

# Support systems

Technical information





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# Support systems

## Product description

Whenever you install a system for getting cables from A to B (whether in the form of solid cable trays, mesh cable trays or wide-span systems), you will need a suitable support system. No cable management system is complete without the appropriate fastening elements. We offer solutions for a diverse range of application areas – from sales rooms, industrial halls, computer centres, power stations, airports and tunnels right through to residential buildings.

When choosing a suitable cable management and support system, various factors come into play: Do I need to lay data cables or electricity cables? How high is the cable load? What are the structural conditions at the site and what support distances need to be observed? What design concepts should apply? Do the systems need to retain their function in the event of fire (circuit integrity maintenance)? What weather conditions are to be expected and what impact will these have on corrosion protection?

We do not leave you to battle with these questions on your own. Our Application Technology department will be happy to help you with the processes of planning and installing your cable management systems. Special solutions can also be provided if you need them.



## Benefits

- Secure and sturdy systems
- Variable design allows the system to be adjusted for various areas of application
- Also designed to handle very high loads and large support distances
- Special solutions available on request
- Planning, installation and service

## Areas of application



**On walls and ceilings for technical building equipment – indoors and outdoors**



**Industrial halls and production facilities**



**Plant and power station construction**



**Infrastructure projects**

# How do I select my support system?

**It is not a case of “any old support system will do”. Depending on your requirements, there might be various solutions to choose from when it comes to suspending cable trays.**

It is absolutely essential to work through a couple of questions in advance:

## 1. Type of cable tray

The correct choice of cable tray depends on what kinds of lines are going to be laid – and how many. Different cable trays are suitable for routing power and control cables according to the weight of the cables involved. Our cable trays are the classic system for routing cables in a neat and well-organised manner. But if you are installing power cables, which have a tendency to heat up, it makes sense to use a system consisting of cable ladders (for example) because these provide good air circulation and prevent heat from building up. For control cables, solid cable trays or mesh cable trays are used. And if you need a solution for spanning large support distances, our wide-span cable trays are definitely up to the job. To accommodate high loads, heavy-duty versions are available. To see which support system is suitable for each type of cable tray, please refer to the table below.

## 2. Structural conditions

In addition to the type of cable tray, the structural conditions also play a crucial role when selecting a suitable support structure. If you have a trapezoidal sheet ceiling, we recommend using wall brackets to route the cables along the concrete wall. In the case of a brick wall, you should consider suspending the cable tray from the ceiling instead. In light of the above, you need to answer the following questions:

- Where is the system going to be mounted?  
(Ceiling, floor, wall)
- Type of substrate/material to which the system will be attached (concrete, sand-lime brick, steel beam, etc.)
- Fastening options (dowels, injection mortar, clamping claws, etc.)

## 3. Support distances

The support distances are determined by the structural and loading conditions. If only large support distances are possible, particular demands are placed on the support system.

## 4. Retention of function

To ensure retention of function in the event of a fire (circuit integrity maintenance), special cable trays, wall supports and ceiling suspension supports are required. We will be happy to advise you on which suspending supports are best suited to your specific scenario.

## 5. Weather conditions

To prevent the systems from getting damaged by corrosion, it is absolutely vital to consider the weather conditions or other influences. Our products are available in various materials and with different coatings, making them extremely versatile. Zinc-plated cable management systems are ideal for use in computer centres so that short circuits can be prevented. Further information on this topic can be found in the planning section.



### Consultation

Our Internal Sales department will be happy to assist you with further solutions:

T + 49 30 68283-801  
vertrieb-puk@pohlcon.com



# Which support system is suitable for which type of cable tray?



## (Mesh) cable trays

		Product line	Tray width up to 300 mm	Tray width up to 400 mm	Tray width up to 600 mm
Wall	Wall brackets	KWLL	✓	✗	✗
		KWF	✓	✓	✗
		KSLW	✓	✓	✗
		KW	✓	✓	✓
		KWMS	✓	✓	✓
		KWS	✓	✓	✓
		KIS	✓	✓	✓
		KISS	✓	✓	✓
		KWSS	✓	✓	✓
Ceiling	Central/middle suspending brackets	MA 60 for cable trays	✓	✗	✗
		GBAR for cable trays	✓	✗	✗
		GBAG for mesh cable trays	✓	✗	✗
	Fixed ceiling brackets	DB	✓	✗	✗
		DKSL	✓	✓	✗
	Pendulum suspensions	GB M8 + KHA 8	✓	✓	✓
		GB M10 + KHA 41	✓	✓	✓
		GB M10 + KHU 57	✓	✓	✓
		U-profiles (KHU/KDU/BGU 60)	✓	✓	✓
		I-profiles (KHI/KDI/BGI)	✓	✓	✓
		C-profiles (KDAG 41/KHA 41)	✓	✓	✓
	Wire rope suspensions	DSA...	✓	✓	✓
		KDU 40 + KWF	✓	✓	✗
		BGU 40 + KHU 40 + KWF	✓	✓	✗
	U-profile system	KDU 57 + KW	✓	✓	✓
BGU 57 + KHU 57 + KW		✓	✓	✓	
KDU 60 + KW		✓	✓	✓	
BGU 60 + KHU 60 + KW		✓	✓	✓	
C-profile mounting channels (STRUT)	KDAG 41 + KA 30	✓	✓	✗	
	BGA 41 + KHA 41 + KA 30	✓	✓	✗	
	KDAG 41 + KA 41	✓	✓	✓	
I-profile system	KDI + KT	✓	✓	✓	
	KDI + KTS	✓	✓	✓	
	BGI + KHI + KT/KTS	✓	✓	✓	
	KDI + KTSS	✓	✓	✓	



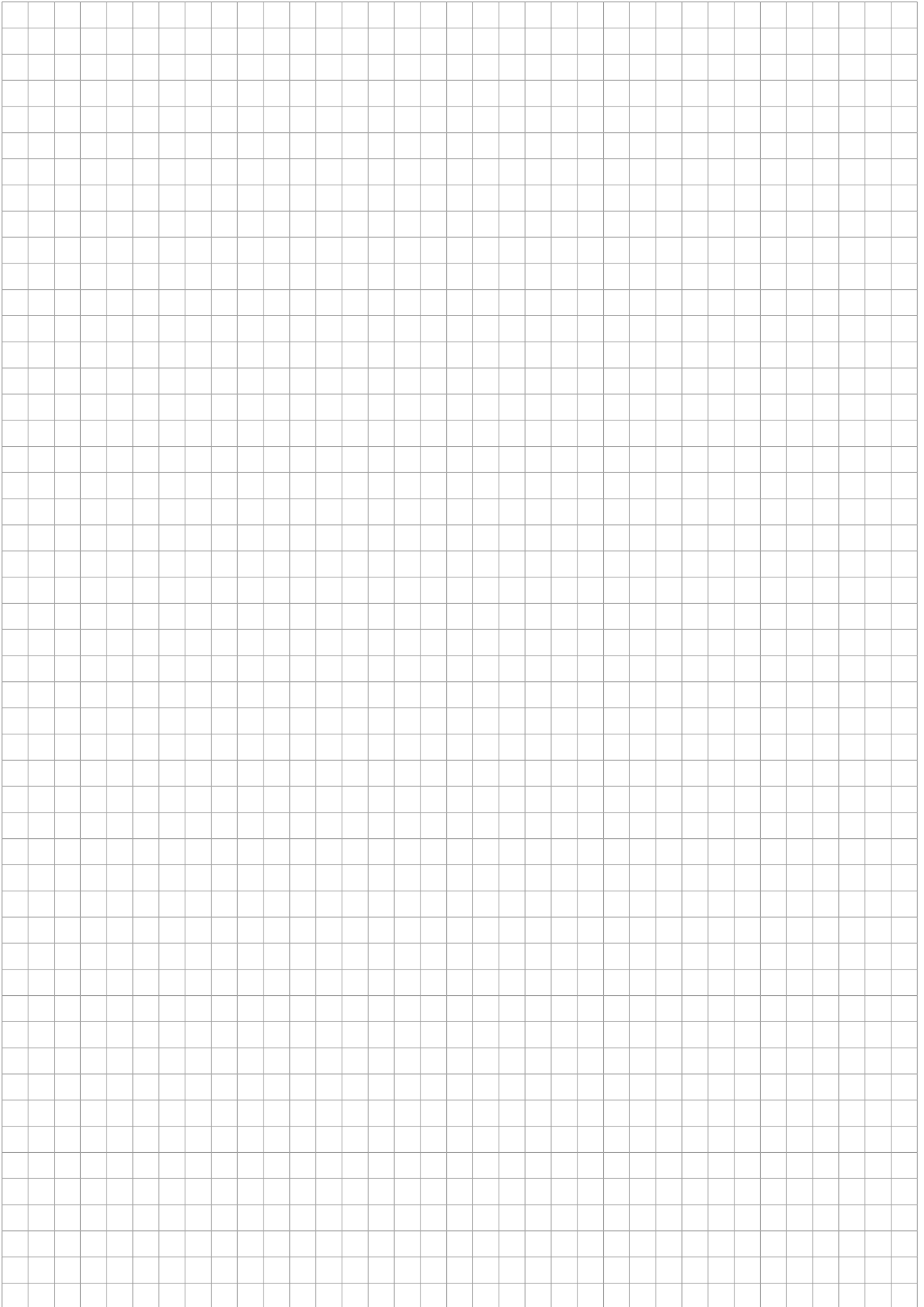
## Cable ladders

		Product line	Tray width up to 300 mm	Tray width up to 400 mm	Tray width up to 600 mm	
Wall	Wall brackets	KW	✓	✓	✓	
		KWMS	✓	✓	✓	
		KWS	✓	✓	✓	
		KIS	✓	✓	✓	
		KISS	✓	✓	✓	
		KWSS	✓	✓	✓	
Ceiling	Pendulum suspensions	GB M10 + KHA 41	✓	✓	✓	
		GB M10 + KHU 57	✓	✓	✓	
		U-profiles (KHU/KDU/BGU 60)	✓	✓	✓	
		I-profiles (KHI/KDI/BGI)	✓	✓	✓	
		C-profiles (KDAG 41/KHA 41)	✓	✓	✓	
	U-profile system	KDU 57 + KW	✓	✓	✓	
		BGU 57 + KHU 57 + KW	✓	✓	✓	
		KDU 60 + KW	✓	✓	✓	
		BGU 60 + KHU 60 + KW	✓	✓	✓	
	C-profile mounting channels (STRUT)	KDAG 41 + KA 41	✓	✓	✓	
		I-profile system	KDI + KT	✓	✓	✓
			KDI + KTS	✓	✓	✓
			BGI + KHI + KT/KTS	✓	✓	✓
			KDI + KTSS	✓	✓	✓



## Wide-span cable trays

		Product line	Tray width up to 300 mm	Tray width up to 400 mm	Tray width up to 600 mm
Wall	Wall brackets	EBW	✓	✓	✓
		KWS	✓	✓	✓
		KIS	✓	✓	✓
		KISS	✓	✓	✓
		KWSS	✓	✓	✓
Ceiling	Pendulum suspensions	U-profiles (KHU/KDU/BGU 60)	✓	✓	✓
		I-profiles (KHI/KDI/BGI)	✓	✓	✓
		C-profiles (KDAG 41/KHA 41)	✓	✓	✓



# An overview of the systems

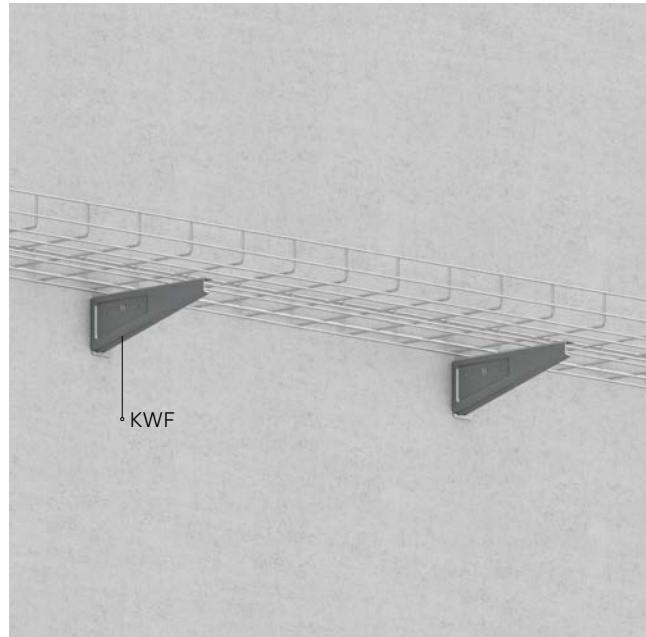
## Wall brackets and ceiling fixed suspensions

We offer a multitude of solutions for hanging cable trays on walls and ceilings. Our wall supports enable cable trays to be routed safely and securely along the wall. This system overview provides just a small selection of the products from our extensive range. We also offer brackets that can be mounted on steel beams, such as the KISS steel beam bracket. Wide-span cable trays can even be routed around concrete support columns with ease thanks to the EBW corner fixing.

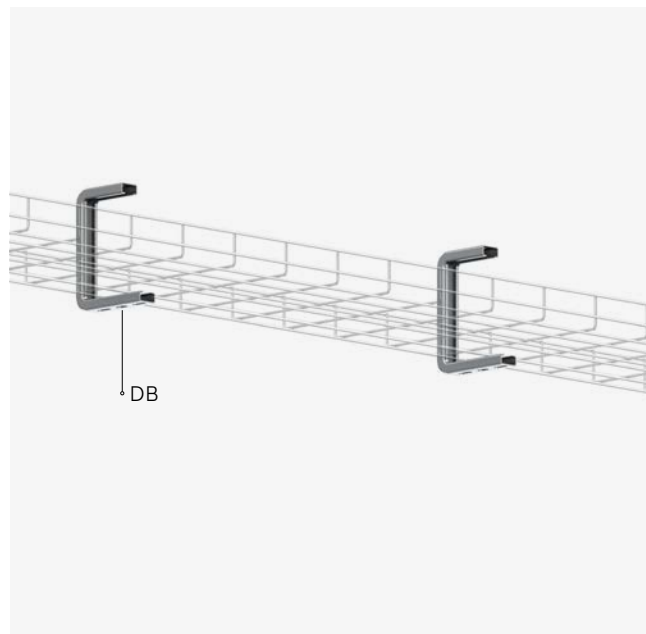
Should the cable trays need to be routed across the ceiling, we offer a large number of fixed ceiling supports, middle suspending supports and wire rope supports. For example, our system overview shows the DB fixed ceiling bracket, the GBAR middle suspending bracket for cable trays and the DSAG support bracket in the form of a wire rope suspension. These are particularly suitable for light loads, solid cable trays and mesh cable trays. The advantage of fixed ceiling brackets is that they barely protrude underneath and so take up very little space. If you intend to suspend wide-span cable trays from the ceiling, pendulum supports (e.g. two KDI bracket supports and the horizontal KHI I-profile) are suitable for this purpose.

As for the question of whether it is more appropriate to hang the cable tray on the wall or from the ceiling, the answer depends, among other things, on the local conditions, requirements and design concepts.

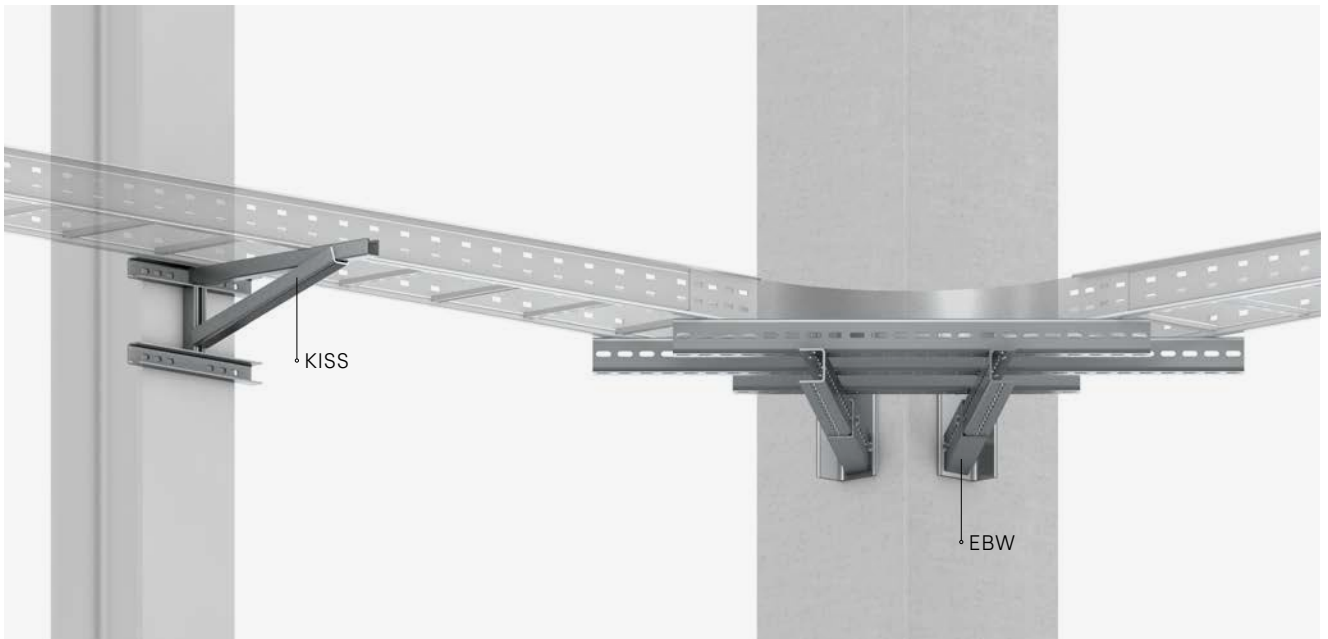
## Wall brackets



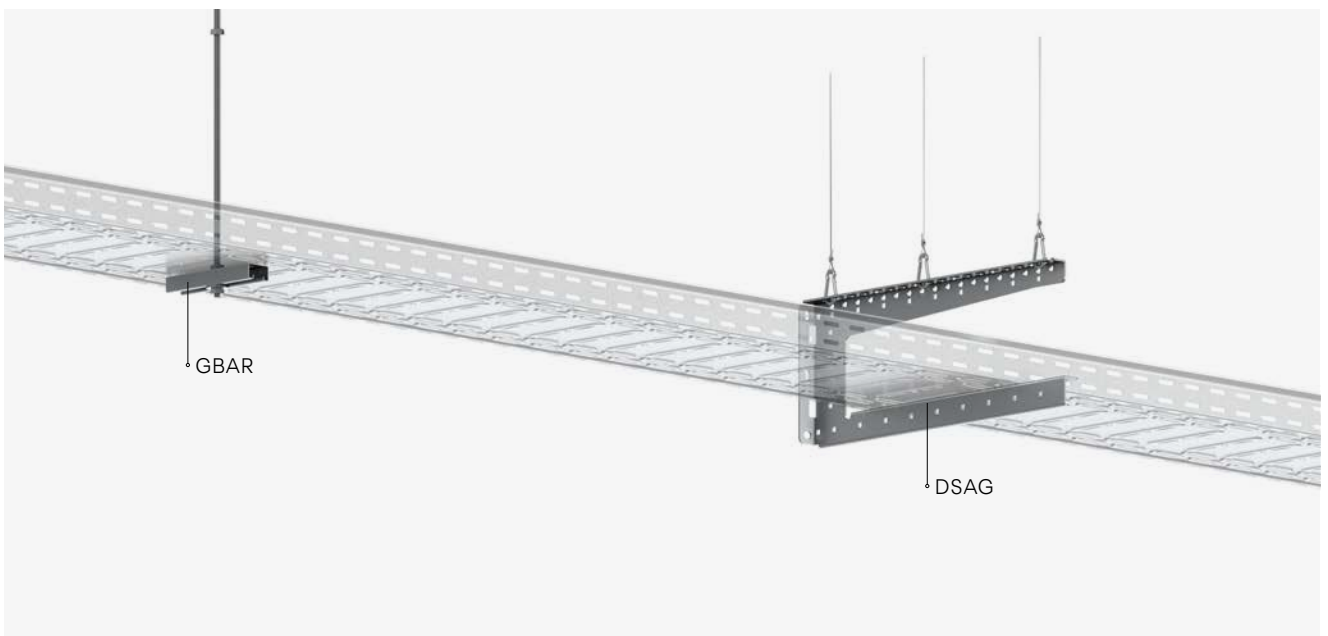
## Fixed ceiling brackets



## Wall brackets for particular requirements



## Middle suspending brackets and wire rope suspensions



### Our systems

The systems presented on this page are based on the principle of suspending cable trays from the ceiling using a bracket support and arm.

The U-profile system (consisting of U-profiles) is illustrated in the system overview by example configurations that show a KDU 40 bracket support with a welded-on head plate and a KHU 60 bracket support that is screwed to the BGU 60 head plate. The KWF and KW arms are suitable for use as stem supports. The U-profile system is the most popular system in the German-speaking world and its stand-out feature is its flexibility of use.

The I-profile system is constructed from I-profiles, in this case: the KDI bracket support with integrated head plate and the KHI bracket support with screwed-on BGI head plate plus the KT and KTS brackets. The I-profile system can handle very high loads and its strengths come to the fore in industrial installations of all kinds.

The PUK STRUT system - which is constructed from C-profile mounting channels - is the most popular system internationally. The overview shows an example of the KDAG 41 bracket support with an integrated head plate and the KHA 41 mounting channel with a screwed-on BGA 41 head plate. The stems are paired with KA 30 and KA 41 arms.

## U-profile system



## I-profile system



## C-profile mounting channels (PUK STRUT)







# Support systems for (mesh) cable trays

# Wall brackets



## Product description

The arms described here can be mounted on the wall using dowels or profile rails and are used for fixing cable trays to the wall. The wall supports are designed for various loads and tray widths. For mesh and solid cable trays, you can use the KWLL bracket with tray widths of up to 300 mm and the KSLW and KWF brackets with tray widths of up to 400 mm. These are designed for loads of up to 1.3 kN. Meanwhile, the KW and KWMS supports should be used with tray widths of up to 600 mm and a maximum bracket load of 3.8 kN.

If you need a product capable of bearing heavy loads of up to 10 kN and spanning long support distances, the KWS and KWSS arms are what you need. The KIS and KISS brackets are suitable for suspending cable trays from steel structures such as T-beams and double-T-beams.



## Areas of application

- On walls for technical building equipment - indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction



## Benefits

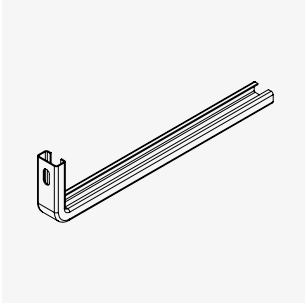
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

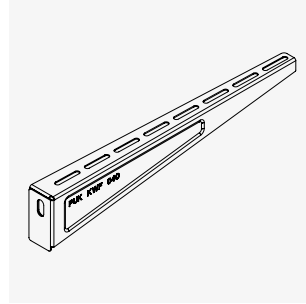
## Model overview

For tray widths up to 300 mm

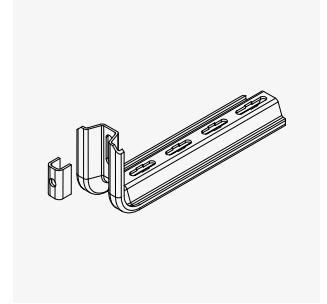


KWLL

For tray widths up to 400 mm

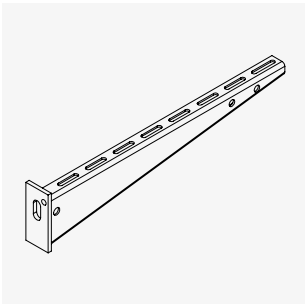


KWF

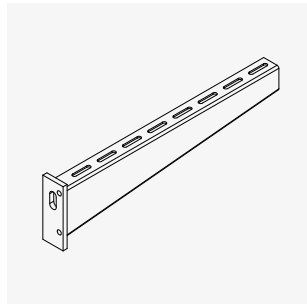


KSLW

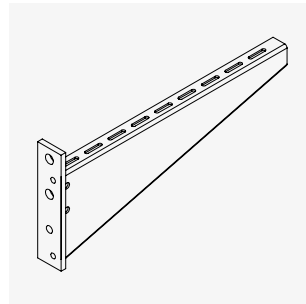
For tray widths up to 600 mm



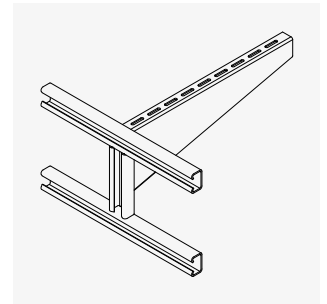
KW



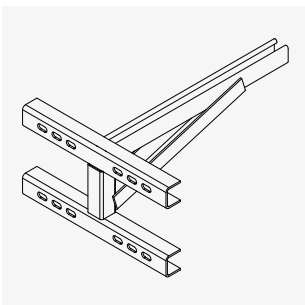
KWMS



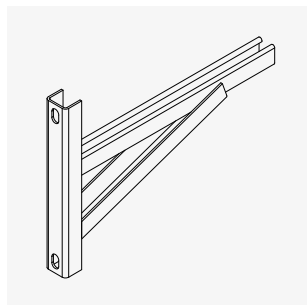
KWS



KIS



KISS



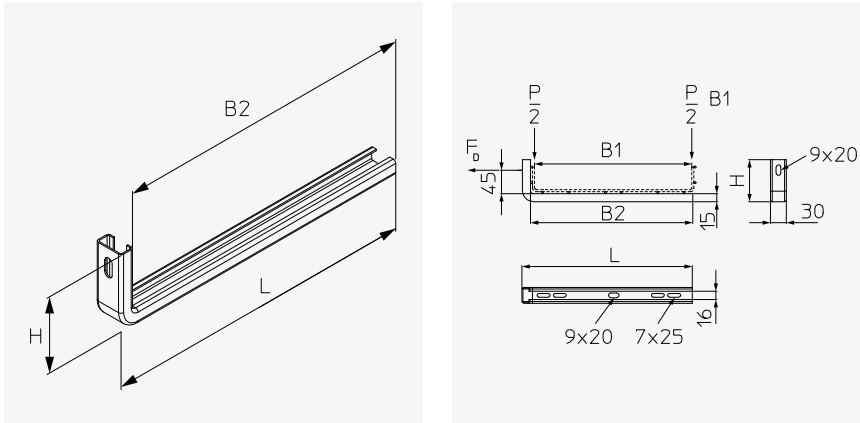
KWSS

# KWLL

## Wall bracket

Wall bracket consisting of 30x15 mm profile rail, slot size 16 mm. For mounting on walls.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>E</sub> kg
KWLL 010	80	100	110	125	0.3	2.0	0.13	0.13
KWLL 020	80	200	210	225	0.3	3.0	0.20	0.21
KWLL 030	80	300	310	325	0.3	4.0	0.28	0.28

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



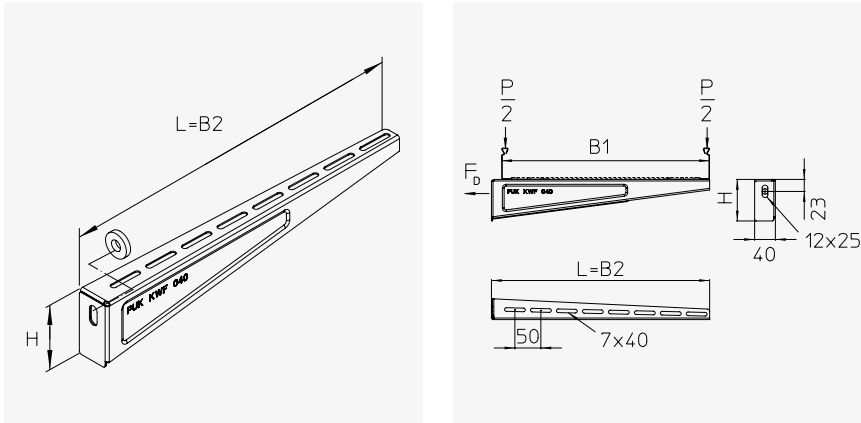
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KWF

## Wall/stem support

Wall/stem support, made from folded sheet steel. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>F</sub> kg
KWF 010	80	100	120	120	1.2	1.58	0.21	0.24
KWF 020	80	200	220	220	1.2	2.33	0.29	0.32
KWF 030	80	300	320	320	1.2	3.15	0.43	0.47
KWF 040	80	400	420	420	1.2	3.99	0.50	0.54

H: Height | B1: Tray width | B2: Bracket length | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm
- KDU 40 bracket support, 40x30 mm
- KHU 40 bracket support, 40x30 mm



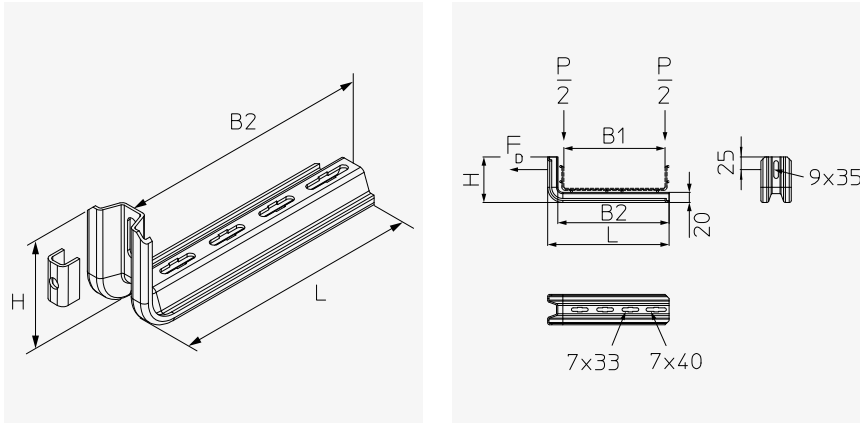
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KSLW

## Wall bracket

Wall bracket, consisting of 60x20 mm W-/trapezoidal profile, holes in centre. Tested in accordance with DIN EN 61537. For mounting on walls. Max. support distance 1.2 m.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>F</sub> kg
KSLW 010	90	100	120	140	1.3	2.80	0.39	0.41
KSLW 015	90	150	170	190	1.0	3.40	0.48	0.50
KSLW 020	90	200	220	240	0.9	4.10	0.56	0.59
KSLW 025	90	250	270	290	0.7	4.80	0.64	0.68
KSLW 030	90	300	320	340	0.6	5.50	0.72	0.76
KSLW 040	90	400	420	440	0.5	6.90	0.89	0.95

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply when the product is being mounted as a wall bracket. In the case of wall mounting, the KSL-SP spacer must be installed to prevent profile deformations caused by frictional contact with the fastening screw.

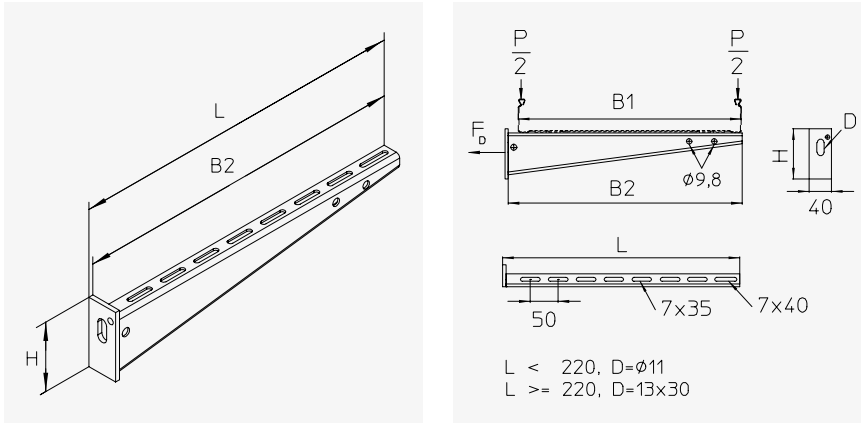
The KSL-SP spacer is included in the scope of delivery.

# KW

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KW 010	45	100	115	124	1.4	3.10	0.12	0.13	0.13	0.15
KW 015	45	150	170	174	1.5	4.10	*	0.17	0.16	0.16
KW 020	70	200	215	225	2.0	3.00	0.30	0.32	0.39	0.31
KW 030	70	300	315	326	2.0	4.00	0.41	0.44	0.47	0.42
KW 040	90	400	415	426	2.4	3.60	0.70	0.80	0.76	0.73
KW 050	110	500	515	528	2.1	3.40	1.24	1.33	1.08	1.10
KW 060	110	600	615	628	2.1	4.00	1.45	1.55	1.25	1.26
KW 070	110	700	715	728	3.0	5.68	2.12	2.27	*	*

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

\* On request

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



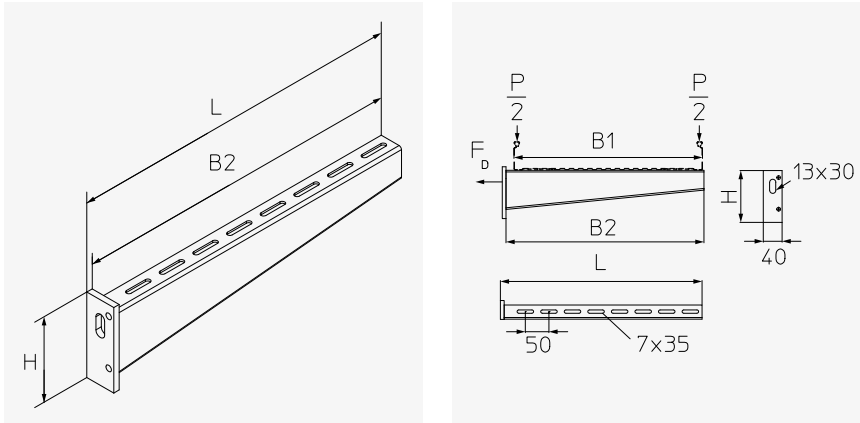
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KWMS

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KWMS 010	110	100	115	128	3.8	1.36	0.50	0.53	0.51	0.52
KWMS 020	110	200	215	228	3.8	1.81	0.71	0.76	0.73	0.74
KWMS 030	110	300	315	328	3.8	2.32	0.92	0.99	0.94	0.95
KWMS 040	110	400	415	428	3.8	2.86	1.13	1.21	1.16	1.17
KWMS 050	110	500	515	528	3.8	3.42	1.34	1.43	1.37	1.38
KWMS 060	110	600	615	628	3.8	3.99	1.54	1.65	1.58	1.60

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm
- KHU 60 bracket support, 60x40 mm
- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

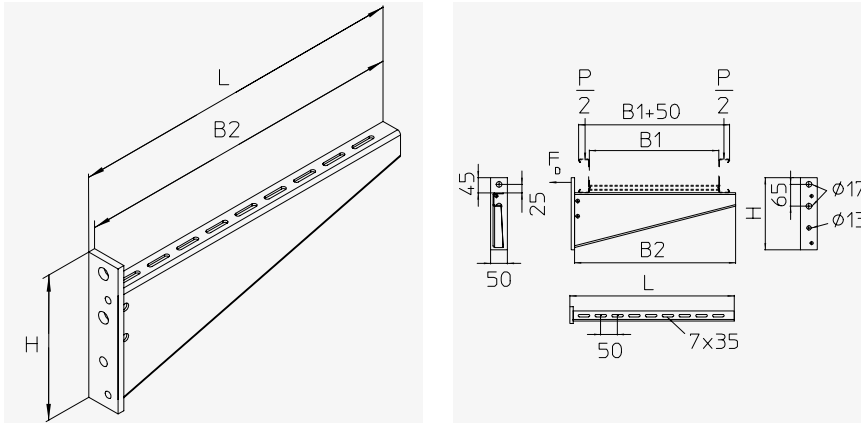


# KWS

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KWS 020	215	200	270	290	7.0	1.31	2.04	1.92	1.92
KWS 030	215	300	370	390	6.7	1.49	2.40	2.26	2.26
KWS 040	215	400	470	490	6.5	1.69	2.78	2.61	2.61
KWS 050	215	500	570	592	6.3	1.91	2.91	2.95	2.95
KWS 060	215	600	670	692	6.1	2.13	3.22	3.29	3.29
KWS 070	215	700	770	792	5.2	2.60	3.54	3.64	3.64
KWS 080	215	800	870	892	4.4	3.07	3.85	3.97	3.97
KWS 090	215	900	970	992	3.6	3.56	4.17	4.32	4.32
KWS 100	215	1,000	1,070	1,092	2.8	4.06	4.48	4.67	4.67

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm
- KHU 60 bracket support, 60x40 mm
- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



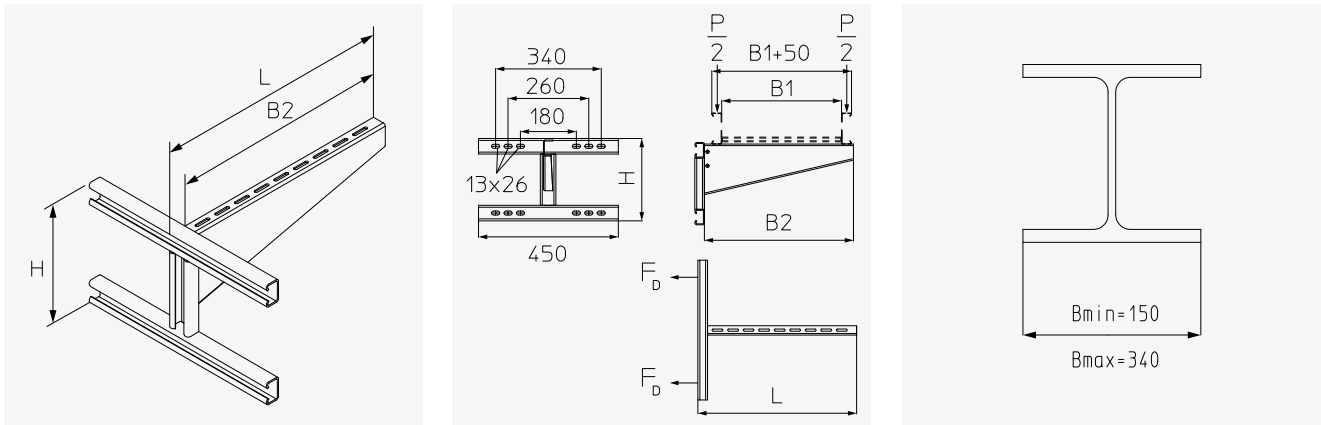
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KIS

## Wall bracket

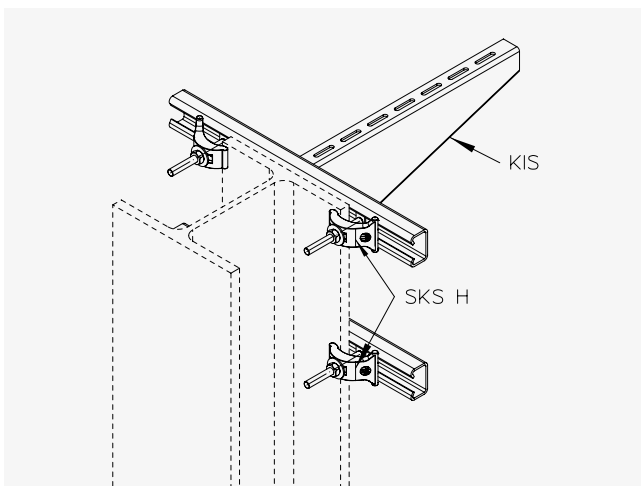
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KIS 020F	265	200	275	310	7.0	0.66	4.32
KIS 030F	265	300	375	410	6.7	0.76	4.65
KIS 040F	265	400	475	510	6.5	0.86	5.00
KIS 050F	265	500	575	610	6.3	0.97	5.34
KIS 060F	265	600	675	710	6.1	1.09	5.68
KIS 070F	265	700	775	810	5.2	1.33	6.02
KIS 080F	265	800	875	910	4.4	1.57	6.36
KIS 090F	265	900	975	1,010	3.6	1.83	6.70
KIS 100F	265	1,000	1,075	1,110	2.8	2.08	7.04

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KIS wall bracket attached to a steel beam using the SKS H beam clamp set.

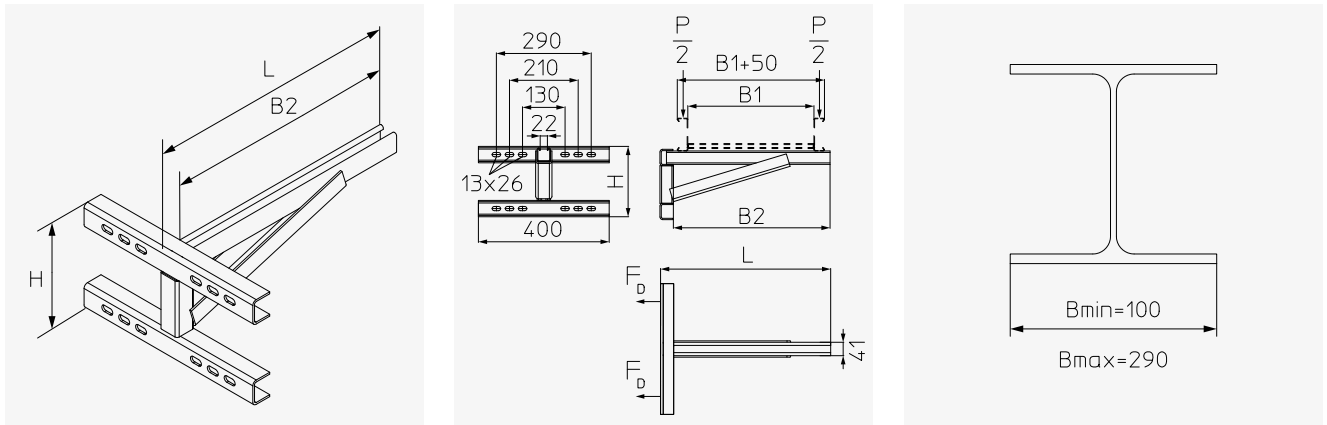
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KISS

## Wall bracket

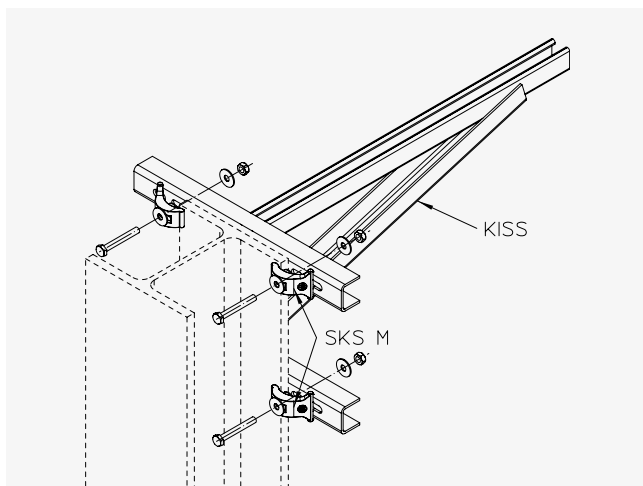
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KISS 020F	150	200	275	210	10.0	0.93	4.66
KISS 030F	185	300	375	420	10.0	0.91	5.42
KISS 040F	215	400	475	520	10.0	0.92	6.17
KISS 050F	250	500	575	620	10.0	0.92	6.93
KISS 060F	280	600	675	720	10.0	0.92	7.70
KISS 070F	315	700	775	820	10.0	0.99	8.44
KISS 080F	345	800	875	920	10.0	1.06	9.21
KISS 090F	380	900	975	1,020	10.0	1.10	9.96
KISS 100F	410	1,000	1,075	1,120	10.0	1.15	10.71

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KISS wall bracket attached to a steel beam using the SKS M beam clamp set.

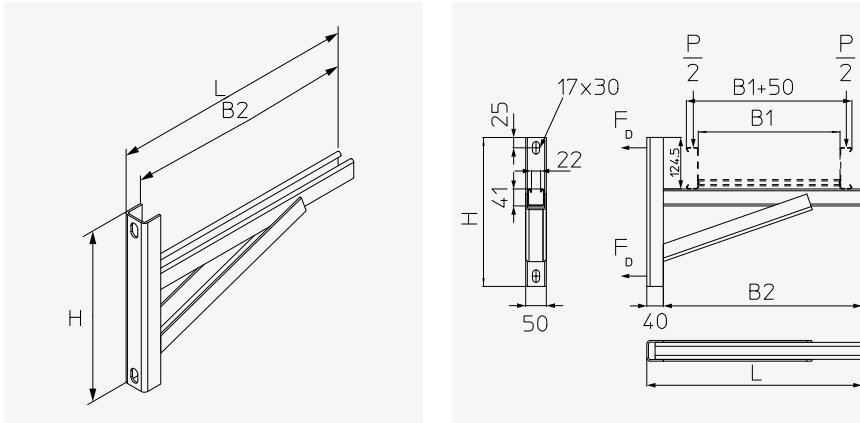
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KWSS

## Wall bracket

Wall bracket, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls.

### Technical data

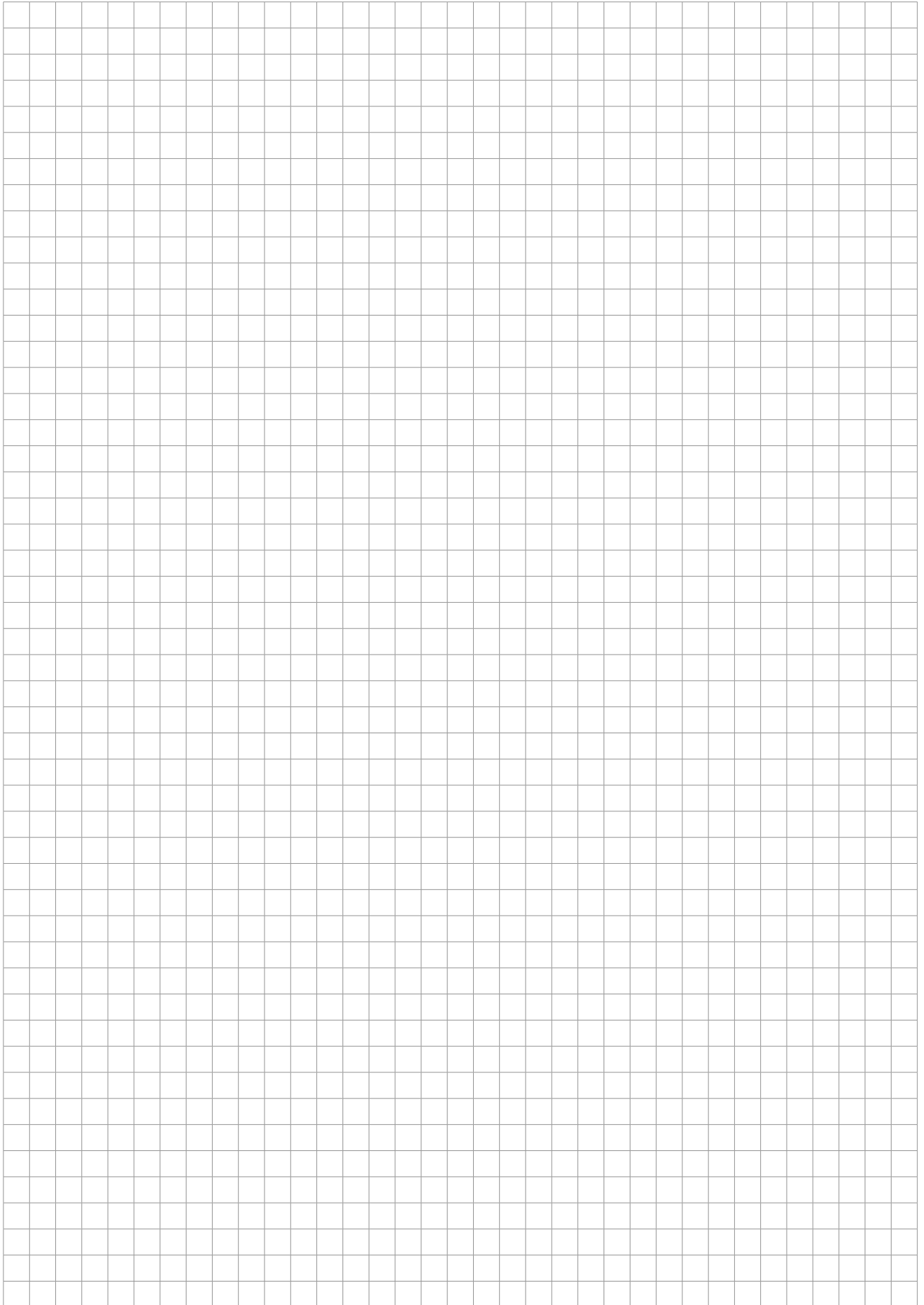


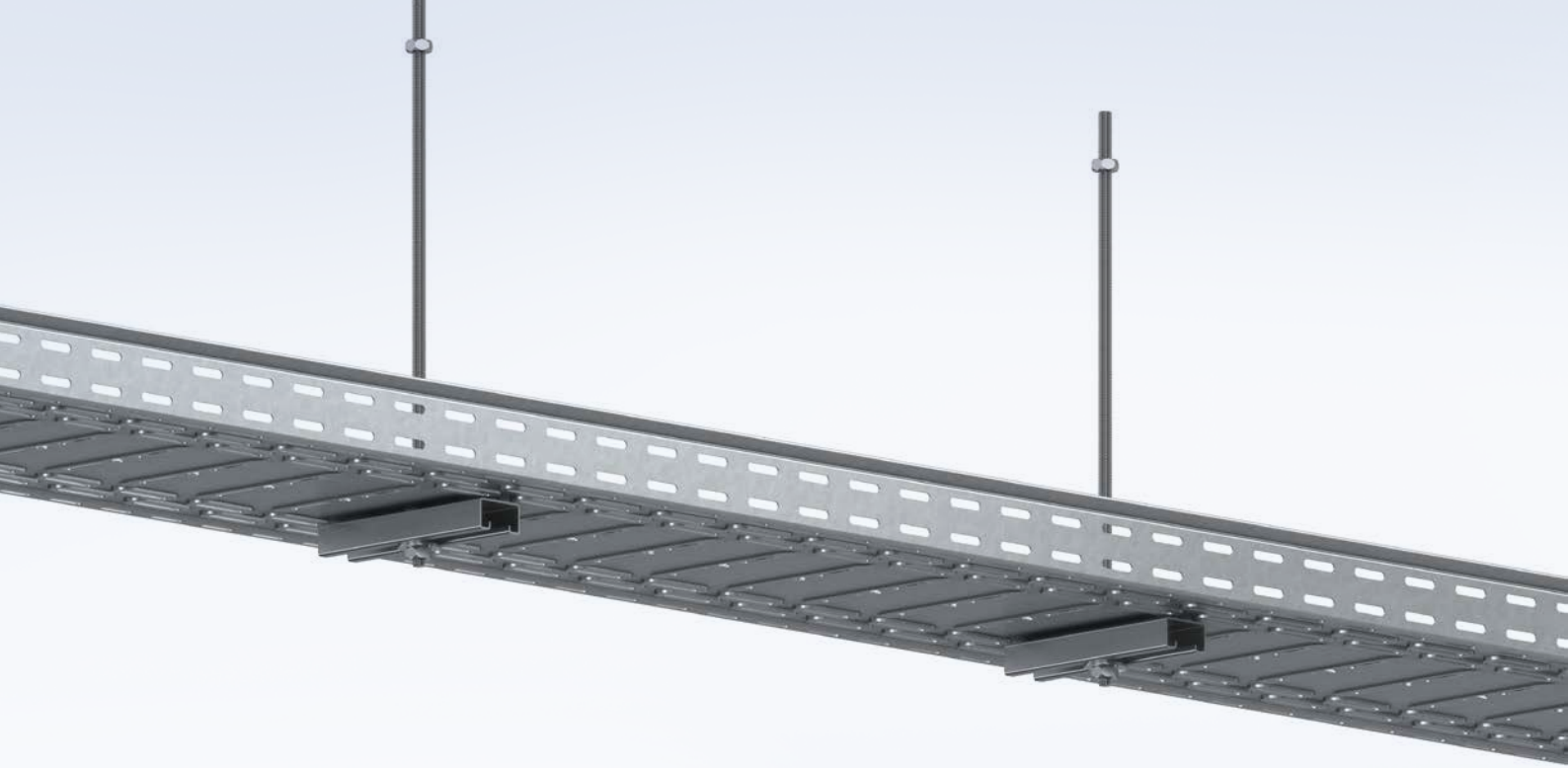
Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KWSS 020F	290	200	275	320	10.0	0.76	2.59
KWSS 030F	320	300	375	420	10.0	0.86	3.37
KWSS 040F	360	400	475	520	10.0	0.91	4.18
KWSS 050F	390	500	575	620	10.0	0.97	4.96
KWSS 060F	360	600	675	720	10.0	1.26	5.51
KWSS 070F	390	700	775	820	10.0	1.44	6.28
KWSS 080F	425	800	875	920	10.0	1.56	7.08
KWSS 090F	455	900	975	1,020	10.0	1.66	7.85
KWSS 100F	490	1,000	1,075	1,120	10.0	1.72	8.65

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.





# Central and middle suspending brackets

## Product description

Our central and middle suspending brackets are suitable for suspending solid and mesh cable trays from the ceiling. They are designed for loads of up to 0.7 kN. The GBAR central suspending bracket and MA 60 middle suspending support can be used to suspend cable trays with tray widths of up to 300 mm. The MA 60 middle suspending bracket is an internal suspension element for cable trays with a side rail height of 60 mm.

The GBAR and GBAG central suspending brackets are attached externally. The latter has been exclusively designed for mesh cable trays with tray widths of up to 300 mm. The central and middle suspending brackets are attached to a dowel using a sleeve.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



## Benefits

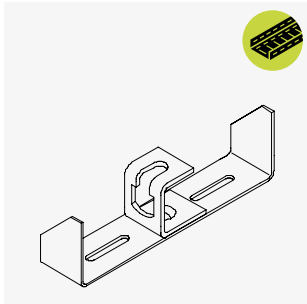
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads

## Available surface coatings and materials

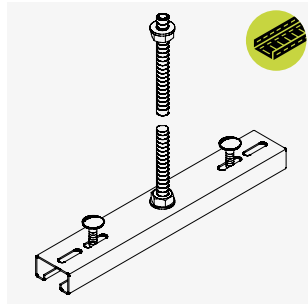
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview

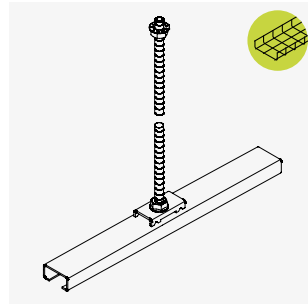
For tray widths up to 300 mm



MA 60



GBAR



GBAG

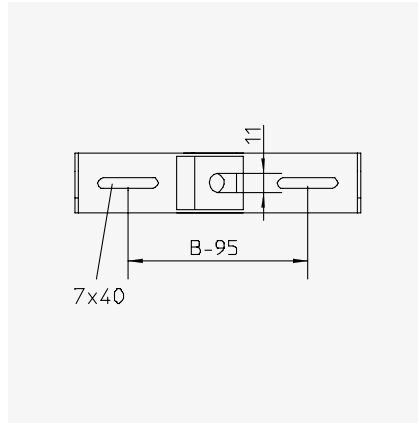
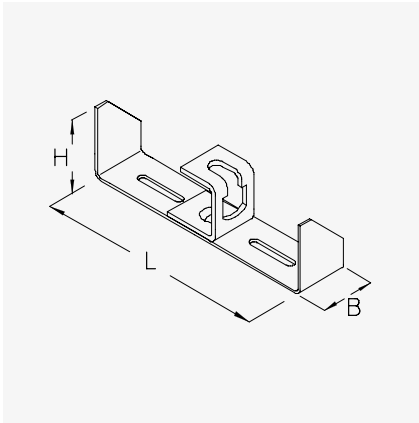
# MA 60

## Middle suspending bracket, internal



Internal middle suspending bracket for cable trays (height 60 mm). For tray widths up to 300 mm.

### Technical data



Model	H mm	B mm	L mm	P <sub>max</sub> kN	G S kg
MA 60-10S	56	40	90	0.26	0.26
MA 60-20S	56	40	190	0.26	0.36
MA 60-30S	56	40	290	0.26	0.45

H: Height | B: Width | L: Length | P<sub>max</sub>: Maximum load | G: Weight (per surface/material)



The middle suspending bracket is **not** suitable for the products in the cable installation trays category.



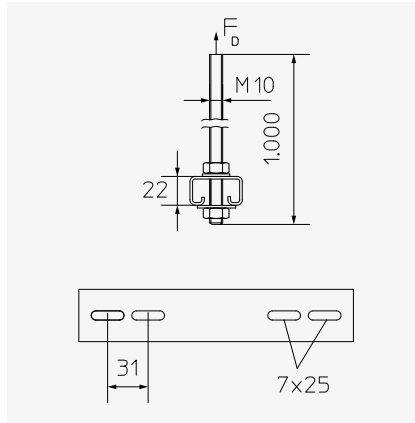
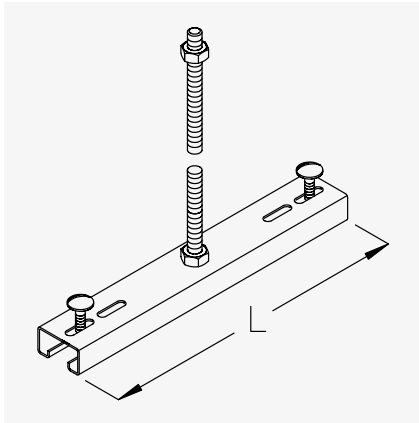
# GBAR

## Central suspending bracket, external



External central suspending bracket with threaded rod for cable trays. For tray widths up to 300 mm. A threaded rod (L = 1,000 mm) is included in the set.

### Technical data



Model	B mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>E</sub> kg
GBAR 10	100	60	0.7	1.0	0.62	0.62
GBAR 20	200	160	0.7	1.0	0.75	0.75
GBAR 30	300	260	0.7	1.0	0.88	0.88

B: Width | L: Length | P<sub>max</sub>: Maximum load | F<sub>D</sub>/P: Dowel load/load | G: Weight (per surface/material)



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

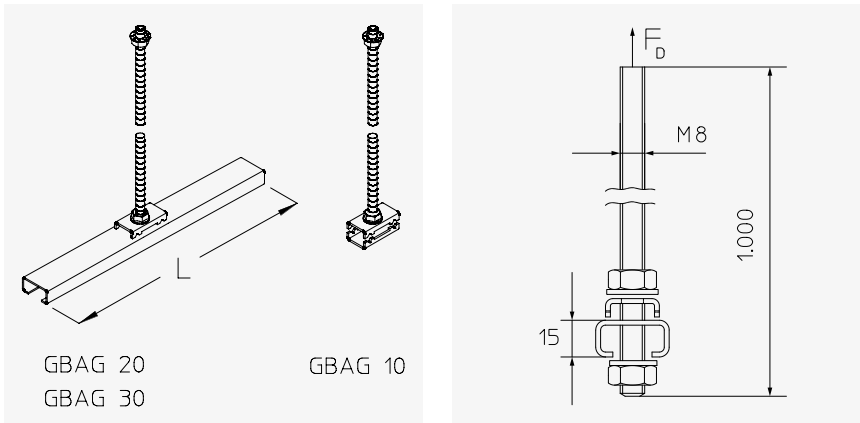
# GBAG

## Central suspending bracket, external



External central suspending bracket with threaded rod for mesh cable trays. For tray widths up to 300 mm. A threaded rod (L = 1,000 mm) is included in the set.

### Technical data



Model	B mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>E</sub> kg
GBAG 10	100	41	0.5	1.0	0.42	0.42
GBAR 20	200	180	0.5	1.0	0.50	0.50
GBAR 30	300	280	0.5	1.0	0.57	0.57

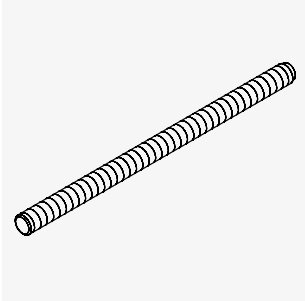
B: Width | L: Length | P<sub>max</sub>: Maximum load | F<sub>D</sub>/P: Dowel load/load | G: Weight (per surface/material)



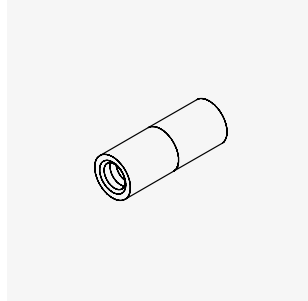
The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

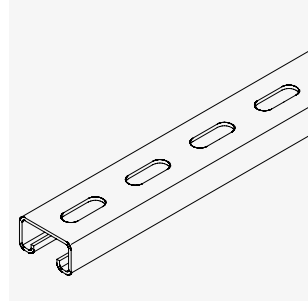
## Installation components



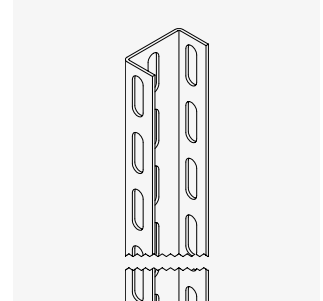
**GB**  
Threaded rod, DIN 976-1  
GV E



**VM**  
Rod coupling  
GV E



**KHA 8**  
40x22 mm profile rail,  
perforated  
F E4



**KHU 57**  
Bracket support, 57x30 mm  
GV S F E E4

# Fixed ceiling brackets



## Product description

Our fixed ceiling brackets are suitable for suspending mesh and solid cable trays from the ceiling. For light loads of up to 0.6 kN and tray widths of up to 300 mm, you should use the DB fixed ceiling bracket. The DKSL fixed ceiling bracket is able to withstand loads of up to 0.9 kN and can be used with tray widths of up to 400 mm. It is attached to the ceiling using dowels. Prior to attachment, the KSL-SP spacer must be fitted to prevent deformation of the trapezoidal profile.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



## Benefits

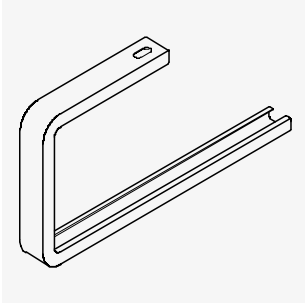
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

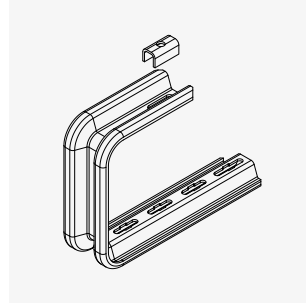
## Model overview

For tray widths up to 300 mm



DB

For tray widths up to 400 mm



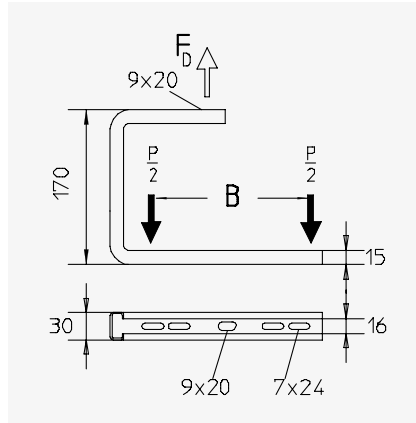
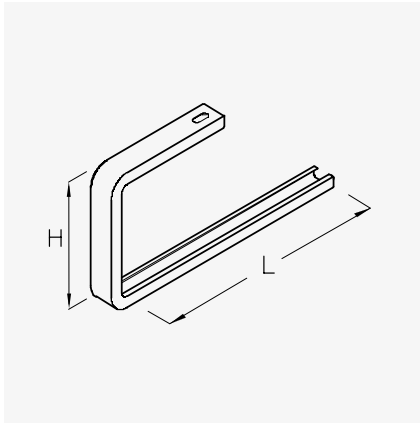
DKSL

# DB

## Fixed ceiling brackets

Fixed ceiling bracket, 30x15 mm profile rail.

### Technical data



Model	H mm	B mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>E</sub> kg
DB 10	170	100	110	0.60	1.2	0.25	0.30
DB 20	170	200	210	0.40	1.1	0.36	0.44
DB 30	170	300	310	0.28	1.1	0.47	0.58

H: Height | B: Tray width | L: Length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



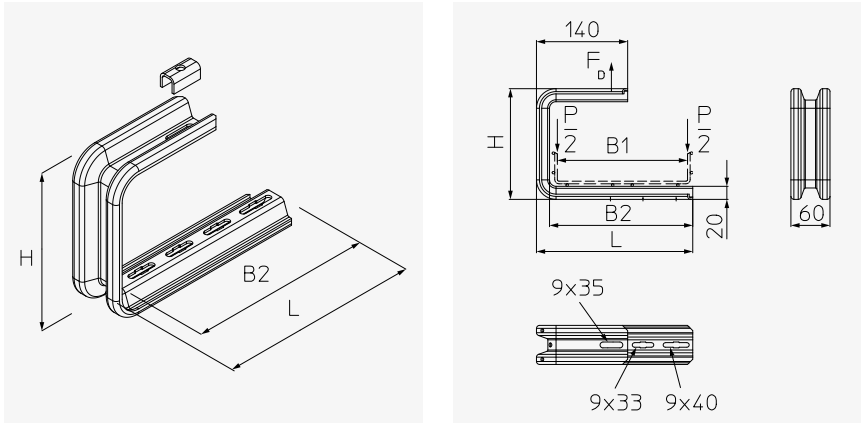
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.

# DKSL

## Fixed ceiling brackets

Fixed ceiling bracket, made of 60x20x2.5 mm W-/trapezoidal profile, holes in centre, suspension length 170 mm.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>F</sub> kg
DKSL 010	170	100	120	140	0.9	3.1	0.62	0.86
DKSL 020	170	200	220	240	0.5	2.1	0.79	0.84
DKSL 030	170	300	320	340	0.4	2.7	0.94	1.00
DKSL 040	170	400	420	440	0.3	3.3	1.11	1.18

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply when the product is being mounted as a fixed ceiling bracket. In the case of ceiling mounting, the KSL-SP spacer must be installed to prevent profile deformations caused by frictional contact with the fastening screw.

The KSL-SP spacer is included in the scope of delivery.

# Pendulum suspensions



## Product description

Pendulum supports are used to suspend cable trays from ceilings. Particularly in the case of trapezoidal sheet ceilings, please be aware that a pendulum suspension solution can only be implemented using TBS trapezium bows and GB threaded rods. For mesh and solid cable trays, we recommend using pendulum suspension solutions that consist of GB M8 threaded rods and the KHA 8 profile rail. For larger loads, suspension solutions can be achieved by combining GB M10 threaded rods with a KHA 41 C-profile or KHU 57 U-profile. Pendulum suspensions constructed from U-, I- or C-profiles are used for very high loads.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



## Benefits

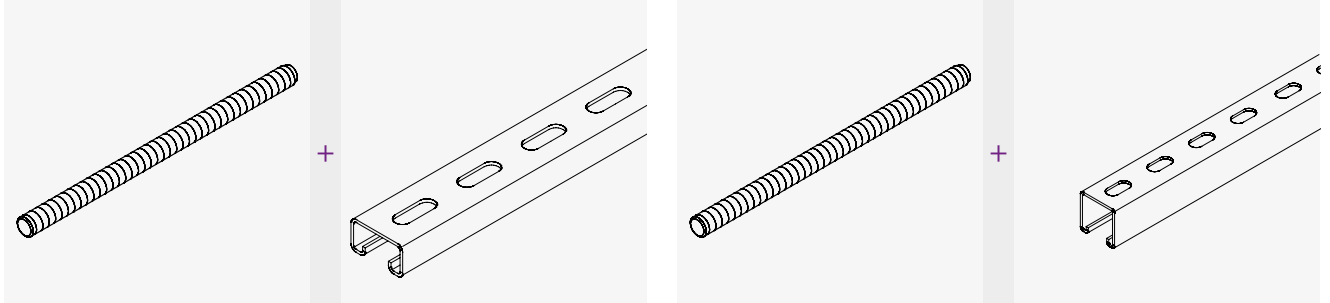
- A secure and sturdy system
- Even load distribution
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

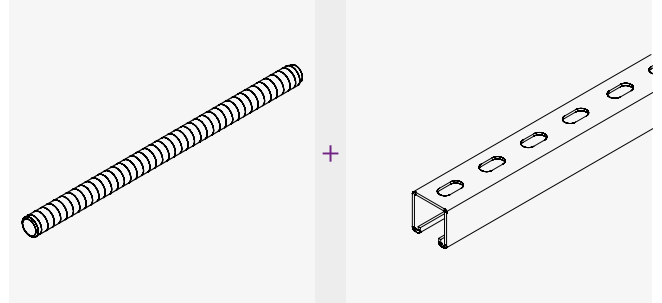


## Model overview



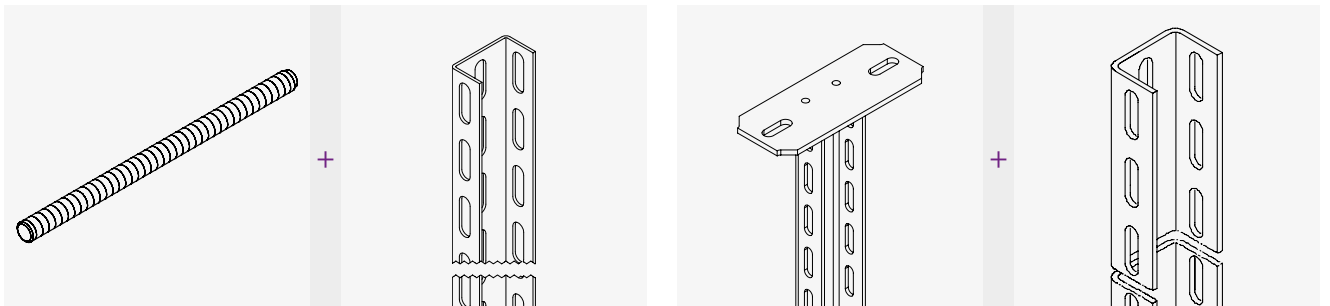
2x GB (M8)

1x KHA 8



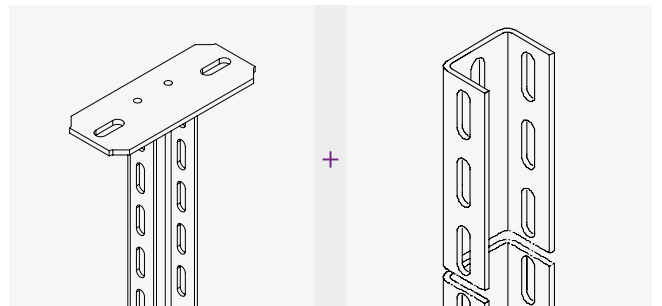
2x GB (M10)

1x KHA 41



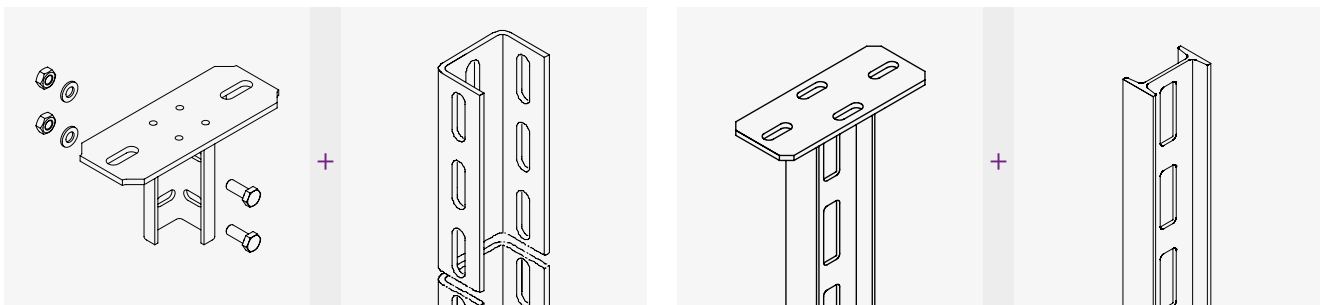
2x GB (M10)

1x KHU 57



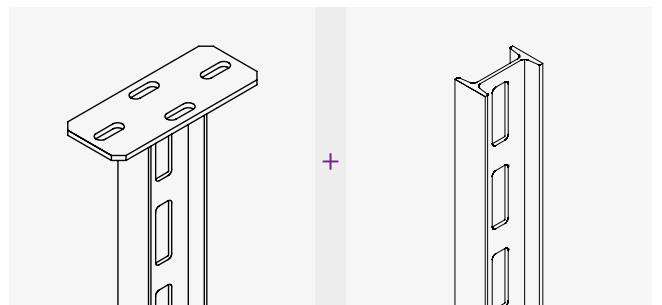
2x KDU 60

1x KHU 60



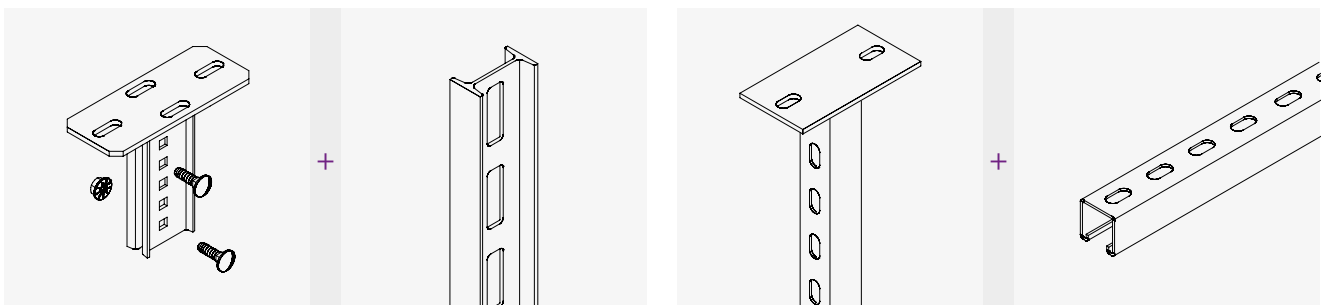
2x BGU 60

3x KHU 60



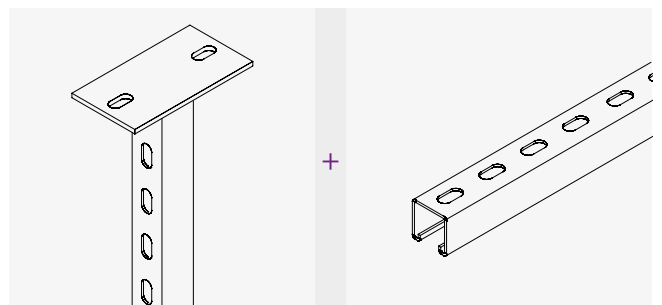
2x KDI

1x KHI



2x BGI

3x KHI



2x KDAG 41

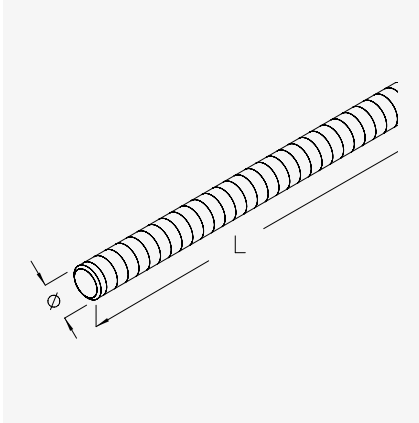
1x KHA 41

# GB

## Threaded rod, DIN 976-1

Stress areas according to DIN 267-4: GB M8 = 36.6 mm<sup>2</sup>, GB M10 = 58.0 mm<sup>2</sup>, GB M12 = 84.3 mm<sup>2</sup>.

### Technical data



Model	L mm	Ø mm	G <b>GV</b> kg/100 pcs.
GB M8-03	300	8	8.20
GB M8-05	500	8	15.30
GB M8-10	1,000	8	30.70
GB M10-03	300	10	14.10
GB M10-05	500	10	24.30
GB M10-10	1,000	10	49.70
GB M12-03	300	12	21.70
GB M12-05	500	12	36.20
GB M12-10	1,000	12	72.50

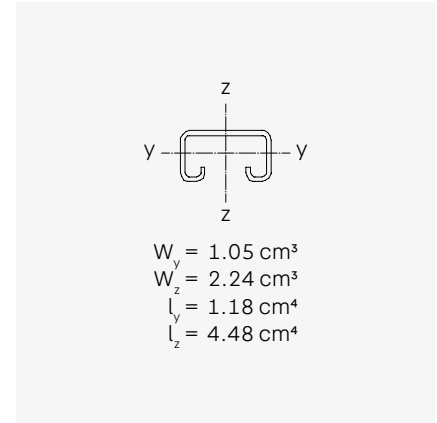
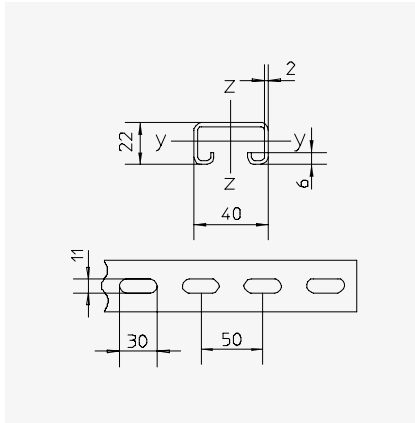
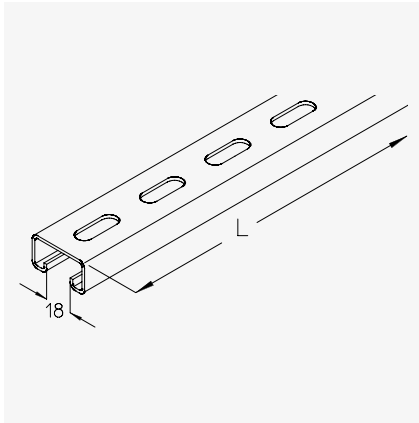
L: Length | Ø: Diameter | G: Weight (per surface/material)

# KHA 8

## 40x22 mm profile rail, perforated

40x22x2.00 mm profile rail, with a row of continuous holes measuring 11x30 mm, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 8-02	22	40	200	2.00	0.31
KHA 8-03	22	40	300	2.00	0.46
KHA 8-04	22	40	400	2.00	0.62
KHA 8-05	22	40	500	2.00	0.77
KHA 8-06	22	40	600	2.00	0.93
KHA 8-07	22	40	700	2.00	1.08
KHA 8-08	22	40	800	2.00	1.24
KHA 8-09	22	40	900	2.00	1.39
KHA 8-10	22	40	1,000	2.00	1.54
KHA 8-11	22	40	1,100	2.00	1.69
KHA 8-12	22	40	1,200	2.00	1.85
KHA 8-13	22	40	1,300	2.00	2.01
KHA 8-14	22	40	1,400	2.00	2.16
KHA 8-15	22	40	1,500	2.00	2.32
KHA 8-20	22	40	2,000	2.00	3.09
KHA 8-30	22	40	3,000	2.00	4.63
KHA 8-60	22	40	6,000	2.00	8.27

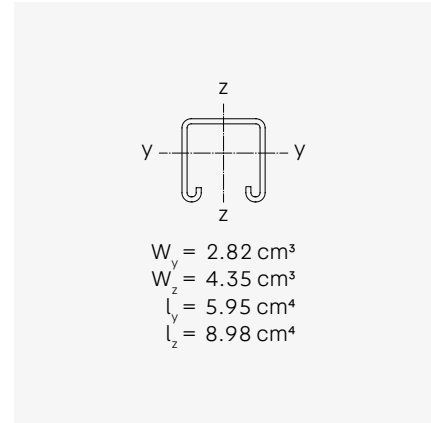
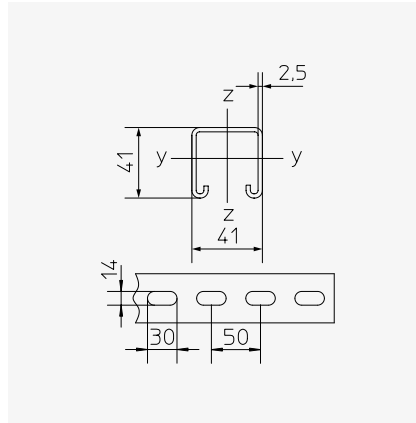
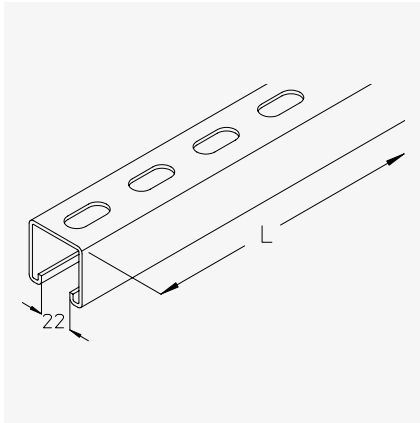
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 41

## 41x41 mm mounting channel, perforated

41x41x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 41-01F	41	41	100	2.50	0.25
KHA 41-02F	41	41	200	2.50	0.50
KHA 41-03F	41	41	300	2.50	0.70
KHA 41-04F	41	41	400	2.50	1.00
KHA 41-05F	41	41	500	2.50	1.30
KHA 41-06F	41	41	600	2.50	1.60
KHA 41-07F	41	41	700	2.50	1.80
KHA 41-08F	41	41	800	2.50	2.10
KHA 41-09F	41	41	900	2.50	2.40
KHA 41-10F	41	41	1,000	2.50	2.60
KHA 41-11F	41	41	1,100	2.50	2.90
KHA 41-12F	41	41	1,200	2.50	3.20
KHA 41-13F	41	41	1,300	2.50	3.40
KHA 41-14F	41	41	1,400	2.50	3.70
KHA 41-15F	41	41	1,500	2.50	4.00
KHA 41-20F	41	41	2,000	2.50	5.20
KHA 41-30F	41	41	3,000	2.50	7.80
KHA 41-60F	41	41	6,000	2.50	15.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

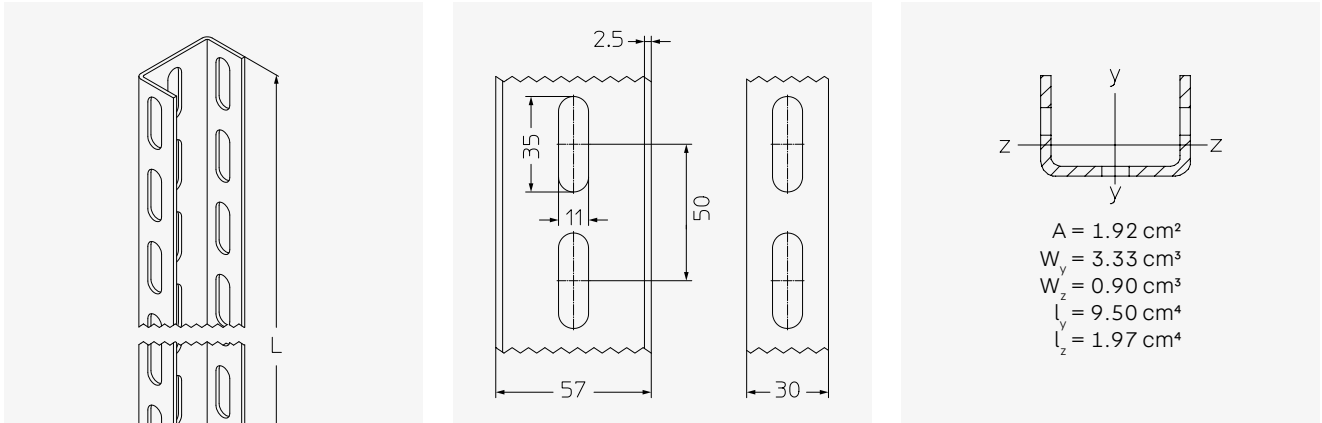
- KDAG 41 bracket support, 41x41 mm

# KHU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G S kg	G F kg	G E kg	G E4 kg
KHU 57-02	30	57	200	0.34	0.36	0.34	0.35
KHU 57-03	30	57	300	0.51	0.55	0.51	0.52
KHU 57-04	30	57	400	0.68	0.73	0.68	0.69
KHU 57-05	30	57	500	0.85	0.91	0.85	0.87
KHU 57-06	30	57	600	1.02	1.09	1.03	1.04
KHU 57-07	30	57	700	1.19	1.27	1.20	1.21
KHU 57-08	30	57	800	1.36	1.45	1.37	1.38
KHU 57-09	30	57	900	1.53	1.63	1.54	1.56
KHU 57-10	30	57	1,000	1.70	1.82	1.71	1.73
KHU 57-11	30	57	1,100	1.87	2.00	1.88	1.90
KHU 57-12	30	57	1,200	2.04	2.18	2.05	2.08
KHU 57-13	30	57	1,300	2.21	2.36	2.22	2.25
KHU 57-14	30	57	1,400	2.38	2.54	2.39	2.42
KHU 57-15	30	57	1,500	2.55	2.72	2.56	2.59
KHU 57-30	30	57	3,000	5.09	5.45	5.12	5.19
KHU 57-60	30	57	6,000	10.18	10.89	10.25	10.38

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm



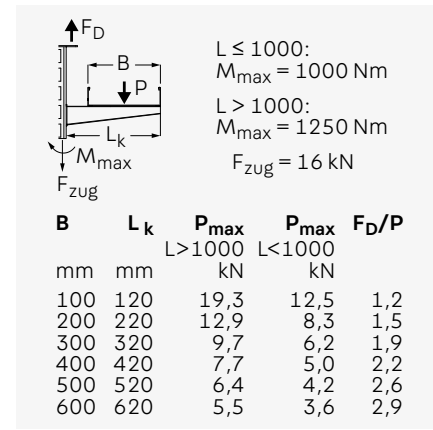
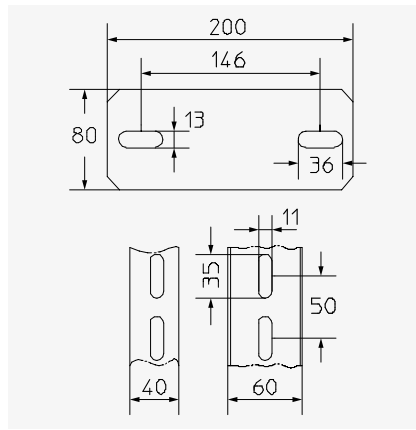
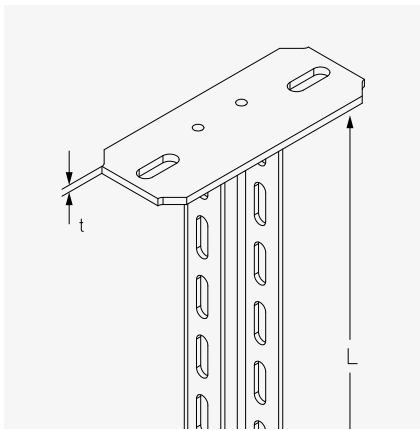
Using the support piece enables higher load-bearing capacities to be achieved.

# KDU 60

## Bracket support, 60x40 mm

Bracket support, 60x40x4 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg
KDU 60-02	200	6.00	1.34	1.40	1.40
KDU 60-03	300	6.00	1.67	1.80	1.80
KDU 60-04	400	6.00	2.00	2.10	2.10
KDU 60-05	500	6.00	2.33	2.50	2.50
KDU 60-06	600	6.00	2.54	2.80	2.80
KDU 60-07	700	6.00	2.88	3.20	3.20
KDU 60-08	800	6.00	3.31	3.50	3.50
KDU 60-09	900	6.00	3.64	3.90	3.90
KDU 60-10	1,000	6.00	3.97	4.20	4.20
KDU 60-11	1,100	8.00	4.52	4.80	4.80
KDU 60-12	1,200	8.00	4.85	5.20	5.20
KDU 60-13	1,300	8.00	5.18	5.50	5.50
KDU 60-14	1,400	8.00	5.51	5.90	5.90
KDU 60-15	1,500	8.00	5.84	6.30	6.30
KDU 60-16	1,600	8.00	6.19	6.60	6.60
KDU 60-17	1,700	8.00	6.53	7.00	7.00
KDU 60-18	1,800	8.00	6.86	7.30	7.30
KDU 60-19	1,900	8.00	7.10	7.00	7.00
KDU 60-20	2,000	8.00	7.48	8.00	8.00

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

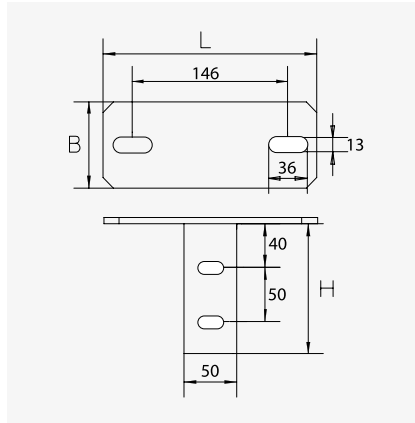
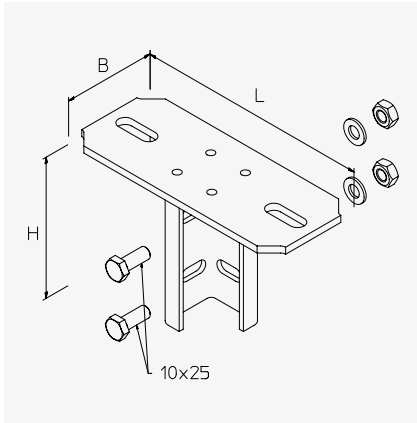
- KHU 60 bracket support, 60x40 mm

# BGU 60

## Screw-on head plate, KHU 60

Head plate for mounting U 60 profile bracket supports on ceilings.

### Technical data



Model	H mm	B mm	L mm	G <sup>GV</sup> kg	G <sup>F</sup> kg	G <sup>E</sup> kg	G <sup>E4</sup> kg
BGU 60	120	80	200	1.25	1.28	1.30	1.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



The screw fastenings for assembly are included in the scope of delivery.

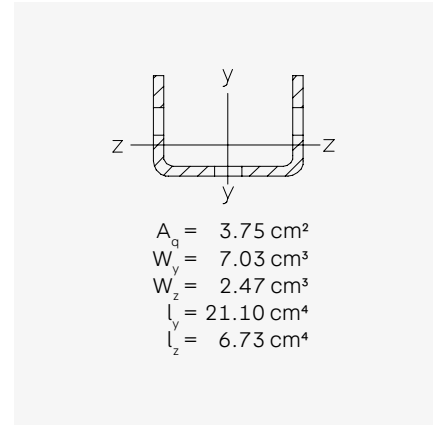
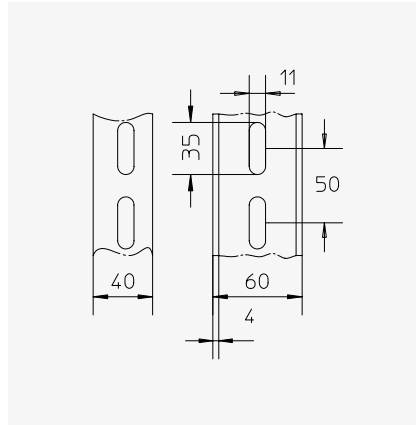
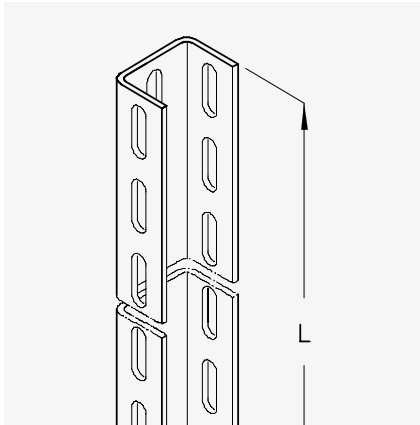
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 60

## Bracket support, 60x40 mm

Bracket support consisting of 60x40x4 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHU 60-02	40	60	200	0.70
KHU 60-03	40	60	300	1.05
KHU 60-04	40	60	400	1.40
KHU 60-05	40	60	500	1.75
KHU 60-06	40	60	600	2.11
KHU 60-07	40	60	700	2.46
KHU 60-08	40	60	800	2.81
KHU 60-09	40	60	900	3.16
KHU 60-10	40	60	1,000	3.51
KHU 60-11	40	60	1,100	3.86
KHU 60-12	40	60	1,200	4.21
KHU 60-13	40	60	1,300	4.56
KHU 60-14	40	60	1,400	4.91
KHU 60-15	40	60	1,500	5.26
KHU 60-20	40	60	2,000	7.02
KHU 60-30	40	60	3,000	10.53
KHU 60-60	40	60	6,000	21.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm



Using the support piece enables higher load-bearing capacities to be achieved.

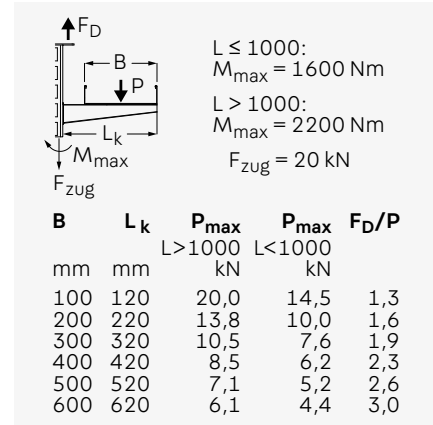
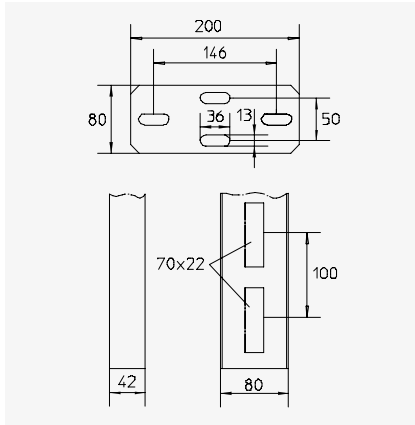
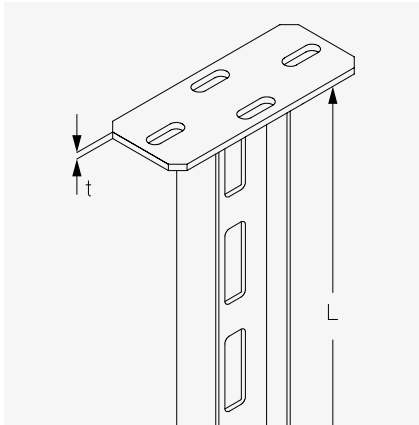


# KDI

## Bracket support, 80x42 mm

Bracket support, consisting of an I80 profile with a row of continuous elongated holes in the web, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G F kg
KDI 02	200	6.00	1.86
KDI 03	300	6.00	2.38
KDI 04	400	6.00	2.92
KDI 05	500	6.00	3.65
KDI 06	600	6.00	4.17
KDI 07	700	6.00	4.70
KDI 08	800	6.00	5.37
KDI 09	900	6.00	5.84
KDI 10	1,000	6.00	6.60
KDI 11	1,100	8.00	7.10
KDI 12	1,200	8.00	7.68
KDI 13	1,300	8.00	8.26
KDI 14	1,400	8.00	8.84
KDI 15	1,500	8.00	9.42
KDI 16	1,600	8.00	10.01
KDI 17	1,700	8.00	10.59
KDI 18	1,800	8.00	11.18
KDI 19	1,900	8.00	11.76
KDI 20	2,000	8.00	12.35
KDI 21	2,100	8.00	12.93
KDI 22	2,200	8.00	13.52
KDI 23	2,300	8.00	14.10
KDI 24	2,400	8.00	14.69

L: Length | t: Material thickness | G: Weight (per surface/material)

A zinc-plated (GV) surface in accordance with DIN EN ISO 19598 / DIN EN ISO 2081 is available on request. You must specify the surface finish/material when placing your order.

<b>Model</b>	<b>L</b> mm	<b>t</b> mm	<b>G F</b> kg
<b>KDI 25</b>	2,500	8.00	15.27
<b>KDI 26</b>	2,600	8.00	15.89
<b>KDI 27</b>	2,700	8.00	16.44
<b>KDI 28</b>	2,800	8.00	17.03
<b>KDI 29</b>	2,900	8.00	17.61
<b>KDI 30</b>	3,000	8.00	18.20

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

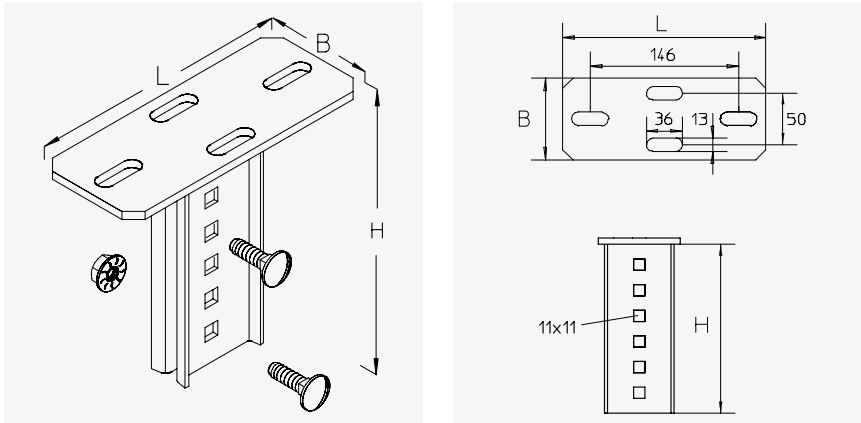
- KHI bracket support, 80x42 mm

# BGI

## Screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGI F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

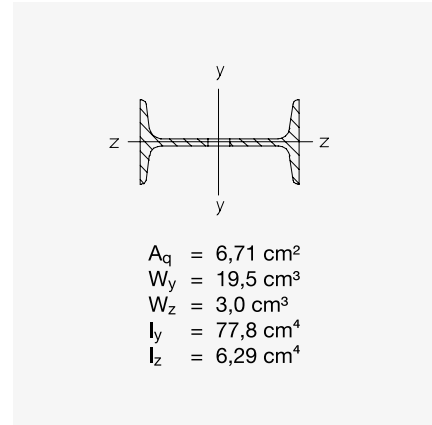
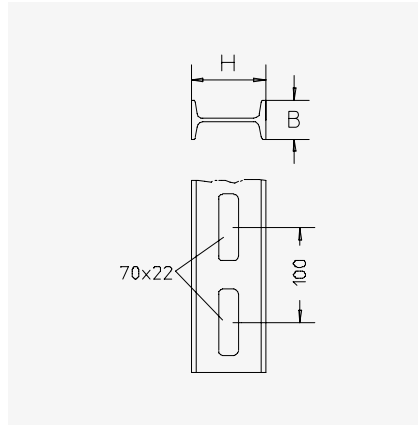
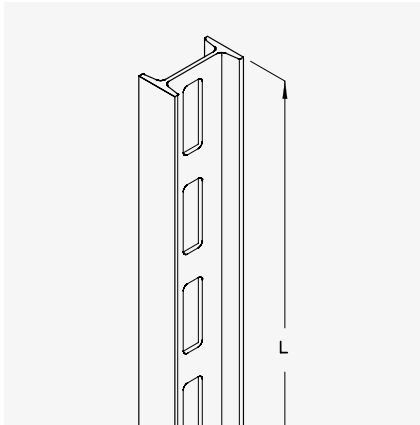
**This item is also available with different angles of inclination.**

# KHI

## Bracket support, 80x42 mm

Bracket support with a row of continuous elongated holes in the web, for direct mounting on the ceiling in conjunction with BL 7/BGI.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHI 02F	80	42	200	1.10
KHI 03F	80	42	300	1.70
KHI 04F	80	42	400	2.30
KHI 05F	80	42	500	2.90
KHI 06F	80	42	600	3.50
KHI 07F	80	42	700	4.10
KHI 08F	80	42	800	4.70
KHI 09F	80	42	900	5.30
KHI 10F	80	42	1,000	5.90
KHI 11F	80	42	1,100	6.40
KHI 12F	80	42	1,200	7.10
KHI 13F	80	42	1,300	7.60
KHI 14F	80	42	1,400	8.20
KHI 15F	80	42	1,500	8.80
KHI 16F	80	42	1,600	9.40
KHI 17F	80	42	1,700	10.00
KHI 18F	80	42	1,800	10.60
KHI 19F	80	42	1,900	11.10
KHI 20F	80	42	2,000	11.70
KHI 21F	80	42	2,100	12.30
KHI 22F	80	42	2,200	12.90
KHI 23F	80	42	2,300	13.50
KHI 24F	80	42	2,400	14.10
KHI 25F	80	42	2,500	14.60

<b>Model</b>	<b>H</b> mm	<b>B</b> mm	<b>L</b> mm	<b>G F</b> kg
<b>KHI 26F</b>	80	42	2,600	15.20
<b>KHI 27F</b>	80	42	2,700	15.80
<b>KHI 28F</b>	80	42	2,800	16.30
<b>KHI 29F</b>	80	42	2,900	16.90
<b>KHI 30F</b>	80	42	3,000	17.50
<b>KHI 60F</b>	80	42	6,000	35.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

#### Matching bracket supports

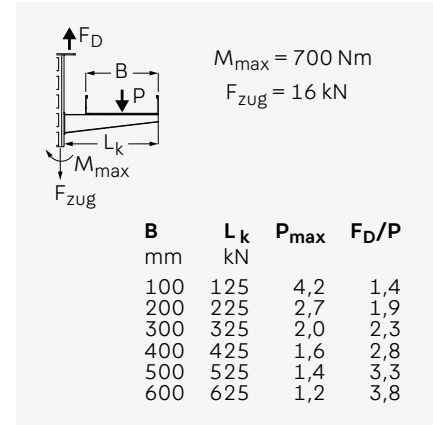
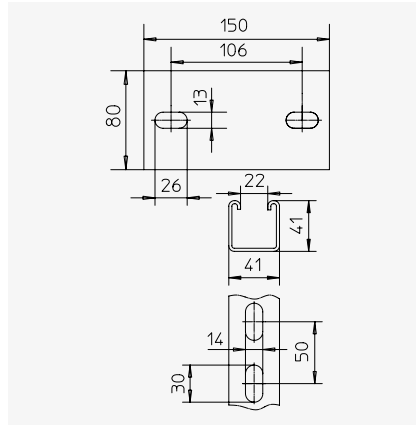
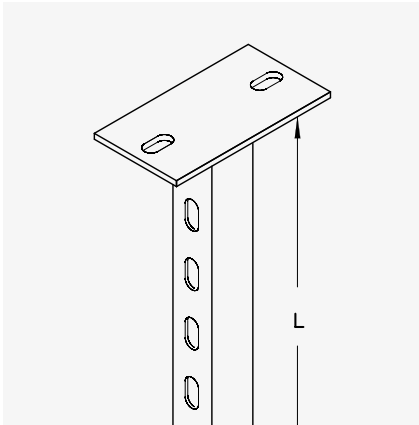
- KDI bracket support, 80x42 mm

# KDAG 41

## Bracket support, 41x41 mm

Bracket support consisting of a 41x41 mm mounting channel with a welded-on head plate.

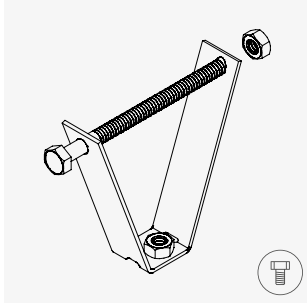
### Technical data



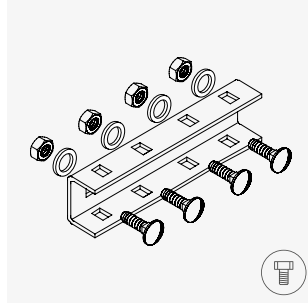
Model	L	G F
	mm	kg
KDAG 41-02F	200	1.10
KDAG 41-03F	300	1.40
KDAG 41-04F	400	1.70
KDAG 41-05F	500	1.90
KDAG 41-06F	600	2.20
KDAG 41-07F	700	2.50
KDAG 41-08F	800	2.70
KDAG 41-09F	900	3.00
KDAG 41-10F	1,000	3.20

L: Length | G: Weight (per surface/material)

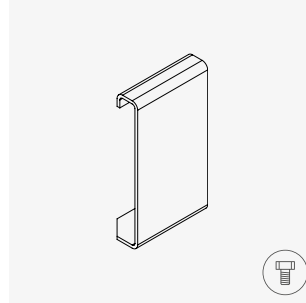
## Installation components



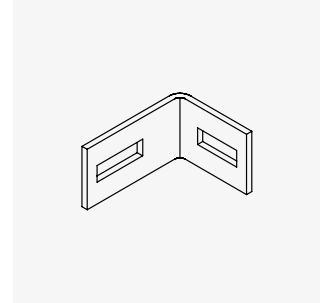
**TBS**  
Trapezium bow  
**Z**



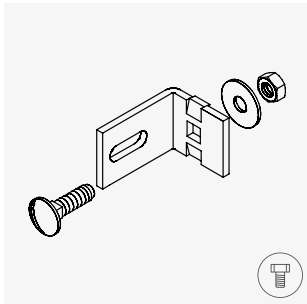
**KHUV 60**  
Connector, KHU 60  
**GV F E E4**



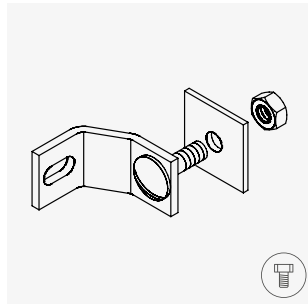
**KHUSS 60**  
Support piece, KHU 60  
**S F E E4**



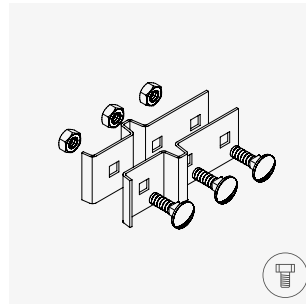
**BL 4**  
Corner angle, KHU 40/57/60  
**GV F E**



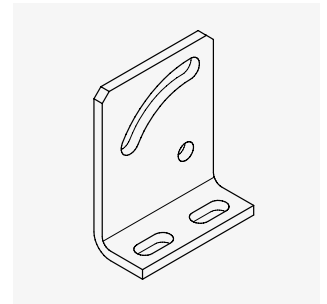
**BL 6**  
Corner angle, KHU 60  
**S F E**



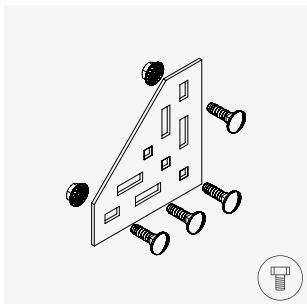
**BL 7**  
Corner angle, KHI  
**GV F**



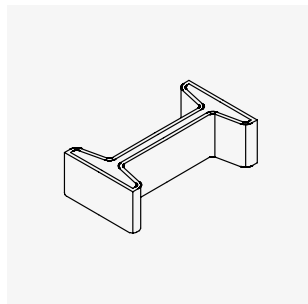
**HKIW**  
Mounting bracket, KHI  
**GV F**



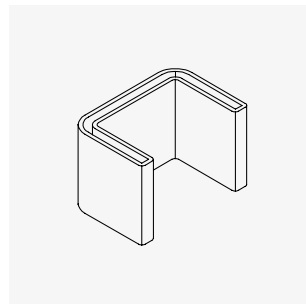
**BLD**  
Adaptor diagonal  
**F**



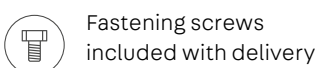
**KB**  
Junction plate  
**F E**



**SI**  
Protection cap, KDI/KHI  
**PE**



**SU 60**  
Protection cap, KHU 60  
**PE**



# Wire rope suspensions

## Product description

Wire rope suspensions are used to suspend solid and mesh cable trays from ceilings. They take up very little space but still support a high working load. Quick assembly is a given. In addition, they offer great flexibility of use. The wire rope locking devices and end fixings can be combined in different ways according to the application area. Another elegant solution for suspending cable trays on wire rope supports can be found in the form of the DSAG support bracket.



## Areas of application

- On ceilings for technical building equipment - indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



## Benefits

- Visually appealing
- Flexibility of use
- Quick assembly
- Minimal space requirements

## Available surface coatings and materials

**GV** Galvanised in accordance with DIN EN ISO 2081

**E** Stainless steel, material no. 1.4301 (V2A)



# Model overview



## Example order

Ceiling wire rope suspension	Wire rope locking device	End fixing	Gripple load class
<b>DSA*</b>	<b>XP</b>	<b>TH</b>	<b>2</b>

\*The code DSA (= ceiling wire rope suspension) must be included when composing the item number.

### Wire rope locking device

Express <b>XP</b>	Universal <b>HF</b>	Universal, stainless steel <b>INOX</b>	UniGrip - Standard <b>UG</b>	UniGrip - Central Exit <b>UGR</b>	Y-Fit Accessory <b>Y2AJ</b>

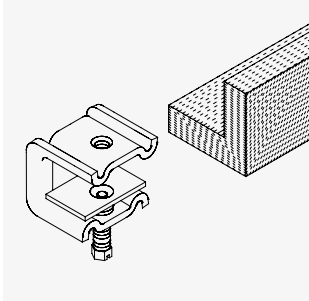
### End fixing

	Cladding Hook <b>TH</b>	✓	✗	✗	✓	✓	✗
	Toggle <b>SP</b>	✓	✓	✓	✓	✓	✗
	Loop <b>FR</b>	✓	✓	✓	✓	✓	✗
	M8 Stud <b>EF8</b>	✓	✓	✓	✓	✓	✗
	M8 Barrel End Fixing <b>ET8</b>	✓	✗	✗	✗	✗	✗
	Cable Tray Hook <b>CT</b>	✗	✗	✗	✗	✗	✓
	Snap Hook <b>EC</b>	✗	✗	✗	✗	✗	✓
	Loops with Karabiner <b>EM</b>	✗	✗	✗	✗	✗	✓
<b>Gripple load class</b>	<b>2 (0.44 kN)</b>	<b>3 (0.88 kN)</b> <b>4* (2.21 kN)</b> <b>5* (3.19 kN)</b>	<b>2 (0.44 kN)</b>	<b>2 (0.44 kN)</b>	<b>2 (0.44 kN)</b>	<b>2 (0.44 kN)</b>	<b>2 (0.44 kN)</b>

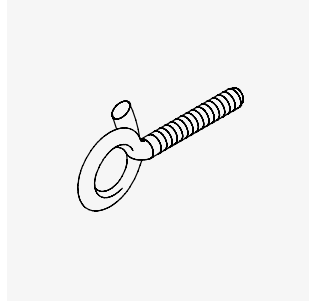
The stated Gripple load class includes the maximum load (Pmax) in kN.

\*Only applies to the FR end fixing.

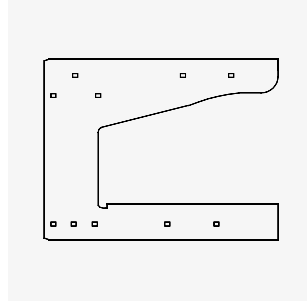
## Installation components



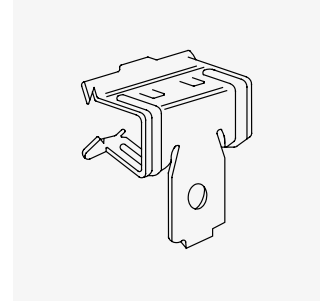
**MKD**  
Mounting clamp  
F E E4



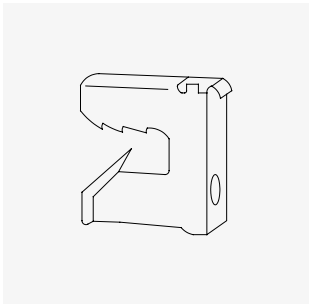
**SHS**  
Eyebolt  
GV



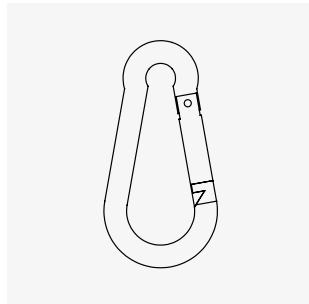
**DSAG**  
Support bracket, G-profile  
S



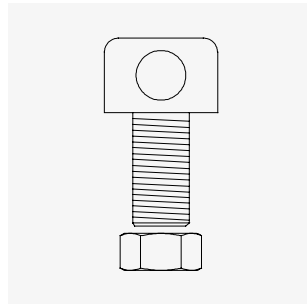
**DSAGCB**  
Beam clip  
GV



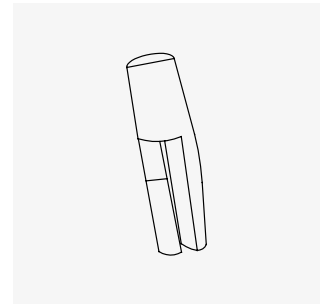
**DSATIGERCLIP**  
Tiger clip  
GV



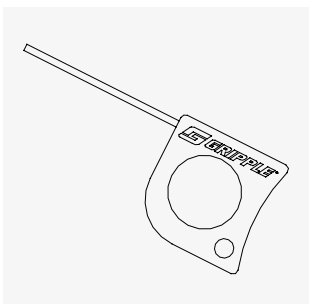
**DSAGRIPKARA**  
Karabiner  
GV E



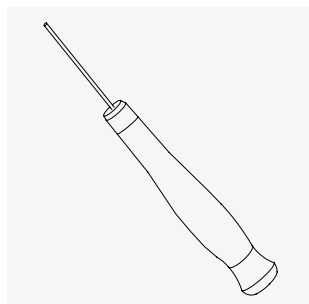
**DSAGRIPADAP**  
Thread adaptor with hole  
GV



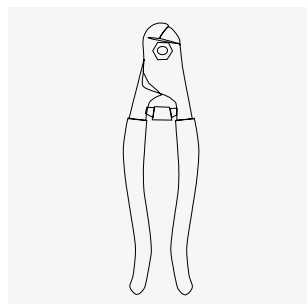
**DSAGRIPTWIS**  
Wire end cap  
GV



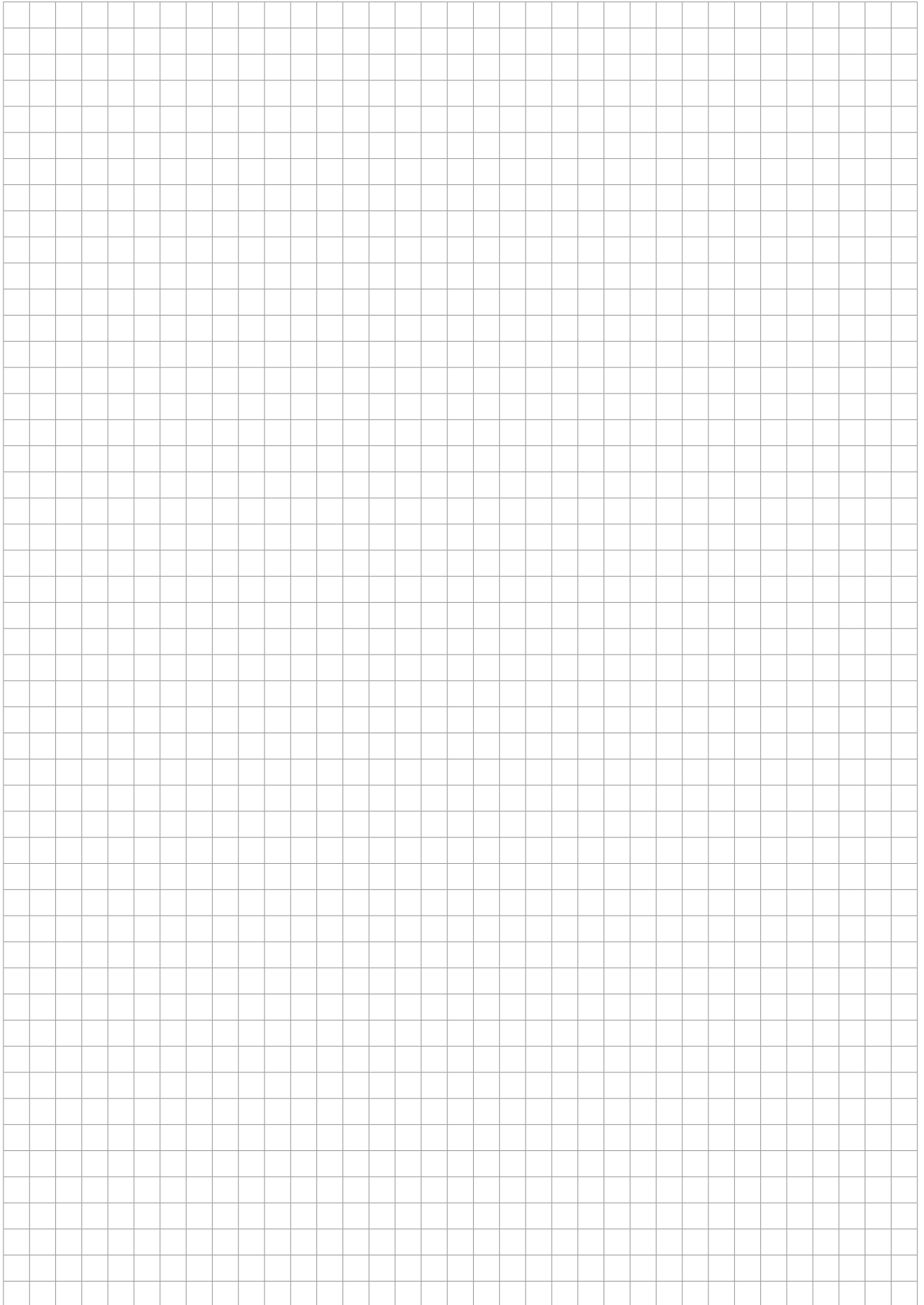
**DSAGRIPCLE1**  
Adjustment key  
GV



**DSAGRIPCLE2**  
Adjustment key  
GV



**DSAGRIPPINC**  
Wire cutter  
GV



# U-profile system



## Product description

The classic U-profile system is the most popular system in the German-speaking world. The component parts are bracket supports, stem supports and head plates. The stems consist of perforated U-profiles in sizes ranging from 40x30 mm to 80x60 mm. The KDU bracket supports have integrated head plates. In the case of the KHU profiles, separate BGU head plates can be screwed on. The rows of continuous holes on three sides allow popular brackets – such as the KWF model – to be custom mounted really easily (see Brackets chapter).

The stand-out feature of the U-profile system is its flexibility of use, making it suitable for the majority of application areas. When used in combination with the KWF arm, the 40x30 mm U-profile stem is particularly suitable for suspending mesh and solid cable trays with tray widths of up to 400 mm from the ceiling. For tray widths of up to 600 mm, we recommend using the 57x30 mm and 60x40 mm stems in conjunction with the KW bracket.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction
- Infrastructure projects



## Benefits

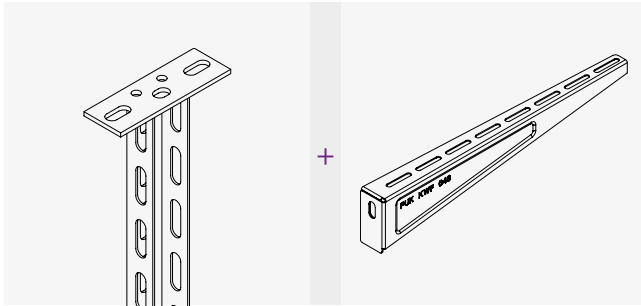
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

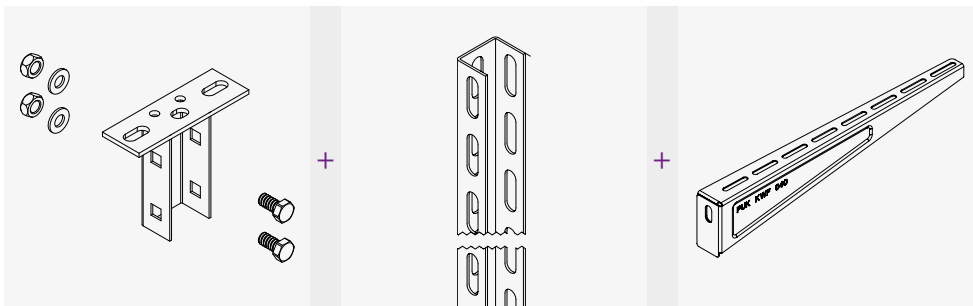
## Model overview

For tray widths up to 400 mm



KDU 40

KWF

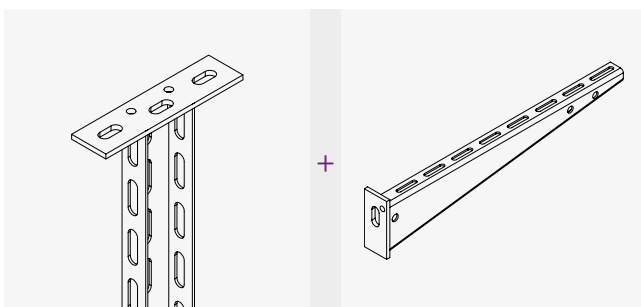


BGU 40

KHU 40

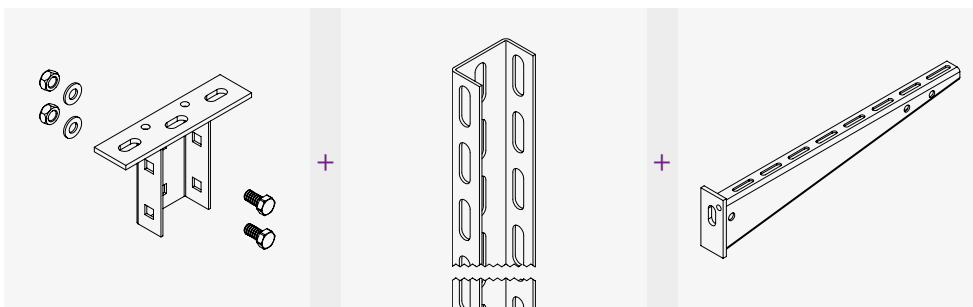
KWF

For tray widths up to 600 mm



KDU 57

KW

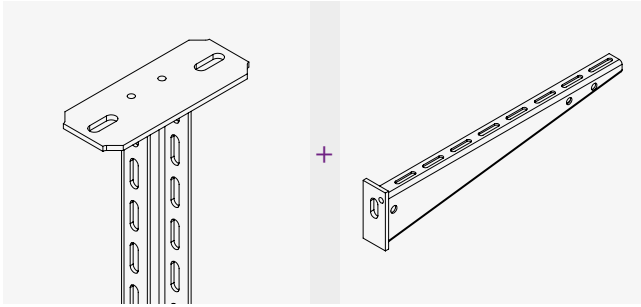


BGU 57

KHU 57

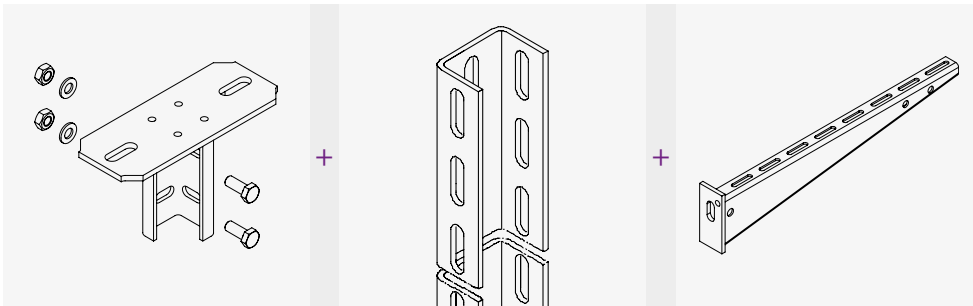
KW

## For tray widths up to 600 mm



**KDU 60**

**KW**



**BGU 60**

**KHU 60**

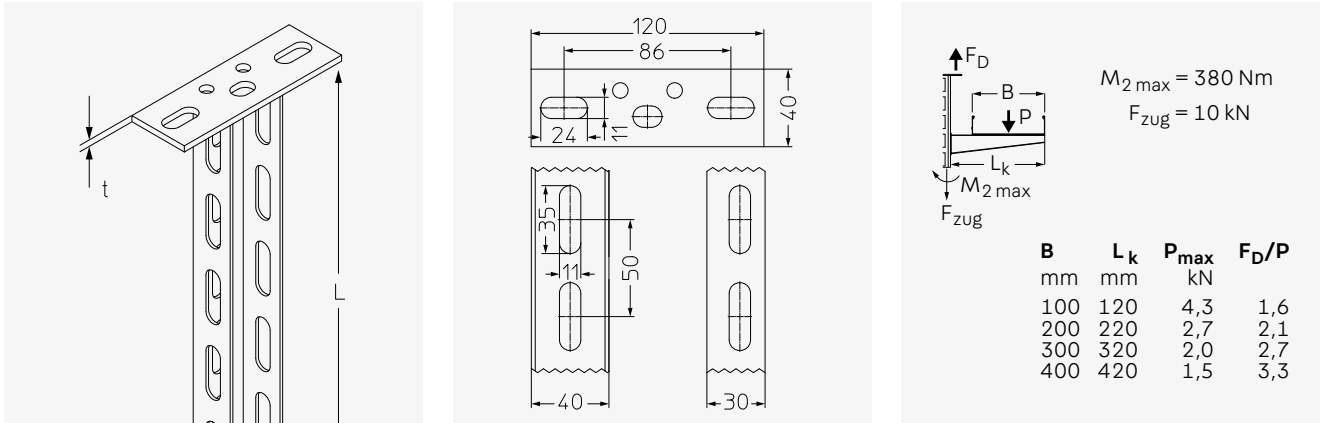
**KW**

# KDU 40

## Bracket support, 40x30 mm

Bracket support, 40x30x2 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L	t	G <sub>GV</sub>	G <sub>F</sub>	G <sub>E</sub>	G <sub>E4</sub>
	mm	mm	kg	kg	kg	kg
KDU 40-02	200	4.00	0.36	0.38	0.36	0.36
KDU 40-03	300	4.00	0.47	0.50	0.47	0.47
KDU 40-04	400	4.00	0.58	0.62	0.60	0.60
KDU 40-05	500	4.00	0.68	0.73	0.70	0.70
KDU 40-06	600	4.00	0.80	0.86	0.81	0.81
KDU 40-07	700	4.00	0.92	0.98	0.92	0.92
KDU 40-08	800	4.00	1.03	1.10	1.03	1.03
KDU 40-09	900	4.00	1.14	1.22	1.15	1.16
KDU 40-10	1,000	4.00	1.25	1.34	1.26	1.26
KDU 40-11	1,100	4.00	1.36	1.46	1.40	1.40
KDU 40-12	1,200	4.00	1.48	1.58	1.50	1.50
KDU 40-13	1,300	4.00	1.59	1.70	1.60	1.61
KDU 40-14	1,400	4.00	1.70	1.82	1.73	1.73
KDU 40-15	1,500	4.00	1.81	1.94	1.83	1.84

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 40 bracket support, 40x30 mm

### Matching brackets

- KWF wall/stem support
- KW wall/stem support



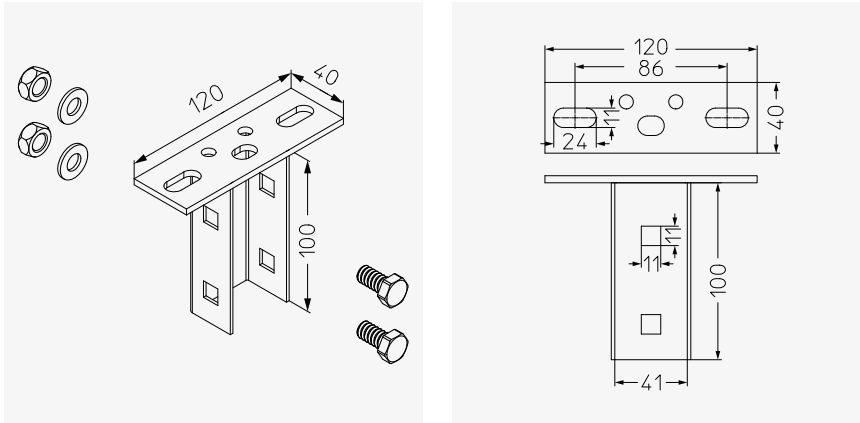
The permissible load-bearing capacities are achieved with the aid of a support piece. If the bracket length is 400 mm or above, or if the bracket is being mounted in the end zone of the ceiling stem, a support piece must be used. In cases where the bracket length is <400 mm and no support piece is used, the permissible load-bearing capacities must be reduced by 30%.

# BGU 40

## Screw-on head plate, KHU 40

Head plate for mounting KHU 40 bracket supports on the ceiling

### Technical data



Model	H mm	B mm	L mm	t mm	G GV kg	G F kg	G E kg	G E4 kg
BGU 40	100	40	120	4.00	0.34	0.37	0.35	0.35

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 40 bracket support, 40x30 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

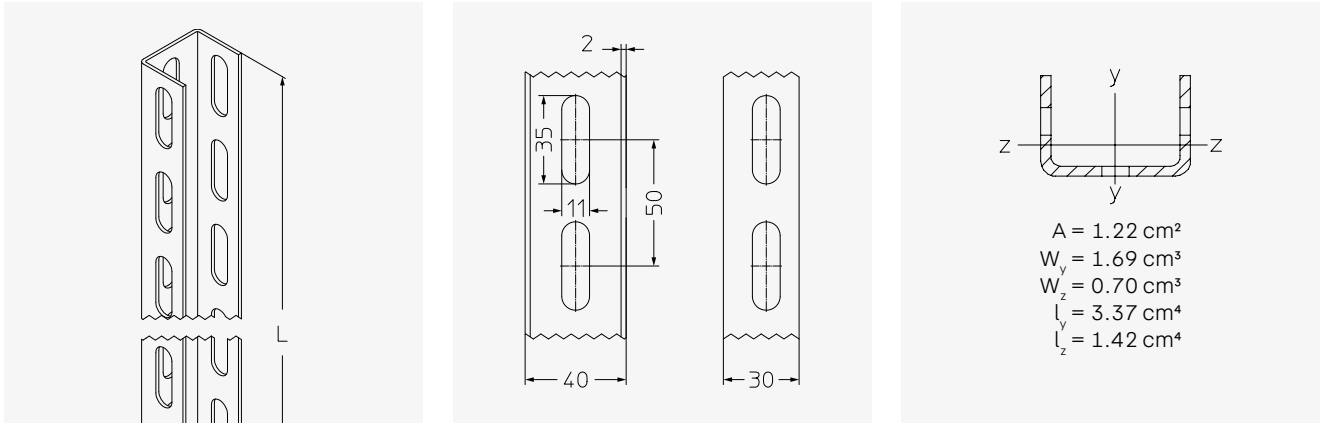


# KHU 40

## Bracket support, 40x30 mm

Bracket support, 40x30x2 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G S kg	G F kg	G E kg	G E4 kg
KHU 40-02	30	40	200	0.22	0.24	0.23	0.23
KHU 40-03	30	40	300	0.34	0.36	0.34	0.34
KHU 40-04	30	40	400	0.45	0.48	0.45	0.45
KHU 40-05	30	40	500	0.56	0.60	0.57	0.57
KHU 40-06	30	40	600	0.67	0.72	0.68	0.69
KHU 40-07	30	40	700	0.79	0.84	0.79	0.80
KHU 40-08	30	40	800	0.90	0.96	0.90	0.92
KHU 40-09	30	40	900	1.01	1.08	1.02	1.03
KHU 40-10	30	40	1,000	1.12	1.20	1.13	1.14
KHU 40-11	30	40	1,100	1.23	1.32	1.24	1.26
KHU 40-12	30	40	1,200	1.35	1.44	1.36	1.38
KHU 40-13	30	40	1,300	1.55	1.56	1.47	1.49
KHU 40-14	30	40	1,400	1.60	1.68	1.58	1.60
KHU 40-15	30	40	1,500	1.70	1.80	1.69	1.72
KHU 40-30	30	40	3,000	3.40	3.60	3.39	3.43
KHU 40-60	30	40	6,000	6.73	7.20	6.77	6.86

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 40 bracket support, 40x30 mm

### Matching brackets

- KWF wall/stem support
- KW wall/stem support



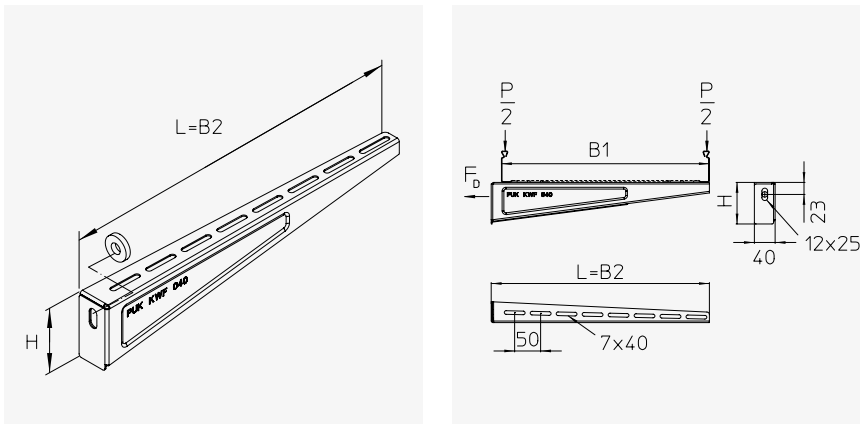
Using the support piece enables higher load-bearing capacities to be achieved.

# KWF

## Wall/stem support

Wall/stem support, made from folded sheet steel. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>S</sub> kg	G <sub>F</sub> kg
KWF 010	80	100	120	120	1.2	1.58	0.21	0.24
KWF 020	80	200	220	220	1.2	2.33	0.29	0.32
KWF 030	80	300	320	320	1.2	3.15	0.43	0.47
KWF 040	80	400	420	420	1.2	3.99	0.50	0.54

H: Height | B1: Tray width | B2: Bracket length | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm
- KDU 40 bracket support, 40x30 mm
- KHU 40 bracket support, 40x30 mm



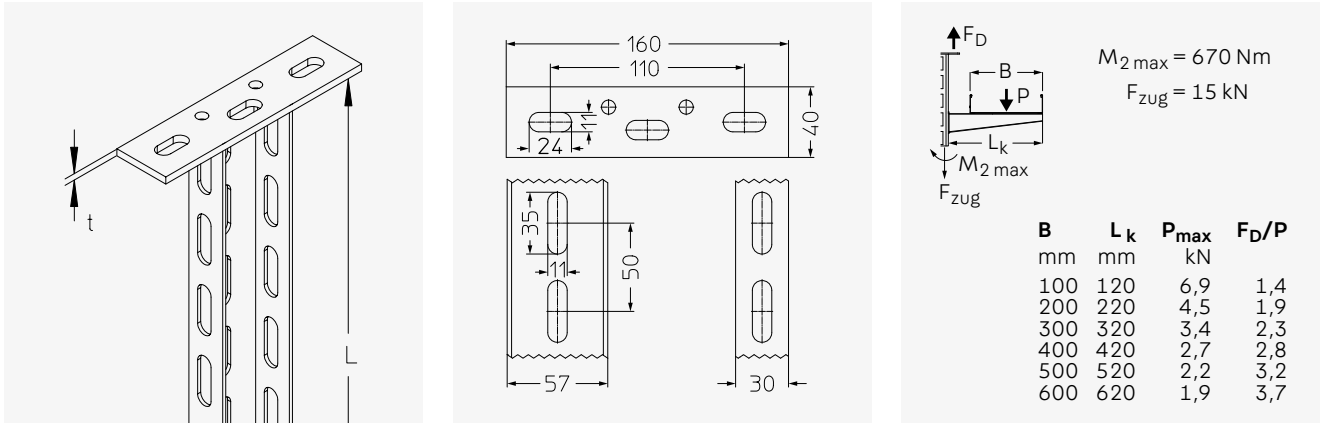
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KDU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness t), tested in accordance with DIN EN 61537.

### Technical data



Model	L	t	G <sup>GV</sup>	G <sup>F</sup>	G <sup>E</sup>	G <sup>E4</sup>
	mm	mm	kg	kg	kg	kg
KDU 57-02	200	5.00	0.55	0.59	0.57	0.57
KDU 57-03	300	5.00	0.72	0.77	0.74	0.74
KDU 57-04	400	5.00	0.89	0.95	0.91	0.91
KDU 57-05	500	5.00	1.06	1.13	1.08	1.08
KDU 57-06	600	5.00	1.22	1.31	1.25	1.25
KDU 57-07	700	5.00	1.39	1.49	1.42	1.42
KDU 57-08	800	5.00	1.57	1.68	1.59	1.59
KDU 57-09	900	5.00	1.74	1.86	1.76	1.76
KDU 57-10	1,000	5.00	1.91	2.04	1.93	1.93
KDU 57-11	1,100	5.00	2.07	2.22	2.10	2.10
KDU 57-12	1,200	5.00	2.25	2.40	2.27	2.27
KDU 57-13	1,300	5.00	2.41	2.58	2.44	2.44
KDU 57-14	1,400	5.00	2.59	2.77	2.61	2.61
KDU 57-15	1,500	5.00	2.76	2.95	2.78	2.78

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 57 bracket support, 57x30 mm

### Matching brackets

- KWF wall/stem support
- KW wall/stem support
- KWMS wall/stem support



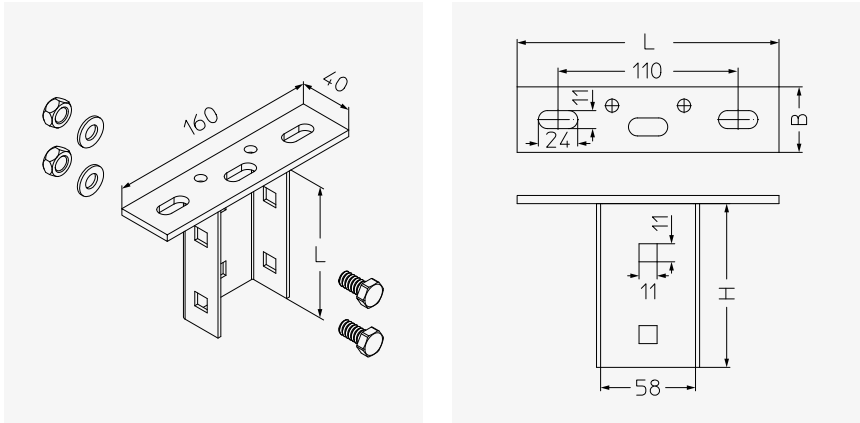
The permissible load-bearing capacities are achieved with the aid of a support piece. If the bracket length is 400 mm or above, or if the bracket is being mounted in the end zone of the ceiling stem, a support piece must be used. In cases where the bracket length is <400 mm and no support piece is used, the permissible load-bearing capacities must be reduced by 30%.

# BGU 57

## Screw-on head plate, KHU 57

Head plate for mounting KHU 57 bracket supports on the ceiling.

### Technical data



Model	H mm	B mm	L mm	t mm	G GV kg	G F kg	G E kg	G E4 kg
BGU 57	100	40	160	5.00	0.51	0.54	0.52	0.52

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 57 bracket support, 57x30 mm



The screw fastenings for assembly are included in the scope of delivery.

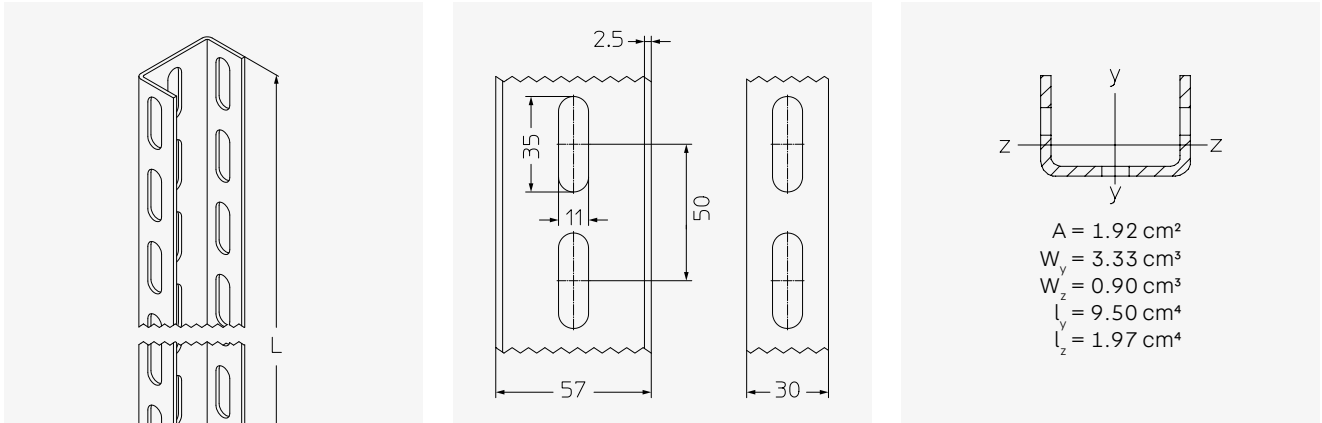
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G S kg	G F kg	G E kg	G E4 kg
KHU 57-02	30	57	200	0.34	0.36	0.34	0.35
KHU 57-03	30	57	300	0.51	0.55	0.51	0.52
KHU 57-04	30	57	400	0.68	0.73	0.68	0.69
KHU 57-05	30	57	500	0.85	0.91	0.85	0.87
KHU 57-06	30	57	600	1.02	1.09	1.03	1.04
KHU 57-07	30	57	700	1.19	1.27	1.20	1.21
KHU 57-08	30	57	800	1.36	1.45	1.37	1.38
KHU 57-09	30	57	900	1.53	1.63	1.54	1.56
KHU 57-10	30	57	1,000	1.70	1.82	1.71	1.73
KHU 57-11	30	57	1,100	1.87	2.00	1.88	1.90
KHU 57-12	30	57	1,200	2.04	2.18	2.05	2.08
KHU 57-13	30	57	1,300	2.21	2.36	2.22	2.25
KHU 57-14	30	57	1,400	2.38	2.54	2.39	2.42
KHU 57-15	30	57	1,500	2.55	2.72	2.56	2.59
KHU 57-30	30	57	3,000	5.09	5.45	5.12	5.19
KHU 57-60	30	57	6,000	10.18	10.89	10.25	10.38

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm



Using the support piece enables higher load-bearing capacities to be achieved.

### Matching brackets

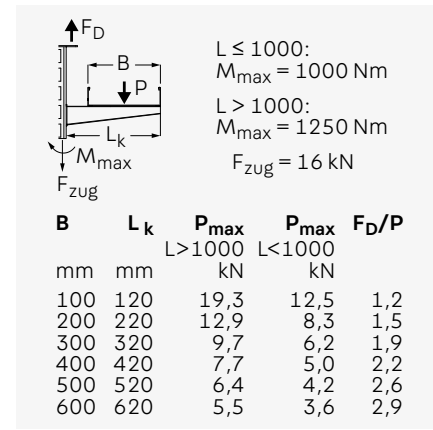
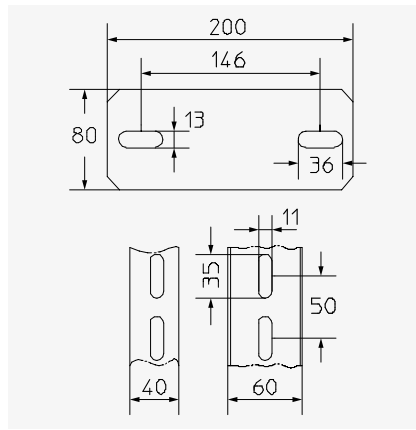
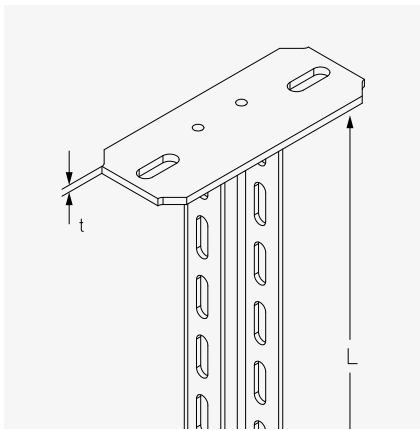
- KWF wall/stem support
- KW wall/stem support
- KWMS wall/stem support

# KDU 60

## Bracket support, 60x40 mm

Bracket support, 60x40x4 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg
KDU 60-02	200	6.00	1.34	1.40	1.40
KDU 60-03	300	6.00	1.67	1.80	1.80
KDU 60-04	400	6.00	2.00	2.10	2.10
KDU 60-05	500	6.00	2.33	2.50	2.50
KDU 60-06	600	6.00	2.54	2.80	2.80
KDU 60-07	700	6.00	2.88	3.20	3.20
KDU 60-08	800	6.00	3.31	3.50	3.50
KDU 60-09	900	6.00	3.64	3.90	3.90
KDU 60-10	1,000	6.00	3.97	4.20	4.20
KDU 60-11	1,100	8.00	4.52	4.80	4.80
KDU 60-12	1,200	8.00	4.85	5.20	5.20
KDU 60-13	1,300	8.00	5.18	5.50	5.50
KDU 60-14	1,400	8.00	5.51	5.90	5.90
KDU 60-15	1,500	8.00	5.84	6.30	6.30
KDU 60-16	1,600	8.00	6.19	6.60	6.60
KDU 60-17	1,700	8.00	6.53	7.00	7.00
KDU 60-18	1,800	8.00	6.86	7.30	7.30
KDU 60-19	1,900	8.00	7.10	7.00	7.00
KDU 60-20	2,000	8.00	7.48	8.00	8.00

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

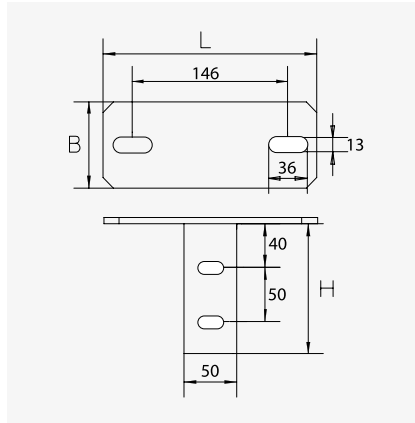
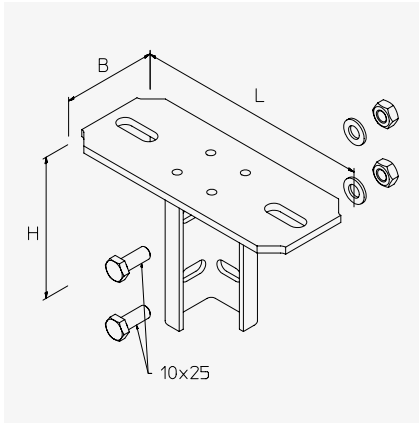
- KHU 60 bracket support, 60x40 mm

# BGU 60

## Screw-on head plate, KHU 60

Head plate for mounting U 60 profile bracket supports on ceilings.

### Technical data



Model	H mm	B mm	L mm	G <sup>GV</sup> kg	G <sup>F</sup> kg	G <sup>E</sup> kg	G <sup>E4</sup> kg
BGU 60	120	80	200	1.25	1.28	1.30	1.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



The screw fastenings for assembly are included in the scope of delivery.

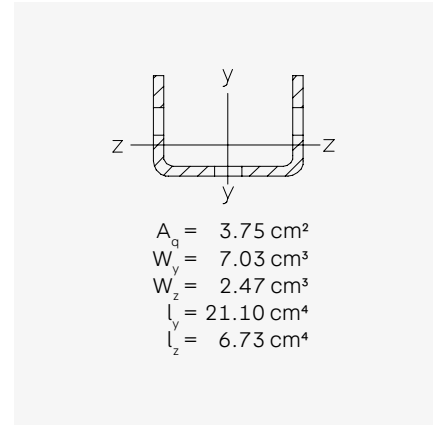
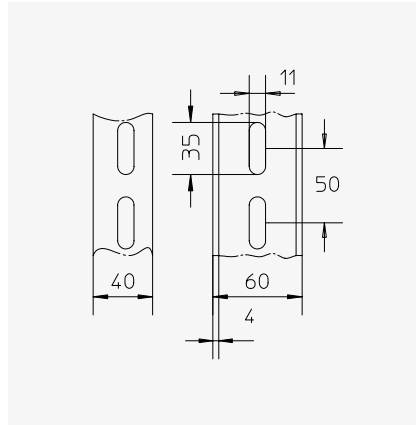
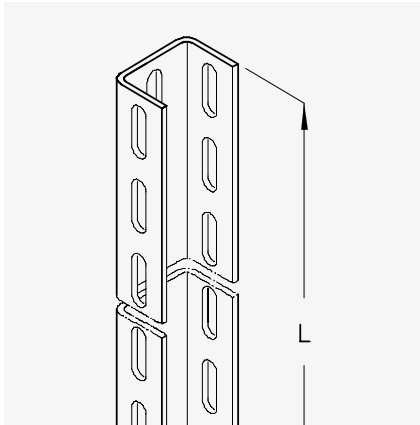
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 60

## Bracket support, 60x40 mm

Bracket support consisting of 60x40x4 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHU 60-02	40	60	200	0.70
KHU 60-03	40	60	300	1.05
KHU 60-04	40	60	400	1.40
KHU 60-05	40	60	500	1.75
KHU 60-06	40	60	600	2.11
KHU 60-07	40	60	700	2.46
KHU 60-08	40	60	800	2.81
KHU 60-09	40	60	900	3.16
KHU 60-10	40	60	1,000	3.51
KHU 60-11	40	60	1,100	3.86
KHU 60-12	40	60	1,200	4.21
KHU 60-13	40	60	1,300	4.56
KHU 60-14	40	60	1,400	4.91
KHU 60-15	40	60	1,500	5.26
KHU 60-20	40	60	2,000	7.02
KHU 60-30	40	60	3,000	10.53
KHU 60-60	40	60	6,000	21.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm



Using the support piece enables higher load-bearing capacities to be achieved.

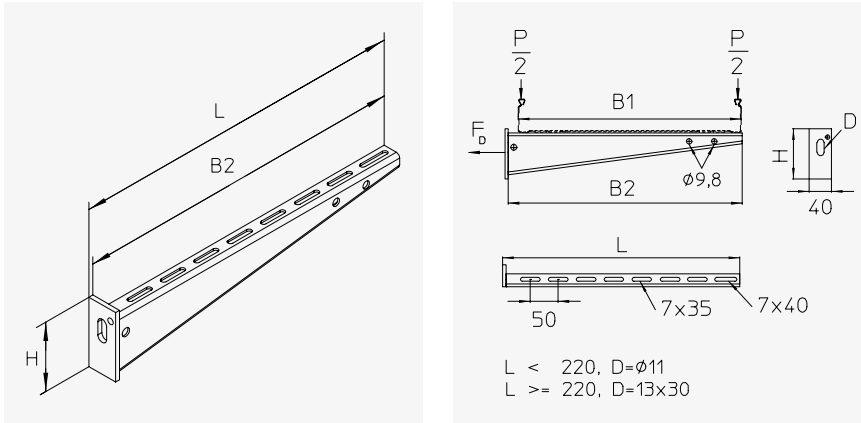


# KW

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sup>GV</sup> kg	G <sup>F</sup> kg	G <sup>E</sup> kg	G <sup>E4</sup> kg
KW 010	45	100	115	124	1.4	3.10	0.12	0.13	0.13	0.15
KW 015	45	150	170	174	1.5	4.10	*	0.17	0.16	0.16
KW 020	70	200	215	225	2.0	3.00	0.30	0.32	0.39	0.31
KW 030	70	300	315	326	2.0	4.00	0.41	0.44	0.47	0.42
KW 040	90	400	415	426	2.4	3.60	0.70	0.80	0.76	0.73
KW 050	110	500	515	528	2.1	3.40	1.24	1.33	1.08	1.10
KW 060	110	600	615	628	2.1	4.00	1.45	1.55	1.25	1.26
KW 070	110	700	715	728	3.0	5.68	2.12	2.27	*	*

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

\* On request

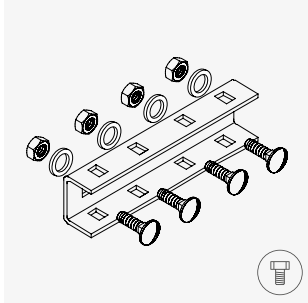
### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm

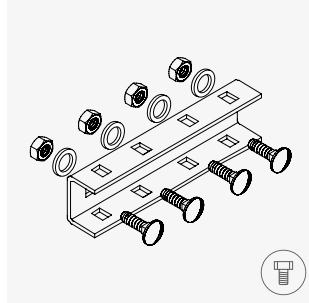


The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

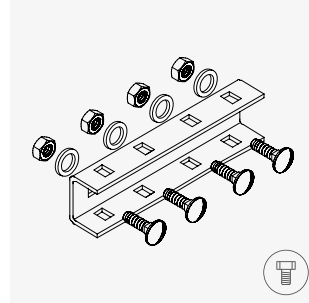
## Installation components



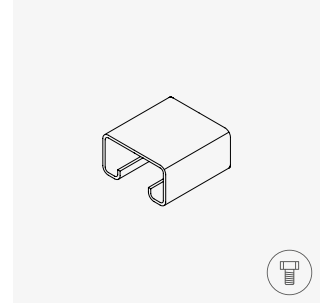
**KHUV 40**  
Connector, KHU 40  
GV S F E E4



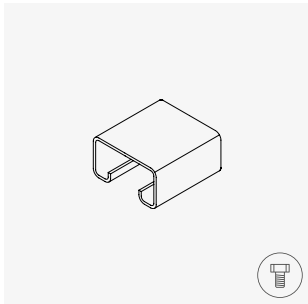
**KHUV 57**  
Connector, KHU 57  
GV S F E E4



**KHUV 60**  
Connector, KHU 60  
GV F E E4



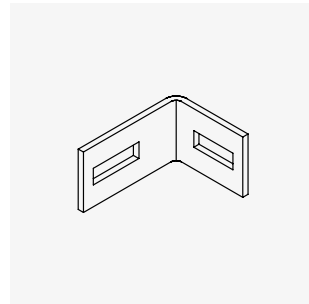
**KHUSS 40**  
Support piece, KHU 40  
S F E E4



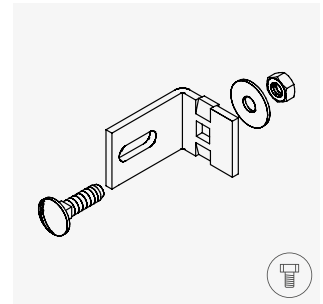
**KHUSS 57**  
Support piece, KHU 57  
S F E E4



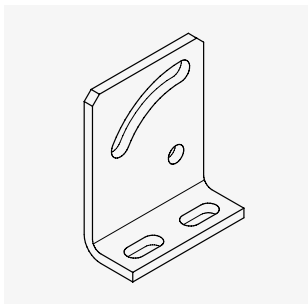
**KHUSS 60**  
Support piece, KHU 60  
S F E E4



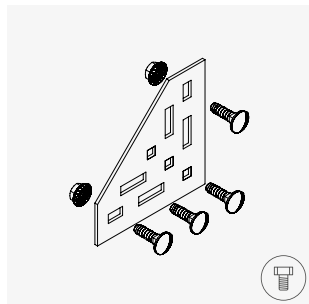
**BL 4**  
Corner angle, KHU 40/57/60  
GV F E



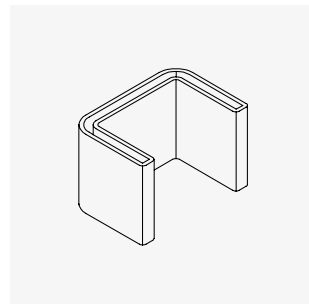
**BL 6**  
Corner angle, KHU 60  
S F E



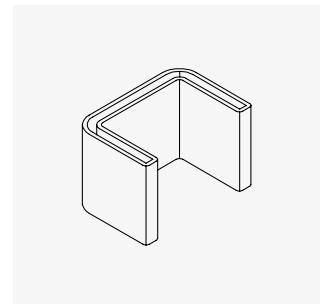
**BLD**  
Adaptor diagonal  
F



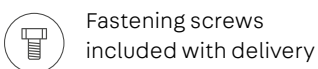
**KB**  
Junction plate  
F E

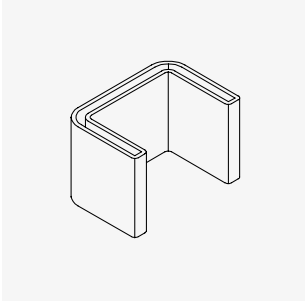


**SU 40**  
Protection cap, KHU 40  
PE

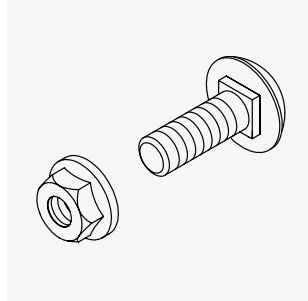


**SU 57**  
Protection cap, KHU 57  
PE





**SU 60**  
Protection cap, KHU 60  
**PE**



**KLS**  
Clamp fastening set  
**GV**

# C-profile mounting channels

PUK STRUT



## Product description

The PUK STRUT system consists of perforated and unperforated mounting channels featuring C+ and C60° profiles and a slot size of 22 mm. It is suitable for loads of up to 4.3 kN. The KDAG bracket support has an integrated head plate while the KHA 41 profile is designed to have the BGA head plate screwed onto it. When used in combination with the KA 30 arm, the C-profile stems are particularly suitable for suspending mesh and solid cable trays with tray widths of up to 400 mm from the ceiling. For tray widths of up to 600 mm, we recommend using the stems in conjunction with the KA 41 bracket.

The PUK STRUT system is one of the most popular systems internationally. The bracket can be variably mounted on the channel. The stand-out feature of the PUK STRUT system is its flexibility of use, making it suitable for the majority of application areas.



All channels are customisable. The available options include cuts, and additional round and elongated holes.



## Areas of application

- On ceilings for technical building equipment - indoors and outdoors
- Industrial halls and production facilities
- Hygienic areas, such as those encountered in the chemicals and food industries



## Benefits

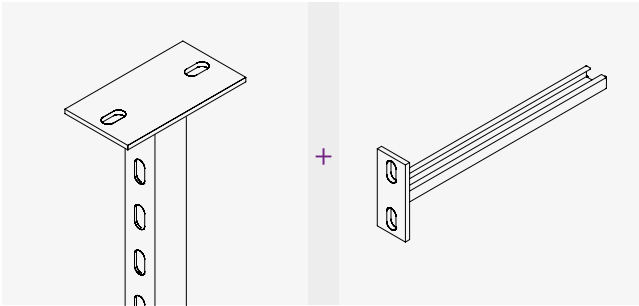
- Height can be adjusted to any level
- Constitutes the international standard
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows the system to be adjusted for various areas of application

## Available surface coatings and materials

- B** Non-galvanised
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

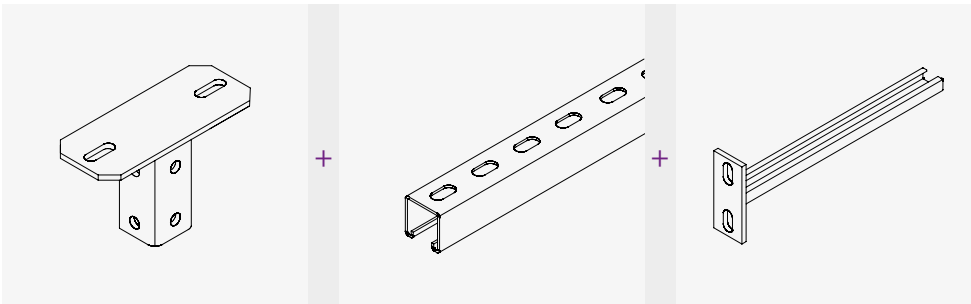
## Model overview

For tray widths up to 400 mm



KDAG 41

KA 30

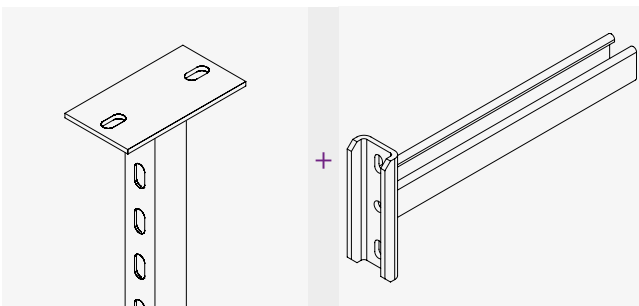


BGA 41

KHA 41

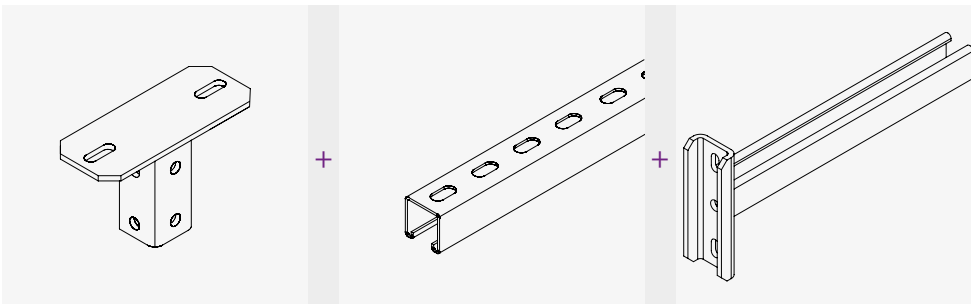
KA 30

For tray widths up to 600 mm



KDAG 41

KA 41



BGA 41

KHA 41

KA 41

## Overview of mounting channels

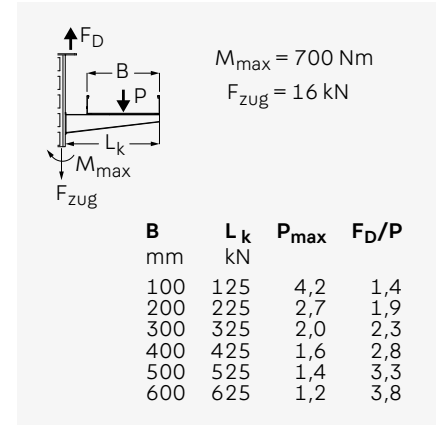
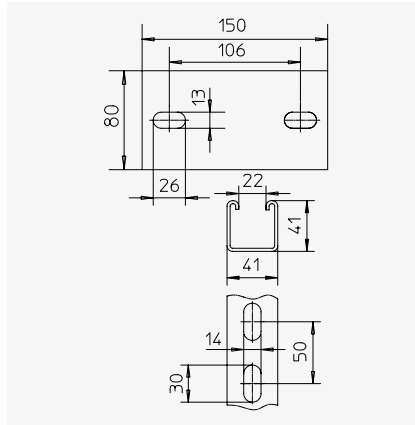
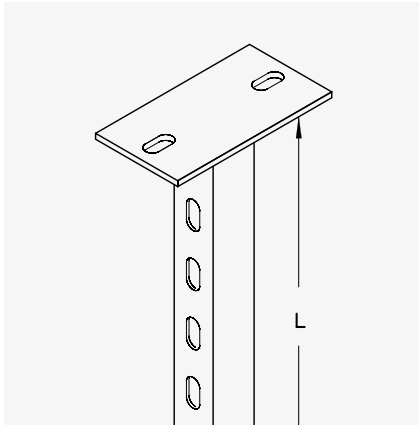
Product line	Design	Height mm	Width mm	Material thickness mm	Slot size mm	Surface finish
A 2	Unperforated	31	50	3.25	22	B F
KHA 2	Perforated	31	50	3.25	22	F
KHA 21	Perforated	21	41	2.50	22	F
KHAZ 21	Perforated, toothed	21	41	2.50	22	F
A 4	Unperforated	26	48	2.50	22	B F
KHA 4	Perforated	26	48	2.50	22	F
A 41	Unperforated	41	41	2.50	22	B E
KHA 41	Perforated	41	41	2.50	22	F
KHAZ 41	Perforated, toothed	41	41	2.50	22	F
KHAL 41	Perforated	41	41	1.50	22	F
KHA 42	Perforated	42	41	2.50	22	F
KHA 82	Perforated	82	41	2.50	22	F

# KDAG 41

## Bracket support, 41x41 mm

Bracket support consisting of a 41x41 mm mounting channel with a welded-on head plate.

### Technical data



Model	L	G
	mm	kg
KDAG 41-02F	200	1.10
KDAG 41-03F	300	1.40
KDAG 41-04F	400	1.70
KDAG 41-05F	500	1.90
KDAG 41-06F	600	2.20
KDAG 41-07F	700	2.50
KDAG 41-08F	800	2.70
KDAG 41-09F	900	3.00
KDAG 41-10F	1,000	3.20

L: Length | G: Weight (per surface/material)

### Matching brackets

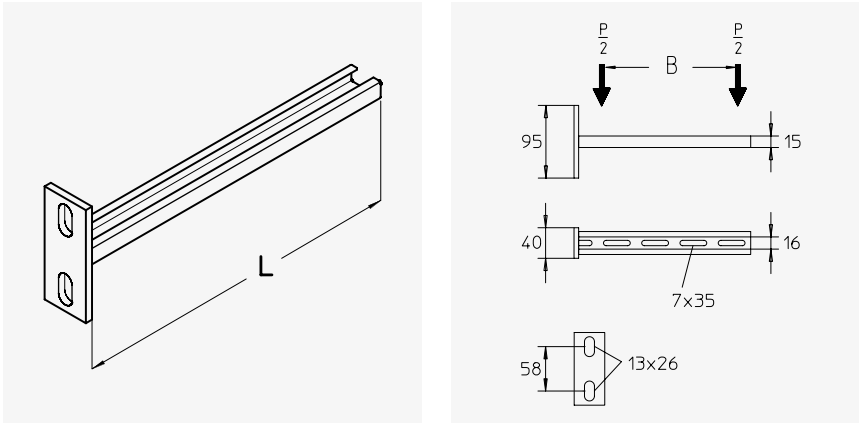
- KA 30 stem support
- KA 41 stem support

# KA 30

## Stem support

Stem bracket for profile 41 bracket support.

### Technical data



Model	B mm	L mm	P <sub>max</sub> kN	G F kg
KA 30-010F	100	125	0.5	0.20
KA 30-015F	150	175	0.5	0.30
KA 30-020F	200	225	0.5	0.30
KA 30-025F	250	275	0.5	0.40
KA 30-030F	300	325	0.5	0.40
KA 30-040F	400	425	0.5	0.50

B: Tray width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

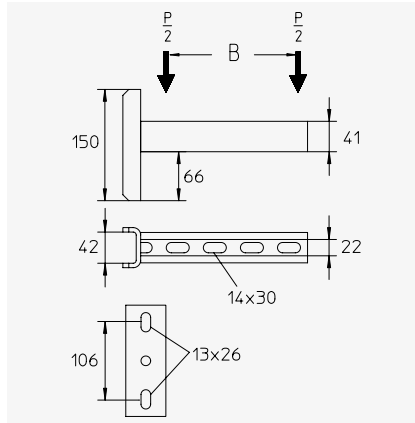
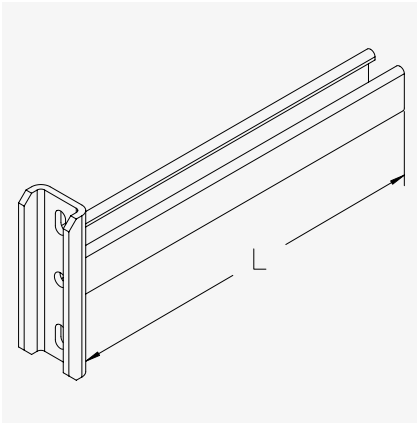


# KA 41

## Stem support

Stem support for KDAG 41, KHA 21/41/42/82.

### Technical data



Model	B mm	L mm	P <sub>max</sub> kN	G <sub>F</sub> kg
KA 41-010F	100	125	4.3	1.00
KA 41-015F	150	175	4.3	1.10
KA 41-020F	200	225	4.3	1.20
KA 41-025F	250	275	4.3	1.40
KA 41-030F	300	325	4.3	1.50
KA 41-040F	400	425	4.3	1.60
KA 41-050F	500	525	4.3	1.80
KA 41-060F	600	625	4.3	1.90

B: Tray width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

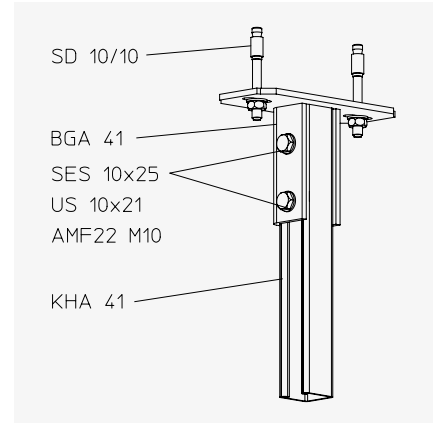
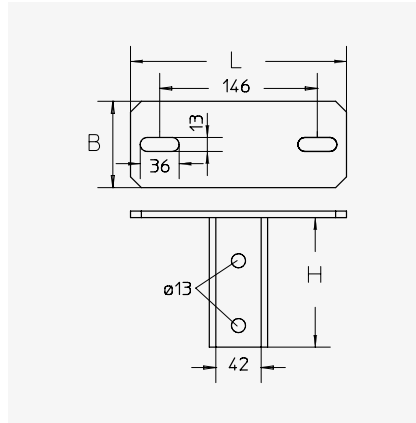
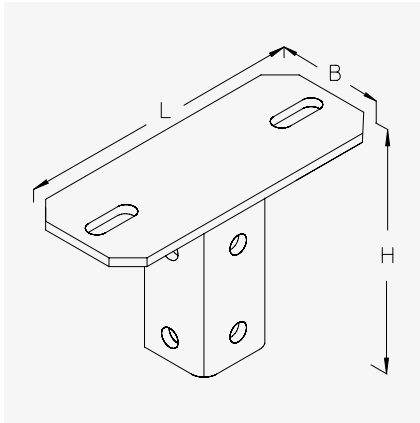
- KDAG 41 bracket support, 41x41 mm

# BGA 41

## Screw-on head plate, KHA 41

Assembly plate for mounting KHA 41 profile bracket supports on a floor/ceiling slab.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGA 41F	120	80	200	1.47

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHA 41 41x41 mm mounting channel, perforated



The screw fastenings for assembly are **not** included in the scope of delivery.

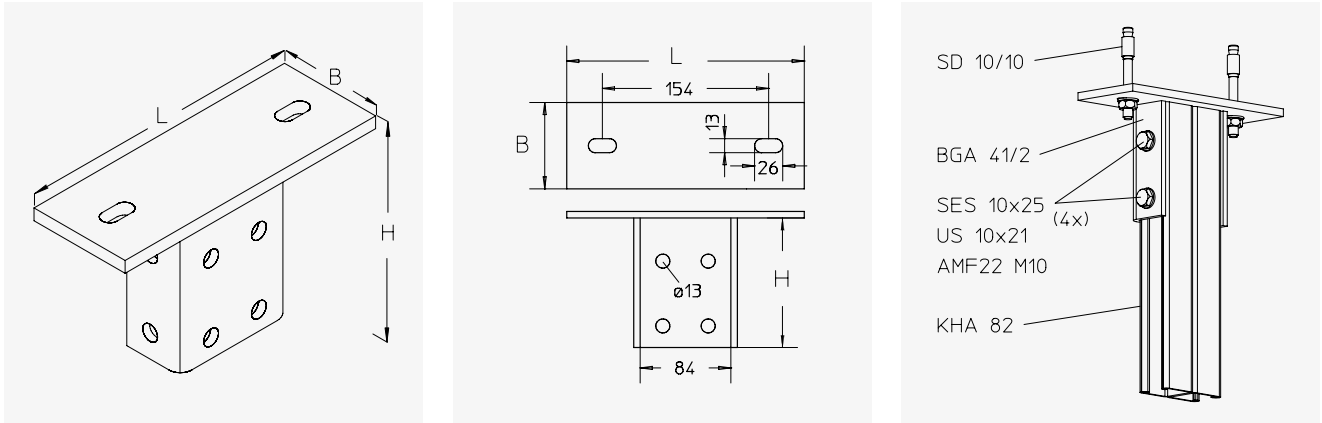
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# BGA 41/2

## Screw-on head plate, KHA 41/82

Assembly plate for mounting KHA 41 profile bracket supports on a floor/ceiling slab.

### Technical data



Model	H mm	B mm	L mm	G <sub>GV</sub> kg	G <sub>F</sub> kg
BGA 41/2	120	80	220	1.99	1.80

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHA 41 41x41 mm mounting channel, perforated



The screw fastenings for assembly are not included in the scope of delivery.

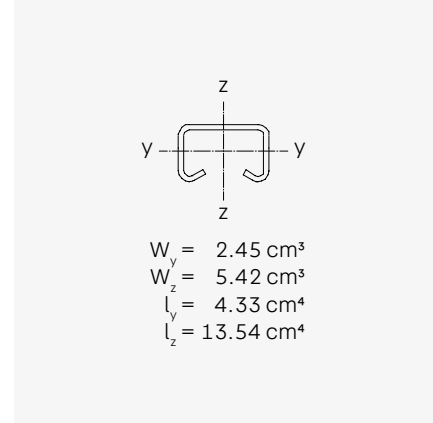
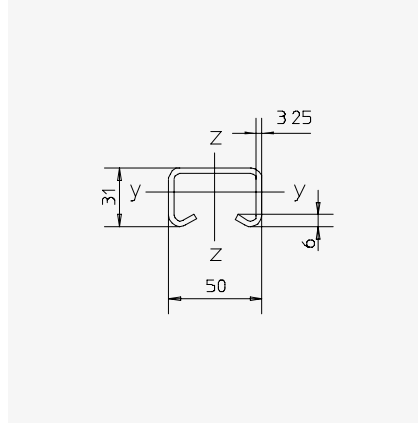
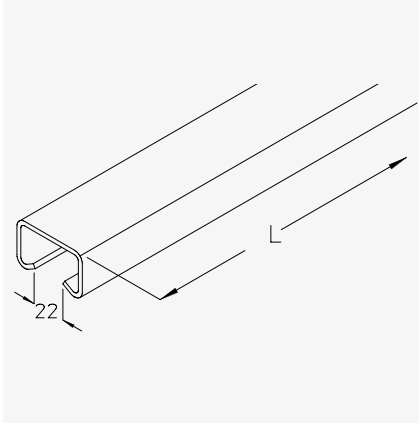
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# A 2

## 50x31 mm mounting channel, unperforated

50x31x3.25 mm mounting channel, without holes, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 2-30	31	50	3,000	3.25	8.80	9.40
A 2-60	31	50	6,000	3.25	17.60	18.80

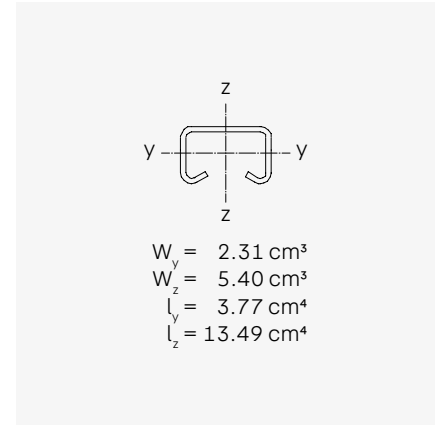
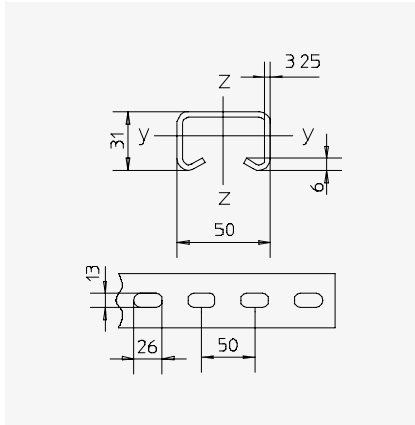
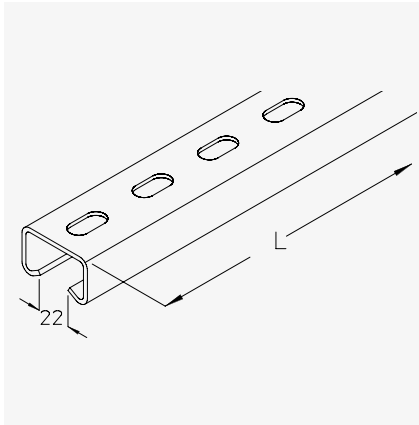
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 2

## 50x31 mm mounting channel, perforated

50x31x3.25 mm mounting channel, with a row of continuous holes measuring 13x26 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 2-05F	31	50	500	3.25	1.50
KHA 2-10F	31	50	1,000	3.25	3.00
KHA 2-15F	31	50	1,500	3.25	4.50
KHA 2-20F	31	50	2,000	3.25	6.00
KHA 2-30F	31	50	3,000	3.25	9.00
KHA 2-60F	31	50	6,000	3.25	17.90

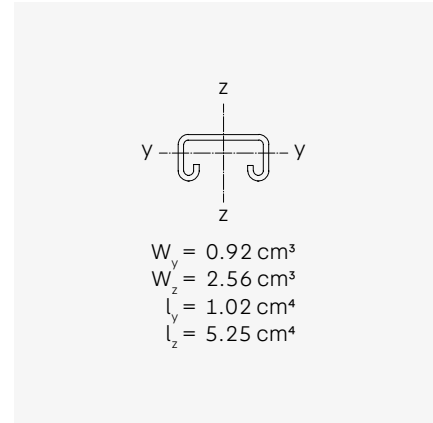
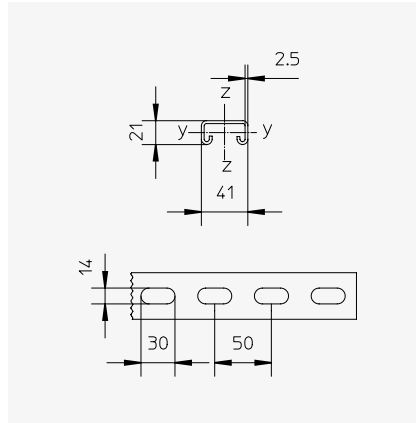
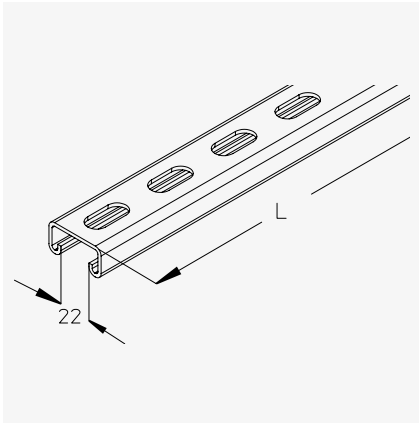
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 21

## 41x21 mm mounting channel, perforated

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg	G E4 kg
KHA 21-30	21	41	3,000	2.50	5.32	4.97
KHA 21-60	21	41	6,000	2.50	10.64	9.94

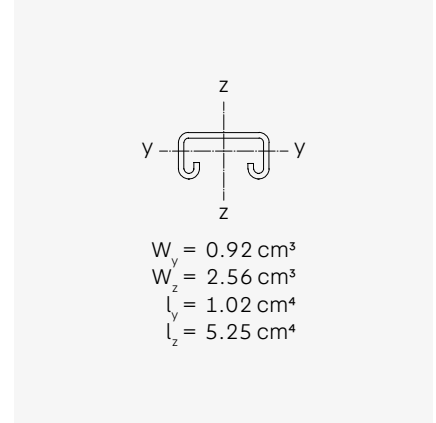
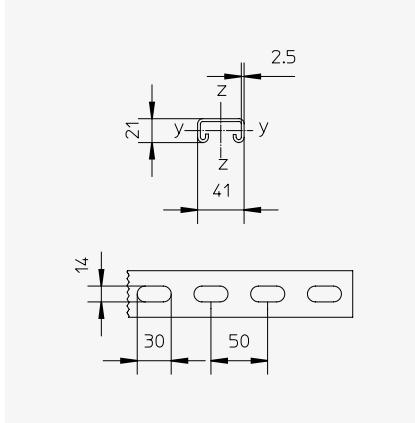
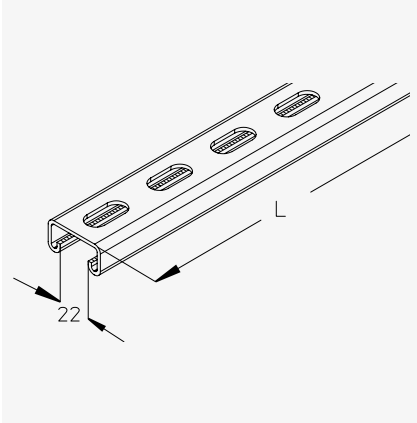
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHAZ 21

## 41x21 mm mounting channel, perforated, toothed

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G E4 kg
KHAZ 21-60E4	21	41	6,000	2.50	9.95

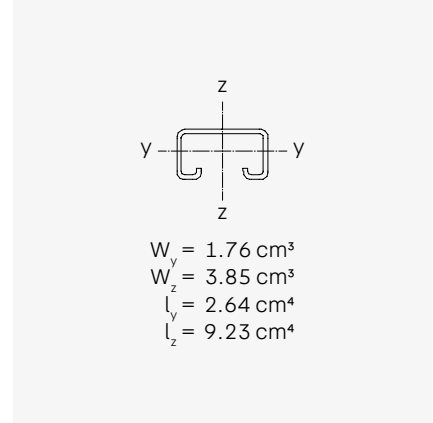
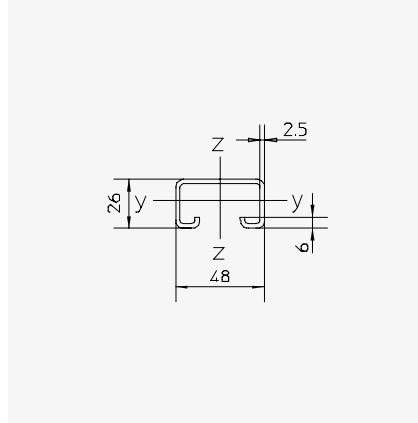
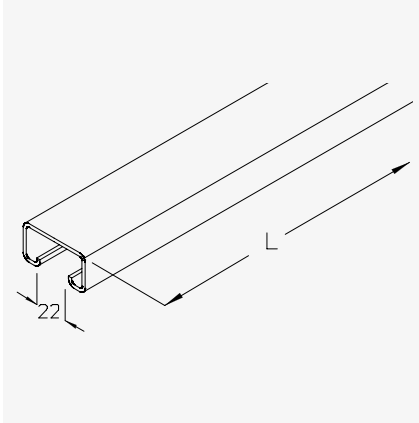
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# A 4

## 48x26 mm mounting channel, unperforated

48x26x2.50 mm mounting channel, without holes, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 4-30	26	48	3,000	2.50	6.70	7.20
A 4-60	26	48	6,000	2.50	13.40	14.40

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

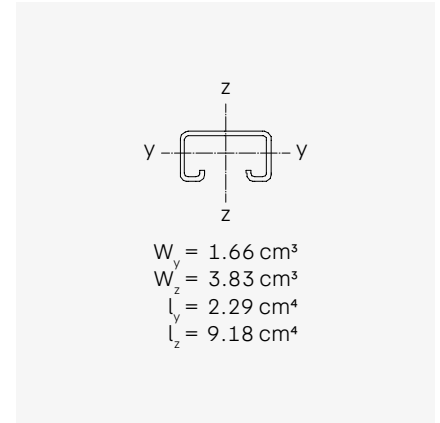
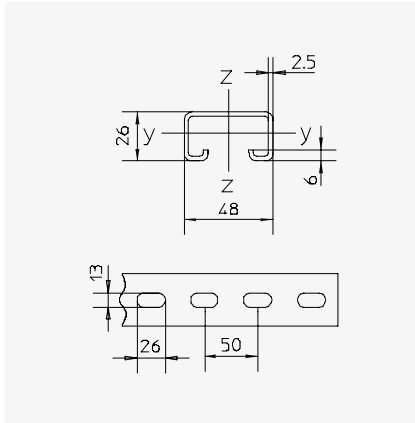
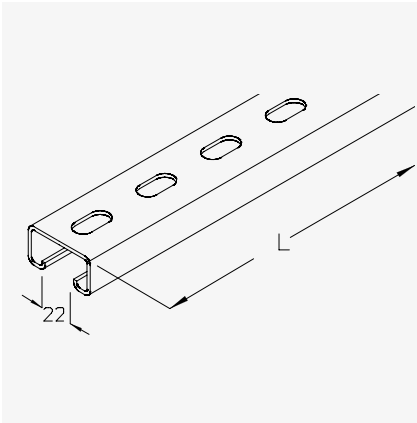


# KHA 4

## 48x26 mm mounting channel, perforated

48x26x2.50 mm mounting channel, with a row of continuous holes measuring 13x26 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 4-30F	26	48	3,000	2.50	6.80
KHA 4-60F	26	48	6,000	2.50	13.60

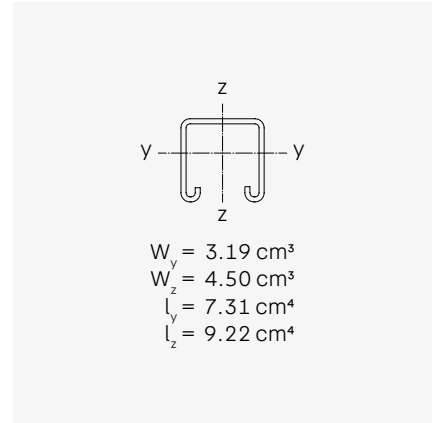
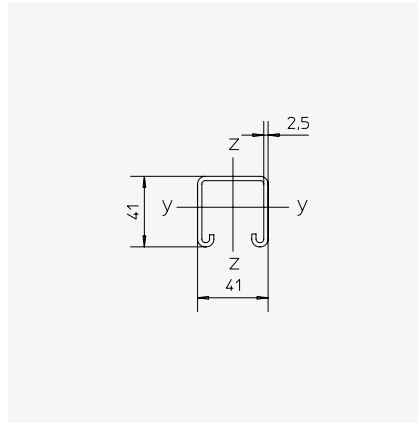
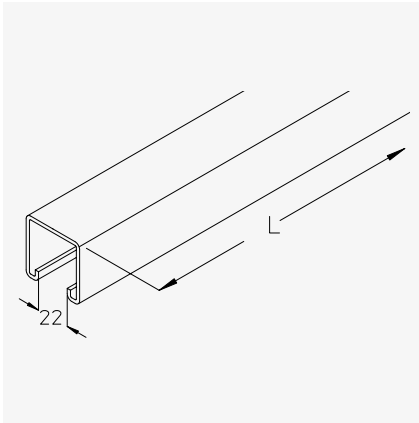
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# A 41

## 41x41 mm mounting channel, unperforated

48x26x2.50 mm mounting channel, without holes, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 41-30	41	41	3,000	2.50	8.20	8.30
A 41-60	41	41	6,000	2.50	15.55	16.63

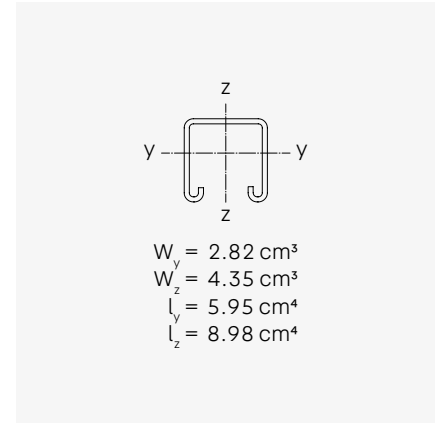
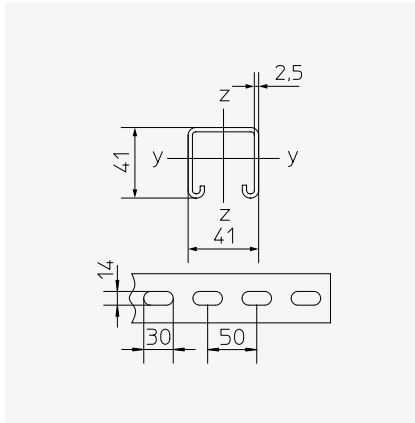
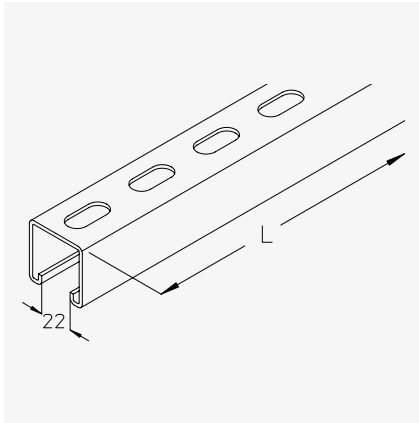
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 41

## 41x41 mm mounting channel, perforated

41x41x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 41-01F	41	41	100	2.50	0.25
KHA 41-02F	41	41	200	2.50	0.50
KHA 41-03F	41	41	300	2.50	0.70
KHA 41-04F	41	41	400	2.50	1.00
KHA 41-05F	41	41	500	2.50	1.30
KHA 41-06F	41	41	600	2.50	1.60
KHA 41-07F	41	41	700	2.50	1.80
KHA 41-08F	41	41	800	2.50	2.10
KHA 41-09F	41	41	900	2.50	2.40
KHA 41-10F	41	41	1,000	2.50	2.60
KHA 41-11F	41	41	1,100	2.50	2.90
KHA 41-12F	41	41	1,200	2.50	3.20
KHA 41-13F	41	41	1,300	2.50	3.40
KHA 41-14F	41	41	1,400	2.50	3.70
KHA 41-15F	41	41	1,500	2.50	4.00
KHA 41-20F	41	41	2,000	2.50	5.20
KHA 41-30F	41	41	3,000	2.50	7.80
KHA 41-60F	41	41	6,000	2.50	15.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

### Matching brackets

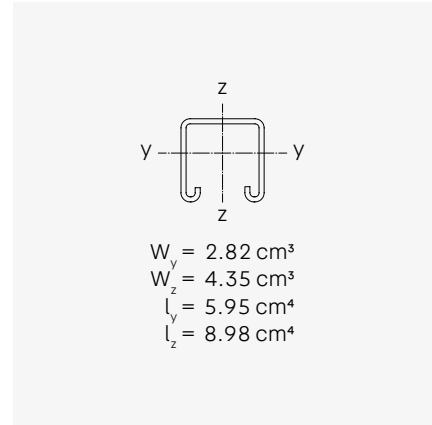
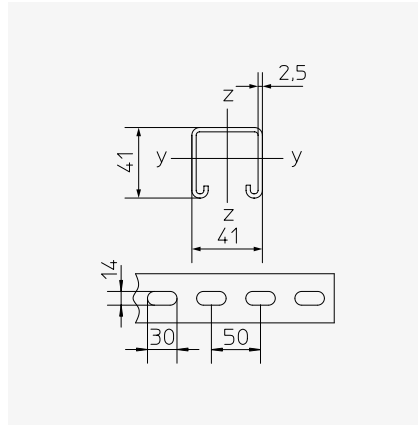
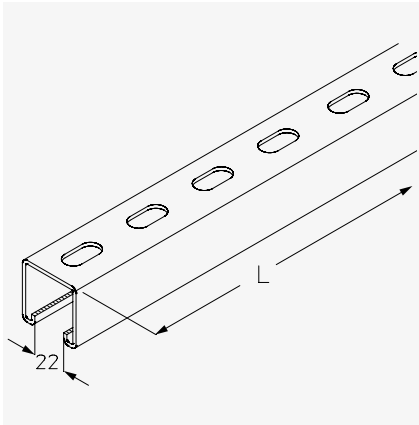
- KA 30 stem support
- KA 41 stem support

# KHAZ 41

## 41x41 mm mounting channel, perforated, toothed

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G E4 kg
KHAZ 41-60E4	41	41	6,000	2.50	15.28

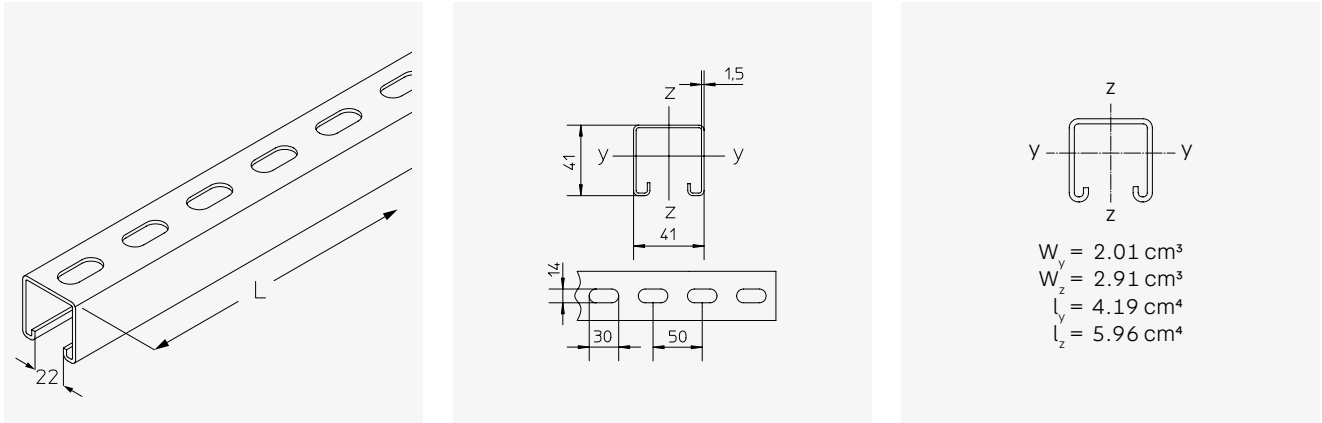
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHAL 41

## 41x41 mm mounting channel, perforated

41x41x1.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHAL 41-05	41	41	500	1.50	0.80
KHAL 41-10	41	41	1,000	1.50	1.56
KHAL 41-15	41	41	1,500	1.50	2.34
KHAL 41-20	41	41	2,000	1.50	3.30
KHAL 41-30	41	41	3,000	1.50	4.68
KHAL 41-36	41	41	3,600	1.50	6.01
KHAL 41-60	41	41	6,000	1.50	9.36

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

### Matching brackets

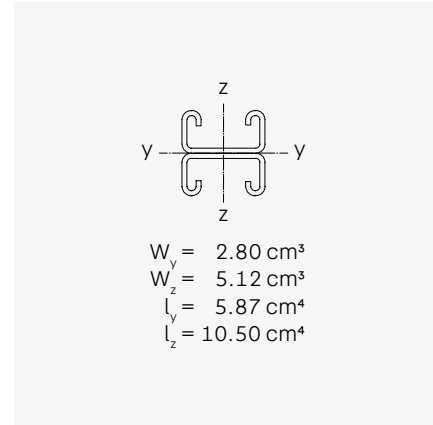
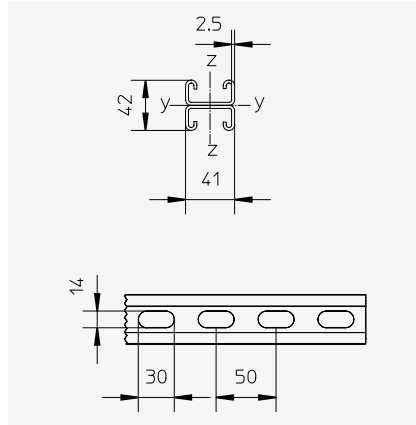
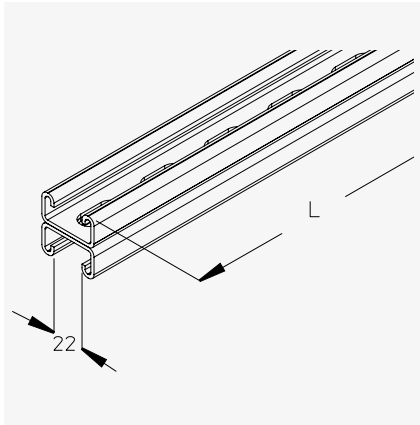
- KA 30 stem support
- KA 41 stem support

# KHA 42

## 41x42 mm mounting channel, perforated

41x42x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, welded back to back, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 42-30F	42	41	3,000	2.50	15.90
KHA 42-60F	42	41	6,000	2.50	21.28

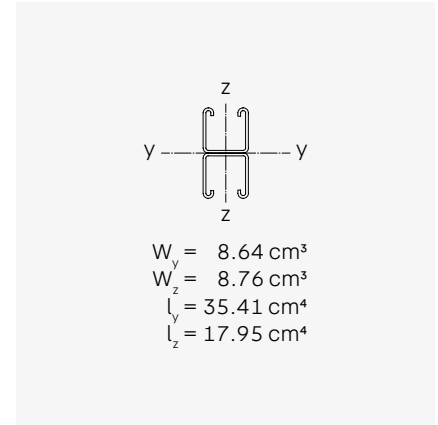
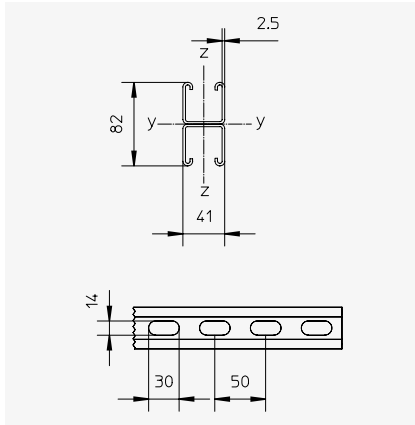
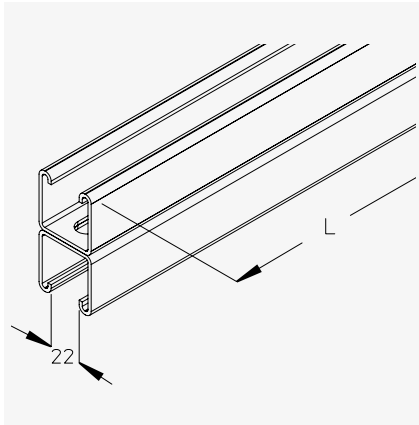
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 82

## 41x82 mm mounting channel, perforated

41x82x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, welded back to back, slot size 22 mm.

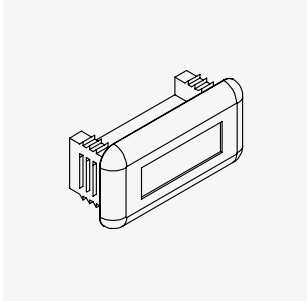
### Technical data



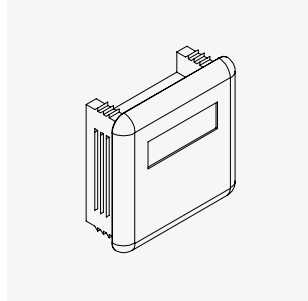
Model	H mm	B mm	L mm	t mm	G F kg	G E kg	G E4 kg
KHA 82-30	82	41	3,000	2.50	15.68	14.87	15.05
KHA 82-60	82	41	6,000	2.50	31.36	29.74	30.10

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

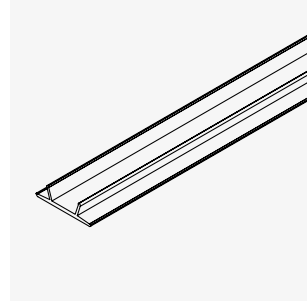
## Installation components



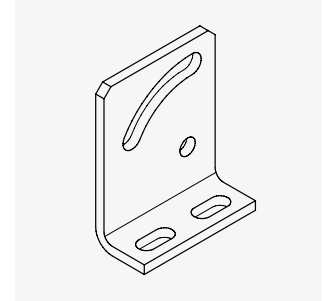
**SAI 21**  
Protection cap, white/black/  
yellow  
**PE**



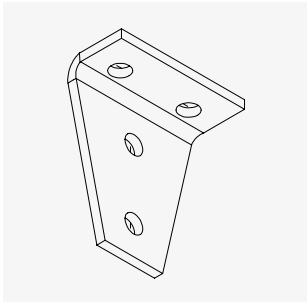
**SAI 41**  
Protection cap, white/black/  
yellow  
**PE**



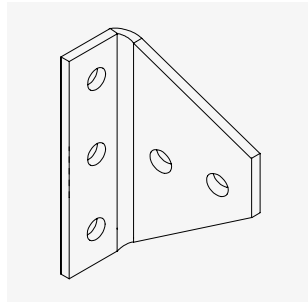
**KHAD 22**  
Cover, C-profile  
**PE**



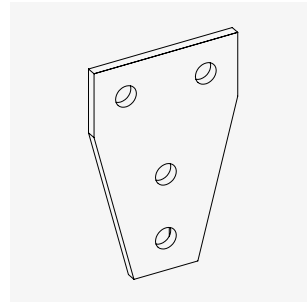
**BLD**  
Adaptor diagonal  
**F**



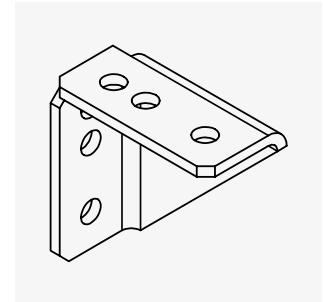
**AVLWB 1-2**  
90° profile connector with  
4 holes  
**F**



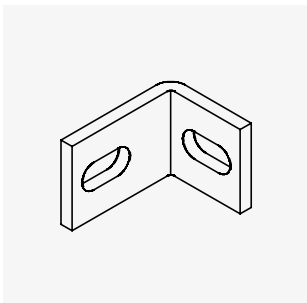
**AVLWBL 1-2**  
90° profile connector with  
5 holes  
**F**



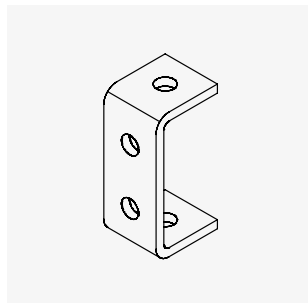
**AVLWBF2-2**  
Profile connector with  
4 holes  
**F**



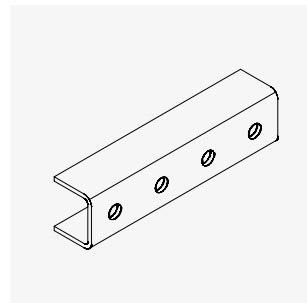
**AVLK**  
90° corner connector with  
6 holes  
**F**



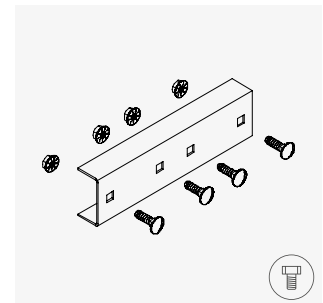
**BL 5**  
Corner angle, KHU 40/57/60,  
KHA  
**F**



**AKL**  
Rail clamp  
**F**



**AV**  
Connector,  
A/KHA 21/41/42/82  
**F**

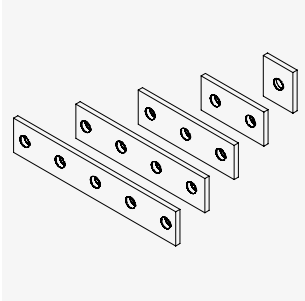


**ASK 4**  
Connector, A/KHA 4  
**F**

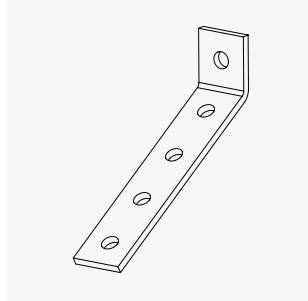


Fastening screws  
included with delivery

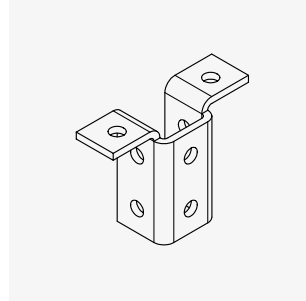




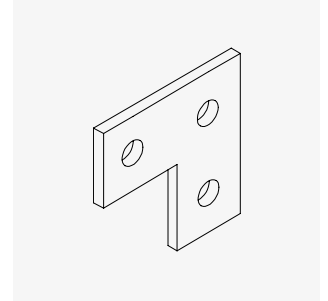
**AVL**  
Rail connector  
F



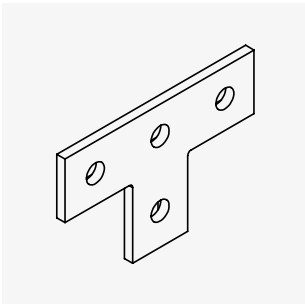
**AVL 60**  
60° profile connector  
F



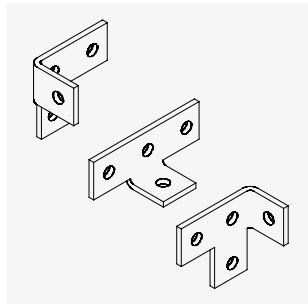
**AVT**  
Vertical T-piece  
F



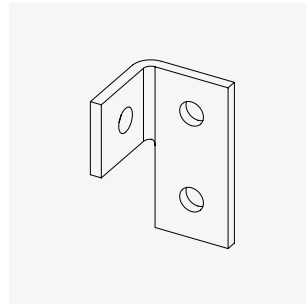
**AVE**  
Rail connector corner  
F



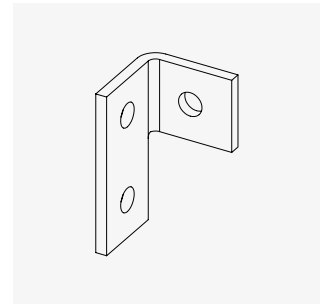
**AVA**  
Rail connector branch  
F



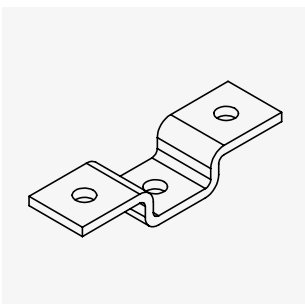
**AVAW**  
Rail connector angle  
F



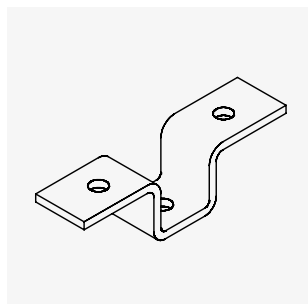
**AVE-L**  
Rail connector, 90° left  
F



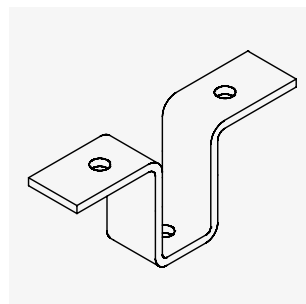
**AVE-R**  
Rail connector, 90° right  
F



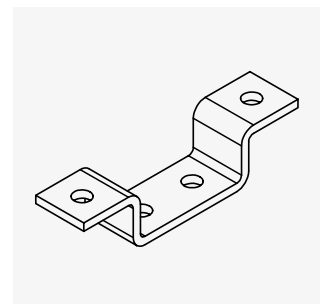
**AVB 21**  
Omega rail connector U support  
F



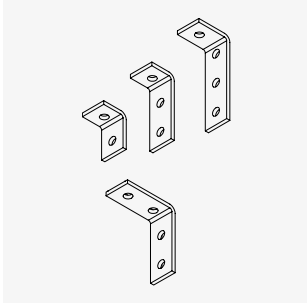
**AVB 41**  
Omega rail connector U support  
F



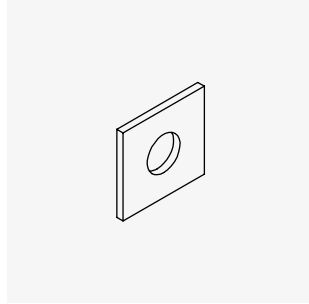
**AVB 82**  
Omega rail connector U support  
F



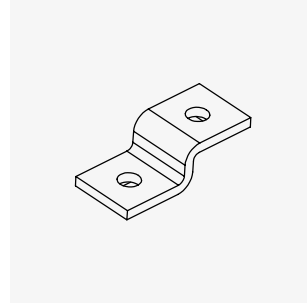
**AVBD 41**  
Omega rail connector U support  
F



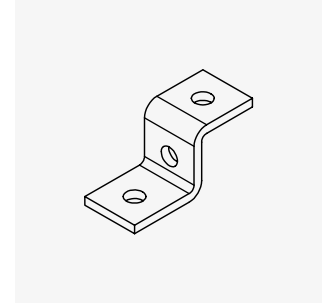
**AVLW**  
Rail connector, angular  
**F**



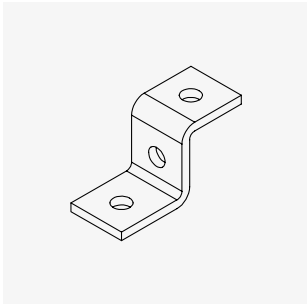
**AVLI-1**  
Square washer  
**F**



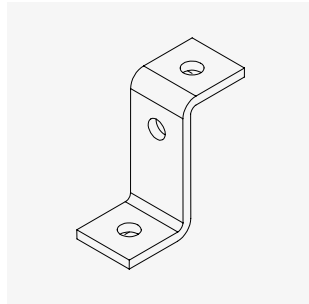
**AVBL 21**  
Z-mounting bracket  
**F**



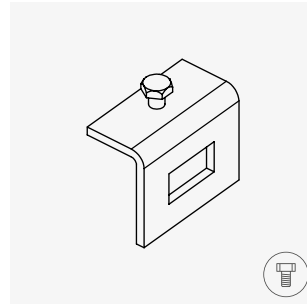
**AVBL 41**  
Z-mounting bracket  
**F**



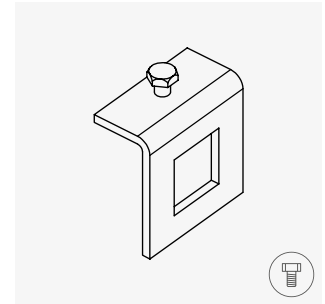
**AVBLA 41**  
Z-mounting bracket  
**F**



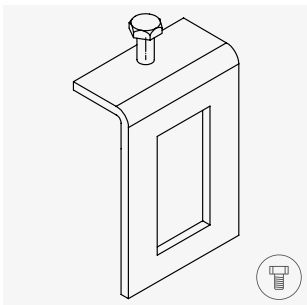
**AVBL 82**  
Z-mounting bracket  
**F**



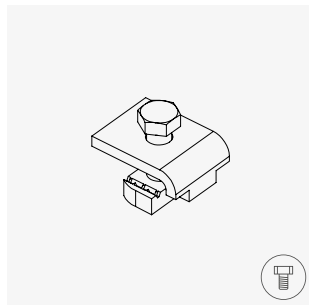
**AVSK 21**  
Clamping plate  
**F**



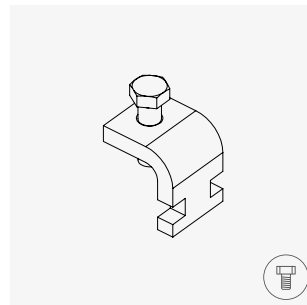
**AVSK 41**  
Clamping plate  
**F**



**AVSK 82**  
Clamping plate  
**F**



**AVSKA**  
Beam clamp  
**F**



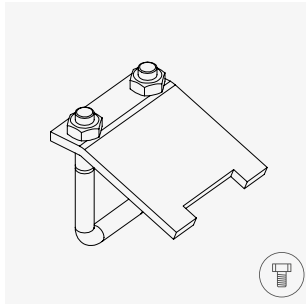
**AVSKH**  
Beam clamp  
**F**



**AVSKT**  
Beam clamp  
**F**



**AVSKP**  
 Beam clamp  
**F**



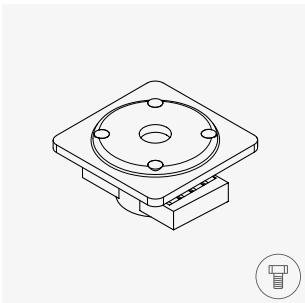
**AVSKGB**  
 Beam clamp  
**F**



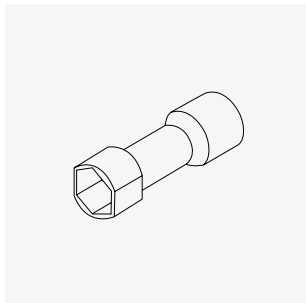
**AVRS**  
 Tube clamp  
**F**



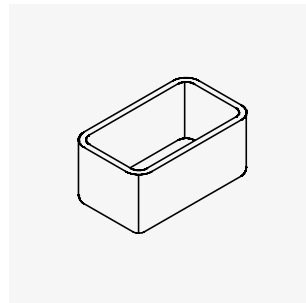
**SKLC**  
 Clamp strap  
**F**



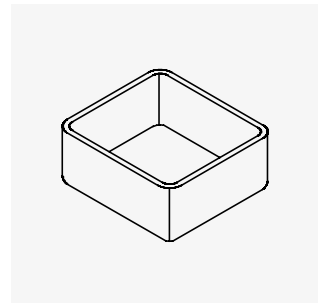
**AMP 22**  
 Locking plate  
**F**



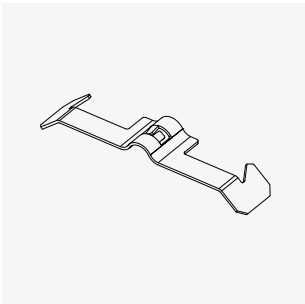
**PSS**  
 Channel socket  
**F**



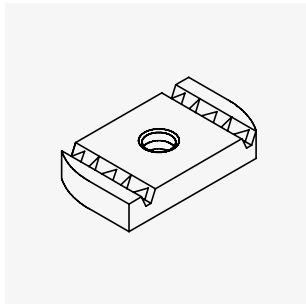
**SA 1**  
 Protection cap, cadmium  
 yellow RAL 1021  
**PE**



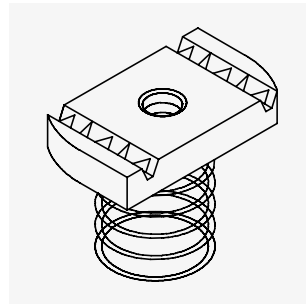
**SA 2**  
 Protection cap, cadmium  
 yellow RAL 1021  
**PE**



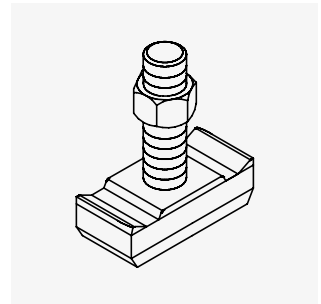
**GK-A**  
 Mesh cable tray clamp  
**ZL**



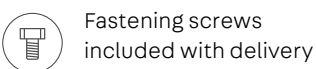
**AM22**  
 Channel nut,  
 A 41, KHA 41, KHAL 41  
**GV F E4**



**AMF22**  
 Channel spring nut,  
 A 41, KHA 41, KHAL 41  
**GV F E4**



**HS22**  
 Tee-head bolt, A 2/A 4  
**GV F E4**



# I-profile system



## Product description

The component parts of the I-profile system are bracket supports, stem supports and head plates. The stems consist of perforated I-profiles with a size of 80x42 mm. The KDI bracket support has an integrated head plate while the KHI profile is designed to have the BGI head plate screwed onto it. The KT, KTS and KTSS and stem supports are also part of the system.

The I-profile system is used whenever particularly heavy loads need to be supported. It offers load-bearing capacities of up to 12 kN and allows the cable trays to be filled to capacity. The I-profile system is the preferred support system of the automotive engineering sector. It is also used in power station and airport construction, among other areas of application.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction
- Automotive engineering and airport construction



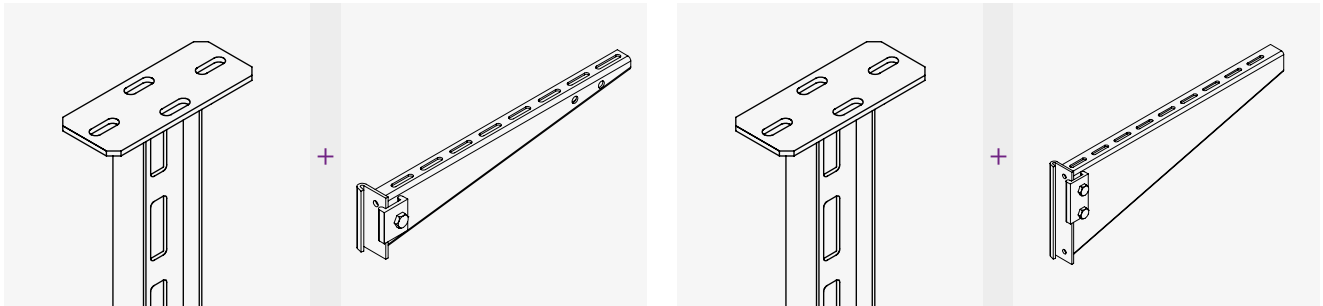
## Benefits

- Cable trays can be filled to capacity
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows the system to be adjusted for various areas of application

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview

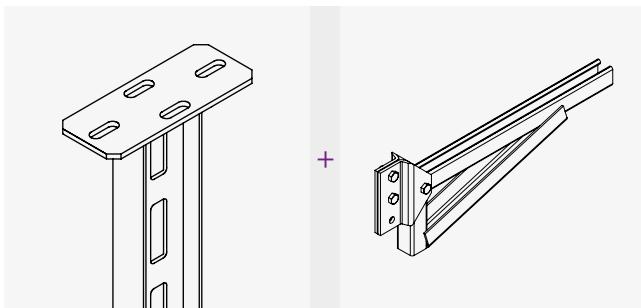


KDI

KT

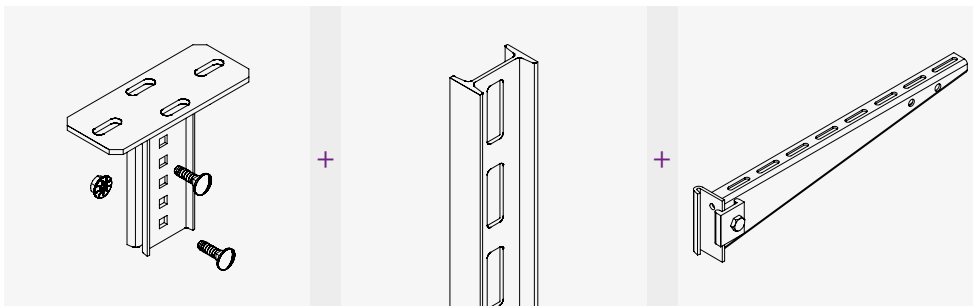
KDI

KTS



KDI

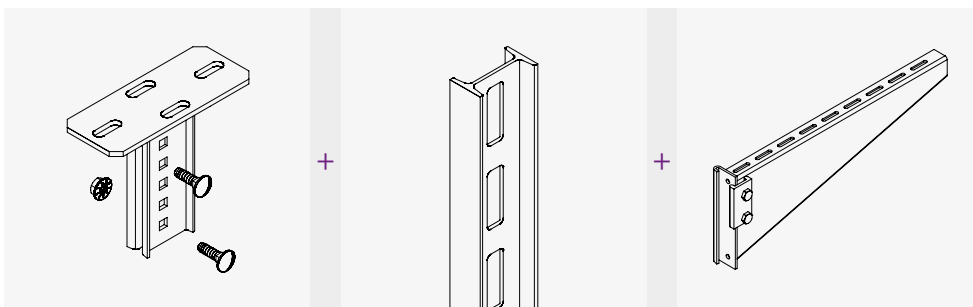
KTSS



BGI

KHI

KT



BGI

KHI

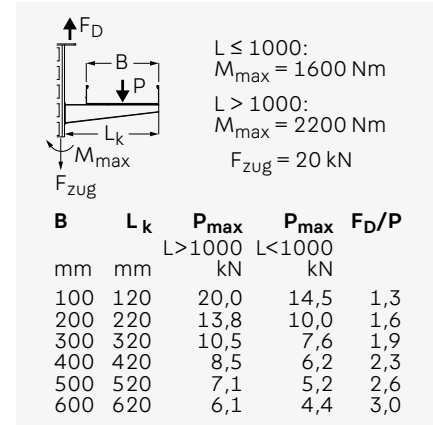
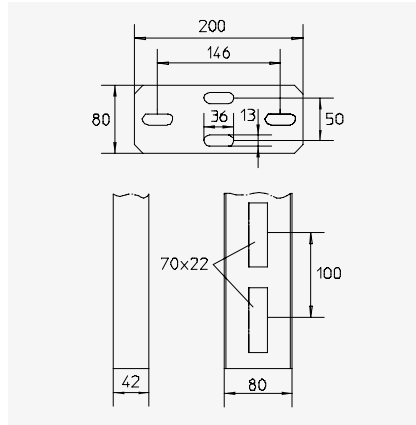
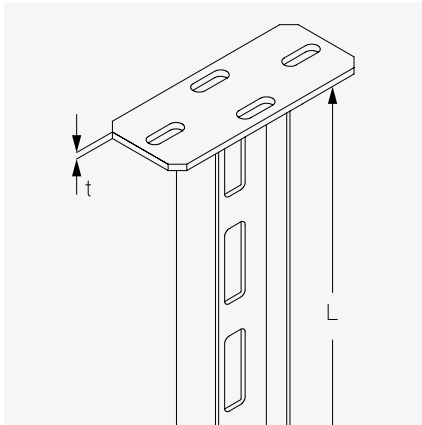
KTS

# KDI

## Bracket support, 80x42 mm

Bracket support, consisting of an I80 profile with a row of continuous elongated holes in the web, with welded-on head plate (material thickness t), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G F kg
KDI 02	200	6.00	1.86
KDI 03	300	6.00	2.38
KDI 04	400	6.00	2.92
KDI 05	500	6.00	3.65
KDI 06	600	6.00	4.17
KDI 07	700	6.00	4.70
KDI 08	800	6.00	5.37
KDI 09	900	6.00	5.84
KDI 10	1,000	6.00	6.60
KDI 11	1,100	8.00	7.10
KDI 12	1,200	8.00	7.68
KDI 13	1,300	8.00	8.26
KDI 14	1,400	8.00	8.84
KDI 15	1,500	8.00	9.42
KDI 16	1,600	8.00	10.01
KDI 17	1,700	8.00	10.59
KDI 18	1,800	8.00	11.18
KDI 19	1,900	8.00	11.76
KDI 20	2,000	8.00	12.35
KDI 21	2,100	8.00	12.93
KDI 22	2,200	8.00	13.52
KDI 23	2,300	8.00	14.10
KDI 24	2,400	8.00	14.69

L: Length | t: Material thickness | G: Weight (per surface/material)

A zinc-plated (GV) surface in accordance with DIN EN ISO 19598 / DIN EN ISO 2081 is available on request. You must specify the surface finish/material when placing your order.

<b>Model</b>	<b>L</b> mm	<b>t</b> mm	<b>G F</b> kg
<b>KDI 25</b>	2,500	8.00	15.27
<b>KDI 26</b>	2,600	8.00	15.89
<b>KDI 27</b>	2,700	8.00	16.44
<b>KDI 28</b>	2,800	8.00	17.03
<b>KDI 29</b>	2,900	8.00	17.61
<b>KDI 30</b>	3,000	8.00	18.20

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm

### Matching brackets

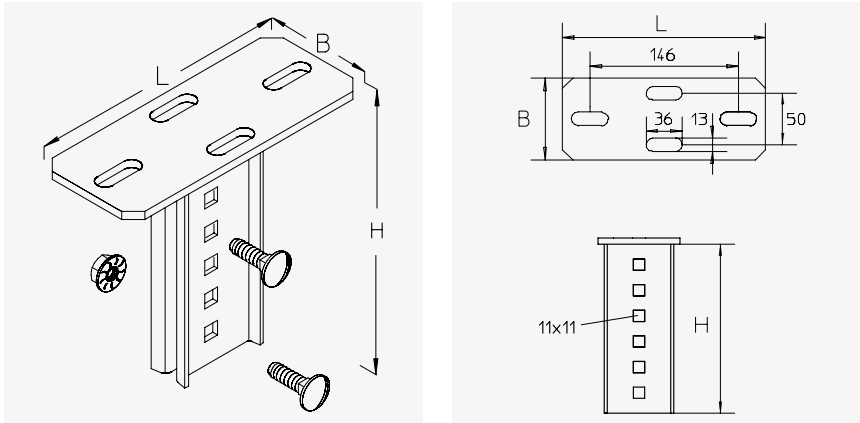
- KT bracket, KDI/KHI
- KTS bracket, KDI/KHI
- KTSS bracket, KDI/KHI

# BGI

## Screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGI F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

**This item is also available with different angles of inclination.**

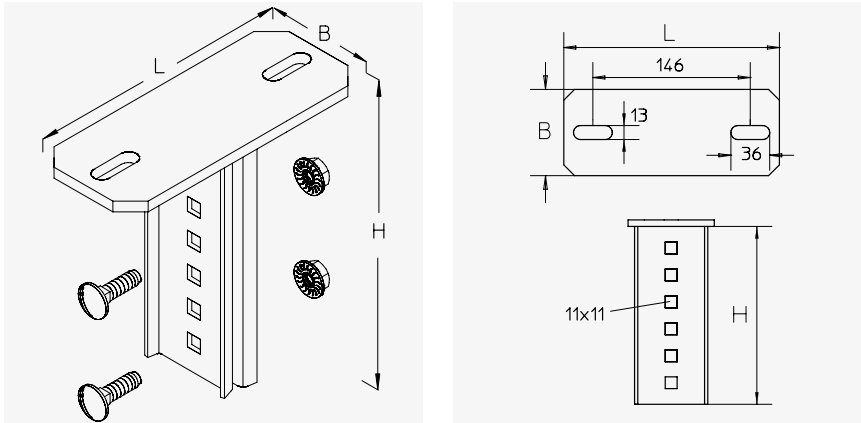


# BGIQ

## Screw-on head plate turned 90°, KHI

Transverse head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGIQ F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

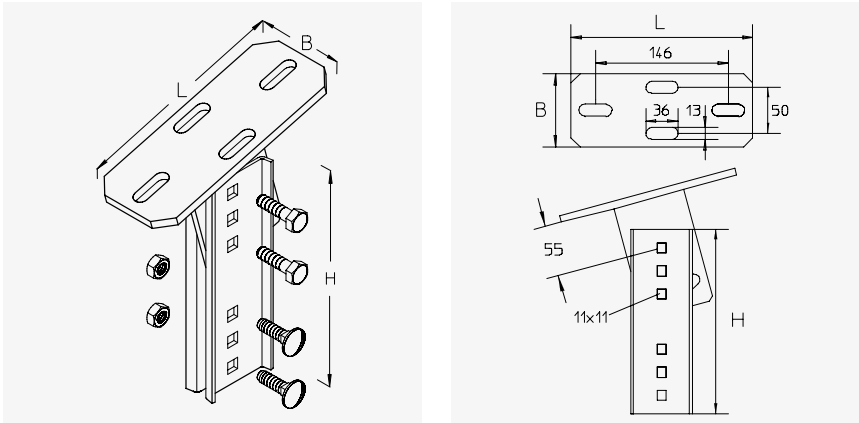
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# BGID

## ±30° screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling. For an angled connection of +/-30°.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGID F	200	80	200	2.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

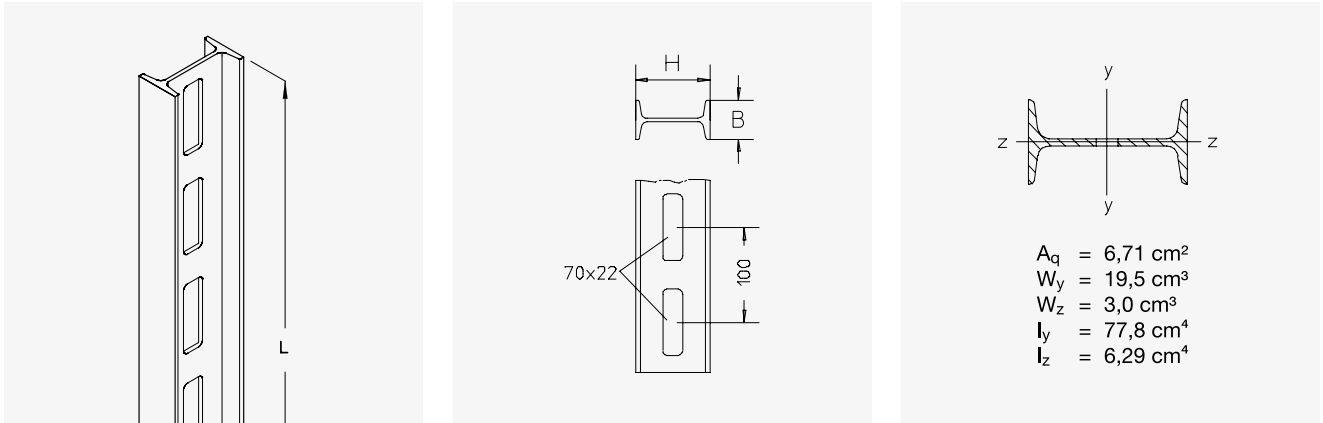
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHI

## Bracket support, 80x42 mm

Bracket support with a row of continuous elongated holes in the web, for direct mounting on the ceiling in conjunction with BL 7/BGI.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHI 02F	80	42	200	1.10
KHI 03F	80	42	300	1.70
KHI 04F	80	42	400	2.30
KHI 05F	80	42	500	2.90
KHI 06F	80	42	600	3.50
KHI 07F	80	42	700	4.10
KHI 08F	80	42	800	4.70
KHI 09F	80	42	900	5.30
KHI 10F	80	42	1,000	5.90
KHI 11F	80	42	1,100	6.40
KHI 12F	80	42	1,200	7.10
KHI 13F	80	42	1,300	7.60
KHI 14F	80	42	1,400	8.20
KHI 15F	80	42	1,500	8.80
KHI 16F	80	42	1,600	9.40
KHI 17F	80	42	1,700	10.00
KHI 18F	80	42	1,800	10.60
KHI 19F	80	42	1,900	11.10
KHI 20F	80	42	2,000	11.70
KHI 21F	80	42	2,100	12.30
KHI 22F	80	42	2,200	12.90
KHI 23F	80	42	2,300	13.50
KHI 24F	80	42	2,400	14.10
KHI 25F	80	42	2,500	14.60

<b>Model</b>	<b>H</b> mm	<b>B</b> mm	<b>L</b> mm	<b>G F</b> kg
<b>KHI 26F</b>	80	42	2,600	15.20
<b>KHI 27F</b>	80	42	2,700	15.80
<b>KHI 28F</b>	80	42	2,800	16.30
<b>KHI 29F</b>	80	42	2,900	16.90
<b>KHI 30F</b>	80	42	3,000	17.50
<b>KHI 60F</b>	80	42	6,000	35.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDI bracket support, 80x42 mm

### Matching brackets

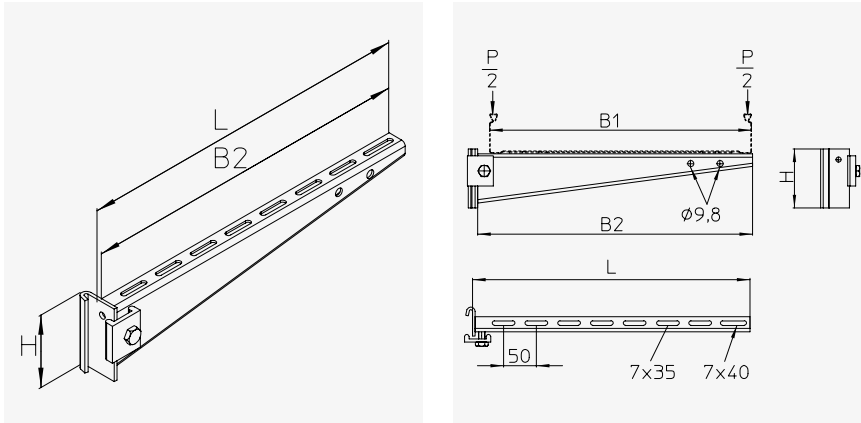
- KT bracket, KDI/KHI
- KTS bracket, KDI/KHI
- KTSS bracket, KDI/KHI

# KT

## Bracket, KDI/KHI

Bracket, for I80 profile bracket support, tested in accordance with DIN EN 61537.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G <sub>GV</sub> kg	G <sub>F</sub> kg
KT 010	50	100	120	124	2.0	0.24	0.24
KT 020	70	200	220	224	2.0	0.46	0.56
KT 030	70	300	320	324	2.0	0.56	0.77
KT 040	90	400	420	424	2.0	0.90	0.87
KT 050	110	500	520	524	2.0	1.34	1.40
KT 060	110	600	620	624	2.1	1.55	1.55

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

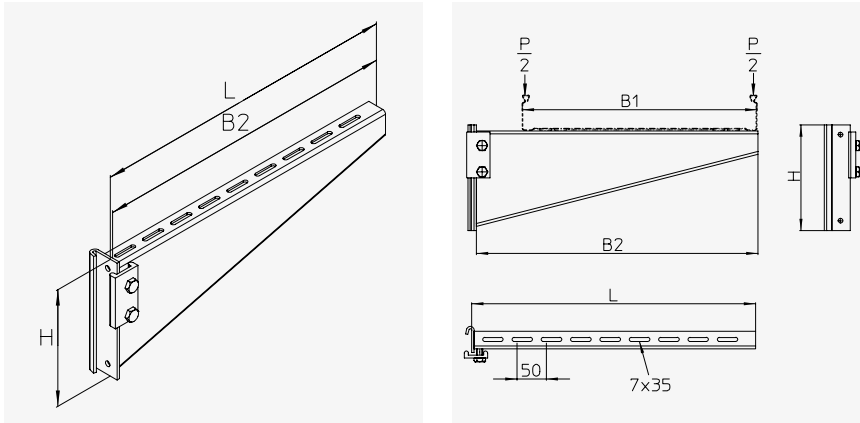
- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

# KTS

## Bracket, KDI/KHI

Bracket, for I80 profile bracket support, tested in accordance with DIN EN 61537.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G F kg
KTS 020F	180	200	280	284	7.0	1.63
KTS 030F	180	300	380	384	6.3	1.99
KTS 040F	180	400	480	484	5.5	2.36
KTS 050F	180	500	580	584	4.9	2.73
KTS 060F	180	600	680	684	4.3	3.09
KTS 070F	180	600	780	784	3.6	3.46
KTS 080F	180	600	880	884	3.0	3.81
KTS 090F	180	600	980	984	2.3	4.18
KTS 100F	180	600	1,080	1,084	1.7	4.55

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

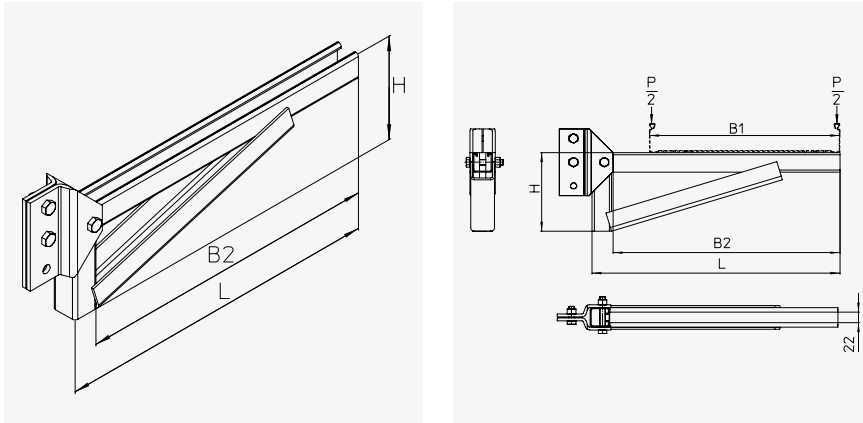
- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

# KTSS

## Bracket, KDI/KHI

Supports, particularly suitable for wide-span cable trays, for I80 bracket support, tested in accordance with DIN EN 61537.

### Technical data



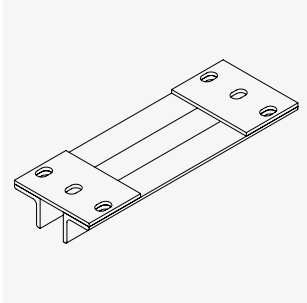
Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G <sub>F</sub> kg
KTSS 020F	100	200	280	321	12.0	3.16
KTSS 030F	135	300	380	421	12.0	3.94
KTSS 040F	165	400	480	521	12.0	4.71
KTSS 050F	200	500	580	621	12.0	5.50
KTSS 060F	230	600	680	721	12.0	6.29

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

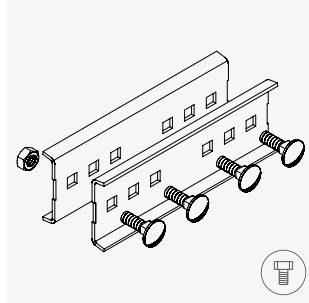
### Matching bracket supports

- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

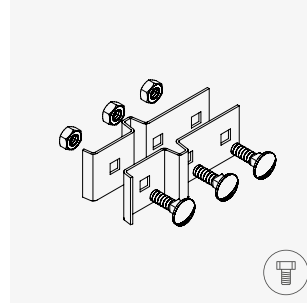
# Installation components



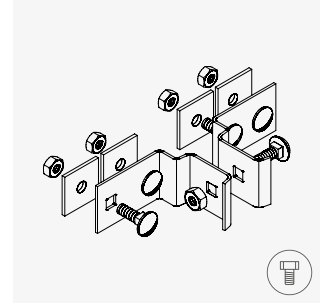
**KDIA-G**  
Adapter for KDI, welded  
**F**



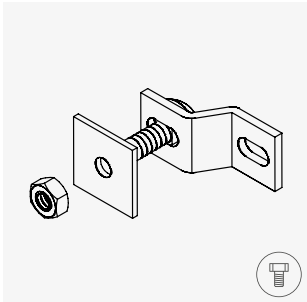
**HKI**  
Connector, KHI  
**F**



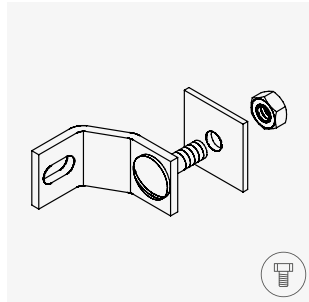
**HKIW**  
Mounting bracket, KHI  
**GV F**



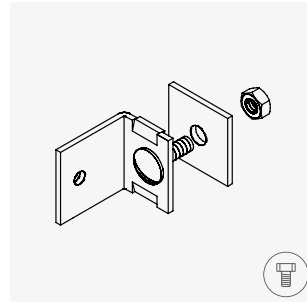
**HKIQ**  
Mounting bracket, transverse, KHI  
**F**



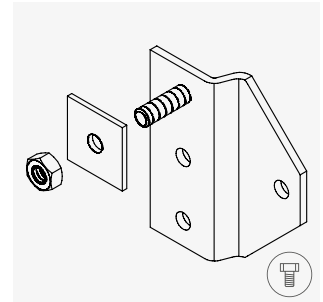
**BL 3**  
Corner angle, KHI  
**F**



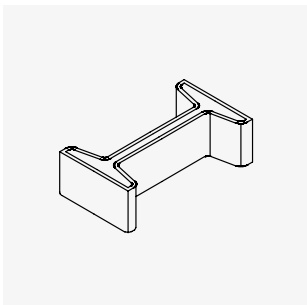
**BL 7**  
Corner angle, KHI  
**GV F**



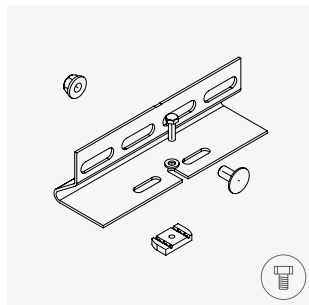
**BL 8**  
Corner angle, KHI  
**F**



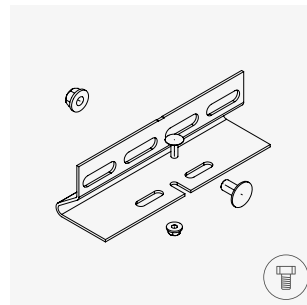
**BLI**  
Corner angle, KHI  
**F**



**SI**  
Protection cap, KDI/KHI  
**PE**



**WPHS-A**  
Flange mounting clamp  
(mounting channel)  
**S**

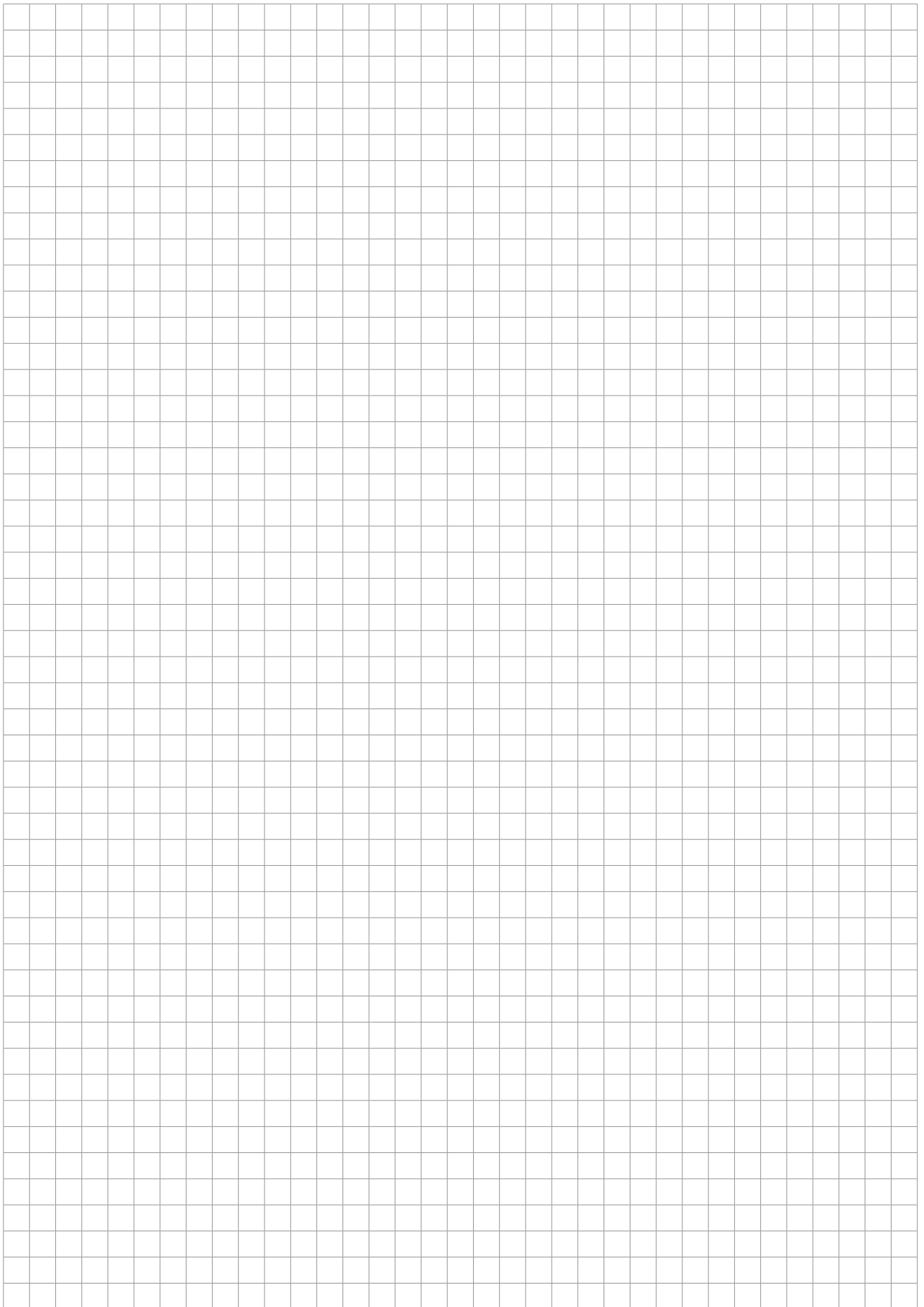


**WPHS-K**  
Flange mounting clamp  
(brackets)  
**S**



Fastening screws  
included with delivery







# Support systems for cable ladders

# Wall brackets



## Product description

The arms described here can be mounted on the wall using dowels or profile rails and are used for fixing cable trays to the wall. The wall brackets are designed for various loads. With their maximum bracket load of 3.8 kN, the KW and KWMS brackets are particularly suitable for cable ladders.

If you need a product capable of bearing heavy loads of up to 10 kN and spanning long support distances, the KWS and KWSS arms are what you need. The KIS and KISS brackets are suitable for suspending cable trays from steel structures such as T-beams and double-T-beams.



## Areas of application

- On walls for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction



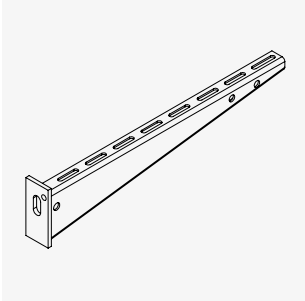
## Benefits

- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

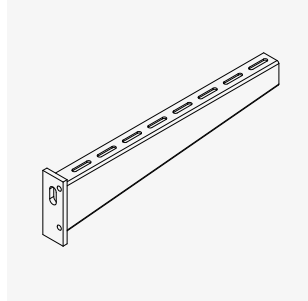
## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

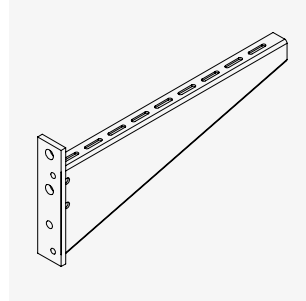
## Model overview



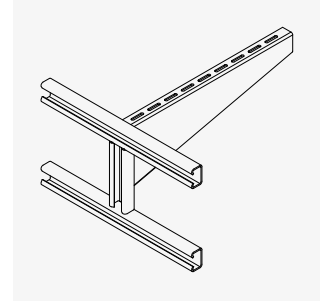
**KW**



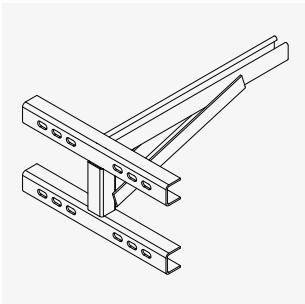
**KWMS**



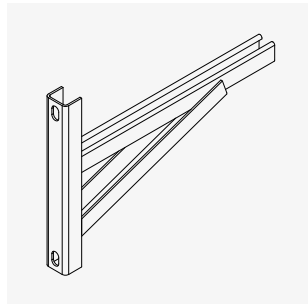
**KWS**



**KIS**



**KISS**



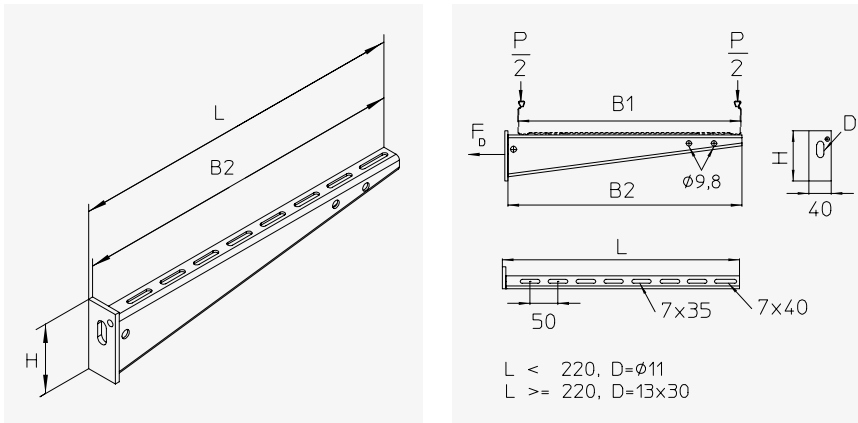
**KWSS**

# KW

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KW 010	45	100	115	124	1.4	3.10	0.12	0.13	0.13	0.15
KW 015	45	150	170	174	1.5	4.10	*	0.17	0.16	0.16
KW 020	70	200	215	225	2.0	3.00	0.30	0.32	0.39	0.31
KW 030	70	300	315	326	2.0	4.00	0.41	0.44	0.47	0.42
KW 040	90	400	415	426	2.4	3.60	0.70	0.80	0.76	0.73
KW 050	110	500	515	528	2.1	3.40	1.24	1.33	1.08	1.10
KW 060	110	600	615	628	2.1	4.00	1.45	1.55	1.25	1.26
KW 070	110	700	715	728	3.0	5.68	2.12	2.27	*	*

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

\* On request

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



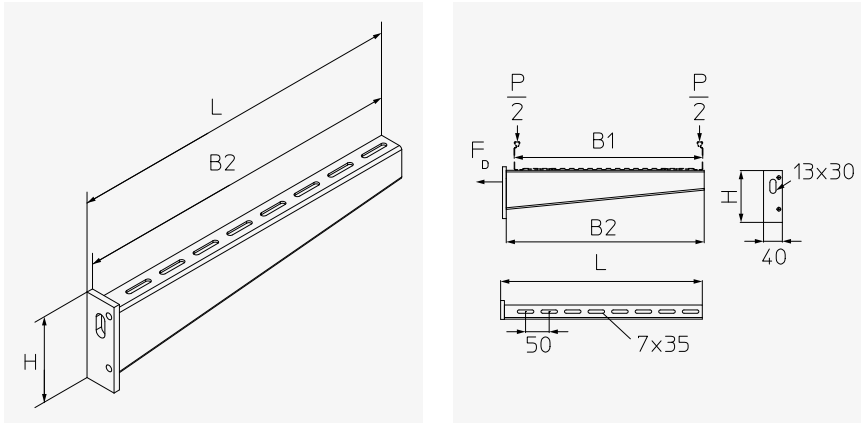
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KWMS

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KWMS 010	110	100	115	128	3.8	1.36	0.50	0.53	0.51	0.52
KWMS 020	110	200	215	228	3.8	1.81	0.71	0.76	0.73	0.74
KWMS 030	110	300	315	328	3.8	2.32	0.92	0.99	0.94	0.95
KWMS 040	110	400	415	428	3.8	2.86	1.13	1.21	1.16	1.17
KWMS 050	110	500	515	528	3.8	3.42	1.34	1.43	1.37	1.38
KWMS 060	110	600	615	628	3.8	3.99	1.54	1.65	1.58	1.60

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm
- KHU 60 bracket support, 60x40 mm
- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



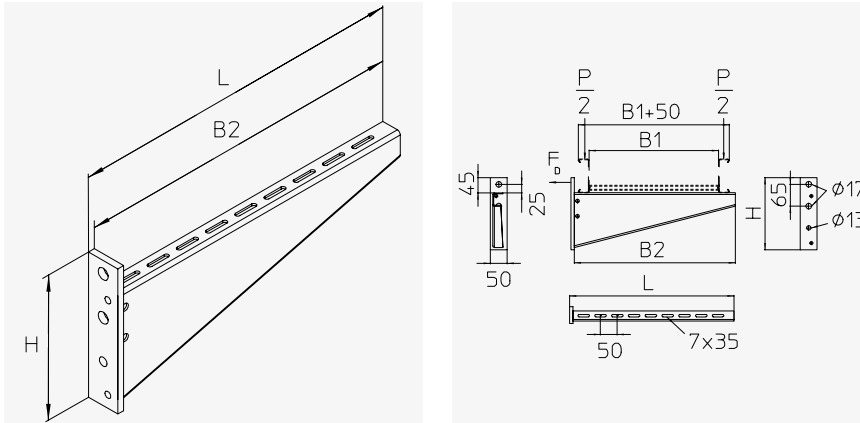
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KWS

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KWS 020	215	200	270	290	7.0	1.31	2.04	1.92	1.92
KWS 030	215	300	370	390	6.7	1.49	2.40	2.26	2.26
KWS 040	215	400	470	490	6.5	1.69	2.78	2.61	2.61
KWS 050	215	500	570	592	6.3	1.91	2.91	2.95	2.95
KWS 060	215	600	670	692	6.1	2.13	3.22	3.29	3.29
KWS 070	215	700	770	792	5.2	2.60	3.54	3.64	3.64
KWS 080	215	800	870	892	4.4	3.07	3.85	3.97	3.97
KWS 090	215	900	970	992	3.6	3.56	4.17	4.32	4.32
KWS 100	215	1,000	1,070	1,092	2.8	4.06	4.48	4.67	4.67

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm
- KHU 60 bracket support, 60x40 mm
- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

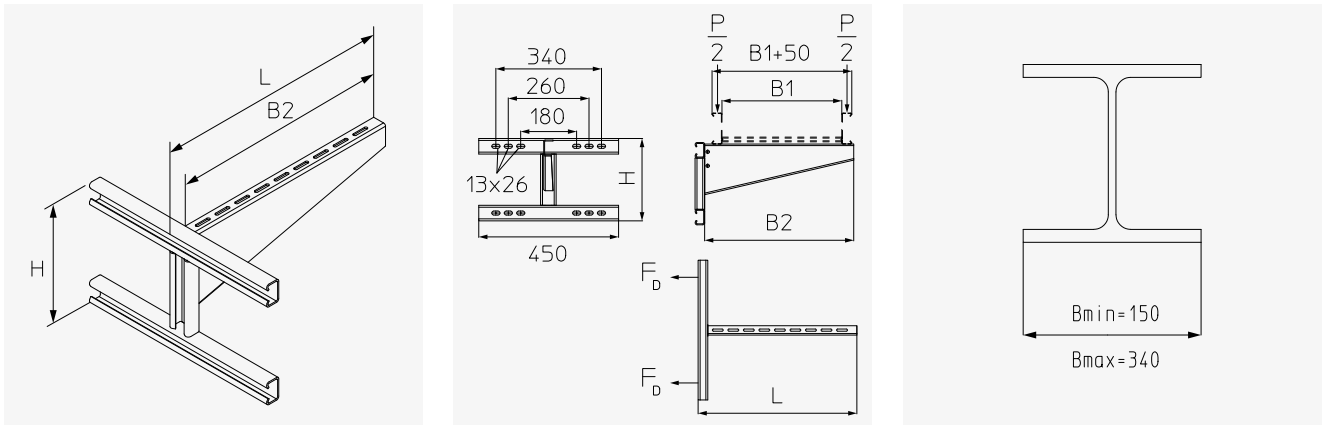


# KIS

## Wall bracket

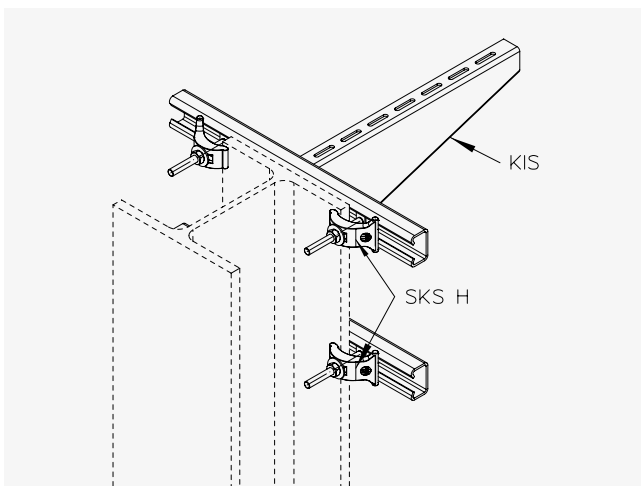
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KIS 020F	265	200	275	310	7.0	0.66	4.32
KIS 030F	265	300	375	410	6.7	0.76	4.65
KIS 040F	265	400	475	510	6.5	0.86	5.00
KIS 050F	265	500	575	610	6.3	0.97	5.34
KIS 060F	265	600	675	710	6.1	1.09	5.68
KIS 070F	265	700	775	810	5.2	1.33	6.02
KIS 080F	265	800	875	910	4.4	1.57	6.36
KIS 090F	265	900	975	1,010	3.6	1.83	6.70
KIS 100F	265	1,000	1,075	1,110	2.8	2.08	7.04

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KIS wall bracket attached to a steel beam using the SKS H beam clamp set.

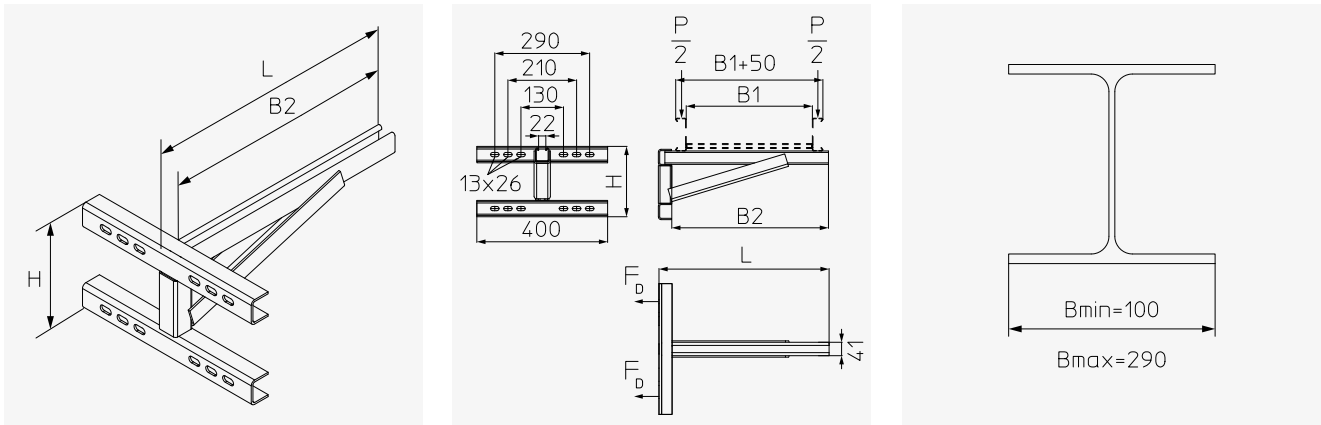
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KISS

## Wall bracket

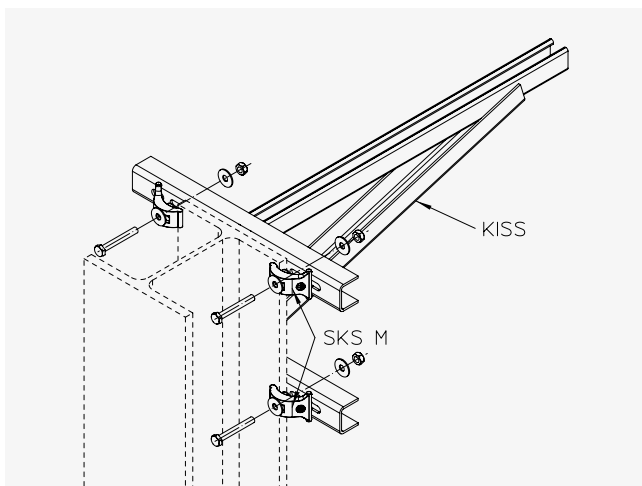
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KISS 020F	150	200	275	210	10.0	0.93	4.66
KISS 030F	185	300	375	420	10.0	0.91	5.42
KISS 040F	215	400	475	520	10.0	0.92	6.17
KISS 050F	250	500	575	620	10.0	0.92	6.93
KISS 060F	280	600	675	720	10.0	0.92	7.70
KISS 070F	315	700	775	820	10.0	0.99	8.44
KISS 080F	345	800	875	920	10.0	1.06	9.21
KISS 090F	380	900	975	1,020	10.0	1.10	9.96
KISS 100F	410	1,000	1,075	1,120	10.0	1.15	10.71

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KISS wall bracket attached to a steel beam using the SKS M beam clamp set.

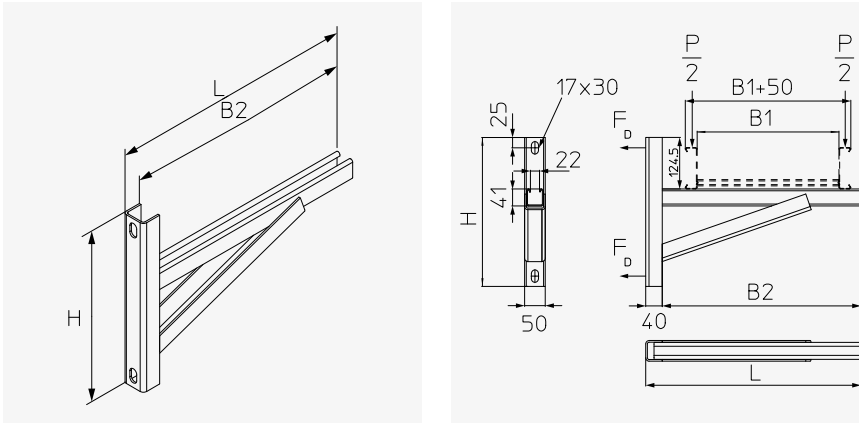
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KWSS

## Wall bracket

Wall bracket, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>F</sub> kg
KWSS 020F	290	200	275	320	10.0	0.76	2.59
KWSS 030F	320	300	375	420	10.0	0.86	3.37
KWSS 040F	360	400	475	520	10.0	0.91	4.18
KWSS 050F	390	500	575	620	10.0	0.97	4.96
KWSS 060F	360	600	675	720	10.0	1.26	5.51
KWSS 070F	390	700	775	820	10.0	1.44	6.28
KWSS 080F	425	800	875	920	10.0	1.56	7.08
KWSS 090F	455	900	975	1,020	10.0	1.66	7.85
KWSS 100F	490	1,000	1,075	1,120	10.0	1.72	8.65

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.

# Pendulum suspensions



## Product description

Pendulum supports are used to suspend cable trays from ceilings. Particularly in the case of trapezoidal sheet ceilings, please be aware that a pendulum suspension solution can only be implemented using trapezium bows and threaded rods. For cable ladders, pendulum suspension solutions can be achieved by combining GB M10 threaded rods with a KHA 41 C-profile or KHU 57 U-profile. For heavy loads, pendulum suspensions consisting of U-, I- or C-profiles should be used.



## Areas of application

- On ceilings for technical building equipment - indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



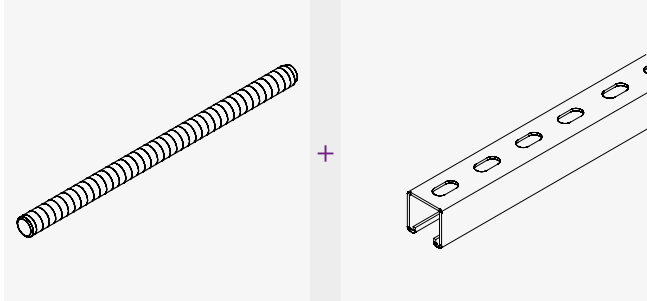
## Benefits

- A secure and sturdy system
- Even load distribution
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads and tray widths

## Available surface coatings and materials

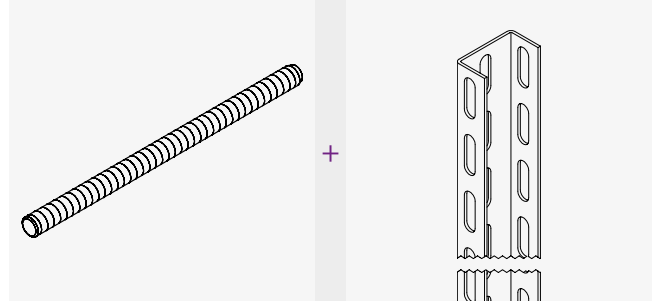
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview



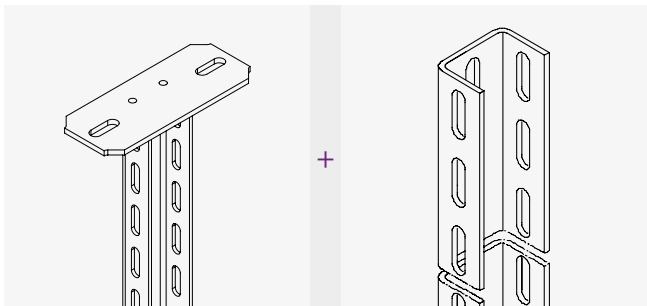
2x GB (M10)

1x KHA 41



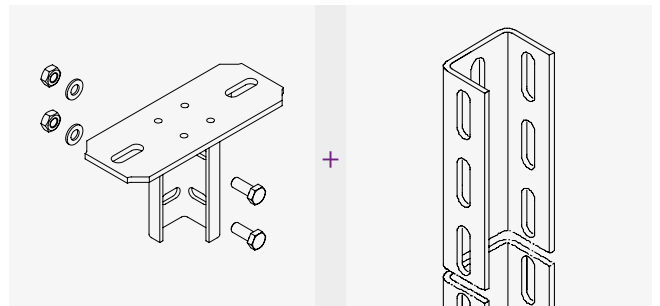
2x GB (M10)

1x KHU 57



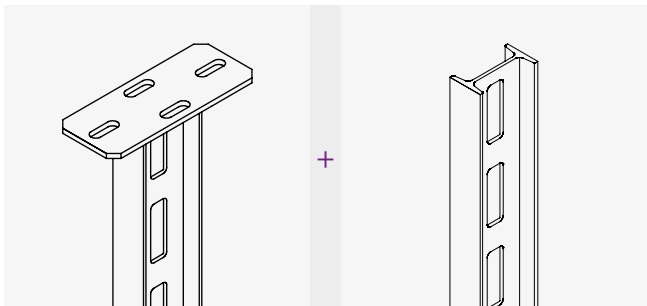
2x KDU 60

1x KHU 60



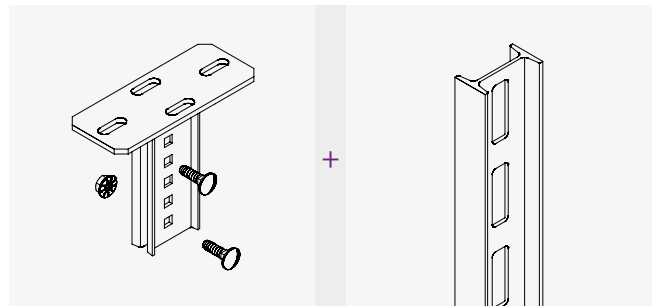
2x BGU 60

3x KHU 60



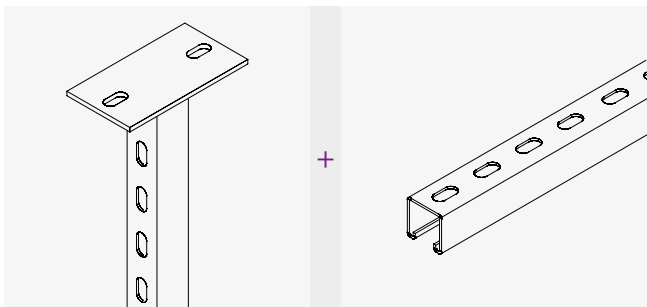
2x KDI

1x KHI



2x BGI

3x KHI



2x KDAG 41

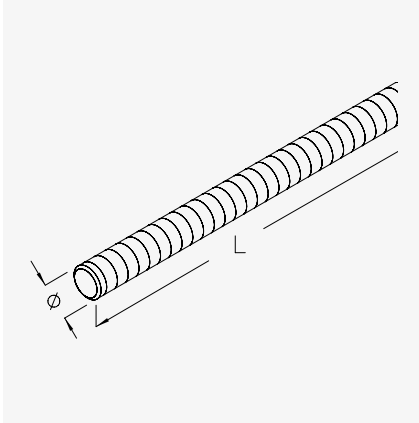
1x KHA 41

# GB

## Threaded rod, DIN 976-1

Stress areas according to DIN 267-4: GB M8 = 36.6 mm<sup>2</sup>, GB M10 = 58.0 mm<sup>2</sup>, GB M12 = 84.3 mm<sup>2</sup>.

### Technical data



Model	L mm	Ø mm	G <b>GV</b> kg/100 pcs.
GB M10-03	300	10	14.10
GB M10-05	500	10	24.30
GB M10-10	1,000	10	49.70
GB M12-03	300	12	21.70
GB M12-05	500	12	36.20
GB M12-10	1,000	12	72.50

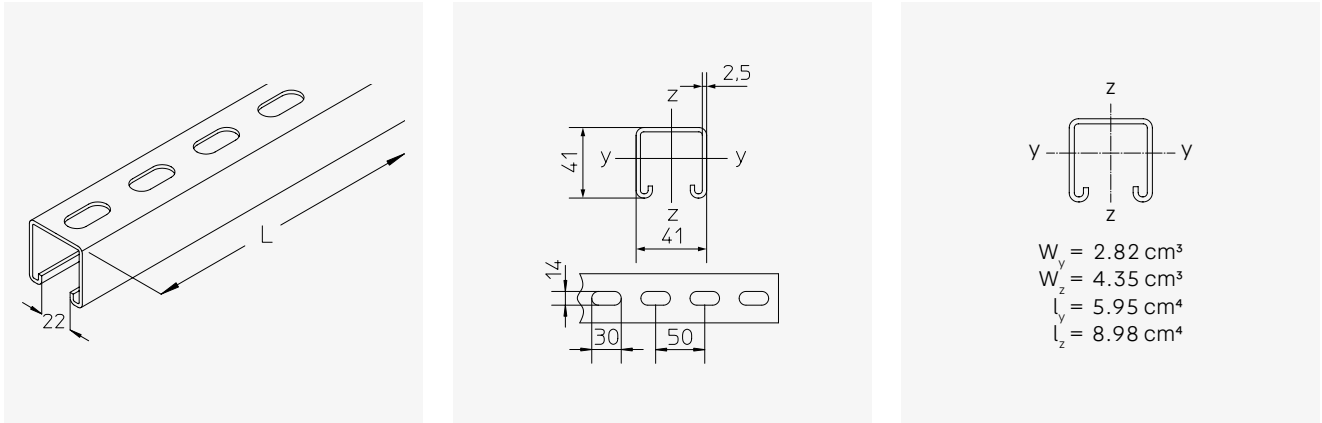
L: Length | Ø: Diameter | G: Weight (per surface/material)

# KHA 41

## 41x41 mm mounting channel, perforated

41x41x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 41-01F	41	41	100	2.50	0.25
KHA 41-02F	41	41	200	2.50	0.50
KHA 41-03F	41	41	300	2.50	0.70
KHA 41-04F	41	41	400	2.50	1.00
KHA 41-05F	41	41	500	2.50	1.30
KHA 41-06F	41	41	600	2.50	1.60
KHA 41-07F	41	41	700	2.50	1.80
KHA 41-08F	41	41	800	2.50	2.10
KHA 41-09F	41	41	900	2.50	2.40
KHA 41-10F	41	41	1,000	2.50	2.60
KHA 41-11F	41	41	1,100	2.50	2.90
KHA 41-12F	41	41	1,200	2.50	3.20
KHA 41-13F	41	41	1,300	2.50	3.40
KHA 41-14F	41	41	1,400	2.50	3.70
KHA 41-15F	41	41	1,500	2.50	4.00
KHA 41-20F	41	41	2,000	2.50	5.20
KHA 41-30F	41	41	3,000	2.50	7.80
KHA 41-60F	41	41	6,000	2.50	15.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

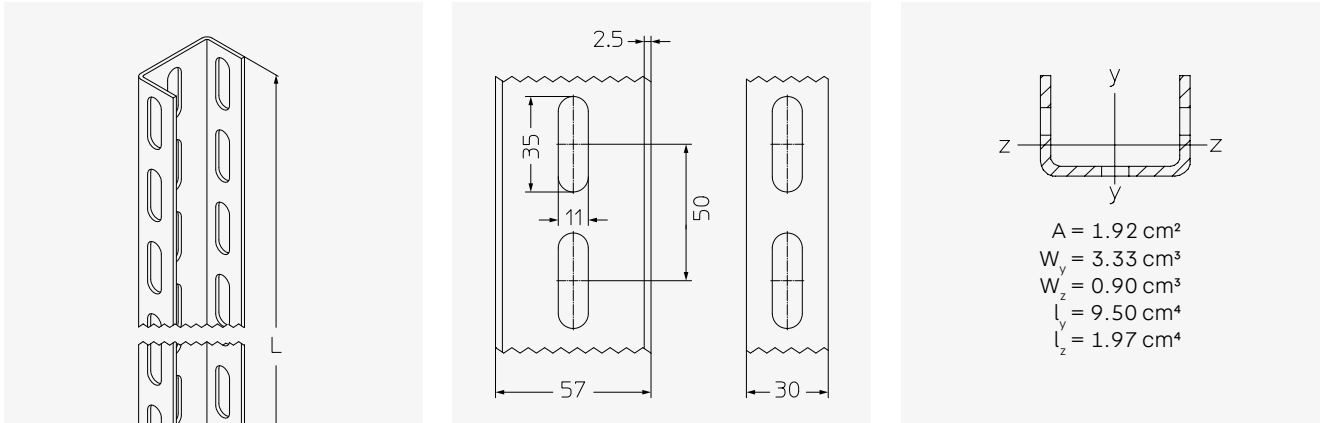
- KDAG 41 bracket support, 41x41 mm

# KHU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G S kg	G F kg	G E kg	G E4 kg
KHU 57-02	30	57	200	0.34	0.36	0.34	0.35
KHU 57-03	30	57	300	0.51	0.55	0.51	0.52
KHU 57-04	30	57	400	0.68	0.73	0.68	0.69
KHU 57-05	30	57	500	0.85	0.91	0.85	0.87
KHU 57-06	30	57	600	1.02	1.09	1.03	1.04
KHU 57-07	30	57	700	1.19	1.27	1.20	1.21
KHU 57-08	30	57	800	1.36	1.45	1.37	1.38
KHU 57-09	30	57	900	1.53	1.63	1.54	1.56
KHU 57-10	30	57	1,000	1.70	1.82	1.71	1.73
KHU 57-11	30	57	1,100	1.87	2.00	1.88	1.90
KHU 57-12	30	57	1,200	2.04	2.18	2.05	2.08
KHU 57-13	30	57	1,300	2.21	2.36	2.22	2.25
KHU 57-14	30	57	1,400	2.38	2.54	2.39	2.42
KHU 57-15	30	57	1,500	2.55	2.72	2.56	2.59
KHU 57-30	30	57	3,000	5.09	5.45	5.12	5.19
KHU 57-60	30	57	6,000	10.18	10.89	10.25	10.38

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm



Using the support piece enables higher load-bearing capacities to be achieved.

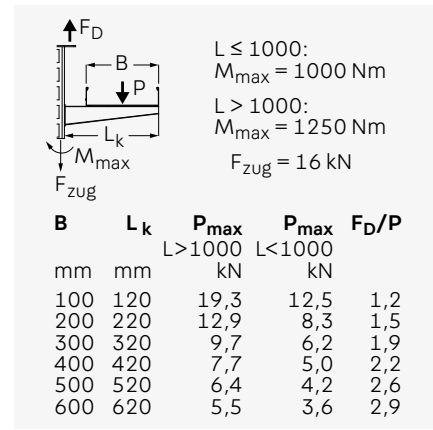
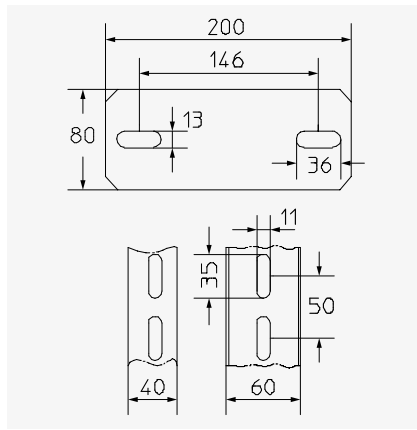
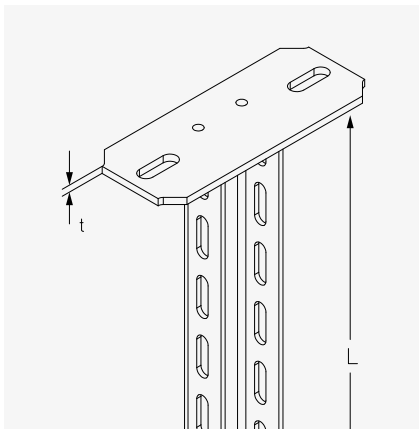


# KDU 60

## Bracket support, 60x40 mm

Bracket support, 60x40x4 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness t), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg
KDU 60-02	200	6.00	1.34	1.40	1.40
KDU 60-03	300	6.00	1.67	1.80	1.80
KDU 60-04	400	6.00	2.00	2.10	2.10
KDU 60-05	500	6.00	2.33	2.50	2.50
KDU 60-06	600	6.00	2.54	2.80	2.80
KDU 60-07	700	6.00	2.88	3.20	3.20
KDU 60-08	800	6.00	3.31	3.50	3.50
KDU 60-09	900	6.00	3.64	3.90	3.90
KDU 60-10	1,000	6.00	3.97	4.20	4.20
KDU 60-11	1,100	8.00	4.52	4.80	4.80
KDU 60-12	1,200	8.00	4.85	5.20	5.20
KDU 60-13	1,300	8.00	5.18	5.50	5.50
KDU 60-14	1,400	8.00	5.51	5.90	5.90
KDU 60-15	1,500	8.00	5.84	6.30	6.30
KDU 60-16	1,600	8.00	6.19	6.60	6.60
KDU 60-17	1,700	8.00	6.53	7.00	7.00
KDU 60-18	1,800	8.00	6.86	7.30	7.30
KDU 60-19	1,900	8.00	7.10	7.00	7.00
KDU 60-20	2,000	8.00	7.48	8.00	8.00

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



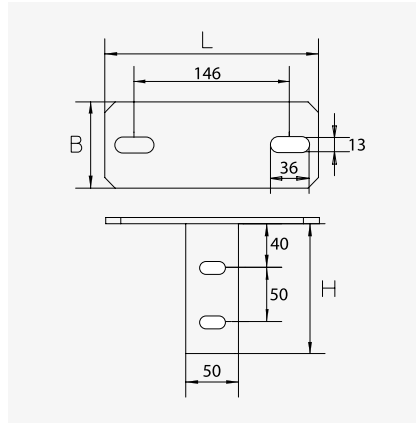
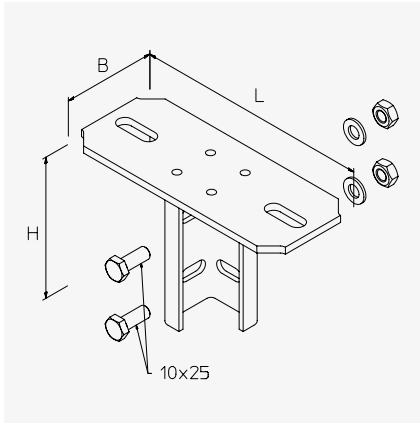
If the bracket length is 500 mm or above, a support piece must be used.

# BGU 60

## Screw-on head plate, KHU 60

Head plate for mounting U 60 profile bracket supports on ceilings.

### Technical data



Model	H mm	B mm	L mm	G <b>GV</b> kg	G <b>F</b> kg	G <b>E</b> kg	G <b>E4</b> kg
<b>BGU 60</b>	120	80	200	1.25	1.28	1.30	1.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



The screw fastenings for assembly are included in the scope of delivery.

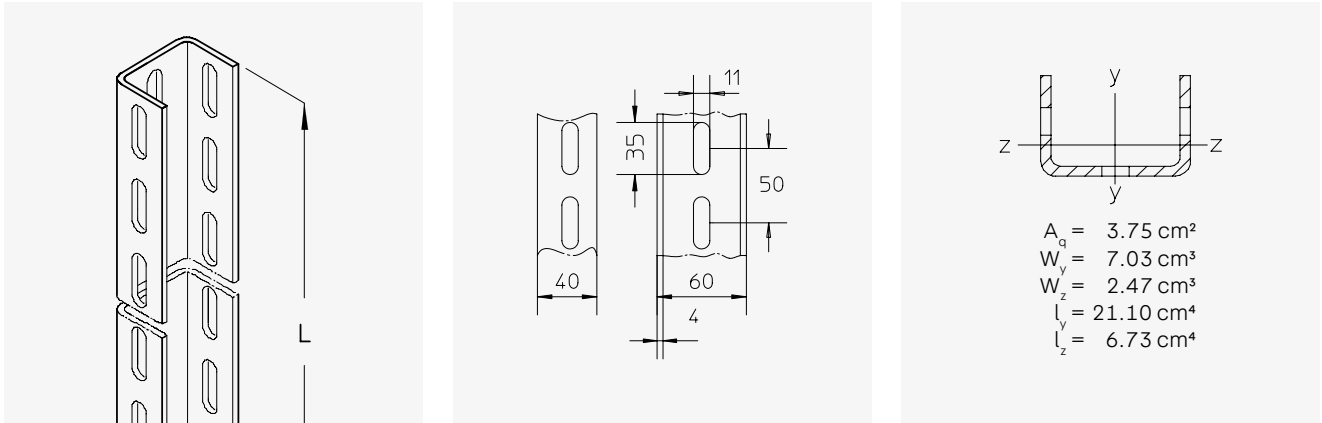
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 60

## Bracket support, 60x40 mm

Bracket support consisting of 60x40x4 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHU 60-02	40	60	200	0.70
KHU 60-03	40	60	300	1.05
KHU 60-04	40	60	400	1.40
KHU 60-05	40	60	500	1.75
KHU 60-06	40	60	600	2.11
KHU 60-07	40	60	700	2.46
KHU 60-08	40	60	800	2.81
KHU 60-09	40	60	900	3.16
KHU 60-10	40	60	1,000	3.51
KHU 60-11	40	60	1,100	3.86
KHU 60-12	40	60	1,200	4.21
KHU 60-13	40	60	1,300	4.56
KHU 60-14	40	60	1,400	4.91
KHU 60-15	40	60	1,500	5.26
KHU 60-20	40	60	2,000	7.02
KHU 60-30	40	60	3,000	10.53
KHU 60-60	40	60	6,000	21.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm



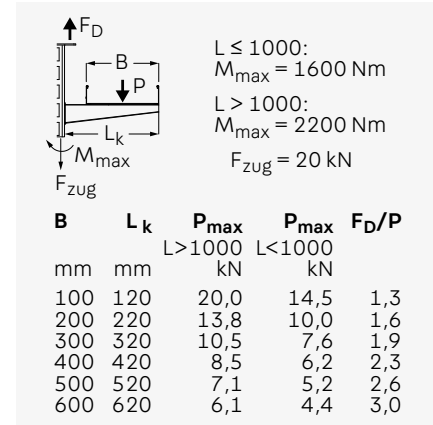
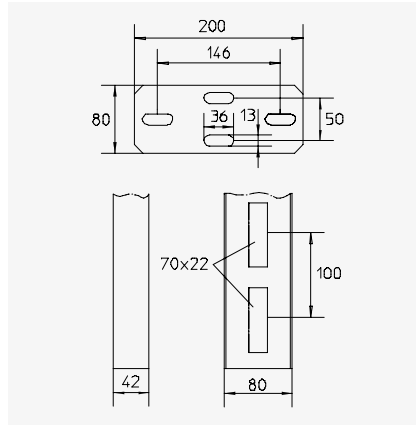
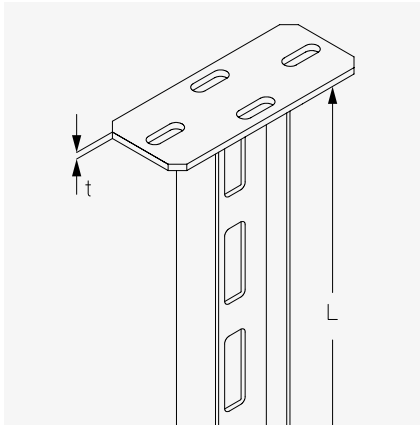
Using the support piece enables higher load-bearing capacities to be achieved.

# KDI

## Bracket support, 80x42 mm

Bracket support, consisting of an I80 profile with a row of continuous elongated holes in the web, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G F kg
KDI 02	200	6.00	1.86
KDI 03	300	6.00	2.38
KDI 04	400	6.00	2.92
KDI 05	500	6.00	3.65
KDI 06	600	6.00	4.17
KDI 07	700	6.00	4.70
KDI 08	800	6.00	5.37
KDI 09	900	6.00	5.84
KDI 10	1,000	6.00	6.60
KDI 11	1,100	8.00	7.10
KDI 12	1,200	8.00	7.68
KDI 13	1,300	8.00	8.26
KDI 14	1,400	8.00	8.84
KDI 15	1,500	8.00	9.42
KDI 16	1,600	8.00	10.01
KDI 17	1,700	8.00	10.59
KDI 18	1,800	8.00	11.18
KDI 19	1,900	8.00	11.76
KDI 20	2,000	8.00	12.35
KDI 21	2,100	8.00	12.93
KDI 22	2,200	8.00	13.52
KDI 23	2,300	8.00	14.10
KDI 24	2,400	8.00	14.69

L: Length | t: Material thickness | G: Weight (per surface/material)

A zinc-plated (GV) surface in accordance with DIN EN ISO 19598 / DIN EN ISO 2081 is available on request. You must specify the surface finish/material when placing your order.

<b>Model</b>	<b>L</b> mm	<b>t</b> mm	<b>G F</b> kg
<b>KDI 25</b>	2,500	8.00	15.27
<b>KDI 26</b>	2,600	8.00	15.89
<b>KDI 27</b>	2,700	8.00	16.44
<b>KDI 28</b>	2,800	8.00	17.03
<b>KDI 29</b>	2,900	8.00	17.61
<b>KDI 30</b>	3,000	8.00	18.20

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

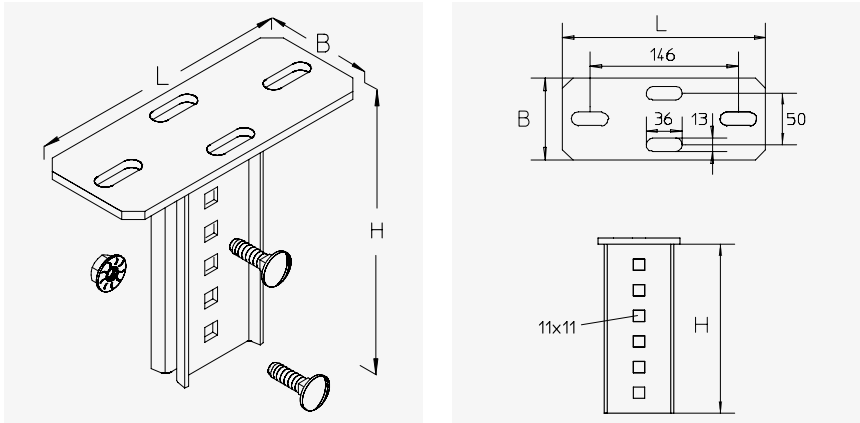
- KHI bracket support, 80x42 mm

# BGI

## Screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGI F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

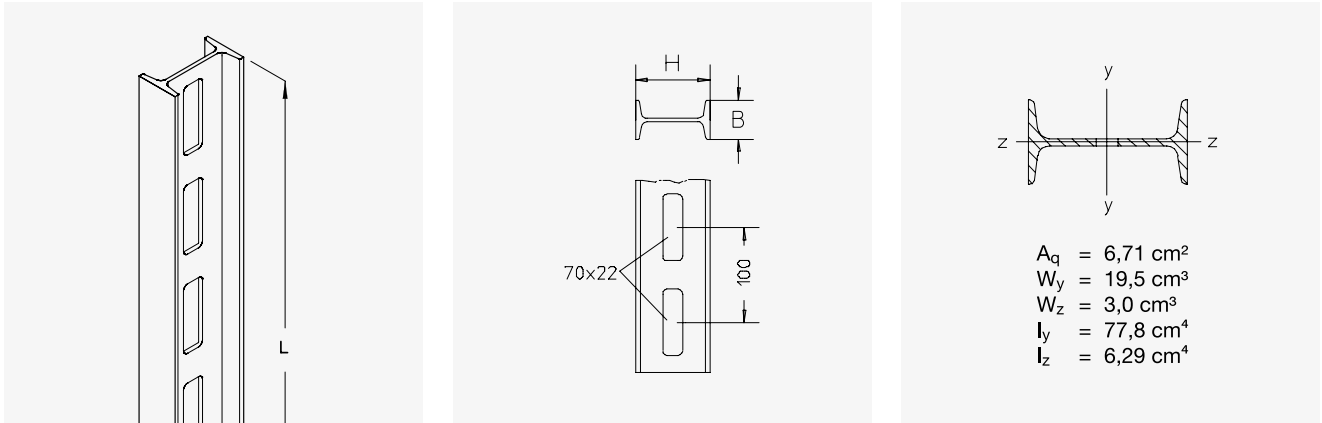
**This item is also available with different angles of inclination.**

# KHI

## Bracket support, 80x42 mm

Bracket support with a row of continuous elongated holes in the web, for direct mounting on the ceiling in conjunction with BL 7/BGI.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHI 02F	80	42	200	1.10
KHI 03F	80	42	300	1.70
KHI 04F	80	42	400	2.30
KHI 05F	80	42	500	2.90
KHI 06F	80	42	600	3.50
KHI 07F	80	42	700	4.10
KHI 08F	80	42	800	4.70
KHI 09F	80	42	900	5.30
KHI 10F	80	42	1,000	5.90
KHI 11F	80	42	1,100	6.40
KHI 12F	80	42	1,200	7.10
KHI 13F	80	42	1,300	7.60
KHI 14F	80	42	1,400	8.20
KHI 15F	80	42	1,500	8.80
KHI 16F	80	42	1,600	9.40
KHI 17F	80	42	1,700	10.00
KHI 18F	80	42	1,800	10.60
KHI 19F	80	42	1,900	11.10
KHI 20F	80	42	2,000	11.70
KHI 21F	80	42	2,100	12.30
KHI 22F	80	42	2,200	12.90
KHI 23F	80	42	2,300	13.50
KHI 24F	80	42	2,400	14.10
KHI 25F	80	42	2,500	14.60

<b>Model</b>	<b>H</b> mm	<b>B</b> mm	<b>L</b> mm	<b>G F</b> kg
<b>KHI 26F</b>	80	42	2,600	15.20
<b>KHI 27F</b>	80	42	2,700	15.80
<b>KHI 28F</b>	80	42	2,800	16.30
<b>KHI 29F</b>	80	42	2,900	16.90
<b>KHI 30F</b>	80	42	3,000	17.50
<b>KHI 60F</b>	80	42	6,000	35.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

#### Matching bracket supports

- KDI bracket support, 80x42 mm

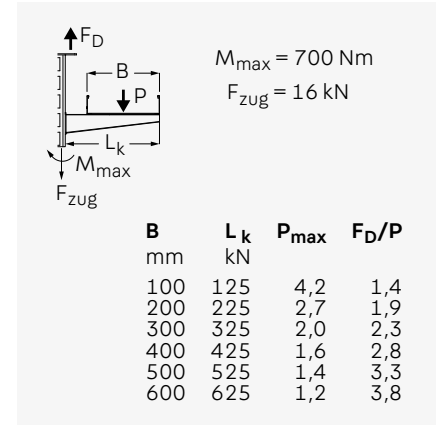
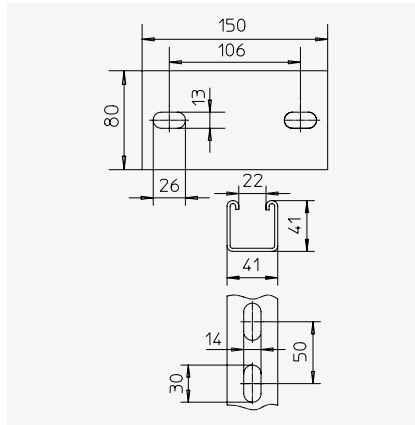
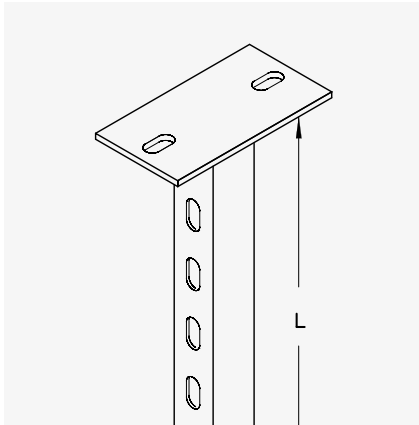


# KDAG 41

## Bracket support, 41x41 mm

Bracket support consisting of a 41x41 mm mounting channel with a welded-on head plate.

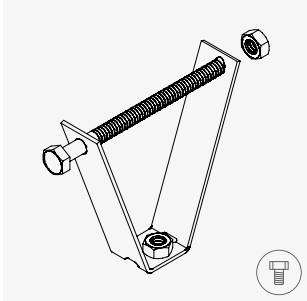
### Technical data



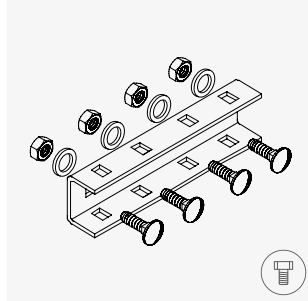
Model	L	G F
	mm	kg
KDAG 41-02F	200	1.10
KDAG 41-03F	300	1.40
KDAG 41-04F	400	1.70
KDAG 41-05F	500	1.90
KDAG 41-06F	600	2.20
KDAG 41-07F	700	2.50
KDAG 41-08F	800	2.70
KDAG 41-09F	900	3.00
KDAG 41-10F	1,000	3.20

L: Length | G: Weight (per surface/material)

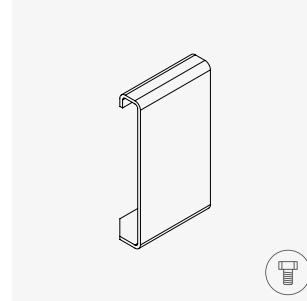
## Installation components



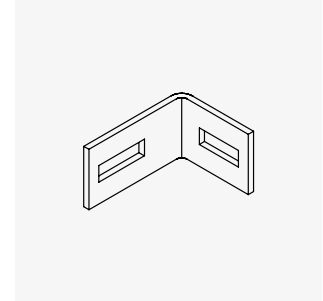
**TBS**  
Trapezium bow  
**Z**



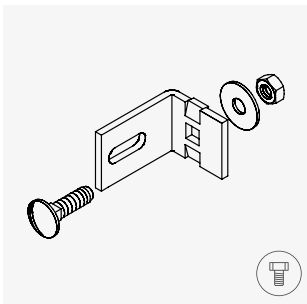
**KHUV 60**  
Connector, KHU 60  
**GV F E E4**



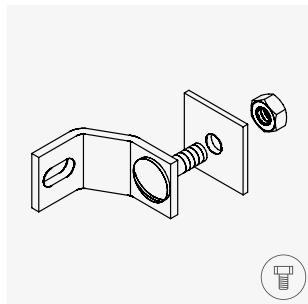
**KHUSS 60**  
Support piece, KHU 60  
**S F E E4**



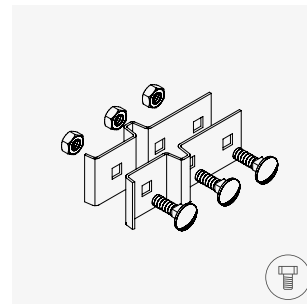
**BL 4**  
Corner angle, KHU 40/57/60  
**GV F E**



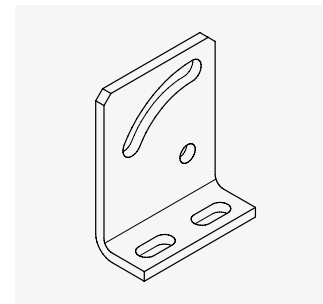
**BL 6**  
Corner angle, KHU 60  
**S F E**



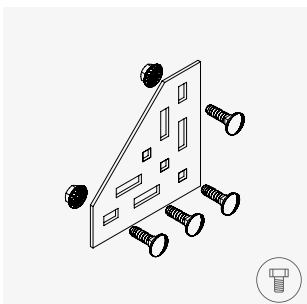
**BL 7**  
Corner angle, KHI  
**GV F**



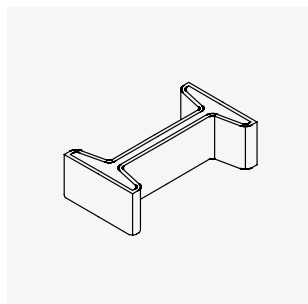
**HKIW**  
Mounting bracket, KHI  
**GV F**



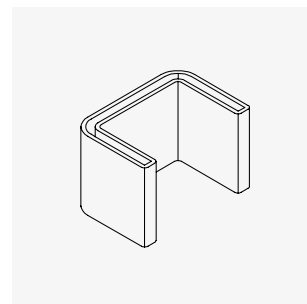
**BLD**  
Adaptor diagonal  
**F**



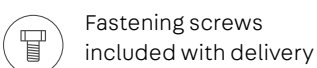
**KB**  
Junction plate  
**F E**

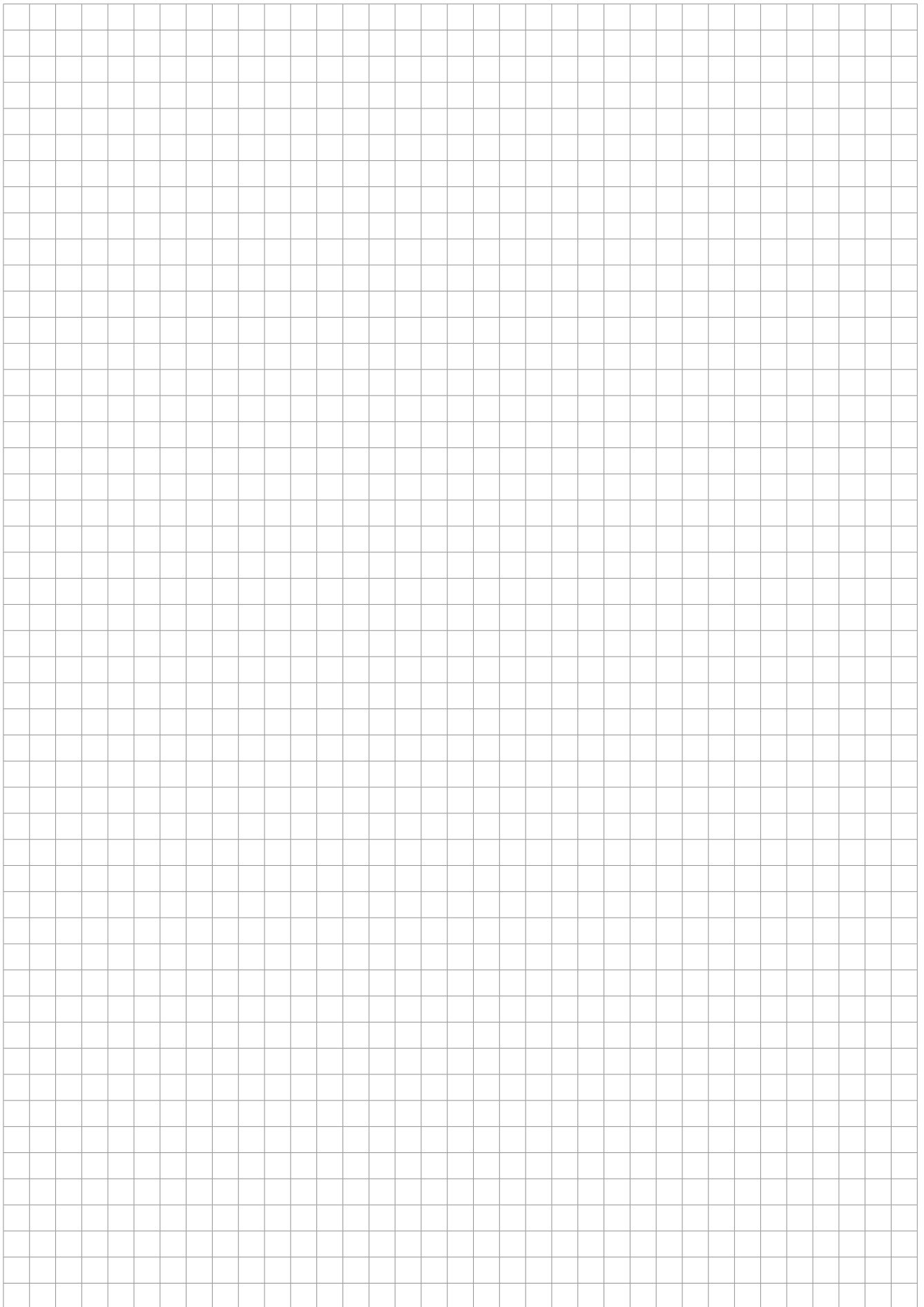


**SI**  
Protection cap, KDI/KHI  
**PE**



**SU 60**  
Protection cap, KHU 60  
**PE**





# U-profile system



## Product description

The classic U-profile system is the most popular system in the German-speaking world. The component parts are bracket supports, stem supports and head plates. The stems consist of perforated U-profiles in sizes of up to 80x60 mm. The KDU bracket supports have integrated head plates. In the case of the KHU profiles, separate BGU head plates need to be screwed on. The rows of continuous holes on three sides allow popular brackets – such as the KW model – to be custom mounted really easily (see Brackets chapter).

The stand-out feature of the U-profile system is its flexibility of use, making it suitable for the majority of application areas. When used in combination with the KW bracket, the 57x30 mm and 60x40 mm U-profile stems are particularly suitable for suspending cable ladders from the ceiling.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction
- Infrastructure projects



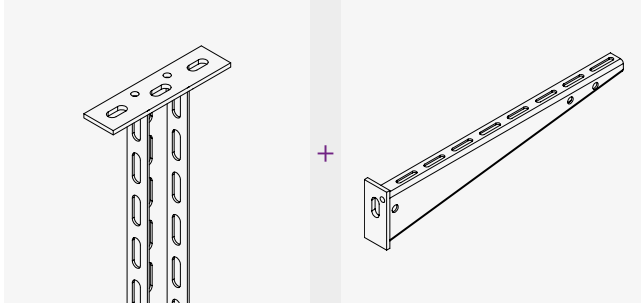
## Benefits

- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows the system to be adjusted for various areas of application

## Available surface coatings and materials

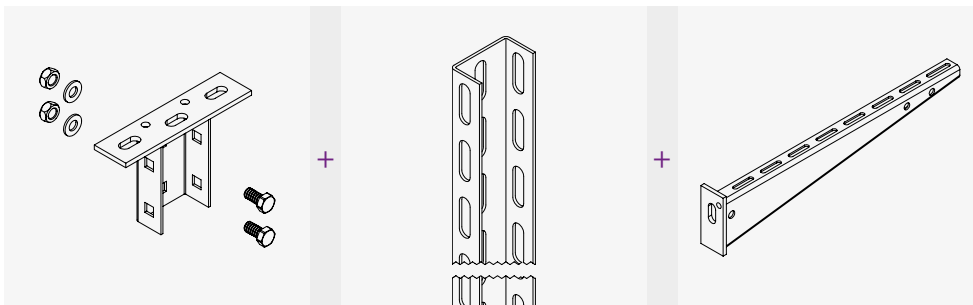
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview



**KDU 57**

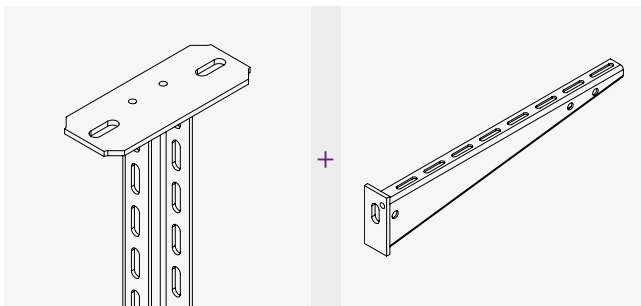
**KW**



**BGU 57**

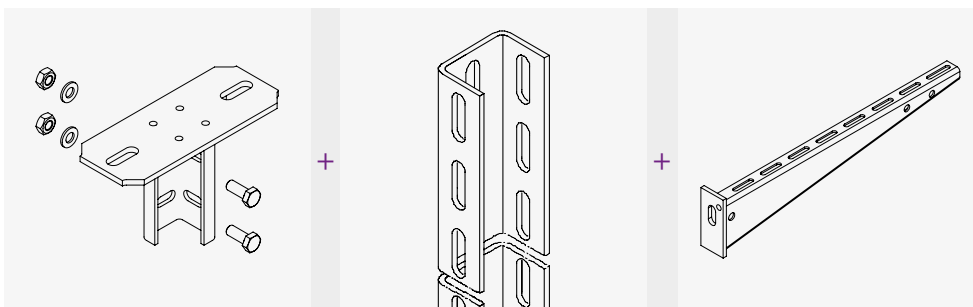
**KHU 57**

**KW**



**KDU 60**

**KW**



**BGU 60**

**KHU 60**

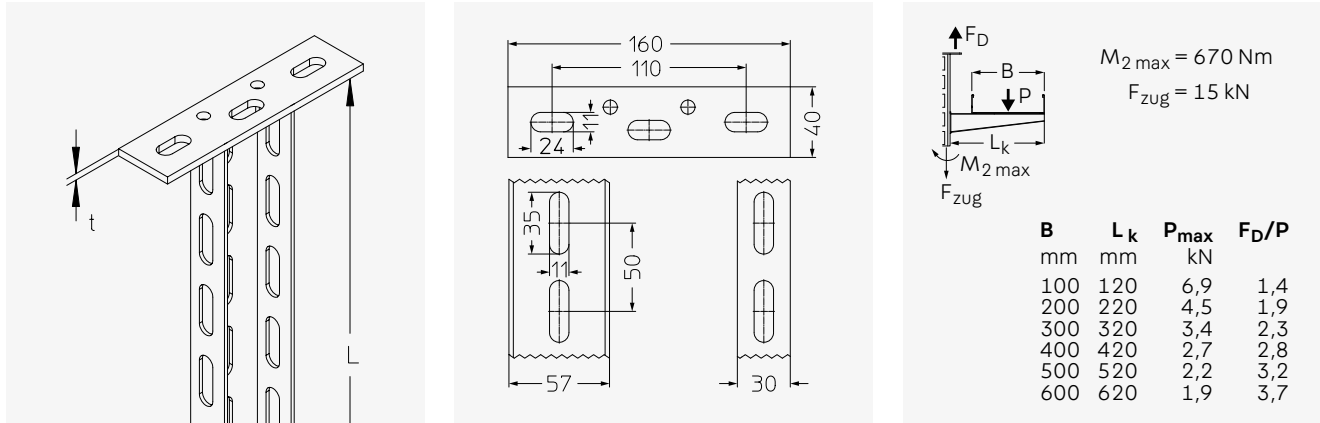
**KW**

# KDU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L	t	G <sub>GV</sub>	G <sub>F</sub>	G <sub>E</sub>	G <sub>E4</sub>
	mm	mm	kg	kg	kg	kg
KDU 57-02	200	5.00	0.55	0.59	0.57	0.57
KDU 57-03	300	5.00	0.72	0.77	0.74	0.74
KDU 57-04	400	5.00	0.89	0.95	0.91	0.91
KDU 57-05	500	5.00	1.06	1.13	1.08	1.08
KDU 57-06	600	5.00	1.22	1.31	1.25	1.25
KDU 57-07	700	5.00	1.39	1.49	1.42	1.42
KDU 57-08	800	5.00	1.57	1.68	1.59	1.59
KDU 57-09	900	5.00	1.74	1.86	1.76	1.76
KDU 57-10	1,000	5.00	1.91	2.04	1.93	1.93
KDU 57-11	1,100	5.00	2.07	2.22	2.10	2.10
KDU 57-12	1,200	5.00	2.25	2.40	2.27	2.27
KDU 57-13	1,300	5.00	2.41	2.58	2.44	2.44
KDU 57-14	1,400	5.00	2.59	2.77	2.61	2.61
KDU 57-15	1,500	5.00	2.76	2.95	2.78	2.78

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 57 bracket support, 57x30 mm

### Matching brackets

- KWF wall/stem support
- KW wall/stem support
- KWMS wall/stem support



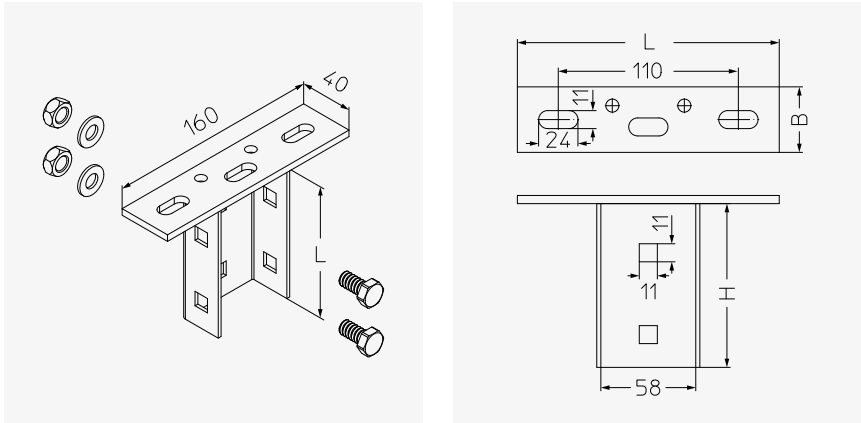
The permissible load-bearing capacities are achieved with the aid of a support piece. If the bracket length is 400 mm or above, or if the bracket is being mounted in the end zone of the ceiling stem, a support piece must be used. In cases where the bracket length is <400 mm and no support piece is used, the permissible load-bearing capacities must be reduced by 30%.

# BGU 57

## Screw-on head plate, KHU 57

Head plate for mounting KHU 57 bracket supports on the ceiling

### Technical data



Model	H	B	L	t	G GV	G F	G E	G E4
	mm	mm	mm	mm	kg	kg	kg	kg
<b>BGU 57</b>	100	40	160	5.00	0.51	0.54	0.52	0.52

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 57 bracket support, 57x30 mm



The screw fastenings for assembly are included in the scope of delivery.

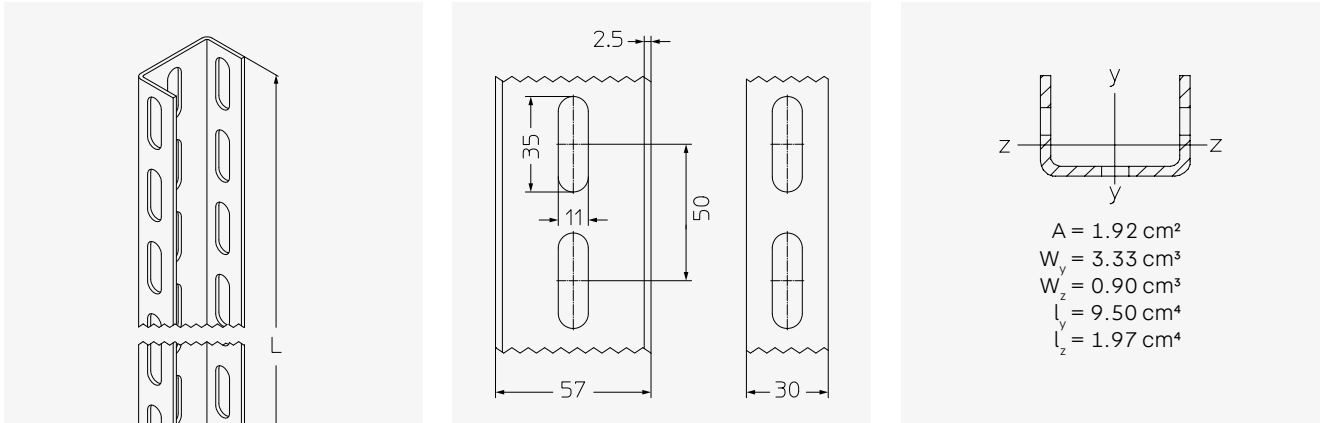
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 57

## Bracket support, 57x30 mm

Bracket support, 57x30x2.5 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G S kg	G F kg	G E kg	G E4 kg
KHU 57-02	30	57	200	0.34	0.36	0.34	0.35
KHU 57-03	30	57	300	0.51	0.55	0.51	0.52
KHU 57-04	30	57	400	0.68	0.73	0.68	0.69
KHU 57-05	30	57	500	0.85	0.91	0.85	0.87
KHU 57-06	30	57	600	1.02	1.09	1.03	1.04
KHU 57-07	30	57	700	1.19	1.27	1.20	1.21
KHU 57-08	30	57	800	1.36	1.45	1.37	1.38
KHU 57-09	30	57	900	1.53	1.63	1.54	1.56
KHU 57-10	30	57	1,000	1.70	1.82	1.71	1.73
KHU 57-11	30	57	1,100	1.87	2.00	1.88	1.90
KHU 57-12	30	57	1,200	2.04	2.18	2.05	2.08
KHU 57-13	30	57	1,300	2.21	2.36	2.22	2.25
KHU 57-14	30	57	1,400	2.38	2.54	2.39	2.42
KHU 57-15	30	57	1,500	2.55	2.72	2.56	2.59
KHU 57-30	30	57	3,000	5.09	5.45	5.12	5.19
KHU 57-60	30	57	6,000	10.18	10.89	10.25	10.38

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 57 bracket support, 57x30 mm



Using the support piece enables higher load-bearing capacities to be achieved.

### Matching brackets

- KWF wall/stem support
- KW wall/stem support
- KWMS wall/stem support

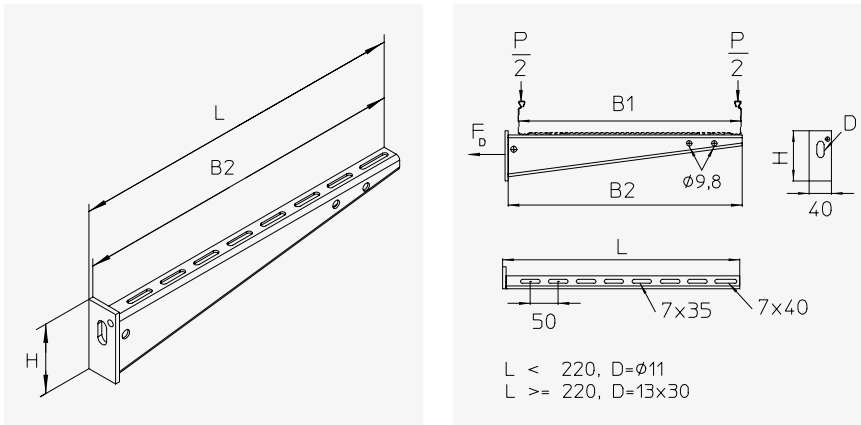


# KW

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sup>GV</sup> kg	G <sup>F</sup> kg	G <sup>E</sup> kg	G <sup>E4</sup> kg
KW 010	45	100	115	124	1.4	3.10	0.12	0.13	0.13	0.15
KW 015	45	150	170	174	1.5	4.10	*	0.17	0.16	0.16
KW 020	70	200	215	225	2.0	3.00	0.30	0.32	0.39	0.31
KW 030	70	300	315	326	2.0	4.00	0.41	0.44	0.47	0.42
KW 040	90	400	415	426	2.4	3.60	0.70	0.80	0.76	0.73
KW 050	110	500	515	528	2.1	3.40	1.24	1.33	1.08	1.10
KW 060	110	600	615	628	2.1	4.00	1.45	1.55	1.25	1.26
KW 070	110	700	715	728	3.0	5.68	2.12	2.27	*	*

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

\* On request

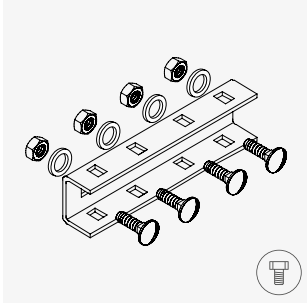
### Matching bracket supports

- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm

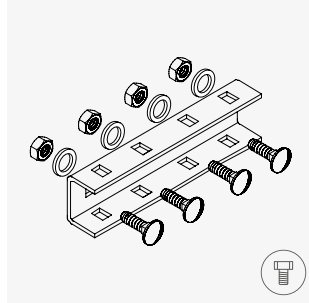


The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

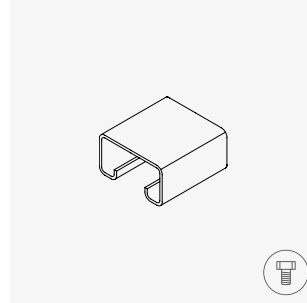
## Installation components



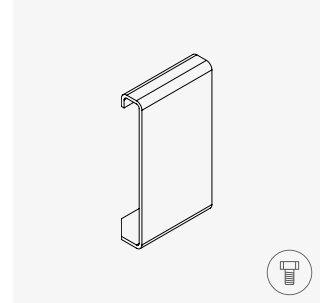
**KHUV 57**  
Connector, KHU 57  
GV S F E E4



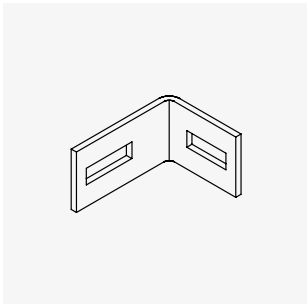
**KHUV 60**  
Connector, KHU 60  
GV F E E4



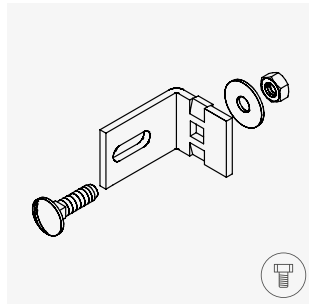
**KHUSS 57**  
Support piece, KHU 57  
S F E E4



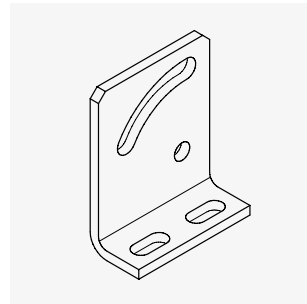
**KHUSS 60**  
Support piece, KHU 60  
S F E E4



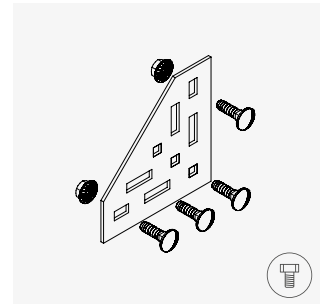
**BL 4**  
Corner angle, KHU 40/57/60  
GV F E



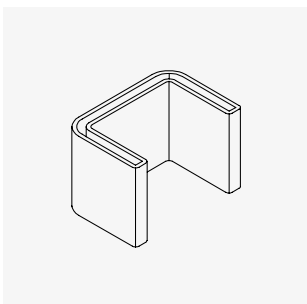
**BL 6**  
Corner angle, KHU 60  
S F E



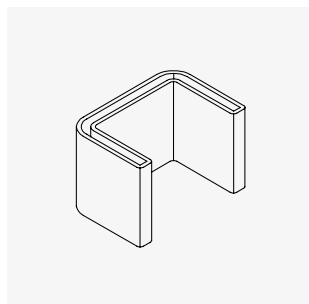
**BLD**  
Adaptor diagonal  
F



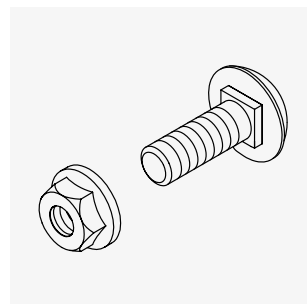
**KB**  
Junction plate  
F E



**SU 57**  
Protection cap, KHU 57  
PE



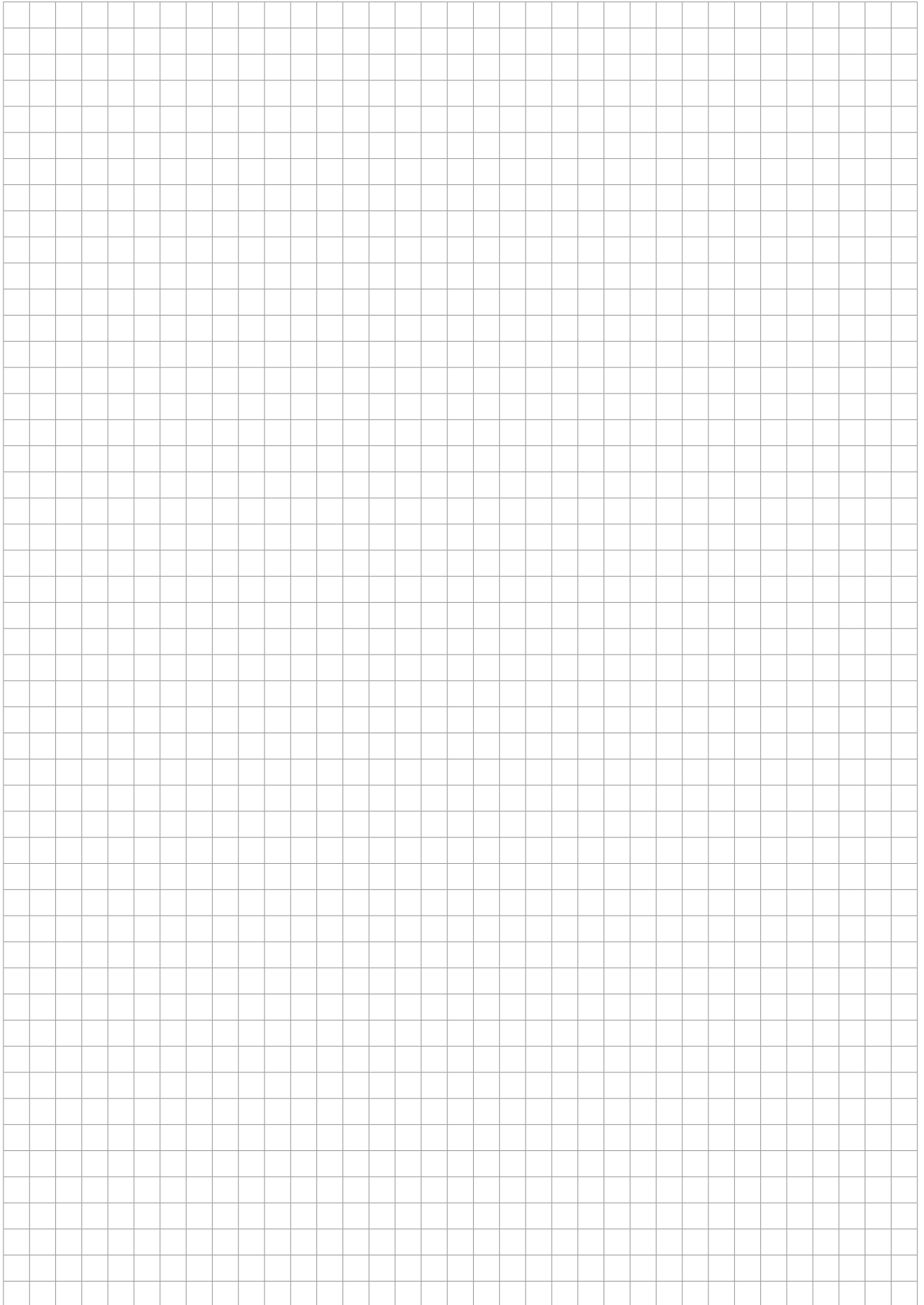
**SU 60**  
Protection cap, KHU 60  
PE



**KLS**  
Clamp fastening set  
GV



Fastening screws  
included with delivery



# C-profile mounting channels

PUK STRUT



## Product description

The PUK STRUT system consists of perforated and unperforated mounting channels featuring C+ and C60° profiles and a slot size of 22 mm. It is suitable for loads of up to 4.3 kN. The KDAG bracket support has an integrated head plate while the KHA 41 profile is designed to have the BGA head plate screwed onto it. When used in combination with the KA 41 arm, the C-profile stems are suitable for suspending cable ladders from the ceiling.

The PUK STRUT system is one of the most popular systems internationally. The bracket can be variably mounted on the channel. The stand-out feature of the PUK STRUT system is its flexibility of use, making it suitable for the majority of application areas.



All channels are customisable. The available options include cuts, and additional round and elongated holes.



## Areas of application

- On ceilings for technical building equipment - indoors and outdoors
- Industrial halls and production facilities
- Hygienic areas, such as those encountered in the chemicals and food industries



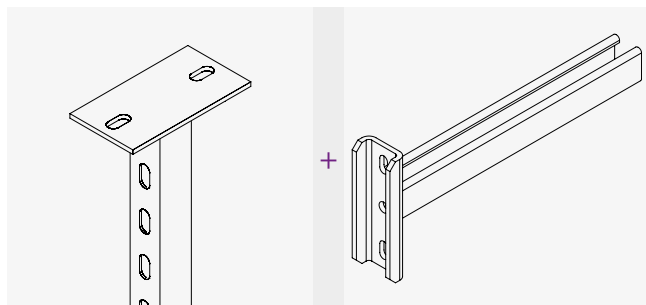
## Benefits

- Height can be adjusted to any level
- Constitutes the international standard
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows the system to be adjusted for various areas of application

## Available surface coatings and materials

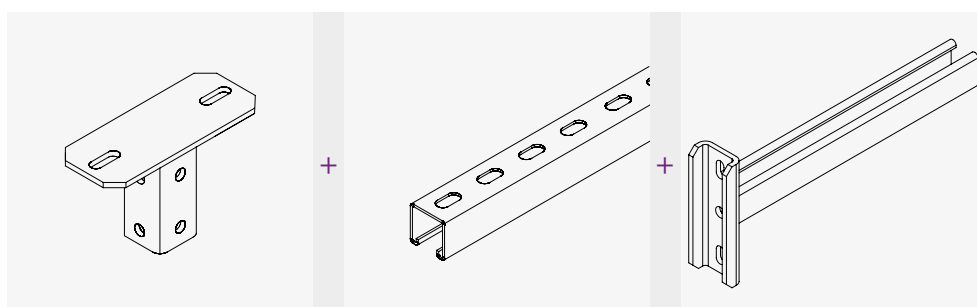
- B** Non-galvanised
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview



**KDAG 41**

**KA 41**



**BGA 41**

**KHA 41**

**KA 41**

## Overview of mounting channels

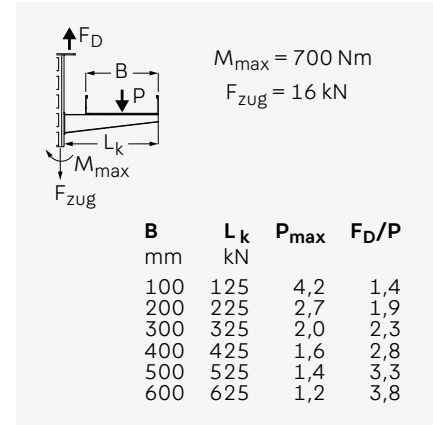
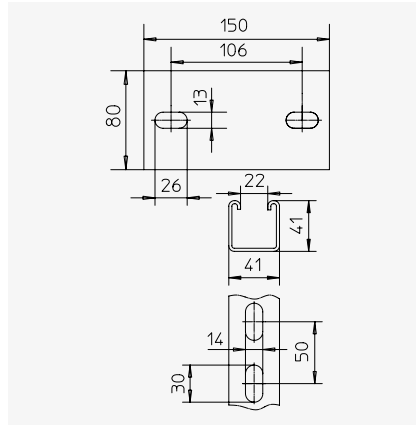
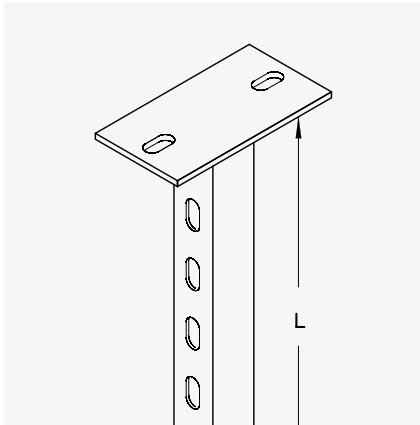
Product line	Design	Height mm	Width mm	Material thickness mm	Slot size mm	Surface finish
<b>A 2</b>	Unperforated	31	50	3.25	22	<b>B F</b>
<b>KHA 2</b>	Perforated	31	50	3.25	22	<b>F</b>
<b>KHA 21</b>	Perforated	21	41	2.50	22	<b>F</b>
<b>KHAZ 21</b>	Perforated, toothed	21	41	2.50	22	<b>F</b>
<b>A 4</b>	Unperforated	26	48	2.50	22	<b>B F</b>
<b>KHA 4</b>	Perforated	26	48	2.50	22	<b>F</b>
<b>A 41</b>	Unperforated	41	41	2.50	22	<b>B E</b>
<b>KHA 41</b>	Perforated	41	41	2.50	22	<b>F</b>
<b>KHAZ 41</b>	Perforated, toothed	41	41	2.50	22	<b>F</b>
<b>KHAL 41</b>	Perforated	41	41	1.50	22	<b>F</b>
<b>KHA 42</b>	Perforated	42	41	2.50	22	<b>F</b>
<b>KHA 82</b>	Perforated	82	41	2.50	22	<b>F</b>

# KDAG 41

## Bracket support, 41x41 mm

Bracket support consisting of a 41x41 mm mounting channel with a welded-on head plate.

### Technical data



Model	L	G F
	mm	kg
KDAG 41-02F	200	1.10
KDAG 41-03F	300	1.40
KDAG 41-04F	400	1.70
KDAG 41-05F	500	1.90
KDAG 41-06F	600	2.20
KDAG 41-07F	700	2.50
KDAG 41-08F	800	2.70
KDAG 41-09F	900	3.00
KDAG 41-10F	1,000	3.20

L: Length | G: Weight (per surface/material)

### Matching brackets

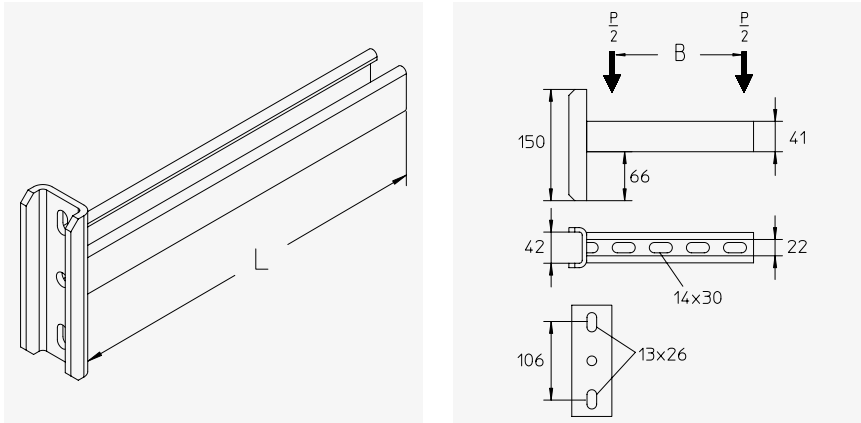
- KA 30 stem support
- KA 41 stem support

# KA 41

## Stem support

Stem support for KDAG 41, KHA 21/41/42/82.

### Technical data



Model	B mm	L mm	P <sub>max</sub> kN	G <sub>F</sub> kg
KA 41-010F	100	125	4.3	1.00
KA 41-015F	150	175	4.3	1.10
KA 41-020F	200	225	4.3	1.20
KA 41-025F	250	275	4.3	1.40
KA 41-030F	300	325	4.3	1.50
KA 41-040F	400	425	4.3	1.60
KA 41-050F	500	525	4.3	1.80
KA 41-060F	600	625	4.3	1.90

B: Tray width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

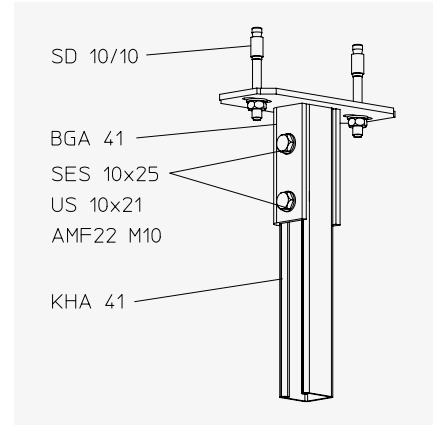
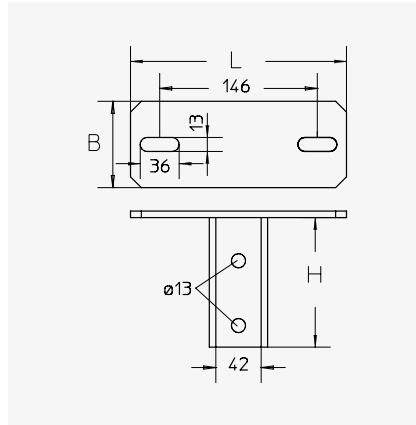
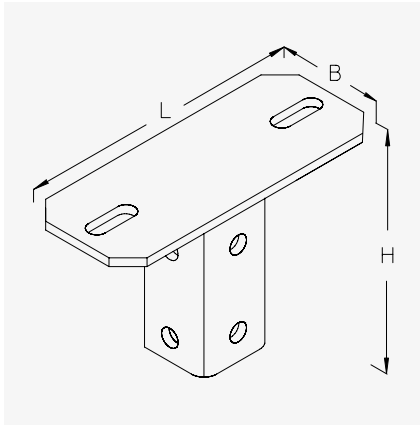
- KDAG 41 bracket support, 41x41 mm

# BGA 41

## Screw-on head plate, KHA 41

Assembly plate for mounting KHA 41 profile bracket supports on a floor/ceiling slab.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGA 41F	120	80	200	1.47

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHA 41 41x41 mm mounting channel, perforated



The screw fastenings for assembly are not included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

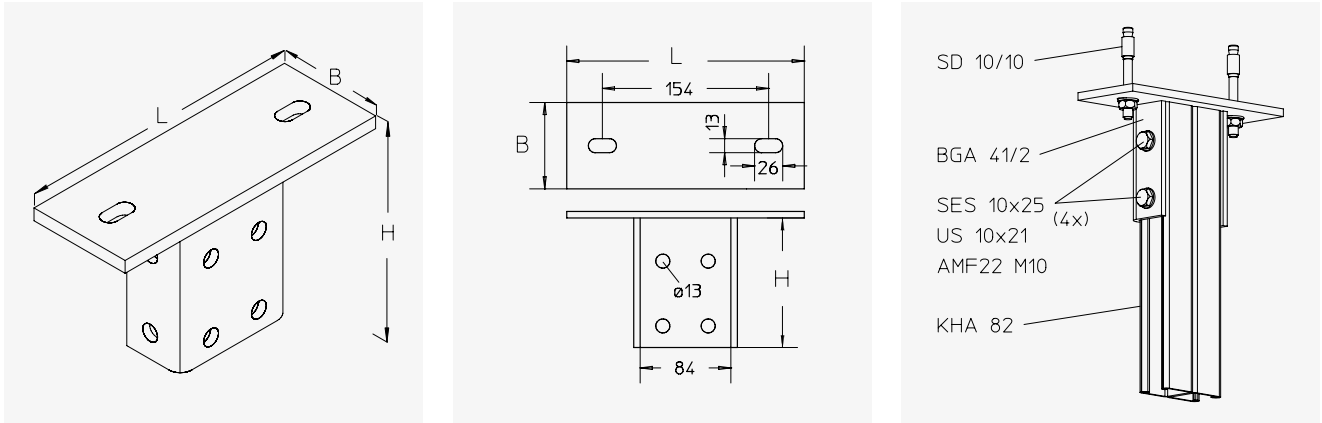


# BGA 41/2

## Screw-on head plate, KHA 41/82

Assembly plate for mounting KHA 41 profile bracket supports on a floor/ceiling slab.

### Technical data



Model	H mm	B mm	L mm	G <sub>GV</sub> kg	G <sub>F</sub> kg
BGA 41/2	120	80	220	1.99	1.80

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHA 41 41x41 mm mounting channel, perforated



The screw fastenings for assembly are not included in the scope of delivery.

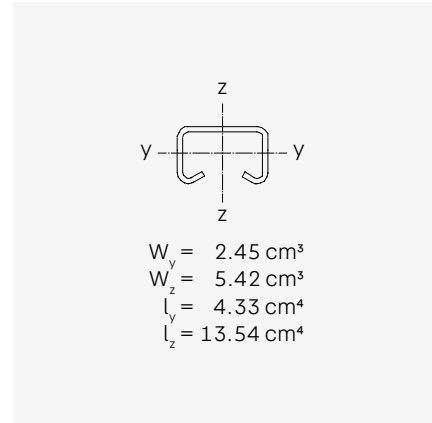
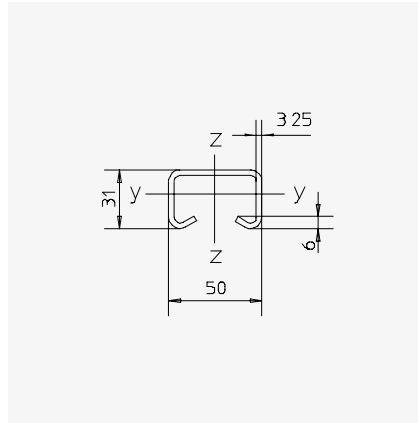
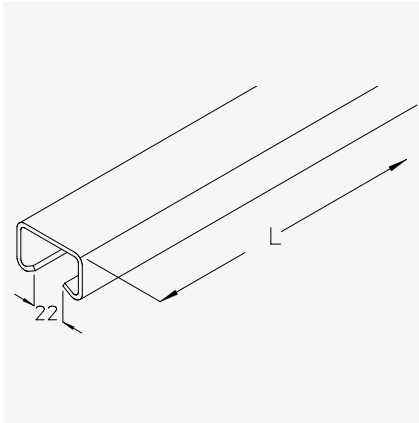
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

## A 2

### 50x31 mm mounting channel, unperforated

50x31x3.25 mm mounting channel, without holes, slot size 22 mm.

#### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 2-30	31	50	3,000	3.25	8.80	9.40
A 2-60	31	50	6,000	3.25	17.60	18.80

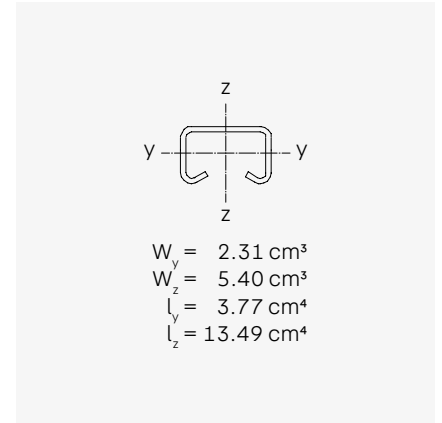
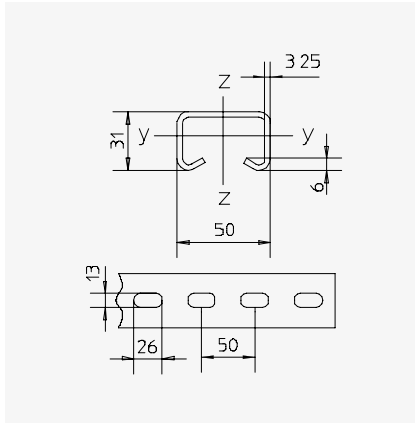
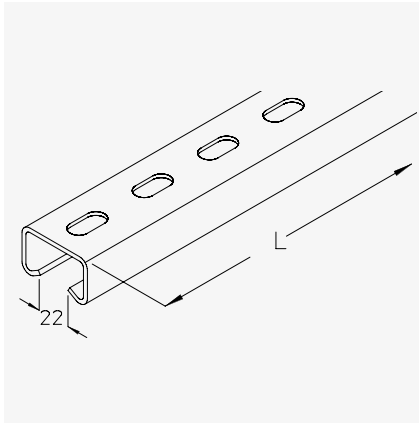
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 2

## 50x31 mm mounting channel, perforated

50x31x3.25 mm mounting channel, with a row of continuous holes measuring 13x26 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 2-05F	31	50	500	3.25	1.50
KHA 2-10F	31	50	1,000	3.25	3.00
KHA 2-15F	31	50	1,500	3.25	4.50
KHA 2-20F	31	50	2,000	3.25	6.00
KHA 2-30F	31	50	3,000	3.25	9.00
KHA 2-60F	31	50	6,000	3.25	17.90

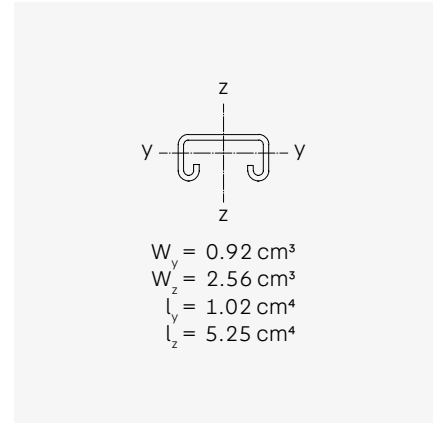
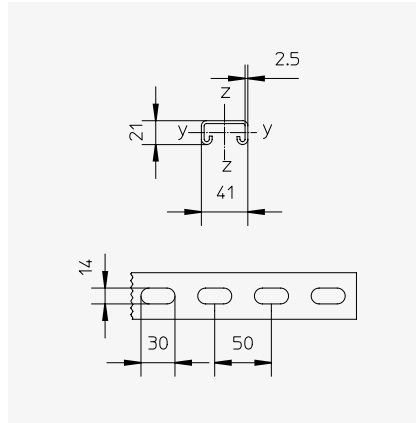
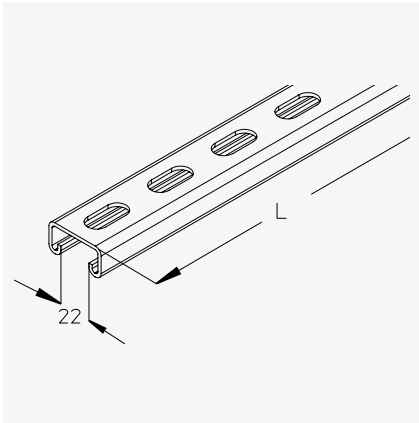
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 21

## 41x21 mm mounting channel, perforated

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg	G E4 kg
KHA 21-30	21	41	3,000	2.50	5.32	4.97
KHA 21-60	21	41	6,000	2.50	10.64	9.94

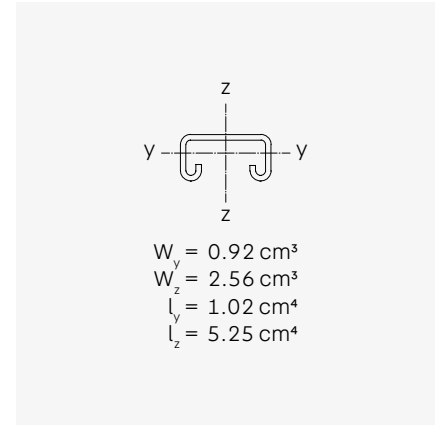
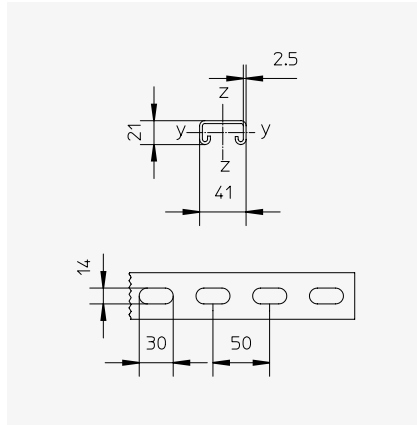
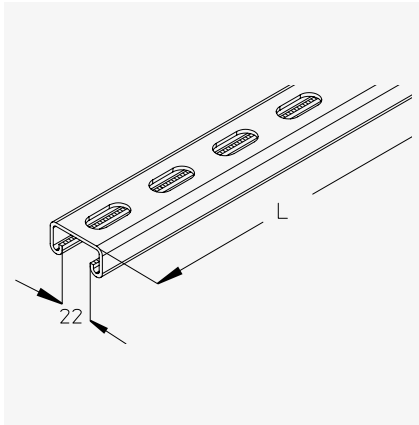
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHAZ 21

## 41x21 mm mounting channel, perforated, toothed

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G E4 kg
KHAZ 21-60E4	21	41	6,000	2.50	9.95

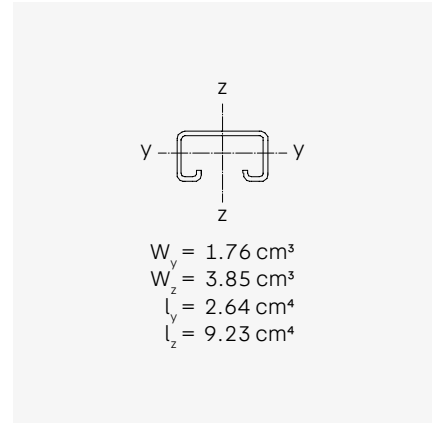
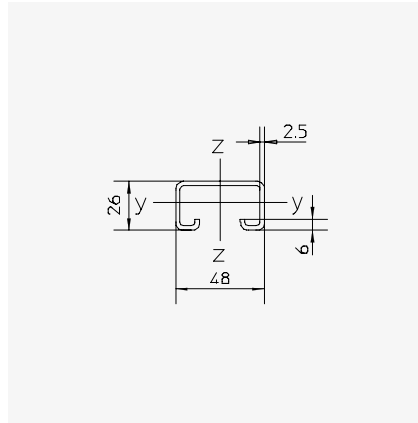
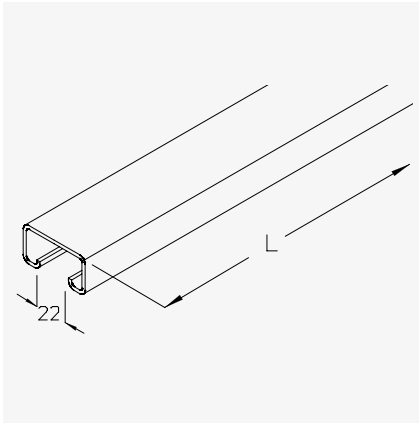
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# A 4

## 48x26 mm mounting channel, unperforated

48x26x2.50 mm mounting channel, without holes, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 4-30	26	48	3,000	2.50	6.70	7.20
A 4-60	26	48	6,000	2.50	13.40	14.40

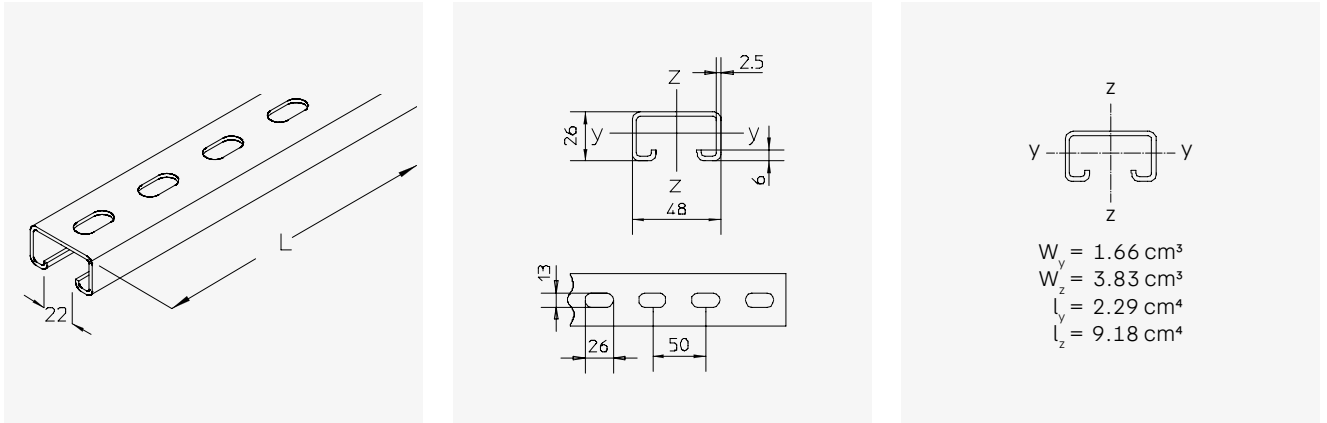
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 4

## 48x26 mm mounting channel, perforated

48x26x2.50 mm mounting channel, with a row of continuous holes measuring 13x26 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 4-30F	26	48	3,000	2.50	6.80
KHA 4-60F	26	48	6,000	2.50	13.60

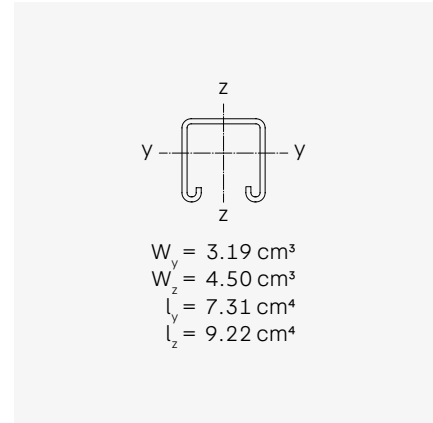
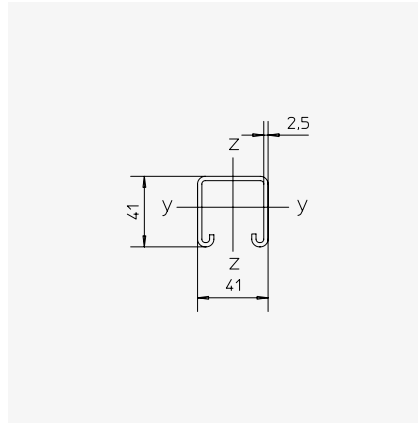
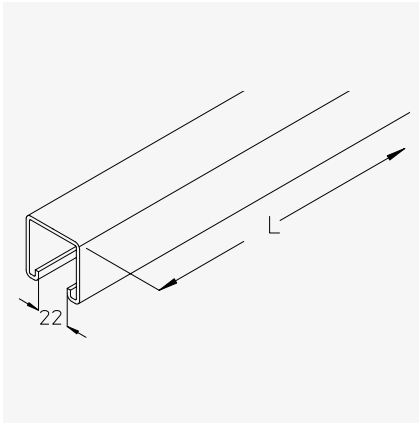
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# A 41

## 41x41 mm mounting channel, unperforated

48x26x2.50 mm mounting channel, without holes, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 41-30	41	41	3,000	2.50	8.20	8.30
A 41-60	41	41	6,000	2.50	15.55	16.63

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

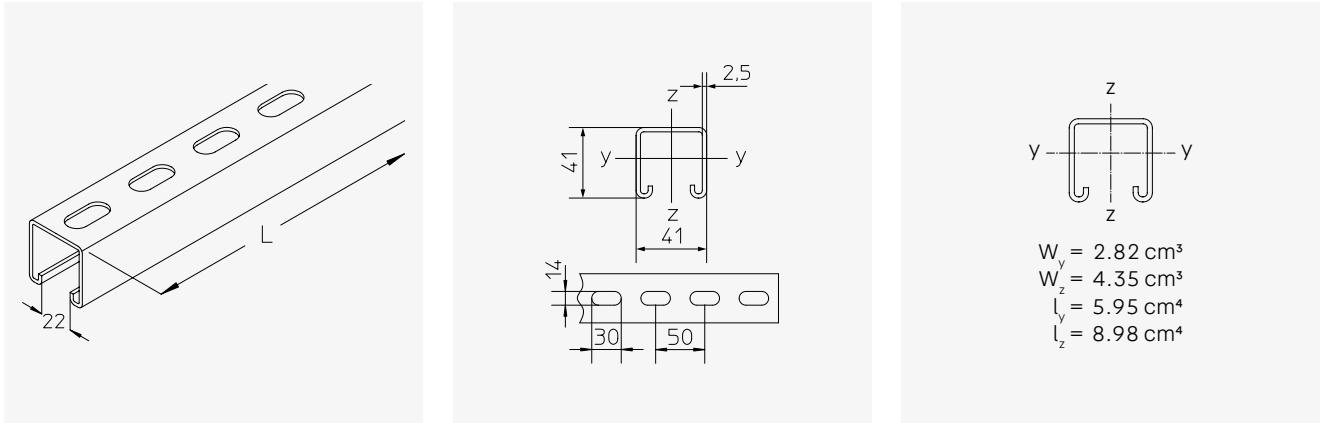


# KHA 41

## 41x41 mm mounting channel, perforated

41x41x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 41-01F	41	41	100	2.50	0.25
KHA 41-02F	41	41	200	2.50	0.50
KHA 41-03F	41	41	300	2.50	0.70
KHA 41-04F	41	41	400	2.50	1.00
KHA 41-05F	41	41	500	2.50	1.30
KHA 41-06F	41	41	600	2.50	1.60
KHA 41-07F	41	41	700	2.50	1.80
KHA 41-08F	41	41	800	2.50	2.10
KHA 41-09F	41	41	900	2.50	2.40
KHA 41-10F	41	41	1,000	2.50	2.60
KHA 41-11F	41	41	1,100	2.50	2.90
KHA 41-12F	41	41	1,200	2.50	3.20
KHA 41-13F	41	41	1,300	2.50	3.40
KHA 41-14F	41	41	1,400	2.50	3.70
KHA 41-15F	41	41	1,500	2.50	4.00
KHA 41-20F	41	41	2,000	2.50	5.20
KHA 41-30F	41	41	3,000	2.50	7.80
KHA 41-60F	41	41	6,000	2.50	15.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

### Matching brackets

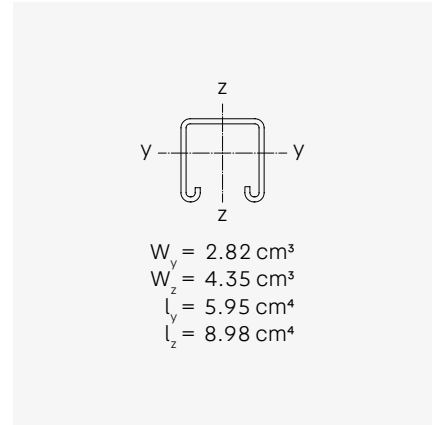
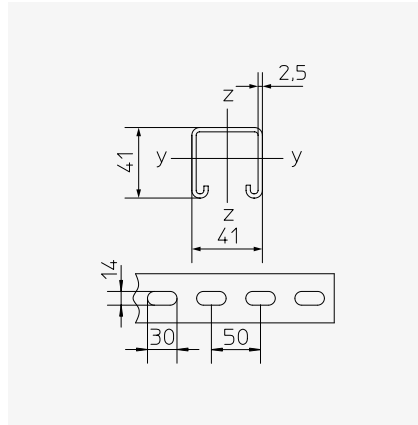
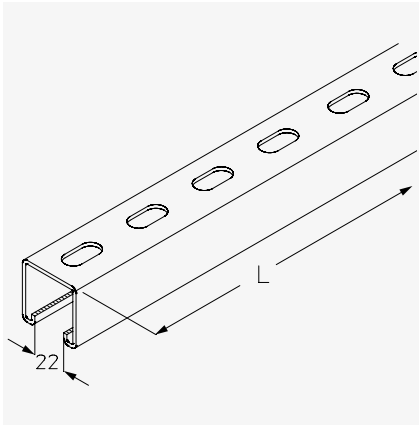
- KA 30 stem support
- KA 41 stem support

# KHAZ 41

## 41x41 mm mounting channel, perforated, toothed

41x21x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G E4 kg
KHAZ 41-60E4	41	41	6,000	2.50	15.28

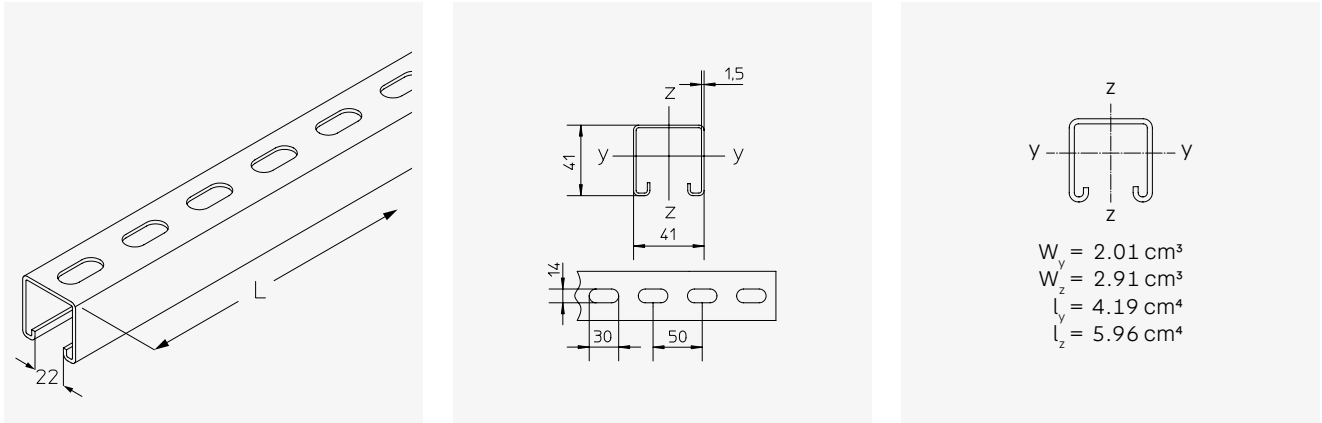
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHAL 41

## 41x41 mm mounting channel, perforated

41x41x1.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHAL 41-05	41	41	500	1.50	0.80
KHAL 41-10	41	41	1,000	1.50	1.56
KHAL 41-15	41	41	1,500	1.50	2.34
KHAL 41-20	41	41	2,000	1.50	3.30
KHAL 41-30	41	41	3,000	1.50	4.68
KHAL 41-36	41	41	3,600	1.50	6.01
KHAL 41-60	41	41	6,000	1.50	9.36

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

### Matching brackets

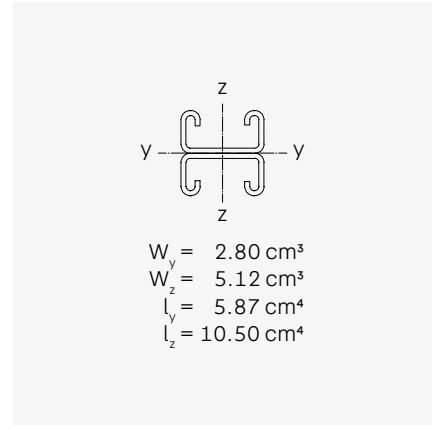
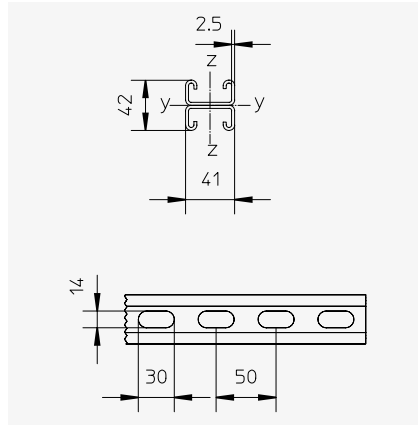
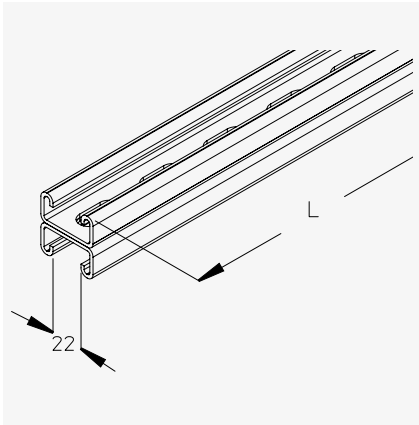
- KA 30 stem support
- KA 41 stem support

# KHA 42

## 41x42 mm mounting channel, perforated

41x42x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, welded back to back, slot size 22 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 42-30F	42	41	3,000	2.50	15.90
KHA 42-60F	42	41	6,000	2.50	21.28

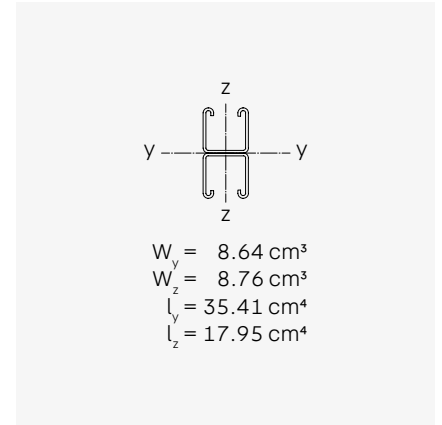
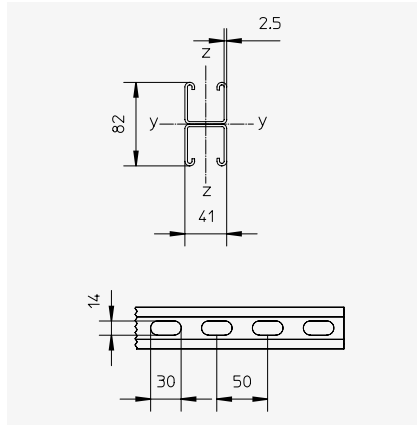
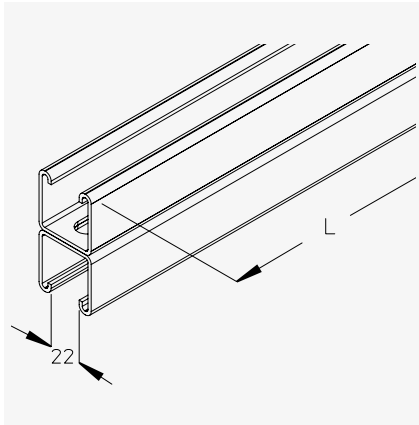
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 82

## 41x82 mm mounting channel, perforated

41x82x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, welded back to back, slot size 22 mm.

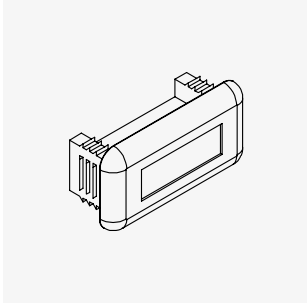
### Technical data



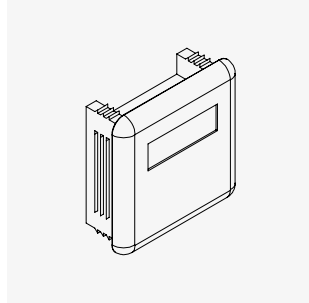
Model	H mm	B mm	L mm	t mm	G F kg	G E kg	G E4 kg
KHA 82-30	82	41	3,000	2.50	15.68	14.87	15.05
KHA 82-60	82	41	6,000	2.50	31.36	29.74	30.10

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

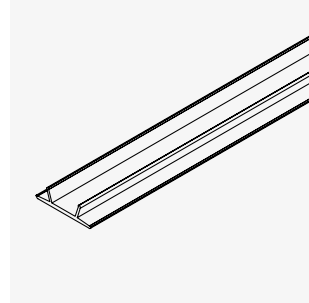
## Installation components



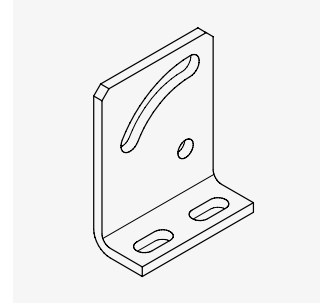
**SAI 21**  
Protection cap, white/black/  
yellow  
**PE**



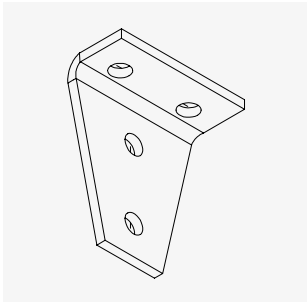
**SAI 41**  
Protection cap, white/black/  
yellow  
**PE**



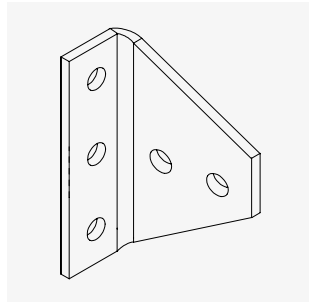
**KHAD 22**  
Cover, C-profile  
**PE**



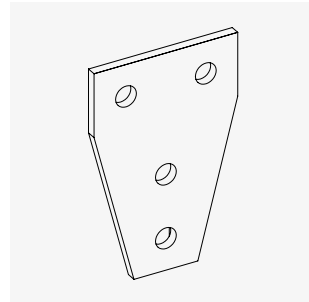
**BLD**  
Adaptor diagonal  
**F**



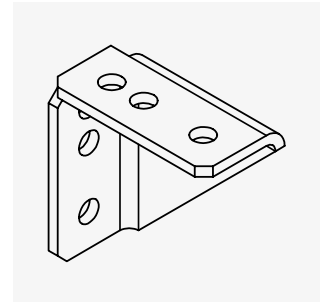
**AVLWB 1-2**  
90° profile connector with  
4 holes  
**F**



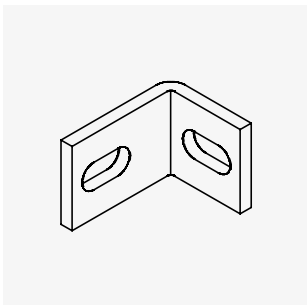
**AVLWBL 1-2**  
90° profile connector with  
5 holes  
**F**



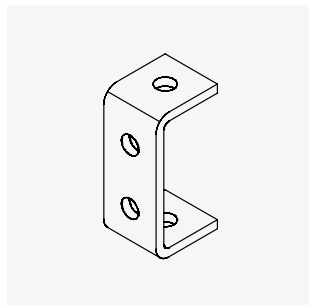
**AVLWBF2-2**  
Profile connector with  
4 holes  
**F**



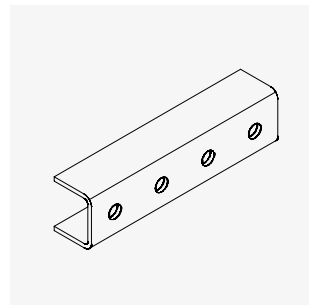
**AVLK**  
90° corner connector with  
6 holes  
**F**



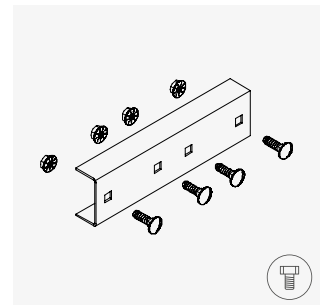
**BL 5**  
Corner angle, KHU 40/57/60,  
KHA  
**F**



**AKL**  
Rail clamp  
**F**



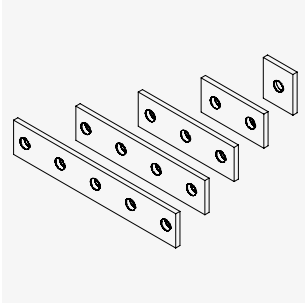
**AV**  
Connector,  
A/KHA 21/41/42/82  
**F**



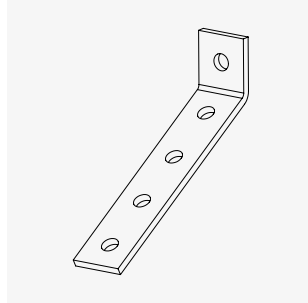
**ASK 4**  
Connector, A/KHA 4  
**F**



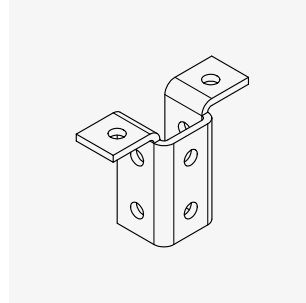
Fastening screws  
included with delivery



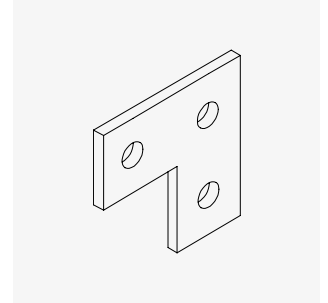
**AVL**  
Rail connector  
F



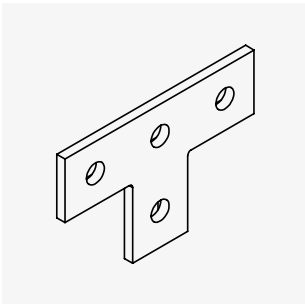
**AVL 60**  
60° profile connector  
F



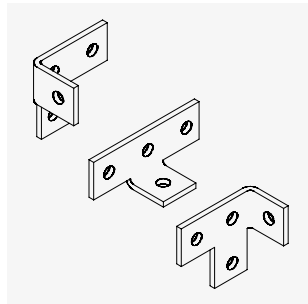
**AVT**  
Vertical T-piece  
F



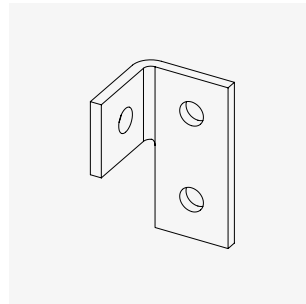
**AVE**  
Rail connector corner  
F



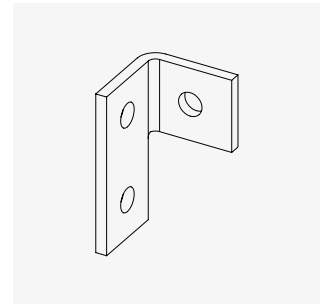
**AVA**  
Rail connector branch  
F



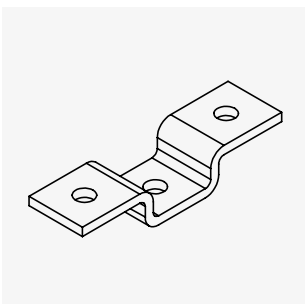
**AVAW**  
Rail connector angle  
F



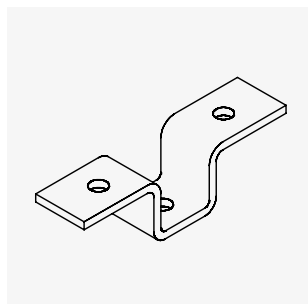
**AVE-L**  
Rail connector, 90° left  
F



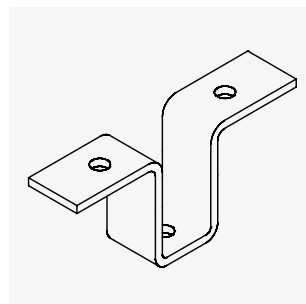
**AVE-R**  
Rail connector, 90° right  
F



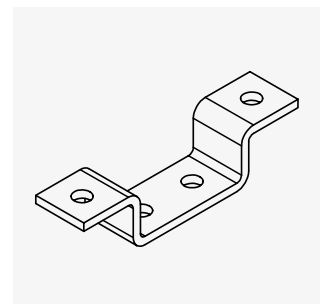
**AVB 21**  
Omega rail connector U support  
F



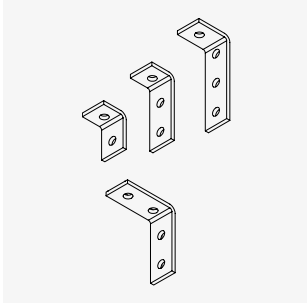
**AVB 41**  
Omega rail connector U support  
F



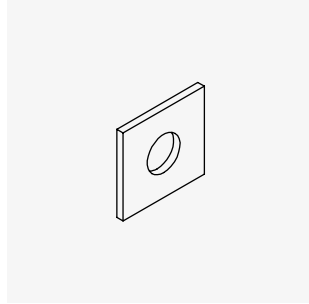
**AVB 82**  
Omega rail connector U support  
F



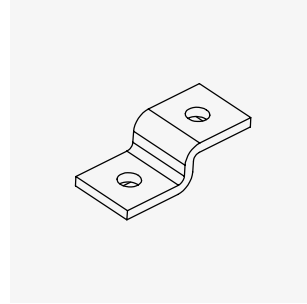
**AVBD 41**  
Omega rail connector U support  
F



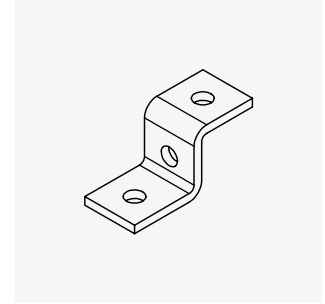
**AVLW**  
Rail connector, angular  
**F**



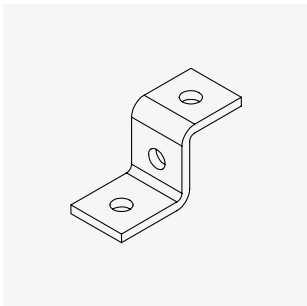
**AVLI-1**  
Square washer  
**F**



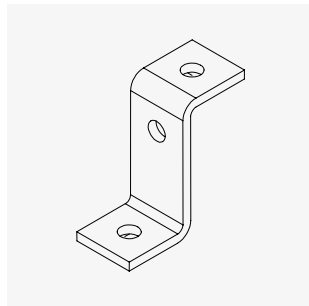
**AVBL 21**  
Z-mounting bracket  
**F**



**AVBL 41**  
Z-mounting bracket  
**F**



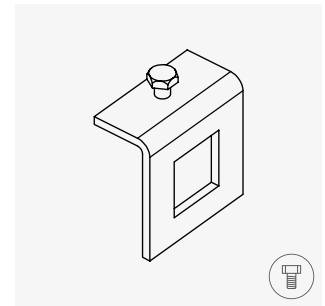
**AVBLA 41**  
Z-mounting bracket  
**F**



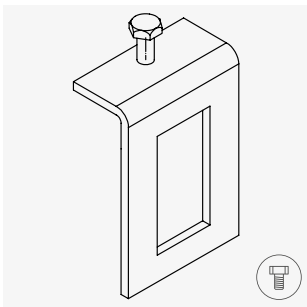
**AVBL 82**  
Z-mounting bracket  
**F**



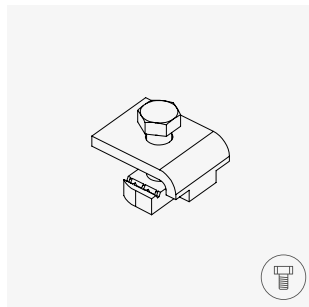
**AVSK 21**  
Clamping plate  
**F**



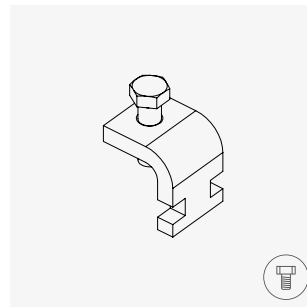
**AVSK 41**  
Clamping plate  
**F**



**AVSK 82**  
Clamping plate  
**F**



**AVSKA**  
Beam clamp  
**F**



**AVSKH**  
Beam clamp  
**F**

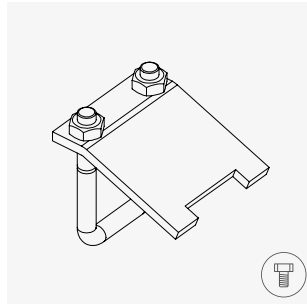


**AVSKT**  
Beam clamp  
**F**





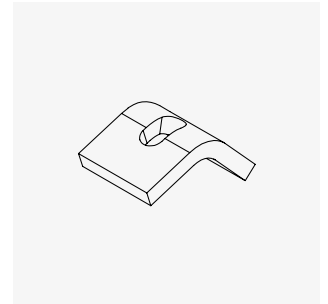
**AVSKP**  
Beam clamp  
F



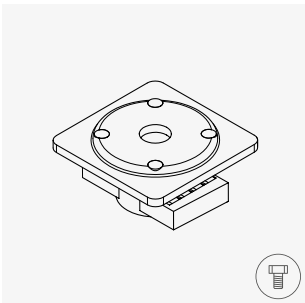
**AVSKGB**  
Beam clamp  
F



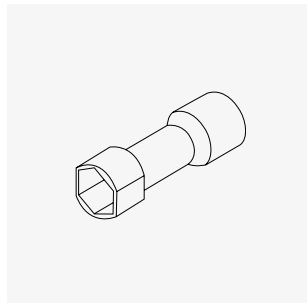
**AVRS**  
Tube clamp  
F



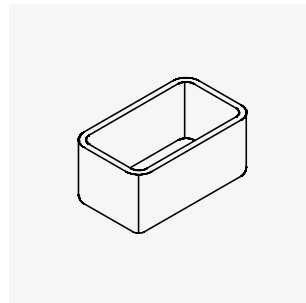
**SKLC**  
Clamp strap  
F



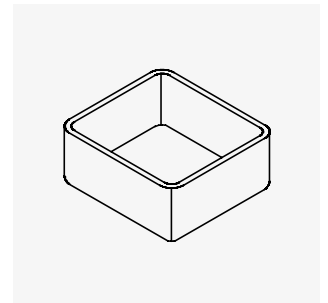
**AMP22**  
Locking plate  
F



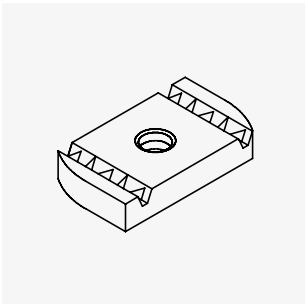
**PSS**  
Channel socket  
F



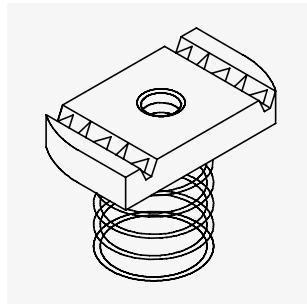
**SA1**  
Protection cap, cadmium  
yellow RAL 1021  
PE



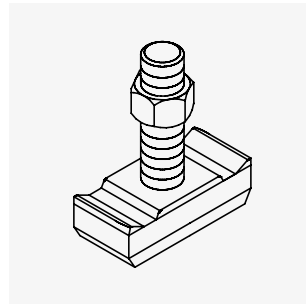
**SA2**  
Protection cap, cadmium  
yellow RAL 1021  
PE



**AM22**  
Channel nut,  
A 41, KHA 41, KHAL 41  
GV F E4



**AMF22**  
Channel spring nut,  
A 41, KHA 41, KHAL 41  
GV F E4



**HS22**  
Tee-head bolt, A 2/A 4  
GV F E4



Fastening screws  
included with delivery

# I-profile system



## Product description

The component parts of the I-profile system are bracket supports, stem supports and head plates. The stems consist of perforated I-profiles with a size of 80x42 mm. The KDI bracket support has an integrated head plate while the KHI profile is designed to have the BGI head plate screwed onto it. The KT, KTS and KTSS and stem supports are also part of the system.

The I-profile system is used whenever particularly heavy loads need to be supported. It offers load-bearing capacities of up to 12 kN and allows the cable trays to be filled to capacity. The I-profile system is the preferred support system of the automotive engineering sector. It is also used in power station and airport construction, among other areas of application.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction
- Automotive engineering and airport construction



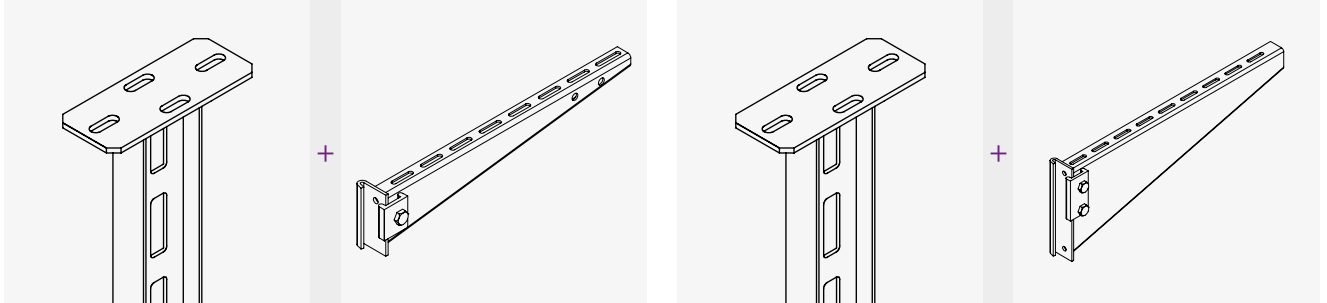
## Benefits

- Cable trays can be filled to capacity
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows the system to be adjusted for various areas of application

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview

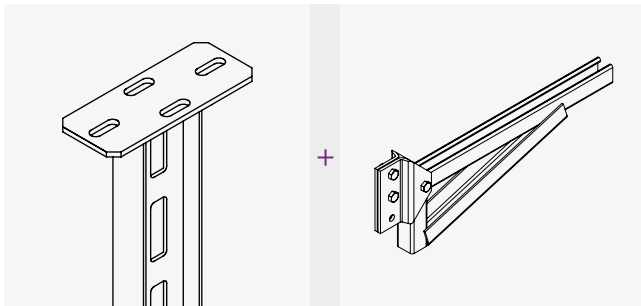


KDI

KT

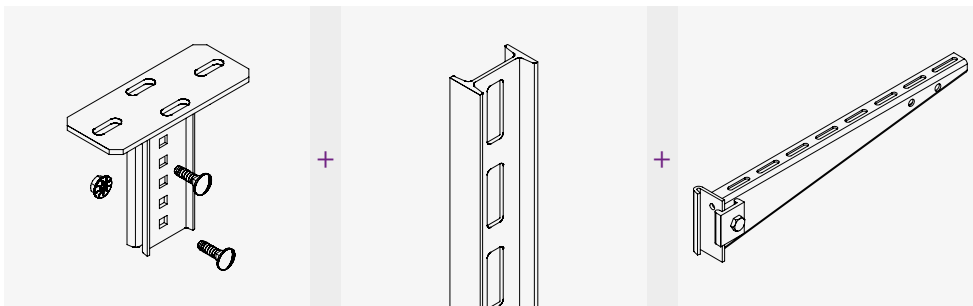
KDI

KTS



KDI

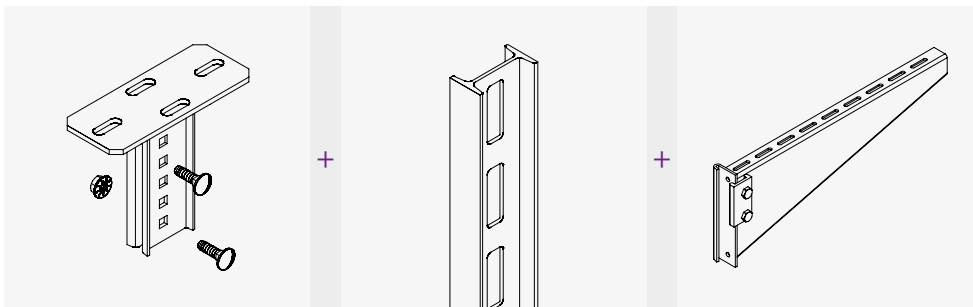
KTSS



BGI

KHI

KT



BGI

KHI

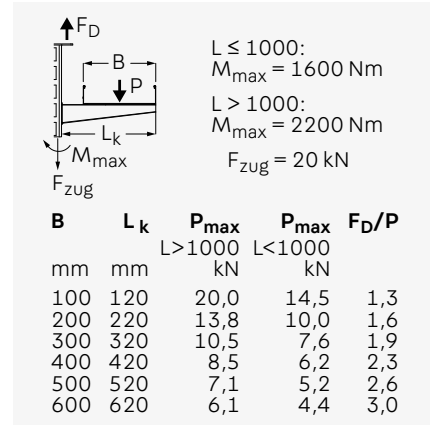
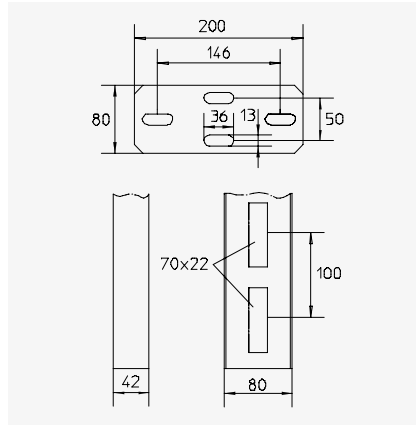
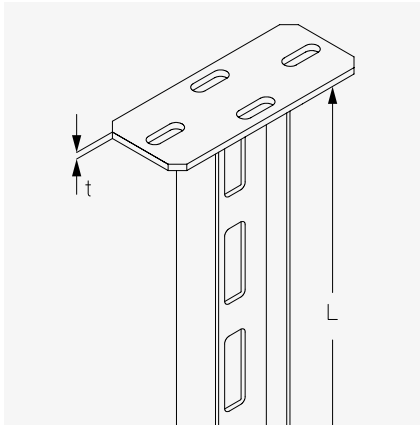
KTS

# KDI

## Bracket support, 80x42 mm

Bracket support, consisting of an I80 profile with a row of continuous elongated holes in the web, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G F kg
KDI 02	200	6.00	1.86
KDI 03	300	6.00	2.38
KDI 04	400	6.00	2.92
KDI 05	500	6.00	3.65
KDI 06	600	6.00	4.17
KDI 07	700	6.00	4.70
KDI 08	800	6.00	5.37
KDI 09	900	6.00	5.84
KDI 10	1,000	6.00	6.60
KDI 11	1,100	8.00	7.10
KDI 12	1,200	8.00	7.68
KDI 13	1,300	8.00	8.26
KDI 14	1,400	8.00	8.84
KDI 15	1,500	8.00	9.42
KDI 16	1,600	8.00	10.01
KDI 17	1,700	8.00	10.59
KDI 18	1,800	8.00	11.18
KDI 19	1,900	8.00	11.76
KDI 20	2,000	8.00	12.35
KDI 21	2,100	8.00	12.93
KDI 22	2,200	8.00	13.52
KDI 23	2,300	8.00	14.10
KDI 24	2,400	8.00	14.69

L: Length | t: Material thickness | G: Weight (per surface/material)

A zinc-plated (GV) surface in accordance with DIN EN ISO 19598 / DIN EN ISO 2081 is available on request. You must specify the surface finish/material when placing your order.

<b>Model</b>	<b>L</b> mm	<b>t</b> mm	<b>G F</b> kg
<b>KDI 25</b>	2,500	8.00	15.27
<b>KDI 26</b>	2,600	8.00	15.89
<b>KDI 27</b>	2,700	8.00	16.44
<b>KDI 28</b>	2,800	8.00	17.03
<b>KDI 29</b>	2,900	8.00	17.61
<b>KDI 30</b>	3,000	8.00	18.20

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm

### Matching brackets

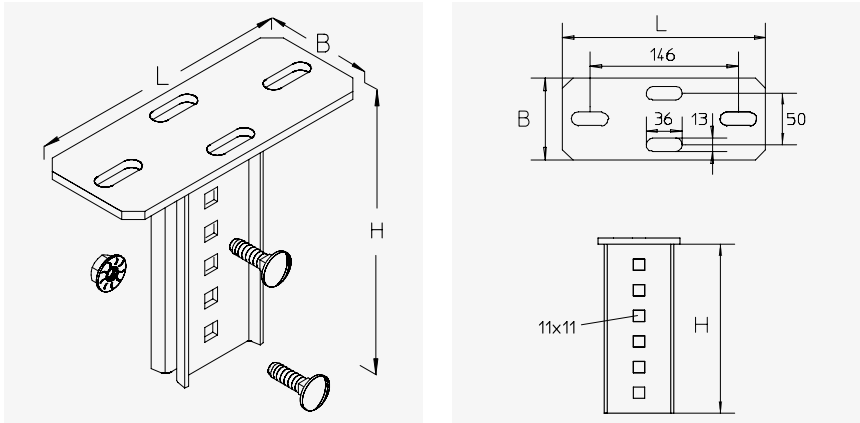
- KT bracket, KDI/KHI
- KTS bracket, KDI/KHI
- KTSS bracket, KDI/KHI

# BGI

## Screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGI F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

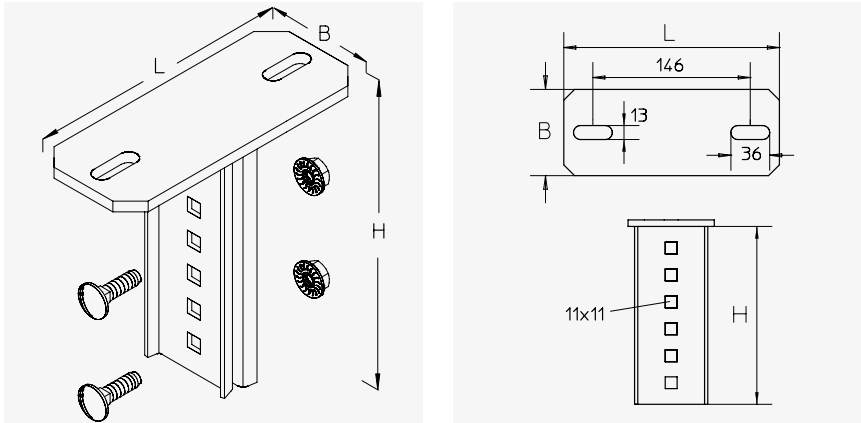
**This item is also available with different angles of inclination.**

# BGIQ

## Screw-on head plate turned 90°, KHI

Transverse head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGIQ F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

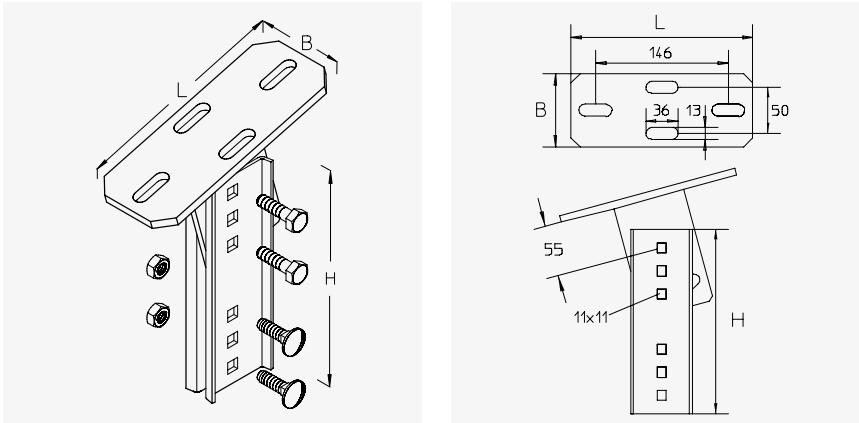
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# BGID

## ±30° screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling. For an angled connection of +/-30°.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGID F	200	80	200	2.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

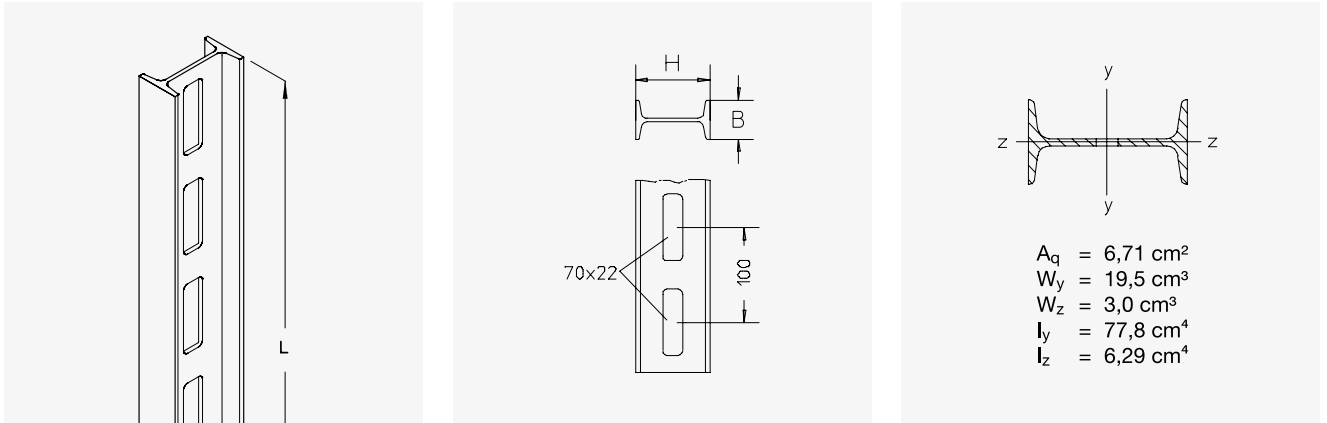


# KHI

## Bracket support, 80x42 mm

Bracket support with a row of continuous elongated holes in the web, for direct mounting on the ceiling in conjunction with BL 7/BGI.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHI 02F	80	42	200	1.10
KHI 03F	80	42	300	1.70
KHI 04F	80	42	400	2.30
KHI 05F	80	42	500	2.90
KHI 06F	80	42	600	3.50
KHI 07F	80	42	700	4.10
KHI 08F	80	42	800	4.70
KHI 09F	80	42	900	5.30
KHI 10F	80	42	1,000	5.90
KHI 11F	80	42	1,100	6.40
KHI 12F	80	42	1,200	7.10
KHI 13F	80	42	1,300	7.60
KHI 14F	80	42	1,400	8.20
KHI 15F	80	42	1,500	8.80
KHI 16F	80	42	1,600	9.40
KHI 17F	80	42	1,700	10.00
KHI 18F	80	42	1,800	10.60
KHI 19F	80	42	1,900	11.10
KHI 20F	80	42	2,000	11.70
KHI 21F	80	42	2,100	12.30
KHI 22F	80	42	2,200	12.90
KHI 23F	80	42	2,300	13.50
KHI 24F	80	42	2,400	14.10
KHI 25F	80	42	2,500	14.60

<b>Model</b>	<b>H</b> mm	<b>B</b> mm	<b>L</b> mm	<b>G F</b> kg
<b>KHI 26F</b>	80	42	2,600	15.20
<b>KHI 27F</b>	80	42	2,700	15.80
<b>KHI 28F</b>	80	42	2,800	16.30
<b>KHI 29F</b>	80	42	2,900	16.90
<b>KHI 30F</b>	80	42	3,000	17.50
<b>KHI 60F</b>	80	42	6,000	35.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDI bracket support, 80x42 mm

### Matching brackets

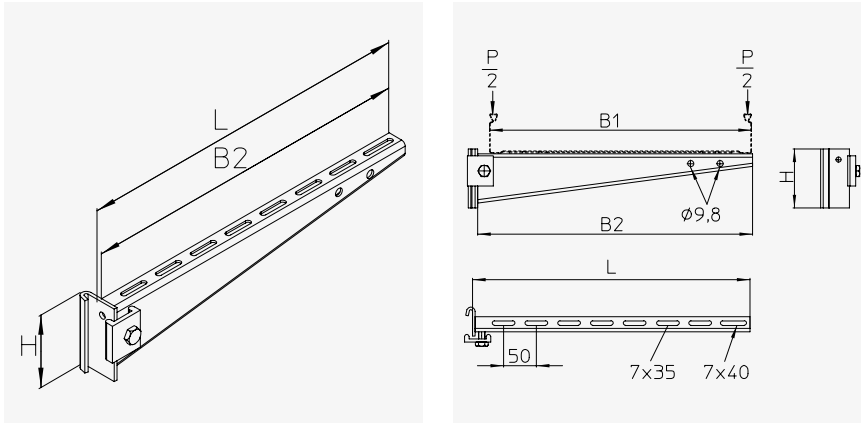
- KT bracket, KDI/KHI
- KTS bracket, KDI/KHI
- KTSS bracket, KDI/KHI

# KT

## Bracket, KDI/KHI

Bracket, for I80 profile bracket support, tested in accordance with DIN EN 61537.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G <sub>GV</sub> kg	G <sub>F</sub> kg
KT 010	50	100	120	124	2.0	0.24	0.24
KT 020	70	200	220	224	2.0	0.46	0.56
KT 030	70	300	320	324	2.0	0.56	0.77
KT 040	90	400	420	424	2.0	0.90	0.87
KT 050	110	500	520	524	2.0	1.34	1.40
KT 060	110	600	620	624	2.1	1.55	1.55

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

### Matching bracket supports

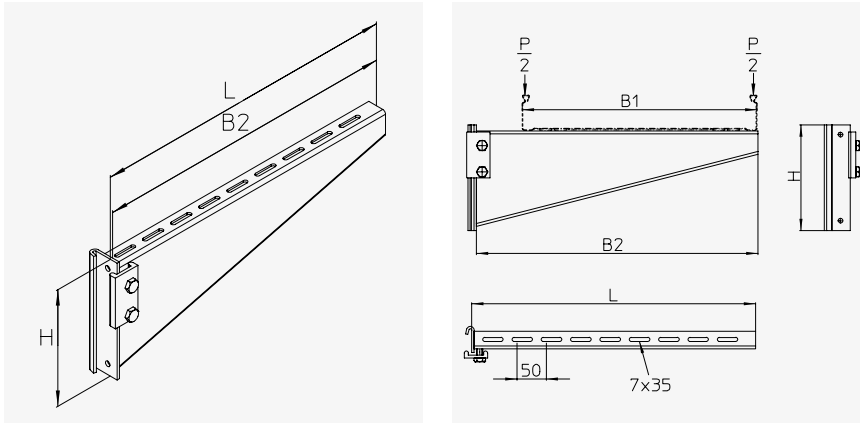
- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

# KTS

## Bracket, KDI/KHI

Bracket, for I80 profile bracket support, tested in accordance with DIN EN 61537.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G <sub>F</sub> kg
KTS 020F	180	200	280	284	7.0	1.63
KTS 030F	180	300	380	384	6.3	1.99
KTS 040F	180	400	480	484	5.5	2.36
KTS 050F	180	500	580	584	4.9	2.73
KTS 060F	180	600	680	684	4.3	3.09
KTS 070F	180	600	780	784	3.6	3.46
KTS 080F	180	600	880	884	3.0	3.81
KTS 090F	180	600	980	984	2.3	4.18
KTS 100F	180	600	1,080	1,084	1.7	4.55

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G<sub>F</sub>: Weight (per surface/material)

### Matching bracket supports

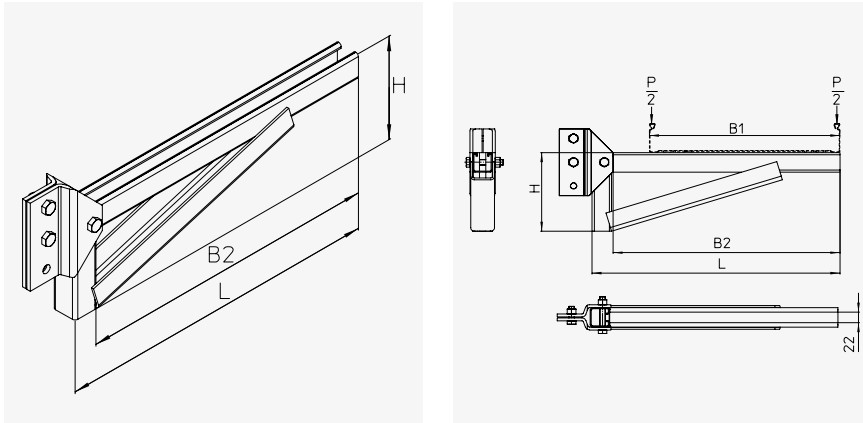
- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

# KTSS

## Bracket, KDI/KHI

Supports, particularly suitable for wide-span cable trays, for I80 bracket support, tested in accordance with DIN EN 61537.

### Technical data



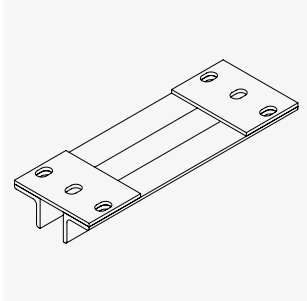
Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	G <sub>F</sub> kg
KTSS 020F	100	200	280	321	12.0	3.16
KTSS 030F	135	300	380	421	12.0	3.94
KTSS 040F	165	400	480	521	12.0	4.71
KTSS 050F	200	500	580	621	12.0	5.50
KTSS 060F	230	600	680	721	12.0	6.29

H: Height | B1: Tray width | B2: Usable support width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | G: Weight (per surface/material)

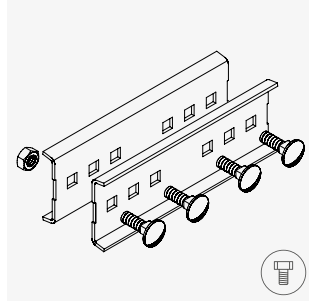
### Matching bracket supports

- KDI bracket support, 80x42 mm
- KHI bracket support, 80x42 mm

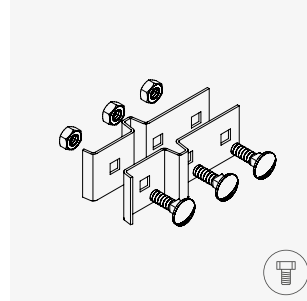
# Installation components



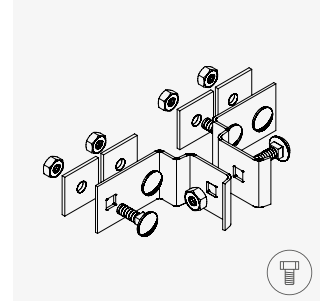
**KDIA-G**  
Adapter for KDI, welded  
**F**



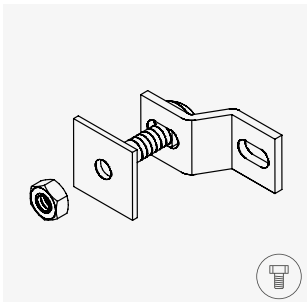
**HKI**  
Connector, KHI  
**F**



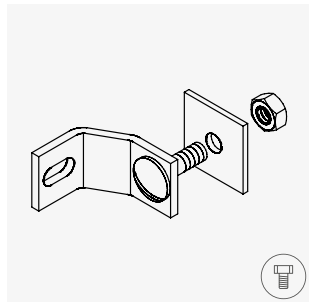
**HKIW**  
Mounting bracket, KHI  
**GV F**



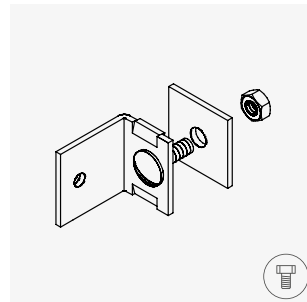
**HKIQ**  
Mounting bracket, transverse, KHI  
**F**



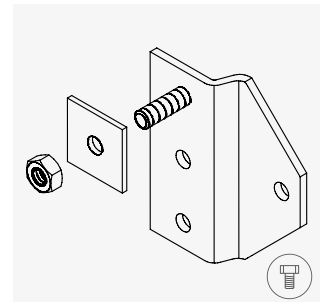
**BL 3**  
Corner angle, KHI  
**F**



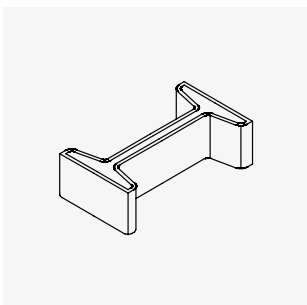
**BL 7**  
Corner angle, KHI  
**GV F**



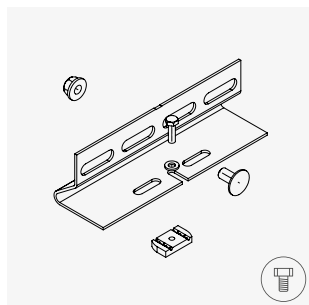
**BL 8**  
Corner angle, KHI  
**F**



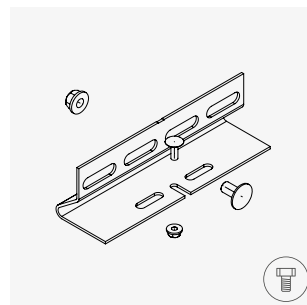
**BLI**  
Corner angle, KHI  
**F**



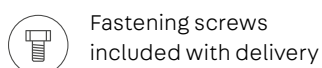
**SI**  
Protection cap, KDI/KHI  
**PE**

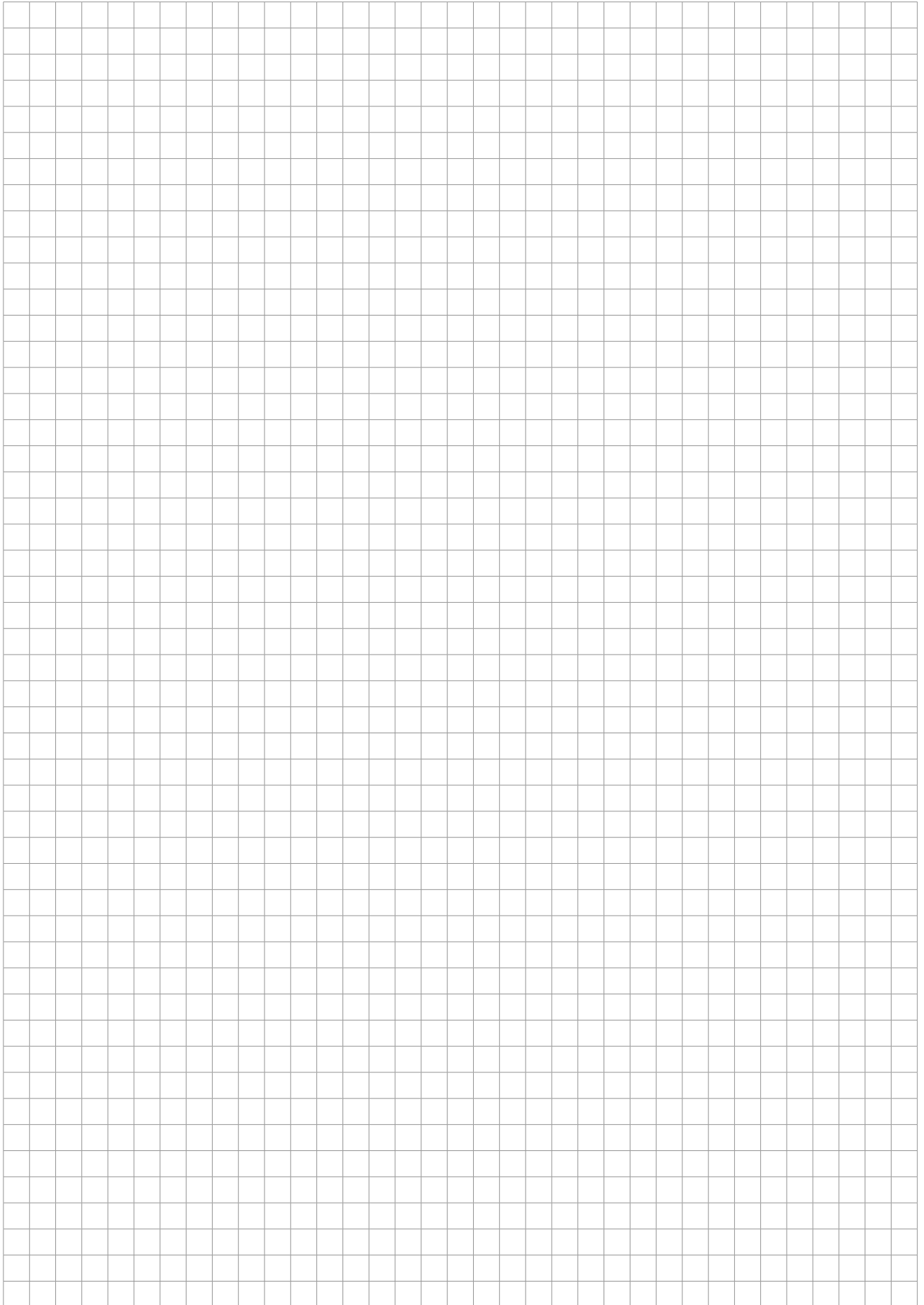


**WPHS-A**  
Flange mounting clamp  
(mounting channel)  
**S**



**WPHS-K**  
Flange mounting clamp  
(brackets)  
**S**









# Support systems for wide-span cable trays

# Wall brackets



## Product description

The arms described here are particularly useful for fixing wide-span cable trays to the wall. If you need a product capable of bearing heavy loads of up to 10 kN and spanning long support distances, the KWS and KWSS brackets are up to the task. The KIS and KISS brackets are suitable for suspending wide-span cable trays from steel structures such as T-beams and double-T-beams. The EBW corner fixing is attached to concrete supports using dowels, allowing wide-span cable trays to change direction by 90°. It is designed for loads of up to 6.5 kN.



## Areas of application

- On walls for technical building equipment – indoors and outdoors
- Industrial halls and production facilities
- Plant and power station construction



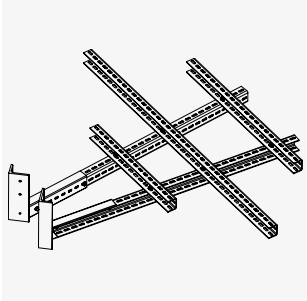
## Benefits

- Suitable for very high loads of up to 10 kN
- A secure and sturdy system
- Special solutions available on request
- Planning, installation and service
- Variable design allows system to be adjusted for various loads

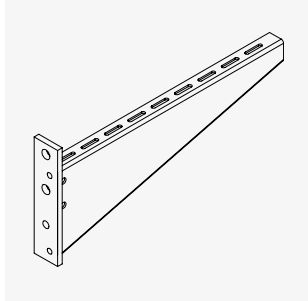
## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

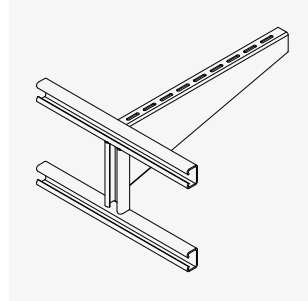
## Model overview



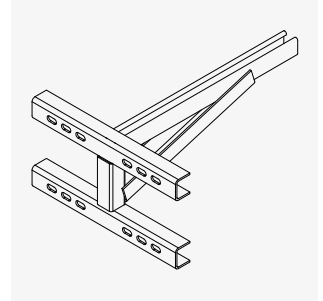
**EBW**



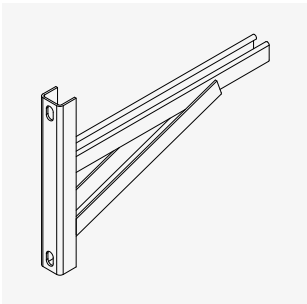
**KWS**



**KIS**



**KISS**



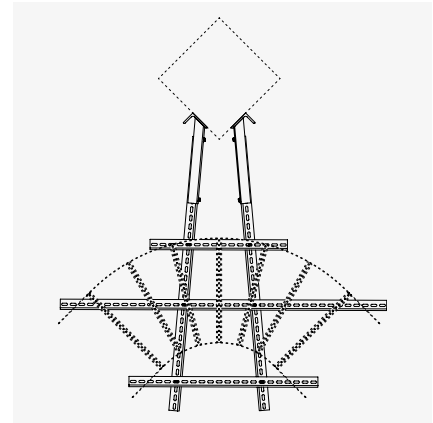
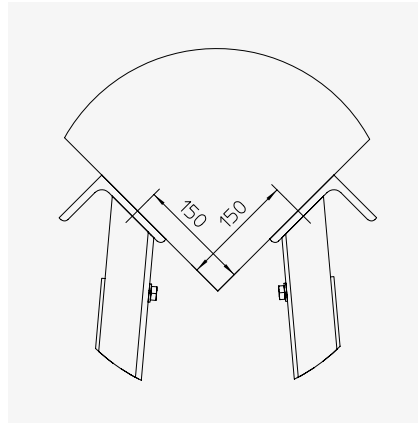
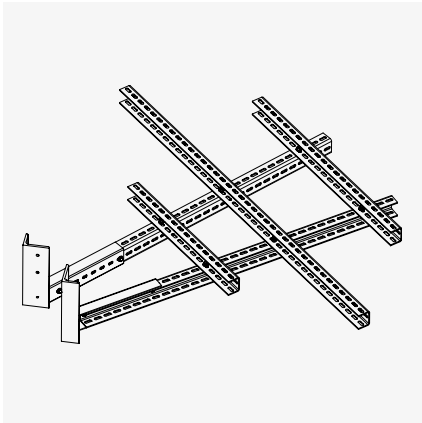
**KWSS**

# EBW

## Corner fixing

For attachment to concrete supports using dowels. Particularly suitable for wide-span cable trays.

### Technical data

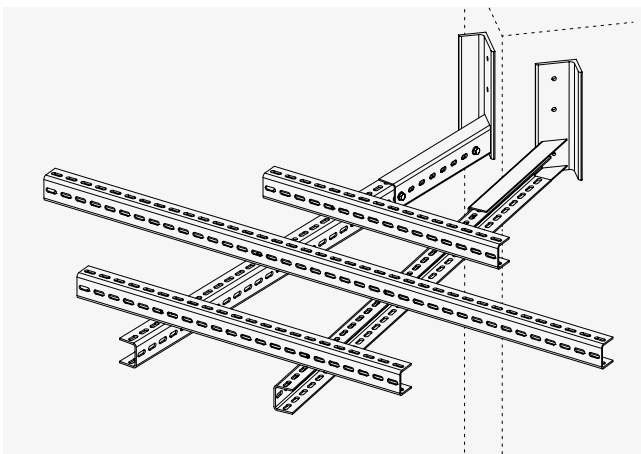


Model	$P_{max}$ kN	G F kg
EBW 040F	6.5	60.63
EBW 050F	6.5	60.64
EBW 060F	6.5	64.63
EBW 020F	6.5	52.64
EBW 030F	6.5	55.31

H: Height |  $P_{max}$ : Maximum load | G: Weight



The screw fastenings for assembly are included in the scope of delivery. The fastening materials for the wall/ceiling must be ordered separately according to the load that is to be supported.



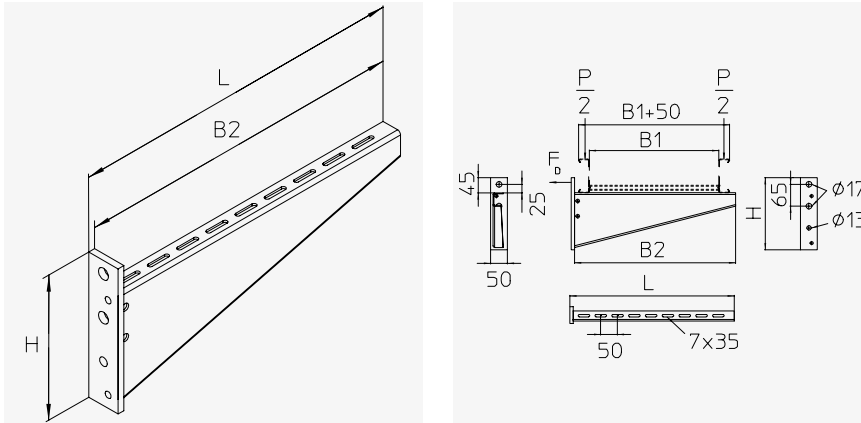
The illustration shows an EBW corner fixing attached to a concrete support using dowels. Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KWS

## Wall/stem support

Wall/stem support, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls or attachment to suspension stems.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>F</sub> kg	G <sub>E</sub> kg	G <sub>E4</sub> kg
KWS 020	215	200	270	290	7.0	1.31	2.04	1.92	1.92
KWS 030	215	300	370	390	6.7	1.49	2.40	2.26	2.26
KWS 040	215	400	470	490	6.5	1.69	2.78	2.61	2.61
KWS 050	215	500	570	592	6.3	1.91	2.91	2.95	2.95
KWS 060	215	600	670	692	6.1	2.13	3.22	3.29	3.29
KWS 070	215	700	770	792	5.2	2.60	3.54	3.64	3.64
KWS 080	215	800	870	892	4.4	3.07	3.85	3.97	3.97
KWS 090	215	900	970	992	3.6	3.56	4.17	4.32	4.32
KWS 100	215	1,000	1,070	1,092	2.8	4.06	4.48	4.67	4.67

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm
- KHU 60 bracket support, 60x40 mm
- KDU 57 bracket support, 57x30 mm
- KHU 57 bracket support, 57x30 mm



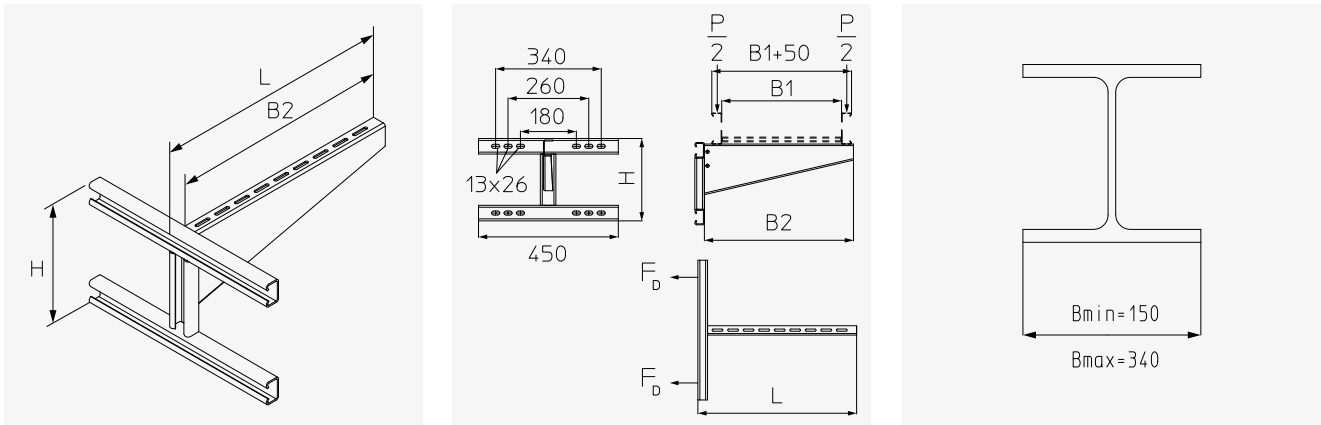
The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached to suspension stems in accordance with the instructions.

# KIS

## Wall bracket

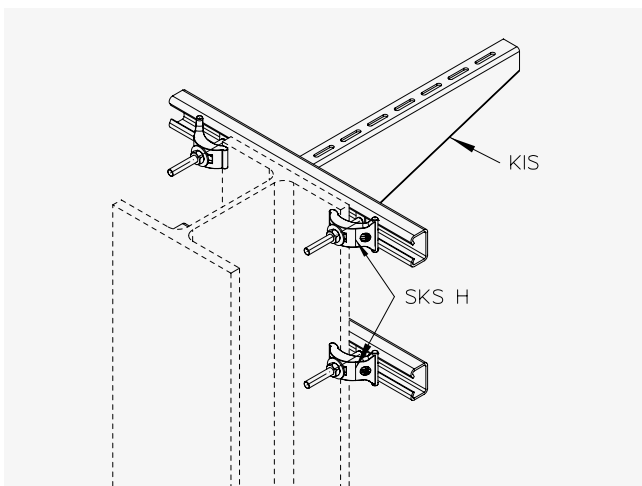
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KIS 020F	265	200	275	310	7.0	0.66	4.32
KIS 030F	265	300	375	410	6.7	0.76	4.65
KIS 040F	265	400	475	510	6.5	0.86	5.00
KIS 050F	265	500	575	610	6.3	0.97	5.34
KIS 060F	265	600	675	710	6.1	1.09	5.68
KIS 070F	265	700	775	810	5.2	1.33	6.02
KIS 080F	265	800	875	910	4.4	1.57	6.36
KIS 090F	265	900	975	1,010	3.6	1.83	6.70
KIS 100F	265	1,000	1,075	1,110	2.8	2.08	7.04

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KIS wall bracket attached to a steel beam using the SKS H beam clamp set.

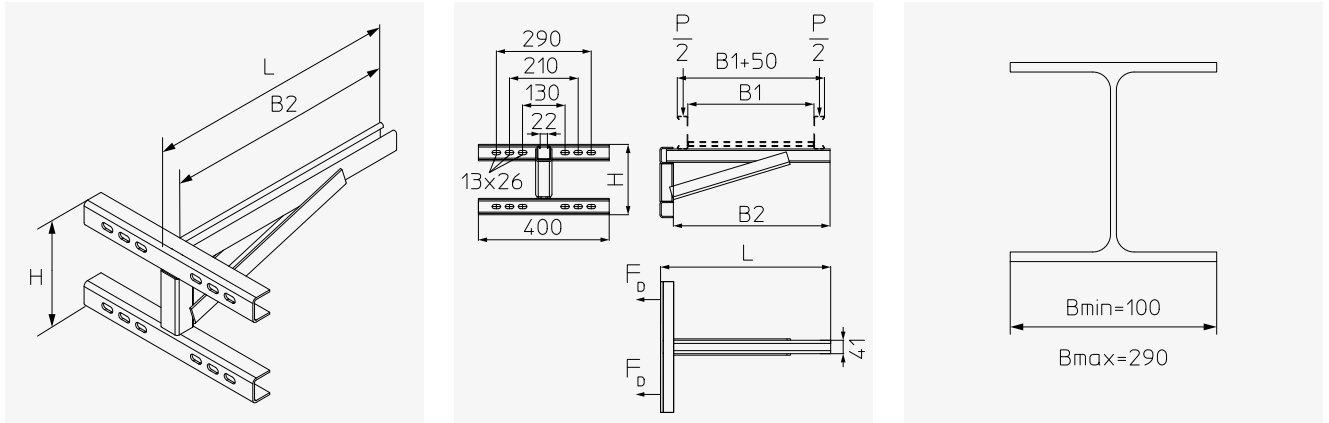
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KISS

## Wall bracket

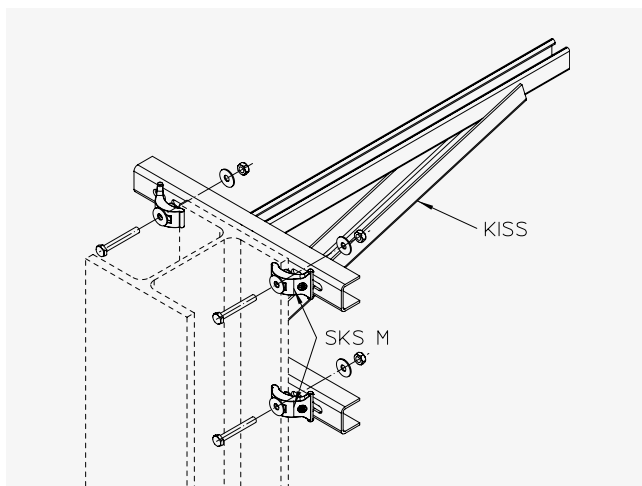
Wall bracket, for stepless clamping to steel structures such as T-beams and double-T-beams. Particularly suitable for wide-span cable trays.

### Technical data



Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G F kg
KISS 020F	150	200	275	210	10.0	0.93	4.66
KISS 030F	185	300	375	420	10.0	0.91	5.42
KISS 040F	215	400	475	520	10.0	0.92	6.17
KISS 050F	250	500	575	620	10.0	0.92	6.93
KISS 060F	280	600	675	720	10.0	0.92	7.70
KISS 070F	315	700	775	820	10.0	0.99	8.44
KISS 080F	345	800	875	920	10.0	1.06	9.21
KISS 090F	380	900	975	1,020	10.0	1.10	9.96
KISS 100F	410	1,000	1,075	1,120	10.0	1.15	10.71

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.



The illustration shows a KISS wall bracket attached to a steel beam using the SKS M beam clamp set.

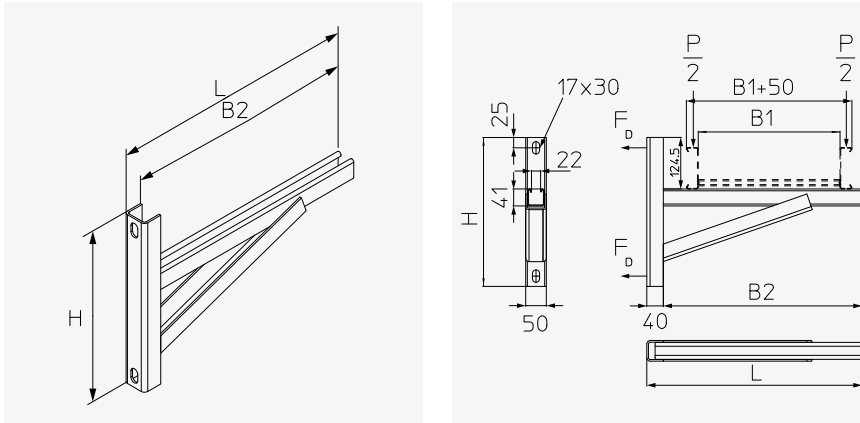
Further information on mounting/assembly can be found in our support **system assembly instructions**, which are available on our website.

# KWSS

## Wall bracket

Wall bracket, with welded-on back plate. Tested in accordance with DIN EN 61537. For mounting on walls.

### Technical data



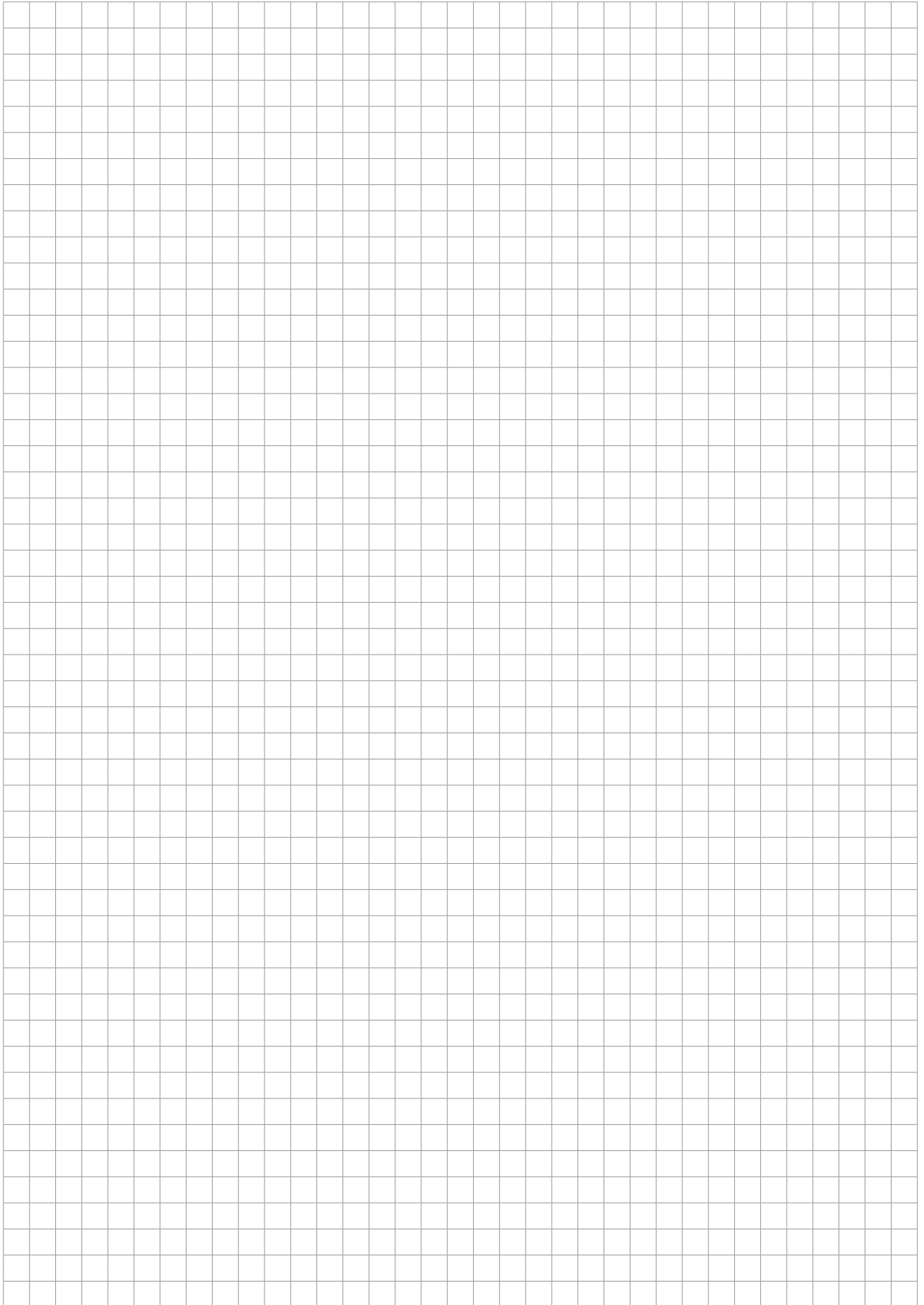
Model	H mm	B1 mm	B2 mm	L mm	P <sub>max</sub> kN	F <sub>D</sub> /P	G <sub>F</sub> kg
KWSS 020F	290	200	275	320	10.0	0.76	2.59
KWSS 030F	320	300	375	420	10.0	0.86	3.37
KWSS 040F	360	400	475	520	10.0	0.91	4.18
KWSS 050F	390	500	575	620	10.0	0.97	4.96
KWSS 060F	360	600	675	720	10.0	1.26	5.51
KWSS 070F	390	700	775	820	10.0	1.44	6.28
KWSS 080F	425	800	875	920	10.0	1.56	7.08
KWSS 090F	455	900	975	1,020	10.0	1.66	7.85
KWSS 100F	490	1,000	1,075	1,120	10.0	1.72	8.65

H: Height | B1: Tray width | B2: Usable bracket width | L: Bracket length | P<sub>max</sub>: Maximum bracket load | F<sub>D</sub>/P: Factor for calculating the dowel load F<sub>D</sub> with the actual bracket load P or the total of all actual bracket loads | G: Weight (per surface/material)



The stated load values only apply if the product is adequately anchored to the force-absorbing substrate or is attached in accordance with the instructions.





# Pendulum suspensions



## Product description

Aside from wall mounting, the only other option available for wide-span cable trays is to suspend them using a solution constructed from U-, I- or C-profiles, which are suitable for large support distances and heavy loads. This also requires the use of appropriate support systems.



## Areas of application

- On ceilings for technical building equipment – indoors and outdoors
- Hygienic areas, such as those encountered in the chemicals and food industries: stainless steel version (V2A)
- Server rooms, computer centres and data centres
- Tunnels: special stainless steel versions



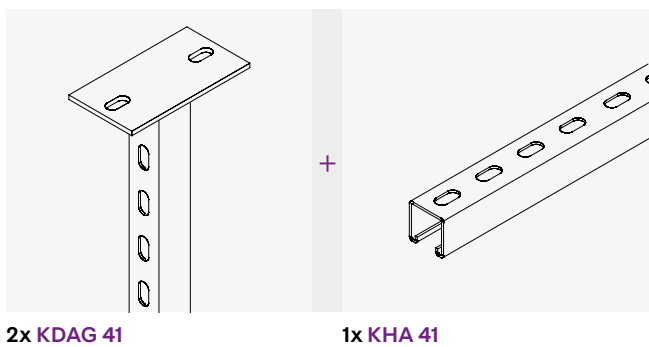
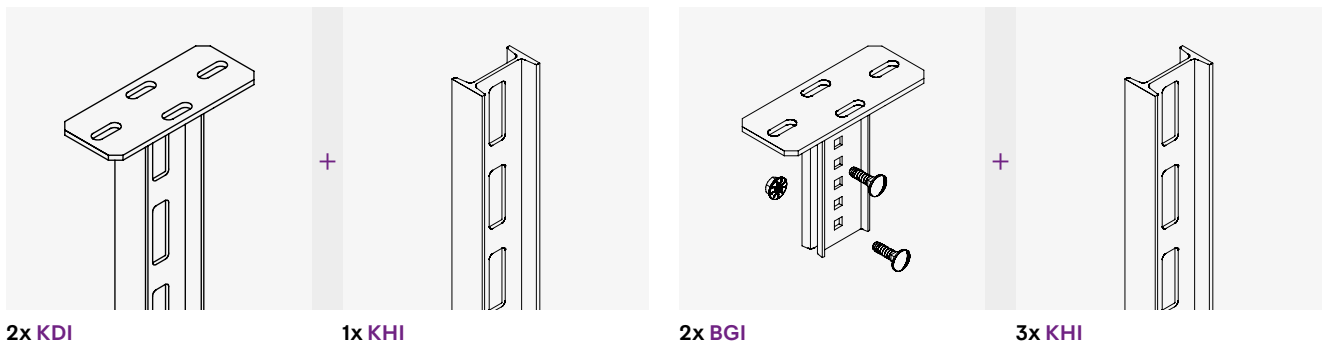
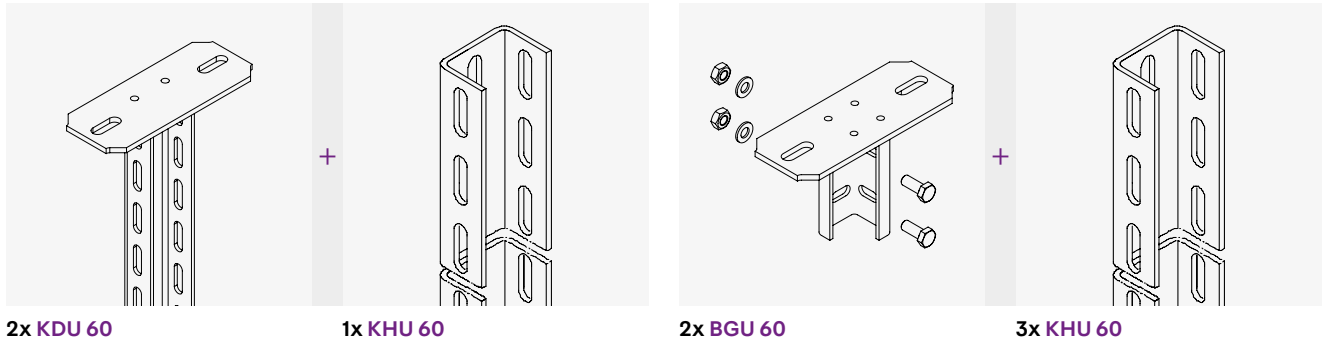
## Benefits

- A secure and sturdy system for particularly high loads
- Special solutions available on request
- Planning, installation and service

## Available surface coatings and materials

- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview

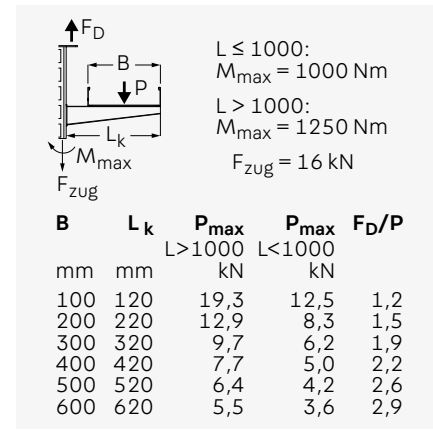
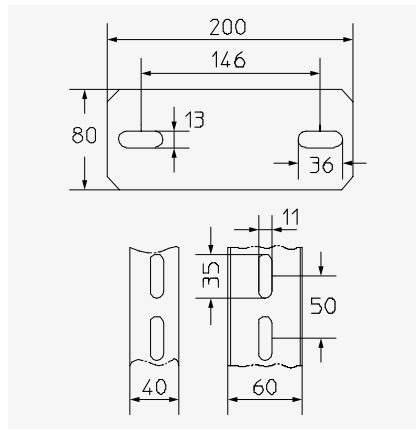
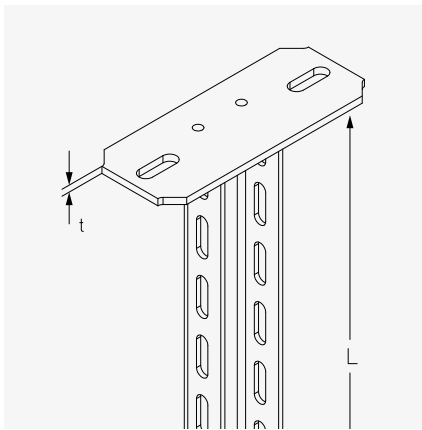


# KDU 60

## Bracket support, 60x40 mm

Bracket support, 60x40x4 mm U-profile, rows of continuous holes on three sides, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G <sub>GV</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg
KDU 60-02	200	6.00	1.34	1.40	1.40
KDU 60-03	300	6.00	1.67	1.80	1.80
KDU 60-04	400	6.00	2.00	2.10	2.10
KDU 60-05	500	6.00	2.33	2.50	2.50
KDU 60-06	600	6.00	2.54	2.80	2.80
KDU 60-07	700	6.00	2.88	3.20	3.20
KDU 60-08	800	6.00	3.31	3.50	3.50
KDU 60-09	900	6.00	3.64	3.90	3.90
KDU 60-10	1,000	6.00	3.97	4.20	4.20
KDU 60-11	1,100	8.00	4.52	4.80	4.80
KDU 60-12	1,200	8.00	4.85	5.20	5.20
KDU 60-13	1,300	8.00	5.18	5.50	5.50
KDU 60-14	1,400	8.00	5.51	5.90	5.90
KDU 60-15	1,500	8.00	5.84	6.30	6.30
KDU 60-16	1,600	8.00	6.19	6.60	6.60
KDU 60-17	1,700	8.00	6.53	7.00	7.00
KDU 60-18	1,800	8.00	6.86	7.30	7.30
KDU 60-19	1,900	8.00	7.10	7.00	7.00
KDU 60-20	2,000	8.00	7.48	8.00	8.00

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



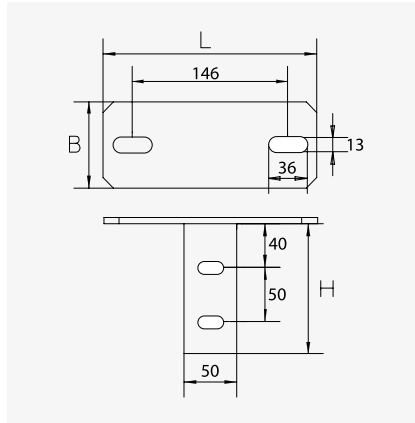
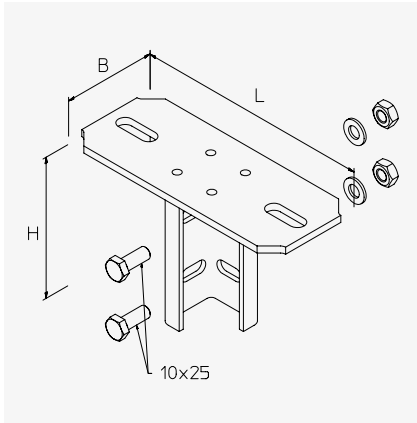
If the bracket length is 500 mm or above, a support piece must be used.

# BGU 60

## Screw-on head plate, KHU 60

Head plate for mounting U 60 profile bracket supports on ceilings.

### Technical data



Model	H mm	B mm	L mm	G <sup>GV</sup> kg	G <sup>F</sup> kg	G <sup>E</sup> kg	G <sup>E4</sup> kg
BGU 60	120	80	200	1.25	1.28	1.30	1.30

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHU 60 bracket support, 60x40 mm



The screw fastenings for assembly are included in the scope of delivery.

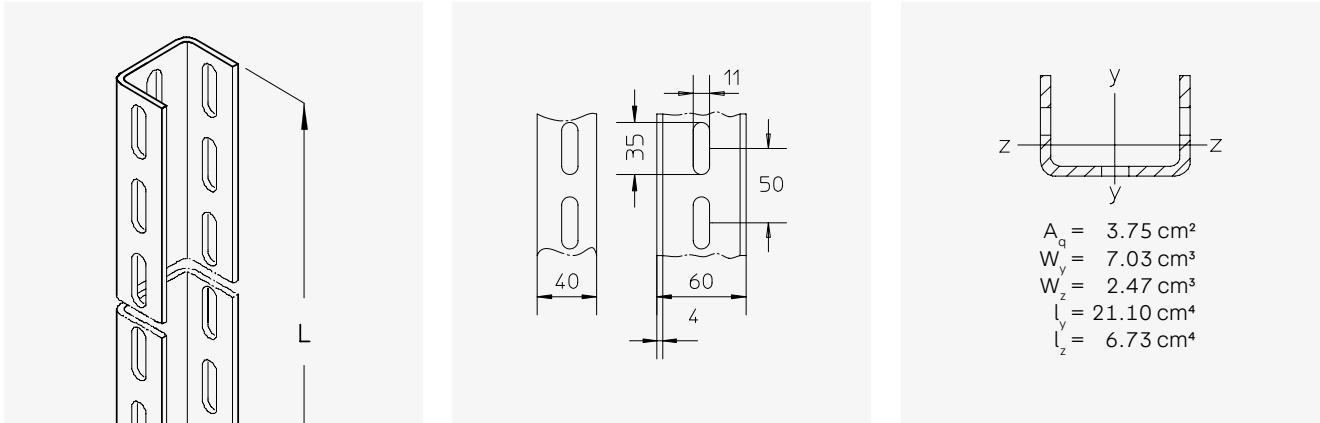
The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

# KHU 60

## Bracket support, 60x40 mm

Bracket support consisting of 60x40x4 mm U-profile, rows of continuous holes on three sides.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHU 60-02	40	60	200	0.70
KHU 60-03	40	60	300	1.05
KHU 60-04	40	60	400	1.40
KHU 60-05	40	60	500	1.75
KHU 60-06	40	60	600	2.11
KHU 60-07	40	60	700	2.46
KHU 60-08	40	60	800	2.81
KHU 60-09	40	60	900	3.16
KHU 60-10	40	60	1,000	3.51
KHU 60-11	40	60	1,100	3.86
KHU 60-12	40	60	1,200	4.21
KHU 60-13	40	60	1,300	4.56
KHU 60-14	40	60	1,400	4.91
KHU 60-15	40	60	1,500	5.26
KHU 60-20	40	60	2,000	7.02
KHU 60-30	40	60	3,000	10.53
KHU 60-60	40	60	6,000	21.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KDU 60 bracket support, 60x40 mm



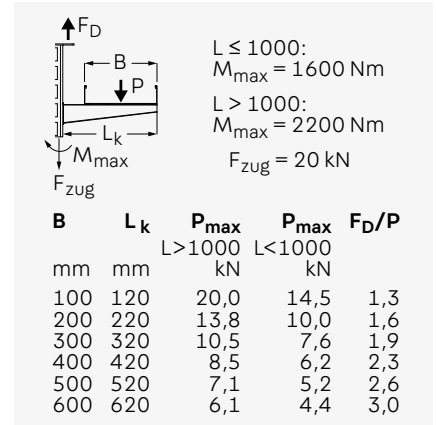
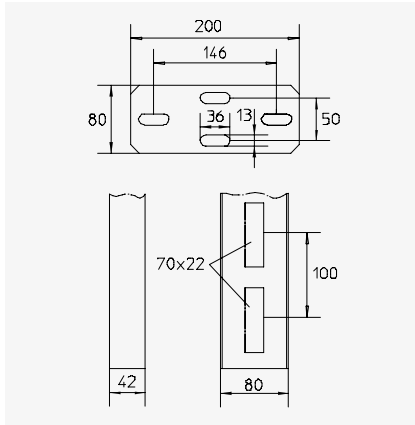
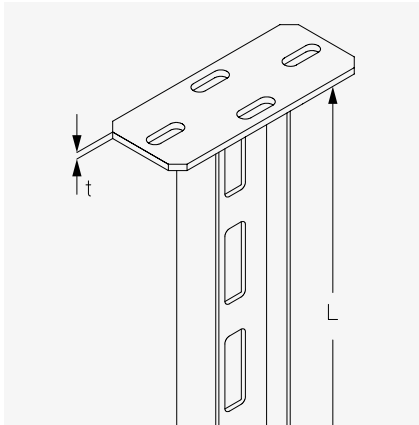
Using the support piece enables higher load-bearing capacities to be achieved.

# KDI

## Bracket support, 80x42 mm

Bracket support, consisting of an I80 profile with a row of continuous elongated holes in the web, with welded-on head plate (material thickness  $t$ ), tested in accordance with DIN EN 61537.

### Technical data



Model	L mm	t mm	G F kg
KDI 02	200	6.00	1.86
KDI 03	300	6.00	2.38
KDI 04	400	6.00	2.92
KDI 05	500	6.00	3.65
KDI 06	600	6.00	4.17
KDI 07	700	6.00	4.70
KDI 08	800	6.00	5.37
KDI 09	900	6.00	5.84
KDI 10	1,000	6.00	6.60
KDI 11	1,100	8.00	7.10
KDI 12	1,200	8.00	7.68
KDI 13	1,300	8.00	8.26
KDI 14	1,400	8.00	8.84
KDI 15	1,500	8.00	9.42
KDI 16	1,600	8.00	10.01
KDI 17	1,700	8.00	10.59
KDI 18	1,800	8.00	11.18
KDI 19	1,900	8.00	11.76
KDI 20	2,000	8.00	12.35
KDI 21	2,100	8.00	12.93
KDI 22	2,200	8.00	13.52
KDI 23	2,300	8.00	14.10
KDI 24	2,400	8.00	14.69

L: Length | t: Material thickness | G: Weight (per surface/material)

A zinc-plated (GV) surface in accordance with DIN EN ISO 19598 / DIN EN ISO 2081 is available on request. You must specify the surface finish/material when placing your order.

<b>Model</b>	<b>L</b> mm	<b>t</b> mm	<b>G F</b> kg
<b>KDI 25</b>	2,500	8.00	15.27
<b>KDI 26</b>	2,600	8.00	15.89
<b>KDI 27</b>	2,700	8.00	16.44
<b>KDI 28</b>	2,800	8.00	17.03
<b>KDI 29</b>	2,900	8.00	17.61
<b>KDI 30</b>	3,000	8.00	18.20

L: Length | t: Material thickness | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm

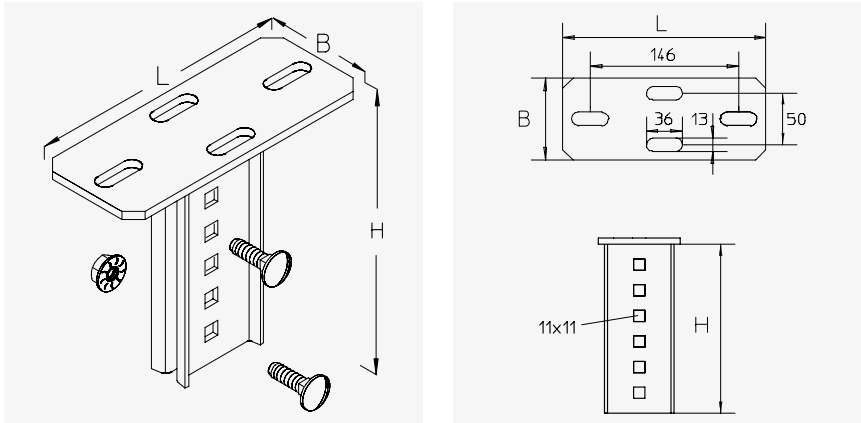


# BGI

## Screw-on head plate, KHI

Head plate for mounting I80 profile bracket supports on ceiling.

### Technical data



Model	H mm	B mm	L mm	G F kg
BGI F	165	80	200	1.40

H: Height | B: Width | L: Length | G: Weight (per surface/material)

### Matching bracket supports

- KHI bracket support, 80x42 mm



The screw fastenings for assembly are included in the scope of delivery.

The fastening materials for the ceiling must be ordered separately according to the load that is to be supported.

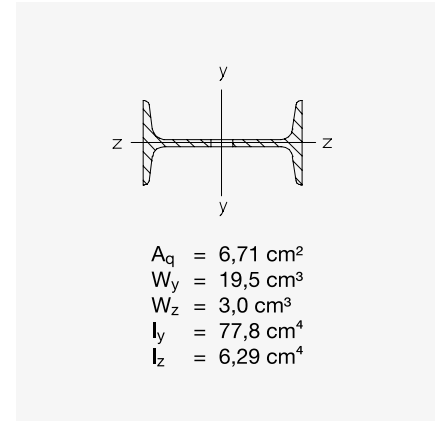
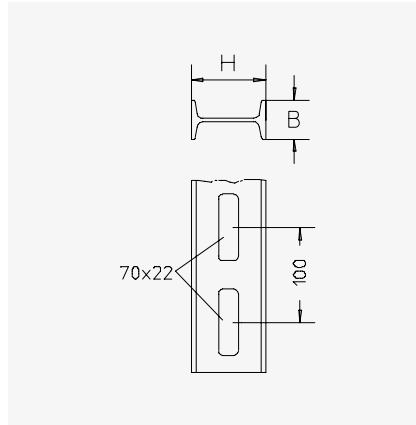
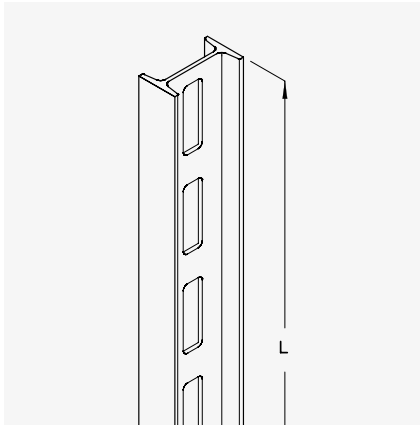
This item is also available with different angles of inclination.

# KHI

## Bracket support, 80x42 mm

Bracket support with a row of continuous elongated holes in the web, for direct mounting on the ceiling in conjunction with BL 7/BGI.

### Technical data



Model	H mm	B mm	L mm	G F kg
KHI 02F	80	42	200	1.10
KHI 03F	80	42	300	1.70
KHI 04F	80	42	400	2.30
KHI 05F	80	42	500	2.90
KHI 06F	80	42	600	3.50
KHI 07F	80	42	700	4.10
KHI 08F	80	42	800	4.70
KHI 09F	80	42	900	5.30
KHI 10F	80	42	1,000	5.90
KHI 11F	80	42	1,100	6.40
KHI 12F	80	42	1,200	7.10
KHI 13F	80	42	1,300	7.60
KHI 14F	80	42	1,400	8.20
KHI 15F	80	42	1,500	8.80
KHI 16F	80	42	1,600	9.40
KHI 17F	80	42	1,700	10.00
KHI 18F	80	42	1,800	10.60
KHI 19F	80	42	1,900	11.10
KHI 20F	80	42	2,000	11.70
KHI 21F	80	42	2,100	12.30
KHI 22F	80	42	2,200	12.90
KHI 23F	80	42	2,300	13.50
KHI 24F	80	42	2,400	14.10
KHI 25F	80	42	2,500	14.60

<b>Model</b>	<b>H</b> mm	<b>B</b> mm	<b>L</b> mm	<b>G F</b> kg
<b>KHI 26F</b>	80	42	2,600	15.20
<b>KHI 27F</b>	80	42	2,700	15.80
<b>KHI 28F</b>	80	42	2,800	16.30
<b>KHI 29F</b>	80	42	2,900	16.90
<b>KHI 30F</b>	80	42	3,000	17.50
<b>KHI 60F</b>	80	42	6,000	35.10

H: Height | B: Width | L: Length | G: Weight (per surface/material)

#### Matching bracket supports

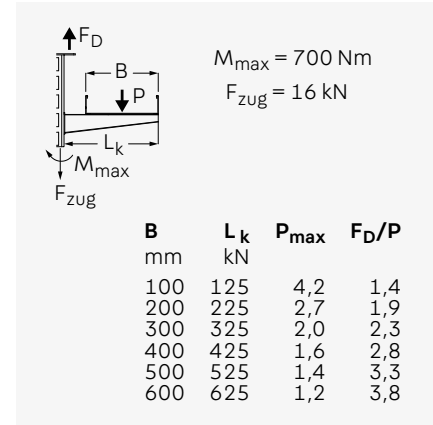
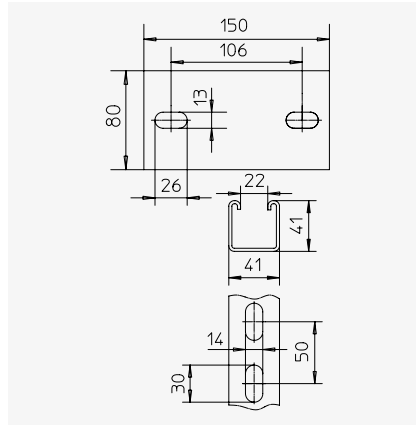
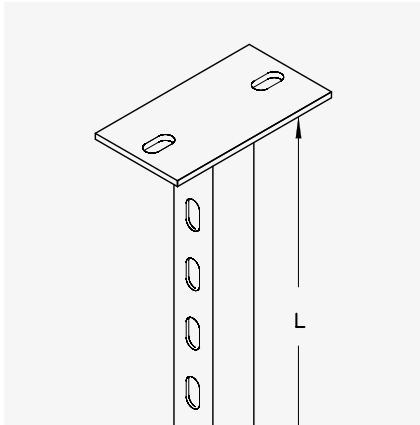
- KDI bracket support, 80x42 mm

# KDAG 41

## Bracket support, 41x41 mm

Bracket support consisting of a 41x41 mm mounting channel with a welded-on head plate.

### Technical data



Model	L	G F
	mm	kg
KDAG 41-02F	200	1.10
KDAG 41-03F	300	1.40
KDAG 41-04F	400	1.70
KDAG 41-05F	500	1.90
KDAG 41-06F	600	2.20
KDAG 41-07F	700	2.50
KDAG 41-08F	800	2.70
KDAG 41-09F	900	3.00
KDAG 41-10F	1,000	3.20

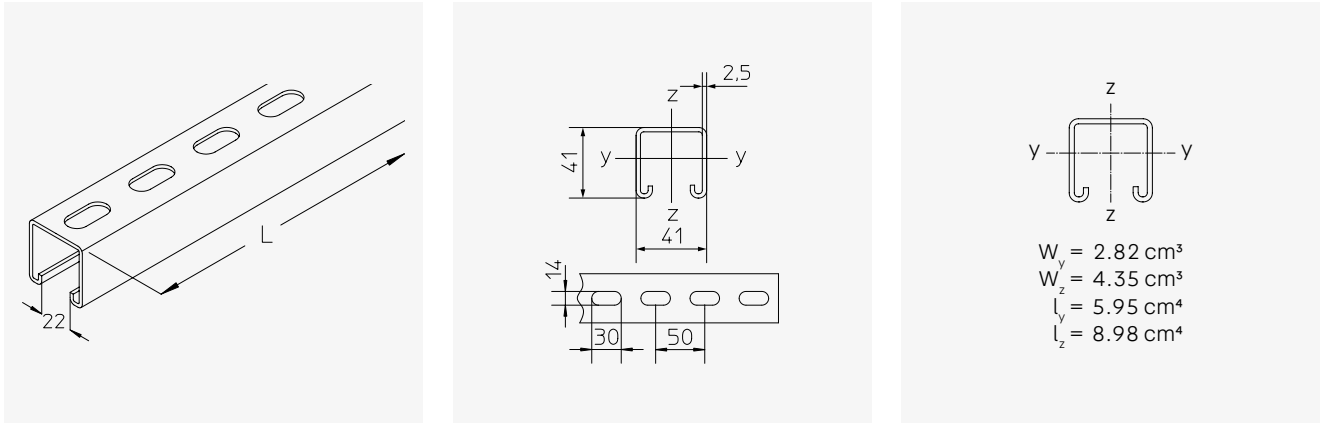
L: Length | G: Weight (per surface/material)

# KHA 41

## 41x41 mm mounting channel, perforated

41x41x2.50 mm mounting channel, with a row of continuous holes measuring 14x30 mm, slot size 22 mm.

### Technical data



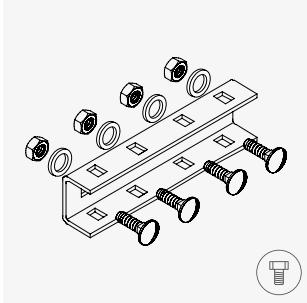
Model	H mm	B mm	L mm	t mm	G F kg
KHA 41-01F	41	41	100	2.50	0.25
KHA 41-02F	41	41	200	2.50	0.50
KHA 41-03F	41	41	300	2.50	0.70
KHA 41-04F	41	41	400	2.50	1.00
KHA 41-05F	41	41	500	2.50	1.30
KHA 41-06F	41	41	600	2.50	1.60
KHA 41-07F	41	41	700	2.50	1.80
KHA 41-08F	41	41	800	2.50	2.10
KHA 41-09F	41	41	900	2.50	2.40
KHA 41-10F	41	41	1,000	2.50	2.60
KHA 41-11F	41	41	1,100	2.50	2.90
KHA 41-12F	41	41	1,200	2.50	3.20
KHA 41-13F	41	41	1,300	2.50	3.40
KHA 41-14F	41	41	1,400	2.50	3.70
KHA 41-15F	41	41	1,500	2.50	4.00
KHA 41-20F	41	41	2,000	2.50	5.20
KHA 41-30F	41	41	3,000	2.50	7.80
KHA 41-60F	41	41	6,000	2.50	15.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

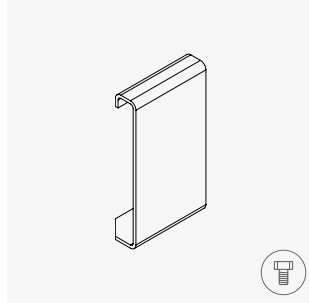
### Matching bracket supports

- KDAG 41 bracket support, 41x41 mm

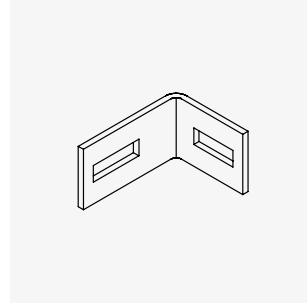
## Installation components



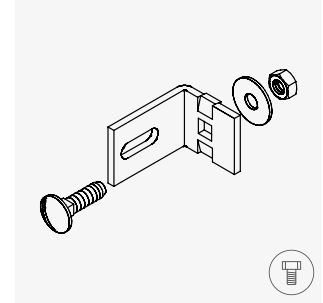
**KHUV 60**  
Connector, KHU 60  
GV F E E4



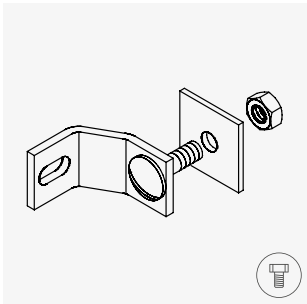
**KHUSS 60**  
Support piece, KHU 60  
S F E E4



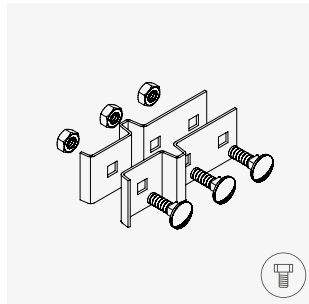
**BL 4**  
Corner angle, KHU 40/57/60  
GV F E



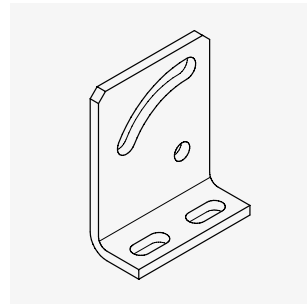
**BL 6**  
Corner angle, KHU 60  
S F E



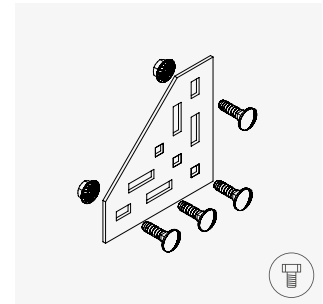
**BL 7**  
Corner angle, KHI  
GV F



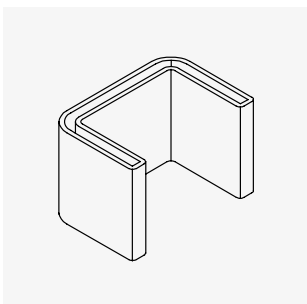
**HKIW**  
Mounting bracket, KHI  
GV F



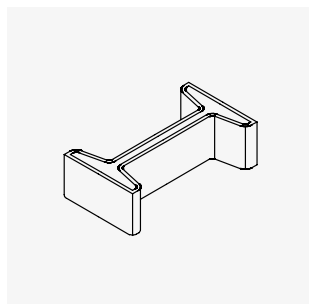
**BLD**  
Adaptor diagonal  
F



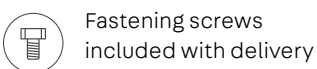
**KB**  
Junction plate  
F E

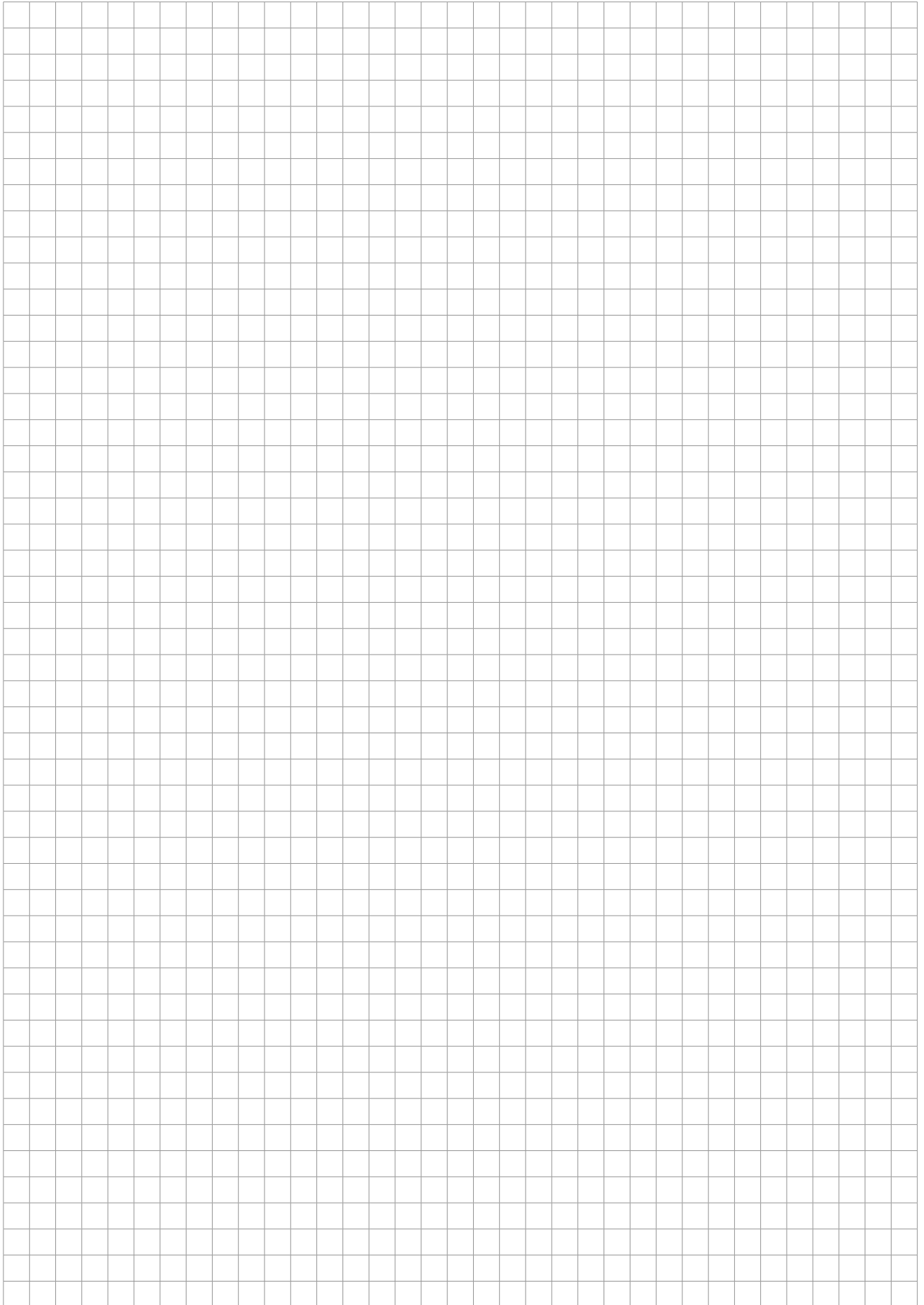


**SU 60**  
Protection cap, KHU 60  
PE



**SI**  
Protection cap, KDI/KHI  
PE









# Accessories

# Profile rails



## Product description

Our profile rails are available in unperforated and perforated versions, and can be provided as C+ and C60° profiles (A/KHA) or as a C-profile (B/KHB). They are extremely versatile in terms of how they can be used in support systems. They are suitable for pendulum suspension solutions that involve threaded rods and can be used as a basis for attaching cable clamps.



All channels are customisable. The available options include cuts, and additional round and elongated holes.



## Areas of application

- On walls and ceilings for technical building equipment - indoors and outdoors
- Industrial halls and production facilities
- Hygienic areas, such as those encountered in the chemicals and food industries
- Switchgear cabinet construction
- For fastening cable clamps

## Available surface coatings and materials

- B** Non-galvanised
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)

## Model overview

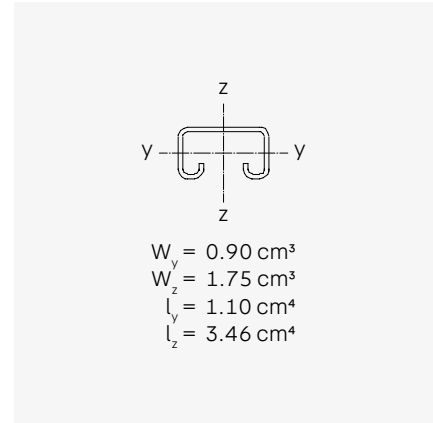
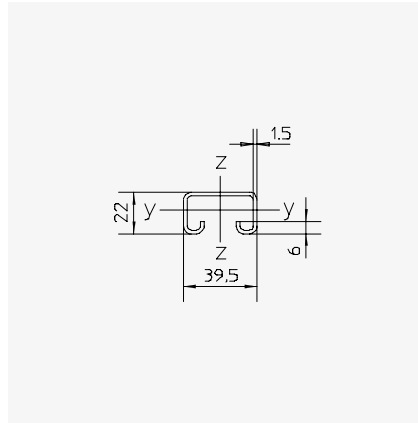
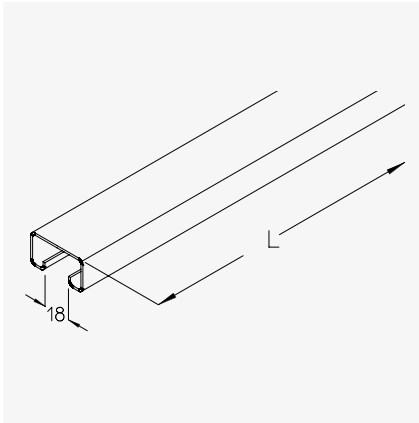
Product line	Design	Height mm	Width mm	Material thickness mm	Slot size mm	Surface finish
<b>A 7</b>	Unperforated	22	39.5	1.50	18	S E
<b>KHA 7</b>	Perforated	22	39.5	1.50	18	S E
<b>A 8</b>	Unperforated	22	40	2.00	18	B F
<b>KHA 8</b>	Perforated	22	40	2.00	18	F E4
<b>A 9</b>	Unperforated	25	40	2.75	18	B F
<b>KHA 9</b>	Perforated	25	40	2.75	18	F
<b>B 3</b>	Unperforated	12	28	2.00	12	F E E4
<b>B 6</b>	Unperforated	15	28	2.30	12	B F E E4
<b>B 7</b>	Unperforated	15	30	1.50	12	B F E E4
<b>KHB 7</b>	Perforated	15	30	1.50	12	S F E

# A7

## 39.5x22 mm profile rail, unperforated

39.5x22x1.50 mm profile rail, without holes, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G S kg	G E kg
A 7-30	22	39	3,000	1.50	3.90	3.90
A 7-60	22	39	6,000	1.50	7.80	7.80

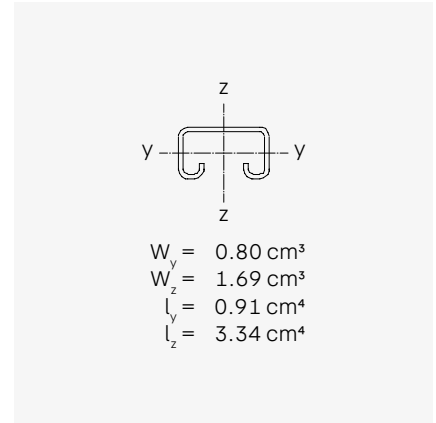
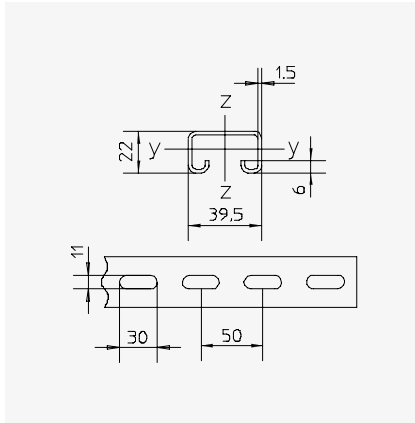
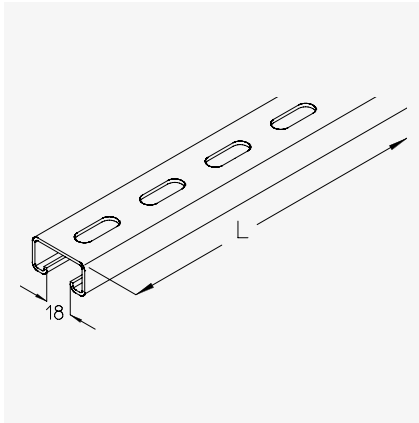
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 7

## 39.5x22 mm profile rail, perforated

39.5x22x1.50 mm profile rail, with a row of continuous holes measuring 11x30 mm, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G S kg	G E kg
KHA 7-01	22	39.5	100	1.5	*	0.11
KHA 7-02	22	39.5	200	1.5	0.21	0.22
KHA 7-03	22	39.5	300	1.5	0.31	0.33
KHA 7-04	22	39.5	400	1.5	0.41	0.44
KHA 7-05	22	39.5	500	1.5	0.51	0.55
KHA 7-06	22	39.5	600	1.5	0.61	0.66
KHA 7-07	22	39.5	700	1.5	0.78	0.77
KHA 7-08	22	39.5	800	1.5	0.83	0.88
KHA 7-09	22	39.5	900	1.5	1.00	0.99
KHA 7-10	22	39.5	1,000	1.5	1.05	1.10
KHA 7-11	22	39.5	1,100	1.5	1.15	1.21
KHA 7-12	22	39.5	1,200	1.5	1.26	1.32
KHA 7-13	22	39.5	1,300	1.5	1.36	1.43
KHA 7-14	22	39.5	1,400	1.5	1.47	1.54
KHA 7-15	22	39.5	1,500	1.5	1.57	1.65
KHA 7-20	22	39.5	2,000	1.5	2.20	2.20
KHA 7-30	22	39.5	3,000	1.5	3.20	3.60
KHA 7-60	22	39.5	6,000	1.5	6.30	6.60

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

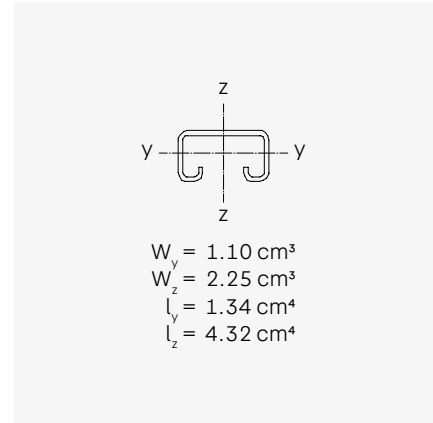
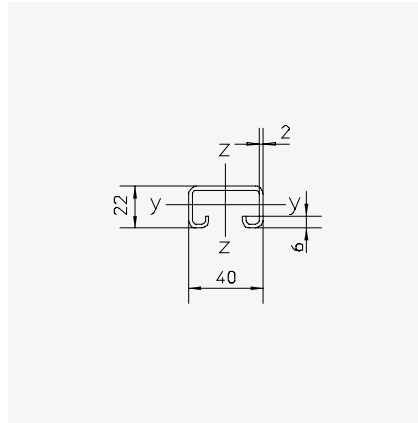
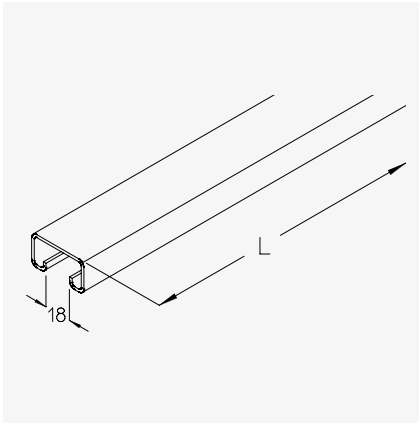
\* On request

# A 8

## 40x22 mm profile rail, unperforated

40x22x2.00 mm profile rail, without holes, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg
A 8-30	22	40	3,000	2.00	4.60	5.00
A 8-60	22	40	6,000	2.00	9.20	9.90

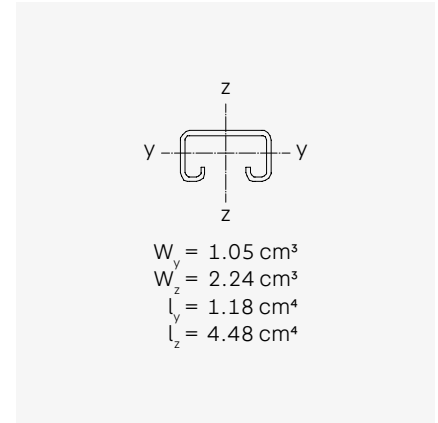
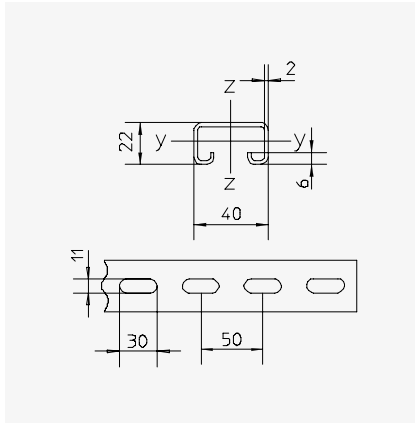
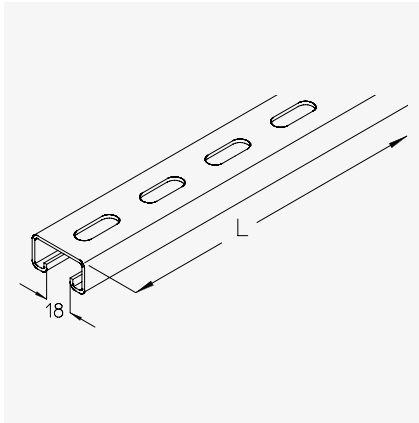
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHA 8

## 40x22 mm profile rail, perforated

40x22x2.00 mm profile rail, with a row of continuous holes measuring 11x30 mm, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 8-02	22	40	200	2.00	0.31
KHA 8-03	22	40	300	2.00	0.46
KHA 8-04	22	40	400	2.00	0.62
KHA 8-05	22	40	500	2.00	0.77
KHA 8-06	22	40	600	2.00	0.93
KHA 8-07	22	40	700	2.00	1.08
KHA 8-08	22	40	800	2.00	1.24
KHA 8-09	22	40	900	2.00	1.39
KHA 8-10	22	40	1,000	2.00	1.54
KHA 8-11	22	40	1,100	2.00	1.69
KHA 8-12	22	40	1,200	2.00	1.85
KHA 8-13	22	40	1,300	2.00	2.01
KHA 8-14	22	40	1,400	2.00	2.16
KHA 8-15	22	40	1,500	2.00	2.32
KHA 8-20	22	40	2,000	2.00	3.09
KHA 8-30	22	40	3,000	2.00	4.63
KHA 8-60	22	40	6,000	2.00	8.27

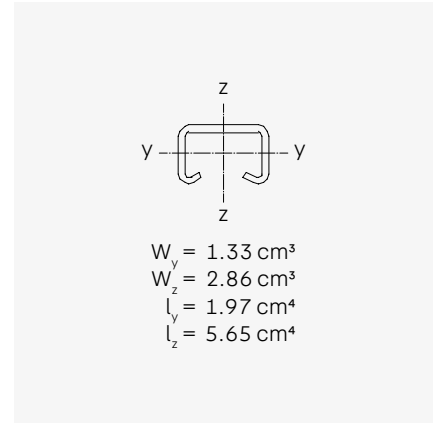
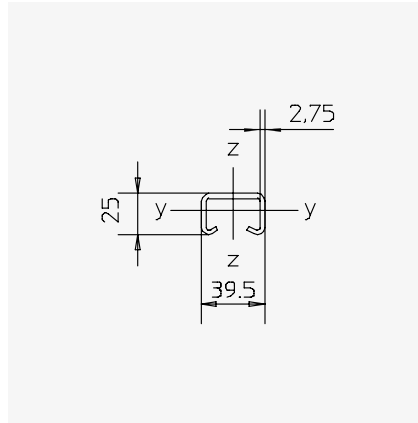
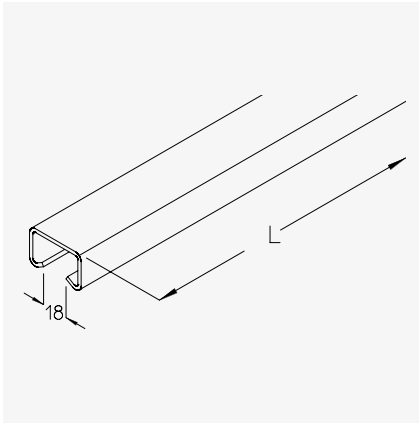
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# A 9

## 40x25 mm profile rail, unperforated

40x25x2.75 mm profile rail, without holes, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G <sub>B</sub> kg	G <sub>F</sub> kg
A 9-30	25	39.5	3,000	2.75	5.50	5.90
A 9-60	25	39.5	6,000	2.75	11.00	11.80

H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

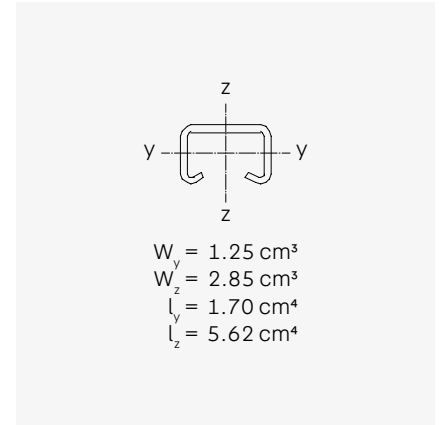
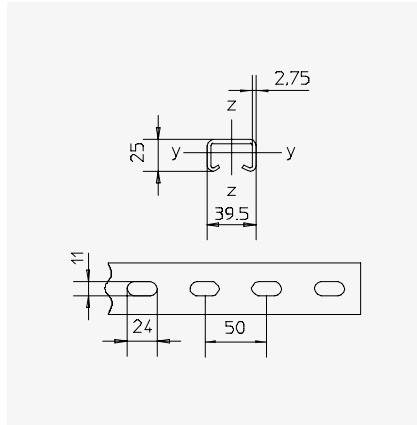
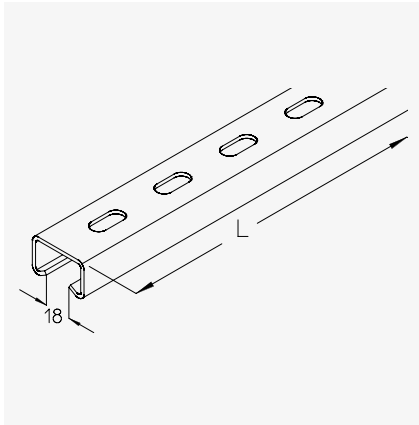


# KHA 9

## 40x25 mm profile rail, perforated

40x25x2.75 mm profile rail, with a row of continuous holes measuring 11x24 mm, slot size 18 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G F kg
KHA 9-02F	25	39.5	200	2.75	0.40
KHA 9-03F	25	39.5	300	2.75	0.60
KHA 9-04F	25	39.5	400	2.75	0.80
KHA 9-05F	25	39.5	500	2.75	0.90
KHA 9-06F	25	39.5	600	2.75	1.20
KHA 9-07F	25	39.5	700	2.75	1.40
KHA 9-08F	25	39.5	800	2.75	1.60
KHA 9-09F	25	39.5	900	2.75	1.80
KHA 9-10F	25	39.5	1,000	2.75	1.90
KHA 9-11F	25	39.5	1,100	2.75	2.10
KHA 9-12F	25	39.5	1,200	2.75	2.30
KHA 9-13F	25	39.5	1,300	2.75	2.40
KHA 9-14F	25	39.5	1,400	2.75	2.60
KHA 9-15F	25	39.5	1,500	2.75	2.80
KHA 9-20F	25	39.5	2,000	2.75	3.70
KHA 9-30F	25	39.5	3,000	2.75	5.60
KHA 9-60F	25	39.5	6,000	2.75	11.20

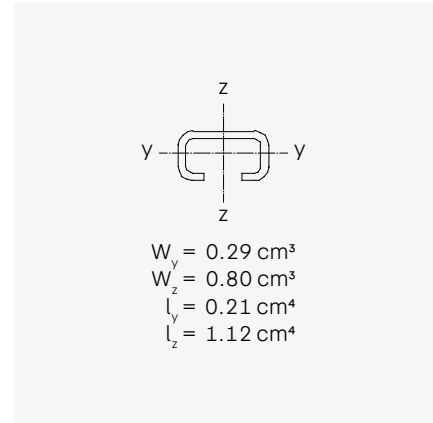
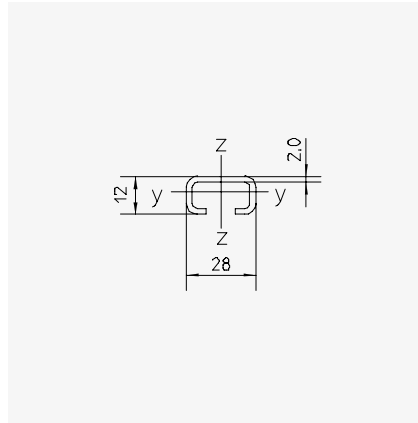
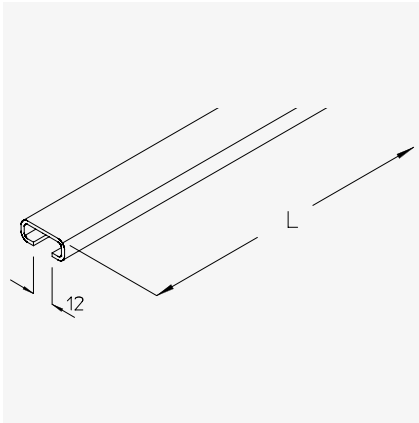
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

## B3

### 28x12 mm profile rail, unperforated

28x12x2.00 mm profile rail, without holes, slot size 12 mm.

#### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg	G E4 kg
B 3-30	12	28	3,000	2.00	2.50	2.70	2.50
B 3-60	12	28	6,000	2.00	5.00	5.30	5.00

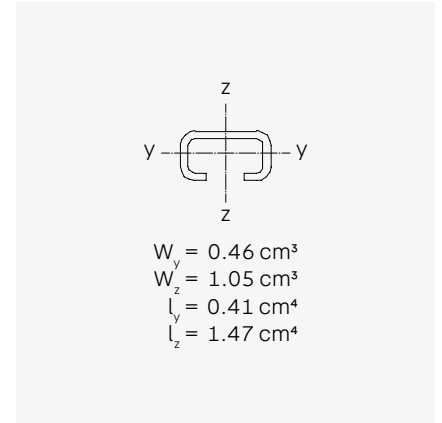
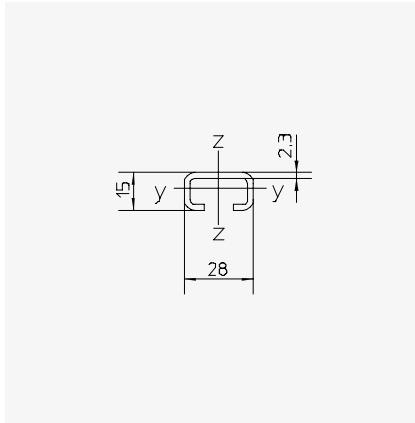
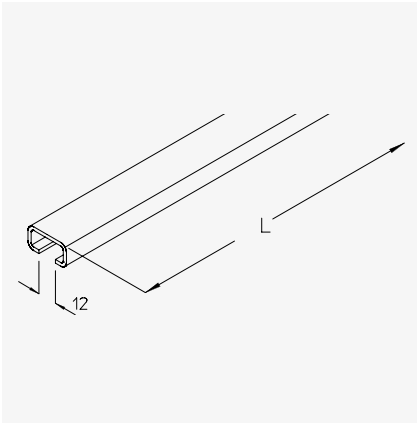
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# B 6

## 28x15 mm profile rail, unperforated

28x15x2.30 mm profile rail, without holes, slot size 12 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G F kg	G E kg	G E4 kg
B 6-30	15	28	3,000	2.30	3.10	3.40	3.10	3.40
B 6-60	15	28	6,000	2.30	6.30	6.70	6.30	6.30

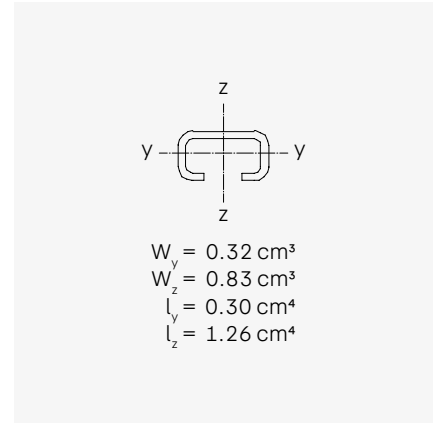
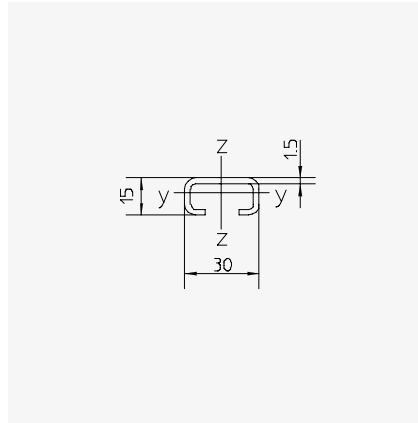
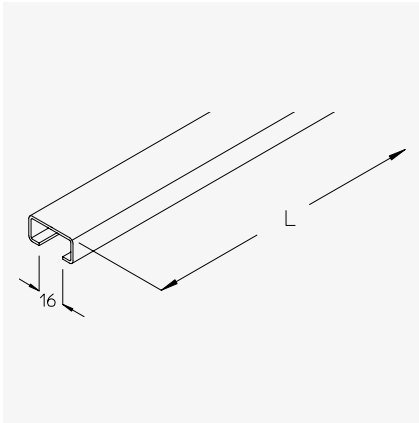
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# B7

## 30x15 mm profile rail, unperforated

30x15x1.50 mm profile rail, without holes, slot size 16 mm.

### Technical data



Model	H mm	B mm	L mm	t mm	G B kg	G S kg	G F kg	G E4 kg
B 7-30	15	30	3,000	1.50	2.20	2.30	2.40	2.20
B 7-60	15	30	6,000	1.50	4.40	4.50	4.80	4.40

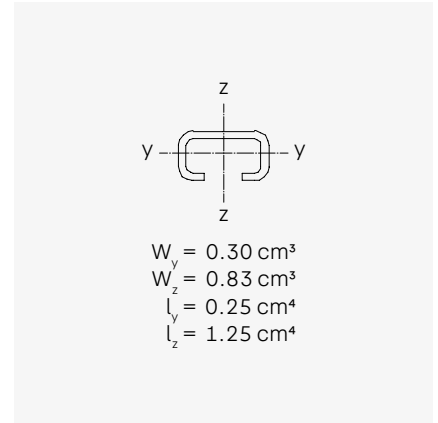
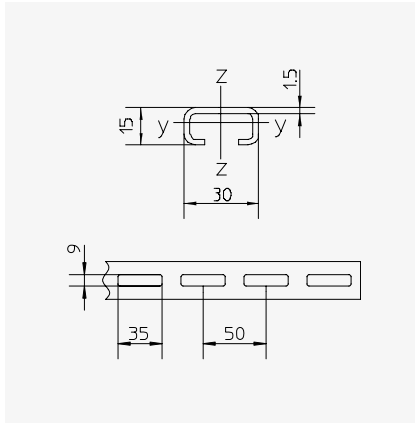
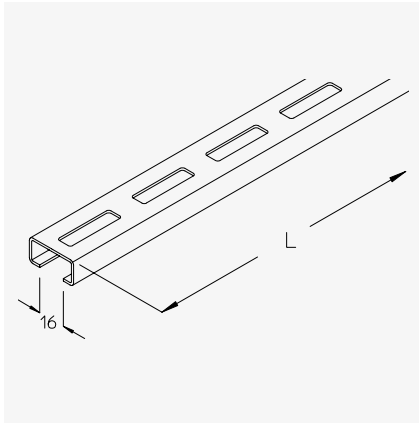
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

# KHB 7

## 30x15 mm profile rail, perforated

30x15x1.50 mm profile rail, with a row of continuous holes measuring 9x35 mm, slot size 16 mm.

### Technical data

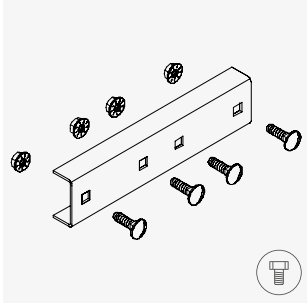


Model	H mm	B mm	L mm	t mm	G <sub>S</sub> kg	G <sub>F</sub> kg	G <sub>E</sub> kg
KHB 7-20	15	30	2,000	1.50	*	*	1.34
KHB 7-30	15	30	3,000	1.50	2.00	2.16	2.10
KHB 7-60	15	30	6,000	1.50	4.01	4.29	4.03

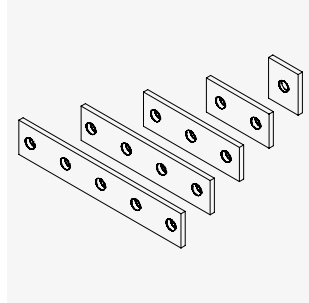
H: Height | B: Width | L: Length | t: Material thickness | G: Weight (per surface/material)

\* On request

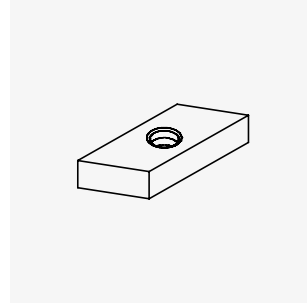
## Installation components



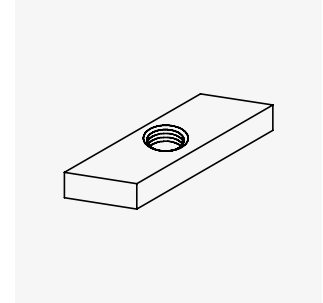
**ASK 8**  
Connector, A/KHA 7/8/9  
F



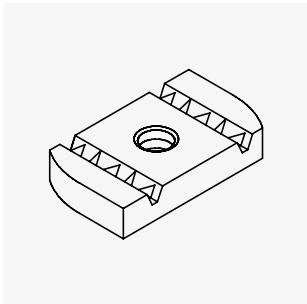
**AVL**  
Rail connector  
F



**AM12**  
Anchor nut, B 3/B 6  
F E



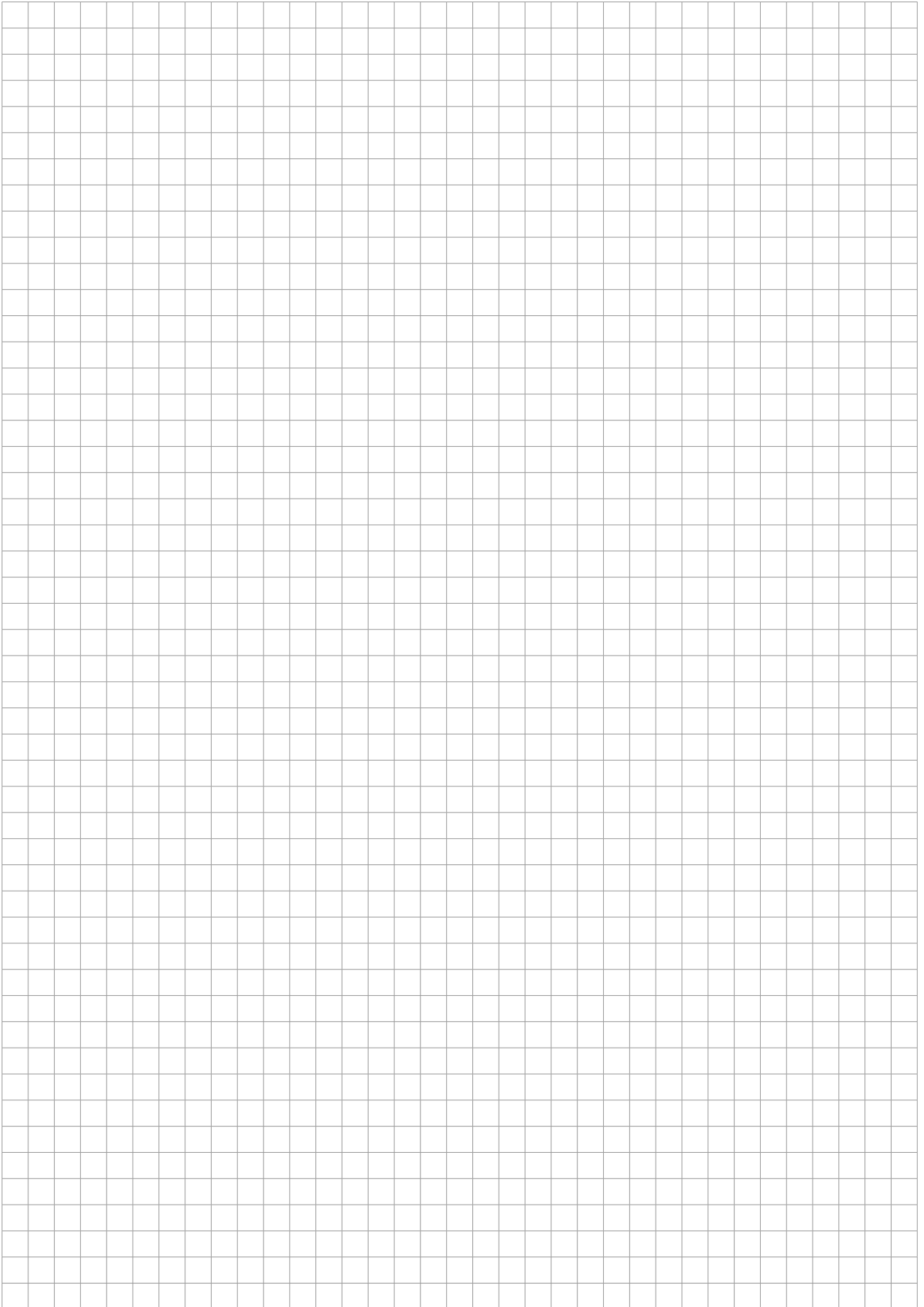
**AM16**  
Anchor nut, B 7  
F E4



**AM18**  
Anchor nut, A 7/A 8  
GV F E4



Fastening screws  
included with delivery



# Fastenings



## Product description

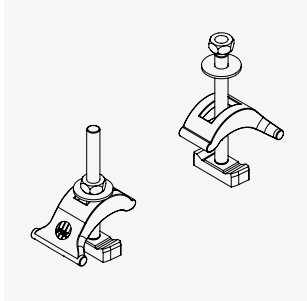
The accessories listed here can be used for the secure and reliable fastening/assembly of support structures. They include clamping assemblies, clamping claws, anchor nuts, bolts, dowels and plenty more besides.

## Available surface coatings and materials

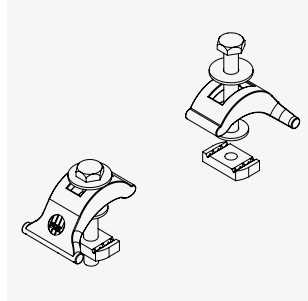
- S** Sendzimir hot-dip galvanised in accordance with DIN EN 10346
- F** Hot-dip galvanised in accordance with DIN EN ISO 1461
- E** Stainless steel, material no. 1.4301 (V2A) (on request)
- E4** Stainless steel, material no. 1.4571/1.4404 (V4A) (on request)



## Clamping assemblies



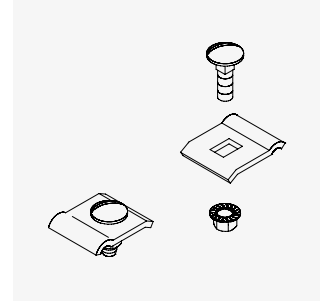
**SKS H**  
Clamping claw set with  
tee-head bolts (steel beams)  
F E4



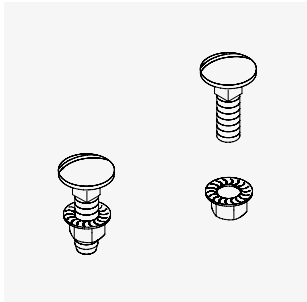
**SKS A**  
Clamping claw set with  
channel nuts (steel beams)  
F E4



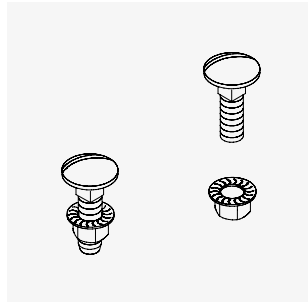
**SKS M**  
Clamping claw set with  
hexagon nut (steel beams)  
F E4 E4



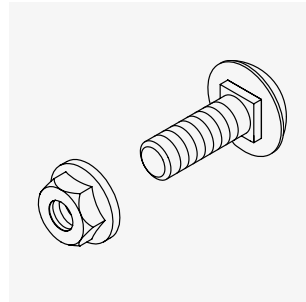
**KLU**  
Clamp fastening set  
GV F



**KLR**  
Clamp fastening set  
F

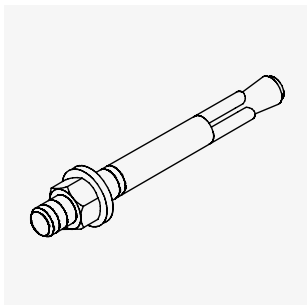


**KLRL**  
Clamp fastening set, long  
GV F

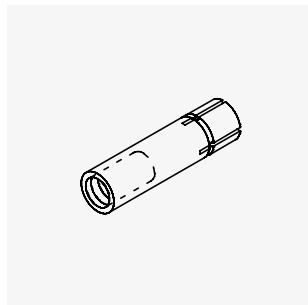


**KLS**  
Clamp fastening set  
GV

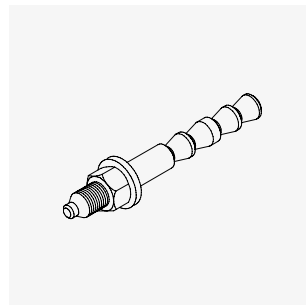
## Dowels, anchors



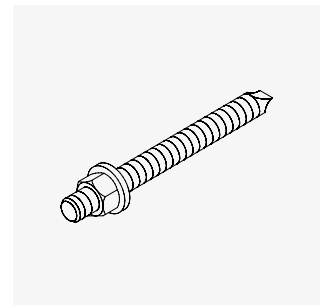
**SD**  
Expansion anchor  
F



**SAZ**  
Anchor  
GV E4

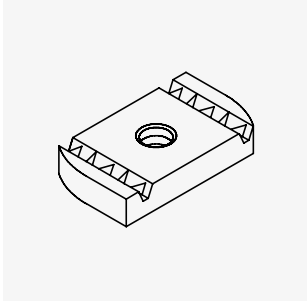


**VAB-HB**  
Shear connector rod,  
concrete  
GV E4

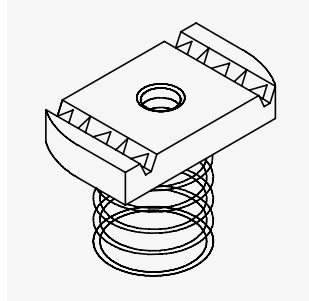


**VAS-AS**  
Shear connector rod, stone  
GV E4

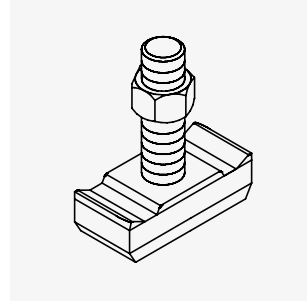
## Anchor nuts, anchor bolts



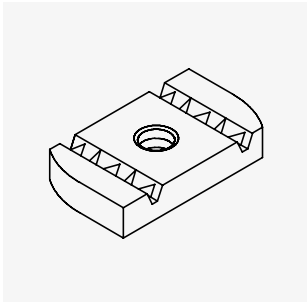
**AM22**  
Channel nut,  
A 41, KHA 41, KHAL 41  
GV F E4



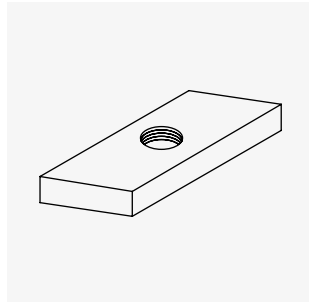
**AMF22**  
Channel spring nut,  
A 41, KHA 41, KHAL 41  
GV F E4



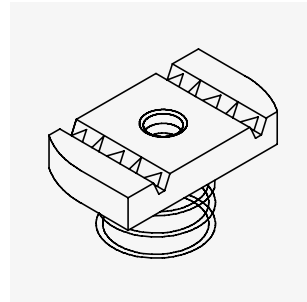
**HS22**  
Tee-head bolt, A 2/A 4  
GV F E4



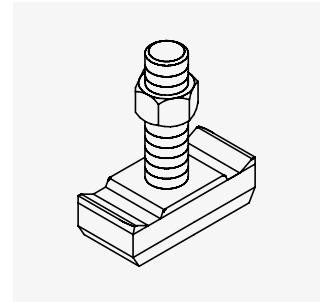
**AM18**  
Anchor nut, A 7/A 8  
GV F E4



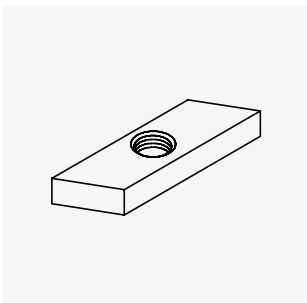
**AMA18**  
Anchor nut, A 7/A 8/A 9  
F E



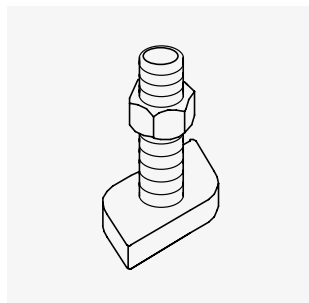
**AMF18**  
Anchor spring nut, A 7/A 8  
GV F E4



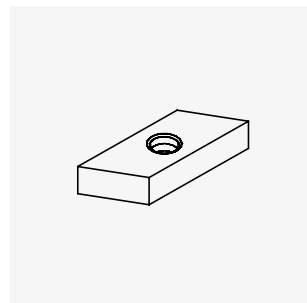
**HS18**  
Tee-head bolt, A 7/A 8/A 9  
GV E4



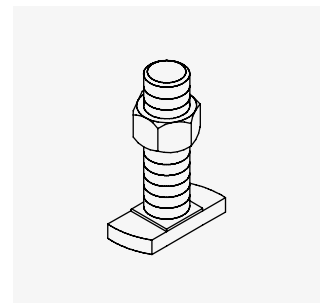
**AM16**  
Anchor nut, B 7  
F E4



**HS16**  
Tee-head bolt  
GV

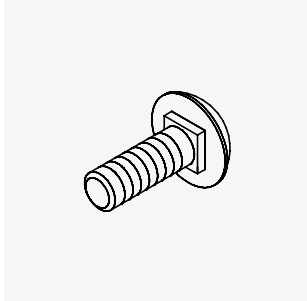


**AM12**  
Anchor nut, B 3/B 6  
F E

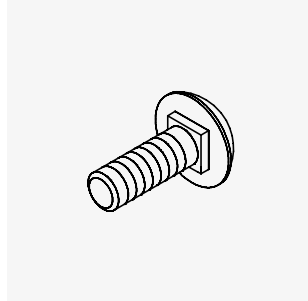


**HS12**  
Tee-head bolt  
GV E4

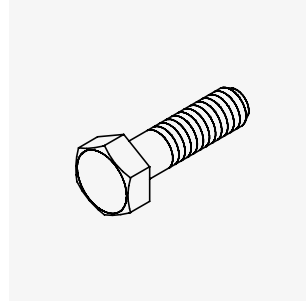
## Bolting fasteners/bolts and nuts



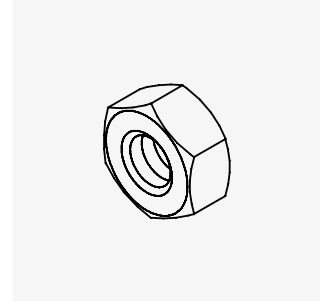
**FRSV**  
Cup head bolt with short square neck, DIN 603  
GV F E E4



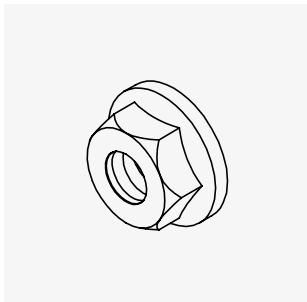
**FRS**  
Cup head square neck bolt, DIN 603  
GV F E E4



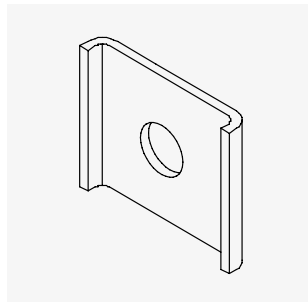
**SES**  
Hexagon head bolt, DIN 933  
GV F E E4



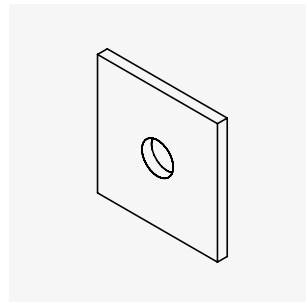
**SEM**  
Hexagon nut, DIN 934  
GV F E E4



**SEMS**  
Nut with flange, DIN EN 1661  
GV E

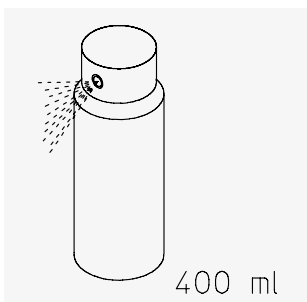


**RUS 41**  
U-shaped washer, KHA 21/41/42/82  
GV F E



**RUS 50**  
Washer, KHI  
GV F E

## Zinc coating materials



**KZS**  
Cold zinc spray



**KZF**  
Cold zinc paint



# Planning

# Planning advices

## Standards and certificates

### Standards

Test standard DIN EN 61537 provides the technical basis for cable management systems. This standard determines which test procedure is to be followed when testing the mechanical properties of the cable management elements. PohlCon constantly carries out extensive tests to ensure that the cable management systems it produces remain functional and fit for use at all times.

### Certificates

As a manufacturer of cable management systems and associated components, PohlCon attaches great importance to product quality. Throughout the entire value chain, high standards of quality apply across all departments with a view to developing the best possible system for a range of complex application areas. In order for this quality standard to be achieved and monitored long term, PUK cable management systems are externally monitored and subject to in-house inspections.

On our own test benches, we test our cable management systems according to the strict specifications of DIN EN 61537, especially with regard to load-bearing capacity and functionality. This is supplemented by our quality management system, which has been established in the company since 1995.

Our quality management system is also capable of accommodating higher requirements, such as those in the petrochemical industry, and it is backed up by the SCCP certificate.

## Corrosion protection

### Basic information

Corrosion is the reaction of a metallic material with its environment. This leads to a change in the material and impairs the ability of a metallic component – or an entire system – to function. Corrosive media can take the form of room air, contamination in the air, water, a marine atmosphere or other chemicals. Interactions between these corrosive media cause a corrosive layer to form, leading to metal attack.

If corrosion damage does occur, very high costs can sometimes be incurred. To avoid corrosion damage, we recommend selecting a suitable material and an appropriate surface coating. The environmental conditions of the products should therefore always be taken into account during planning in addition to their intended use to ensure that the relevant corrosion protection classes are adhered to.

**Table 1: Atmospheric corrosivity categories and examples of typical environments**

Corrosivity category	Mass loss/thickness loss per unit surface area (after first year of exposure)				Examples of typical environments (for information purposes only)	
	Unalloyed steel		Zinc		Exterior	Interior
	Mass loss g/m <sup>2</sup>	Thickn. loss µm	Mass loss g/m <sup>2</sup>	Thickn. loss µm		
<b>C1</b> Negligible	≤ 10	≤ 1.3	≤ 0.7	≤ 0.1	-	Heated buildings with neutral atmospheres, e.g. offices, shops, schools, hotels
<b>C2</b> Low	> 10 to 200	> 1.3 to 25	> 0.7 to 5	> 0.1 to 0.7	Atmospheres with low level of pollution. Mostly rural areas	Unheated buildings where condensation may occur, e.g. warehouses, sports halls
<b>C3</b> Medium	> 200 to 400	> 25 to 50	> 5 to 15	> 0.7 to 2.1	Urban and industrial atmospheres with moderate sulphur dioxide pollution; coastal atmospheres with low salinity	Production areas with high humidity and some air pollution, e.g. food processing plants, laundries, breweries, dairies
<b>C4</b> High	> 400 to 650	> 50 to 80	> 15 to 30	> 2.1 to 4.2	Industrial atmospheres and coastal atmospheres with moderate salinity	Chemical plants, swimming pools, coastal shipyards and boat harbours
<b>C5</b> Very high	> 650 to 1,500	> 80 to 200	> 30 to 60	> 4.2 to 8.4	Industrial areas with high humidity and aggressive atmospheres, and coastal atmospheres with high salinity	Buildings or areas with almost permanent condensation and with high pollution
<b>CX</b> Extreme	> 1,500 to 5,500	> 200 to 700	> 60 to 180	> 8.4 to 25	Offshore areas with high salinity and industrial areas with extreme humidity and aggressive atmosphere, and subtropical and tropical atmospheres	Industrial areas with extreme humidity and aggressive atmosphere

Source: DIN EN ISO 12944-2:2018-04

Note: The loss values for the corrosivity categories are identical to the values in ISO 9223.

Conversion: 10 N corresponds to approx. 1 kg.

# Surface coatings and materials

Several measures can be taken to protect components against the corrosive conditions prevailing at the place of use. When deciding on a particular cable management system, care must therefore be taken to select suitable materials and a design that ensures proper corrosion protection while also paying careful attention to the protective layers and metallic coatings.

For installations in normal environments, zinc coatings have proven themselves to be an effective corrosion inhibitor for steel. However, the protective zinc layer gets worn away by various climatic influences over time. Calculating the thickness of the zinc layer required for different environmental conditions is a question of multiplying the erosion rate by the planned service life of the system.

DIN EN ISO 12944-2:2018-04 (Table 1) provides an overview of how the corrosion categories are assigned while taking account of the environment and the associated annual thickness loss of the zinc layer.

PohlCon offers several coating systems that differ from one another in terms of layer thickness, adhesion and appearance. In addition, most of our cable management systems can be supplied as stainless steel versions.

Alternatively, the PUK brand XC Duplex Coating System can be used for highly corrosive environments (corrosion category C5). The XC coating has been successfully tested in accordance with the DIN EN ISO 12944-6 standard and offers great flexibility with regard to use. With its specially developed formula, it provides a smooth, bubble-free and even coating surface.

## Zinc electroplating (DIN EN ISO 4042)

The components to be coated are placed in an electrolytic bath, where zinc ions are deposited very evenly on the material being galvanised. This results in the formation of a bright and shiny zinc layer with a thickness of approximately 5 µm. To protect this layer against abrasion, it subsequently undergoes bichromate coating process. Within our product range, the relevant bolting fasteners/bolts and nuts are identified by the code **GV**. These are used to connect components galvanised using the sendzimir process.

## Hot galvanisation according to the Sendzimir process (DIN EN 10346, DIN EN 10244-2)

In the rolling mill itself, a wide strip (sheet thickness ≤ 2.0 mm) is coated with zinc continuously as it passes through. This results in an even and strongly adhering zinc layer with an average thickness of 19 µm. Damage to the zinc layer by cutting, piercing/perforation, drilling, etc. does not lead to any progression of the corrosion because the adjacent zinc forms into solution due to the effect of (air) humidity, causing a brownish layer of protective zinc hydroxide to form on the bare cut surfaces. The "migration" of zinc ions protects exposed surfaces up to a width of approximately 2.0 mm. Steel wire and wire products are galvanised in accordance with DIN EN 10244-2.

Products with this type of coating are identified by the code **S**.

## Batch galvanisation (DIN EN ISO 1461)

Hot-dip galvanisation (DIN EN ISO 1461)

Once they have been worked, the parts that are to be coated are immersed in molten zinc (approx. 450°C). Chemical reactions create various zinc-iron alloys that have a particularly strong bond with the steel core. These alloys are usually coated with a "pure zinc" layer. However, depending on the reaction rate, composition of the steel, immersion time, cooling process, etc., the zinc-iron alloys can run right through to the surface level due to a sort of "marbling" effect. For this reason, the surface appearance can vary from bright and shiny through to matt dark grey, although nothing can be inferred about the thickness of the zinc layer or the quality of corrosion protection from this. In addition, humid environments lead to the formation of zinc hydroxide carbonate (known as white rust), particularly on new zinc surfaces. This has absolutely no impact on the corrosion protection properties. Cut surfaces have to be protected with cold zinc paint.



According to DIN EN ISO 1461, the average layer thickness is

at least the following for steel and non-centrifuged parts:

- 45 µm for material thicknesses <1.5 mm
- 55 µm for material thicknesses ≥ 1.5 mm and ≤ 3 mm
- 70 µm for material thicknesses > 3 mm and ≤ 6 mm

at least the following for centrifuged parts (incl. castings):

- 45 µm for material thicknesses <3 mm
- 55 µm for material thicknesses ≥ 3 mm

DIN EN ISO 1461 essentially corresponds to BS EN ISO 1461 in the UK, to EN ISO 1461 in France and to NEN EN 1461 in the USA. All cable tray types and all medium to heavy-duty support systems are available in a hot-dip galvanised version.

Products with this type of coating are identified by the code **F**.

### Stainless steel

In view of its high corrosion resistance, ease of surface cleaning, recyclability and reaction to fire, stainless steel is increasingly becoming the material of choice. Its use is predominantly on the rise in the chemicals, paper, textile and food industries, as well as in wastewater treatment plants, refineries, vehicle tunnels and offshore plants. Compared to various types of plastic, the advantages of stainless steel are its high strength, temperature and fire resistance, and the fact that it does not produce any emissions in the event of fire or during machining.

PohlCon offers two stainless steel versions of its cable management systems as standard.

The most commonly used type is material no. 1.4301 (V2A), which has the short designation X5CrNi 18-10 according to EN 10088-2. It is approved by the Deutsches Institut für Bautechnik (DIBt) in Berlin under general technical approval Z-30.3-6. The following standards are related:

- EN 10088-2 1.4301 X5CrNi 18-10
- AISI 304
- UNS S 30400
- BS 304 S31
- AFNOR Z7CN 18-09
- DIN 17441

PohlCon offers a complete range of stainless steel products: bracket supports, brackets, cable trays, cable ladders, vertical ladders, profile rails and cable clamps. The bolting fasteners/ bolts and nuts correspond to steel group A2 (according to DIN ISO 3506). The products made from this material are identified by the code **E**.

On request, products from the stainless steel range are also available in versions made from the material with no. 1.4571/1.4404 (V4A), which has the short designation X6CrNiMoTi17-12-2 according to EN 10088-2. This is likewise approved by the Deutsche Institut für Bautechnik (DIBt) in Berlin. The bolting fasteners/bolts and nuts meet the requirements of steel group A4 (according to DIN ISO 3506). This material is referred to in the following standards:

- EN 10088-3 1.4404 X2CrNiMo 17-12-2
- AISI 316 L
- UN S 31603
- BS 316 S 11
- AFNOR Z3CND17-11-02/ Z3CND 17-12-02
- DIN 17440 1.4404

1.4571 is available as an alternative to this material. This type of steel is identified by the code **E4**.

Other materials with the same corrosion class can be supplied on request. To cater for special applications (lighting and cable support systems in road tunnels according to ZTV-ING), the high-alloy stainless steel with material no. 1.4529 is available for the relevant product versions.

### XC coating for highly corrosive environments

The XC Duplex Coating System enables reliable protection in highly corrosive environments. With its XC system – which has been successfully tested for corrosion category C5-M – PohlCon offers the longest lasting corrosion protection (up to 25 years) for cable management systems available on the market.

XC consists of a zinc layer and a single-layer powder coating, which together adhere extremely well to the component. With powder coating thicknesses starting from 150 µm and zinc layer thicknesses from 55 µm, XC can be used to achieve an exceptionally smooth and even surface that is free of bubbles. In the event that it should become damaged, the XC coating can be touched up in the case of (more extensive) damage.

We recommend the use of XC coatings in offshore areas with high salinity, in industrial zones with extreme air humidity and in aggressive, subtropical and tropical atmospheres.

## Useful information

### Application of loads to the building structure

All stated load-bearing capacities relate to the product concerned. The load-bearing capacity of the installed system depends on the dimensions and materials used in each case and, in particular, on how the load is applied to the building structure. Substantial additional loads can occur when installing cables. Care must be taken to prevent these additional loads from being permanently applied to the cable management system.

### Substrate

The condition and properties of the substrate and the type of wall or ceiling have a major impact on the fastening of support systems. To enable a better assessment of concealed, plastered or painted substrates, it is helpful to carry out sample drilling.

This will enable you to attach the cable trays to any of the following using the appropriate support systems: timber, mortar, sandstone, limestone, concrete, solid brick, perforated brick, aerated concrete, wallboard, gypsum board, gypsum fibreboard and insulating board. Within this context, special attention must be paid to the dowels because they transmit the loads further into the substrate.

### Permissible dowel load $F_{Zul}$

The dowel load is a superposition of vectors that represent various force components acting on the fastening point (e.g. shear force and vertical pull-out force). This must be less than or equal to the permissible dowel load specified in the approval. This generally applies to all diagonal pull directions. The permissible dowel load depends on the anchorage (concrete grade, type of masonry brick, etc.) and stress exerted on it:

- Cracked concrete tensile zone
- Verified concrete compression zone (e.g. concrete wall, concrete supports, upper half of concrete girder).

In cases of doubt, advice must be sought from the responsible structural engineer.

### Reduction

The permissible dowel load  $F_{Zul}$  must be reduced if:

- Several dowels are closer to each other than dimension  $a$  of the centre-to-centre distance.
- The distance between the dowel and an edge/corner of the building structure is less than edge distance dimension  $a_r$ .

Whenever you are planning cable management systems, it is important to remember that the filling capacity of cable trays may exceed their load-bearing capacity. You must allow sufficient reserves and, where applicable, plan using a multi-layered approach.



For detailed information, use the online expert chat service at [www.pohlcon.com](http://www.pohlcon.com) (only available in German) or speak to a PohlCon consulting engineer.

# Testing according to DIN EN 61537

## Cable management systems

Among other things, DIN EN 61537 determines which test procedure is to be followed when testing the mechanical properties of the cable support elements.

The following undergo testing:

1. Cable trays including connectors with an appropriate design

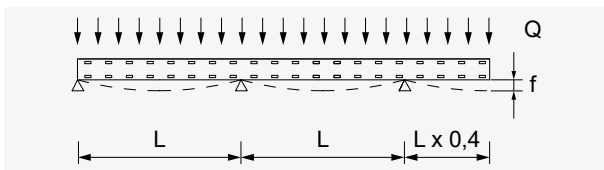


Figure 4: Load diagram for the testing of a cable tray  
 Q: Distributed load | L: Support distance

2. Brackets as an individual component, i.e. without the reinforcing effect provided by assembled cable trays. The stated load-bearing capacities are based on the loads measured with a level of deformation that is still permissible ( $f_{ZUL}$ ) for the cable support elements in the respective standard version (e.g. Sendzimir/hot-dip galvanised).

## Safety

A safety factor of 1.7 must be incorporated into the tested structures, as per the safety concept required under the test standard. The failure scenario possible as a result is not tantamount to the respective structure breaking. Rather, it involves the structure becoming so heavily deformed that no further increase in load can be registered. For this reason, the elastic-plastic deformability of metal cable support systems makes them preferable to brittle plastic systems that break easily.

Whenever you are planning cable management systems, it is important to consider that the filling capacity of cable trays may exceed their load-bearing capacity. Therefore, you must factor in sufficient reserves and, where applicable, plan using a multi-layered approach.

## Cable trays

The cable trays undergo testing on a specially developed test stand. This ensures even surface loading of the components that bend elastically under load.

$$f_{ZUL} \text{ (in longitudinal direction)} = 0.01 \times \text{support distance } StA$$

$$f_{ZUL} \text{ (in transverse direction)} = 0.05 \times \text{cable tray width } B$$

## Arms/brackets

Under a vertical load, the tips of the arms are allowed to drop by:

$$f_{ZUL} = 0.05 \times \text{arm length (but } \leq 30 \text{ mm)}$$

## Stems (bracket supports)

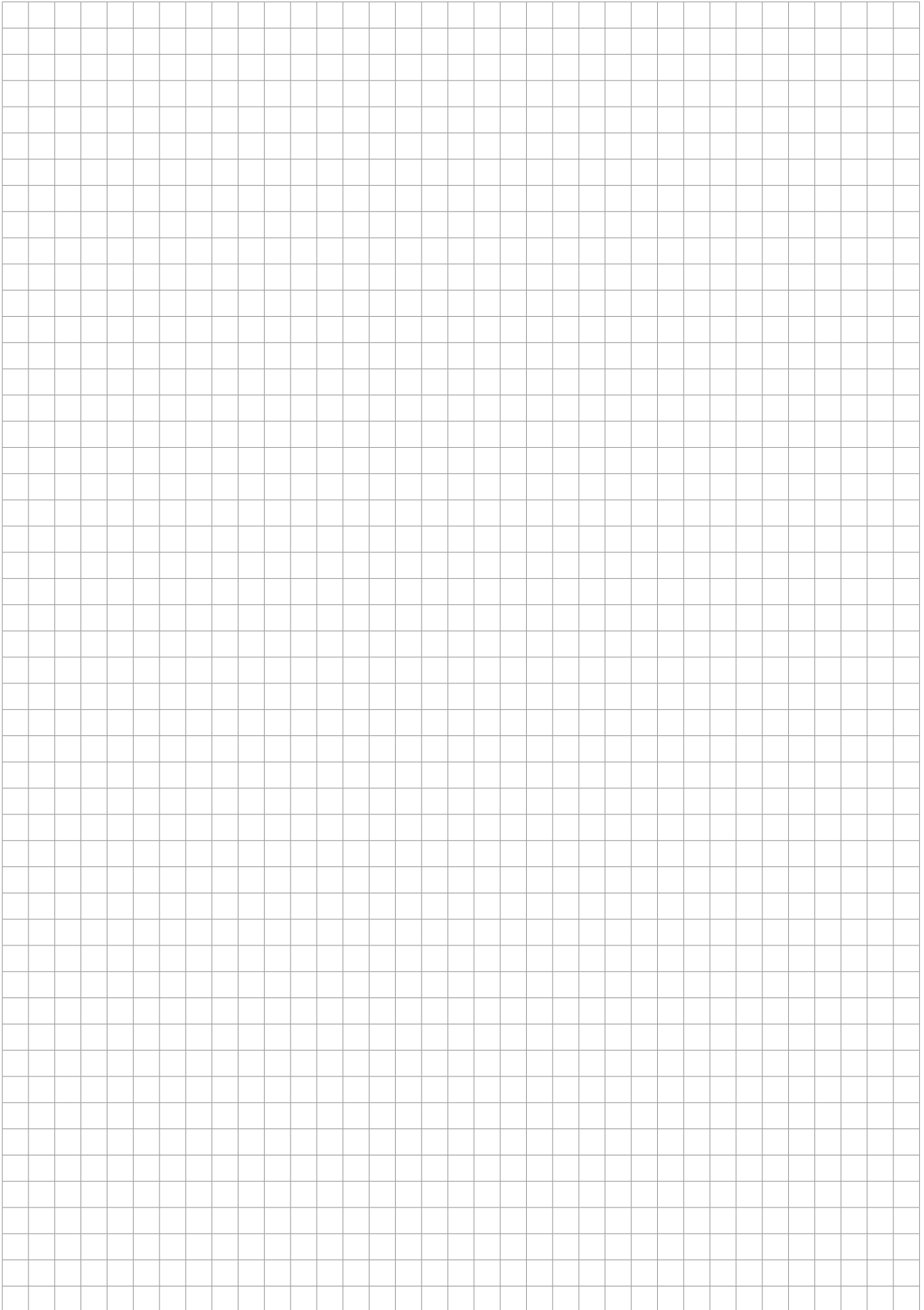
The stems undergo various tests. Careful attention is paid to the following points when testing the stems:

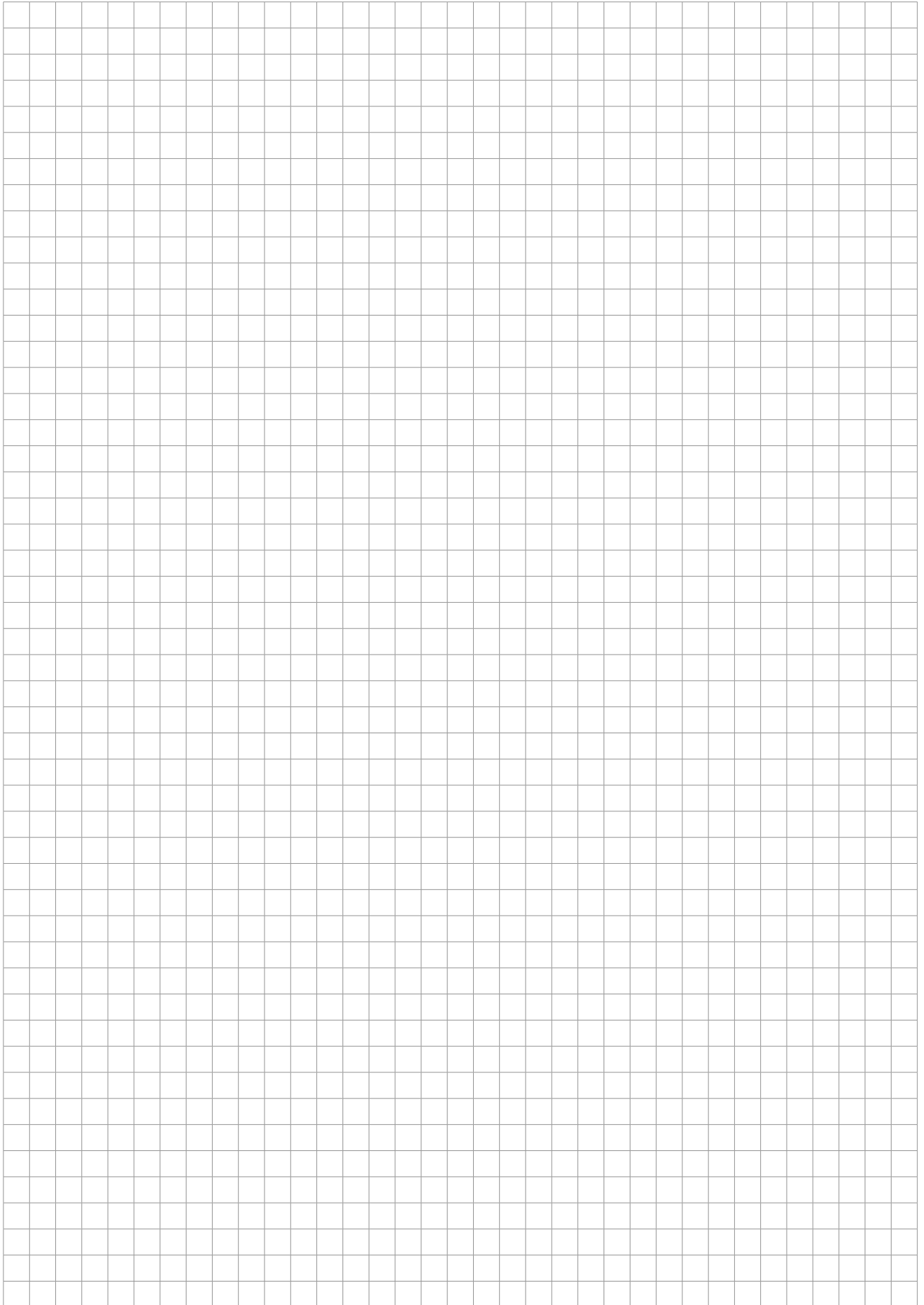
- Bending from to lateral application of force; the permissible deflection within this context is  $f_{ZUL} = 0.05 \times \text{stem length}$
- Application of force in connection with arms
- Pull under centric load

## Equipotential bonding

Equipotential bonding is implemented between electrically conductive components with different levels of electrical potential. The primary purpose of this is to provide protection against electric shock but, at the same time, it protects the electrical equipment in the event of excess voltage. Over time, the effect of equipotential bonding has become ever more important in relation to electromagnetic compatibility (EMC). When electricity flows through conductors, it generates magnetic fields. Due to the large number of wiring systems installed in buildings, these can then have a negative effect on electromagnetic compatibility. Low potential differences are extremely important for ensuring that an electrical installation is electromagnetically compatible.

In the case of PUK cable management systems that are assembled using bolted connections, the equipotential bonding has been verified in accordance with DIN EN 61537. In all other cases, the equipotential bonding must be ensured by further mechanical means.





# Our synergy concept for your benefit

**With us, you benefit from the collective experience of three established manufacturers, who combine products and expertise in a comprehensive range. That is the PohlCon synergy concept.**



## **Full-service consulting**

Our extensive network of consultants is available to answer all your questions about our products on site. From planning to use, you can enjoy personal support from our qualified employees.



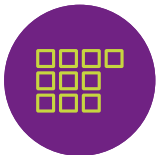
## **Digital solutions**

Our digital solutions provide targeted support in planning with our products. From tender texts to CAD details and BIM data, right through to modern software solutions, we offer customized support for your planning process.



## **7 fields of application**

We think in terms of holistic solutions. This is why we have combined our products into seven fields of application, where you can benefit from their synergy and the overall PohlCon product range.



## **10 product categories**

In order to find the right product in our extensive range even faster, we have divided our products into ten product categories. This way you can navigate clearly and precisely between our products.



## **Individual solutions**

Is there no series product on the market that is suitable for your project? We realize unique construction projects and deal with exceptional challenges using the many years of expertise of the three manufacturing brands.



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