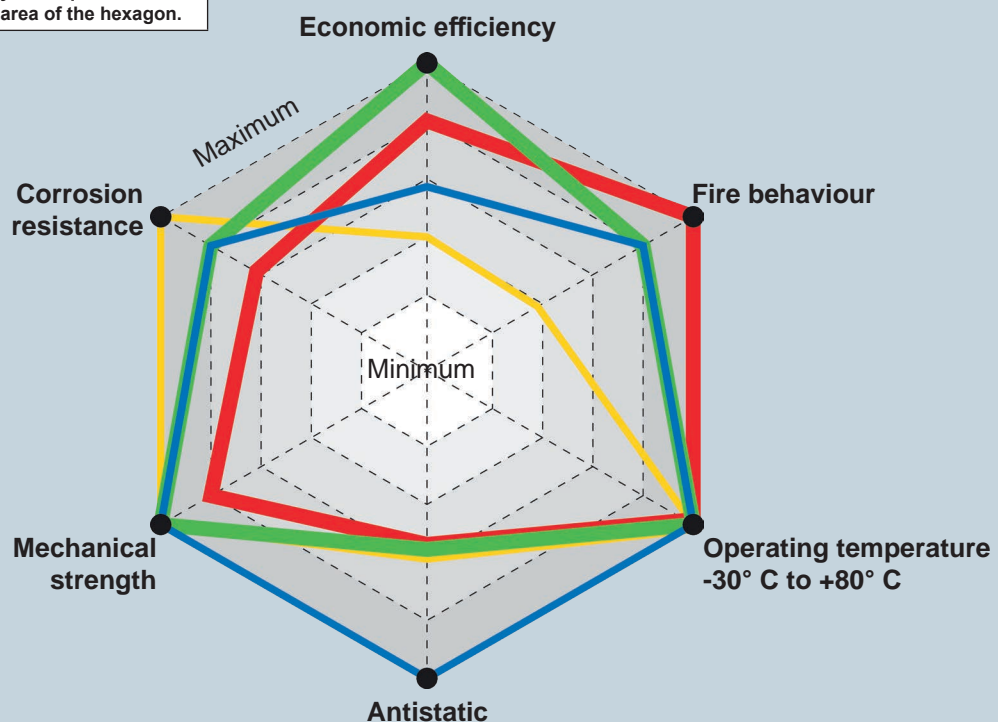
Due to their high chemical resistance, formulations of very high quality vinyl ester resin are used almost exclusively in products for the chemical industry. The products are therefore particularly suitable for use in environments of chemicals with high concentrations.

Resin selection according to the requirements

Standard requirements		
	Application area e.g. near the sea, on drilling platforms	Application e.g. in tunnels
Environment	High atmospheric corrosion	Fire hazard in confined and corrosive environments
Advantage	very long service life, good fire behaviour, optimum economy	Excellent fire behaviour for high safety
Product-proposal:	Polyester resin flame retardant, self-extinguishing, halogen-free	Acrylic resin flame retardant, self-extinguishing, halogen-free

Special requirements		
	Area of application e.g. in EX areas (expl. gases), in mines	Application e.g. in galvanising shop
Environment	high explosive environment	Chemicals with high concentration (e.g. H ₂ SO ₄ , HCl, ...)
Advantage	antistatic property	High chemical resistance
Product-proposal:	Polyester resin with carbon fibres halogen-free	Vinyl ester resin halogen-free

The optimal solution for your requirement is displayed in the outside area of the hexagon.



Plastic/Elastomer

Plastic changes

their properties with temperature fluctuations. For this reason, plastic/elastomer articles should be stored below freezing in a warmer environment before processing to ensure full functionality

Catalogue icon	Abbr	Material description	Operating temperature	Mechanical properties	Range of application (examples)	Stress cracking
K01	PA	Polyamide, halogen-free	-30°C to 80°C	stiff, hard, very solid, very tough, abrasion-resistant	Cable glands, collecting holder, cable bracket, plug terminals	low
K02	PS	Polystyrene, halogen-free	-30°C to 60°C	brittle, notch-sensitive, stiff, very hard	Cable glands, row clamps, counter trough	powerful
K03	PE	Polyethylene, halogen-free	-40°C to 80°C	soft to stiff, tough, low strength	Protective caps, round clamps, counter trough	powerful
K04	PP	Polypropylene, halogen-free	-40°C to 90°C	form stiff, hard, solid, lower notched impact strength	Terminal housings, pipe clamps, nail clamps	possible
K05	PC	Polycarbonate, halogen-free	-40°C to 120°C	high strength, hardness and toughness, impact-resistant	Terminal housing	possible
K06	SBR/ NBR	Styrene butadiene nitrile rubber, halogen-free	-30°C to 100°C	good abrasion and weather resistance	Sealing rings	no
K07	CR	Neoprene (Chloroprene rubber), halogenated	-40°C to 120°C	good weather, chemical and ageing resistance	Sealing rings	no
K08	NBR	Nitrile butadiene rubber, halogen-free	-40°C to 120°C	flexible at low temperatures, high impact elasticity, low weather resistance	Sealing rings	no
K09	PVC	Polyvinyl chloride hard, halogenated	-20°C to 65°C	solid, stiff, hard, low notch sensitivity	Plastic ducts	low
K10	Soft PVC	Polyvinyl chloride soft, halogenated	0°C to 50°C	flexible, soft, good abrasion resistance	Protective caps	no
K11	ABS	Acrylonitrile butadiene styrene, halogen-free	-30°C to 80°C	very tough even with low temperatures, hard, stiff, scratch-resistant	Mounting plates, fittings for plastic ducts	low
K12	ASA	Acrylic acid ester-styrene-acrylonitrile graft copolymer, halogen-free	-30°C to 85°C	impact resistant even in the cold, strength similar to ABS	Device tank housing	low
K14	POM	Polyoxymethylene, halogen-free	-40°C to 100°C	solid, stiff, tough, also at high temperatures, elastic spring behaviour	Cable brackets	few
K15	SBR	Styrene butadiene rubber, halogen-free	-50°C to 100°C	high abrasion resistance, good heat and cold resistance	Sealing rings	no
K16	CR/ NBR	Chloroprene/Nitrile butadiene rubber, halogenated	-20°C to 100°C	high impact elasticity, improved weather resistance	Sealing rings	no
K17	CR/ SBR	Chloroprene/Styrene butadiene rubber, halogenated	-20°C to 70°C	high abrasion resistance, lower heat and cold-resistance	Sealing rings	no
K18	TPE	Theromplastic elastomers, halogen-free	-40°C to 120°C	very good resistance to weathering, ozone and ageing	Sealing rings	no
K19	FS 31	Moulding material 31 (Phenolic resin), halogen-free	to 125°C	high strength, high hardness, high temperature resistance	Illumination sockets	low
K20	SI	Silicone rubber, halogen-free	-40°C to 180°C	good ageing and high temperature stability	Sealing rings	no
K21	PUR	Polyurethanes, halogen-free	-25°C to 60°C	high tensile strength, buckling and abrasion resistance	Industrial hoses, seals, adhesives	low
K22	PET	Polyethylene terephthalate, halogen-free	-40°C to 190°C	high strength, very low moisture absorption	Illumination sockets	low
K23	UP-GF	Glass fiber reinforced polyester, halogen-free	-50°C to 180°C	high strength, high hardness, high temperature resistance	Cable duct, handrail, construction profiles	low
K24	PBT	Polybutylene terephthalate, halogen-free	-50°C to 150°C	high strength, high abrasion resistance, good chemical resistance	Illumination sockets	no

The information on halogen-free properties is based on searches of the relevant technical literature or supplier information. The statements always refer to chemically pure materials without flame-retardants. Tests according to DIN EN 50642 (VDE 0604-2-100) have not been carried out.



Chemical resistances

Catalogue icon	Water	Acids (10%)	Alkalies (10%)	Alcohol (ethanol)	Petrol	Benzene	Mineral oil	Vegetable and animal fats	Solvent
K01	+	o	+	+	o	+	o	+	o
K02	+	o	+	+	-	-	o	o	+
K03	+	+	+	+	o	-	o	+	-
K04	+	+	+	+	o	o	+	+	o
K05	+	o	-	+	-	-	+	+	o
K06	+	o	o	+	-	-	o	o	o
K07	+	-	-	+	o	+	o	o	o
K08	+	o	+	+	+	o	+	o	o
K09	+	+	+	+	+	-	+	+	-
K10	+	+	o	+	-	N/A	-	o	-
K11	+	o	N/A	+	-	-	+	-	-
K12	+	o	o	+	-	-	+	+	-
K14	+	o	o	+	+	+	+	+	-
K15	+	+	+	+	-	-	-	-	o
K16	+	o	o	+	o	-	+	+	o
K17	+	o	o	N/A	-	-	o	N/A	N/A
K18	+	+	+	N/A	+	N/A	+	N/A	-
K19	+	o	o	+	+	o	+	N/A	o
K20	+	o	o	+	o	-	+	+	o
K21	+	-	-	N/A	+	N/A	+	+	o
K22	+	+	o	+	+	o	+	N/A	o
K23	+	+	+	+	+	o	+	+	+
K24	+	o	+	+	+	o	+	+	o

+ = constant o = conditionally constant - = inconstantly N/A = not available

Source: Plastic tables, e.g. Plastic Compendium, Franck, Vogel-book publisher, manufacturers' data sheets

The information given in the tables is intended as a guide for the preselection of products and is based on our current knowledge.

The properties can be negatively influenced by the geometry of the products and the type of application.

More detailed information is available on request. To test the suitability of a product, a test under the specific environmental conditions is required.

! Further chemical resistances can be found on our homepage at www.niedax.com > Downloads.

Polyester resin halogen-free

Properties	Standard references & Standard designations	Country of origin (Test laboratory)	Pressed parts Mixture R96 Test results	pultruded parts Mixture R6204 Test results	Units
Fire behaviour					
Flammability	ASTM D 6194 / IEC 60695-2-12 Glow wire flammability (GWFI) testing of materials.	USA / International (CREPIM, Bruay)	960	960	°C
Flammability	UL 94 Flammability test for plastics.	USA (Exova Warringtonfire)	V0	V0	-
Fire spread	NF P 92-501 Fire behaviour of construction materials.	Frankreich (CSTB)	not tested	not tested	-
Flame spread & Smoke development index	ASTM E 84 / UL 723 Testing the flammability of building materials. Class according to the Uniform Building Code.	USA (Underwriters Lab.)	FSI = 25 SDI = 350 Class I	FSI = 35 SDI = 450 Class II	Key figure Key figure -
Surface flame spread	BS 476 Teil 7 Surface flame spread of materials	UK (BRE Global)	Class 2	Class 2	-
Flame spread	BS 476 Teil 6 Fire spread on material surfaces	UK (BRE Global)	not tested	not tested	Key figure
Flammability & Smoke dispersion index	NF F 16-101 Fire behaviour of materials in rail vehicles	France (CREPIM, Bruay)	I2 F0	I2 F1	Key figure Key figure
Min. oxygen concentration	ASTM D 2863 / ISO 4589-2 Determination of burning behaviour by the oxygen index. Part 2: Ambient temperature.	USA / International (CREPIM, Bruay)	> 32%	> 32%	%
Flammability & Smoke dispersion index	VKF materials and components. Part B: Testing and classification.	Switzerland (EMPA, Dübendorf)	5.3	5.3	Key figure
Fire behaviour	DIN 4102-1 Fire behaviour of building materials and components. Part 1: Building material classes	Germany (RST, Henningsdorf)	B2	B2	-
Fire behaviour	EN 45545-2 Railway applications - Fire protection in railway vehicles. Part 2: Fire behaviour requirements for materials and components. Applicable regulations: R6 ISO 5660-1 Parameter MARHE EN ISO 5659-2 (50 kW/m ²) Parameter DS(4) EN ISO 5659-2 (50 kW/m ²) Parameter VOF4 EN 45545-2 Appendix C (50kW/m ²) Parameter CITg nach der 4 min. EN 45545-2 Appendix C (50kW/m ²) Parameter CITg nach der 8 min.	Europe (LNE)	none 103,7 376,2 454,6 0,016 0,068	none 101,3 331,2 488,5 0,015 0,064	HL kW/m ² - - - -

Mechanical behaviour					
Tensile stress at break	ISO 527-5 Plastics - Determination of tensile properties. Part 5: Unidirectional fibre reinforced plastic composites.	International (Serma Technologies)	~ 55	~ 187	MPa
Modulus of elasticity in tension	ISO 527-5 Plastics - Determination of tensile properties. Part 5: Unidirectional fibre reinforced plastic composites.	International (Serma Technologies)	~ 7200	~ 11900	MPa
Accelerated aging through UV irradiation	ISO 4892-2 / ISO 527-5 Plastics - Artificial irradiation or weathering in appliances. Part 2: Xenon arc lamps.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-
Accelerated ageing through salt spray testing	ISO 9227 / ISO 527-5 Corrosion testing in artificial atmospheres. Salt spray tests.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-
Accelerated ageing through UV / salt spray testing	ISO 4892-2 / ISO 9227 / ISO 527-5 Mechanical resistance in UV and salt spray tests.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-

Electrical behaviours					
Spec. surface resistance & magnitude value for the discharge of a charged surface	IEC 60079-0 Potentially explosive atmospheres. Part 0: Equipment - General requirements.	International (LCIE)	~ 4 x 10 ¹³	~ 4 x 10 ¹²	Ω
Electrical dielectric strength	IEC 60243-1 Elekt. Dielectric strength of insulating materials. Part 1: Testing at technical frequencies.	International (IPH)	~ 6,5	not tested	kV/mm
Test number of creep path formation	IEC 60112 Method for determining the test and comparison number of the creep path formation of solid, insulating materials.	International (LCIE)	575	600	V

Ship approval					
Approval for ships and drilling platforms	ABS (American Bureau of Shipping)	(ABS)	acknowledged K ²	acknowledged KP - UL	

Various					
Specific density			1,8	1,8	g/cm ³
Thermal conductivity			0,3	0,3	W/m.K
Linear coefficient of expansion	ISO 11359-2 Plastics - Thermomechanical analysis (TMA). Part 2: Determination of the coefficient of linear thermal expansion.	International	~ 36 x 10 ⁻⁶	~ 10 x 10 ⁻⁶	cm/cm.K
Moisture absorption	ISO 62 Plastics - Determination of water absorption	International	0,16	0,3	%

Table = current status at time of going to press!

Mixture R96 for pressed components is used in the product series K² (formerly called KK) and BK. The compound R6204 for pultruded components is used in the product series KP, SP, UL and MC.

Conformity according to EN IEC 61537:

Impact resistance test: Products of the K², KP, UL series have successfully passed the shock test with an energy of 20 J (impact resistance grade: IK 10).

Flame spread test: K², KP, UL series products are classified as non-flame spreading components.

CE marking:

The products comply with Directive 2014/35/EU for Germany and 2014/35/UE for France following the harmonised standard EN IEC 61537.



Acrylic resin halogen-free

Properties	Standard references & Standard designations	Country of origin (Test laboratory)	Pressed parts Mixture R98M Test results	pultruded parts Mixture R6204M Test results	Units
Fire behaviour					
Flammability	ASTM D 6194 / IEC 60695-2-12 Glow wire flammability (GWFI) testing of materials.	USA / International (CREPIM, Bruay)	960	960	°C
Flammability	UL 94 Flammability test for plastics.	USA (Exova Warringtonfire)	not tested	not tested	-
Fire spread	NF P 92-501 Fire behaviour of construction materials.	France (CSTB)	M1	M1	-
Flame spread & Smoke development index	ASTM E 84 / UL 723 Testing the flammability of building materials. Class according to the Uniform Building Code.	USA (Underwriters Lab.)	FSI = 15 SDI = 65 Class I	FSI = 20 SDI = 450 Class I	Key figure Key figure -
Surface flame spread	BS 476 Teil 7 Surface flame spread of materials	UK (BRE Global)	Class I	Class I	-
Flame spread	BS 476 Teil 6 Fire spread on material surfaces	England (BRE Global)	I = 9,1	I = 11,7	Key figure
Flammability & Smoke dispersion index	NF F 16-101 Fire behaviour of materials in rail vehicles	France (CREPIM, Bruay)	I1 F0	I1 F1	Key figure Key figure
Min. oxygen concentration	ASTM D 2863 / ISO 4589-2 Determination of burning behaviour by the oxygen index. Part 2: Ambient temperature.	USA / International (CREPIM, Bruay)	> 45%	> 45%	%
Flammability & Smoke dispersion index	VKF materials and components. Part B: Testing and classification.	Switzerland (EMPA, Dübendorf)	not tested	not tested	Key figure
Fire behaviour	DIN 4102-1 Fire behaviour of building materials and components. Part 1: Building material classes	Germany (RST, Henningsdorf)	not tested	not tested	-
Fire behaviour	EN 45545-2 Railway applications - Fire protection in railway vehicles. Part 2: Fire behaviour requirements for materials and components. Applicable regulations: R6 ISO 5660-1 Parameter MARHE EN ISO 5659-2 (50 kW/m ²) Parameter DS(4) EN ISO 5659-2 (50 kW/m ²) Parameter VOF4 EN 45545-2 Appendix C (50kW/m ²) Parameter CITg nach der 4 min. EN 45545-2 Appendix C (50kW/m ²) Parameter CITg nach der 8 min.	Europe (LNE)	HL1, HL2 71,7 184,1 266,9 0,013 0,055	HL1, HL2 80,5 225,3 337,9 0,006 0,042	HL kW/m ² - - - -
Mechanical behaviour					
Tensile stress at break	ISO 527-5 Plastics - Determination of tensile properties. Part 5: Unidirectional fibre reinforced plastic composites..	International (Serma Technologies)	~ 54	~ 167	MPa
Modulus of elasticity in tension	ISO 527-5 Plastics - Determination of tensile properties. Part 5: Unidirectional fibre reinforced plastic composites.	International (Serma Technologies)	~ 5800	~ 10500	MPa
Accelerated aging through UV irradiation	ISO 4892-2 / ISO 527-5 Plastics - Artificial irradiation or weathering in appliances. Part 2: Xenon arc lamps.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-
Accelerated ageing through salt spray testing	ISO 9227 / ISO 527-5 Corrosion testing in artificial atmospheres. Salt spray tests.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-
Accelerated ageing through UV / salt spray testing	ISO 4892-2 / ISO 9227 / ISO 527-5 Mechanical resistance in UV and salt spray tests.	International (Serma Technologies)	Good mechanical and colour behaviour	Good mechanical and colour behaviour	-
Electrical behaviours					
Spec. surface resistance & magnitude value for the discharge of a charged surface	IEC 60079-0 Potentially explosive atmospheres. Part 0: Equipment - General requirements.	International (LCIE)	~ 4 x 10 ¹³	~ 4 x 10 ¹²	Ω
Electrical dielectric strength	IEC 60243-1 Elekt. Dielectric strength of insulating materials. Part 1: Testing at technical frequencies.	International (IPH)	not tested	not tested	kV/mm
Test number of creep path formation	IEC 60112 Method for determining the test and comparison number of the creep path formation of solid, insulating materials.	International (LCIE)	600	600	V
Ship approval					
Approval for ships and drilling platforms	ABS (American Bureau of Shipping)	(ABS)	acknowledged K ²	acknowledged KP - UL	
Various					
Specific density			1,8	1,9	g/cm ³
Thermal conductivity			0,3	0,3	W/m.K
Linear coefficient of expansion	ISO 11359-2 Plastics - Thermomechanical analysis (TMA). Part 2: Determination of the coefficient of linear thermal expansion.	International	~ 36 x 10 ⁻⁶	~ 10 x 10 ⁻⁶	cm/cm/K
Moisture absorption	ISO 62 Plastics - Determination of water absorption	International	0,17	0,3	%

Table = current status at time of going to press!

Mixture R96 for pressed components is used in the product series K² (formerly called KK) and BK. The compound R6204 for pultruded components is used in the product series KP, SP, UL and MC.

Conformity according to EN IEC 61537:

Impact resistance test: Products of the K², KP, UL series have successfully passed the shock test with an energy of 20 J (impact resistance grade: IK 10).
Flame spread test: K², KP, UL series products are classified as non-flame spreading components.

CE marking:

The products comply with Directive 2014/35/EU for Germany and 2014/35/UE for France following the harmonised standard EN IEC 61537.

Galvanised steel - the ideal material

Steel

the material with the many positive characteristics: non-flammable, high mechanical resilient, magnetized, shielding effect (Faraday), no static electricity, fire load-free, halogen-free, 100% fully recyclable.

This exceptionally good, constructive, technological, mechanical and physical properties contribute towards the high utility value and quality of the produced Niedax of cable laying systems.

The many benefits precludes a weak point: steel can rust. With a well-conducted galvanising however, this weakness is effectively and cost to overcome. Steel and zinc complement each other perfectly.



Good all-round protection

is due to the formation of protective, adherent coatings on the zinc. On the new products initially forms a zinc oxide film, which is converted to zinc hydroxide or zinc carbonate under the influence of humidity and carbon dioxide (zinc patina). These protective layers are formed, depending on the surrounding atmosphere, in a few days to several weeks.

Cathodic protection

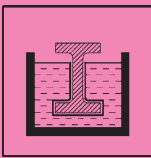
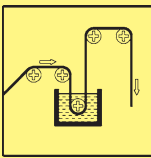
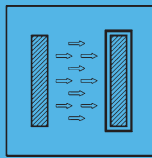
or surface protection mean refers to the ability of zinc to protect the cutting surfaces or other surface damage upon exposure to moisture to corrosion. This capability is based on the more negative of the zinc compared to zinc in the iron status of the "electrolytic voltage range". A galvanising can not rust for the same reason. The cut surface protection is effective up to a material thickness of 2 mm.

Adequate ventilation galvanised components is mandatory. Under unfavorable storage and transport conditions (humid conditions, little or no airflow) may form on freshly galvanised surfaces known as white rust (loose porous zinc hydroxide). White stains may also appear by a dry storage and an insufficient air access to all surfaces (possibly with stacking woodshims use). Outdoor storage under sheets or tarpaulins should be avoided.

Niedax cable laying systems made of steel are generally used only in a galvanised finish.*) This term corrosion protection saves valuable natural resources and is thus a significant contribution to environmental protection. As corrosion protection for the Niedax cable laying systems come, operational and manufacturing reasons, the galvanising process described in more detail in the following summaries are used.

! *) For exceptional, aggressive environmental conditions, cable laying systems made of stainless steel or glass-fibre reinforced plastic are available.

Comparison of three galvanising processes

Liquid Dip Process Immersion in liquid Zinc/Zinc-Aluminium		Electrolytic Process	
F 	S 	V G 	
Process standard			
Hot Dip Galvanising (HDG) after fabrication according to DIN EN ISO 1461 (DIN EN ISO 10684 for hardware)	Continuous Strip Galvanisation (Sendzimir Process) according to DIN EN 10346	Electrolytic Galvanising (Electroplating) according to DIN EN ISO 19598 (DIN EN ISO 4042 for hardware)	
Structure and composition of the coating			
Alloying with the base material	Alloying with the base material	Laminated coating	
Usual thickness of the zinc layer			
Depending on the thickness of the material to be galvanised, up to 1.5 mm thickness approx. 45 µm, up to 3 mm thickness approx. 55 µm, up to 6 mm thickness approx. 70 µm	At Niedax depending on product group Layer thickness Z 140: 10 µm ± 3 µm Layer thickness Z 275: 20 µm ± 5 µm according to DIN EN 10 346	approx. 2.5 to 20 µm, in undercuts and recesses (thread flanks) the layer thickness is less than on the surfaces (Faraday cage).	
Special features			
Each component is individually dipped in the liquid zinc bath. The zinc washes over the entire surface. Hollow sections are protected on the in- and outside. Rigid corrosion protection.	The corrosion protection layer is applied to the surface by passing the steel as a continuous ribbon through a bath of molten zinc.	The zinc layer is deposited from an aqueous electrolyte by means of DC current. Post-treatment is generally applied to improve the protective effect. Decorative visual appearance, smooth surface with no edges and burrs.	
Distinguishing features			
The surface is relatively rough, and solidified zinc may block small holes. Newly galvanised surfaces are bright shining; high temperature galvanised part such as screws are grey.	Smooth surface depending on the process, slightly greased. Holes and cut edges expose "bare metal". Corrosion protection of "bare" edges up to 2 mm material thickness is provided by the by cathodic protection effect. 1	Iridescent shimmer, bright and shiny surface after passivation.	
Usage - Application			
Welded components, equipment exposed to the weather.	Non-welded components up to 2 mm thick, especially for interior building work.	For parts in almost all shapes and sizes, corrosion protection and decorative finish. Recommended for dry, indoor areas only.	
Corrosion Protection (typical annual degradation for Central Europe) (µm)		Corrosion Protection	
Depending on the atmospheric conditions and the local environment. Rural 0.1 - 1.0 µm Suburban 1.0 - 2.0 µm Marine 2.0 - 4.0 µm 2	Almost unlimited corrosion protection in dry indoor areas habitable by humans. Annual removal is hardly measurable there. No subdivision into band, urban, industrial and marine air.	Salt spray tests according to DIN EN ISO 9227 NSS show up to 360 hours before rusting depending on the thickness of the zinc layer and the passivation method.	

1 Components over 2 mm in material thickness are hot dip galvanised at Niedax.

2 Local environmental conditions would be for instance the direct corrosive effect of a chimney with CO₂ flue gases.

Galvanising

Batch galvanising **F**



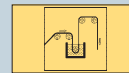
(Hot-dip galvanisation) according to DIN EN ISO 1461 (DIN EN ISO 10684 for hardware)

By immersion in liquid zinc (hot-dip process, ca. 450° C), the entire surface, including all corners and edges lapped. On the steel is an iron-zinc alloy layer forms with an overlying layer of pure zinc. The layer thickness depends on the material thickness and is according to DIN EN ISO 1461 to 1.5 mm material thickness 45 microns, up to 3 mm thick 55 microns and up to 60 mm material thickness 70 microns. Due to the very hard iron-zinc alloy layer can batch-galvanised components, without damaging the zinc surface, not deformed.

Application examples from the Niedax program:

All components with welded joints, for example, suspension struts, cable and pipe clamps as well as products with more than 3 mm thick, cable trays / ladders, wide span cable trays / ladders and many more, as far as increased demands on the corrosion resistance (weathering without rain shield).

Strip coating **S**



(Sendzimir Process) according to DIN EN 10 346

The zinc coating is on both sides, applied by a zinc bath on broadband in the run. The project uses the modified sendzimir. On the steel is an iron-zinc alloy layer forms with an overlying layer of pure zinc. The layer thickness of the sendzimir coil used for Niedax cable laying systems is under consideration of the test method according to DIN EN 10346 according to three surface sample depending on the product group 10 - 20 microns.

Strip galvanisation is used for components up to max. 2 mm material thickness, as up to this strength, a sufficient edge protection is achieved by "cathodic protection". The process-related "bare iron" interfaces of the components are in use in dry interiors, by the cathodic protection effect is not a disadvantage. Strip galvanised components can be formed without damaging the zinc surface.

Application examples from the Niedax program:

Cable trays / ladders, wide span cable trays / ladders, cable ladders, cable protection ducts, light boom, rails up to 2 mm thickness. In dry indoor areas without aggressive media, the strip galvanising provides permanent corrosion protection.

Zinc coating **V** **G**



Selon DIN EN ISO 19598 (DIN EN ISO 4042 for hardware)

The zinc coating is applied in aqueous electrolytes by means of direct current. To improve the corrosion protection can be carried out by an aftertreatment thick layer passivation and blue passivation according to DIN 50961.

The zinc coating is 2.5 to 20 microns. Parts with undercuts, such as C-shaped armature rails, due to the process less heavily coated inside than outside (Faraday cage).

Application examples from the Niedax program:

Small parts (screws, washers up to max. 6 M), mounting rails and screws for distribution board, but with additional thick layer passivated.

Hot-dip galvanised components **C1**

with an epoxy resin powder coating, halogen-free.

The products marked C1 are hot-dip galvanised and coated with an epoxy resin powder coating with a layer thickness of at least 60 µm. When used indoors, this plastic coating ensures very good corrosion protection and high mechanical resistance and is resistant to most chemicals.

The zinc coating is thus protected by the overlying coating from atmospheric and chemical influence. A removal of metallic zinc is avoided, so that the zinc coating remains intact for a long time under the coating in mint condition.

We are pleased to offer you other coatings for special outdoor applications and higher corrosion protection classes.

Coat with zinc dust paint



The zinc-rich paint shall be such that in the dry film more than 90% zinc is included. To avoid the formation of cracks in the coating, the coating is applied in several steps.

Application examples from the Niedax program:

Improvements, particularly assembly-related injuries of the zinc surface by welds or the like.

! For detailed information about the zinc can be found in the cited standards as well as in a voluminous literature offer.

Tightening torques based on VDI 2230

Tightening torques

The specified tightening torques are orientation or guide values based on VDI 2230 for a **90% utilization of the yield strengt $R_{el}/0,2\%$ yield strength $R_{p0,2}$** . Additional lubrication leads to a reduction of the coefficient of friction and thus undefined tightening ratios.

Tightening torques for screws with metric thread

Screws with metric thread	Max. Tightening torques in (Nm) with coefficient of friction $\mu = 0,12$						
	Thread	Strength classes					
		4.6	4.8	6.8	8.8	10.9	12.9
M6	3,7	4,7	7,5	10,1	14,9	17,4	
M8	9,1	11,3	18,2	24,6	36,1	42,2	
M10	18,3	22,9	36,5	48	71	83	
M12	31	39	62	84	123	144	
M14	50	62	100	133	195	229	
M16	76	96	153	206	302	354	

Tightening torques for screws made of austenitic steels

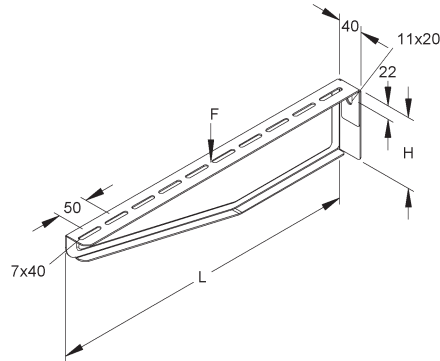
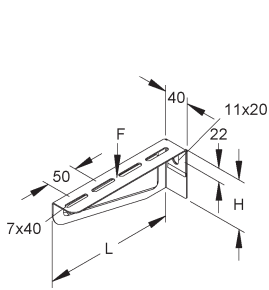
Screws made of austenitic steels	Max. Tightening torques in (Nm) with coefficient of friction $\mu = 0,12$		
	Thread	Strength classes	
		50	70
M6	3	6	8
M8	7,1	16	22
M10	14	32	43
M12	24	56	75

Installation Information

Overhead Hanger- and Wall Bracket KTAM...

E5 100 - 300 mm

E5 400 mm

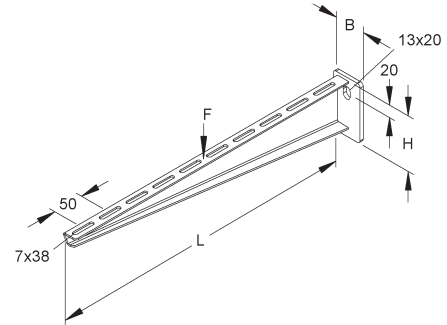
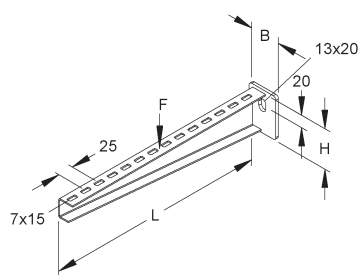
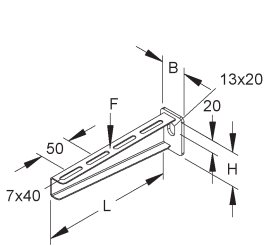


Overhead Hanger- and Wall Bracket KTA...

F 100 - 300 mm, 400 mm
C1 100 - 300 mm, 400 mm
E5 100 - 400 mm

F 350 - 550 mm
C1 350 - 550 mm
E5 500, 600 mm

F 500, 600 mm
C1 500, 600 mm

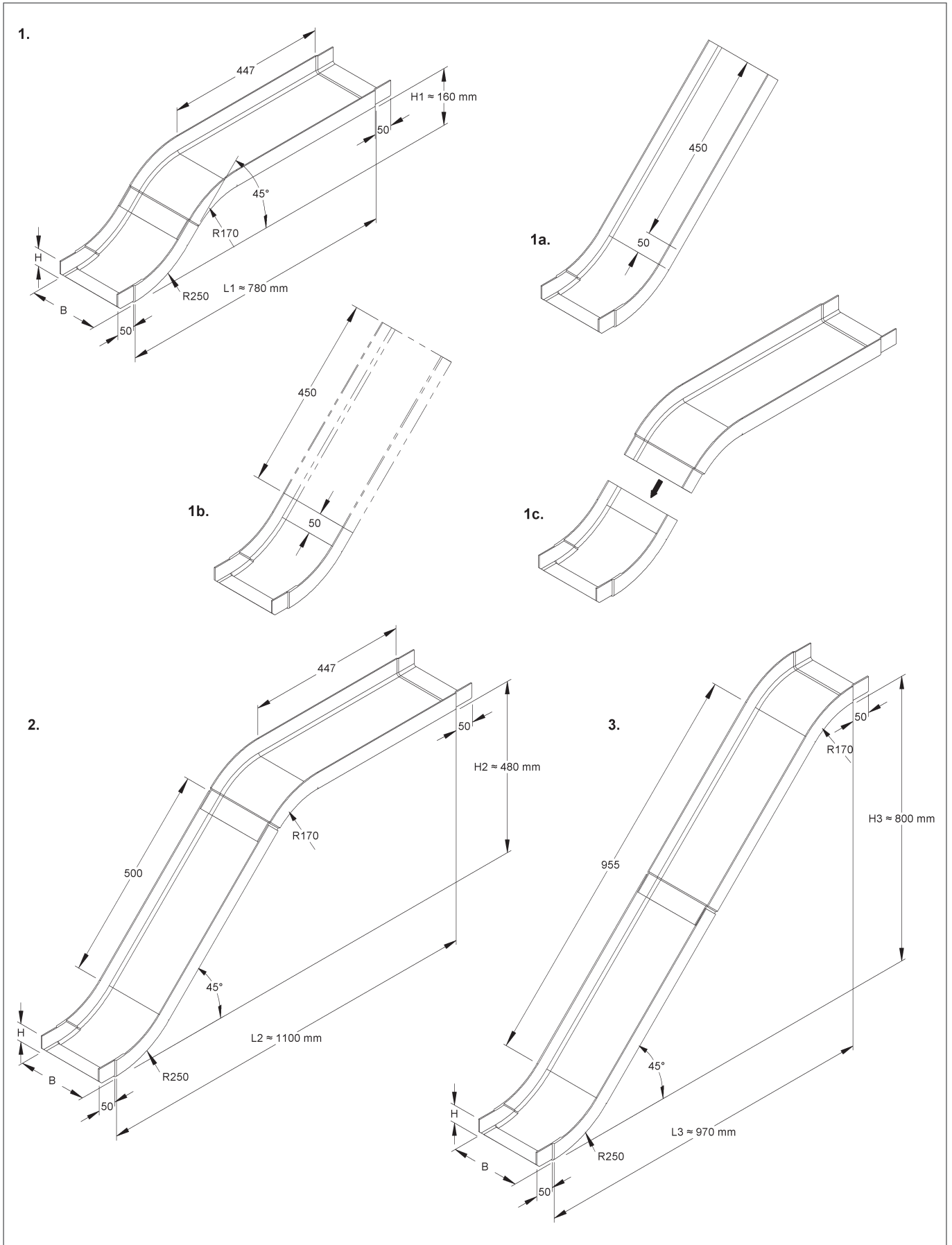


INFORMATIONS

Installation Information

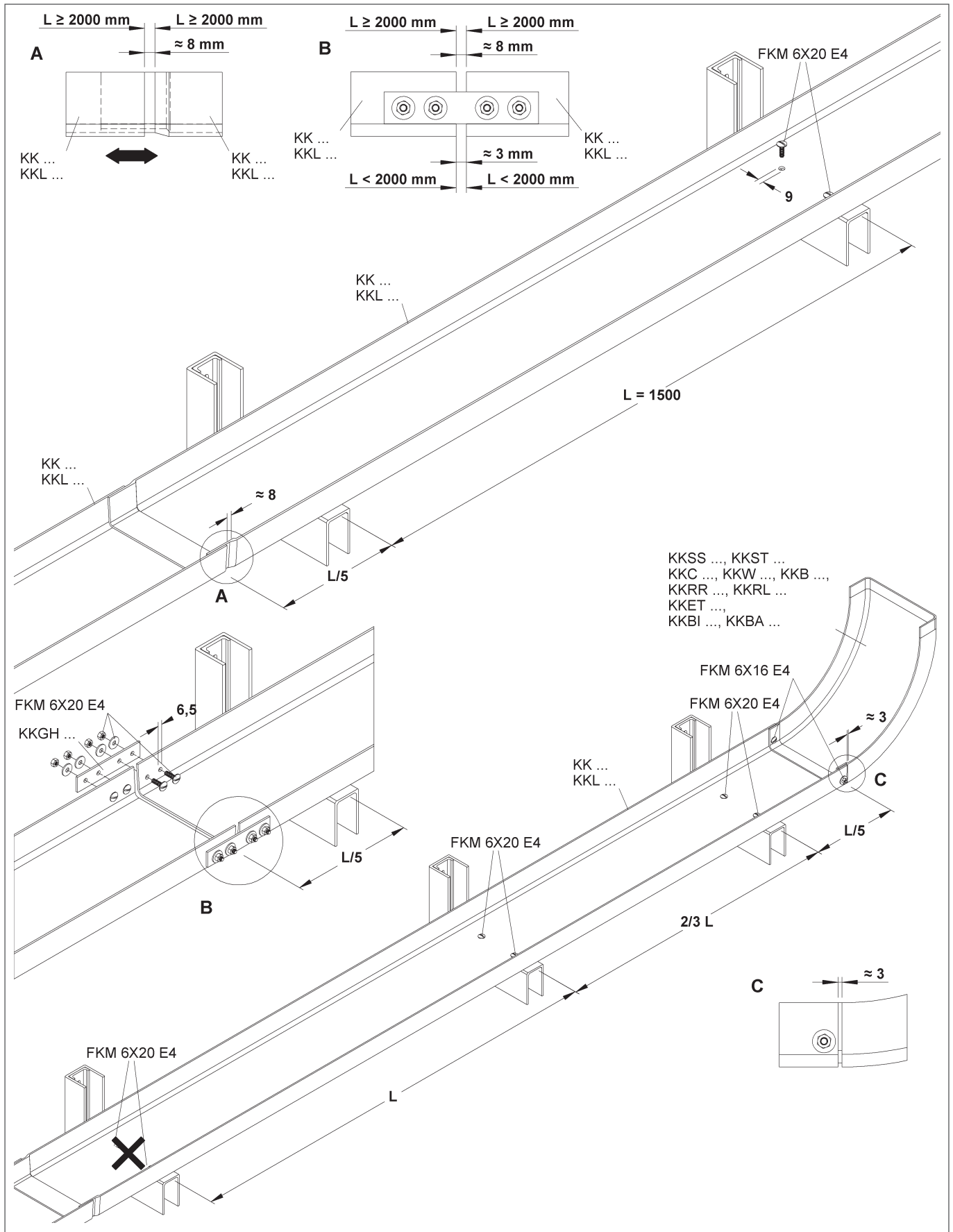
GRP-Floor KKET ... and KPET ...

Depending on the standard variants used (see illustration), different lengths of the tier result depending on the height.



Installation Information

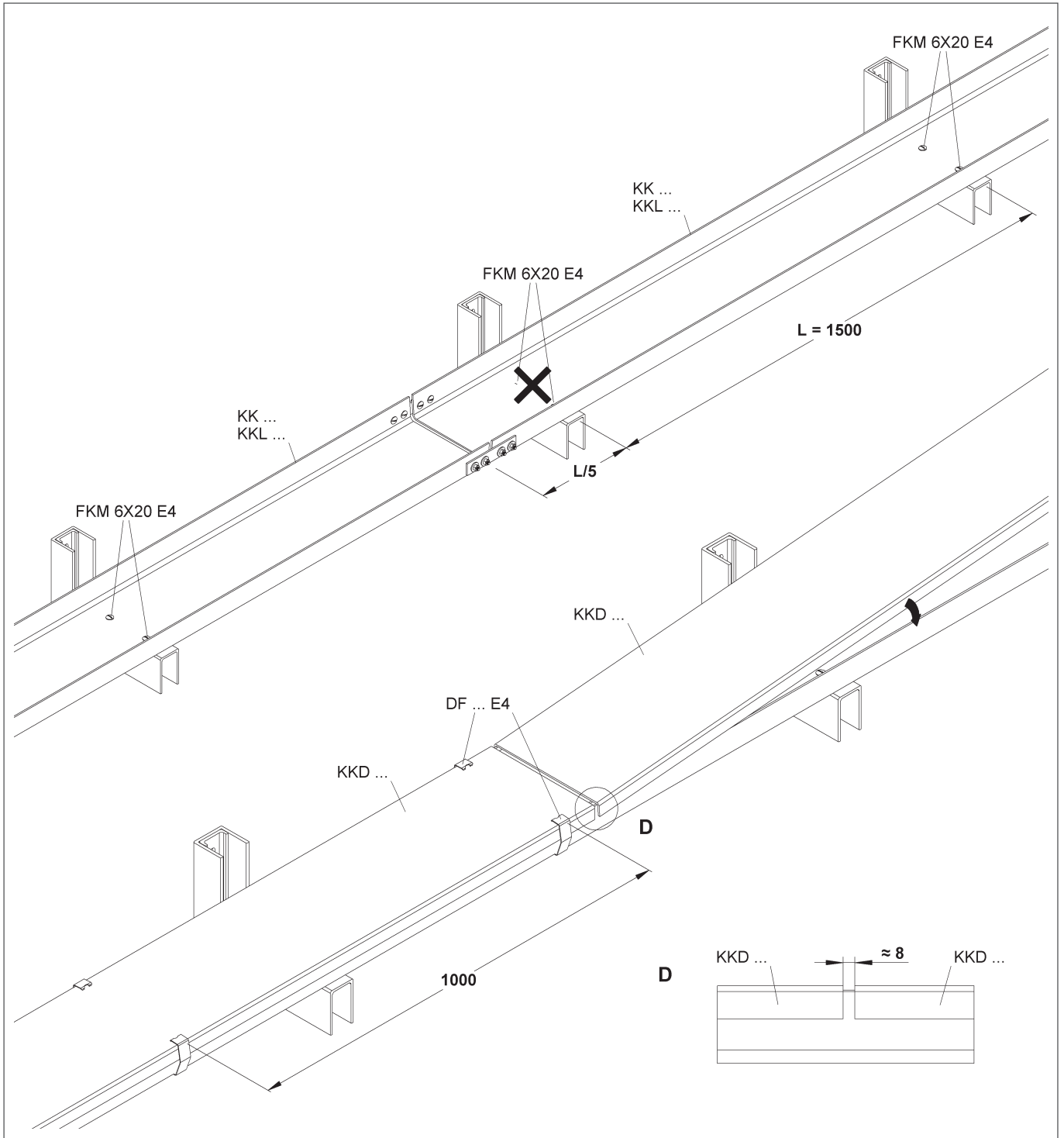
GRP-Cable Tray KK ... and KKL ...



INFORMATIONS

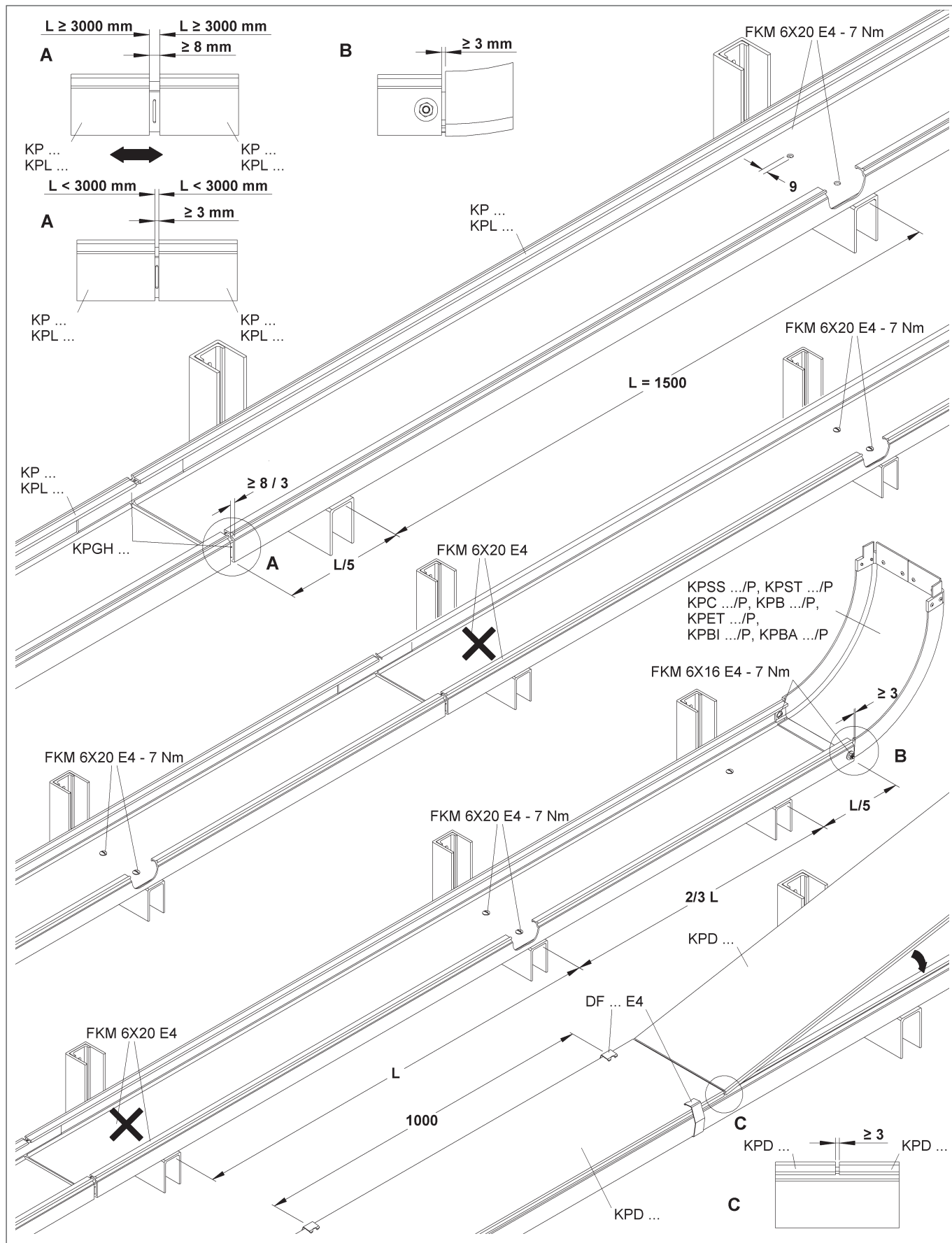
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GRP-Cable Tray KK ... and KKL ...



Installation Information

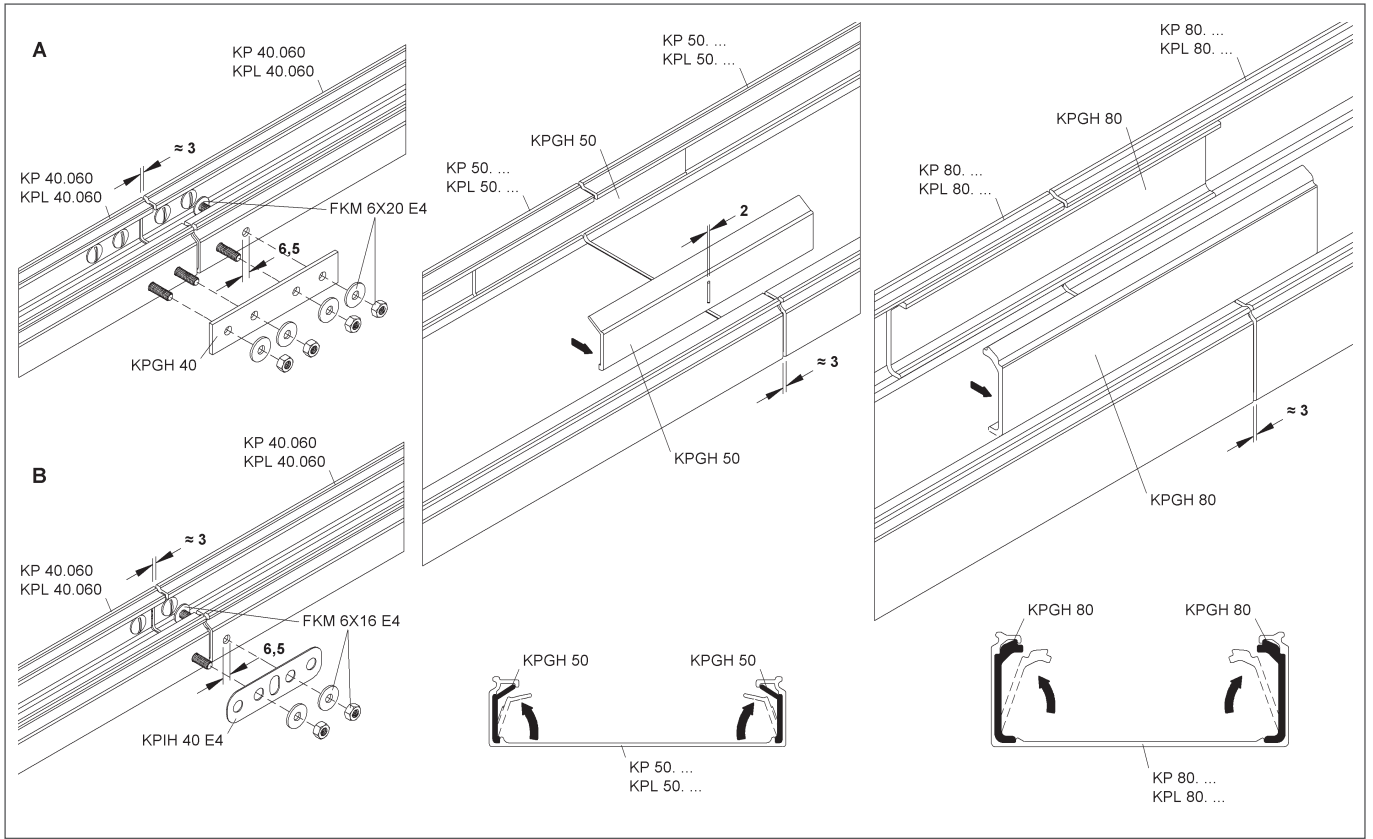
GRP-Cable Tray KP ... and KPL ...



INFORMATIONS

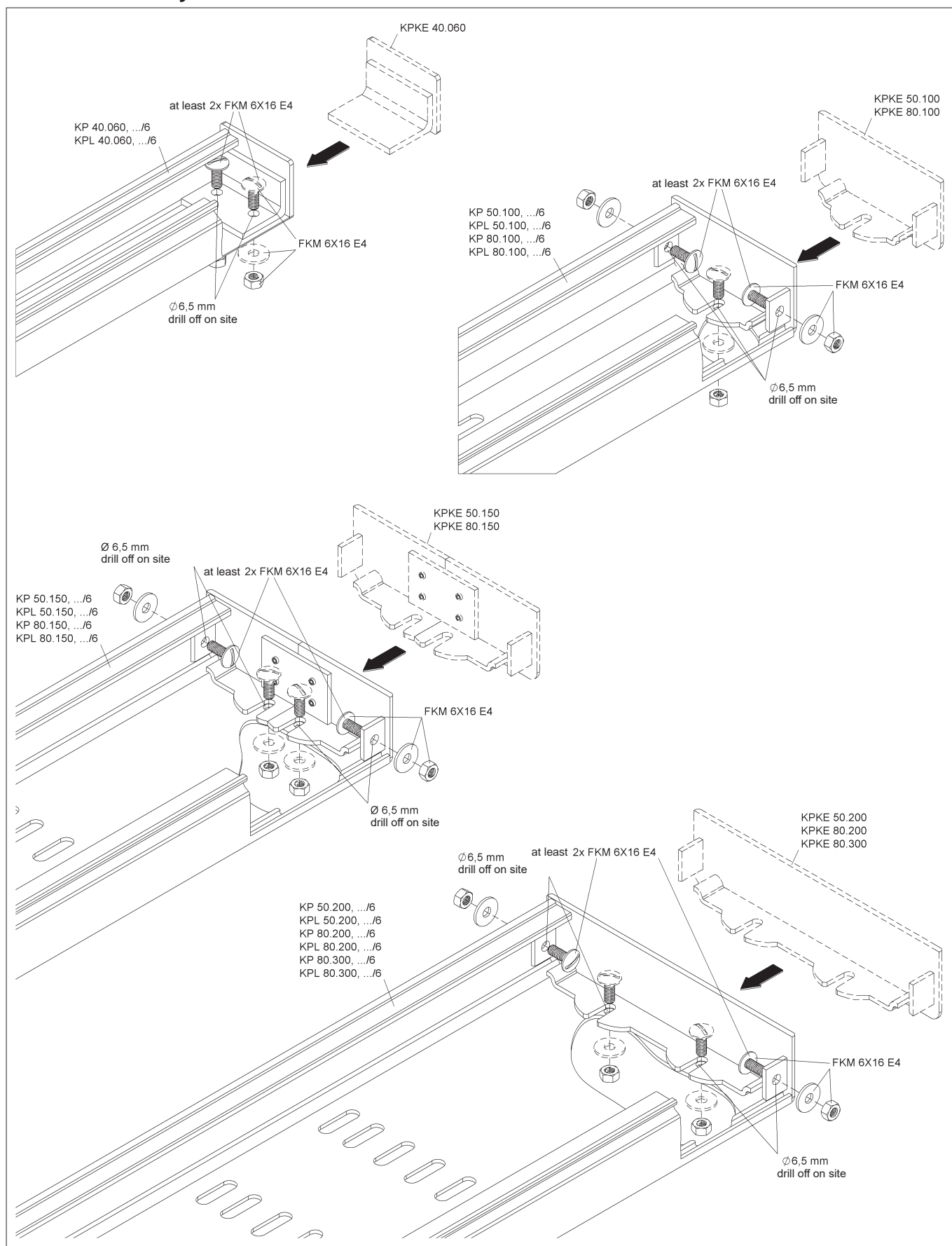
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GRP-Cable Tray KP ... and KPL ...



Installation Information

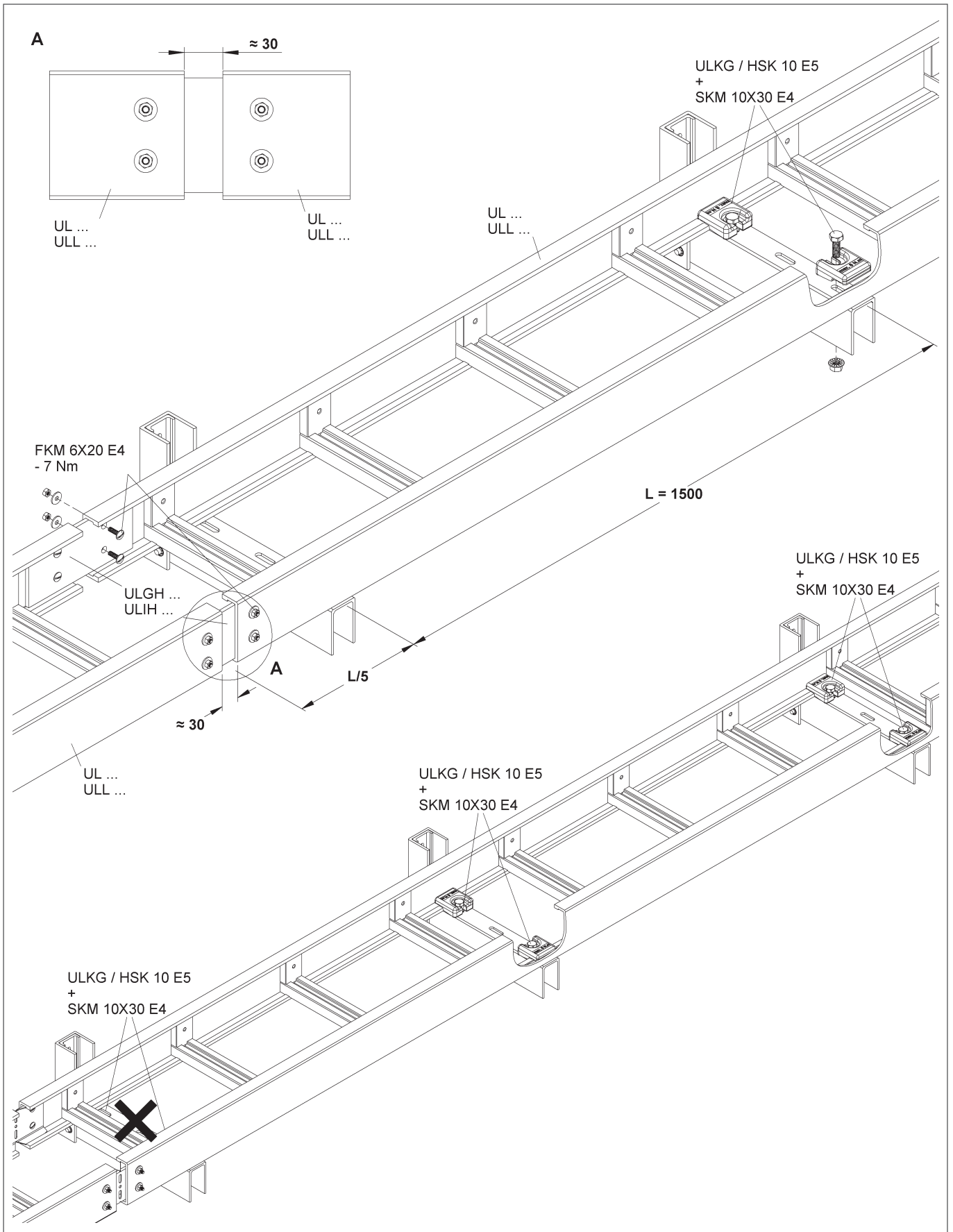
GRP-Cable Tray KP ... and KPL ...



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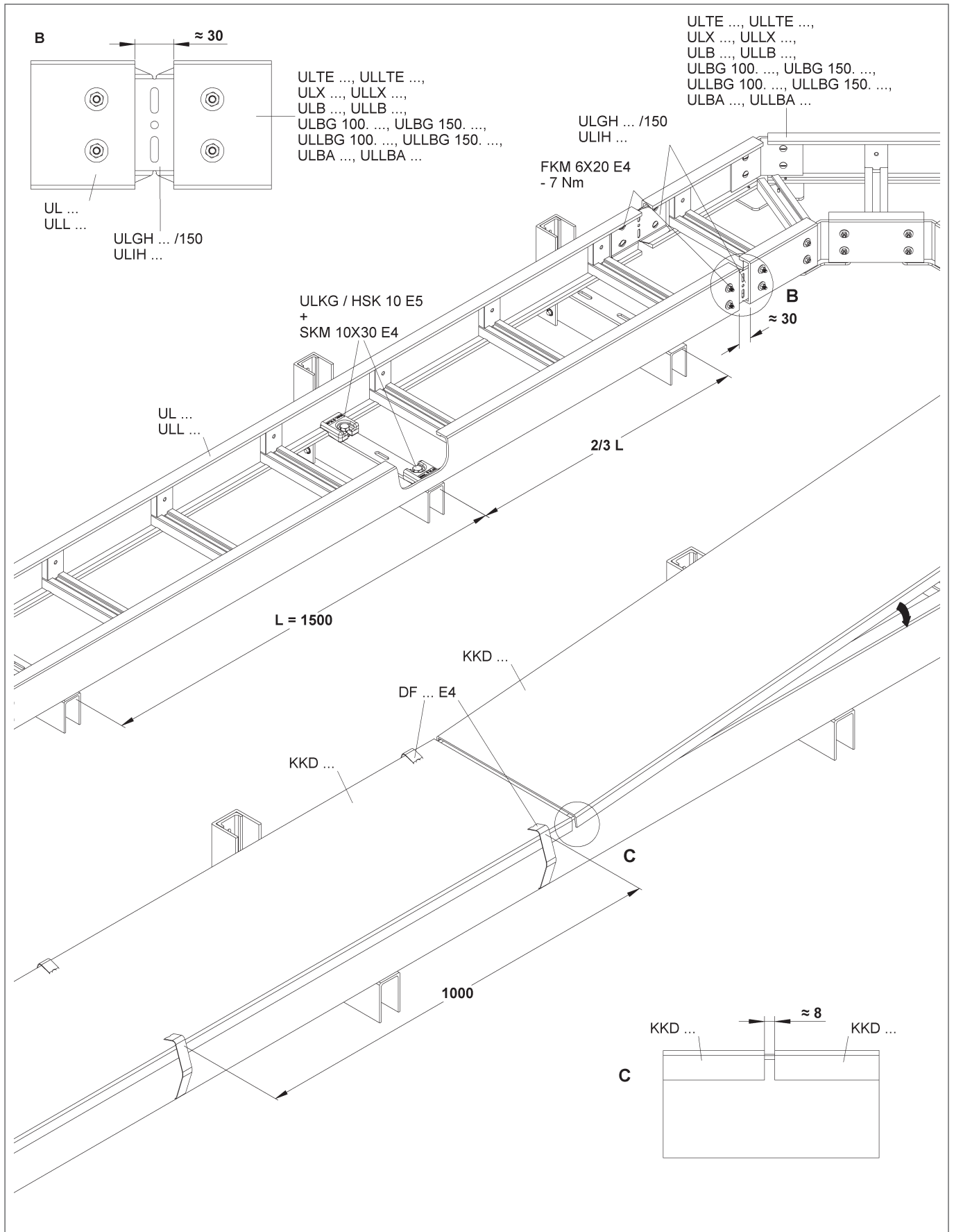
Installation Information

GRP-Cable Ladders UL ... and ULL ...



Installation Information

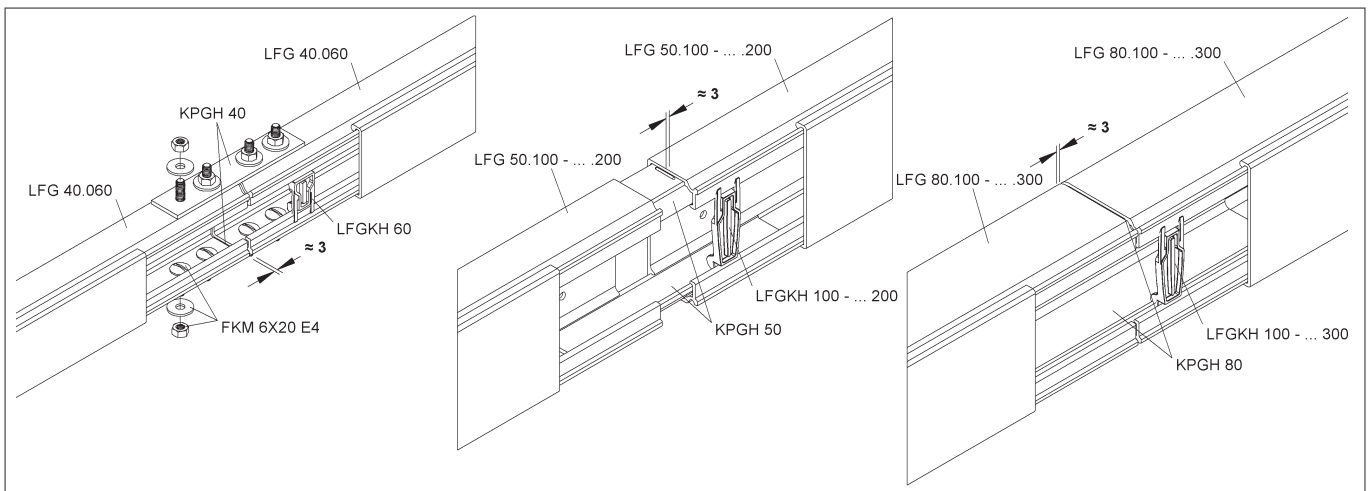
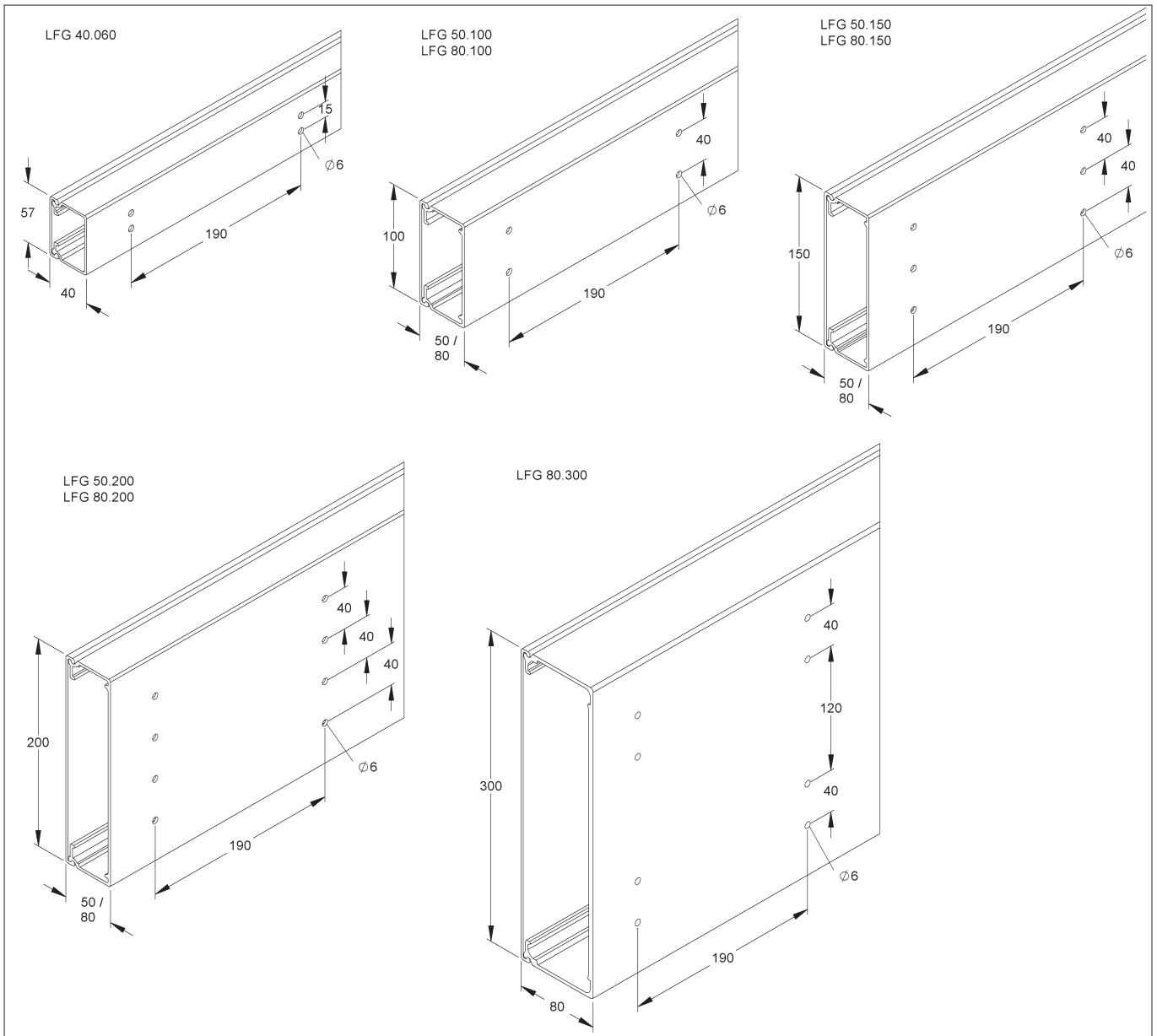
GRP-Cable Ladders UL ... and ULL ...



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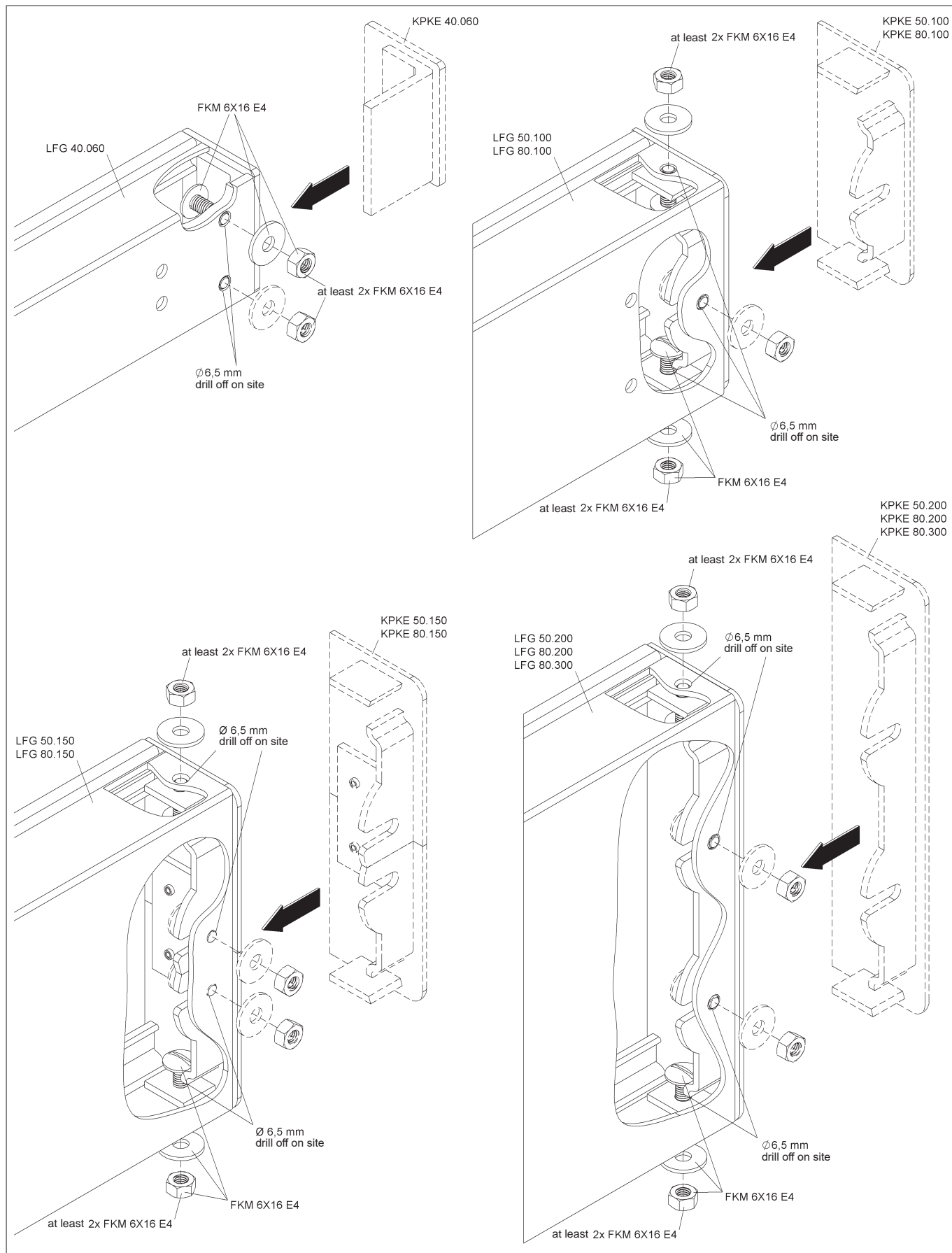
Installation Information

GRP-Cable Routing Duct LFG...



Installation Information

GRP-Cable Routing Duct LFG...



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Sales conditions

1. Opposability

These sales conditions are sent with our bid to all purchasers to raise an order. Consequently, raising an order implies full, unreserved acceptance of these conditions, excluding any other type of document such as a brochure or catalogue, which only give approximate information. No special condition can have priority over these conditions, except if formal written approval is received from Ebo Systems. Furthermore, the purchaser renounces his own general purchasing conditions. The fact that Ebo Systems does not invoke, at a given moment, one of the present conditions, cannot be interpreted as being a renunciation of future invocations of such a condition

2. Contract validity

Bids by Ebo Systems are only valid for a duration of 2 (two) months unless specified otherwise. Orders are only definitively accepted when they have been confirmed in writing by Ebo Systems and where applicable, after payment of the agreed advance. The fact that the purchaser does not reply within 8 (eight) days following the sending of written conformation, is equal to express acceptance by the purchaser. Should an order that has become definitive be cancelled, the entire purchase price will be invoiced to the purchaser and become immediately payable. Ebo Systems none the less reserves the right, in case of a drop in the credit rating of the purchaser, or if Ebo Systems has legitimate reason to consider that the purchaser will be incapable of paying the purchase price at the agreed deadlines:

- either to cancel an order in progress, even if definitive
 - or to demand first rate guarantees, or a payment before delivery, it being understood that payment means effective cashing of the payment instrument.
- The order is specifically intended for the purchaser and cannot be transferred without prior written approval from Ebo Systems.

3. Object of the delivery

Ebo Systems reserves the right to make any change to the presentation, shape, size and design at any time it considers useful to its products without being obliged to modify ordered goods being manufactured. Ebo Systems also reserves the right to modify, without prior warning, the products defined in its pamphlets and catalogues. None the less, in case of changes to standards or improvements to products ordered before delivery Ebo Systems reserves the right to make the technical changes necessary without the object ordered being modified

4. Shipment

Any increase to cost of shipment, to taxes or miscellaneous duties occurring during performance of the contract is entirely paid by the purchaser except if there are special or contrary provisions in the price legislation. Special packaging, maritime freight or insurance where applicable, shall be invoiced at the tariff in force at the moment of shipment

5. Delivery turnaround times

5.1 Delivery turnaround times are given for information purposes and are not guaranteed. Ebo Systems is authorized to make global or partial deliveries. Overshooting of delivery times cannot give rise to compensation and interest, nor discounts or cancellations of orders, unless contrary provisions are agreed in writing with the purchaser. Ebo Systems may be released from its commitment to deliver in case of force majeure. Without this list being comprehensive, force majeure includes: war, uprisings, strikes or combined action by the personnel of the suppliers of Ebo Systems or service suppliers Ebo Systems uses to carry out orders

5.2 In all cases, delivery within the agreed turnaround times can only take place if the purchaser has fully satisfied all his commitments to Ebo Systems, no matter what the reason, especially those resulting from article 2 of these conditions.

6. Delivery costs and risks

Goods are delivered in compliance with Incoterms I.C.C. dated January 2000. As of the delivery, as defined in Article 4 of these conditions, the goods travel at the expense and risk of the purchaser, who is responsible in case of damage or missing articles to make any necessary reservations and to take all steps to preserve his rights of action against the shipper. The shipper designated by Ebo Systems, works on the behalf of, at the expense of and risk of the purchaser. Unless prior written instructions are received from the purchaser, repeated for each shipment and reception confirmed by Ebo Systems, Ebo Systems is not bound to take out any insurance, declaration of value or make any declaration of interest at delivery on behalf of the purchaser, no matter what might be the value of the goods shipped. The costs relating to the services undertaken by Ebo Systems on behalf of the purchaser are fully invoiced to the purchaser. In no case whatsoever can Ebo Systems be held responsible for the method of payment selected and the tariff applied by the shipper.

7. Reception

Notwithstanding any prejudice to the measures to take with regard to the shipper, claims for missing articles, visible defects or non-compliance of goods delivered with regard to goods ordered or the bill of lading, must be made in writing and sent by registered letter with acknowledgement, within 8 (eight) days following delivery of such goods. Beyond this period of time, no claim will be accepted. The purchaser shall leave Ebo Systems leeway to confirm these faults and to remedy them. The purchaser promises not to take any action himself, not bring in a third party for this purpose.

8. Return of products

No return of products shall be carried out without prior written authorization from Ebo Systems. The cost and risk of return of products is always at the expense of the purchaser. In case of visible defects or the non-conformity of delivered goods, duly recorded by Ebo systems under the condition scheduled in Article 7 of these conditions, the purchaser may obtain reimbursement of the price paid, excluding any indemnity and compensation. On the other hand, if the claims made by the purchaser are not substantiated, Ebo Systems has the right to invoice him for all non-substantiated travel, goods inspection and transport expenses.

9. Guarantee

Ebo Systems are ISO 9001 certified. Products are guaranteed against any functional fault for a duration of 6 (six) months as of the date of delivery. Under this guarantee, the only commitment encumbering Ebo Systems will be the reimbursement of the purchase price, excluding any compensation, no matter what it might be. In no case whatsoever can the liability of Ebo Systems exceed the price of the products. To be taken into account, any defective product under guaranteed must be returned at the expense and risk of the purchaser with a return note, once accepted by Ebo Systems.

10. Guarantee exclusions

Any demand with an aim to implementing the guarantee can only be accepted if the purchaser is up to date with his financial commitments with regard to Ebo Systems. Defects and damage caused by normal wear, accidental causes, negligence, malicious intent, implementation not in compliance with good works practice, protection and safety standards, regulations in force, repair by third parties or even defective maintenance shall be excluded from the guarantee.

11. Price

Products are provided at the price rate in force on the date of the order. Prices are net, ex plant, special packaging in addition.

12. Payment methods

Invoices are payable cash on reception, by check, signed and accepted letter of credit, protest not being necessary or any other accepted method of payment. In case of payment by letters of credit, the purchaser is bound to return the letters accepted and signed within a maximum of 7 (seven) days. Payment according to these general sales conditions is not simply the fact of paying by check or by letter of credit, but its effective cashing at the scheduled date. Any drop to the purchaser credit rating may substantiate the demand for first rate guarantees or cash payment when ordering or payment by sight draft prior to execution of orders received or before the due date of issued invoices. Ebo Systems reserves the right at all times, according to the risks involved, to set a maximum credit allowance for each purchaser, it being understood that these modalities are valid for all orders in progress. The refusal by the purchaser to meet these conditions gives Ebo Systems the right either to cancel all or part of the orders or to demand immediate payment of all sums due.

13. Late payment or failure to pay

In case of late payment, Ebo Systems may suspend all orders in progress without any prejudice to any other means of action. Any sum not paid at the scheduled payment time will give rise by full right and without any prior warning, to payment of late payment interest at a rate equal to one and a half times the legal interest rate in force in France, from the due date up to the payment date. In case of failure to pay forty-eight hours after formal notice without response, the sale shall be cancelled by full right if considered necessary by Ebo Systems, who can request restitution of products, without prejudice for other compensation. The resolution will not simply affect the order involved but also all previous orders whether delivered or being delivered and related payment, whether due or not. In case of payment by letter of credit, the returned letter shall be considered as a refusal to accept, assimilated to a failure to pay. Non-payment of a single invoice or at a payment date will result in the immediate payment of all sums due without other warnings. In all preceding cases, the sums due for other reasons or any other cause become immediately payable if Ebo Systems does not opt for the resolution of the corresponding orders. The purchaser shall reimburse, other than the principle and the interest, all expenses caused by the recovery by litigation of sums due, as well as a 15% (fifteen percent) penalty of the unpaid sum. In no case may payments be suspended or be the subject of any compensation without prior written approval from Ebo Systems. All partial payments shall first used to pay compensation and penalties, then the sums with the oldest due payment date. No failure to pay, or late payment, can be justified later by a claim. Lastly, reference to the stipulations made in Article 2 of these general sales conditions is made.

14. Transfer of risks

Transfer of risks takes place as of the moment the goods are made available to the purchaser at a location agreed upon with Ebo Systems at the date, or within the stipulated time frame, or as of the moment such goods have been delivered to the terminal of the forwarder, agreed with the purchaser. As of this moment, the goods are shipped at the risk and the expense of the purchaser.

15. Right of ownership

Ebo Systems reserves the ownership of delivered goods until the full payment of the sum due by the purchaser is received. The purchaser is bound to keep goods in perfect condition and to insure goods on behalf of the owner against all usual risks, especially loss, destruction or theft, with the indemnity being delegated in case of a problem to Ebo Systems. Ebo Systems must immediately be informed about any accident. The purchaser promises to immediately inform Ebo Systems in the case of settlement or judicial winding-up, in case of seizure or any other procedure initiated by a third party and to inform Ebo Systems of the exact location where delivered goods not yet paid for are stored. The purchaser promises not to use delivered unpaid for goods as security and in general not to carry out any operation likely to cause prejudice to the right of ownership of Ebo Systems. In case of resale of delivered goods, whether or not the purchaser is authorized, the purchaser declares now to declare to Ebo Systems the debt resulting from the sale to a sub-purchaser and authorizes Ebo Systems to cash the price paid by the sub-purchaser, up to the total sum of his debt with the purchaser. The purchaser promises to inform Ebo Systems immediately of the exact and complete identity of any sub-purchaser, who will be informed by the purchaser of the right of ownership by Ebo Systems, at the latest at the moment of signing the contract. Any violation by the purchaser with regard to the obligations stipulated in this clause or in the general sales conditions shall be sanctioned by full rights by the event of default. The claim by Ebo Systems to the goods of which the ownership is reserved is by means of registered letter with acknowledgement, sent to the purchaser, requiring him to return the goods in his possession to Ebo Systems. The claim of goods under reserve of ownership neither constitutes a resolution nor cancellation to the sales contract. The claim may be made by Ebo Systems in case of non-observance of any of the commitments by the purchaser, especially non-acceptance of a letter of credit, in which case Ebo Systems will have all legal rights to think that the purchaser is not capable of observing the agreed payment dates. All expenses caused by the claiming of goods or their corresponding sum are at the exclusive cost of the purchaser.

16. Court of competent jurisdiction and applicable law

The court of competent jurisdiction is expressly allocated to the courts of BRIEY - France, who will decide on the application of French law unless Ebo Systems decides to nominate another court of competent jurisdiction.



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