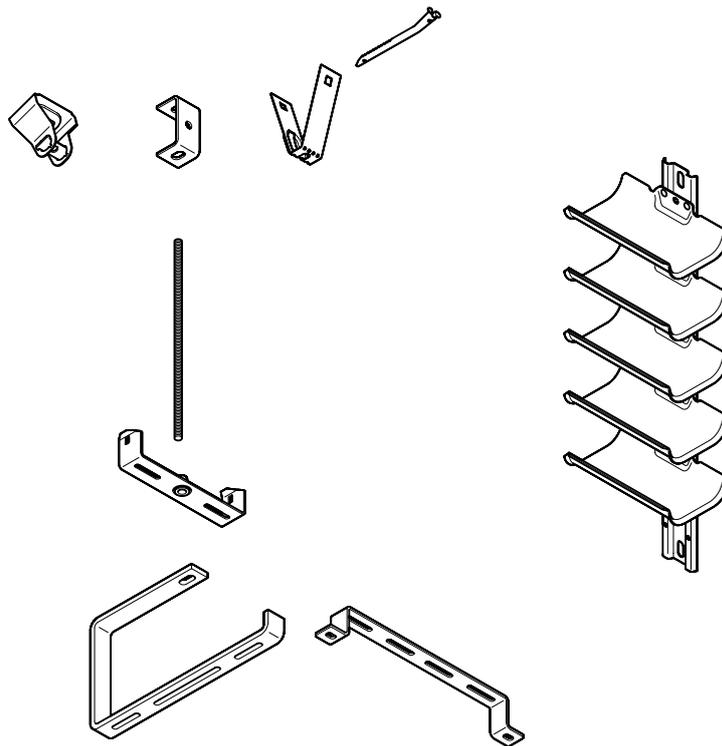


Universal systems
Mounting instructions



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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 universal systems.
- Electrically trained specialists charged with installing universal systems.

1.2 Relevance of these instructions

- These instructions are based on the standards valid at the time of compilation (January 2021).
- 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



Type of risk!

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

Note!

Indicates important information or assistance!

2 Correct use

The universal system is used for supporting and routing all types of cable trays and cable ladders. Depending on the material and surface design, it can be used indoors and outdoors.

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

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

2.1 Basic standards

The universal 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 universal system:

- Follow applicable working, accident and environmental protection regulations.
- The universal system should be included in the protective measures and the equipotential bonding.
- Have the inclusion in the equipotential bonding of the overall system performed by specialist personnel.
- Design the support system according to the loads to be expected.
- Do not exceed the maximum support load of the universal system.
- During mounting, take the structure of the wall and ceiling into account.

3.2 Personal protective equipment

- During all mechanical mounting work, wear personal protective equipment:
 - Gloves
 - Eye protection
 - Head protection

4 System description

Universal systems for cable support structures are used for small loads. The systems are hung from the ceiling with threaded rods. Stand-off brackets enable the raised floor mounting of cable trays or ladders. The universal systems comprise ceiling brackets, trapezoidal fastenings, centre suspensions, suspension brackets and stand-off brackets.

4.1 System components

Note!

*Stand-off brackets are offered in two variants:
 - Without a clamping lug (to accept cable trays)
 - With a clamping lug (to accept mesh cable trays)
 These instructions show only the components without clamping lugs.
 Components with clamping lugs are shown in the mounting instructions for mesh cable trays.*

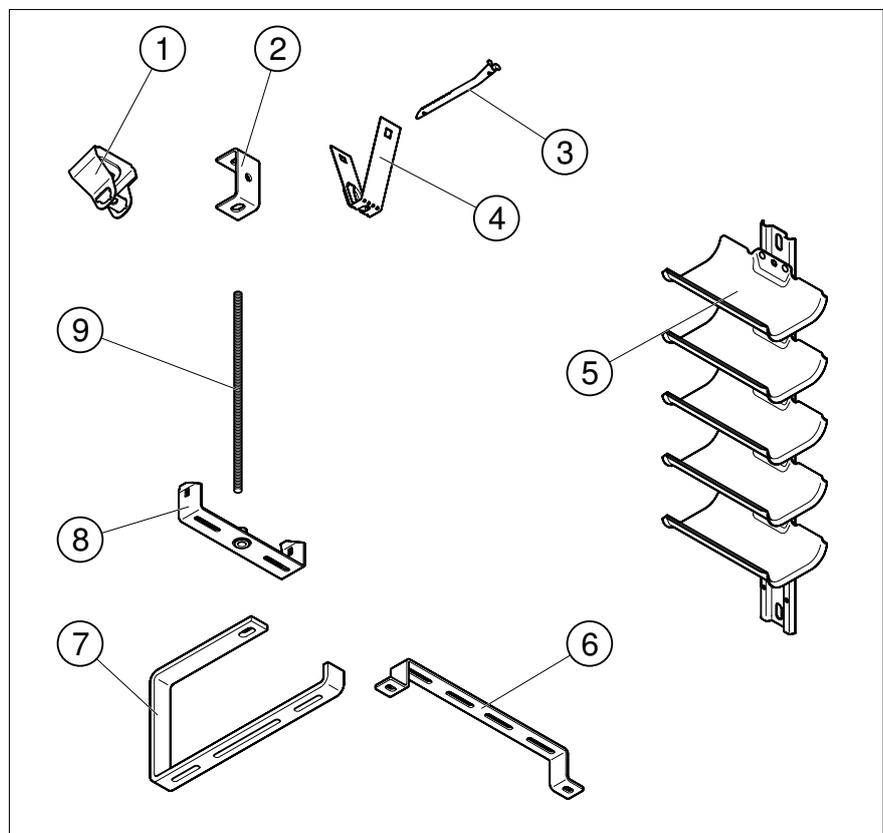


Fig. 1: System components

	Component	Function
①	Ceiling bracket, variable	Mounting of threaded rods on sloping concrete ceilings
②	Ceiling bracket	Mounting of threaded rods on concrete ceilings
③	Latch for trapezoidal fastening	Locking of the trapezoidal fastening
④	Trapezoidal fastening	Mounting of threaded rods on standard trapezoidal ceilings
⑤	Cable support trough	Support of cables, use in small mounting spaces

	Component	Function
⑥	Stand-off bracket	Mounting cable trays/cable ladders on concrete floors
⑦	Suspension brackets	Support for cable trays/cable ladders
⑧	Central suspension	Connection, cable tray to threaded rod
⑨	Threaded rod	Suspension of cable trays/cable ladders, in conjunction with ceiling brackets, etc.

Tab. 1: System components

4.2 Accessories

4.2.1 Earthing terminal

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

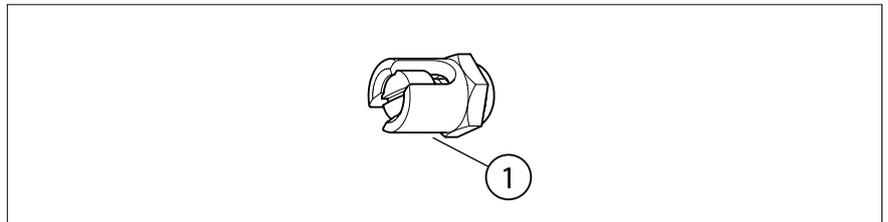


Fig. 2: Earthing terminal

① Earthing terminal

4.2.2 Fastening material

Depending on the structure of the mounting substrate, use suitable fastening materials in the wall or ceiling.

OBO offers the following fastening systems:

Substrate	Fastening material type
Concrete	N, N-K, BZ, BZ-U, BZ-IG, SZ-B, ES, Easy, MMS-plus
Masonry	MMS-plus, HMS-KS, injection tie

The characteristic load values for the fastening anchors can be found in the appropriate tables and the approved load capacity of the individual system components in the appropriate load diagrams in the current catalogue.

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

5 Mounting system components



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 with the torque to be complied with.

Torques and tightness classes of the supplied screws:

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

5.1 Mounting fastening material

In these mounting instructions, only one system with bolt tie, washer and nut will be shown with regard to wall and ceiling mounting. A combination nut can be used as an alternative to the washer and nut.

Note!

To prevent loosening of screw connections through vibrations, screw locks can be attached. Possible screw locks are nuts with an internal plastic ring or a screw locking adhesive, e.g. Loctite (item no. 2362940).

1. Drill the anchor hole.
2. Blow out the anchor hole.
3. Knock in the bolt tie.
4. Push the system onto the bolt thread and fix with washers and nuts or combination nuts.

5.2 Mounting a ceiling bracket

Example: In combination with two threaded rods for direct mounting of a centrally screwed cable tray ≥ 400 mm.

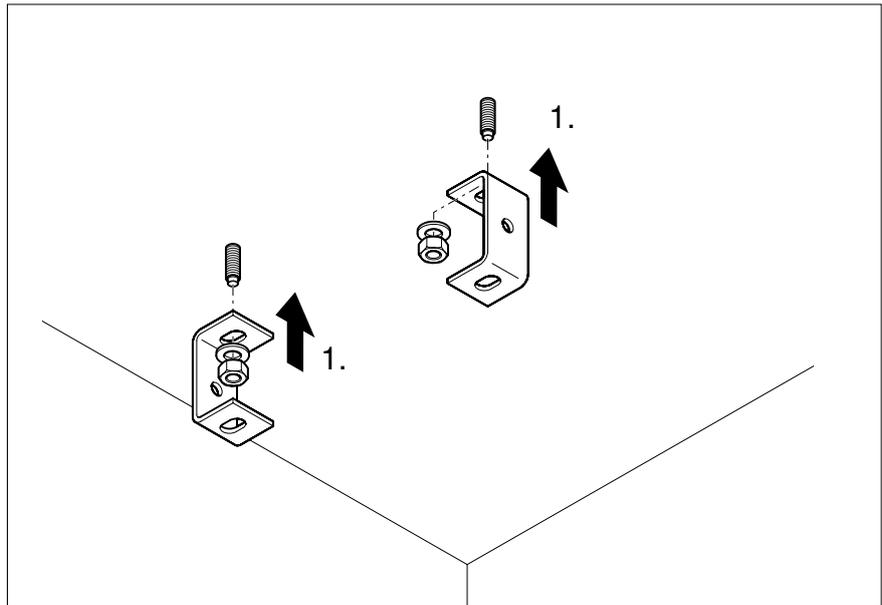


Fig. 3: Mounting a ceiling bracket

1. Attach the ceiling bracket to the bolt thread and screw together from

below with a washer and nut.

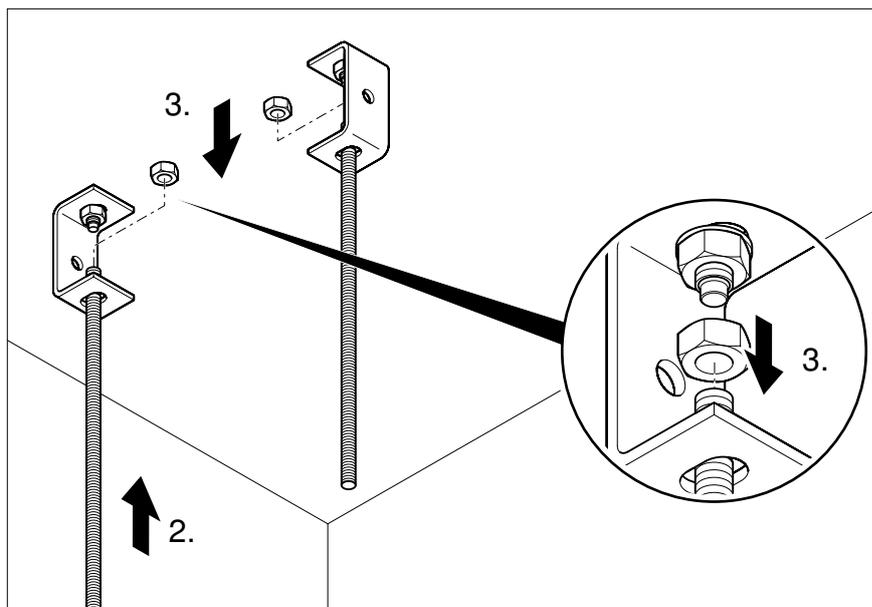


Fig. 4: Mounting the threaded rod

2. Shorten the threaded rod for suspending the cable tray to the required length and insert into the ceiling clamp.
3. Screw the threaded rod tight from above with a nut.

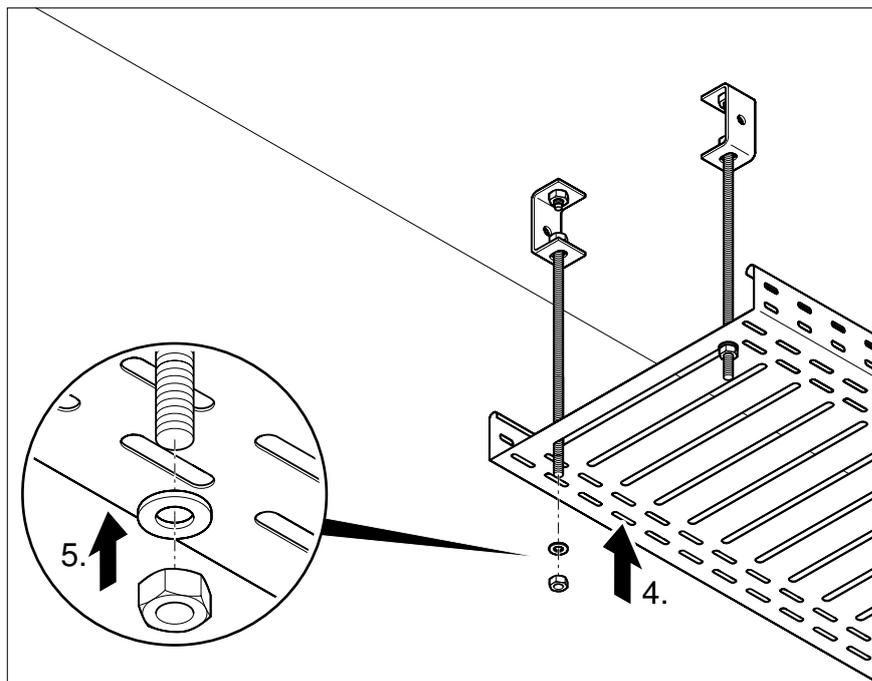


Fig. 5: Mounting the cable tray

4. Place the cable tray on the threaded rods.
5. Secure the threaded rods from below with a washer and nut and, in so doing, align the cable tray horizontally.

5.3 Mounting a variable ceiling bracket

Example: In combination with two threaded rods for direct mounting of a centrally screwed cable tray ≤ 300 mm.

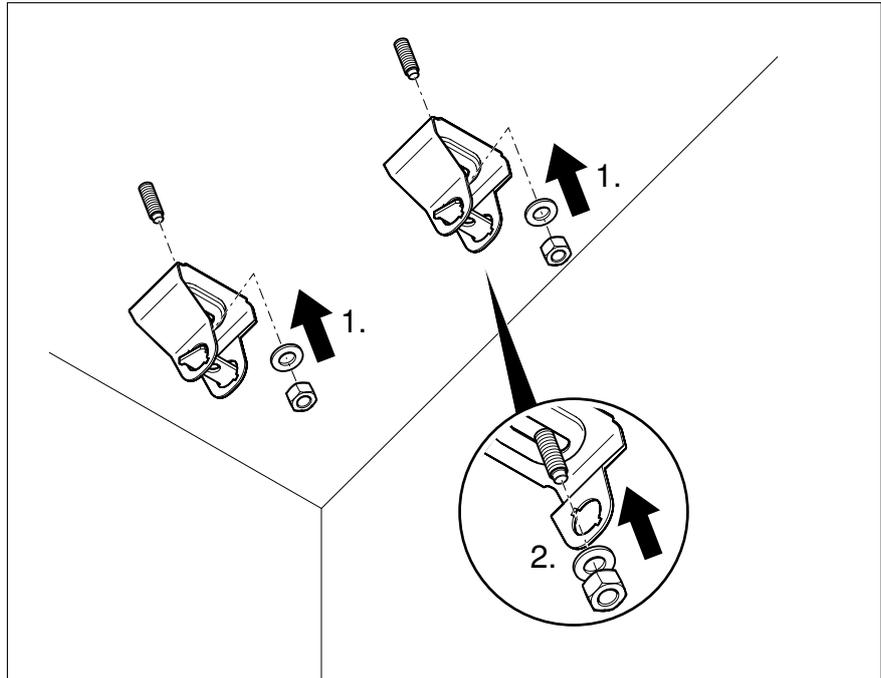


Fig. 6: Mounting a variable ceiling bracket

1. Attach the variable ceiling bracket to the bolt thread.
2. Screw together from below with a washer and nut.

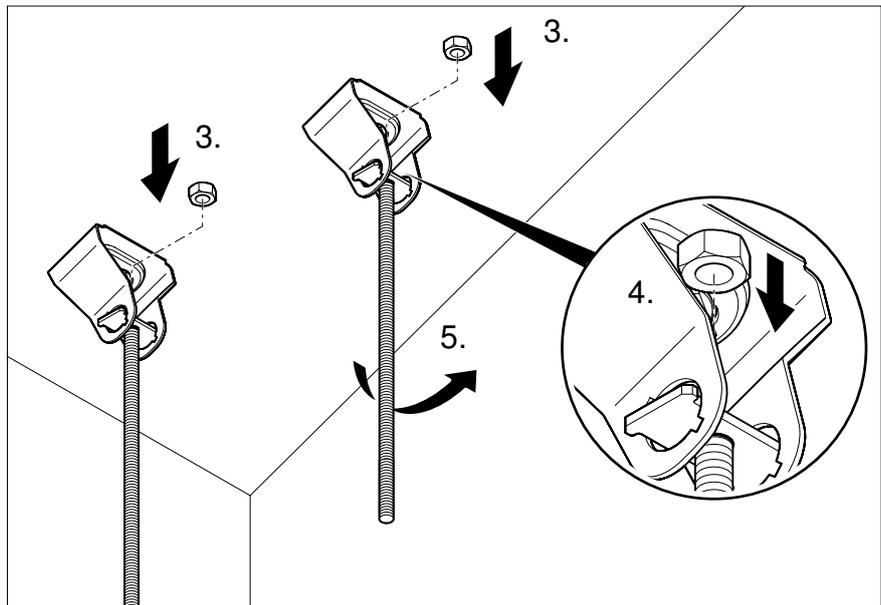


Fig. 7: Mounting the threaded rod

3. Shorten the threaded rod for suspending the cable tray to the required length and insert the threaded rod in the threaded rod mount of the variable ceiling bracket.
4. Tight the threaded rod from above with a nut.
5. Vertically align the threaded rod mount with threaded rod.

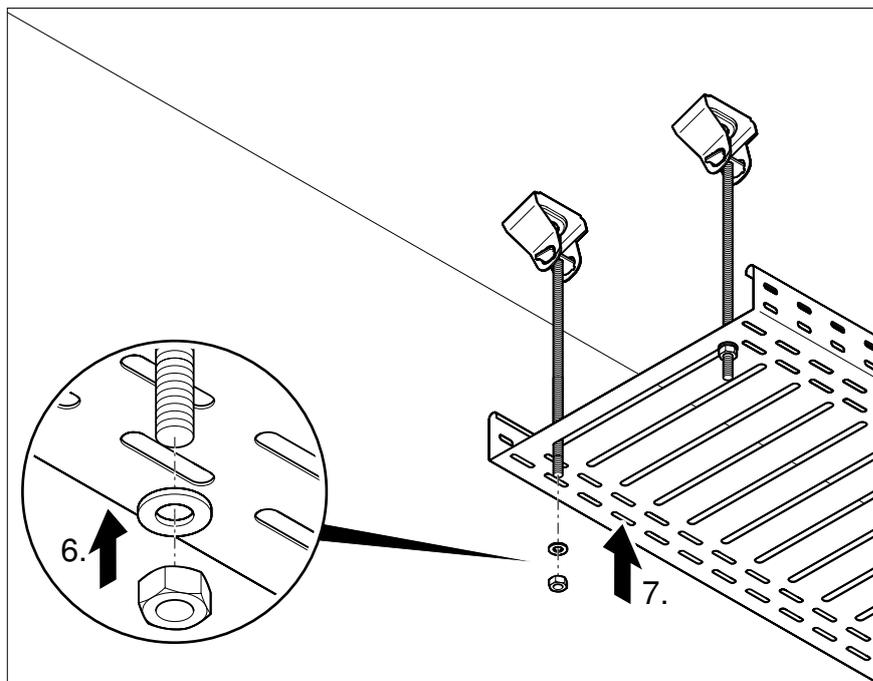


Fig. 8: Mounting the cable tray

6. Place the cable tray on threaded rods and secure from below with washers and nuts.
7. Align the cable tray horizontally.

5.4 Mounting a suspension bracket

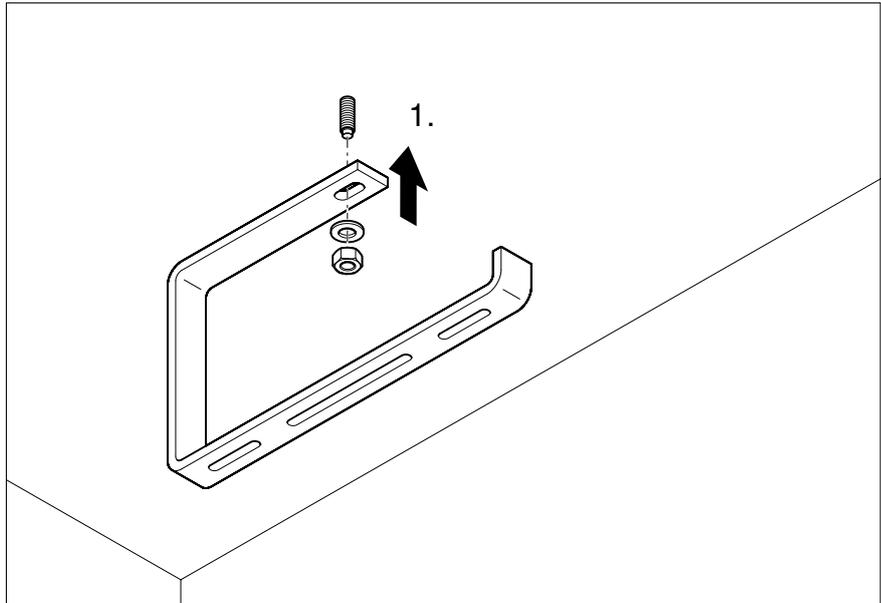


Fig. 9: Mounting a suspension bracket

1. Place the suspension bracket on a threaded rod and screw the threaded rod tight from below with a washer and nut.

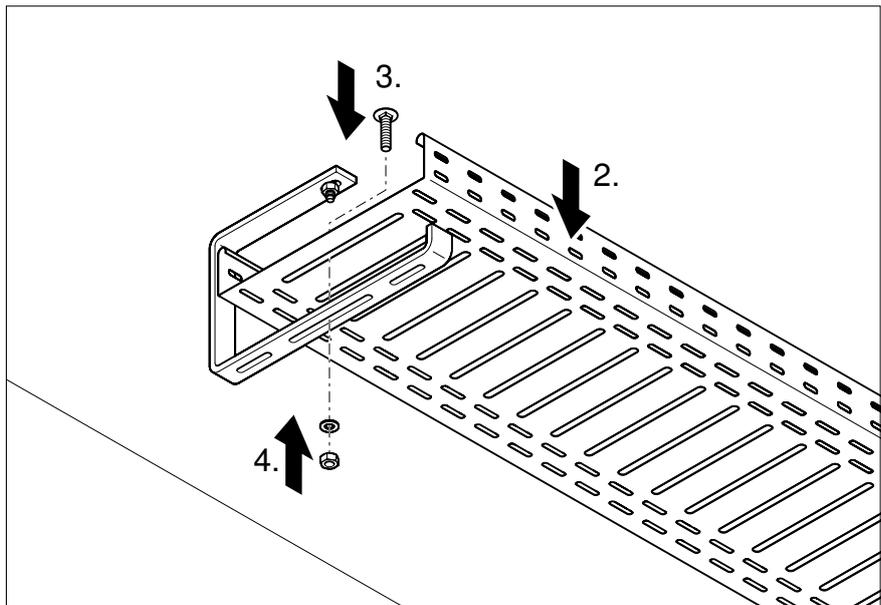


Fig. 10: Mounting the cable tray

2. Insert the cable tray in the suspension bracket.
3. From above, insert the bolt into the cable tray and suspension bracket.
4. From below, screw tight with a washer and nut.

5.5 Mounting a stand-off bracket

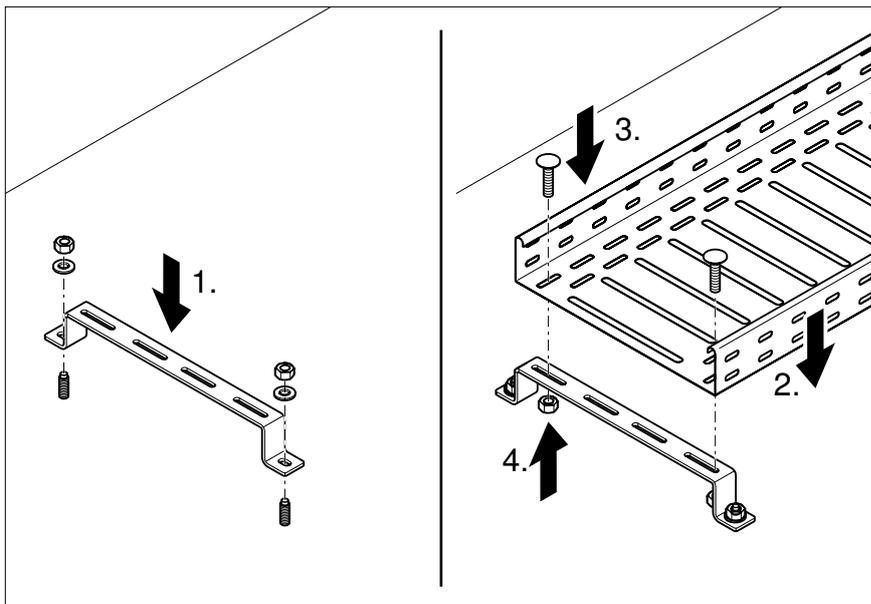


Fig. 11: Mounting a stand-off bracket

1. Attach the stand-off bracket to the bolt thread and screw together from above with a washer and nut.
2. Place the cable tray on the stand-off bracket.
3. From above, insert the bolt into the cable tray and stand-off bracket.
4. Screw together from below with a nut.

5.6 Mounting a trapezoidal fastening with latch

Example: In combination with a centre suspension and threaded rod for mounting of a cable tray.

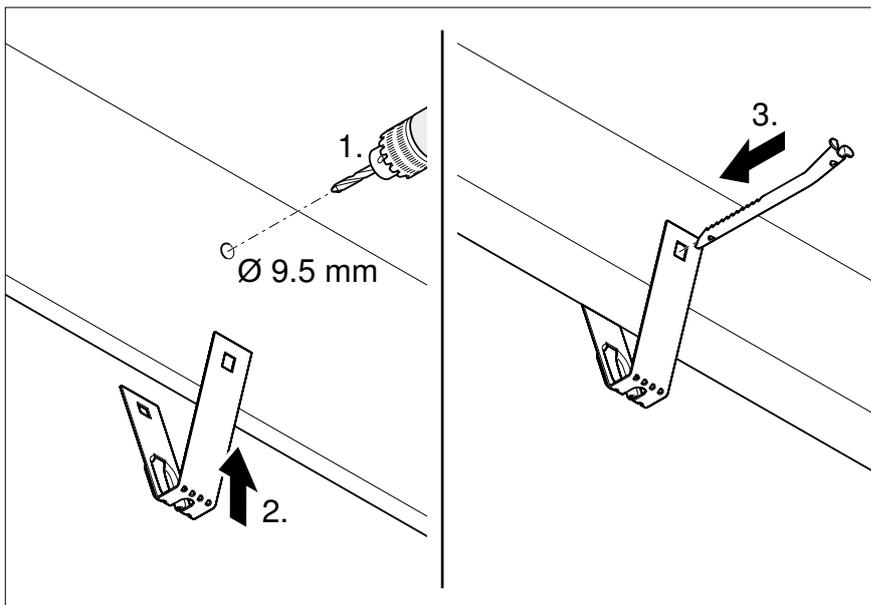


Fig. 12: Mounting a trapezoidal fastening with latch

1. Drill the hole for the latch through the trapezoidal ceiling (\varnothing 9.5 mm).
2. Place the trapezoidal fastening over the hole in the trapezoidal ceiling.
3. Secure the trapezoidal fastening with a latch.

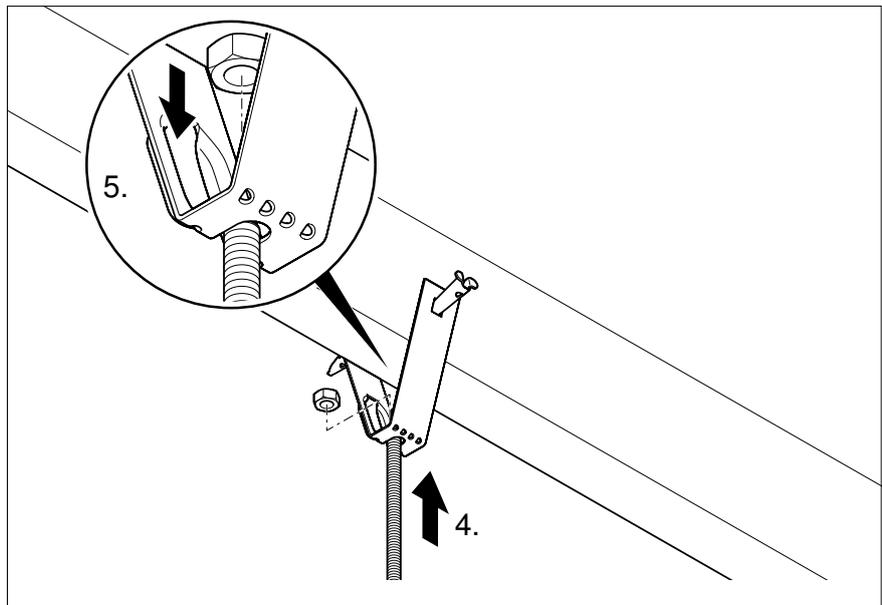


Fig. 13: Mounting the threaded rod

4. Shorten the threaded rod to the required length and insert in the trapezoidal fastening.
5. Secure the threaded rod from above with a nut.

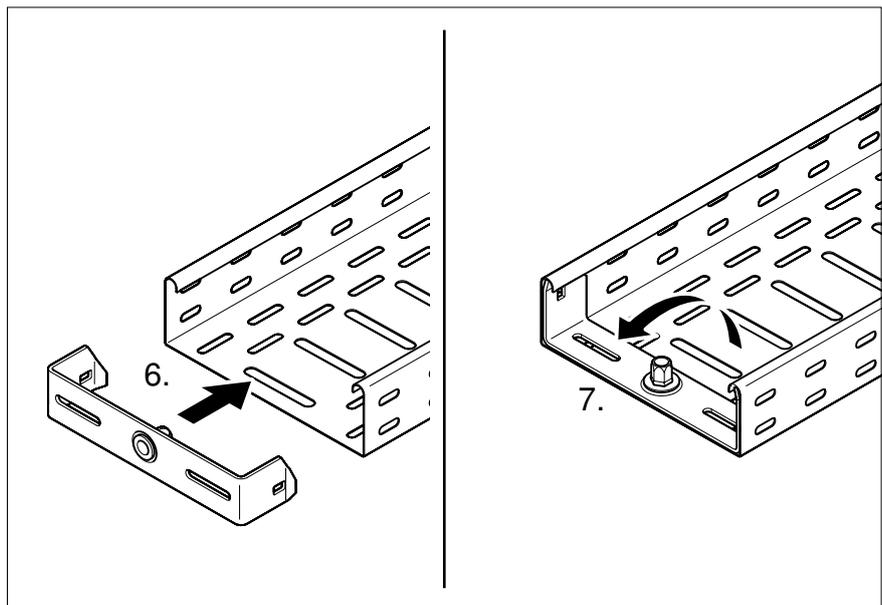


Fig. 14: Mounting the centre suspension

6. Insert the centre suspensions in the cable tray.
7. Turn the centre suspensions into the cable tray.

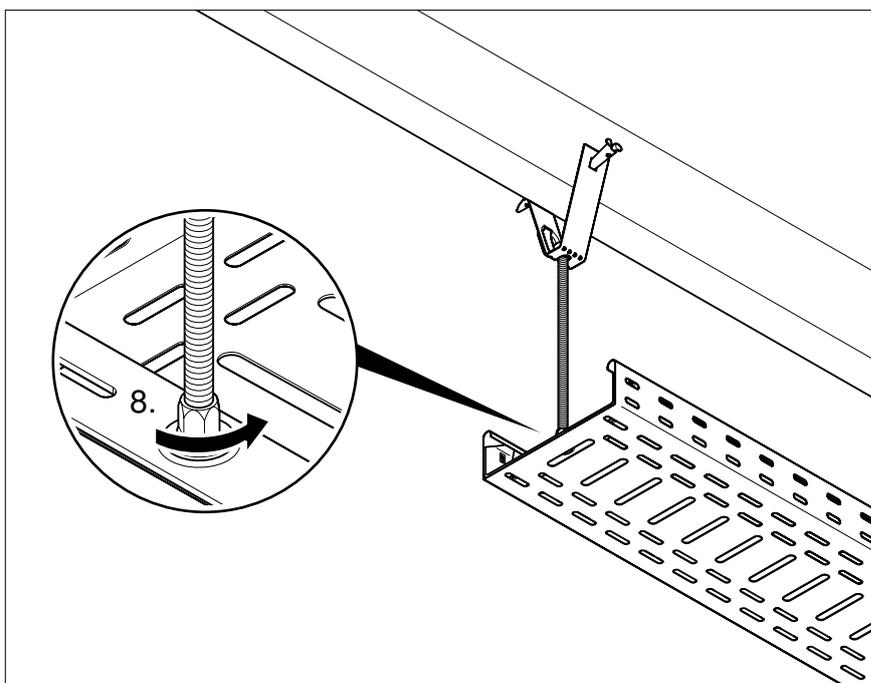


Fig. 15: Mounting the cable tray

8. Place the cable tray with turned-in centre suspension under the threaded rod and turn in the threaded rod by turning the threaded sleeve into the centre suspensions.

5.7 Mounting a cable support trough

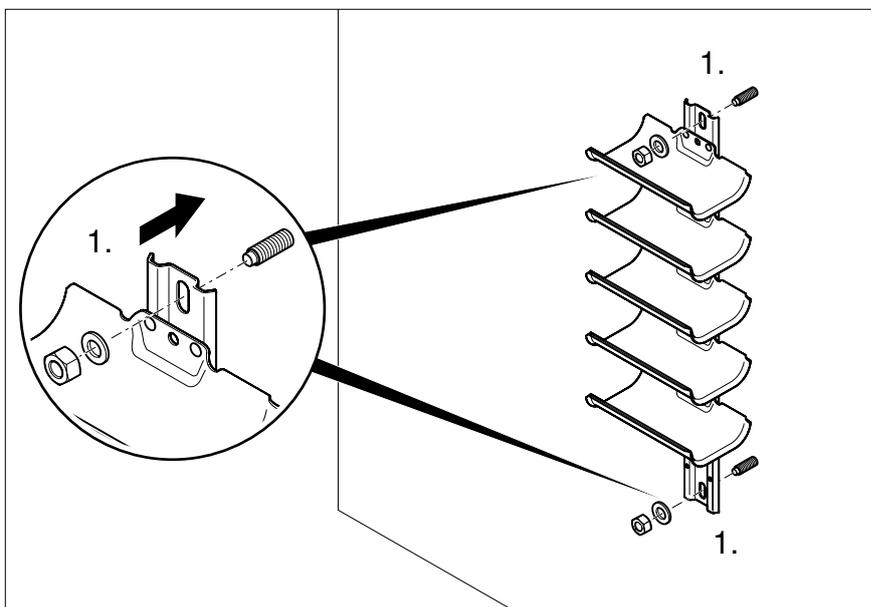


Fig. 16: Mounting a cable support trough

1. Place the cable support trough on the bolt thread and screw together with a washer and nut.

6 Creating equipotential bonding



Risk of electric shock!

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

- Creating equipotential bonding.

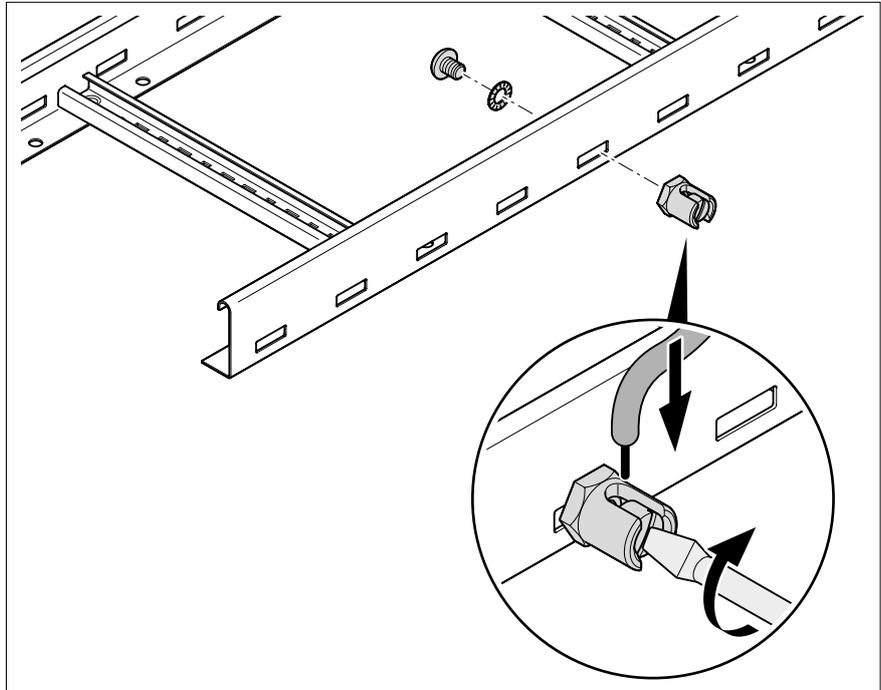


Fig. 17: Mounting the earthing terminal

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

7 Maintaining universal systems

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

Tighten loose connection elements and, if necessary, apply a screw lock using nuts with an internal plastic ring or a screw locking adhesive. Replace damaged parts. Check regularly to see if the connection to the overall equipotential bonding is still intact.

8 Dismantling universal systems



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.
-

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

9 Disposing of universal 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.
Ceiling bracket	DB FT	80 x 40 x 40	FT	6356109
Ceiling bracket	DB A4	80 x 40 x 40	A4	6356113
Ceiling bracket, variable	DBV FS	76 x 68 x 55	FS	6356055
Trapezoidal fastening	TPB 100 FS	95 x 116 x 36	FS	6357506
Trapezoidal fastening	TPB 100 A2	95 x 116 x 36	A2	6357516
Latch for trapezoidal fastening	TPB R FS	145 x 9	FS	6357536
Latch for trapezoidal fastening	TPB R A2	145 x 9	A2	6357538
Threaded rod	2078 M6 1M G	1000 x 6	G	3141047
Threaded rod	2078 M8 1M G	1000 x 8	G	3141128
Threaded rod	2078 M10 1M G	1000 x 10	G	3141209
Threaded rod	2078 M12 1M G	1000 x 12	G	3141306
Threaded rod	2078 M6 2M G	2000 x 6	G	3141048
Threaded rod	2078 M8 2M G	2000 x 8	G	3141136
Threaded rod	2078 M10 2M G	2000 x 10	G	3141140
Threaded rod	2078 M12 2M G	2000 x 12	G	3141144
Threaded rod	2078 M6 1M A2	1000 x 6	A2	3141327
Threaded rod	2078 M8 1M A2	1000 x 8	A2	3141310
Threaded rod	2078 M10 1M A2	1000 x 10	A2	3141312
Threaded rod	2078 M12 1M A2	1000 x 12	A2	3141314
Threaded rod	2078 M6 2M A2	2000 x 6	A2	3141328
Threaded rod	2078 M8 2M A2	2000 x 8	A2	3141330
Threaded rod	2078 M10 2M A2	2000 x 10	A2	3141339
Threaded rod	2078 M12 2M A2	2000 x 12	A2	3141316
Threaded rod	2078 M6 1M A4	1000 x 6	A4	3141482
Threaded rod	2078 M8 1M A4	1000 x 8	A4	3141492
Threaded rod	2078 M10 1M A4	1000 x 10	A4	3141502
Threaded rod	2078 M12 1M A4	1000 x 12	A4	3141512
Threaded rod	2078 M6 2M A4	2000 x 6	A4	3141484
Threaded rod	2078 M8 2M A4	2000 x 8	A4	3141494
Threaded rod	2078 M10 2M A4	2000 x 10	A4	3141504
Threaded rod	2078 M12 2M A4	2000 x 12	A4	3141514
Centre suspension for cable tray, side height 35 mm	MAH 35 100 FS	95 x 32	FS	6358690
Centre suspension for cable tray, side height 35 mm	MAH 35 200 FS	195 x 32	FS	6358692
Centre suspension for cable tray, side height 35 mm	MAH 35 300 FS	295 x 32	FS	6358694
Centre suspension for cable tray, side height 60 mm	MAH 60 100 FS	94 x 57	FS	6358705
Centre suspension for cable tray, side height 60 mm	MAH 60 150 FS	114 x 57	FS	6358709
Centre suspension for cable tray	MAH 60 200 FS	195 x 57	FS	6358713
Centre suspension for cable tray	MAH 60 300 FS	295 x 57	FS	6358717
Centre suspension for cable tray	MAH 60 400 FS	395 x 57	FS	6358720
Centre suspension for cable tray	MAH 60 100 FT	94 x 57	FT	6358752
Centre suspension for cable tray	MAH 60 150 FT	144 x 57	FT	6358756
Centre suspension for cable tray	MAH 60 200 FT	195 x 57	FT	6358760
Centre suspension for cable tray	MAH 60 300 FT	295 x 57	FT	6358764
Centre suspension, cable tray	MAH 050 FS	47 x 39.5 x 40	FS	6358500
Centre suspension, cable tray	MAH 075 FS	72 x 39.5 x 40	FS	6358510
Centre suspension, cable tray	MAH 100 FS	97 x 39.5 x 40	FS	6358527
Centre suspension, cable tray	MAH 150 FS	147 x 39.5 x 40	FS	6358535
Centre suspension, cable tray	MAH 200 FS	197 x 39.5 x 40	FS	6358543
Stand-off bracket	DBL 50 100 FS	100	FS	6015506
Stand-off bracket	DBL 50 150 FS	150	FS	6015514
Stand-off bracket	DBL 50 200 FS	200	FS	6015522

Designation	Type	Dimensions, mm	Material	Item no.
Stand-off bracket	DBL 50 300 FS	300	FS	6015530
Stand-off bracket	DBL 50 400 FS	400	FS	6015549
Stand-off bracket	DBL 50 500 FS	500	FS	6015552
Stand-off bracket	DBL 50 600 FS	600	FS	6015555
Stand-off bracket	DBL 50 100 FT	100	FT	6015565
Stand-off bracket	DBL 50 150 FT	150	FT	6015573
Stand-off bracket	DBL 50 200 FT	200	FT	6015581
Stand-off bracket	DBL 50 300 FT	300	FT	6015603
Stand-off bracket	DBL 50 400 FT	400	FT	6015611
Stand-off bracket	DBL 50 500 FT	500	FT	6015614
Stand-off bracket	DBL 50 600 FT	600	FT	6015617
Stand-off bracket	DBL 50 100 A4	100	A4	6015630
Stand-off bracket	DBL 50 200 A4	200	A4	6015632
Stand-off bracket	DBL 50 300 A4	300	A4	6015633
Stand-off bracket	DBL 50 300 A4	400	A4	6015634
Suspension bracket	AHB 100 FT	115 x 180 x 30	FT	6363903
Suspension bracket	AHB 150 FT	165 x 180 x 30	FT	6363907
Suspension bracket	AHB 200 FT	215 x 180 x 30	FT	6363911
Suspension bracket	AHB 300 FT	315 x 180 x 30	FT	6363938
Suspension bracket	AHB 400 FT	415 x 180 x 30	FT	6363946
Cable support trough, single, for individual routing	KTW 100 FT	198 x 113 x 14	FT	6006890
Cable support trough	KTW 100 1 FT	140 x 198 x 113	FT	6006901
Cable support trough	KTW 100 2 FT	200 x 198 x 113	FT	6006902
Cable support trough	KTW 100 3 FT	300 x 198 x 113	FT	6006903
Cable support trough	KTW 100 4 FT	400 x 198 x 113	FT	6006904
Cable support trough	KTW 100 5 FT	500 x 198 x 113	FT	6006905
Cable support trough	KTW 100 6 FT	600 x 198 x 113	FT	6006906
Cable support trough	KTW 100 7 FT	700 x 198 x 113	FT	6006907
Cable support trough	KTW 100 8 FT	800 x 198 x 113	FT	6006908
Cable support trough	KTW 100 9 FT	900 x 198 x 113	FT	6006909
Cable support trough	KTW 100 10 FT	1,000 x 198 x 113	FT	6006910

Legend

G = Electrogalvanised

FS = Strip galvanised

FT = Hot-dip galvanised

A2 = Stainless steel

A4 = Stainless steel

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