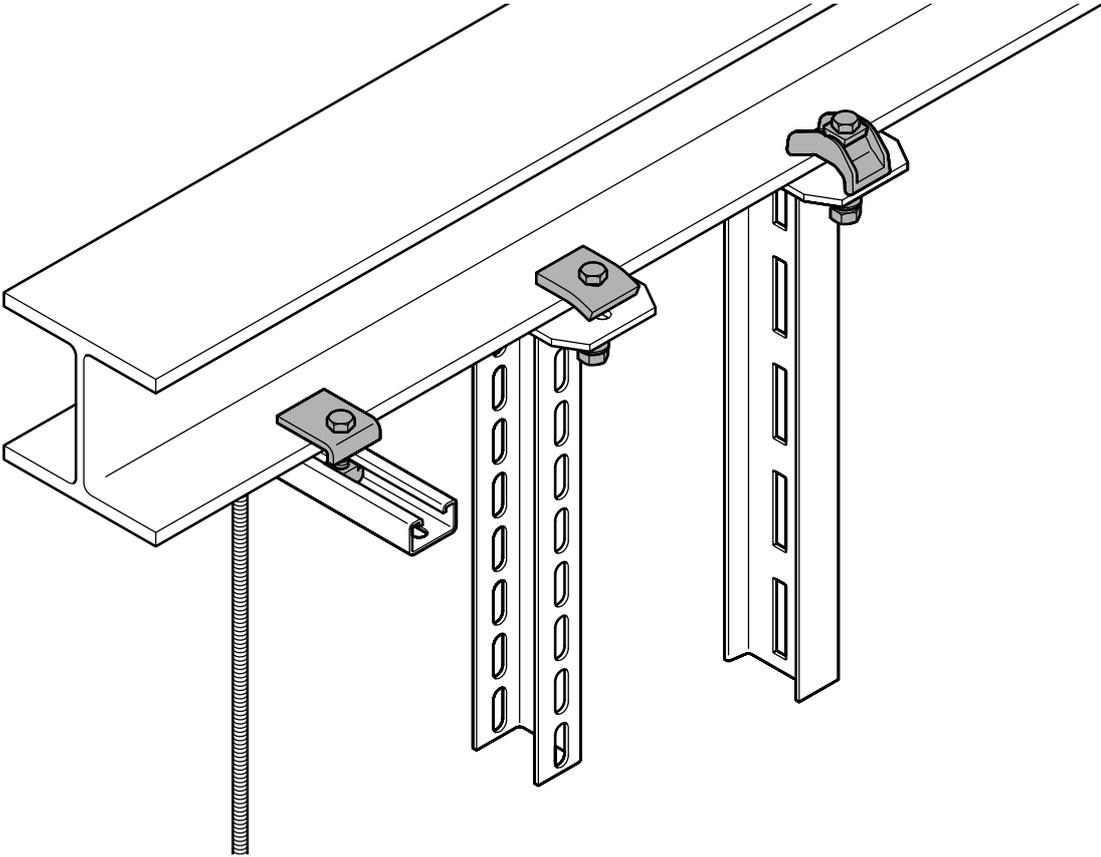


**Clamp fastening systems**  
Mounting instructions



## **Clamp fastening systems**

### Mounting instructions

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# 1 About these instructions

## 1.1 Target group

These mounting instructions are intended for:

- Engineers and architects charged with the planning of clamp fastening systems.
- Electrically trained specialists charged with mounting clamp fastening systems.

## 1.2 Relevance of these instructions

- These instructions are based on the standards valid at the time of compilation (October 2019).
- Please read the instructions carefully before starting installation. We will not accept any warranty claims for damage caused through non-observance of these instructions.
- Any images are intended merely as examples. Mounting results may look different.

## 1.3 Types of warning information



**Note!**

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### Type of risk!

Shows a possibly risky situation. If the situation is not avoided, then death or serious injury may result.

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*Indicates important information or assistance!*

## 2 Correct use

The clamp fastening system is used to fasten cable support constructions to on-site steel girders without drill holes. Depending on the material and surface version used, it can be used indoors and outdoors.

The clamp fastening system is suitable for use at ambient temperatures of  $-20\text{ °C}$  to  $+120\text{ °C}$ . At temperatures below  $-20\text{ °C}$ , the material will become brittle and may not be processed further.

The clamp fastening system is not designed for any other purpose than the one described here. If the clamp fastening system is used for another purpose, any liability, warranty or damage claims shall be rendered null and void.

### 2.1 Basic standards

The clamp fastening system fulfils the requirements of IEC 61537:2006 – Cable management – Cable tray systems and cable ladder systems.

## 3 Safety

### 3.1 General safety information

Observe the following general safety information on handling the clamp fastening system:

- Follow applicable working, accident and environmental protection regulations.
- The clamp fastening system should be included in the protective measures and the equipotential bonding.
- The inclusion in the equipotential bonding of the overall system must be performed by specialist personnel.
- The support system must be designed according to the loads to be expected.
- Do not exceed the maximum load capacity of the clamp fastening system.
- Consider the structure of the wall and ceiling when installing.

### 3.2 Personal protective equipment

- Wear personal protective equipment for all mechanical installation work:
  - Gloves
  - Eye protection
  - Head protection

## 4 System description

Clamp fastening systems enable the installation of cable support constructions directly on steel girders. In areas where drilling is not possible, they are an alternative for a wide range of cable support constructions. The systems include light clamping angles, clamping lugs, light-duty and heavy-duty chuck jaws and vertical and horizontal beam clamps. Various heavy-duty constructions can be implemented with these system components.

### 4.1 System components

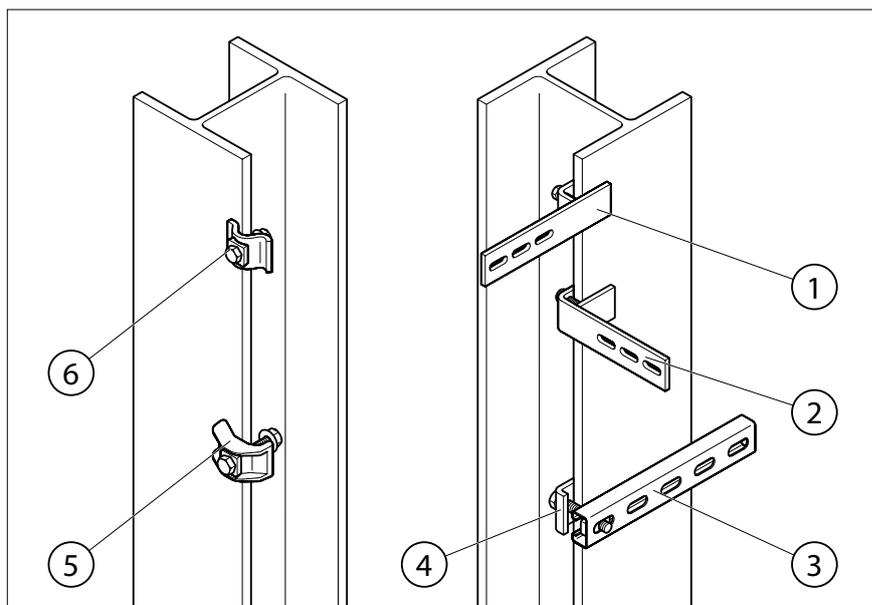


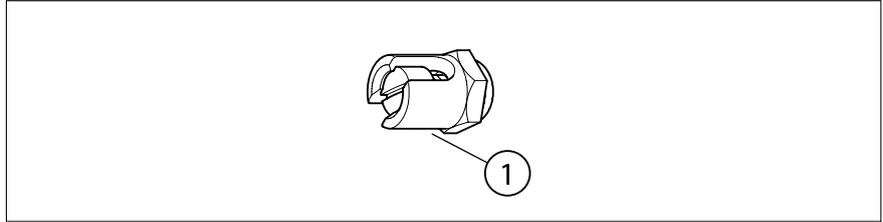
Fig. 1: System components

	Component	Function
①	Beam clamp, horizontal	Fastening lightweight components, e.g. mesh cable trays, cable trays up to 100 mm wide, clips
②	Beam clamp, vertical	Fastening lightweight components, e.g. mesh cable trays, cable trays up to 100 mm wide, clips
③	C profile	Supporting other components, e.g. U supports, threaded rods
④	Clamping lug	Fastening lightweight support components to steel girders, e.g. C profile rails
	Clamping angle	Fastening medium-weight support components to steel girders, e.g. U supports
⑤	Chuck jaw, heavy duty	Fastening heavy-duty support components to steel girders, e.g. I supports
⑥	Chuck jaw, light duty	Fastening medium-weight support components to steel girders, e.g. U supports

Tab. 1: System components

### 4.2 Accessories

Depending on the mounting situation, equipotential bonding with the overall system may be required, see IEC 61537:2006.



**Fig. 2:** Earthing terminal

① Earthing terminal

## 5 Mounting system components

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**WARNING**

### **Danger due to high working height!**

When installing at height, there is a risk of falling and/or that parts may fall. Falls and/or falling components can cause serious injuries.

- Do not work alone.
- Use fall protection as required.
- Secure the area below the installation against access.
- Wear safety shoes and a helmet.

#### **Note!**

*Tighten bolts and nuts to the required torque.*

*Torques and resistance classes of the supplied bolts:*

<https://obo-bettermann.com/en-wo/support/3804.html>

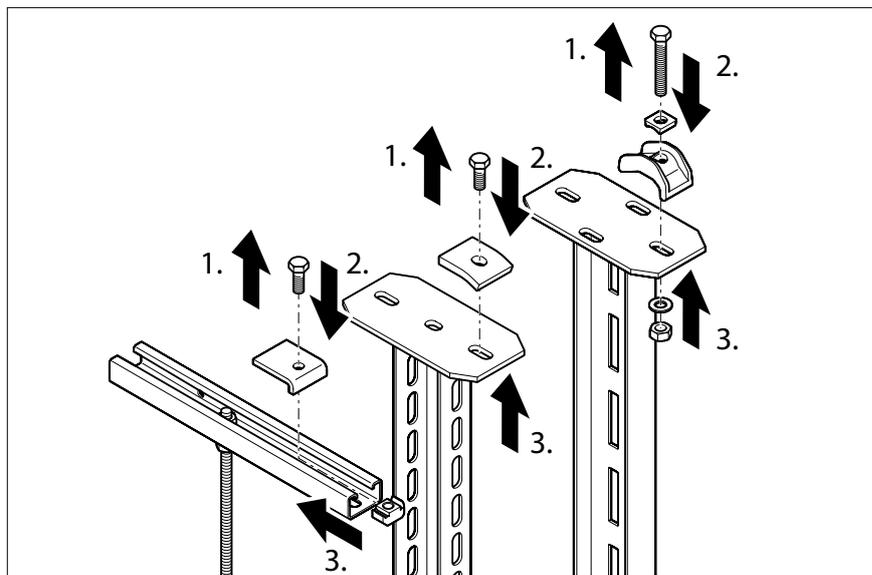
### 5.1 Direct mounting of a clamping lug, clamping angle or chuck jaw

Depending on the load to be clamped, either a clamping lug, clamping angle or chuck jaw is used.

#### **Note!**

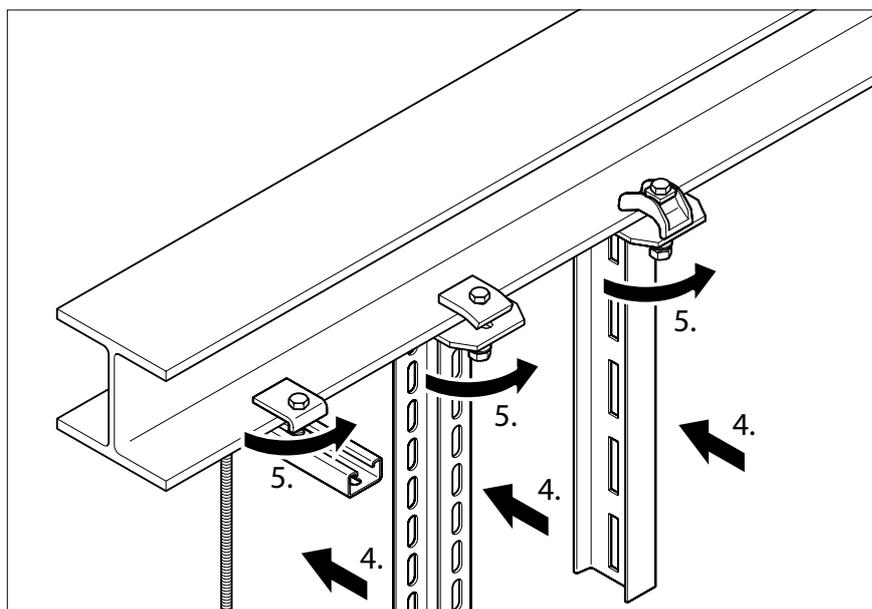
*In the following, the clamping lug, clamping angle and chuck jaw will be referred to as a clamp fastening.*

Example: In combination with C profile rails, U hanging support and I hanging support on a horizontal steel girder. The components to be fastened are always mounted on both sides of the steel girder using clamp fastenings.



**Fig. 3:** Pre-assembling the clamp fastening

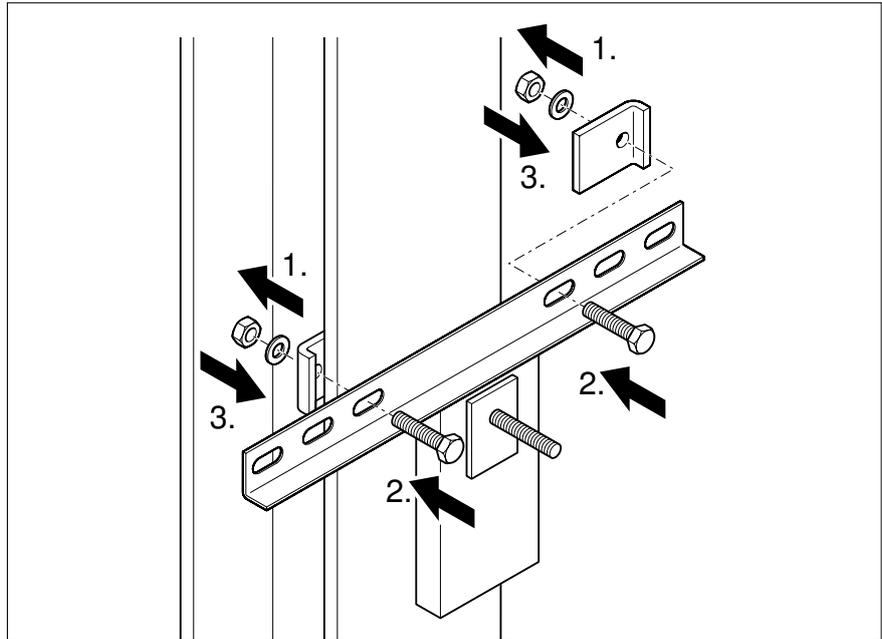
1. Unscrew the nut and washer from the clamp fastening.
2. Push the hexagonal bolt through the drill hole of the component to be clamped and the clamp fastening.
3. Secure the clamp fastening from below using a washer and nut.



**Fig. 4:** Mounting a clamp fastening horizontally

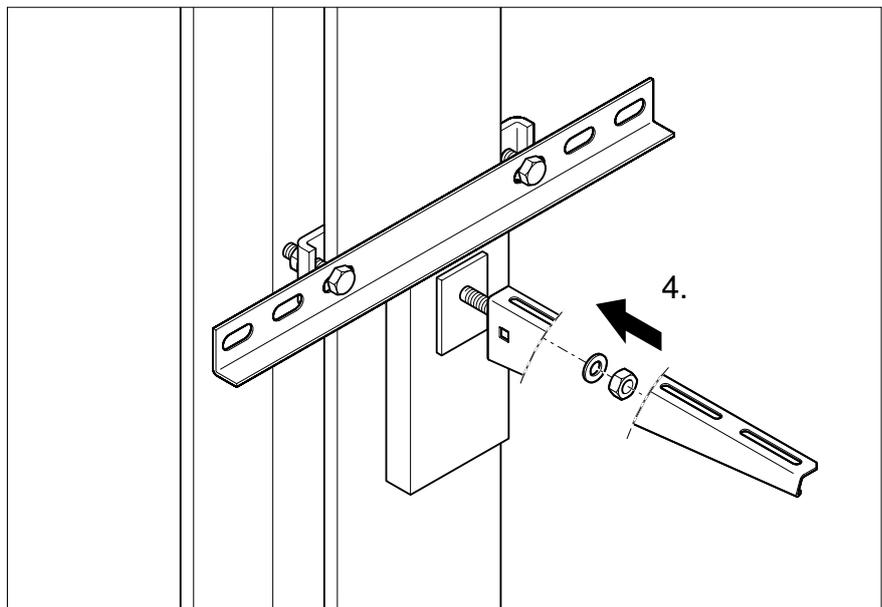
4. Push the clamping lug of the pre-assembled unit onto the steel girder.
5. Attach the clamp fastening from below using a washer and nut.
6. Repeat steps 1–5 for mounting the second clamp fastening on the other side of the steel girder.

Example: In combination with an adapter plate on a vertical steel girder to accommodate a bracket. Two clamp fastenings are required.



**Fig. 5:** Mounting a clamp fastening vertically

1. Unscrew the nut and washer from both clamp fastenings.
2. Place the adapter plate on the steel girder and push hexagonal bolts through the drill holes on the adapter plate and clamp fastenings.
3. Attach both clamp fastenings with nut and washer.

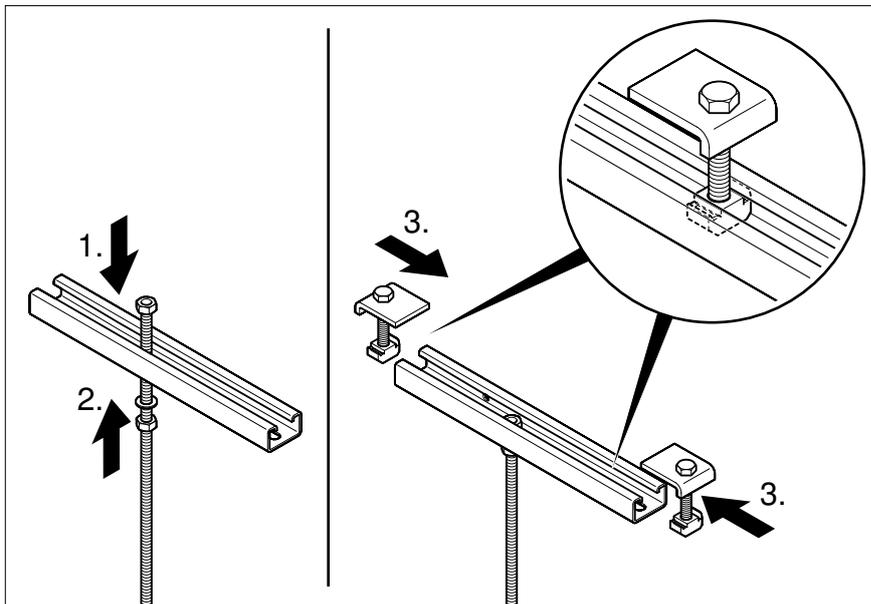


**Fig. 6:** Mounting the bracket

4. Push the bracket on to the thread and attach it with washer and nut.

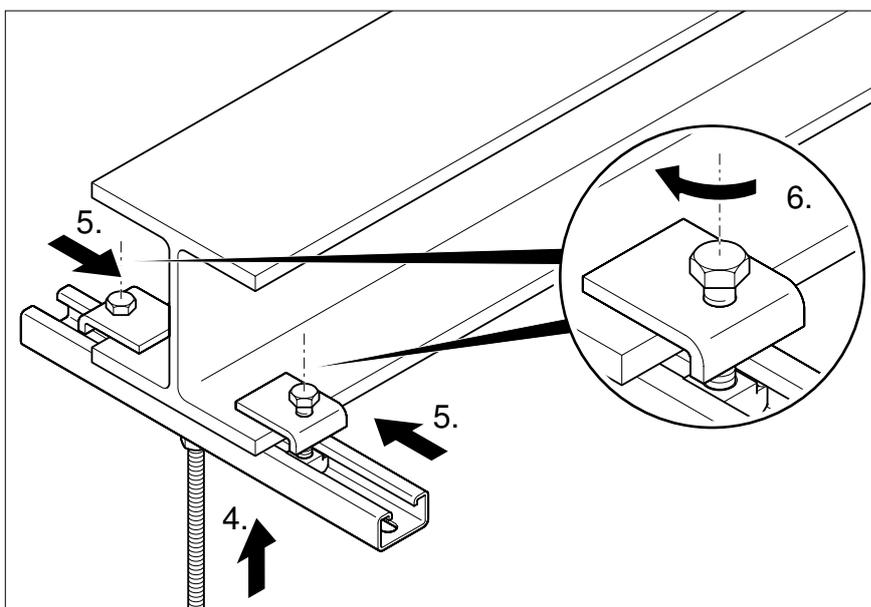
## 5.2 Mounting a clamping angle or chuck jaw with slide nut

Example: In combination with C profile as suspension for a centre suspension with threaded rod on horizontal steel girders. Two clamp fastenings are required.



**Fig. 7:** Pre-assembling the centre suspension

1. Insert the threaded rod with the nut into the C profile.
2. Attach the threaded rod with washer and nut.
3. Loosen each slide nut of the clamp fastening until it can be inserted into the pre-assembled C profile. Insert the slide nuts into the C profile – the clamping lug points in the direction of the threaded rod screw connection.

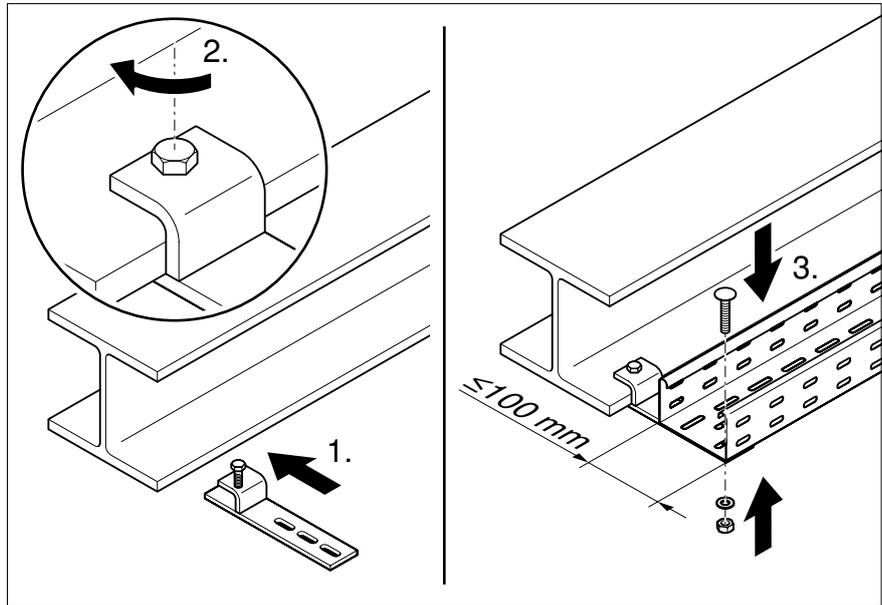


**Fig. 8:** Mounting a clamp fastening on a steel girder

4. Position the pre-assembled centre suspension under the steel girder.
5. Push the clamping lugs onto the steel girder from both sides.
6. Tighten each slide nut with a hexagonal bolt.

### 5.3 Mounting a beam clamp

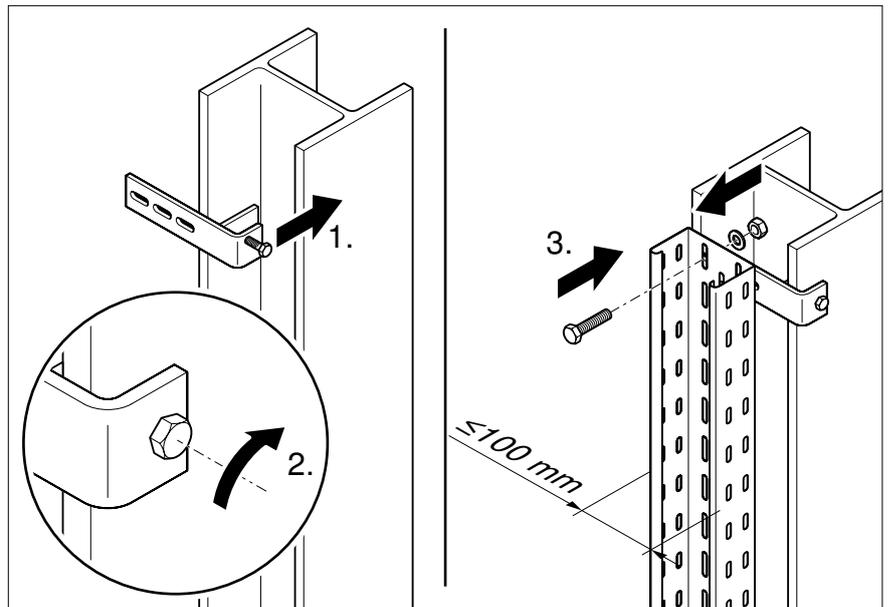
Example: In combination with cable duct (maximum width 100 mm) on a horizontal steel girder. Several beam clamps may be required, depending on the length of the cable duct.



**Fig. 9:** Mounting a beam clamp on a horizontal steel girder

1. Loosen the hexagonal bolt from the beam clamp and push the beam clamp on to the steel girder.
2. Screw the beam clamp to the steel girder using a hexagonal bolt.
3. Screw the cable tray to the beam clamp with a screw, washer and nut.

Example: In combination with cable duct (maximum width 100 mm) on a vertical steel girder. Several beam clamps may be required, depending on the length of the cable duct.



**Fig. 10:** Mounting a beam clamp on a vertical steel girder

1. Loosen the hexagonal bolt from the beam clamp and push the beam clamp on to the steel girder.
2. Screw the beam clamp to the steel girder using a hexagonal bolt.
3. Screw the cable tray to the beam clamp using a screw, washer and nut.

## 6 Creating equipotential bonding



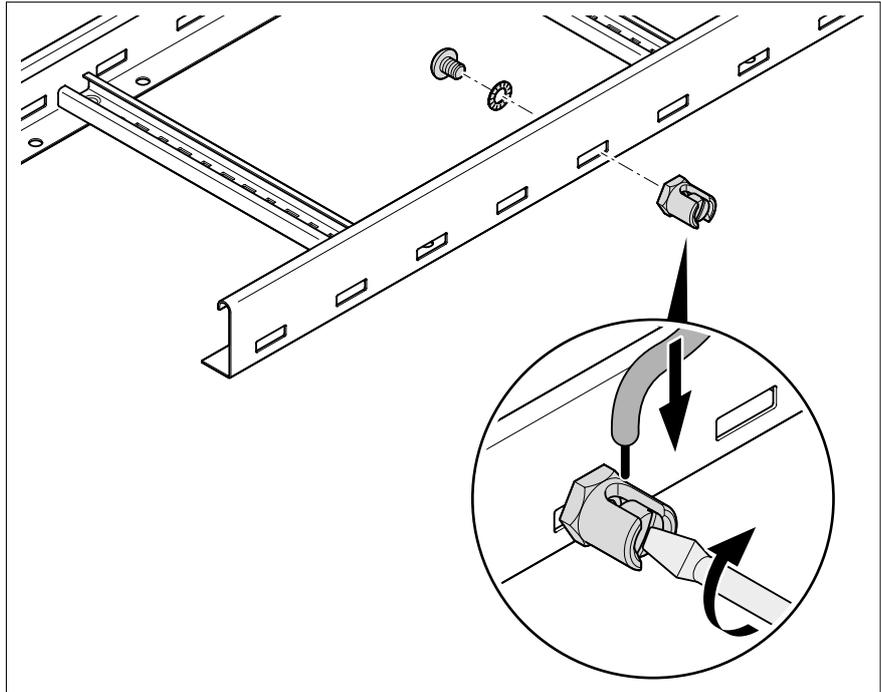
### WARNING

#### Risk from lightning strike!

A lack of equipotential bonding can, in cases of damage, mean that parts of the I support system may be energised. If contact creates a conductive connection, this can lead to fatal injuries.

- Creating equipotential bonding.

Equipotential bonding is created on the cable tray or cable ladder that is mounted to the support construction.



**Fig. 11:** Mounting the earthing terminal

1. Screw the earthing terminal to the component.
2. Electrically connect the earthing terminal to the overall equipotential bonding.

## 7 Maintaining clamp fastening systems

The stability and function of the clamp fastenings can be impaired by external influences, such as damage or machine vibrations.

Tighten any loose fasteners and, if necessary, secure bolts using nuts with internal plastic rings or applying thread-locking fluid. Replace any damaged parts. Regularly check whether the connection to the overall equipotential bonding is still intact.

## 8 Dismantling clamp fastening systems



### **Danger due to high working height!**

When installing at height, there is a risk of falling and/or that parts may fall. Falls and/or falling components can cause serious injuries.

- Do not work alone.
- Use fall protection as required.
- Secure the area below the installation against access.
- Wear safety shoes and a helmet.

Dismantling of all the elements of the clamp fastening systems takes place in the reverse order to mounting.

## 9 Disposing of clamp fastening systems

- Residual metal: As scrap metal
- Packaging: As household waste

Comply with the local waste disposal regulations.

## 10 Technical data

Designation	Type	Dimensions, mm	Material	Item no.
Clamping lug	KL1 10 S FT	10 x 50 x 60	FT	6354106
Clamping lug	KL1 15 S FT	15 x 50 x 60	FT	6354114
Clamping lug	KL1 20 S FT	20 x 50 x 60	FT	6354122
Clamping angle	KWS 5 FT	5 x 60 x 50	FT	6355218
Clamping angle	KWS 10 FT	10 x 60 x 50	FT	6355226
Clamping angle	KWS 15 FT	15 x 60 x 50	FT	6355234
Clamping angle	KWS 20 FT	20 x 60 x 50	FT	6355242
Clamping angle	KWS 25 FT	25 x 60 x 50	FT	6355250
Clamping angle	KWS 5 A2	5 x 60 x 50	A2	6355404
Clamping angle	KWS 10 A2	10 x 60 x 50	A2	6355412
Clamping angle	KWS 15 A2	15 x 60 x 50	A2	6355420
Clamping angle	KWS 20 A2	20 x 60 x 50	A2	6355439
Clamping angle	KWS 25 A2	25 x 60 x 50	A2	6355447
Clamping angle	KWH 5 FT	5 x 60 x 50	FT	6355021
Clamping angle	KWH 10 FT	10 x 60 x 50	FT	6355048
Clamping angle	KWH 15 FT	15 x 60 x 50	FT	6355056
Clamping angle	KWH 20 FT	20 x 60 x 50	FT	6355064
Clamping angle	KWH 25 FT	25 x 60 x 50	FT	6355072
Clamping angle	KWH 5 A2	5 x 60 x 50	A2	6355307
Clamping angle	KWH 10 A2	10 x 60 x 50	A2	6355315
Clamping angle	KWH 15 A2	15 x 60 x 50	A2	6355323
Clamping angle	KWH 20 A2	20 x 60 x 50	A2	6355331
Clamping angle	KWH 25 A2	25 x 60 x 50	A2	6355358
Chuck jaw, light duty	TKS-L-25 FT	50 x 61 x 25	FT	6355808
Chuck jaw, light duty	TKH-L-25 FT	50 x 61 x 25	FT	6355812
Chuck jaw, heavy duty	TKS-S-30 ZL	80 x 70 x 30	ZL	6355798
Chuck jaw, heavy duty	TKH-S-30 ZL	70 x 65 x 30	ZL	6355805
Beam clamp, vertical	BFK 166 58 20 FT	166 x 58	FT	6003888
Beam clamp, vertical	BFK 166 58 20 A2	166 x 58	A2	6003877
Beam clamp, vertical	BFK 132 58 FT	132 x 58	FT	6003880
Beam clamp, vertical	BFK 132 58 A2	132 x 58	A2	6003871
Beam clamp, horizontal	BFK 153 33 FT	153 x 21	FT	6003884
Beam clamp, horizontal	BFK 153 33 A2	153 x 21	A2	6003873
Beam clamp, horizontal	BFK 187 33 FT	187 x 21	FT	6003892
Beam clamp, horizontal	BFK 187 33 A2	187 x 21	A2	6003879
Medium anchor profile rail	AML3518UP2000BK	2,000 x 35 x 18	St	1118021
Medium anchor profile rail	AML3518UP2000FS	2,000 x 35 x 18	FS	1118226
Medium anchor profile rail	AML3518UP2000FT	2,000 x 35 x 18	FT	1118129
Medium anchor profile rail	AML3518P0200FT	35 x 18 x 200	FT	1119696
Medium anchor profile rail	AML3518P0300FT	35 x 18 x 300	FT	1119693
Medium anchor profile rail	AML3518P0400FT	35 x 18 x 400	FT	1119690
Medium anchor profile rail	AML3518P0500FT	35 x 18 x 500	FT	1119687
Medium anchor profile rail	AML3518P0600FT	35 x 18 x 600	FT	1119684
Medium anchor profile rail	AML3518P0700FT	35 x 18 x 700	FT	1119681
Medium anchor profile rail	AML3518P0800FT	35 x 18 x 800	FT	1119678
Medium anchor profile rail	AML3518P1000FT	1,000 x 35 x 18	St	1119672
Medium anchor profile rail	AML3518P2000FT	2,000 x 35 x 18	St	1119656
Medium anchor profile rail	AML3518P1000A2	1,000 x 35 x 18	A2	1119700
Medium anchor profile rail	AML3518P2000A2	2,000 x 35 x 18	A2	1119702
Medium anchor profile rail	AML3518P6000A2	6,000 x 35 x 18	A2	1119729
Medium anchor profile rail	AMS3518UP2000BK	2,000 x 35 x 18	St	1112023
Medium anchor profile rail	AMS3518UP2000FS	2,000 x 35 x 18	FS	1112120
Medium anchor profile rail	AMS3518UP2000FT	2,000 x 35 x 18	FT	1112120
Medium anchor profile rail	AMS3518P2000FS	2,000 x 35 x 18	FS	1112708
Medium anchor profile rail	AMS3518P2000FT	2,000 x 35 x 18	FT	1112759

Designation	Type	Dimensions, mm	Material	Item no.
Medium C profile rail	CM3015P0200FT	200 x 30 x 15	FT	1109782
Medium C profile rail	CM3015P0300FT	300 x 30 x 15	FT	1109790
Medium C profile rail	CM3015P0400FT	400 x 30 x 15	FT	1109804
Medium C profile rail	CM3015P0500FT	500 x 30 x 15	FT	1109812
Medium C profile rail	CM3015P0600FT	600 x 30 x 15	FT	1109820
Medium C profile rail	CM3015P0700FT	700 x 30 x 15	FT	1109839
Medium C profile rail	CM3015P0800FT	800 x 30 x 15	FT	1109847
Medium C profile rail	CM3015P1000FT	1,000 x 30 x 15	FT	1109863
Medium C profile rail	CM3015P2000FT	2,000 x 30 x 15	FT	1109871
Medium C profile rail	CML3518P0150FS	150 x 35 x 18	FS	1104241
Medium C profile rail	CML3518P0200FS	200 x 35 x 18	FS	1104268
Medium C profile rail	CML3518P0300FS	300 x 35 x 18	FS	1104284
Medium C profile rail	CML3518P0400FS	400 x 35 x 18	FS	1104292
Medium C profile rail	CML3518P0500FS	500 x 35 x 18	FS	1104306
Medium C profile rail	CML3518P0600FS	600 x 35 x 18	FS	1104310
Medium C profile rail	CML3518P0700FS	700 x 35 x 18	FS	1104315
Medium C profile rail	CML3518P0800FS	800 x 35 x 18	FS	1104320
Medium C profile rail	CML3518P0900FS	900 x 35 x 18	FS	1104325
Medium C profile rail	CML3518P1000FS	1,000 x 35 x 18	FS	1104497
Medium C profile rail	CML3518P2000FS	2,000 x 35 x 18	FS	1104500
Medium C profile rail	CMS3518P0150FS	150 x 35 x 18	FS	1104349
Medium C profile rail	CMS3518P0200FS	200 x 35 x 18	FS	1104357
Medium C profile rail	CMS3518P0300FS	300 x 35 x 18	FS	1104373
Medium C profile rail	CMS3518P0400FS	400 x 35 x 18	FS	1104391
Medium C profile rail	CMS3518P0500FS	500 x 35 x 18	FS	1104403
Medium C profile rail	CMS3518P0600FS	600 x 35 x 18	FS	1104411
Medium C profile rail	CMS3518P0700FS	700 x 35 x 18	FS	1104422
Medium C profile rail	CMS3518P0800FS	800 x 35 x 18	FS	1104427
Medium C profile rail	CMS3518P0900FS	900 x 35 x 18	FS	1104435
Medium C profile rail	CMS3518P1000FS	1,000 35 x 18	FS	1104445
Medium C profile rail	CMS3518P2000FS	2,000 35 x 18	FS	1104454
End cap CM3518	CM3518 SK	38.6 x 21.6 x 16	PE	1124502
Heavy-duty mounting rail	MS4022P2000FT	2,000 x 40 x 22.5	FT	1121979
Heavy-duty mounting rail	MS4022P6000FT	6,000 x 40 x 22.5	FT	1121898
Heavy-duty mounting rail	MS4022P2000A2	2,000 x 40 x 22.5	A2	1121960
Heavy-duty mounting rail	MS4022P6000A2	6,000 x 40 x 22.5	A2	1121901
End cap MS4022	MS4022 SK	44 x 27 x 18	PE	1124555
Heavy-duty mounting rail	MS5030RP0220FT	220 x 50 x 30	FT	6349404
Heavy-duty mounting rail	MS5030RP0260FT	260 x 50 x 30	FT	6349412
Heavy-duty mounting rail	MS5030RP0300FT	300 x 50 x 30	FT	6349439
Heavy-duty mounting rail	MS5030RP0340FT	340 x 50 x 30	FT	6349447
Heavy-duty mounting rail	MS5030RP0380FT	380 x 50 x 30	FT	6349463
Heavy-duty mounting rail	MS5030P0200FT	200 x 50 x 30	FT	1121391
Heavy-duty mounting rail	MS5030P0300FT	300 x 50 x 30	FT	1121243
Heavy-duty mounting rail	MS5030P0400FT	400 x 50 x 30	FT	1121278
Heavy-duty mounting rail	MS5030P0500FT	500 x 50 x 30	FT	1121405
Heavy-duty mounting rail	MS5030P0600FT	600 x 50 x 30	FT	1121294
Heavy-duty mounting rail	MS5030P0700FT	700 x 50 x 30	FT	1121332
Heavy-duty mounting rail	MS5030P0800FT	800 x 50 x 30	FT	1121308
Heavy-duty mounting rail	MS5030P0900FT	900 x 50 x 30	FT	1121336
Heavy-duty mounting rail	MS5030P1500FT	1,500 x 50 x 30	FT	1121363

## Technical data

Designation	Type	Dimensions, mm	Material	Item no.
Heavy-duty mounting rail	MS5030P1000FT	1,000 x 50 x 30	FT	1121448
Heavy-duty mounting rail	MS5030P2000FT	2,000 x 50 x 30	FT	1121464
Heavy-duty mounting rail	MS5030P3000FT	3,000 x 50 x 30	FT	1121466
Heavy-duty mounting rail	MS5030P6000FT	6,000 x 50 x 30	FT	1121472
Heavy-duty mounting rail	MS5030P2000A2	2,000 x 50 x 30	A2	1121480
Heavy-duty mounting rail	MS5030P6000A2	6,000 x 50 x 30	A2	1121499
End cap MS5030	MS5030 SK	55 x 34.8 x 25	PE	1124563
Heavy-duty mounting rail	MS4121P2000FS	2,000 x 41 x 21	FS	1122918
Heavy-duty mounting rail	MS4121P3000FS	3,000 x 41 x 21	FS	1122920
Heavy-duty mounting rail	MS4121P6000FS	6,000 x 41 x 21	FS	1122922
Heavy-duty mounting rail	MS4121P0200FT	200 x 41 x 21	FS	1122933
Heavy-duty mounting rail	MS4121P0300FT	300 x 41 x 21	FS	1122934
Heavy-duty mounting rail	MS4121P0400FT	400 x 41 x 21	FS	1122935
Heavy-duty mounting rail	MS4121P0500FT	500 x 41 x 21	FS	1122936
Heavy-duty mounting rail	MS4121P0600FT	600 x 41 x 21	FS	1122937
Heavy-duty mounting rail	MS4121P0700FT	700 x 41 x 21	FS	1122938
Heavy-duty mounting rail	MS4121P0800FT	800 x 41 x 21	FS	1122939
Heavy-duty mounting rail	MS4121P0900FT	900 x 41 x 21	FS	1122940
Heavy-duty mounting rail	MS4121P2000FT	2,000 x 41 x 21	FT	1122923
Heavy-duty mounting rail	MS4121P3000FT	3,000 x 41 x 21	FT	1122924
Heavy-duty mounting rail	MS4121P6000FT	6,000 x 41 x 21	FT	1122926
Heavy-duty mounting rail	MS4121P2000A2	2,000 x 41 x 21	A2	1122925
Heavy-duty mounting rail	MS4121P3000A2	3,000 x 41 x 21	A2	1122928
Heavy-duty mounting rail	MS4121P6000A2	6,000 x 41 x 21	A2	1122929
Heavy-duty mounting rail	MS4121P2000A4	2,000 x 41 x 21	A4	1122476
Heavy-duty mounting rail	MS4121P3000A4	3,000 x 41 x 21	A4	1122931
Heavy-duty mounting rail	MS4121P6000A4	6,000 x 41 x 21	A4	1122932

### Legend

St = Steel

FS = Strip galvanised

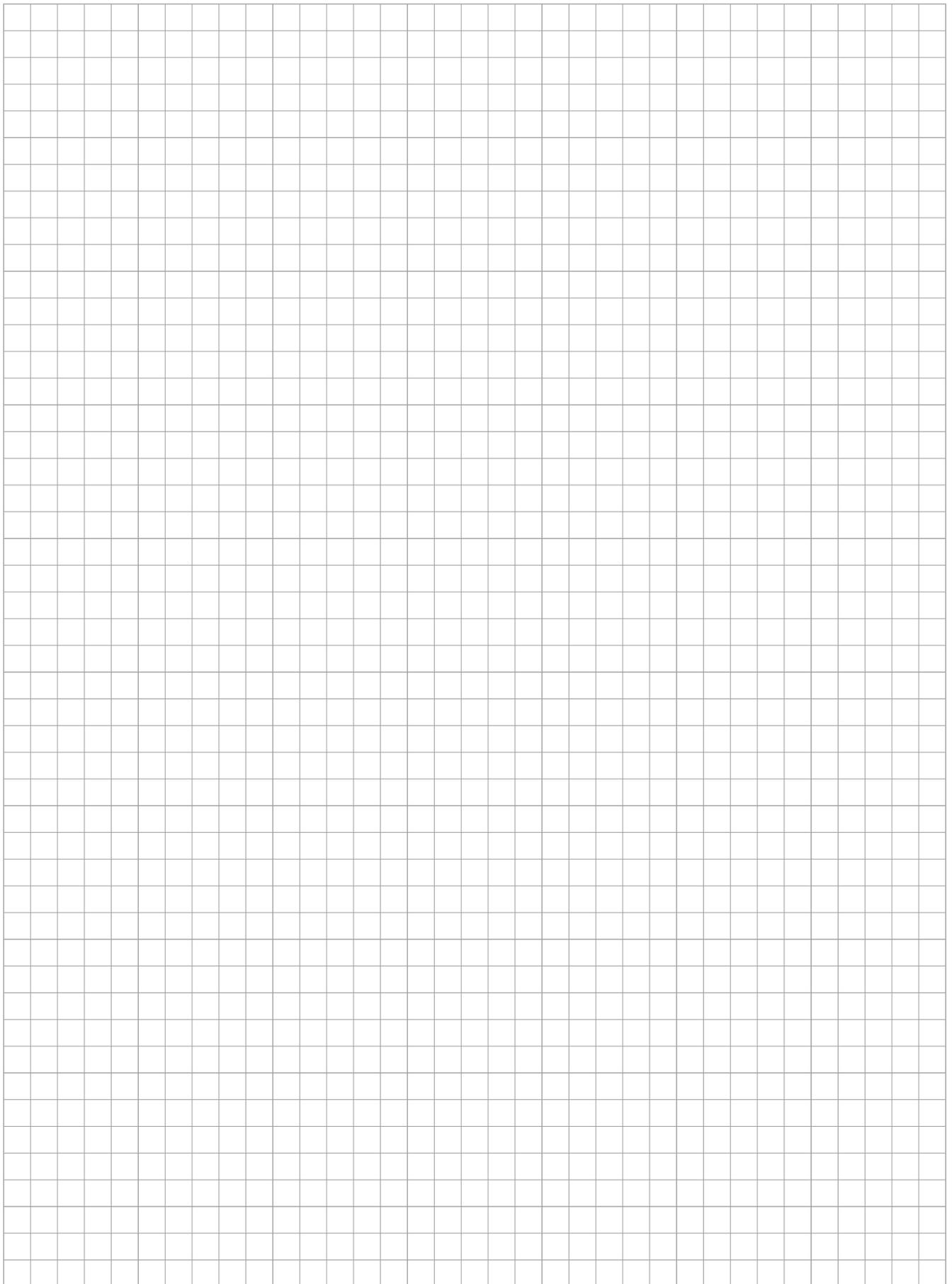
FT = Hot-dip galvanised

ZL = Zinc slat

A2 = Stainless steel

A4 = Stainless steel

PE = Polyethylene



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