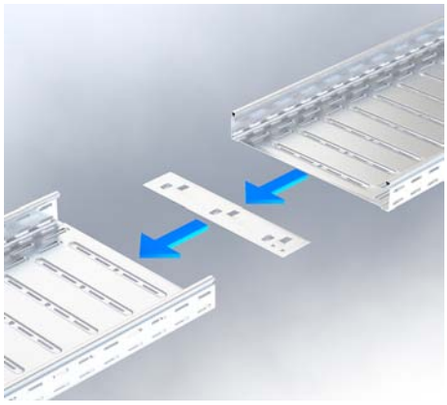
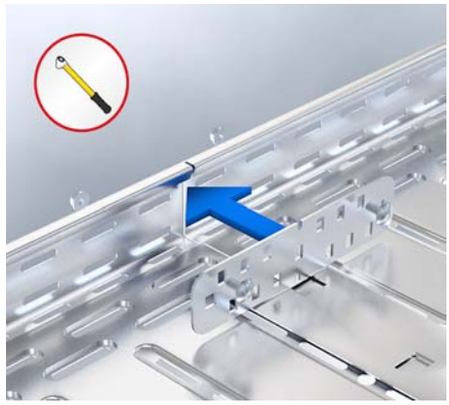
Assembly

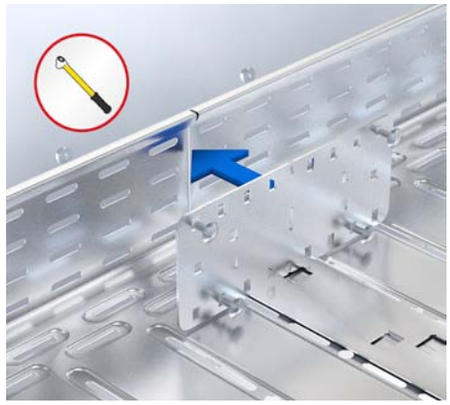
Cable trays serve the bridging of medium-size fitting distances. The support structures must be planned by engineering experts and observing the permissible torque of all screw connections.



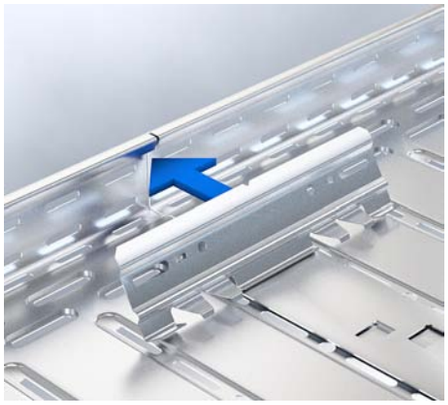
1 | Floor connector
From 100 mm nominal width attach floor connector (VB) to the cable tray bottom.



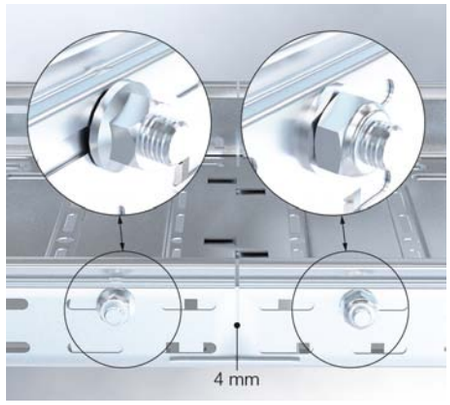
2 | Side connector
Push the side connector (RGV) into the cable tray side rail, screw each side rail tight using a clamping screw (KLR), then push in the connecting tray and screw to the side connector (RGV).



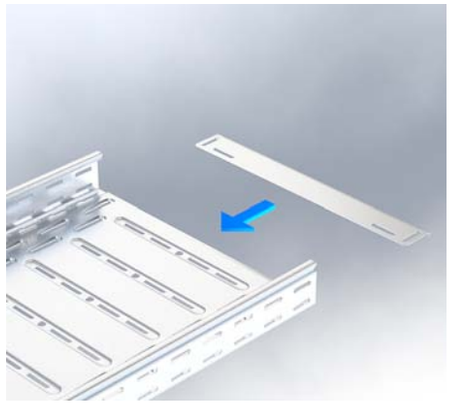
3 | Side connector
Type R 35, RG 35, R 60, RG 60, and RI 60 cable trays are to be screwed using one clamping screw (KLR) per side rail. Type R 85, RG 85, R 110, and RG 110 cable trays are to be screwed with two clamping screws per side rail (top and bottom).



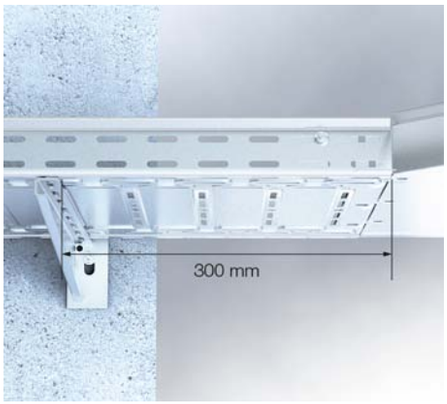
4 | Snap-lock connectors
Alternatively, the cable tray RG 60 can be latched on the inside below the head of the side rail using the snap-lock connector (RGVS 60) without tools. Push the snap-lock connector against the tray bottom by hand until a positive locking into place in the tray bottom occurs.



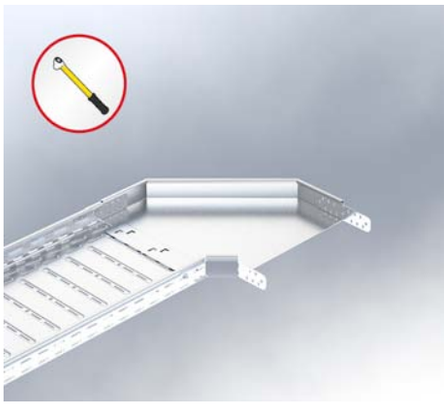
5 | Fixed and floating bearings
In case of extreme variations in temperature, a fixed and free bearing in the joint must be allowed for.
Left view: Fixed bearing (with pre-stamped washer, FRSV+SEMS)
Right view: floating bearing (with free washer FRSV+-SEMSS+US) and a clearance of 4 mm.



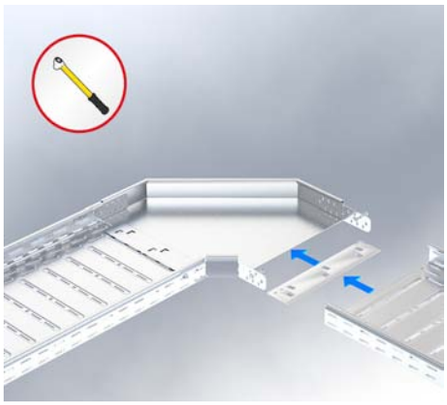
6 | End plate
In case of open support ends and a horizontal change in direction by < 30° open tray bottom.
For cable tray ends or open changes in direction, push tray end plate (REB) into the bottom of the cable tray and screw together.



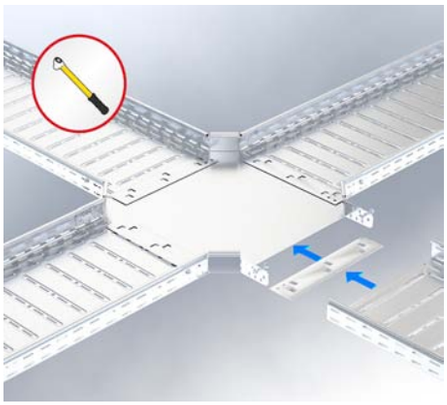
7 | Support distance to formed part end
Applies to all formed parts or changes in direction or open ends: The maximum distance of 300 mm with regard to the formed part end and the support must be observed.



8 | Horizontal curve
Insert the horizontal curve (RB) and the floor connector (VB) into the cable tray and screw together in one place per side rail. For type R 85, RG 85, R 110 and RG 110 cable trays, screw in two places per side rail as described for RB.

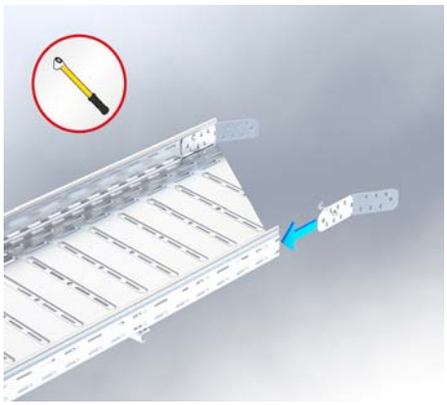


9 | Horizontal curve
Insert connecting tray and floor connector (VB) into horizontal curve (RB) and screw together in one place per side rail. For type R 85, RG 85, R 110 and RG 110 cable trays, screw in two places per side rail as described for RB.

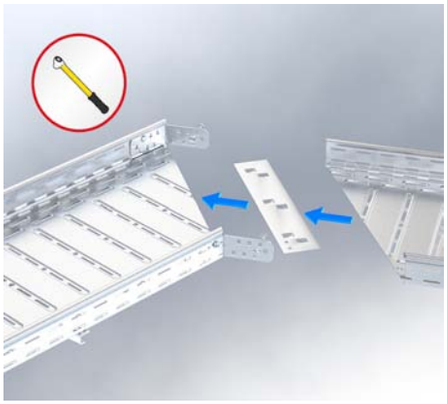


10 | Junction
Insert cable tray junction (RK) and floor connector (VB) into cable tray and screw together in one place per side rail. For type R 85, RG 85, R 110 and RG 110 cable trays, screw in two places per side rail as described for RB.

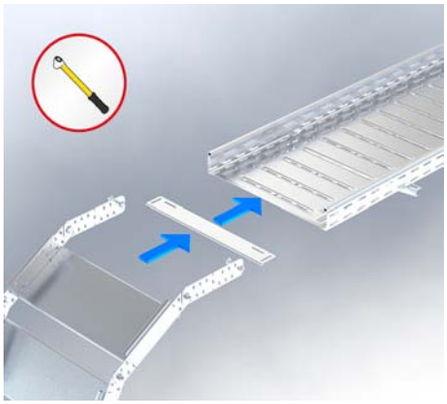
11 | Horizontal change in direction
For a horizontal change in direction without normed formed components, mitre the cable tray as required, deburr and cold-galvanise it.



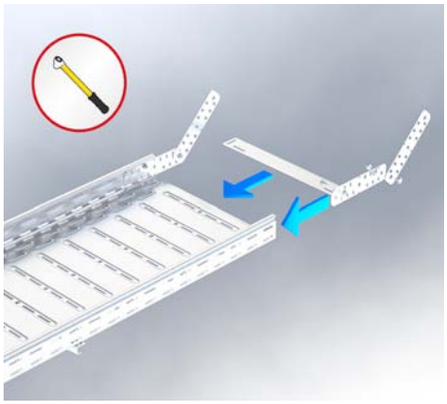
12 | Horizontal change in direction
Bend both side connectors (RGV) to the necessary angle, insert into the side rails of the cable tray and screw together as described for RGV (see image 3).



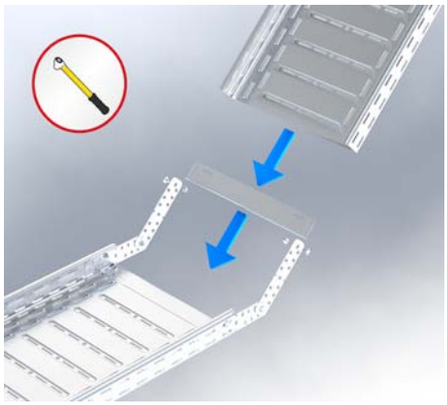
13 | Horizontal change in direction
Place floor connector (VB) of corresponding length inside the cable tray bottom, push connecting cable tray into side connectors (RGV) and screw together as described for RGV (see image 3).



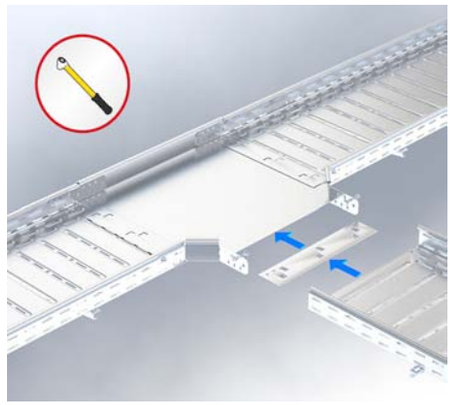
14 | Curve
Push flexible cable tray curve (RVB) into cable trays and screw together as described for RGV (see image 3). Insert the cable tray end plates at the ends of cable trays, push into the bottom of the cable trays and screw together as described for RGV (see image 6).



15 | Vertical change in direction
Vertical change in direction without formed component: Push tray end plate (REB) into the bottom of the cable tray and screw together as described for RGV (see image 3). Screw one RGV to each side rail with projection.

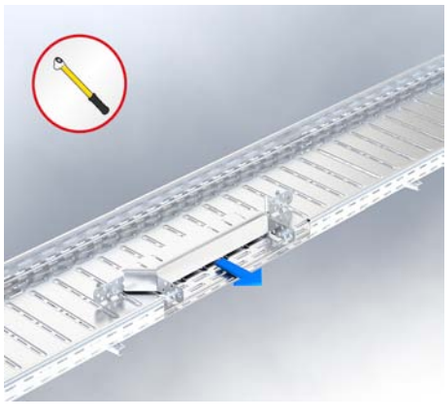


16 | Vertical change in direction
Insert connecting cable tray into the side connectors (RGV) and screw together (see image 3). At the cable tray ends, push cable tray end plates (REB) into the bottom of the cable tray and screw together (see image 6).

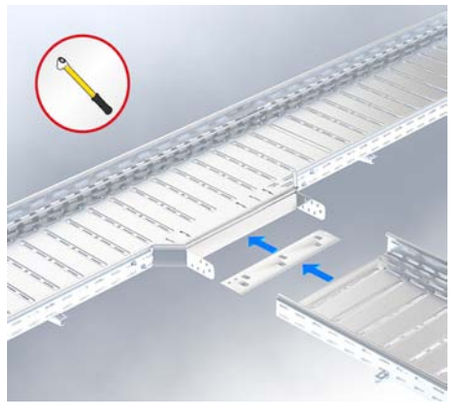


17 | Joint
Push joint (RA) and floor connector (VB) into the cable tray and screw together as described for RGV (see image 3). For type R 85, RG 85, R 110 and RG 110 cable trays, screw in two places as described for RB (see image 8).

18 | Extension joint
Installation of extension joints manufactured on site (RAA). Cut out the side rail of the cable tray flush with the bottom in width B = the connecting cable tray width + 120 mm, deburr and cold-galvanise.



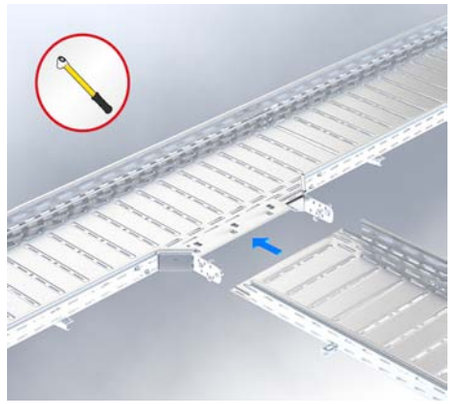
19 | Extension joint
Attach extension joint (RAA) and screw in one place per side rail. For type R 85, RG 85, R 110 and RG 110 cable trays screw together in two places as described for RB (see image 8).



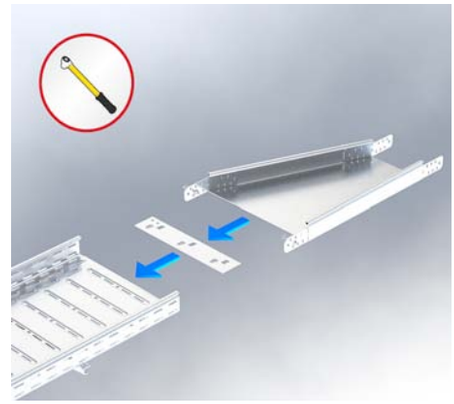
20 | Extension joint
Insert connecting cable tray and floor connector (VB) into the extension joint (RAA) and screw together as described for RGV (see image 3).

21 | Extension angle
Installation of tray extension angles (RAE). Cut out the side rail of the cable tray flush to the bottom in width B = the extension cable tray width + 120 mm.

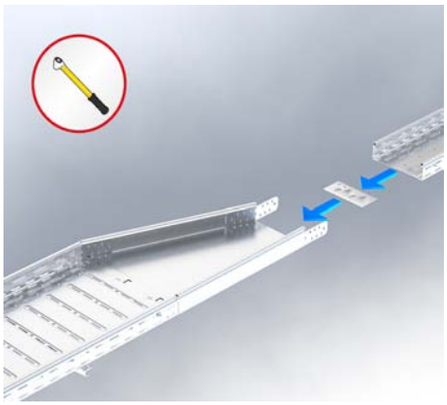
22 | Extension angle
Insert tray extension angles (RAE) into the cable trays and screw to the bottom in one place per side rail. Attach floor connector (VB).



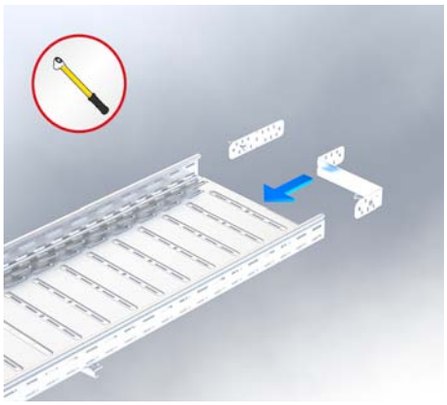
23 | Extension angle
Trim extension trays by 60 mm per side rail, push onto the extension angles and screw together in one place per side rail.



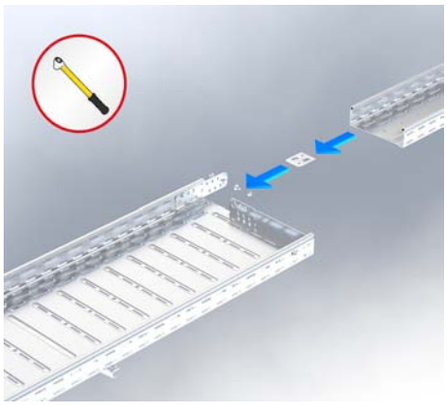
24 | Reduction
Insert cable tray reduction (RR) and floor connector (VB) into the cable tray and screw together in one place per side rail. For type R 85, RG 85, R 110 and RG 110 cable trays screw together in two places as described for RB (see image 8).



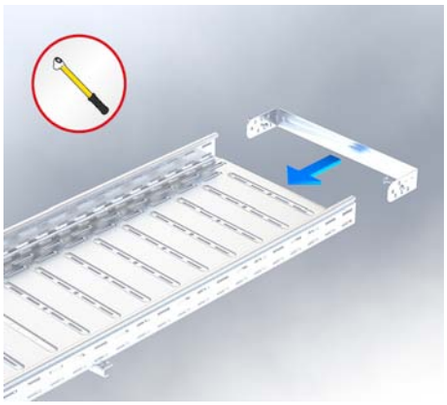
25 | Reduction
Insert extension cable tray and floor connector (VB) into cable tray reduction (RR) and screw together as described for RGV (see image 3).



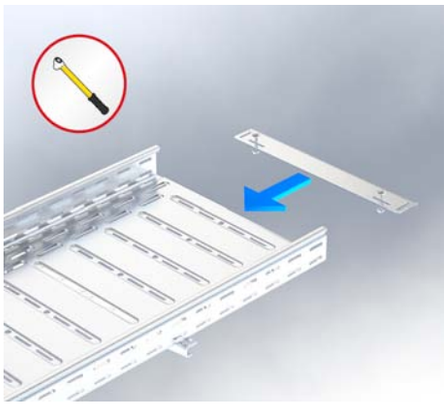
26 | Reduction using a closing plate
Cable tray reduction using a tray closing plate (RAB) and a side connector (RGV). Bend tray closing plate (RAB) into a z-shape and screw side connector (RGV) and tray end plate (RAB) as described for RGV (see image 3).



27 | Reduction using a closing plate
Insert extension cable tray and floor connector (VB) into the cable tray reduction (RAB) and screw together as described for RGV (see image 3).

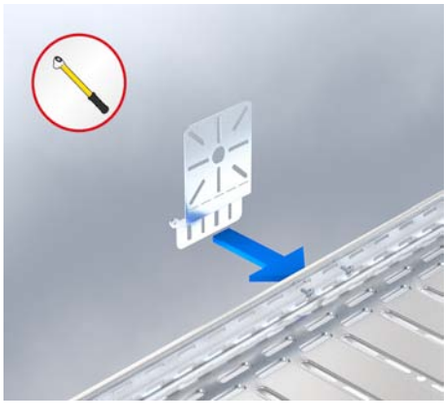


28 | Closing plate
Closing of a cable tray using a tray closing plate (RAB). Bend tray closing plate into a u-shape and push into the cable tray. Screw together as described for RGV (see image 3).

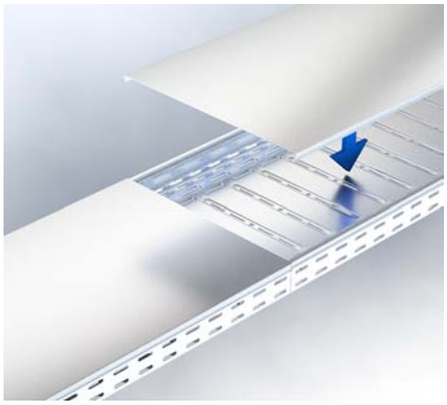


29 | End plate
Mounting of the tray end plate for the protection of the inbound or outbound cables.
Push tray end plate (REB) onto cable tray and screw to the bottom in two places if the width is at least 200 mm.

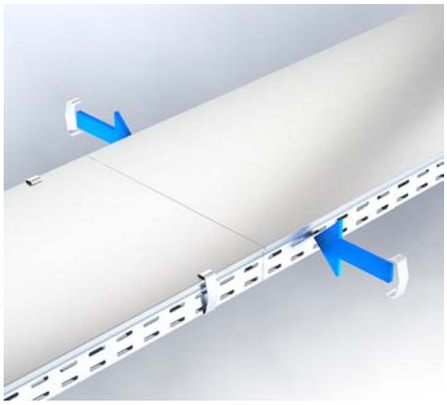
30 | Barrier strip
Screw barrier strip in three places (approx. 100 mm from both barrier strip ends as well as in the middle).



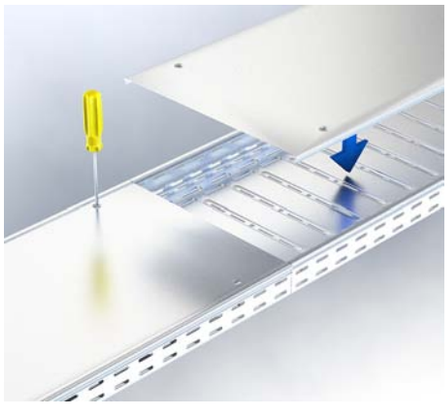
31 | Assembly plate
Screw the assembly plate (MP-RG) for electric components to the side rail of the cable tray in two places.



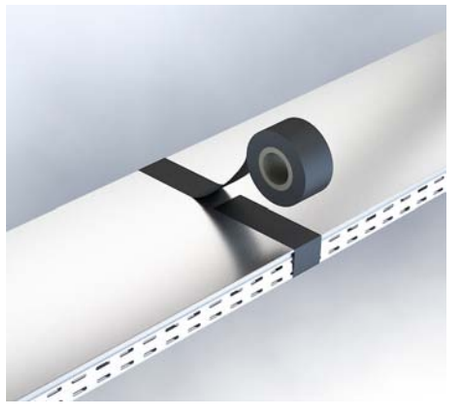
32 | Cover
Place the tray cover (RD) onto the cable tray and push against the side rail until a positive locking into place in the side rail occurs. For indoor use only!



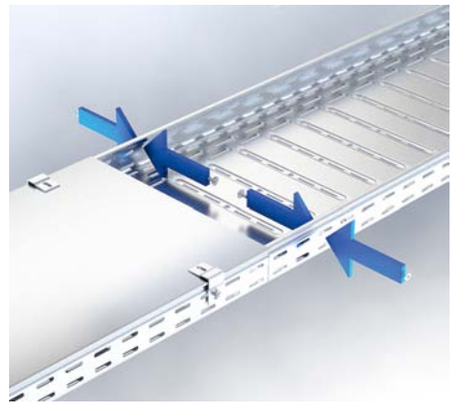
33 | Brackets
Place the cover brackets (RDKL) sideways onto the tray cover (RD) and push against the cover bracket (RDKL) until a positive locking into place with the cable tray bottom occurs. For indoor use only! 6 pieces / 3 metres



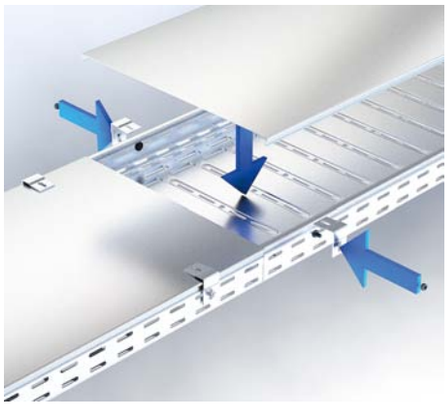
34 | Turning bolt
The tray cover with a turning bolt (RDR) should be mounted as described for RD (see image 32). In addition, turn the turning bolt using a screwdriver until the slit in the screw head points lengthwise towards the cable tray. For indoor use only!



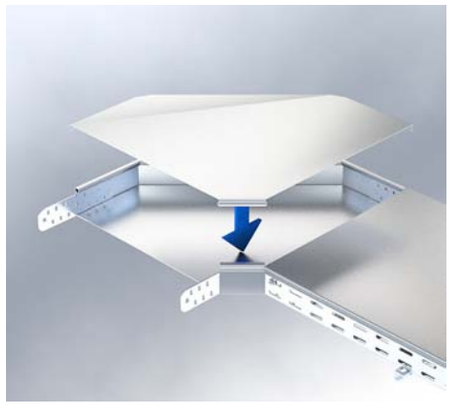
35 | Adhesive metal strip
Place the tray cover (RD) onto the cable tray (see image 32), then remove the separating foil of the adhesive metal strip (MKB) and wrap the strip around the cover and around the cable tray. For indoor use only!



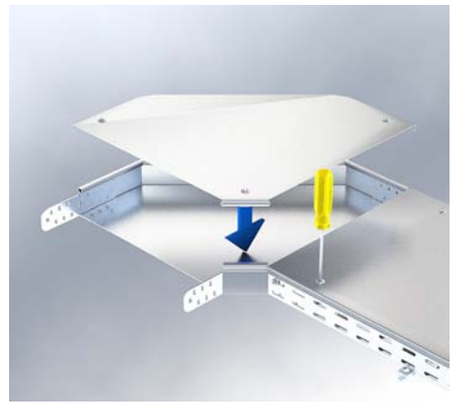
36 | Storm safety angle
Lead the screw (KLR) of the storm safety angle (RD-SW) on the inside through the cable tray. Push the anti-loss washer (UVS M6) on the screw.



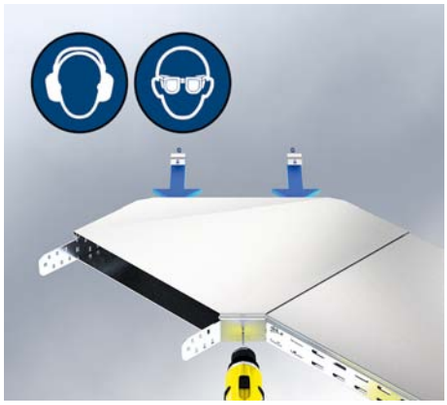
37 | Storm safety angle
Fasten the tray cover (RD) to the cable tray (see image 32), place the storm safety angle (RD-SW) from the outside onto the cover and screw using the screw nut SEMS M6. Suitable for outdoor use! 6 pieces / 3 metres



38 | Curve cover
As described for the cable tray covers (RD) (see image 32), the formed components, e.g. the curve cover (RBD), should be placed on the cable tray curve, pushing against the side rail until a positive locking into place in the side rail occurs. For indoor use only!



39 | Curve cover
The formed component covers with turning bolt, e.g. the tray curve cover (RDBR), are mounted with a turning bolt (RDR) as described for the tray cover (see image 34).



40 | Storm safety angle
Storm safety angles (RD-SW-L) for formed components covers are mounted as described for the tray cover (RD) (see image 38). In addition, the through holes should be made using an RD-SW-L as a drilling template. RAA 2 pieces, RB 3 pieces and RA and RK 4 pieces

41 | Cutting and sectioning work
Perform cutting and sectioning work with greatest care and observe the occupational safety.

42 | Galvanising
All cutting and sectioning points must be galvanised with cold zinc paint (KZF) or cold zinc spray (KZS) by the customer after the deburring.

Legend Accessories

FRSV 6x12

US 6x12

SEMS M6

SEMSS M6

SEM M6

KLR

Symbols

Wear protection glasses

Wear ear protection

Observe tightening torque for fasteners

S Sendzimir-hot-dip galvanised according to DIN EN 10346

F Hot-dip galvanised according to DIN EN ISO 1461

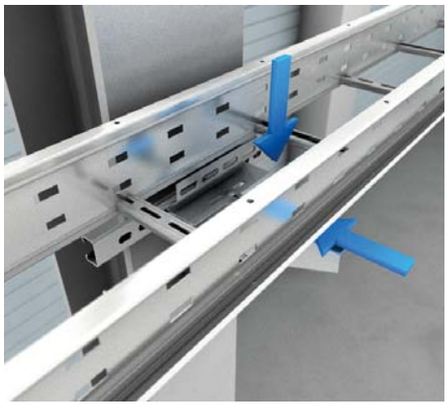
E High-grade steel material No. 1.4301 (V 2A)

Screw tightening torques (recommended)

Bolt diameter	Strength category screw (DIN 267 part 3)	Strength category nut (DIN 267 part 4)	Screw tightening torque (Nm) acc. VDI 2230
M6	4.6	5	4
M6 E	4.6	A2 50	4

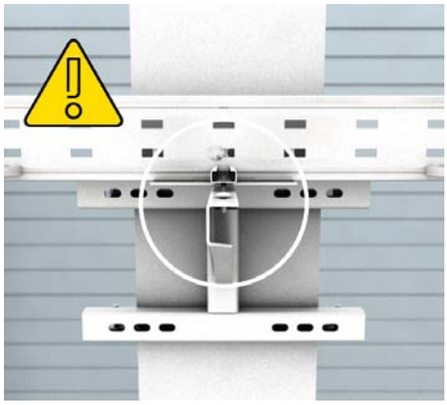
Wide-span cable ladders bridge large fastening gaps. The support structures must be planned according to engineering practice and it is a must to use side rail bearers with the brackets. All bolted connections must be tightened correctly.

1 | Flange mounting clamp
Bolt the rear flange mounting clamp (WPHS) to the bracket.

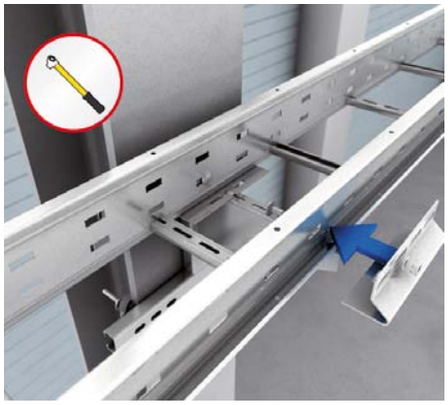


2 | Carefully position
Carefully position the wide-span cable ladder and push it against the fixed flange mounting clamp. Make sure the wide-span cable ladder is in the correct position!

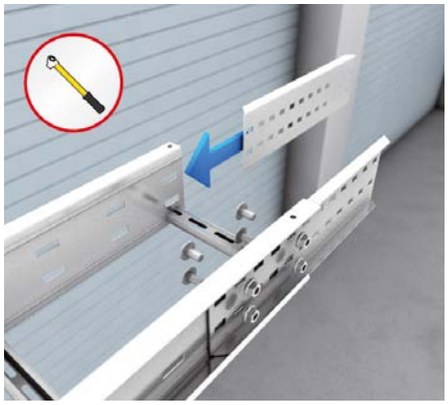
3 | Correctly positioned
Correct: Make sure the bracket is correctly positioned between the rungs of the wide-span cable ladder.



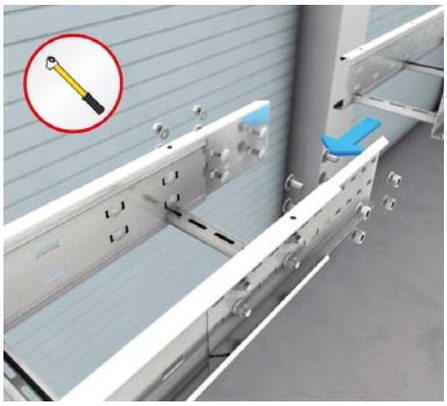
4 | Wide-span cable ladder's
Attention: The mounting clamp (WPHS) has to be bolted to the bracket, even if a rung is positionend directly above the bracket.



5 | Side rail bearer
Push the front flange mounting clamp (WPHS) onto the bracket and bolt the wide-span cable ladder, bracket, and WPHS together.



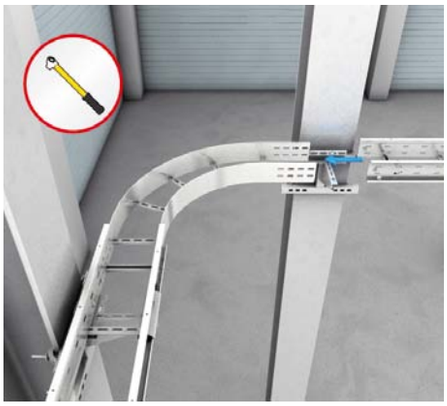
6 | Wide-span coupler
Insert edge connectors (WPV) into the wide-span cable ladder's side rails and secure them with four clamping screws (KLS 10x20) per side rail.



7 | Connecting ladder
Insert the connecting ladder into the wide-span coupler (WPV), leaving a gap of 4 mm between the ends of the two ladders. Then, secure the second ladder to the coupler (WPV), tightening the self-locking hexagon nuts (SEMSS 10 or SEMB 10) with a torque of 3 Nm.

8 | Fixed bearing
Left: fixed bearing (with integral washer). Center: the 4 mm gap between the ends of the two ladders. Right: floating bearing (with unmounted washer). (Connector accessories see table on page 6)

9 | Horizontal bend
Insert a horizontal bend (WPLB) into the wide-span cable ladder and fix it in place with two bolts per side rail.

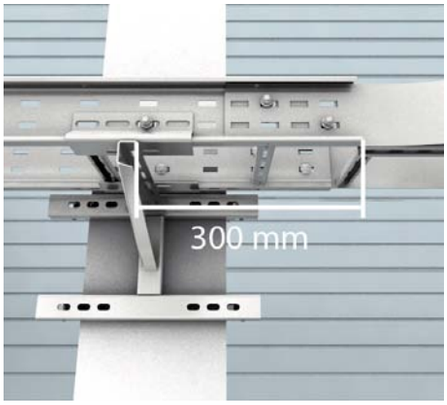


10 | Connecting ladder
Insert the next connecting ladder into the horizontal bend (WPLB) and secure it with two bolts per side rail.

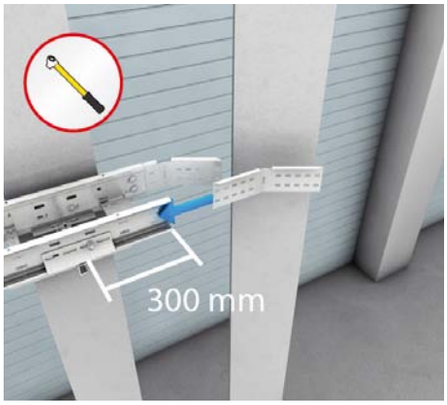
11 | Wide-span branch piece
Insert a wide-span branch piece (WPLA) into the wide-span cable ladder and attach it with two bolts per side rail.

12 | Outside riser
Insert an outside riser (WPLF) into the wide-span cable ladder and bolt it in two places per side rail. Then, insert a connecting ladder into the outside riser (WPLF) and secure it with two bolts per side rail.

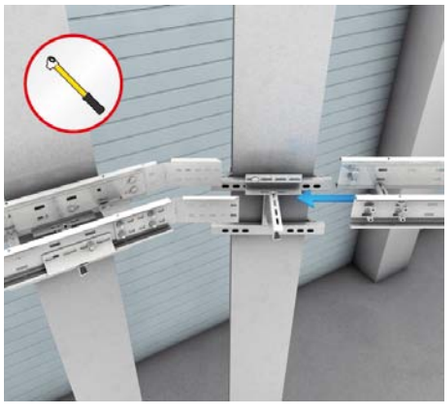
13 | Inside riser
Insert an inside riser (WPLS) into the wide-span cable ladder and fix it in place with two bolts per side rail. Then, insert a connecting ladder into the inside riser (WPLS) and bolt it in two places per side rail.



14 | Fittings
For all fitting parts to make directional changes, please make sure, that the distance between the end of the wide-span ladder and the bracket cannot exceed 300 mm.

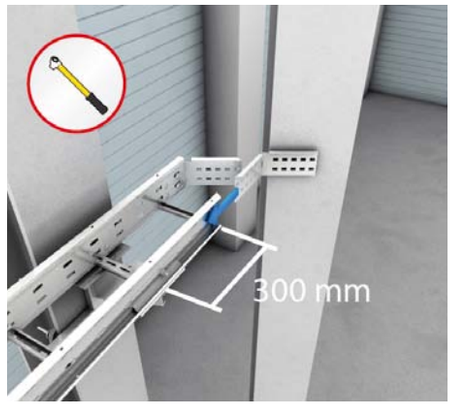


15 | Horizontal directional changes
For horizontal directional changes of less than 30° note: First, bend both couplers (WPVH) to the required angle on site. Then, insert them into the wide-span cable ladder and secure them with four bolts per side rail.

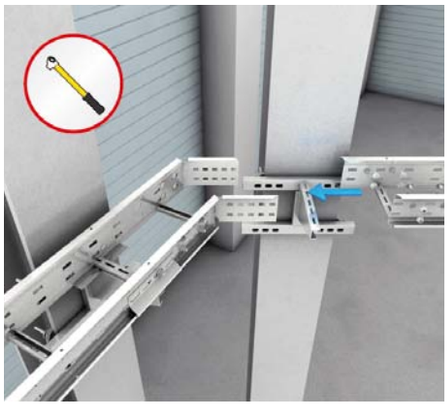


16 | Wide-span coupler
Now, insert a connecting cable ladder into the coupler (WPVH) and fix it in place with four bolts per side rail.

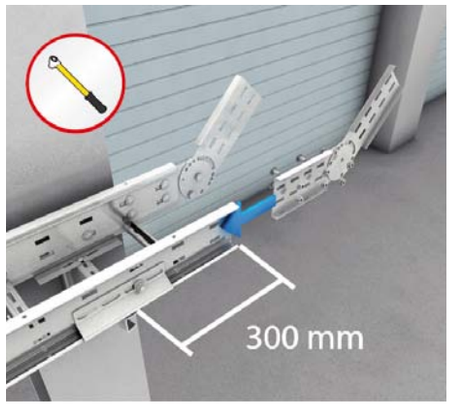
17 | Horizontal directional changes
For horizontal directional changes of more than 30° note, that you have to create a mitre joint for the wide-span cable ladder at the required angle, then, as necessary, remove any extra rungs. Afterwards deburr and cold-galvanise.



18 | Wide-span couplers
First, bend both wide-span couplers (WPVH) to the required angle on site. Then, insert them into the wide-span cable ladder and secure them with four bolts per side rail. The distance between the end of the wide-span ladder and the bracket cannot exceed 300 mm.



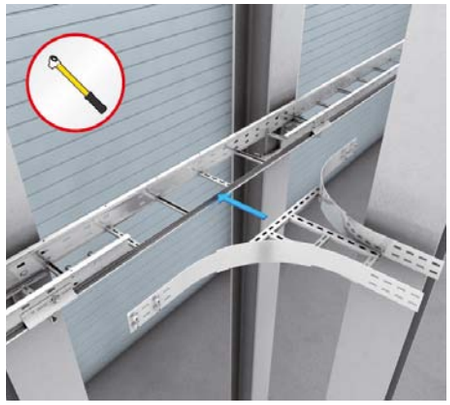
19 | Connecting cable
Insert a connecting cable ladder into the coupler (WPVH) and fix it in place with four bolts per side rail.



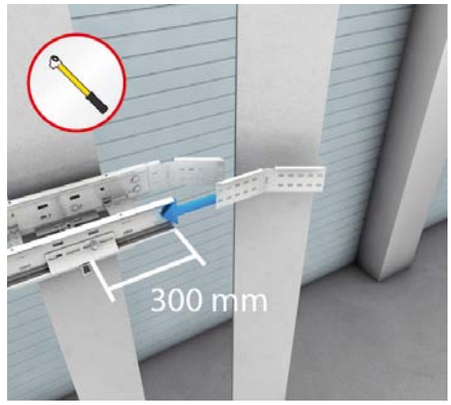
20 | Vertical directional changes
For vertical directional changes note, that you have to first adjust both vertical couplers (WPVV) to the required angle and fix them in place with bolts. Then insert the couplers into the wide-span cable ladder and bolt them in four places per side rail. The distance between the end of the wide-span ladder and the bracket cannot exceed 300 mm.

21 | Vertical wide-span couplers
Insert a connecting cable ladder into the couplers (WPVV) and attach it with four bolts per side rail.

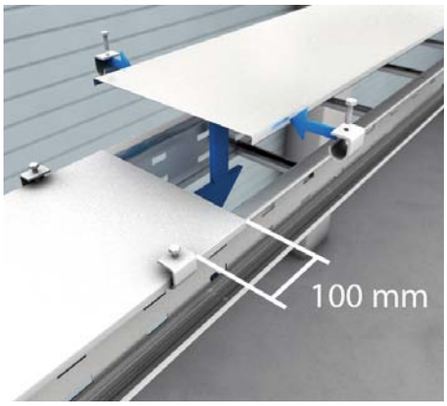
22 | Attachment branch-piece
To fit an attachment branch-piece (WPLAA), a portion of the connecting side rail must be removed. Cut a length of 900 mm + the width of the connecting cable tray from the side rail of the wide-span cable ladder (“B” in the photo). Don’t cut through the whole height of the side rail: H=23 mm must be left at the base of the side rail to support the branch-piece.



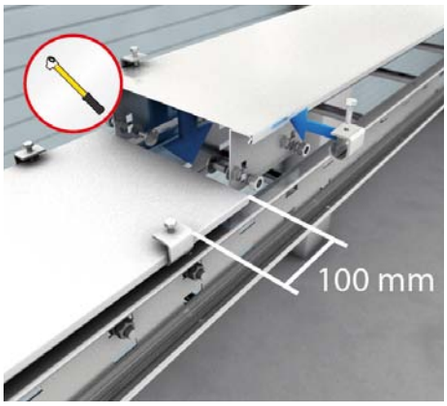
23 | Attachment branch-piece
Attach a branch-piece (WPLAA) with four bolts per side rail.



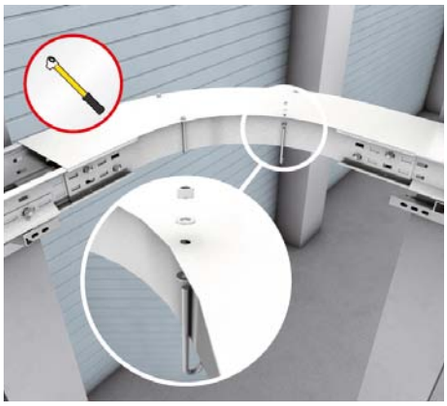
24 | Attachment branch-piece
Insert a connecting ladder into the branch-piece (WPLAA) and fix it in place with four bolts per side rail.



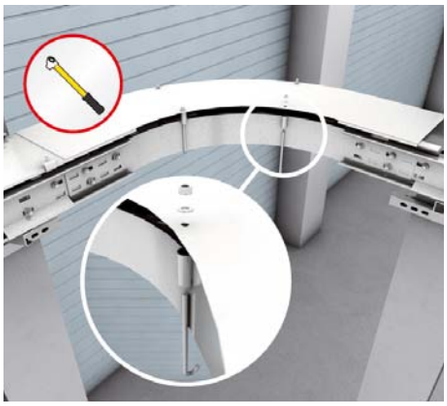
25 | Cover clamps
Secure covers (WPD) with cover clamps (WPD-K) at 100 mm from each end of the cover and in the middle. (6 pieces / 3m)



26 | Secure elevated covers
Secure elevated covers (WPD) with cover clamps (WPD-K and WPDA) at 100 mm from each end of the cover and in the middle. (6 pieces / 3m)

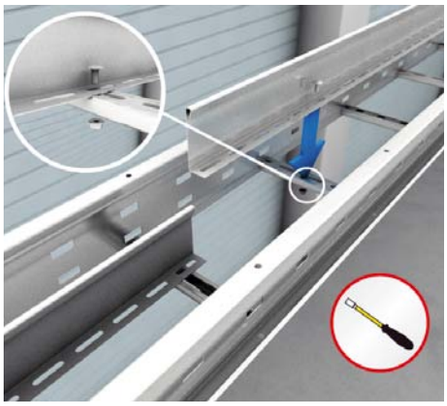


27 | Cover clamps
Attach covers to wide-span cable ladder fittings (WPBD, WPAD or WPKD) with cover clamps (WPFDK) at every hole.



28 | Fittings
Bolt elevated covers to wide-span cable ladder fittings (WPBD, WPAD or WPKD) with cover clamps (WPFDKA) at every hole.

29 | End plate
Attach the end plate (WPKAB) to the desired rung of the cable ladder by bolting it with the provided channel nut AM16 in two places.



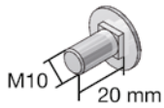
30 | Barrier strip
Using a socket wrench, secure the barrier strip (WPTR) in the front, middle, and back.

31 | Cutting
Cutting must be performed with the greatest care, complying to all industrial safety regulations.

32 | Galvanised
After the deburring, all cut areas must be galvanised with cold zinc paint (KZF) or cold zinc spray (KZS) on site.

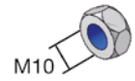
Legend Accessories

FRSV 10x20



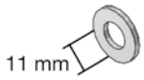
SEMS 10

SEMB 10



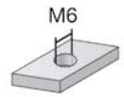
SEM 10

US 10x21



SEMSS 10

AM16



Underline Symbols


Wear protection glasses


Wear ear protection


Correct


Wrong


Observe tightening torque for fasteners


Attention!

S Sendzimir-hot-dip galvanised according to DIN EN 10346

F Hot-dip galvanised according to DIN EN ISO 1461

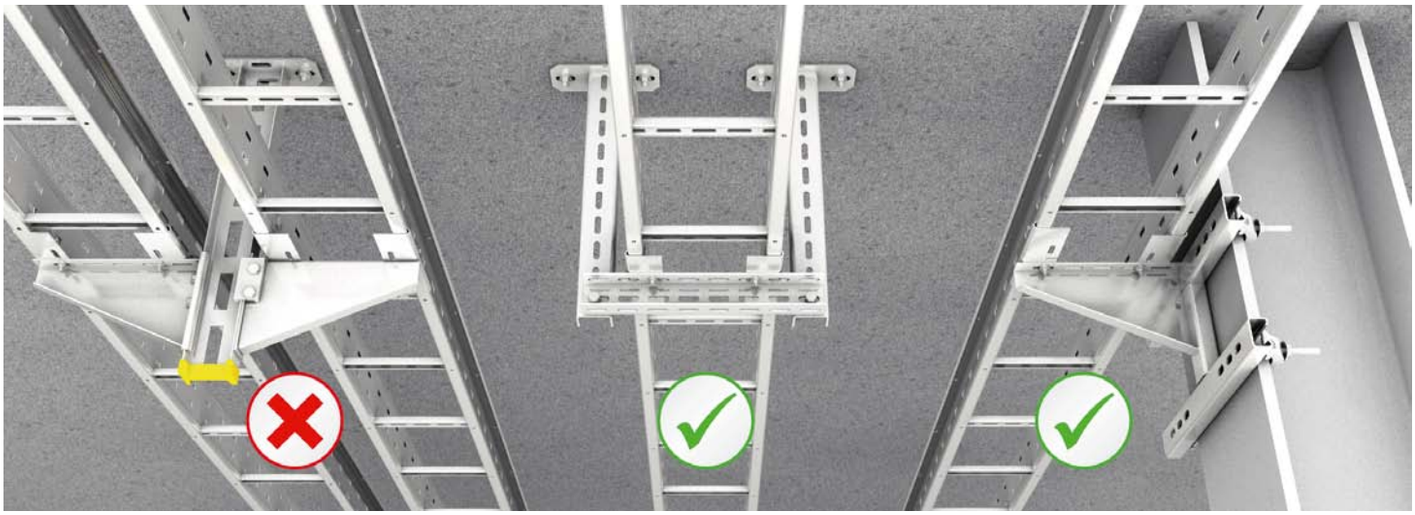
E High-grade steel material No. 1.4301 (V 2A)

Screw tightening torques (recommended)

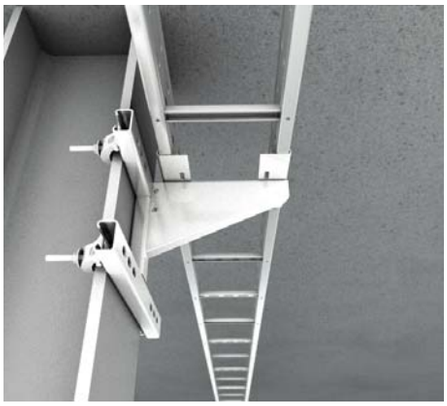
Bolt diameter	Strength category screw (DIN 267 part 3)	Strength category nut (DIN 267 part 4)	Screw tightening torque (Nm) acc. VDI 2230
M6	4.6	5	4
M8	4.6	5	8
M10	4.6	5	16
M12	4.6	5	32
M16	4.6	5	76
M6	8.8	8	14
M8	8.8	8	34
M10	8.8	8	68
M12	8.8	8	117
M16	8.8	8	291

connector accessories

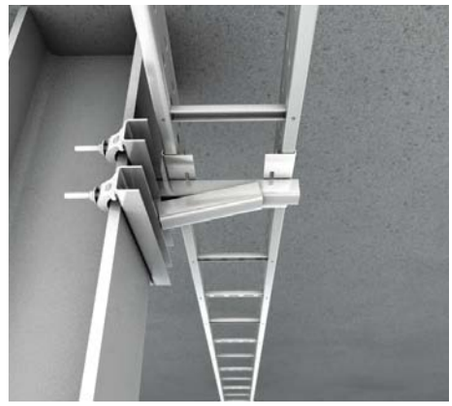
	fixed bearing (16 Nm)			floating bearing (3 Nm)		
S	FRSV 10x20	SEMS 10		FRSV 10x20	SEMSS 10	US 10x21
F	FRSV 10x20F	SEM 10F	US 10x21F	FRSV 10x20F	SEMB 10F	US 10x21
E	FRSV 10x20E	SEM 10E	US 10x21E	FRSV 10x20E	SEMSS 10E	US 10x21E



Supporting structures must be torsion free! Wide-span cable ladders must not be attached to ceiling profiles (single- or double-sided). Only installation with (wall) brackets or pendant suspension is acceptable.



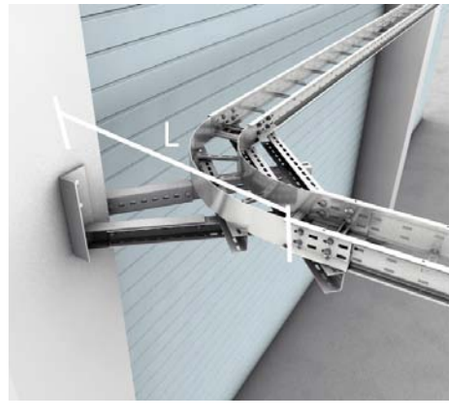
1 | Heavy-duty wall bracket
Heavy-duty wall bracket (KIS) are clamped to steel support with side-rail support (WPHS-K) and clamping claws (SKS H).



2 | Heavy-duty wall bracket
Heavy-duty wall bracket (KISS) are clamped to steel support with side-rail support (WPHS-A) and clamping claws (SKS M).

3 | Heavy-duty wall bracket
Heavy-duty wall bracket (KWS) are mounted on concrete wall with bracket rail support (WPHS-K).

4 | Heavy-duty wall bracket
Heavy-duty wall bracket (KWSS) are mounted on concrete wall with bracket rail support (WPHS-A).



5 | Horizontal
Heavy-duty corner installation (EBW) for horizontal 90° bends with side rail support (WPHS-K) has to be mounted on a concrete support.
L = width of wide-span cable ladder + 560 mm

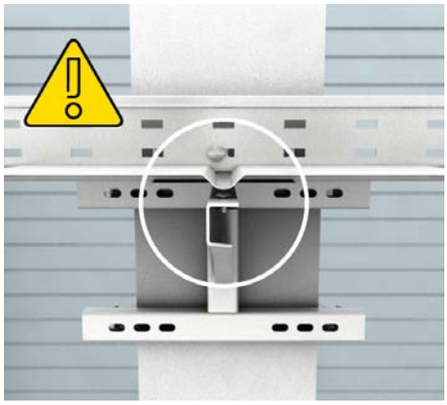
6 | Profiles
Pendant suspension from profiles (e.g. KHU 60) with crossbeam and side-rail support (WPHS-K) are anchored to concrete ceiling.

Wide-span cable trays are for bridging large fastening gaps. The fastening constructions must be planned by engineer and the use of side rail bearers on the brackets must be strictly kept. The permissible torque must be comply with in all screw connections.

1 | Flange mounting clamp
Screw backside flange mounting clamp (WPHS) on the bracket.

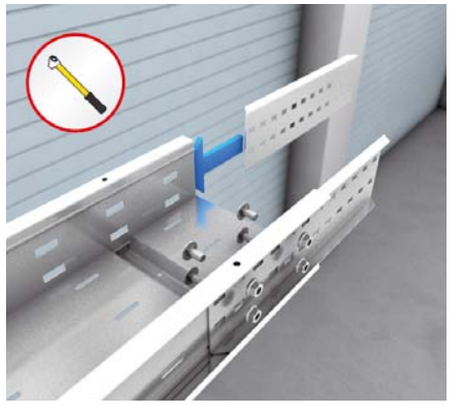
2 | Flange mounting clamp
Place wide-span cable tray in position and push against screwed flange mounting clamp (WPHS). Make sure the wide-span cable tray is in the correct position!

3 | Correctly positioned
Make sure the bracket is positioned correctly between the seams of the wide-span cable tray.

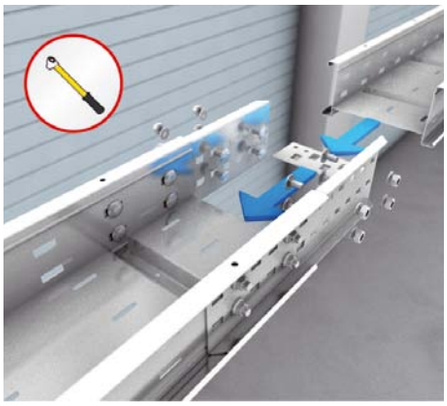


4 | Wide-span cable ladder's
Attention: The mounting clamp (WPHS) has to be bolted to the bracket, even if a rung is positionend directly above the bracket.

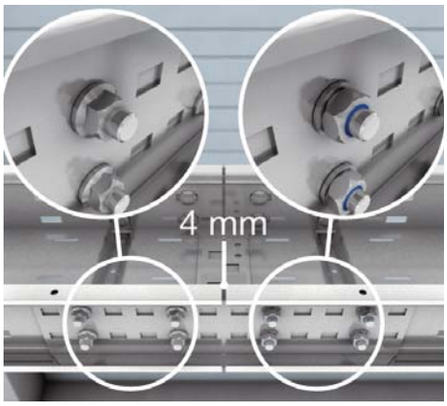
5 | Flange mounting clamp
Push flange mounting clamp (WPHS) onto the bracket and screw together with the wide-span cable tray and the bracket.



6 | Wide-span coupler
Push wide-span coupler (WPV) into the side rail of the wide-span cable tray and screw four times per side rail with clamping screw (KLS 10x20).



7 | Connection plate
Insert connection plate (VB) on the bottom of the wide-span cable tray, push in connecting tray with a space of 4 mm and screw to coupler (WPV) using self-securing screw nuts (SEMSS 10 or SEMB 10). Permissible torque: 3 Nm.

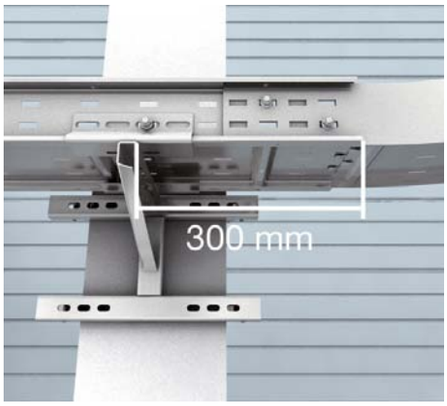


8 | Fixed and floating bearing
View: left fixed bearing (with integral washer), right loose bearing (with loose washer) and a 4 mm clearance. Connector accessories see page 6.

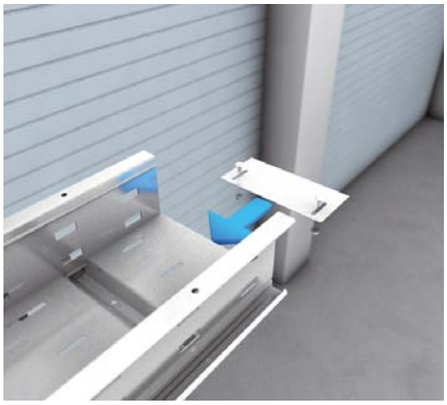
9 | Horizontal bend
Insert horizontal bend (WPRB) with connection plate (VB) into wide-span cable tray and screw two times per side rail.

10 | Connecting tray
Insert connecting tray with connetion plate (VB) into horizontal bend (WPRB) and screw two times per side rail.

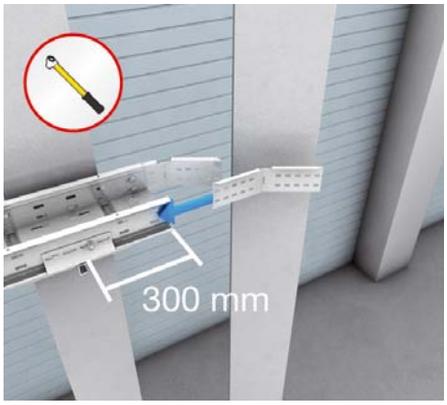
11 | Branch-piece
Insert branch-piece (WPRA) with connection plate (VB) into wide-span cable tray and screw two times per side rail.



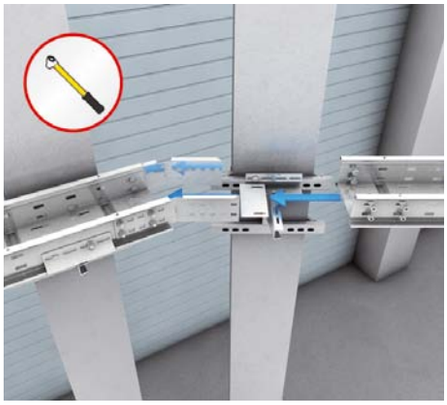
12 | Maximum space
It applies to all formed components or turnarounds: The maximum space of 300 mm with regard to formed component end and bracket must be complied to.



13 | Horizontal directional changes
Horizontal turnaround < 30 degrees – open tray bottom. Insert wide-span tray end plate (WPREB) into wide-span cable tray bottom at the wide-span cable tray ends or at open turnarounds and screw together.

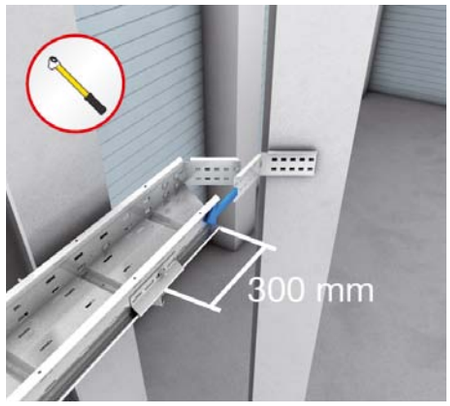


14 | Horizontal directional changes
Bend both side connectors (WPVH) into the angle required for the construction. Insert into the side rails of the wide-span cable tray and screw four times per side rail. The maximum space of 300 mm must be kept with regard to the wide-span tray end and bracket.

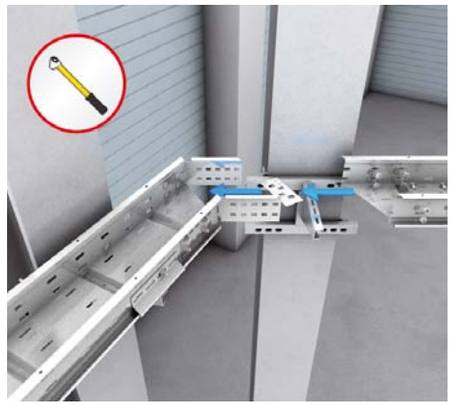


15 | Horizontal directional changes
Push connector cable tray into the coupler (WPVH) and screw four times per side rail.

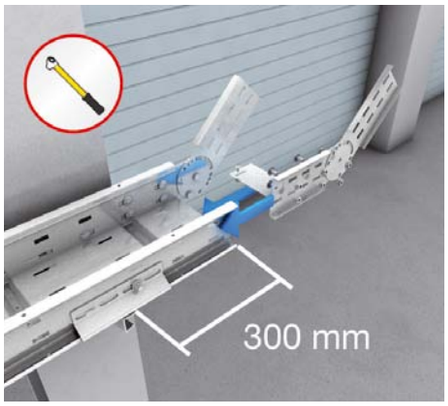
16 | Horizontal directional change
Horizontal turnaround > 30 degrees – closed tray bottom. Mitre wide-span cable tray as required, deflash and



17 | Wide-span coupler
Bend both wide-span coupler (WPVH) into the angle required for the construction. Insert into the side rails of the wide-span cable tray and screw four times per side rail. The maximum space of 300 mm must be kept with respect to the wide-span tray end and the bracket.

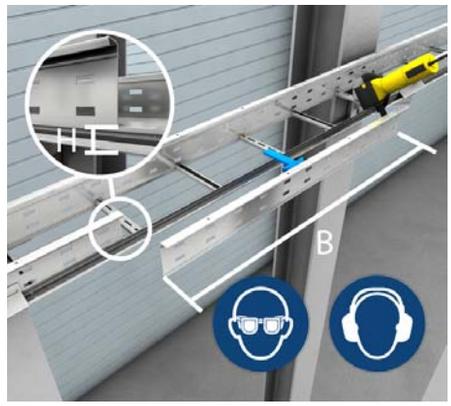


18 | Connection plate
Insert connection plate (VB) into bottom of the wide-span cable tray, push connecting cable tray into coupler (WPVH) and screw four times per side rail.

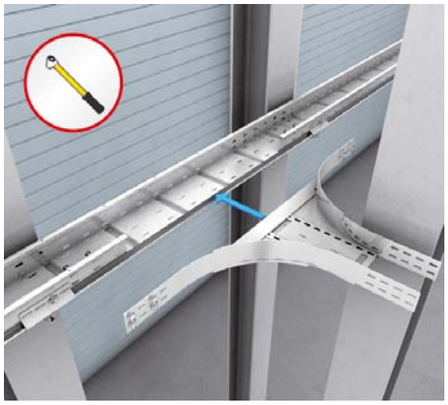


19 | Vertical directional change
To install a vertical turnaround, adjust and screw both couplers (WPVV) to the angle required for the construction, push into the side rails of the wide-span cable tray and screw four times per side rail. The maximum space of 300 mm must be kept with respect to the wide-span cable tray end and the bracket.

20 | Vertical directional change
Insert connecting tray into coupler (WPVV) and screw four times per side rail. Insert wide-span tray end plate (WPREB) into wide-span cable tray bottom at the wide-span cable tray ends or at open turnarounds and screw together.

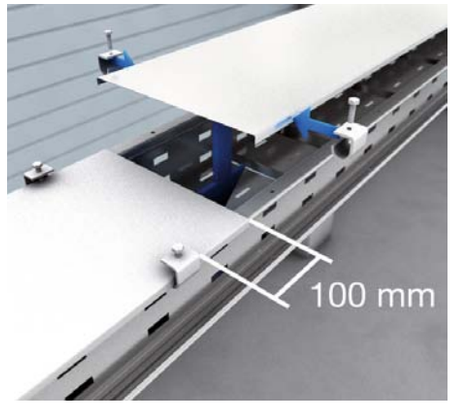


21 | Branch-piece
To install branch-piece (WPRAA) cut out the side rail of the wide-span cable tray in a width B = connecting cable tray width + 900 mm flush with the floor (H = 23 mm).

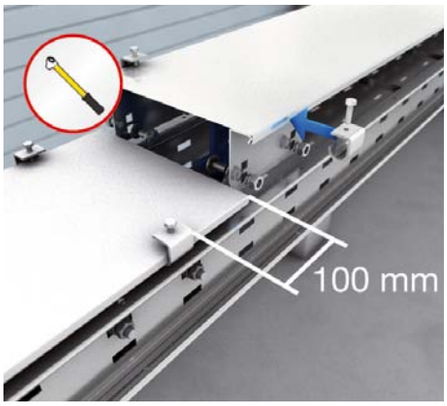


22 | Branch-piece
Attach branch-piece (WPRAA) and screw four times per side rail side.

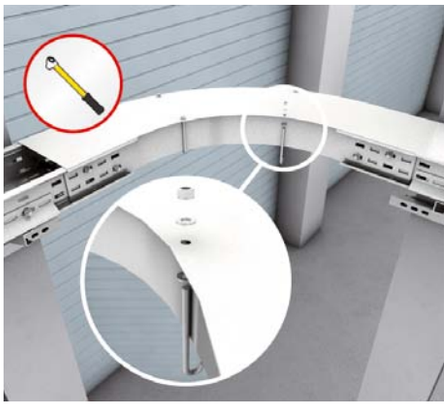
23 | Branch-piece
Insert connecting tray with connection plate (VB) into extension branch-piece (WPRAA) and screw four times per side rail.



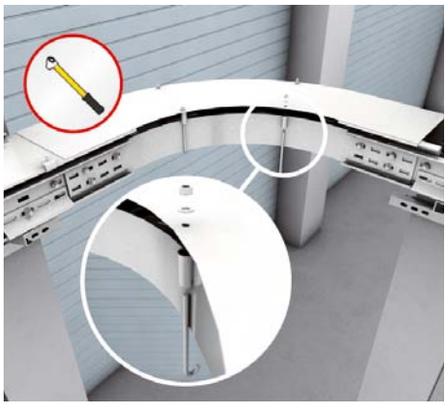
24 | Cover
Secure covers (WPD) with cover clamps (WPD-K) with a space of 100 mm from the cover ends and in the centres of the covers.



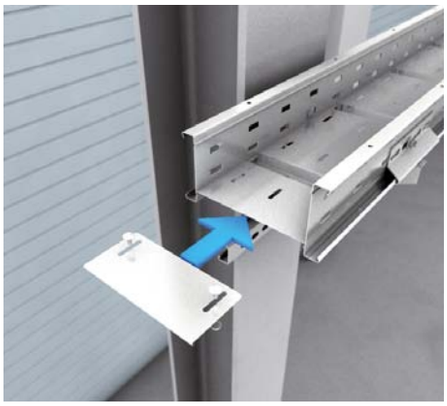
25 | Cover clamps
Secure elevated covers (WPD) with cover clamps (WPD-K and WPD-A) with a space of 100mm from the cover ends and in the centres of the covers.



26 | Cover clamps
Screw covers onto the wide-span cable tray form parts (WPBD, WPAD or WPKD) with cover clamps (WPFDK) into all drill holes of the covers.



27 | Cover clamps
Screw elevated covers onto the wide-span cable tray form parts (WPBD, SPAD or WPKD) with cover clamps (WPFDKA) into all drill holes of the covers.



28 | Wide-span cable tray end plate
Push wide-span cable tray panel sheet (WPREB) up against tray bottom and screw tight.

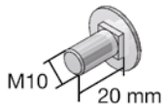
29 | Barrier strip
Screw barrier strip (WPTR) three times (front, middle, back).

30 | Cutting ans severing work
Cutting and severing work must be done with greatest care complying to all industrial safety regulations.

31 | Galvanize
All cutting and partition areas must be galvanised by customers with cold zinc paint (KZF) or cold zinc spray (KZS) after the deburring on site.

Legend Accessories

FRS 10x20



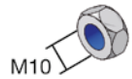
SEMS 10

SEMSS 10

KLS 10x20

SEM 10

SEMB 10



US 10x21

Underline Symbols


Wear protection glasses


Wear ear protection


Correct


Wrong


Observe tightening torque for fasteners


Attention!

S Sendzimir-hot-dip galvanised according to DIN EN 10346

F Hot-dip galvanised according to DIN EN ISO 1461

E High-grade steel material No. 1.4301 (V 2A)

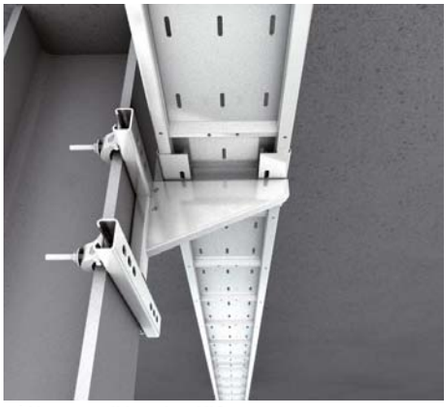
Screw tightening torques

Bolt diameter	Strength category screw (DIN 267 part 3)	Strength category nut (DIN 267 part 4)	Screw tightening torque (Nm) acc. VDI 2230
M10	4.6	5	16
M10	8.8	8	68

connector accessories

	fixed bearing (16 Nm)			floating bearing (3 Nm)		
S	FRSV 10x20	SEMS 10		FRSV 10x20	SEMSS 10	US 10x21
F	FRSV 10x20F	SEM 10F	US 10x21F	FRSV 10x20F	SEMB 10F	US 10x21
E	FRSV 10x20E	SEM 10E	US 10x21E	FRSV 10x20E	SEMSS 10E	US 10x21E

Supporting structures must be assemble torsion-free! The assembly to ceiling profiles (one- or double-sided) is prohibited. Solely the assembly to (wall) brackets or pendant suspensions is allowed.



1 | Heavy wall bracket KIS
Heavy wall bracket (KIS) are to be clamped to steel support with side-rail support (WPHS-K) and clamping claws (SKS H).

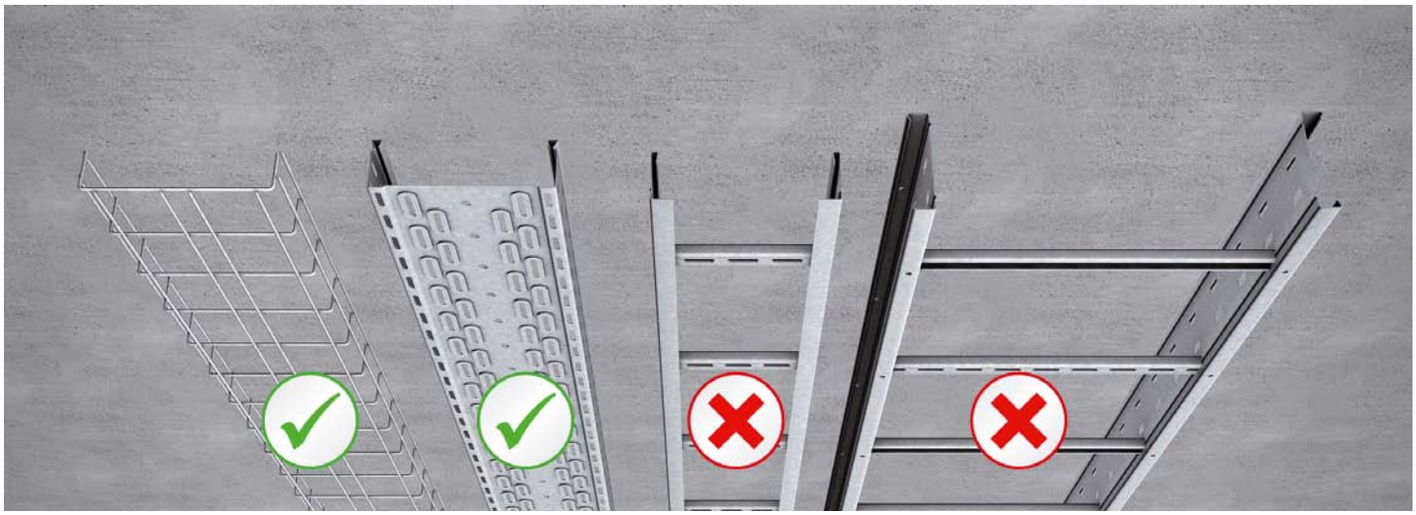
2 | Heavy wall bracket KISS
Heavy wall bracket (KISS) are to be clamped to steel support with side-rail support (WPHS-A) and clamping claws (SKS M).

3 | Heavy wall bracket KWS
Heavy wall bracket (KWS) are to be plugged to concrete wall with bracket rail support (WPHS-A).

4 | Heavy wall bracket KWSS
Heavy wall bracket (KWSS) are to be plugged to concrete wall with bracket rail support (WPHS-A).

5 | Heavy corner installation EBW
Heavy corner installation (EBW) for horizontal 90-degree turnarounds with side rail support (WPHS-K) are to be plugged to concrete support.
L = width of wide-span cable tray + 560 mm

6 | Pendant suspension
Pendant suspension from profiles (e.g. KHU 60) with equaliser bar and side-rail support (WPHS-K) are to be plugged to concrete ceiling.



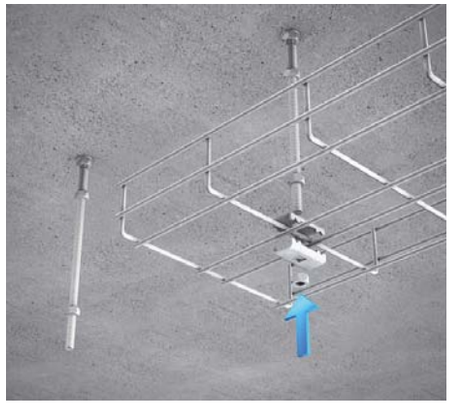
Installation instruction for support systems of wire-mesh cable trays and cable trays attached directly to concrete.

1 | Wall mounting with bracket KWLL
To install the bracket KWLL use a dowel such as e.g. SD 8/30*. Please make sure to use the small washer of the dowel between the anchor nut and the large washer US 8x25*.

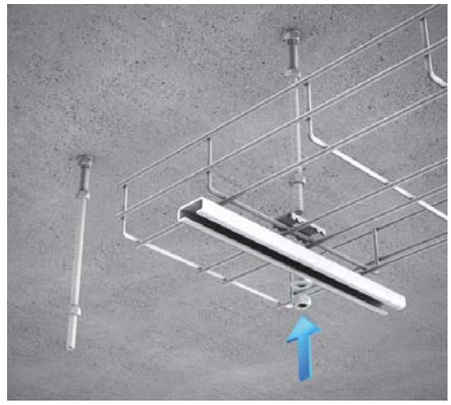
2 | Wall mounting with bracket KSLW
To install the bracket KSLW use a dowel such as e.g. SD 8/30*. The spacer KSL-SP must be positioned before the dowel.

3 | Wall mounting with bracket KWF
To install the bracket KWF use a dowel such as e.g. SD 10/10*.

4 | Wall mounting with bracket KWW
To install the bracket KWW use a dowel such as e.g. SD 8/10*. Please use the outer slots of the profile to fixate the bracket.



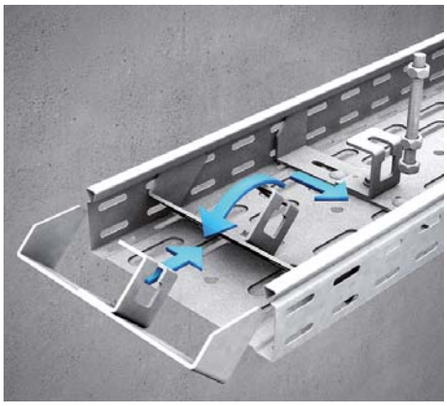
5 | Central suspension for wire-mesh cable tray of up to 100 mm width
Connect the central hanger GBAG 10 to the dowel using a hexagonal connector VM M8*. Mount the connectors GV 30 with the wire-mesh cable tray inbetween.



6 | Central suspension for wire mesh cable tray of up to 300 mm width
Connect the central hanger GBAG 20/30 to the dowel using a hexagonal connector VM M8*. Mount the connector GV 30 as well as the profile rails with the wire-mesh cable tray inbetween both.

* The article is not included in the scope of delivery and must be ordered separately.

7 | Central suspension for cable trays of up to 300 mm width
Connect the central hanger GBAR to the dowel using a hexagonal connector VM M10*. Dismount the profile rails and remount together with the cable trays.



8 | Central suspension for cable trays of up to 300 mm width
Insert the central hanger MA into the cable tray in a tilted position and clip together by turning the MA. Insert the pre-mounted threaded rod GB M10* sideways into the central hanger MA and secure using a hexagonal nut SEM 10*.

9 | Ceiling mounting with ceiling-fixed bracket DB
To install the bracket DB use dowels such as e.g. SD 8/30*. Please make sure to use the small washer of the dowel between the anchor nut and the large washer US 8x25*.

10 | Ceiling mounting with bracket support KDU 40
To install the KDU 40 use two dowels such as e.g. SD 8/10*. Secure the bracket KWF using KHUSS 40 support piece set. The protection cap SU 40* is fitted to the bracket bottom, if needed.

11 | Ceiling mounting with head plate BGU 40 and U-profile KHU 40
To install the BGU 40 use two dowels such as e.g. SD 8/10*. Mount the U-profile KHU 40 to the head plate BGU 40 using head screw set KLS 10x20*. Secure the bracket KWF using KHUSS 40 support piece set. The protection cap SU 40* is fitted to the bracket bottom, if needed.

11 A | Ceiling mounting with bracket support KDU 40 at reduced load – without supporting piece KHUSS 40
To install the KDU 40 use two dowels such as e.g. SD 8/10*. The bracket KWF is mounted with full thread hexagonal head screw 10x20* and two washers US 10x21* onto bracket support. The protection cap SU 40* is fitted to the bracket bottom, if needed.

12 | Ceiling mounting with bracket support KSLW
To install the KSLW use dowels such as e.g. SD 8/30*. The spacer KSL-SP must be positioned before the bracket support. Mount the bracket KSL using head screw FRS 8x20 and hexagonal nut SEMS 8.

13 | Ceiling mounting with ceiling-fixed bracket KDAG 41
To install the KDAG 41 use two dowels such as e.g. SD 8/10*. Install the bracket KA 30 using full thread hexagonal head screw set SES 10x20*, channel spring nut AMF22 M10*. The protection cap SA* is fitted to the bracket bottom, if needed.

14 | Ceiling mounting with head plate BGA 41 and C-profile KHA 41
To install the BGA 41 together with the KHA 41 use two dowels such as e.g. SD 8/10*. Attach the C-profile to the KHA 41 by using head screw set KLS 10x20*. Fasten the bracket KA using full thread hexagonal head screw set SES 10x20* and channel nut spring AMF22 M10*. The protection cap SA* is fitted to the bracket bottom, if needed.

* The article is not included in the scope of delivery and must be ordered separately.

15 | Ceiling mounting with trapezoid-sheet hanger TBS
Fold out the trapezoid-sheet, then attach the hanger using full thread hexagonal head screw set SES 8x110 and hexagonal nuts SEM 8. Then it is possible to connect various types of accessories such as threaded rods or hexagonal nuts for mounting trays and other light-duty systems.

16 | Ceiling suspension with pendulum suspension
Connect threaded rods GB M8 to dowel using hexagonal connector VM M8, then mount C-profile KHA 8 onto the rods from the bottom.

Legend Accessories

GB-M8

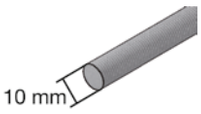
FRS 8x20

SEMS 8

US 8x25

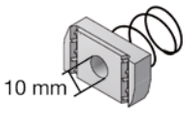
SD 8/10

GB-M10



KLS 10x20

AMF22 M10



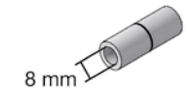
US 8x17

SD 8/30

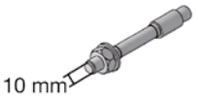
SES 8x110

SEM 8

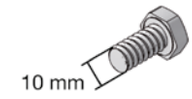
VM M8



SD 10/10

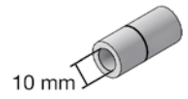


SES 10x20

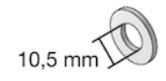


SEM 10

VM M10



US 10x21



Legend of Symbols

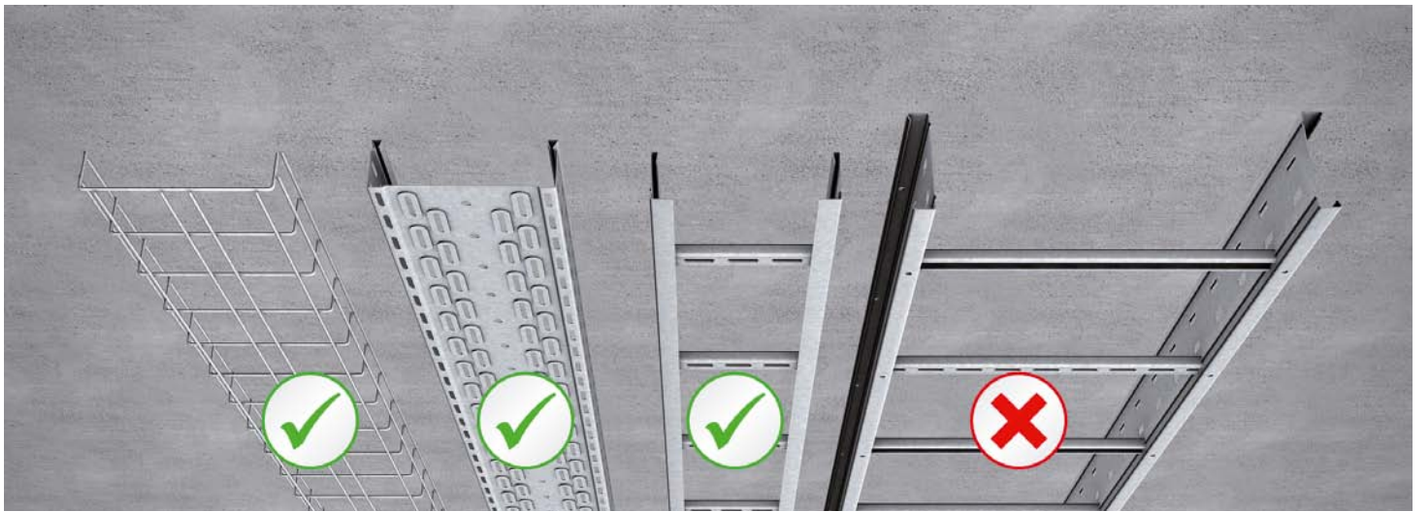
Correct

Wrong

Observe tightening torque for fasteners

Screw tightening torques (recommended)

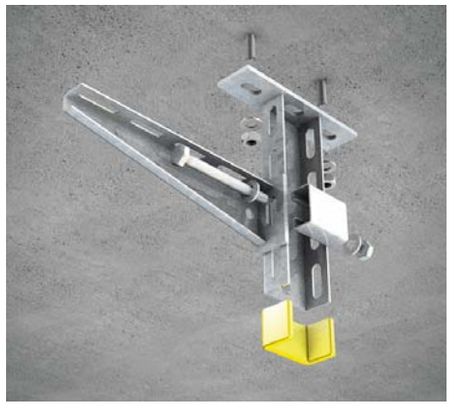
Bolt diameter	relative strength marking for screws (acc. to DIN 267 part 3)	relative strength marking for nuts (acc. to DIN 267 part 4)	property class (Nm) acc. to VDI 2230
M8	4.6	5	8
M10	4.6	5	16
M12	4.6	5	32
M8	8.8	8	34
M10	8.8	8	68
M12	8.8	8	117



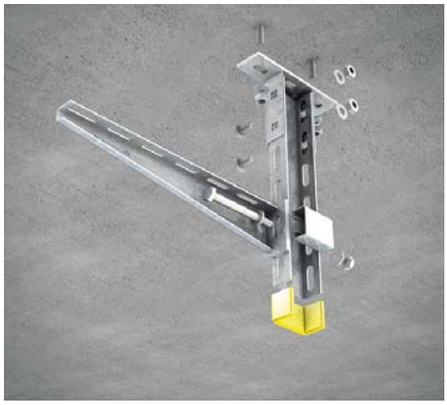
Installation instruction for support systems of wire-mesh cable trays, cable trays and cable ladders attached directly to concrete.

1 | Wall mounting with bracket KW
To install the bracket KW use dowels such as e.g. SD 10/10*.

2 | Ceiling mounting with ceiling-fixed bracket DKSL
To install DKSL use dowels such as e.g. SD 8/30*. The spacer KSL-SP must be positioned between the dowel and the bracket.

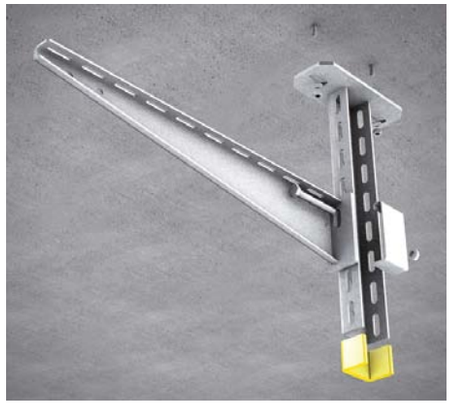


3 | Ceiling mounting with bracket support KDU 57
To install KDU 57 use two dowels such as e.g. SD 10/10*. Secure the bracket KW using KHUSS 57 support piece set. The protection cap SU 57* is fitted to the bracket bottom, if needed.



4 | Ceiling mounting with head plate BGU 57 and U-profile KHU 57
To install the BGU 57 use two dowels such as e.g. SD 10/10*. Mount the U-profile KHU 57 to the head plate BGU 57 using head screw set KLS 10x20*. Secure the bracket KW using KHUSS 57 support piece set. The protection cap SU 57* is fitted to the bracket bottom, if needed.

5 | Ceiling mounting with ceiling-fixed bracket KDAG 41
To install KDAG 41 use two dowels such as e.g. SD 10/10*. Then attach the bracket KA 41 using full thread hexagonal head screw set SES 10x20* and channel spring nut AMF22 M10*. The protection cap SU 57* is fitted to the bracket bottom, if needed.



6 | Ceiling mounting with heavy bracket support KDU 60
To install KDU 60 use two dowels such as e.g. SD 10/10*. Then attach the bracket KW using head screw set KLS 10x20*. If the bracket is longer than 500 mm, screw the support piece KHUSS together with the bracket. The protection cap SU 60* is fitted to the bracket bottom, if needed.

* The article is not included in the scope of delivery and must be ordered separately.

7 | Ceiling mounting with head plate BGU 60 and U-profile KHU 60
To install BGU 60 use two dowels such as e.g. SD 10/10*. Secure the U-profile with full thread hexagonal head screw set SES 10x20, hexagonal nut SEM 10 and washer US 10x21. Mounting the bracket KW is done as with KDU 60. The protective cap SU 60* is fitted to the bracket bottom, if needed.

8 | Ceiling mounting with heavy bracket support KDI
To install KDI use two dowels such as e.g. SD 10/10*. Fasten the bracket KT using the enclosed spacer. The protection cap SI* is fitted to the bracket bottom, if needed.

9 | Ceiling mounting with heavy bracket support KDI
To install KDI use two dowels such as e.g. SD 10/10*. Fasten the bracket KTS using the enclosed spacer. The protection cap SI* is fitted to the bracket bottom, if needed.

10 | Ceiling mounting with head plate BGI with I-profile KHI
To install BGI use two dowels such as e.g. SD 10/10*. Attach the I-profile using head screw FRS 10x30 and hexagonal nut SEM 10. Mounting KHI is done as with KDI. The protection cap SI* is fitted to the bracket bottom, if needed.

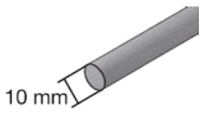
11 | Ceiling suspension with pendulum suspension
Connect threaded rods GB M10 to dowel using hexagonal connector VM M10, then mount C-profile KHA 41 onto the rods from the bottom.

12 | Ceiling suspension with pendulum suspension
Connect threaded rods GB M10 to dowel using hexagonal connector VM M10, then mount U-profil KHU 57 onto the rods from the bottom.

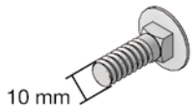
* The article is not included in the scope of delivery and must be ordered separately.

Legend Accessories

GB-M10

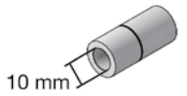


FRS 10x30



SEM 10

VM M10

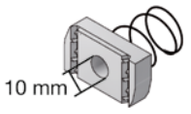


SD 8/30

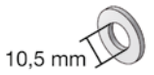
SES 10x20

KLS 10x20

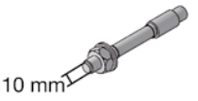
AMF22 M10



US 10x21



SD 10/10



Legend of Symbols

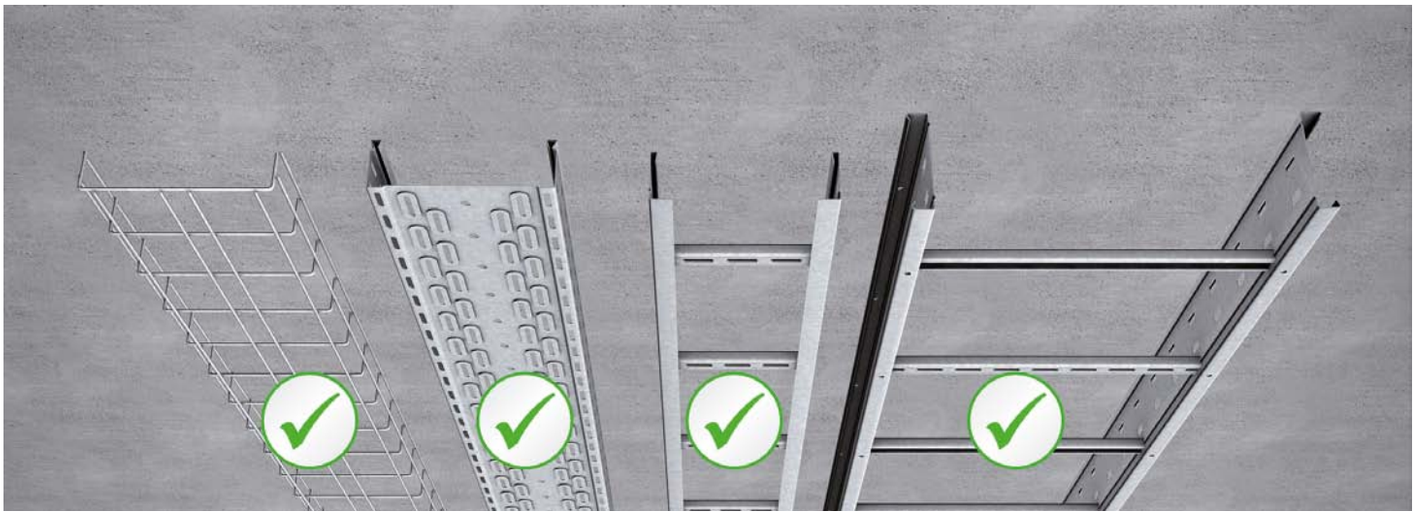

Correct


Wrong


Observe tightening torque for fasteners

Screw tightening torques (recommended)

Bolt diameter	relative strength marking for screws (acc. to DIN 267 part 3)	relative strength marking for nut (acc. to DIN 267 part 4)	property class (Nm) acc. to VDI 2230
M8	4.6	5	8
M10	4.6	5	16
M12	4.6	5	32
M8	8.8	8	34
M10	8.8	8	68
M12	8.8	8	117



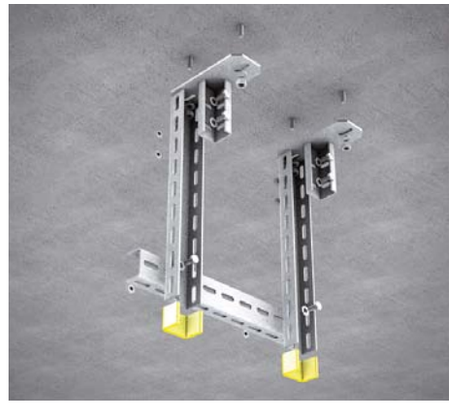
Installation instruction for support systems of wire-mesh cable trays, cable trays, cable ladders and wide-span cable ladders attached directly to concrete.

1 | Wall mounting with heavy bracket KWS
To install KWS use dowels such as e.g. SD 12/10*
Please make sure to use the top drill hole to fixate the bracket.

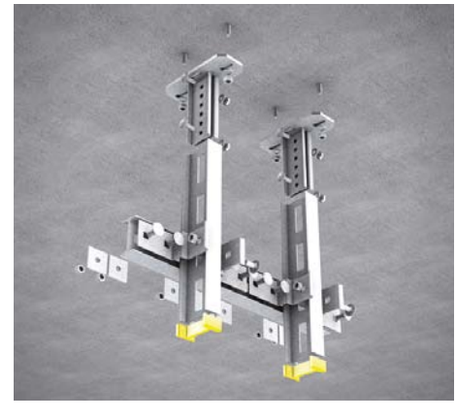
2 | Wall mounting with heavy bracket KWSS
To install KWSS use dowels such as e.g. SD 12/10*.
Please make sure to use the top and bottom drill holes to fixate the bracket.

3 | Mounting to steel beam using heavy bracket KIS
To install KIS use four beam clamps SKS H*.

4 | Mounting to steel beam using heavy bracket KISS
To install KISS use four beam clamps SKS M*.



5 | Ceiling suspension with pendulum suspension
Fasten head plates BGU 60 with two dowels each, e.g. SD 12/10*. Secure the U-profile using the full thread hexagonal head screw set SES 10x20, hexagonal nut SEM 10 and washer US 10x21, both horizontally and vertically.



6 | Ceiling suspension with pendulum suspension
Fasten head plates BGI with two dowels each, e.g. SD 12/10*. Secure the I-profiles horizontally to the head plates using head screw FRS 10x30 and hexagonal nut SEM 10. Screw the profile that is vertically to the support connector HKIQ.

* The article is not included in the scope of delivery and must be ordered separately.

Legend Accessories

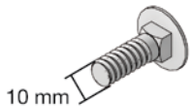
SES 10x20

SEM 10

SD 12/10

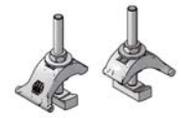
SKS M

FRS 10x30



US 10x21

SKS H



Legend of Symbols

Correct

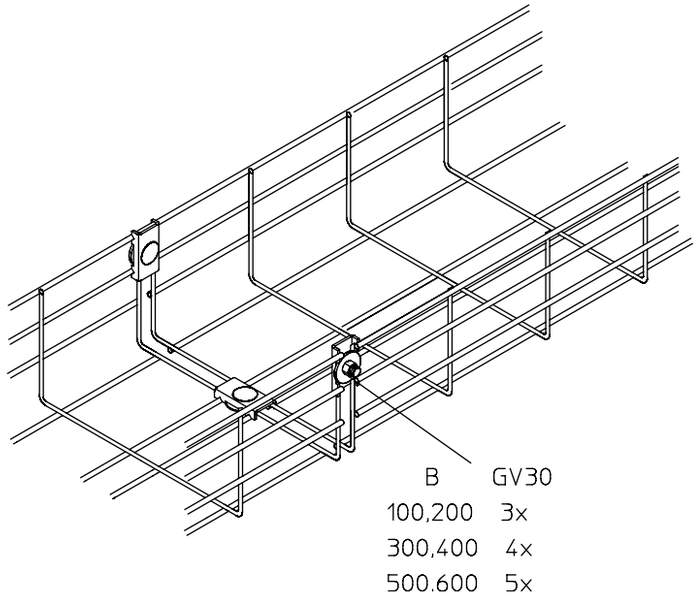
Wrong

Observe tightening torque for fasteners

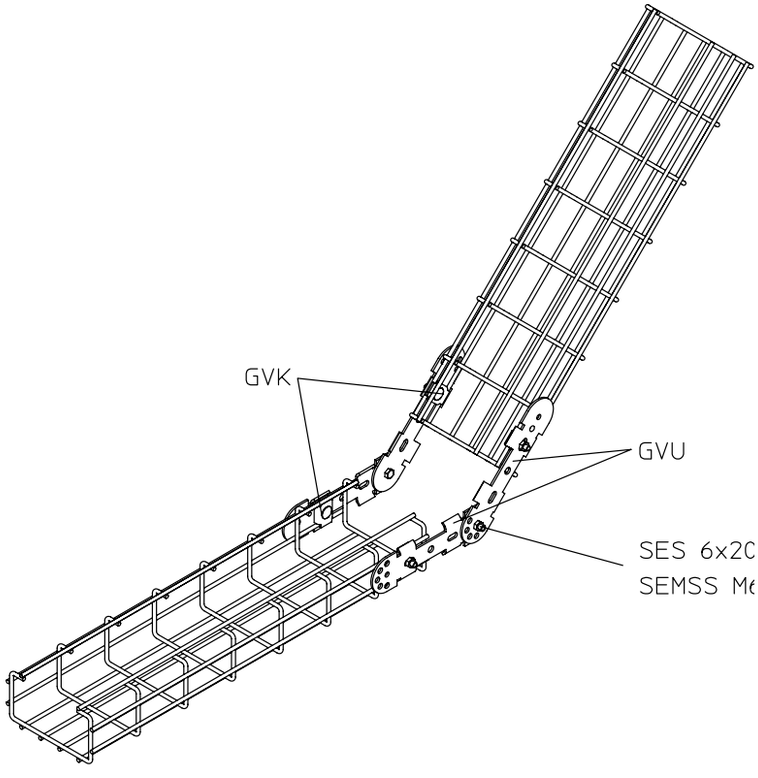
Screw tightening torques (recommended)

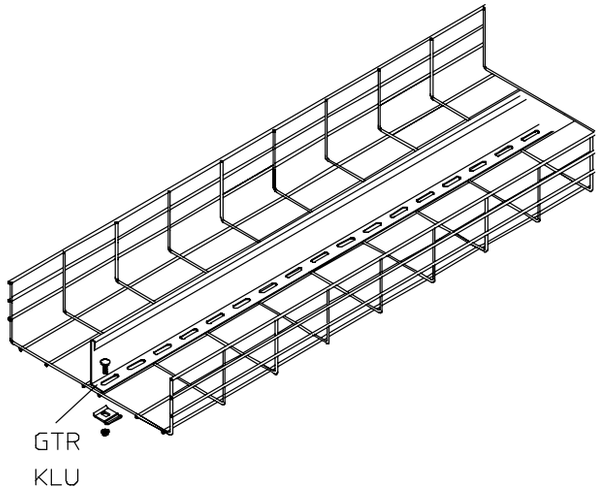
Bolt diameter	relative strength marking for screws (acc. to DIN 267 part 3)	relative strength marking for nuts (acc. to DIN 267 part 4)	property class (Nm) acc. to VDI 2230
M8	4.6	5	8
M10	4.6	5	16
M12	4.6	5	32
M8	8.8	8	34
M10	8.8	8	68
M12	8.8	8	117

End-to-end assembly

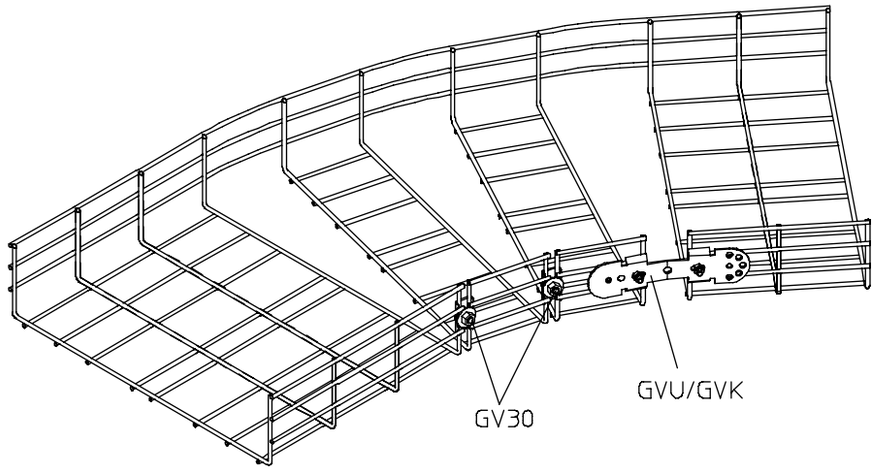


Upstream and assembly of separating strip

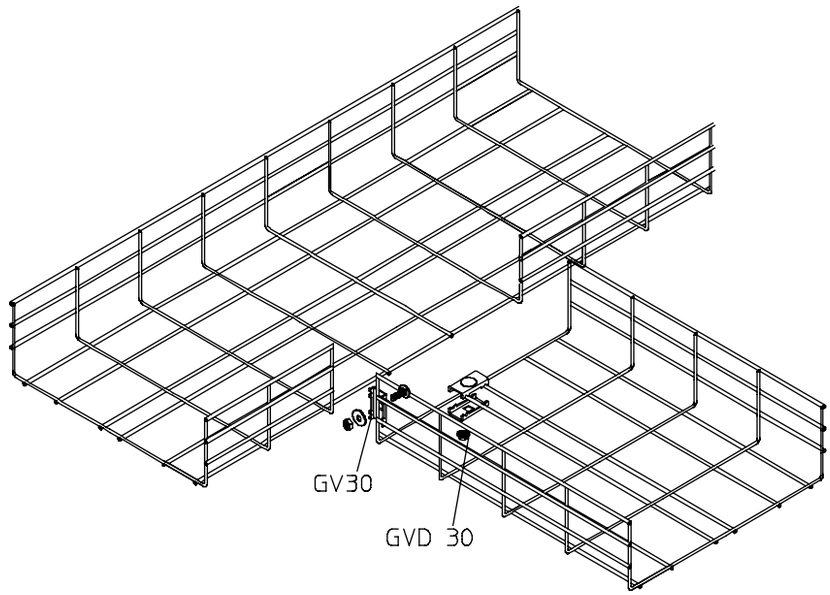




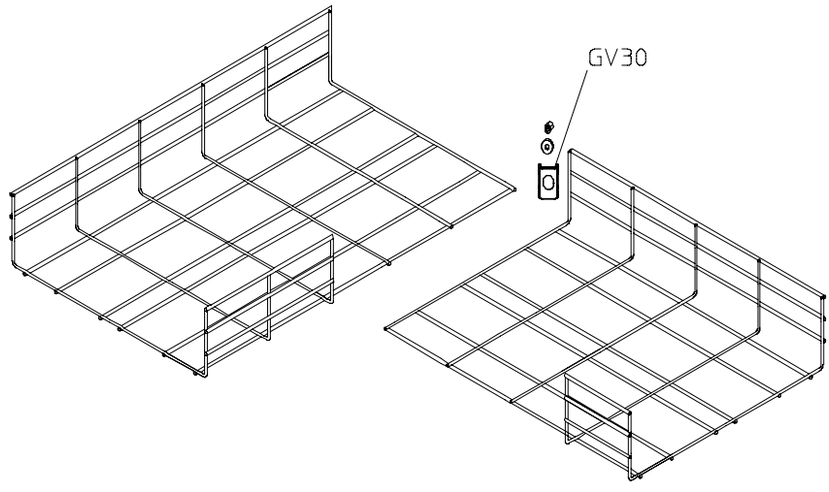
Horizontal elbow



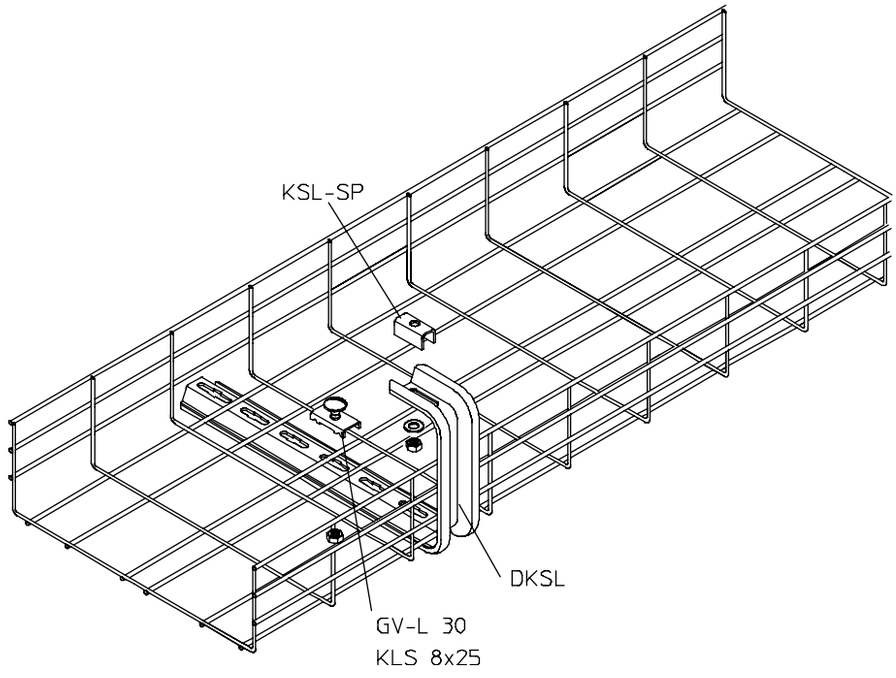
T-piece



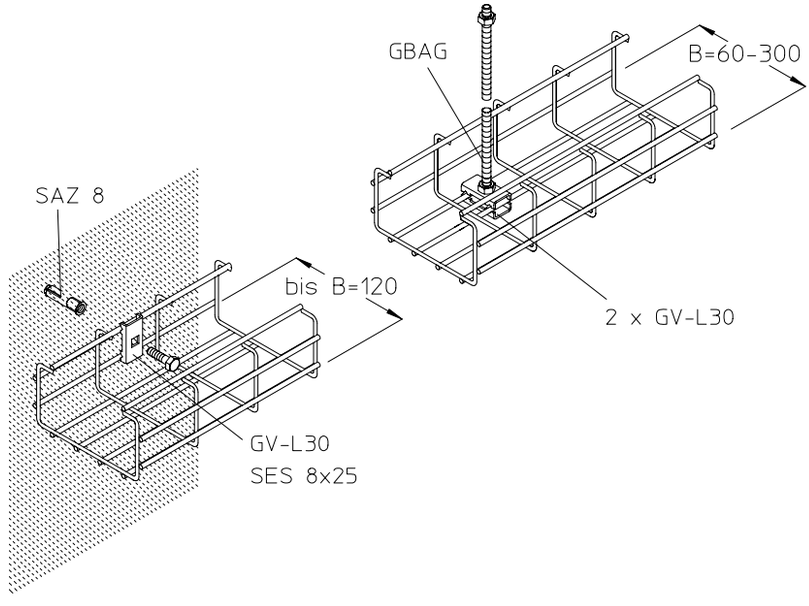
90°-elbow



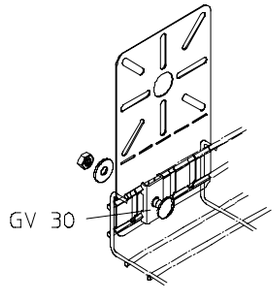
Assembly with ceiling bracket



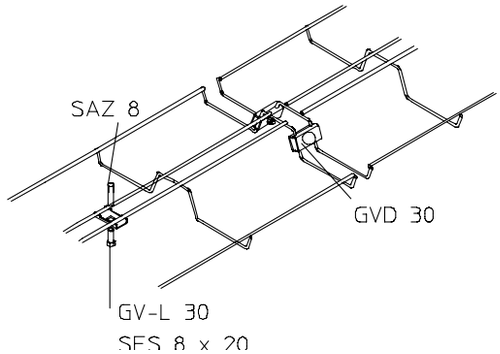
Wall and ceiling assembly with central suspension

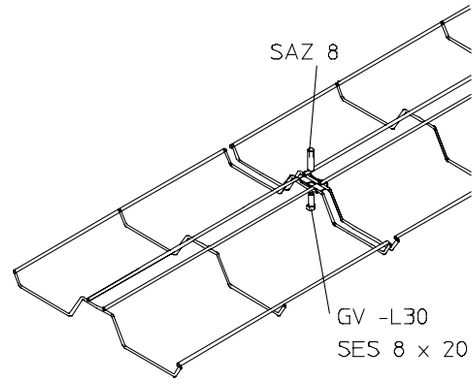


Mounting plate installation

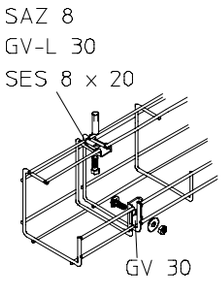


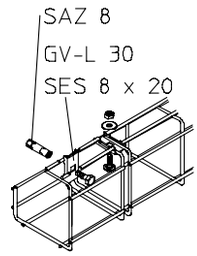
End-to-end assembly and direct ceiling assembly

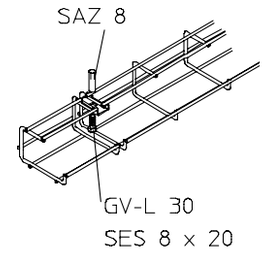




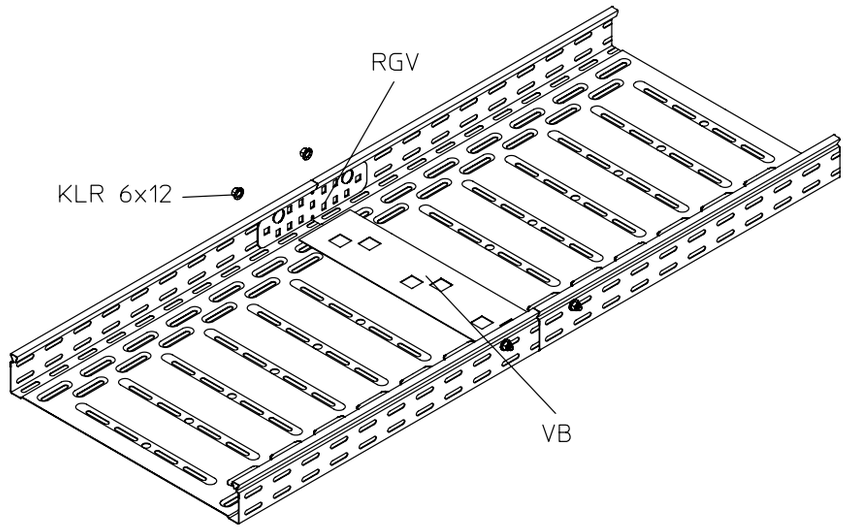
Wall-mounting and direct ceiling assembly



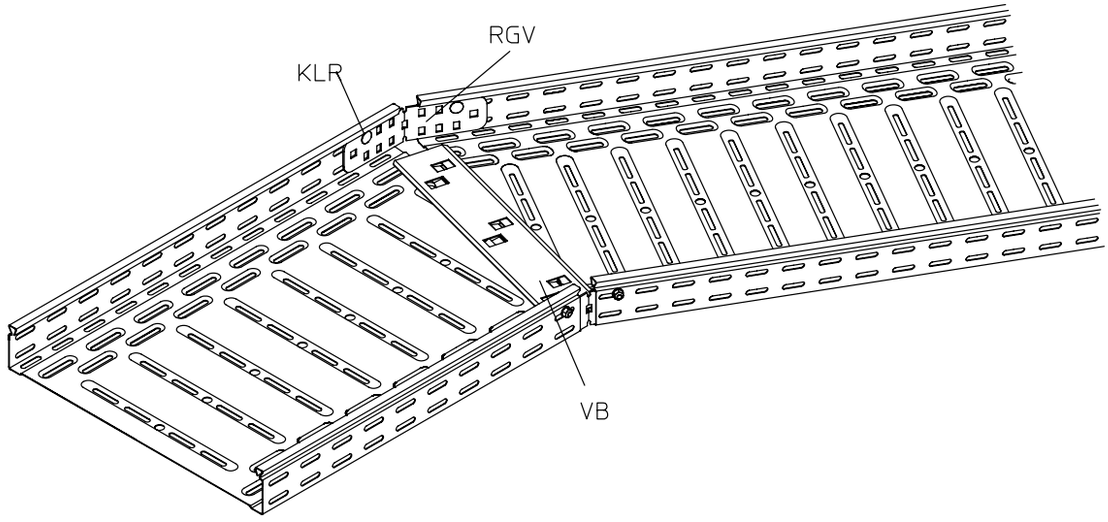




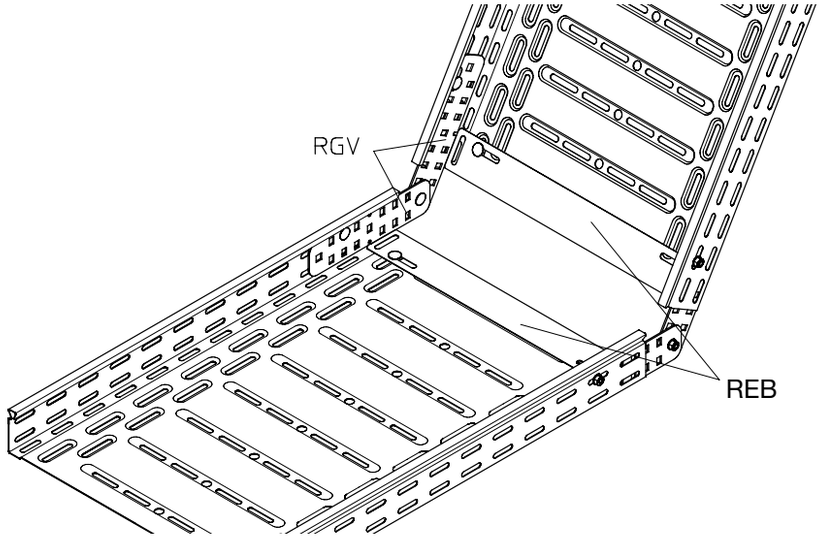
End-to-end assembly



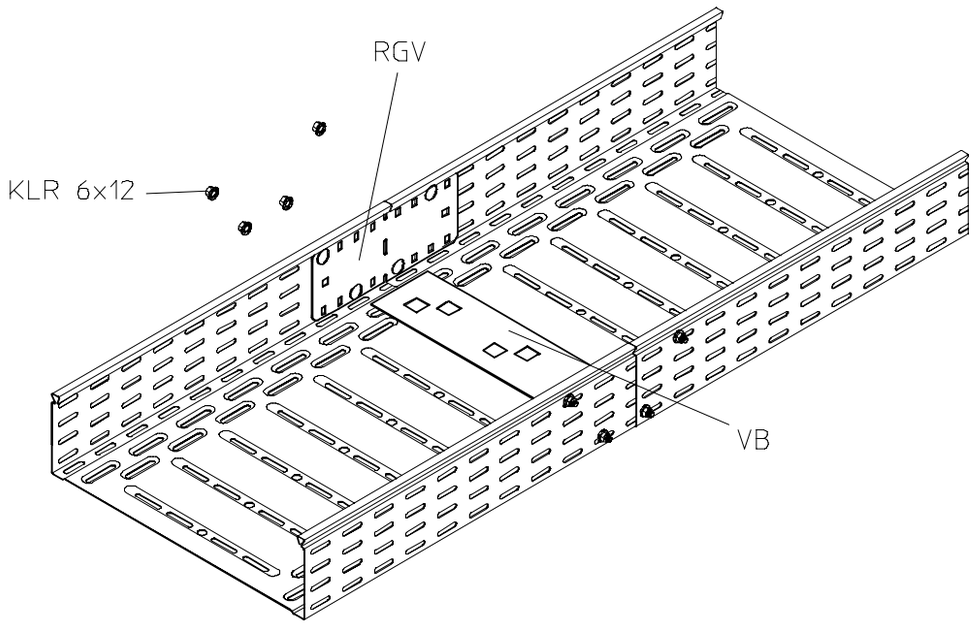
Flexible horizontal elbow assembly



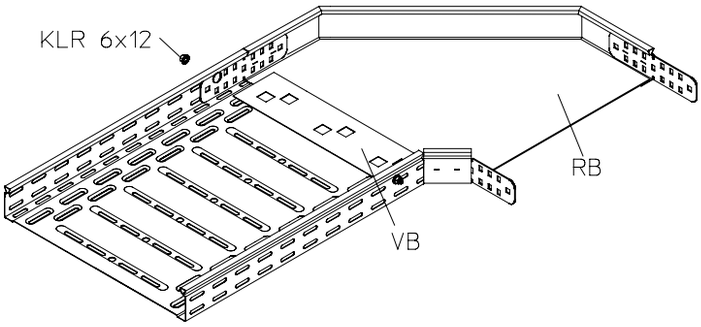
Upstream

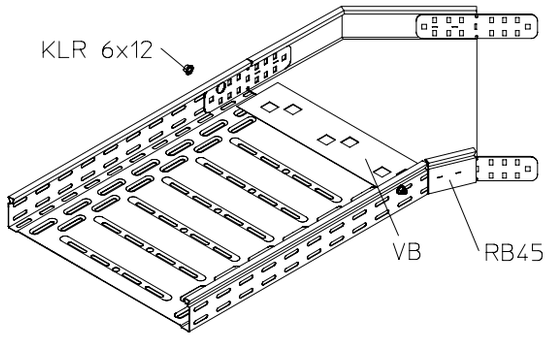


End-to-end assembly with RG 85 and RG 110

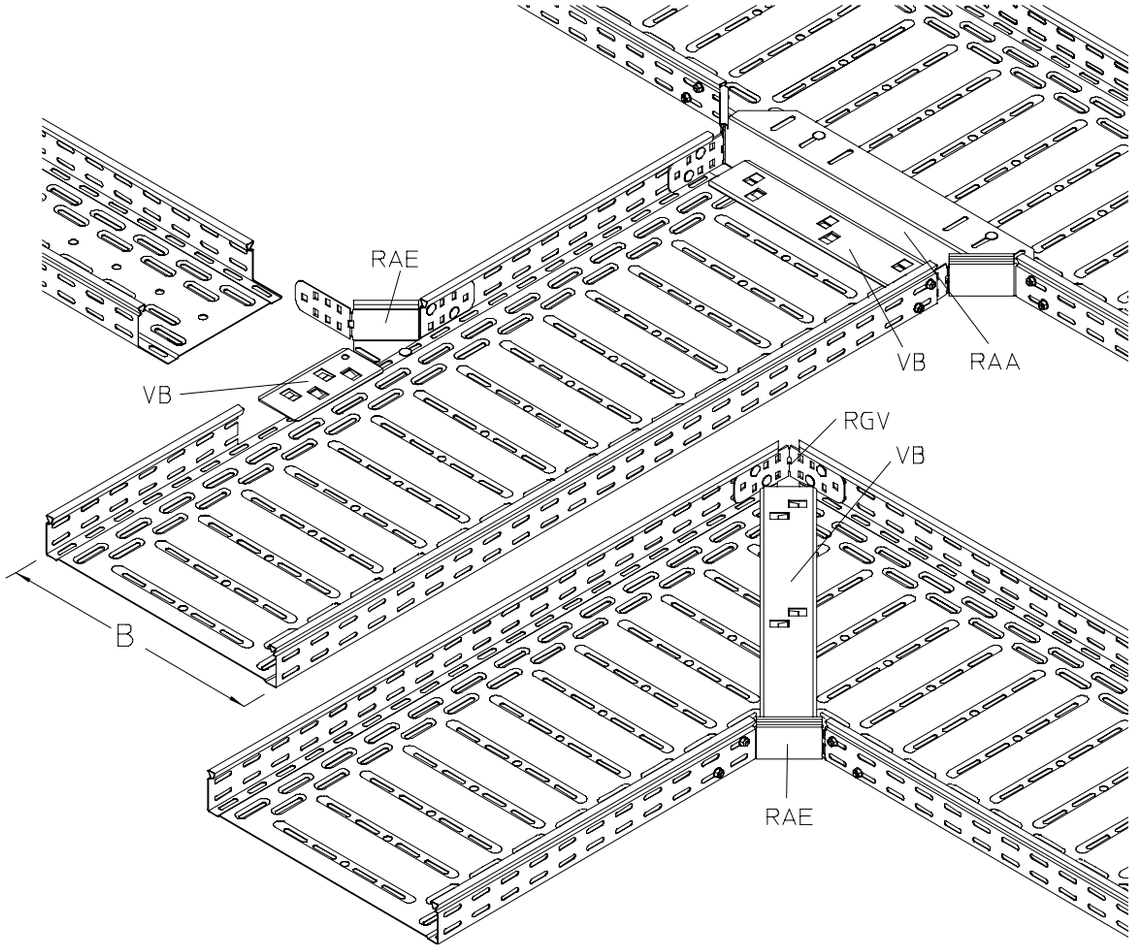


90° / 45° elbow assembly

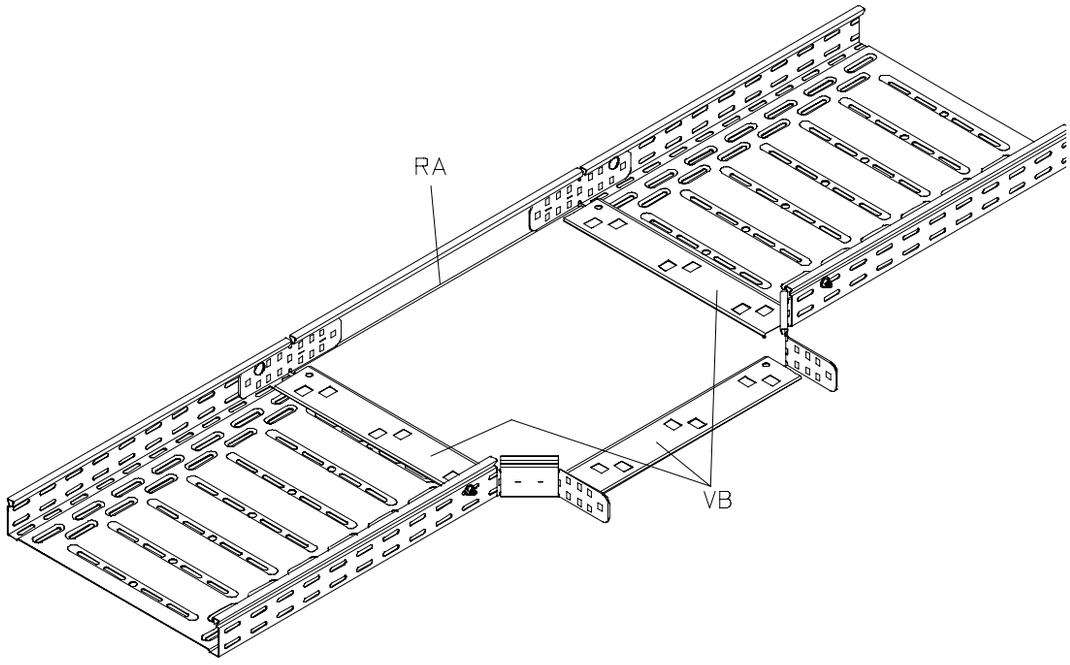




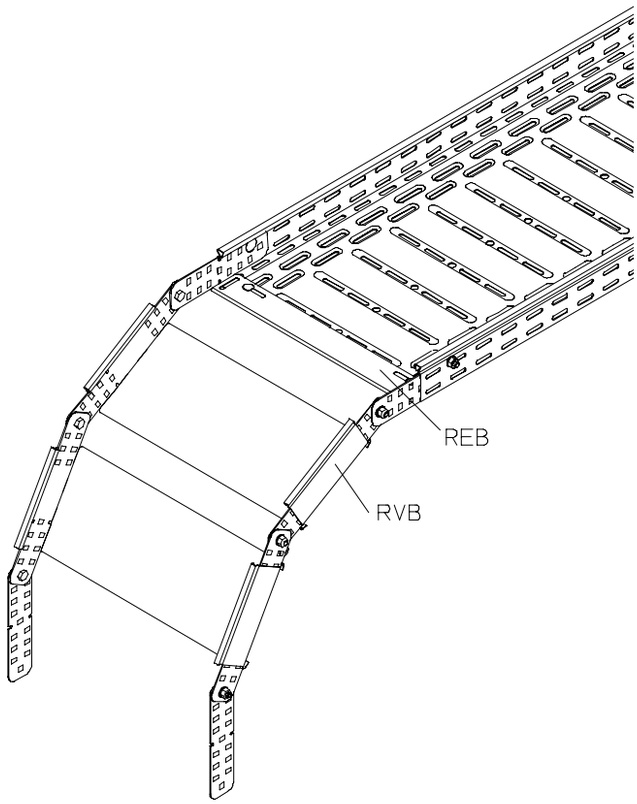
T-piece, flexible | 90°-elbow, flexible



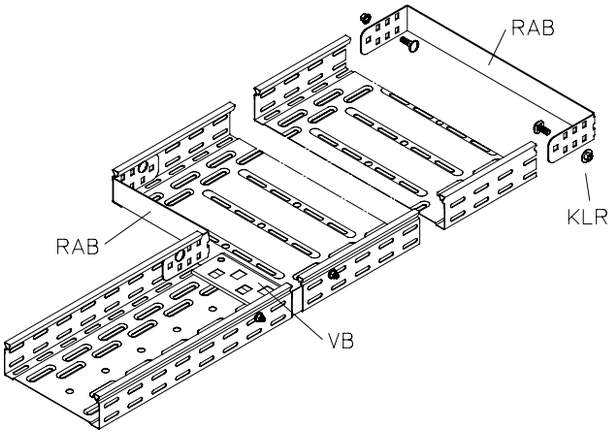
T-piece

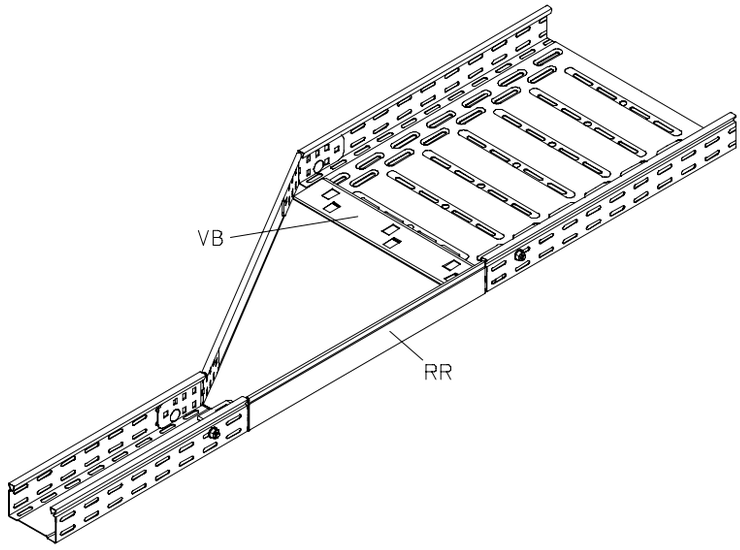


Upward and downward piece

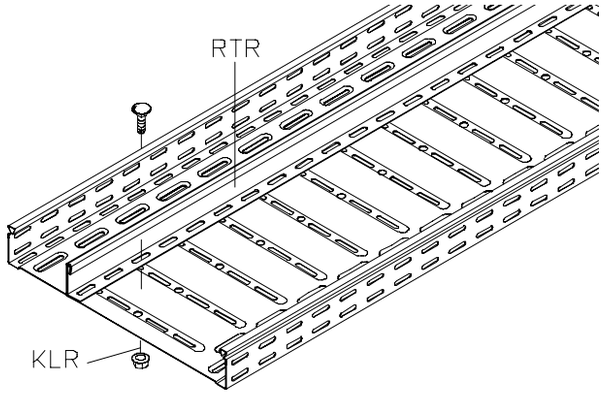


Reducer

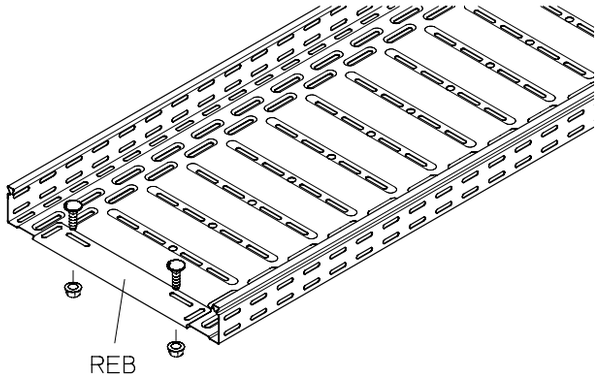




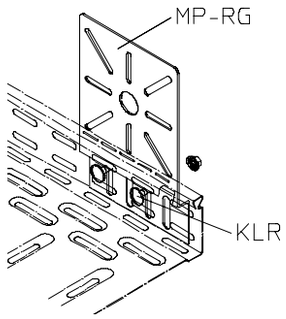
Assembly of separating strip



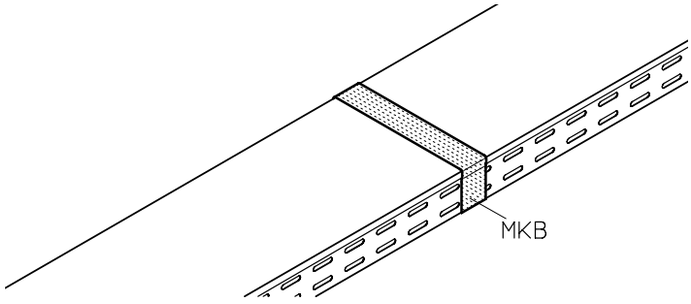
End piece assembly



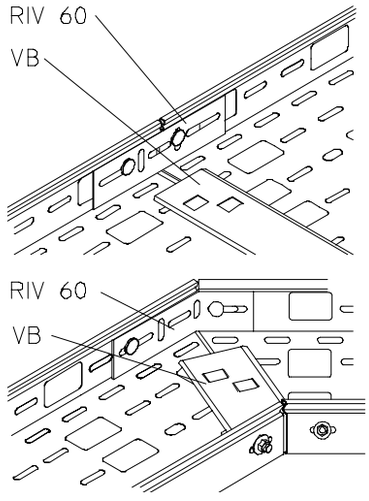
Mounting plate installation



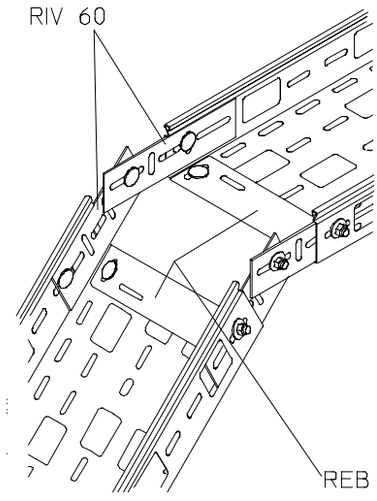
Protecting the cover with tape



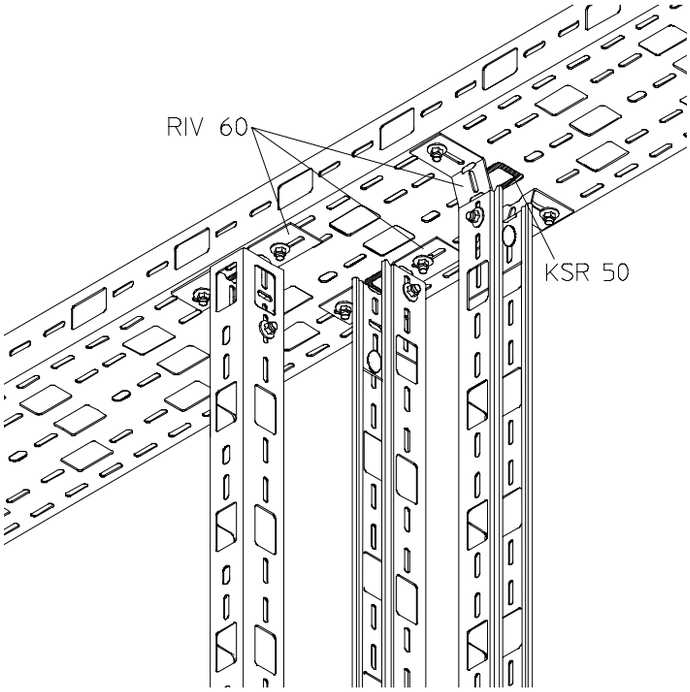
End-to-end assembly | Flexible horizontal elbow assembly



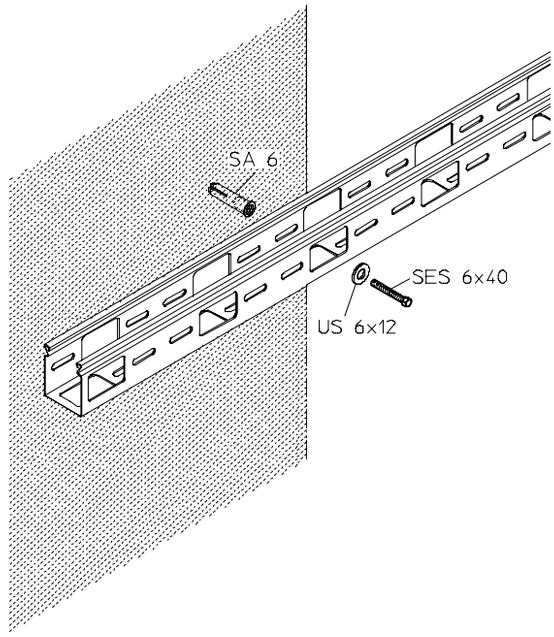
Upstream



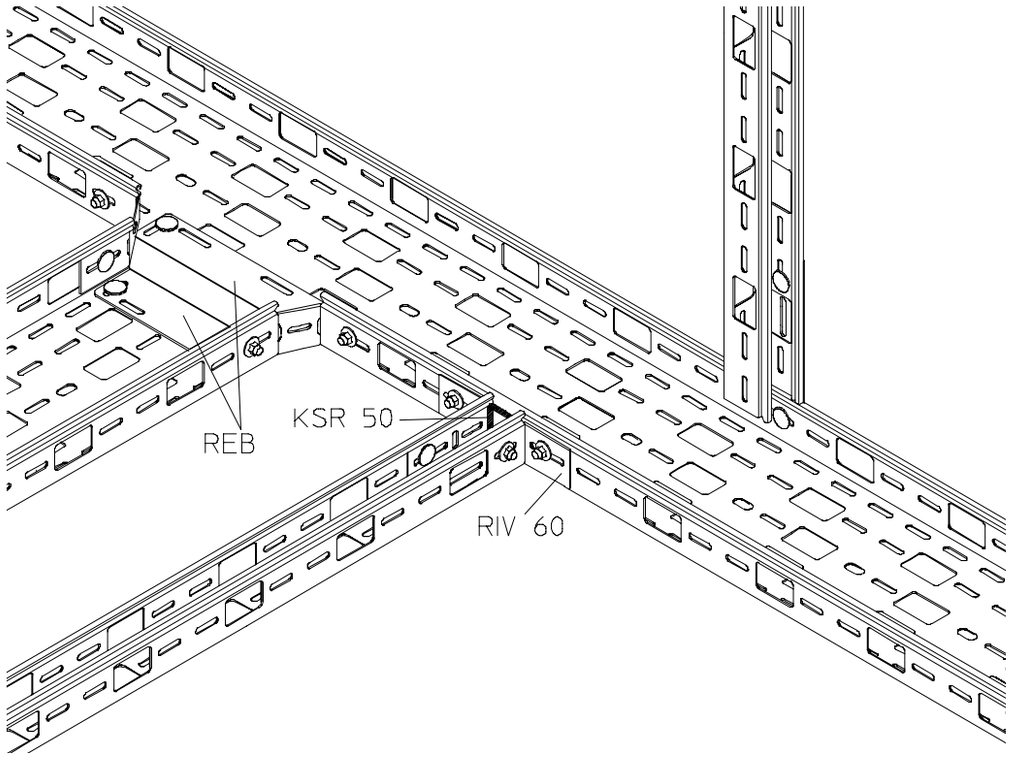
Vertical connection by RIV 60



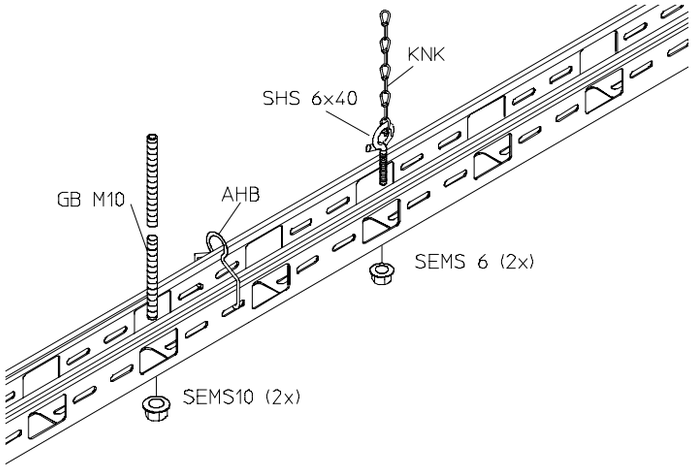
Direct wall-mounting



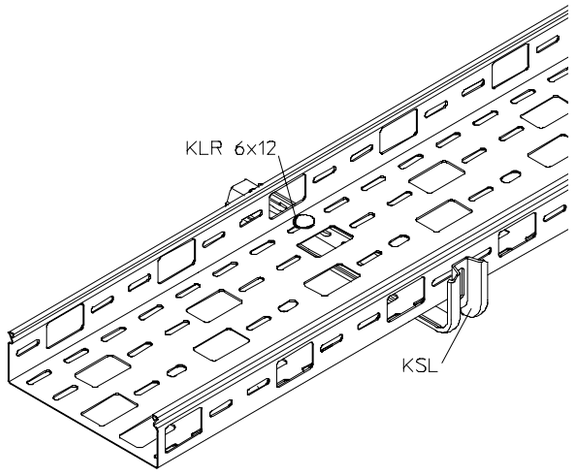
T-piece



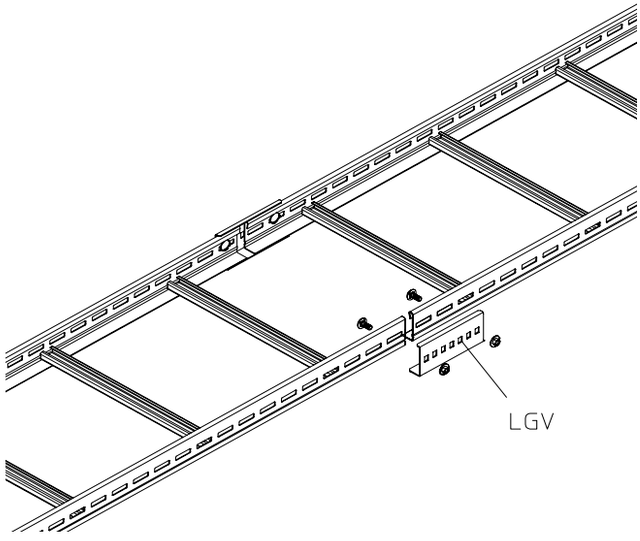
Ceiling-mounting with threaded rod and knotted link chain



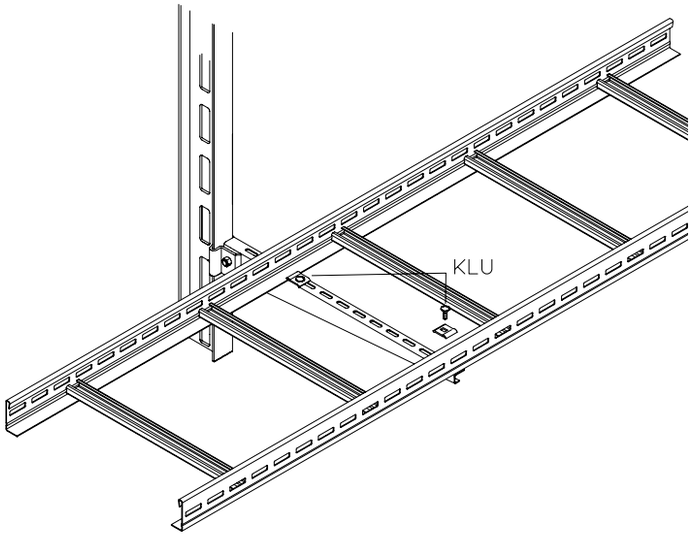
Assembly with ceiling fixation



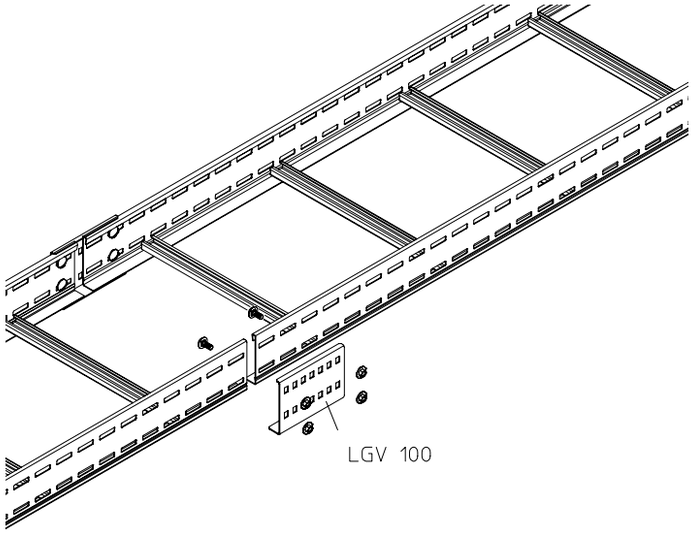
End-to-end assembly with LGG 60



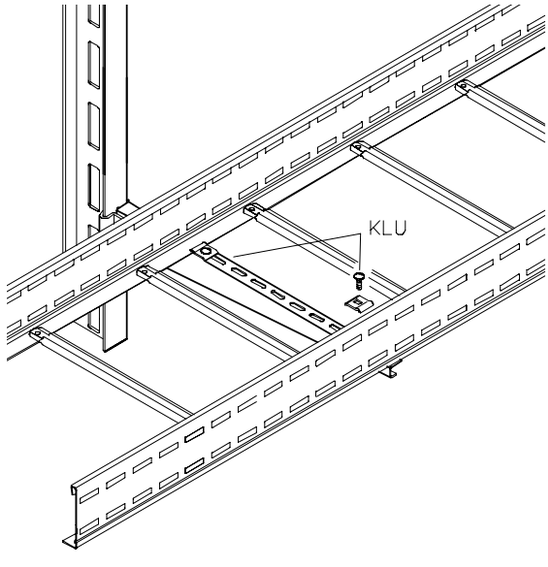
Bracket mounting



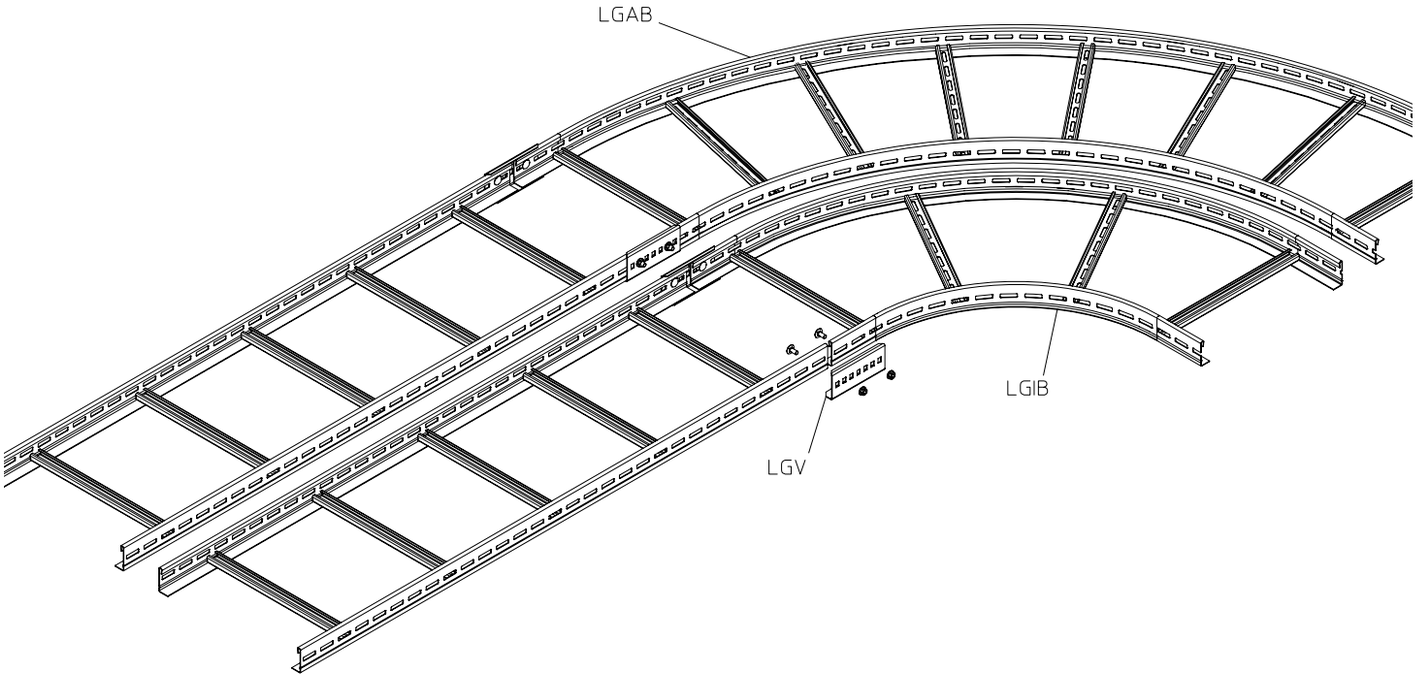
End-to-end assembly with LGG 100



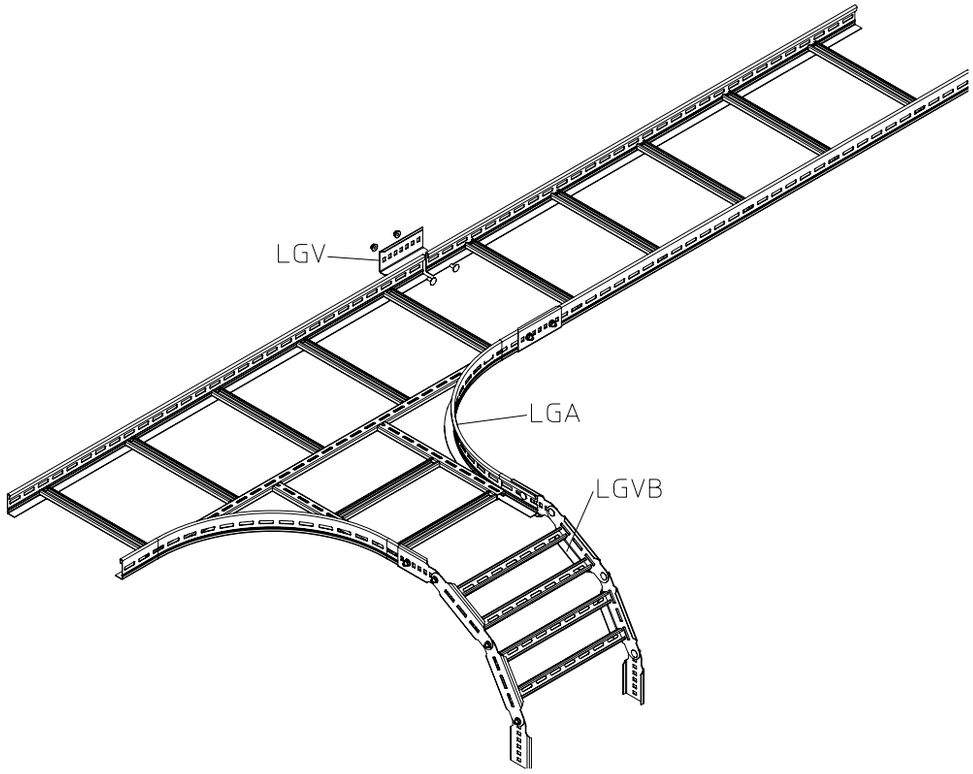
Bracket mounting



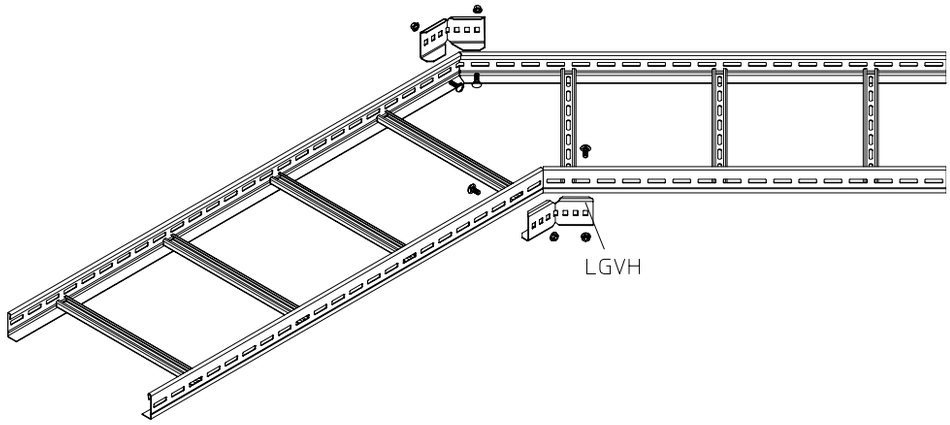
Inner elbow and outer elbow



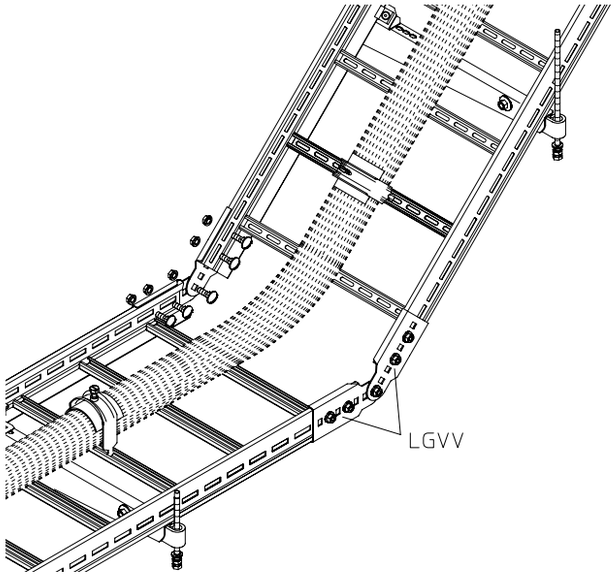
T-piece and downstream



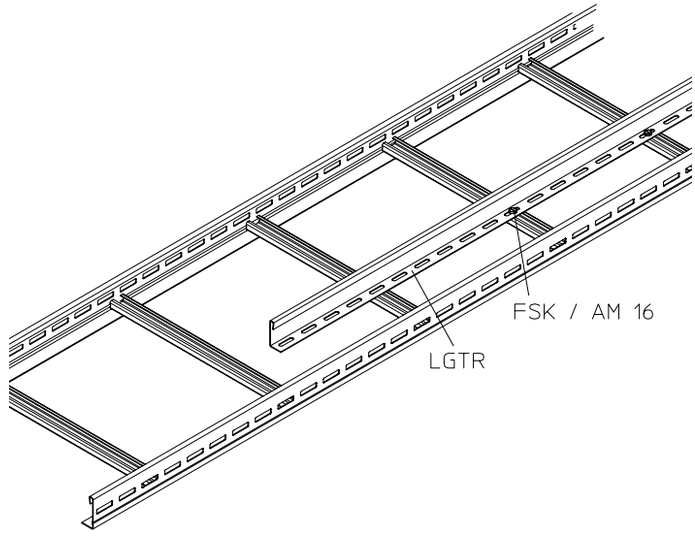
Flexible horizontal elbow assembly



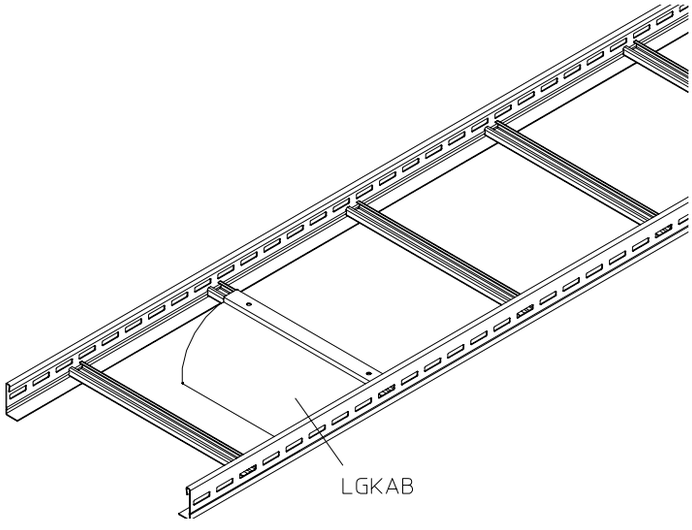
Upstream



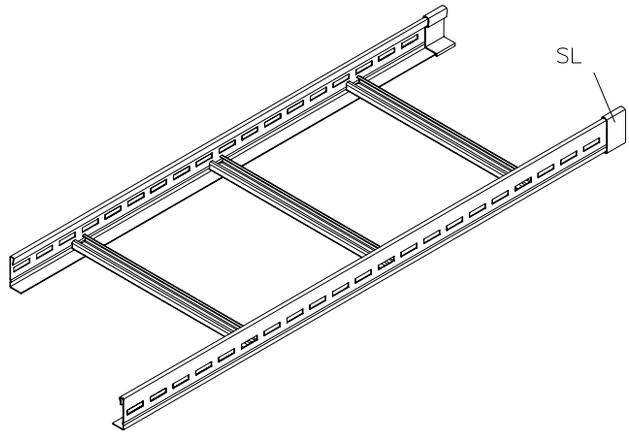
Assembly of separating strip



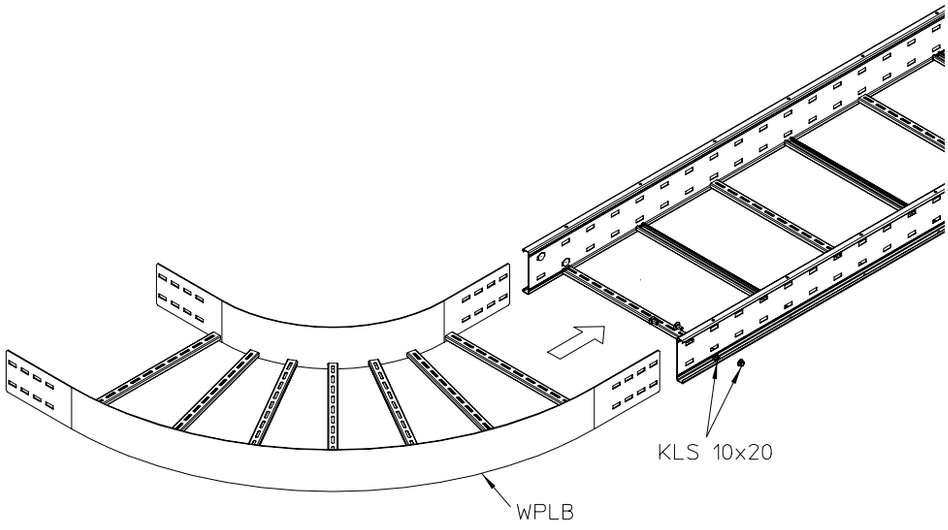
End plate



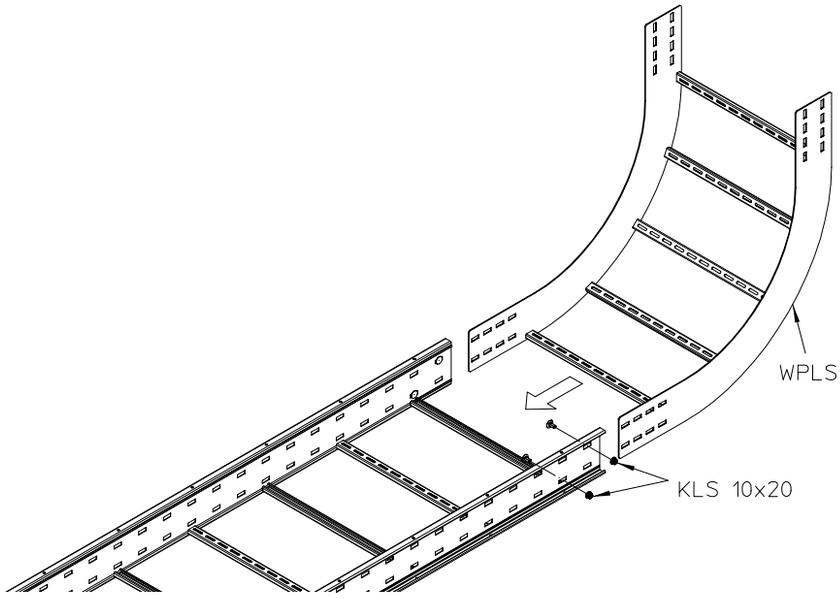
Protecting cap



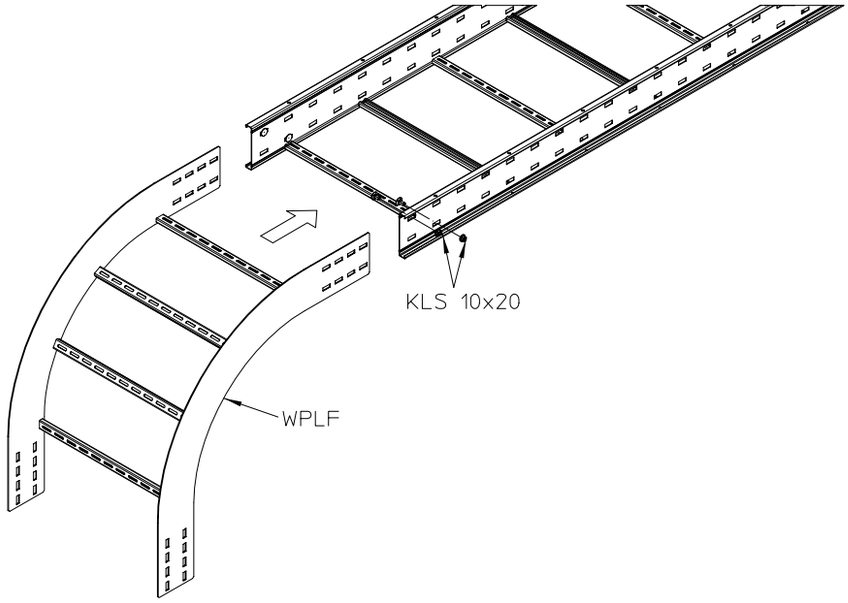
90°-elbow



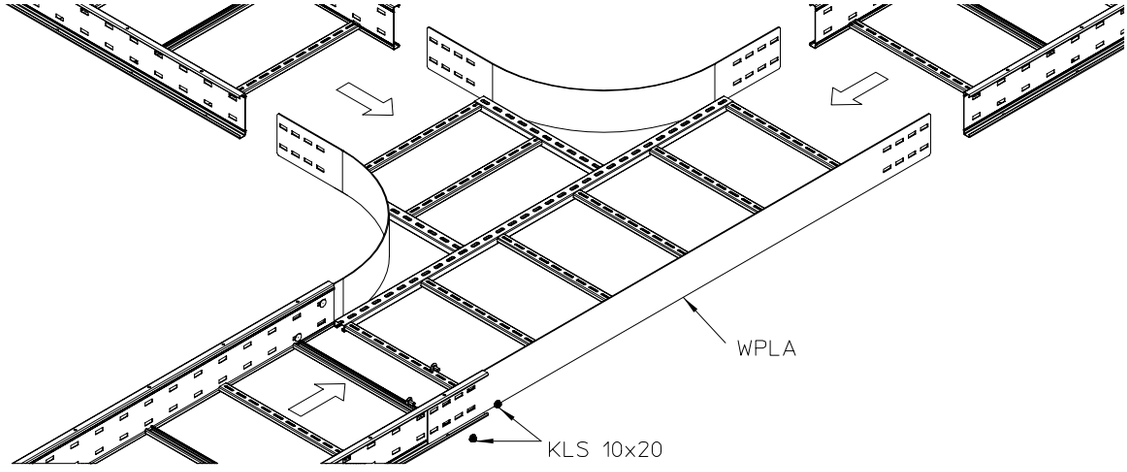
Inside riser



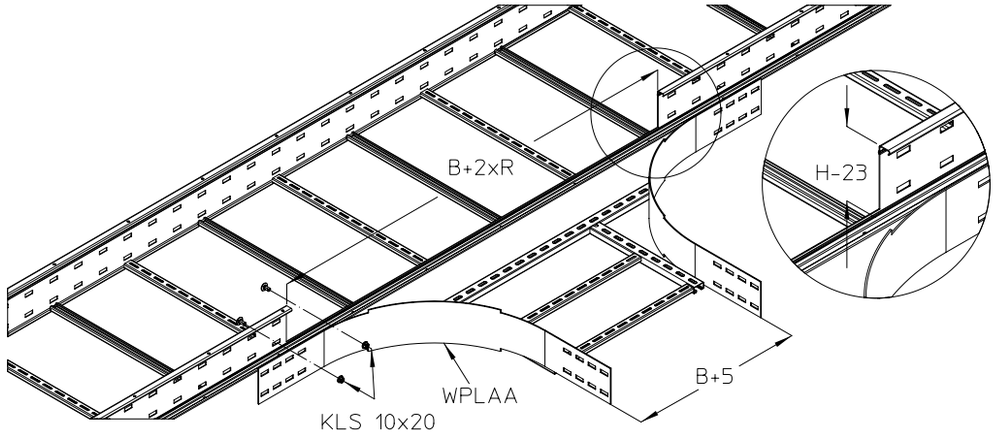
Outside riser



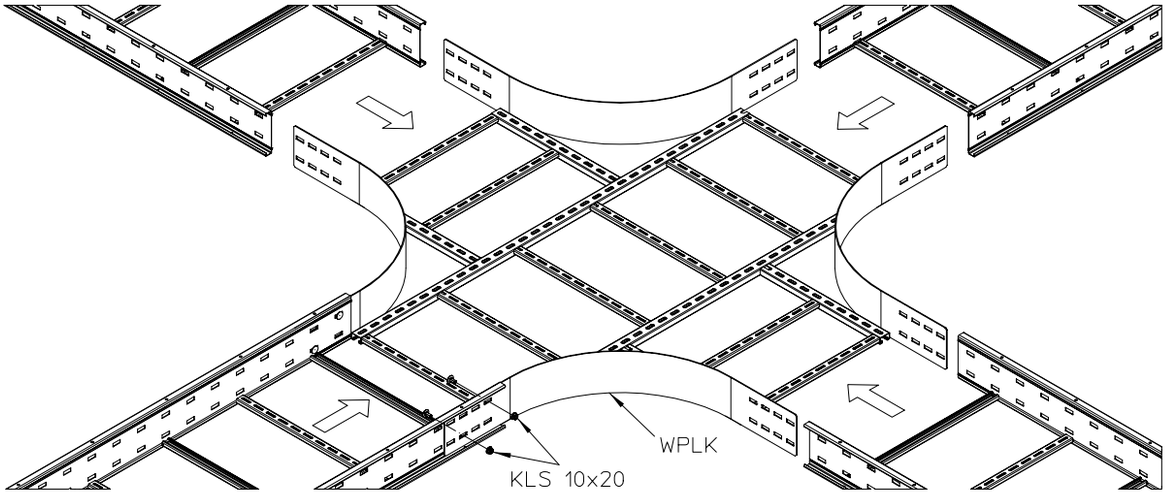
T-piece



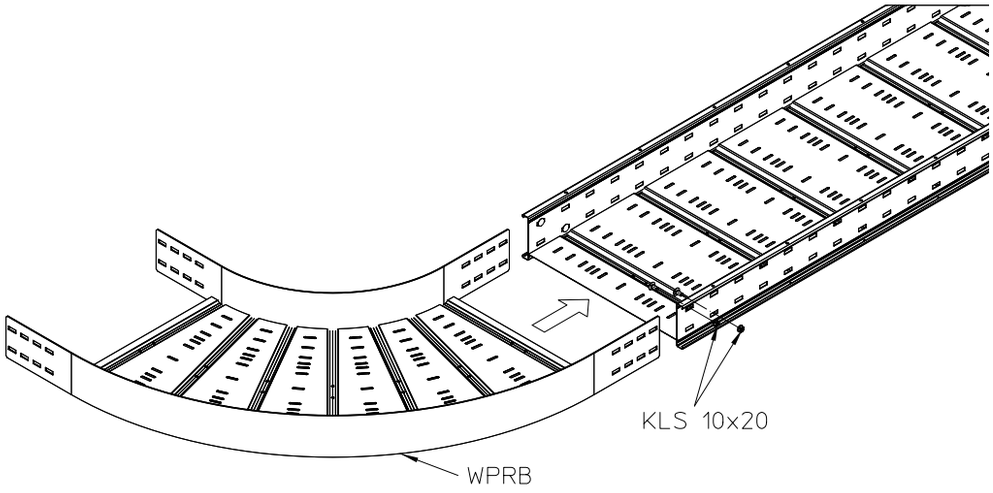
Flexible T-piece



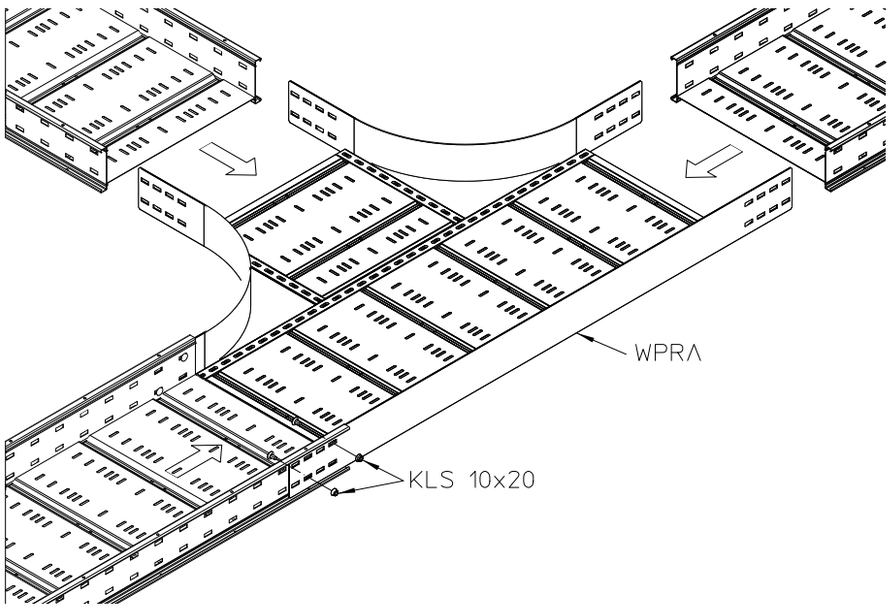
Cable tray crossing



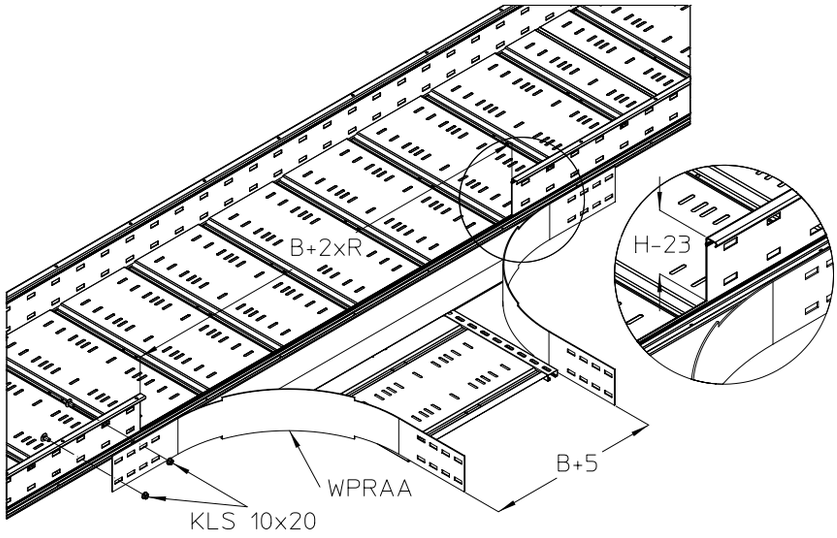
90° elbow



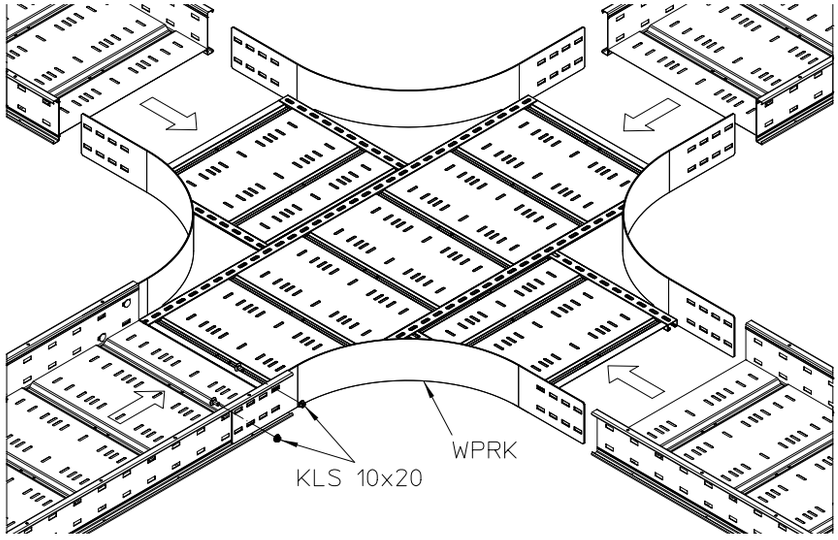
T-piece



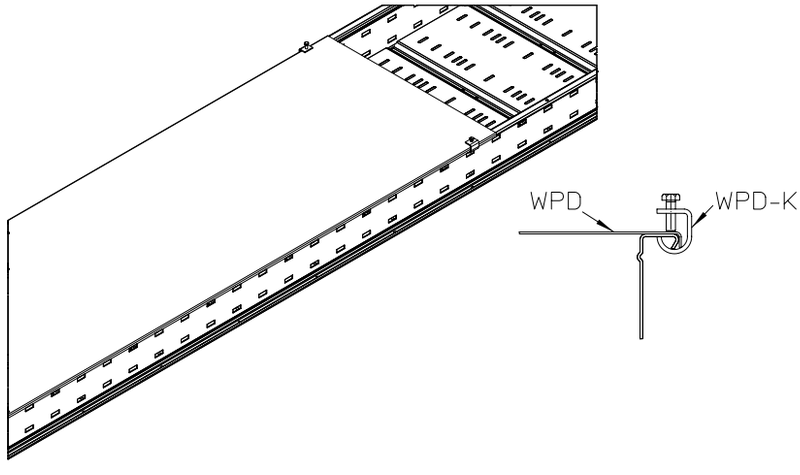
Flexible T-piece



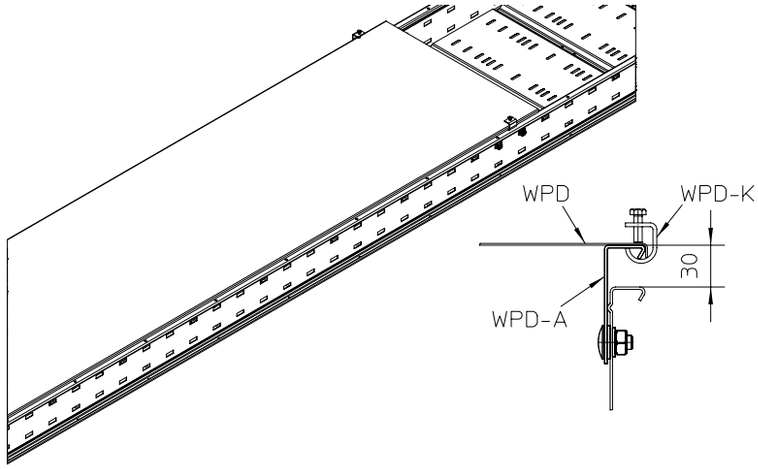
Crossing



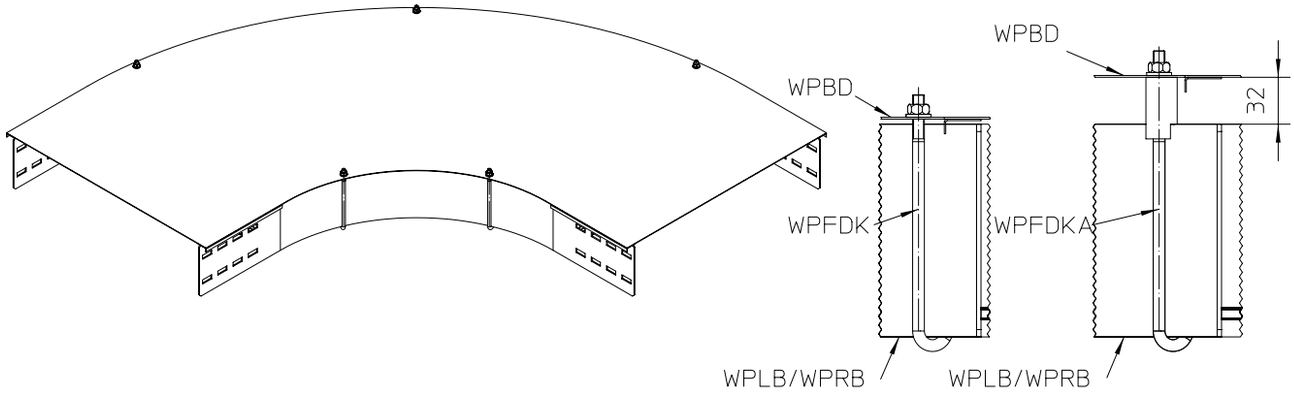
Cover assembly



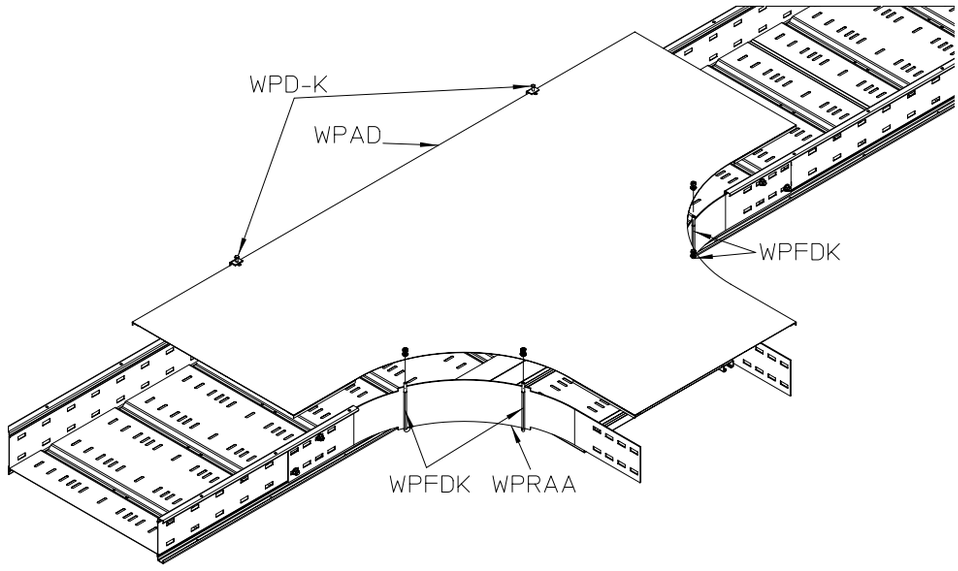
Elevated ceiling assembly



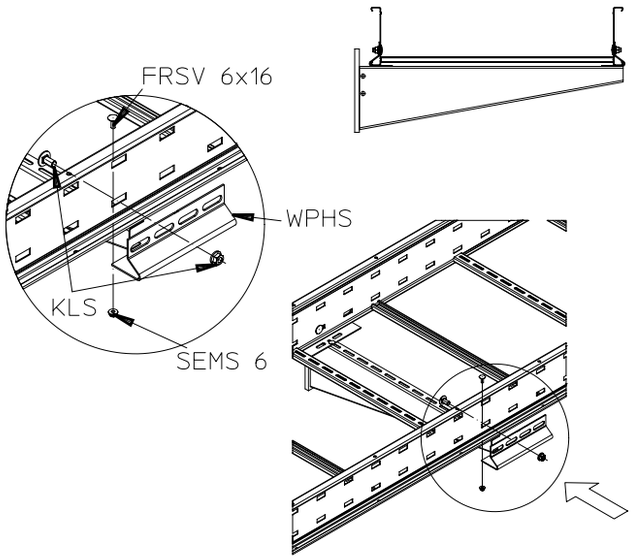
Fittings cover for elbow

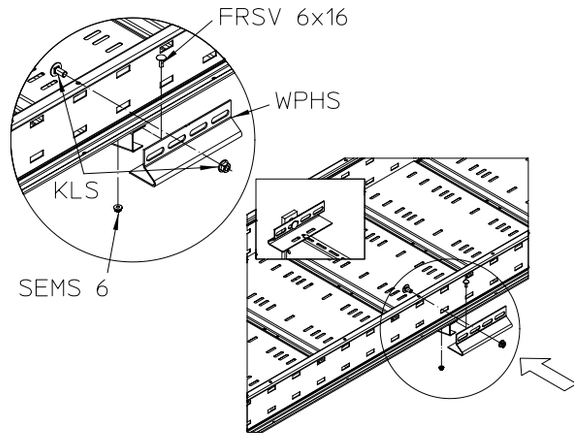


Fittings cover for T-piece

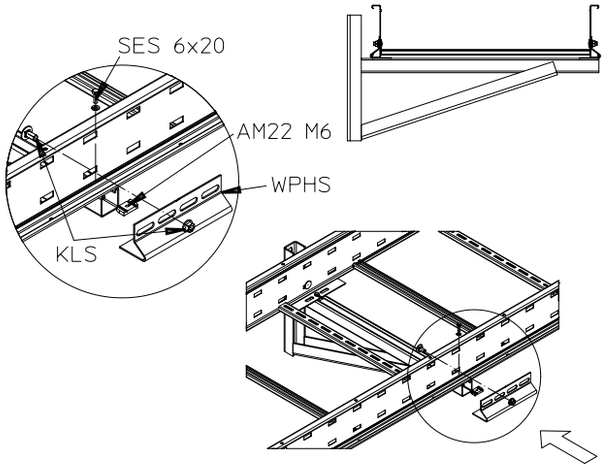


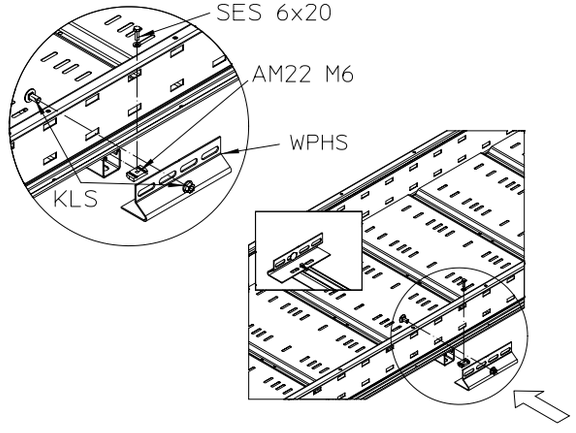
Flange mounting clamp (brackets)



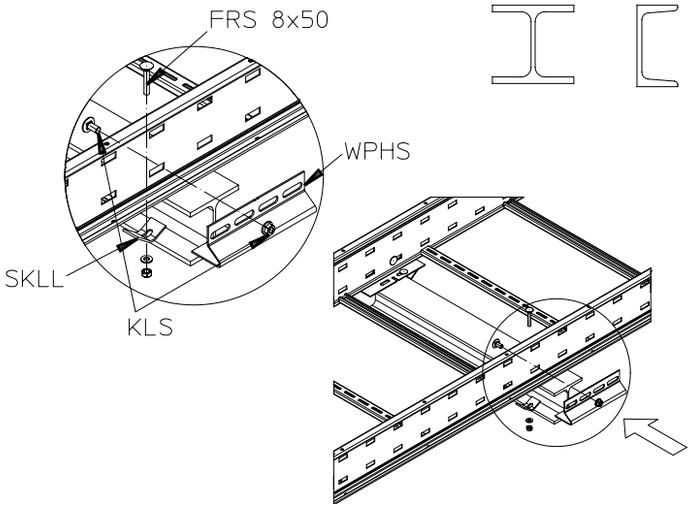


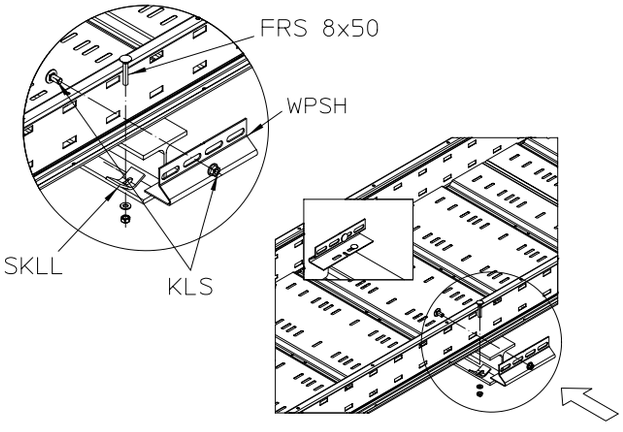
Flange mounting clamp for KWS mounting



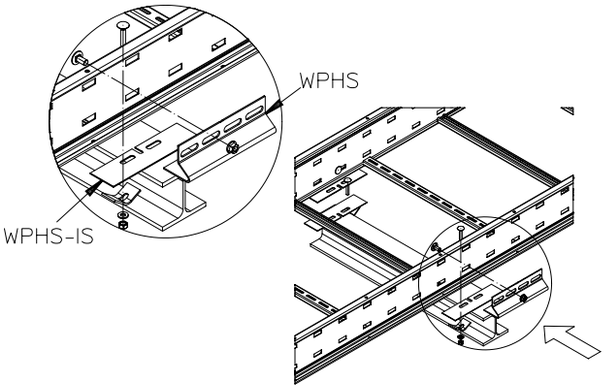


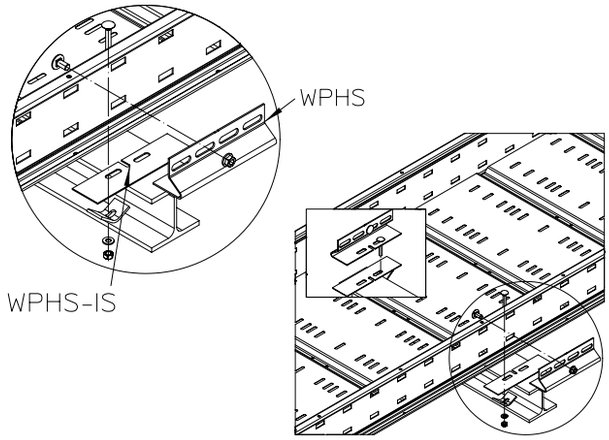
Flange mounting clamp for mounting on steel beams



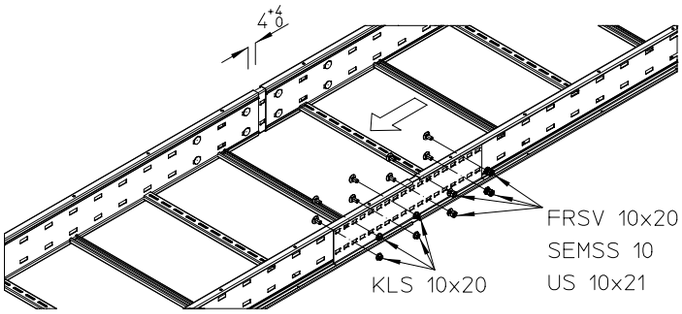


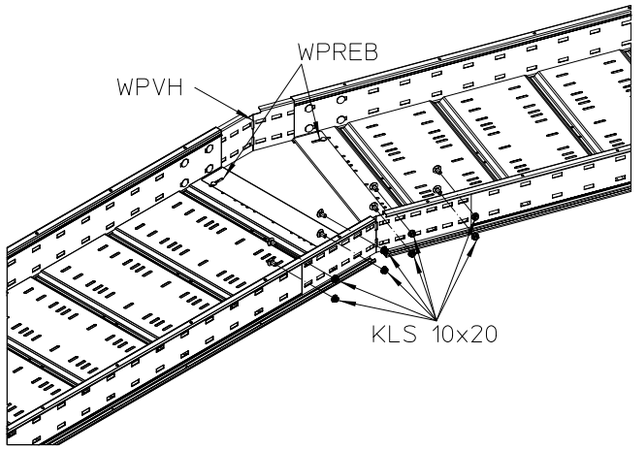
Flange mounting clamp for mounting on steel beams with insulating tape



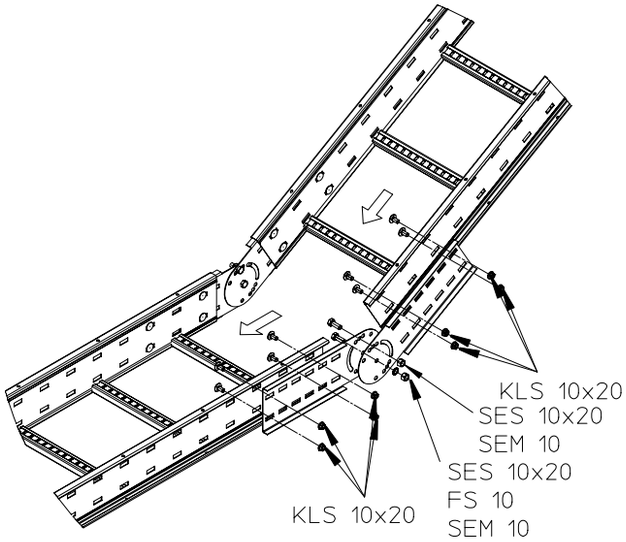


End-to-end assembly



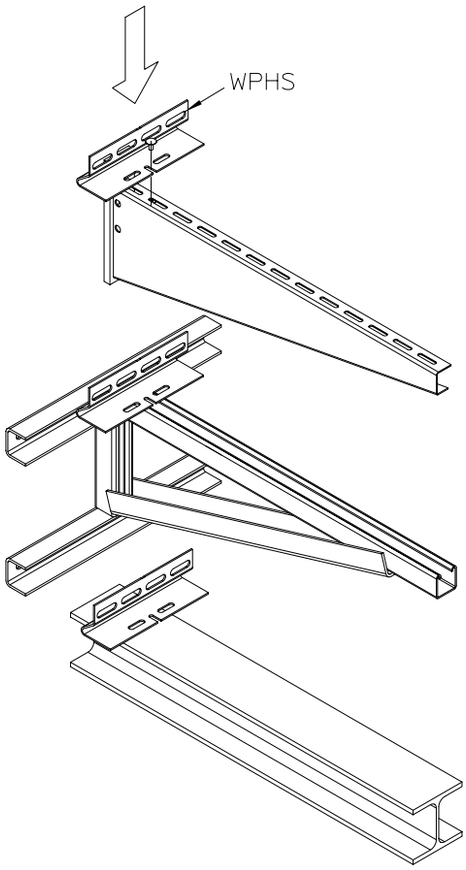


Upstream



Flange mounting clamp support for KLS mounting

1.



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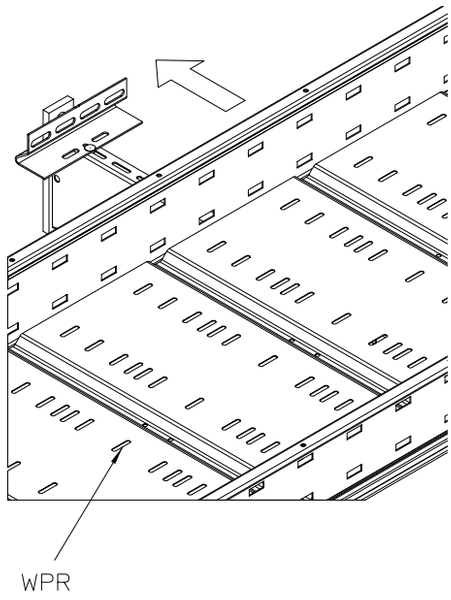

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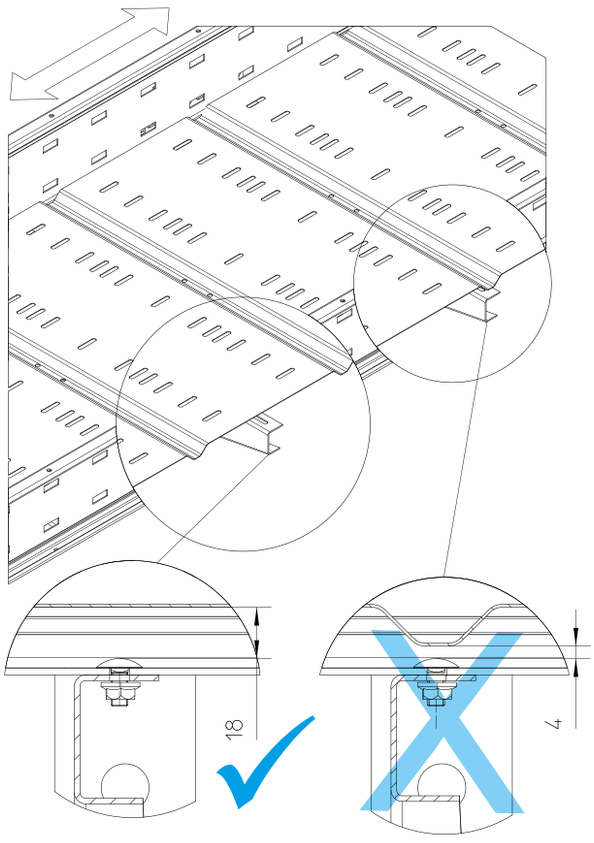
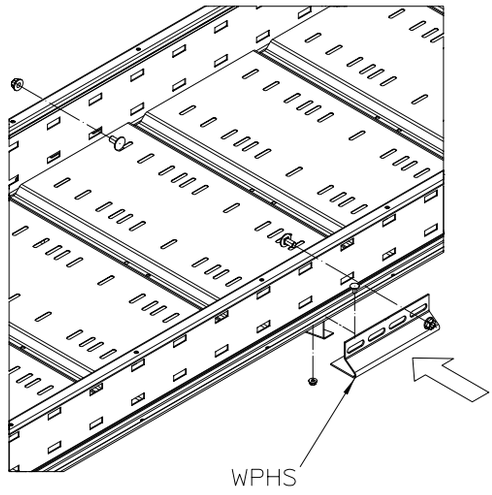
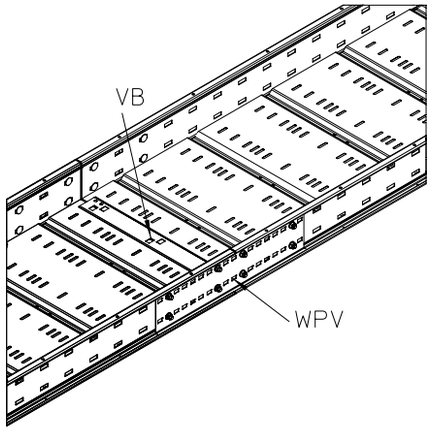


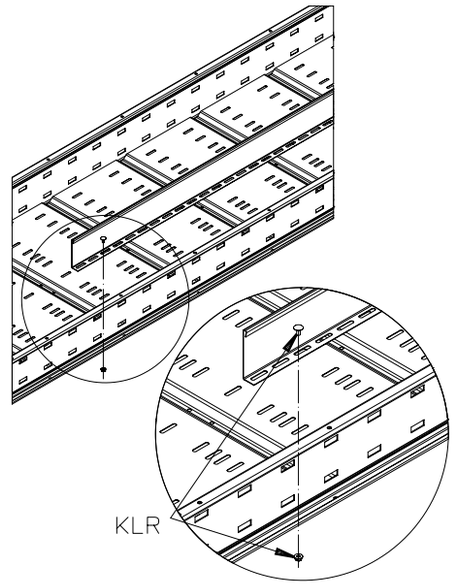
4.



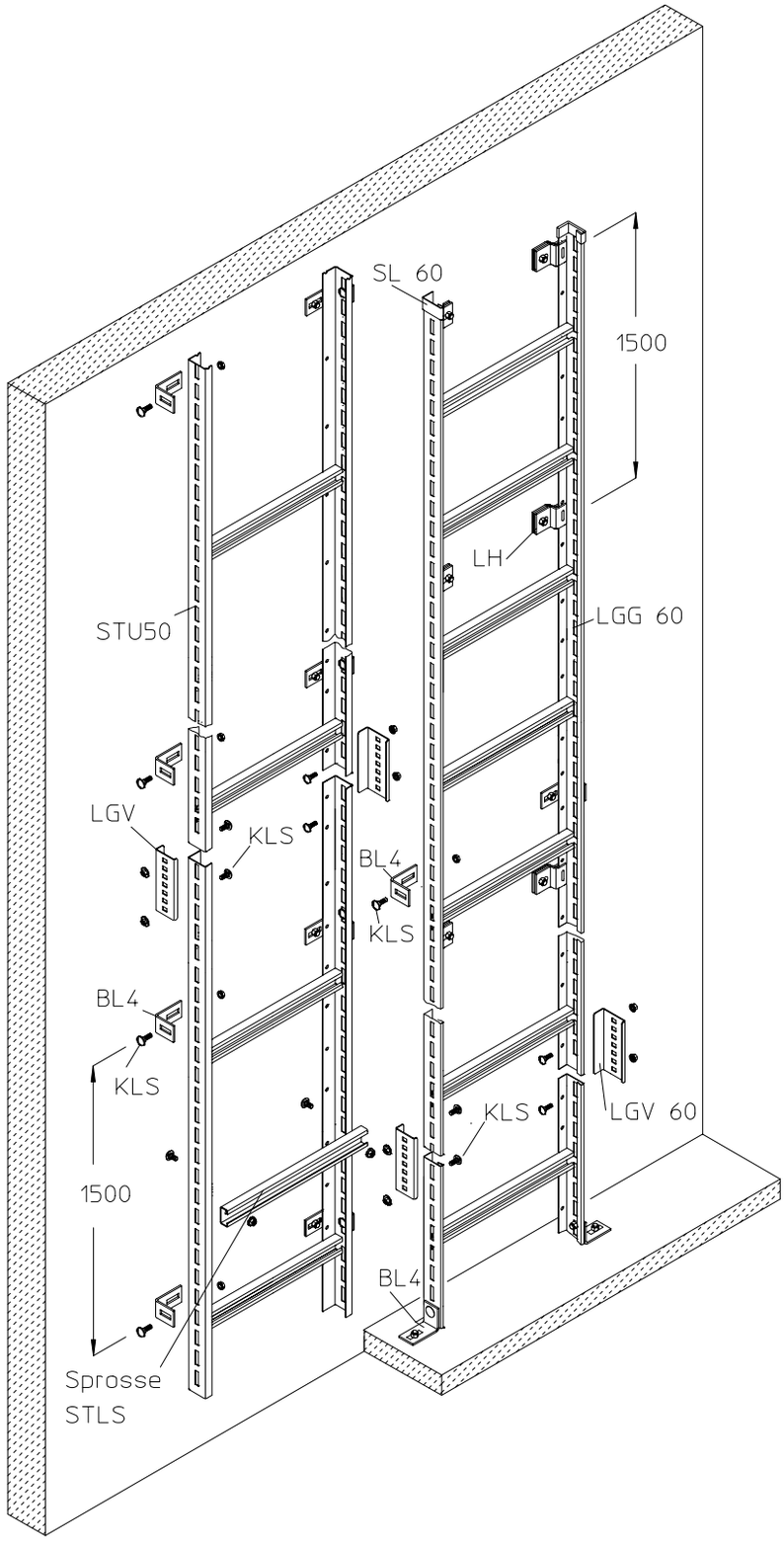
End-to-end assembly



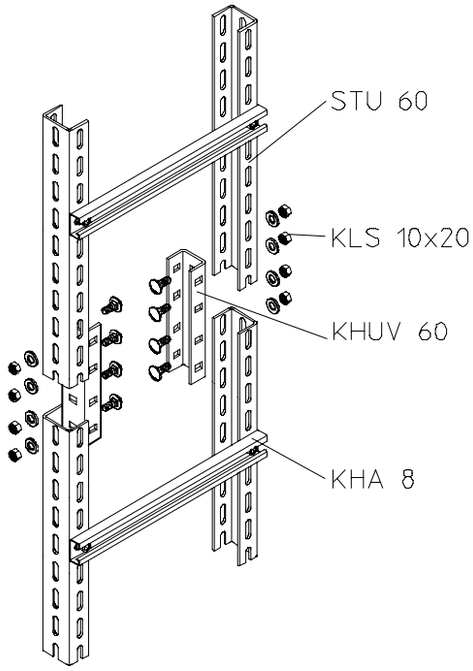
Assembly of separating strip



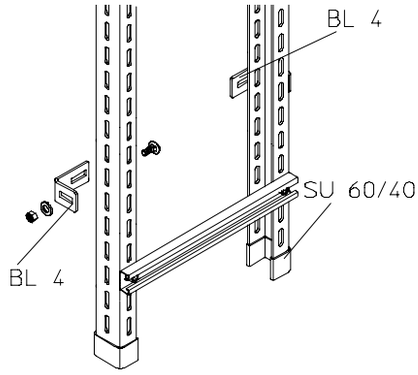
Direct wall-mounting / Assembly with foot plate



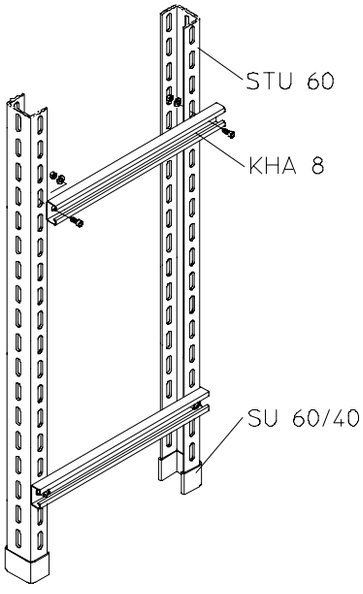
Vertical ladder extension



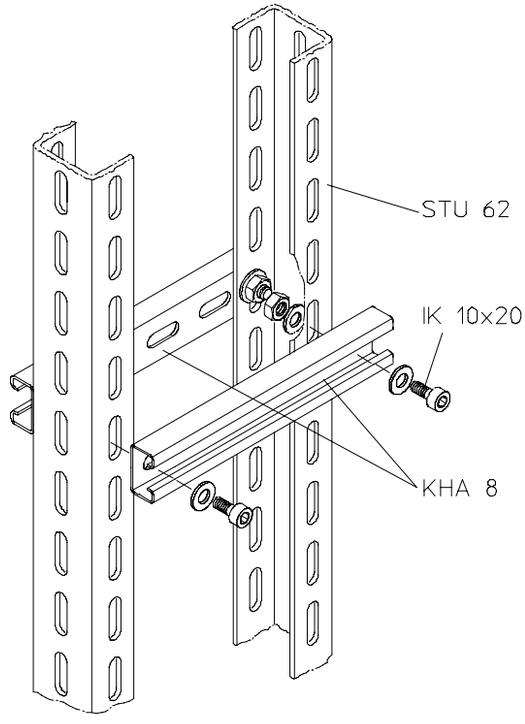
Direct wall-mounting



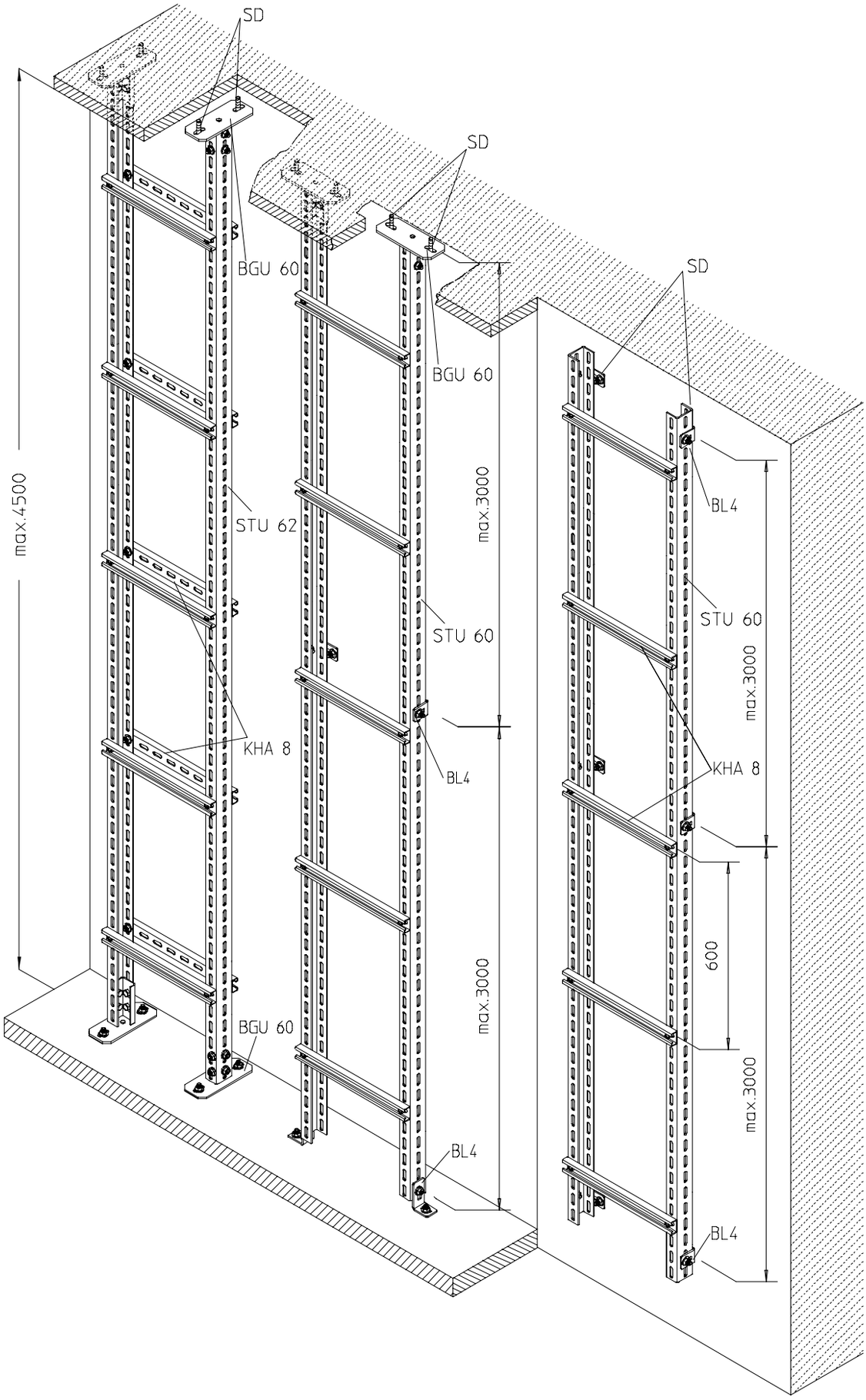
STU 60



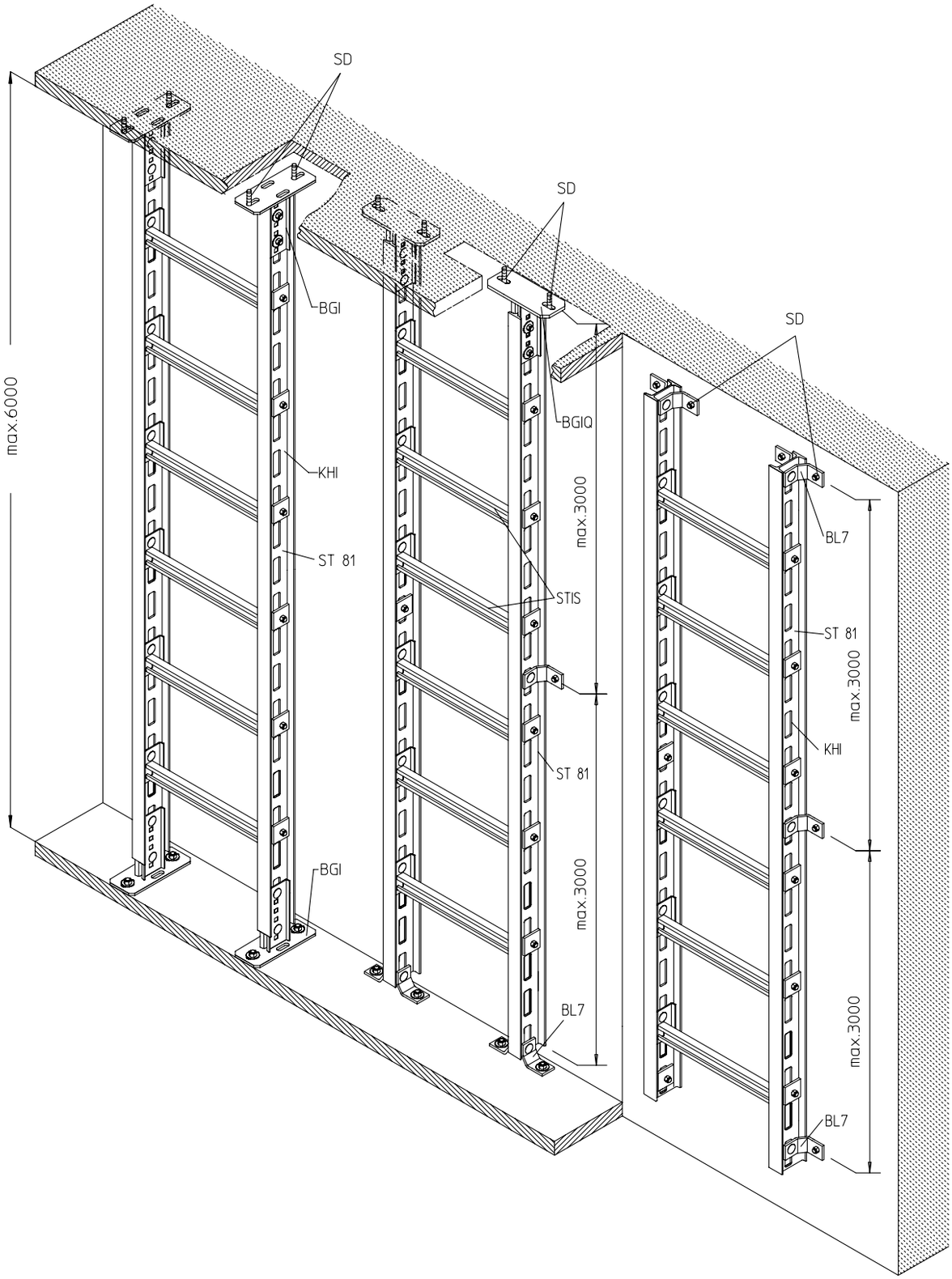
STU 62



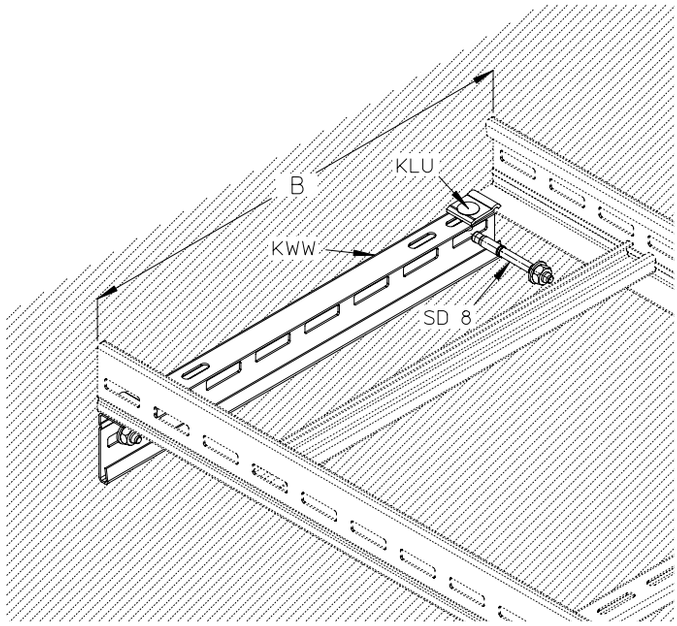
Direct wall-mounting / Assembly with foot plate and head plate



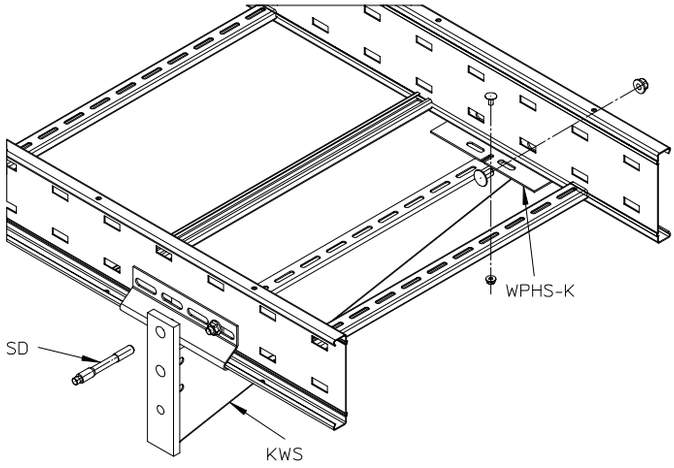
Direct wall-mounting / Assembly with foot plate and head plate



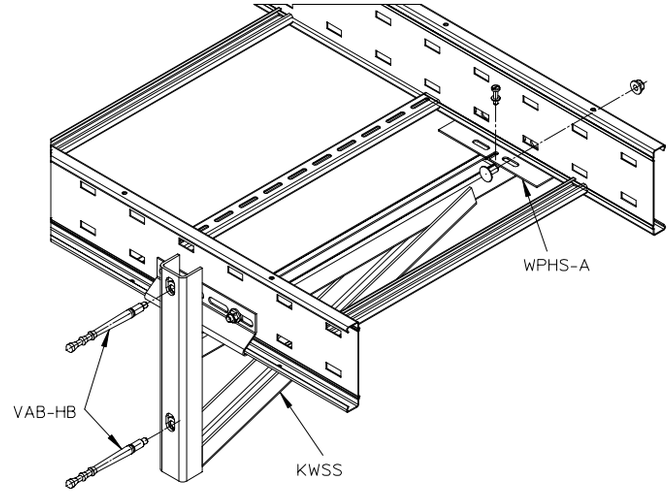
Assembly on wall angle



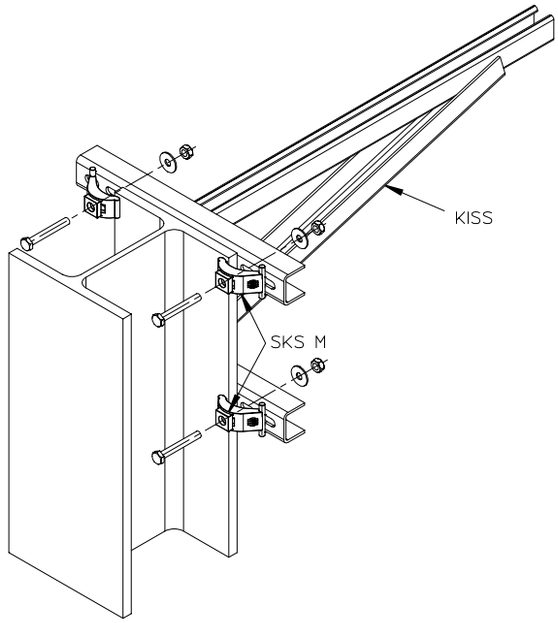
Assembly of KWS



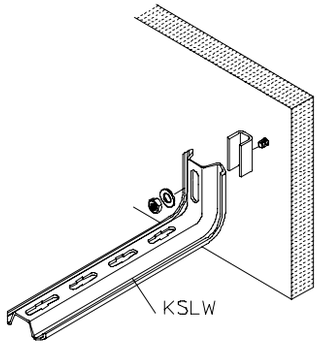
Assembly of KWSS

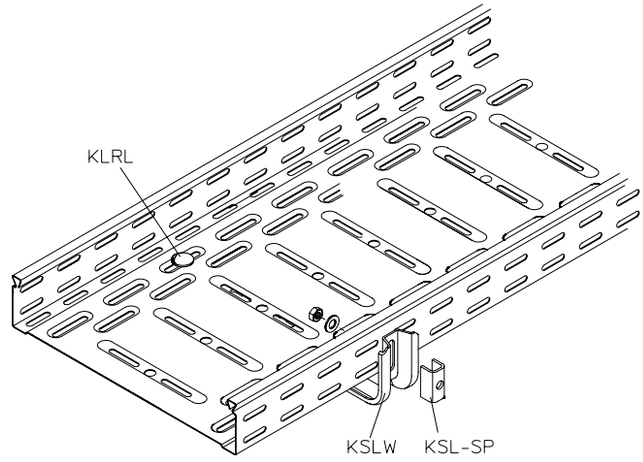


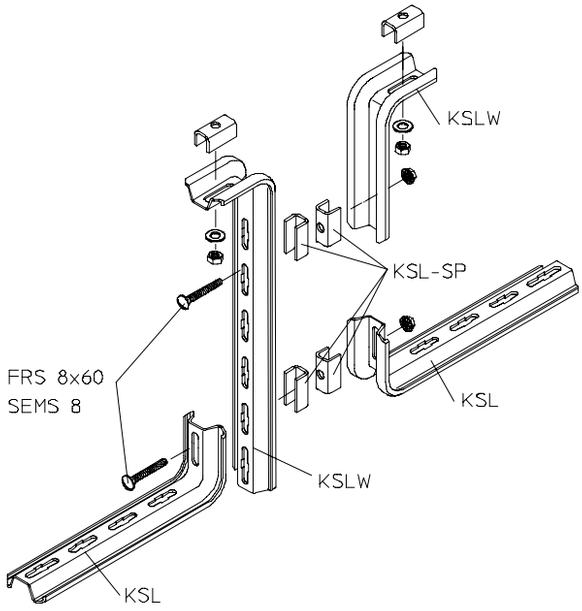
Assembly on steel beams

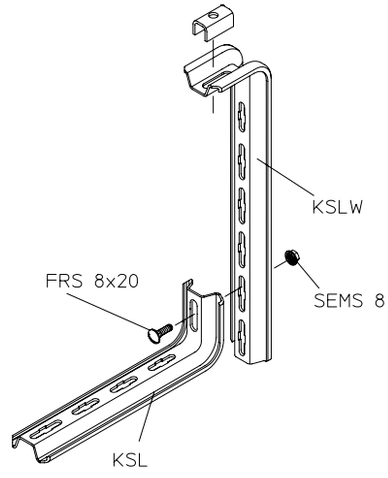


KSL-system / wall and ceiling assembly

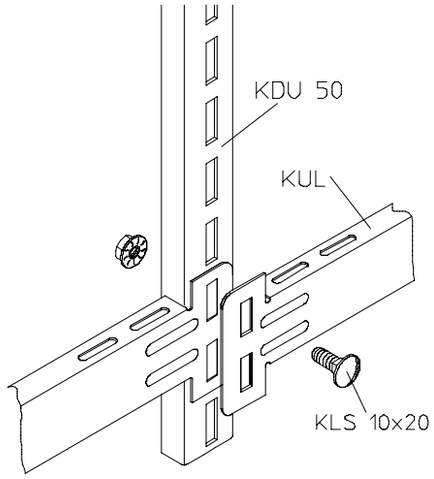


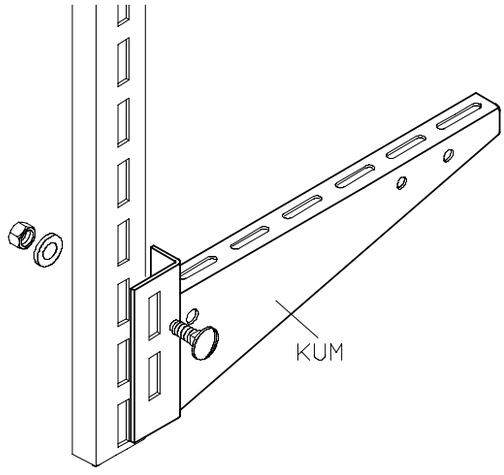




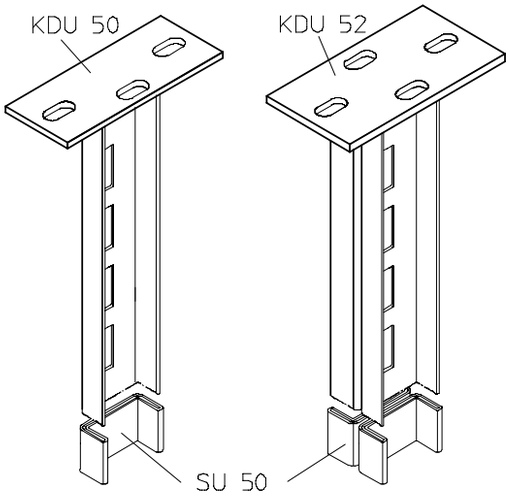


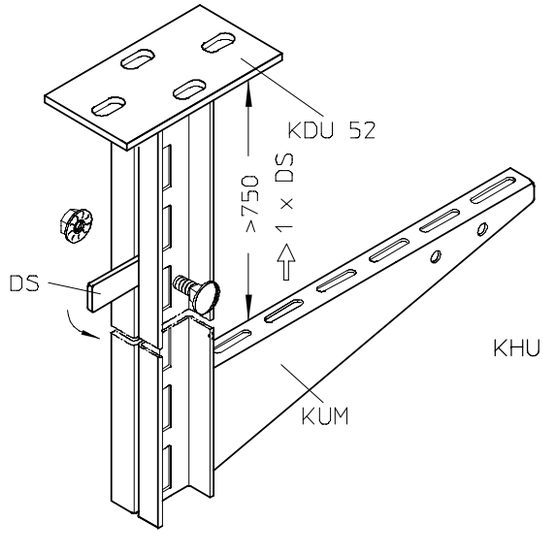
Bracket assembly

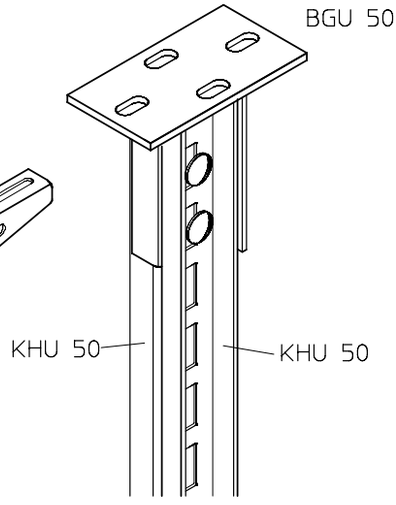




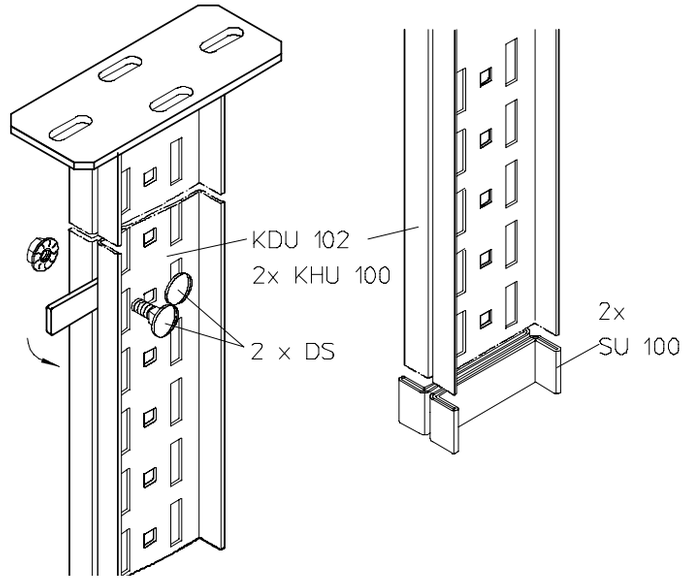
Bracket assembly

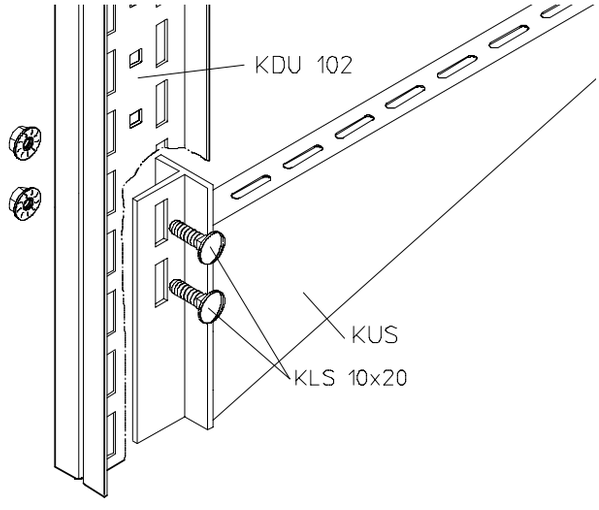




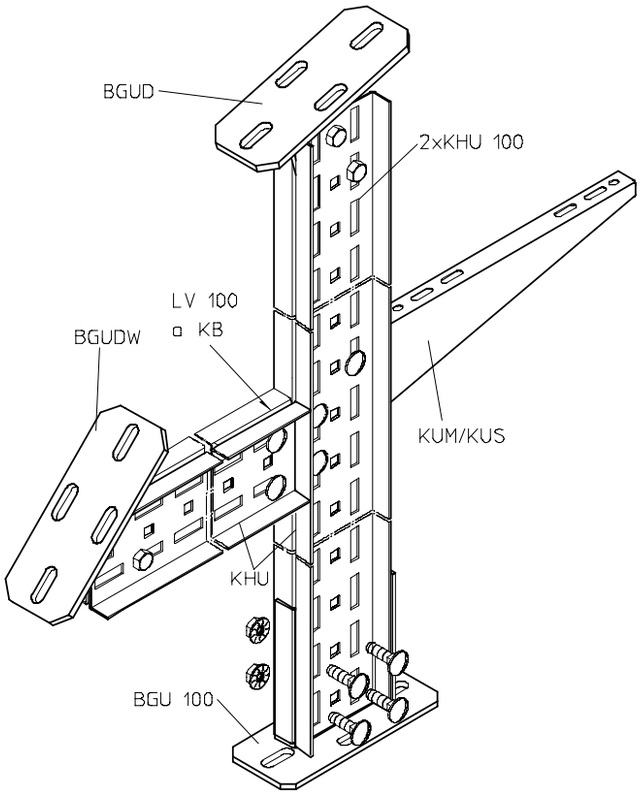


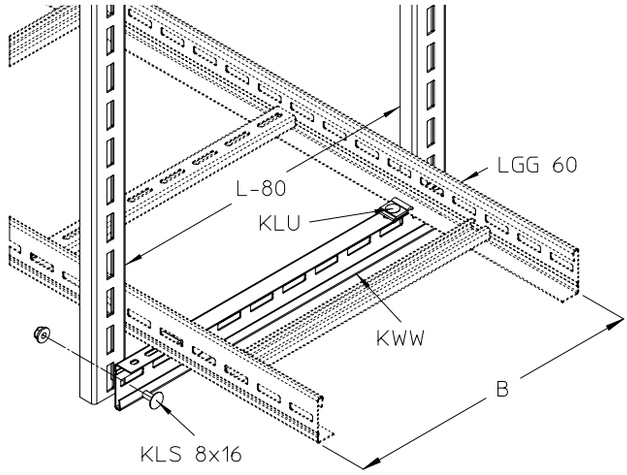
Bracket assembly

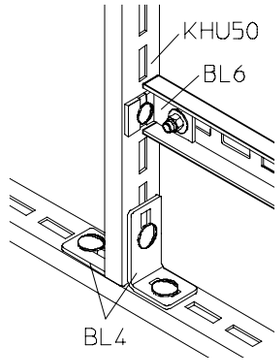


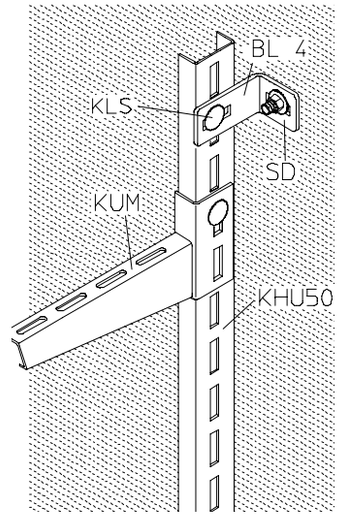


Assembly of KHU

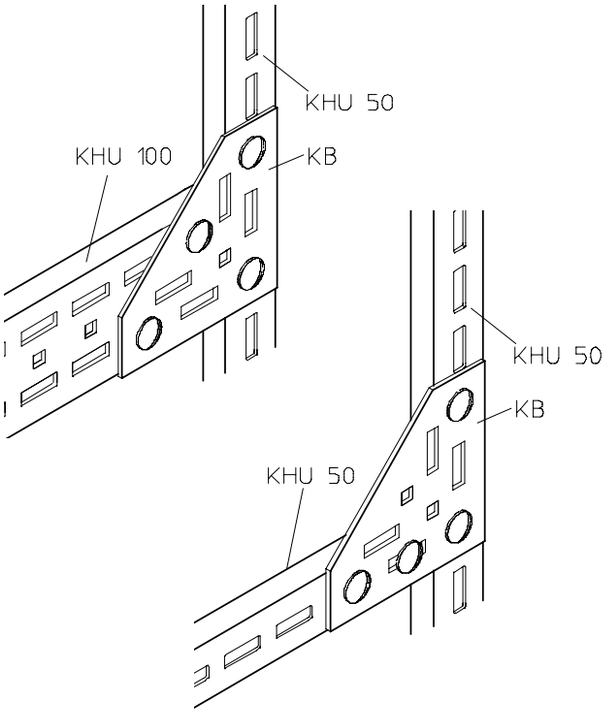


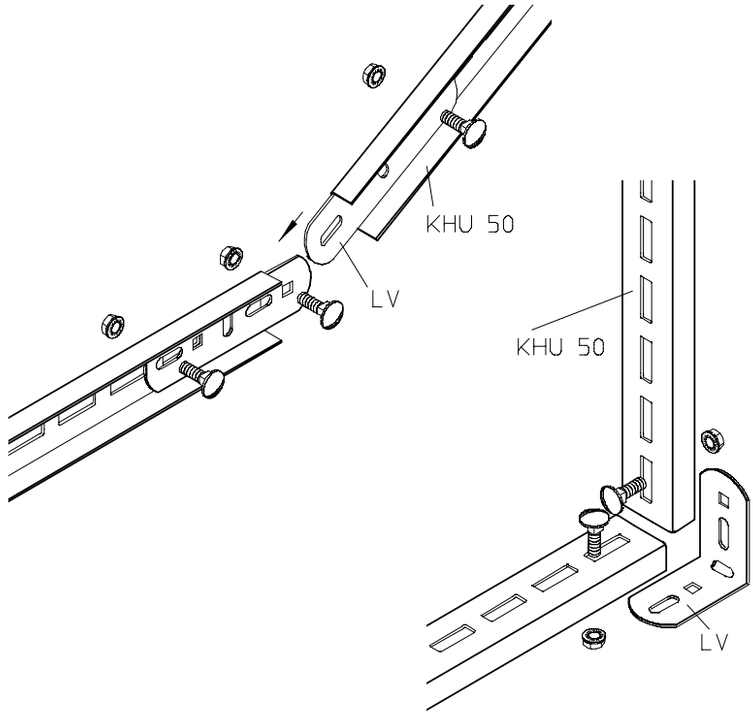




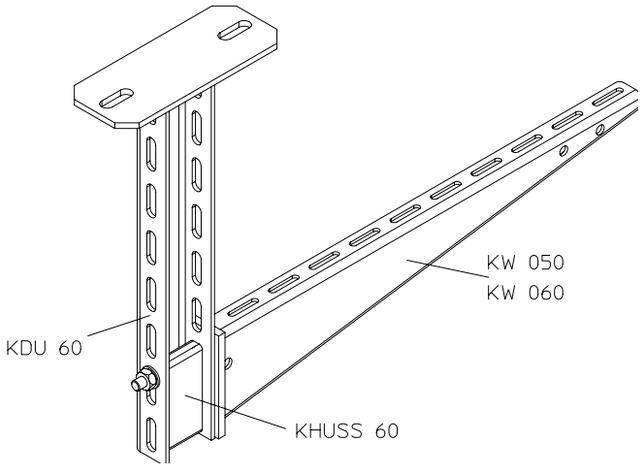


Assembly of KHU

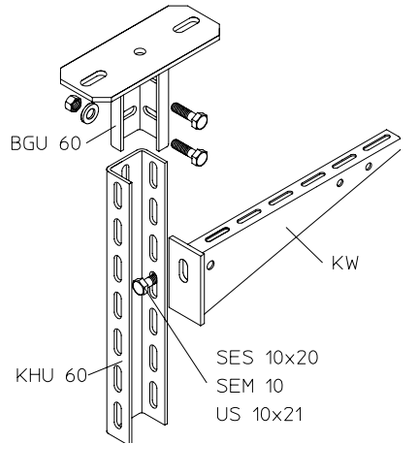




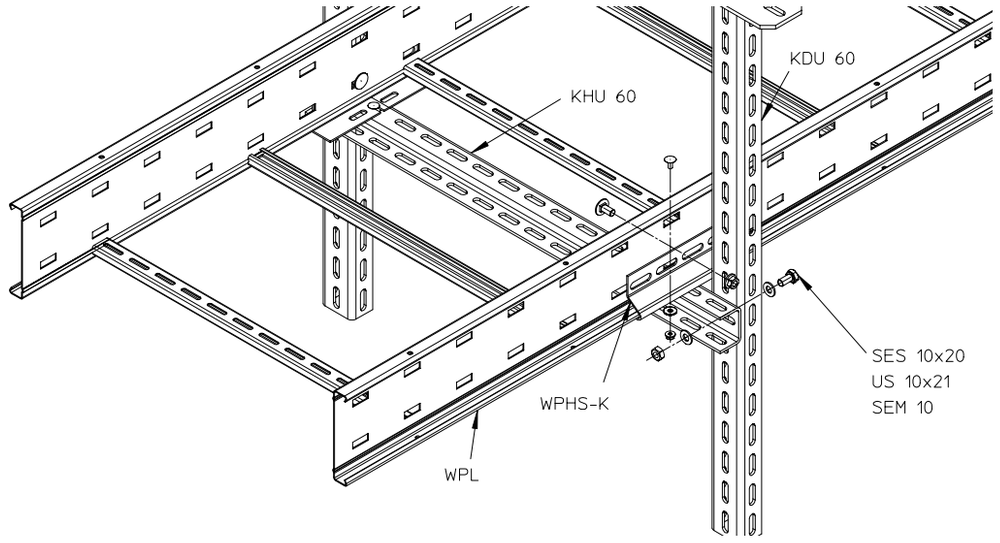
Bracket assembly



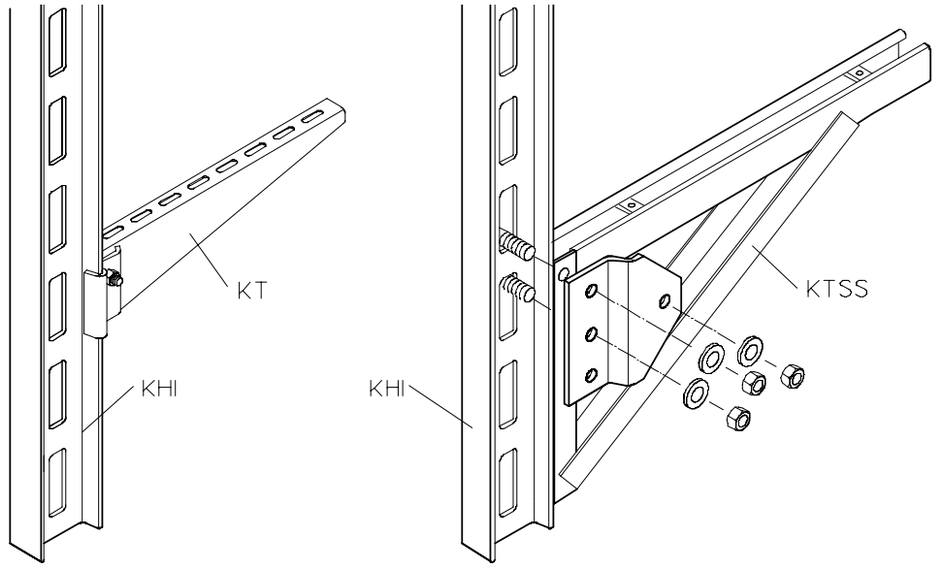
Bracket assembly



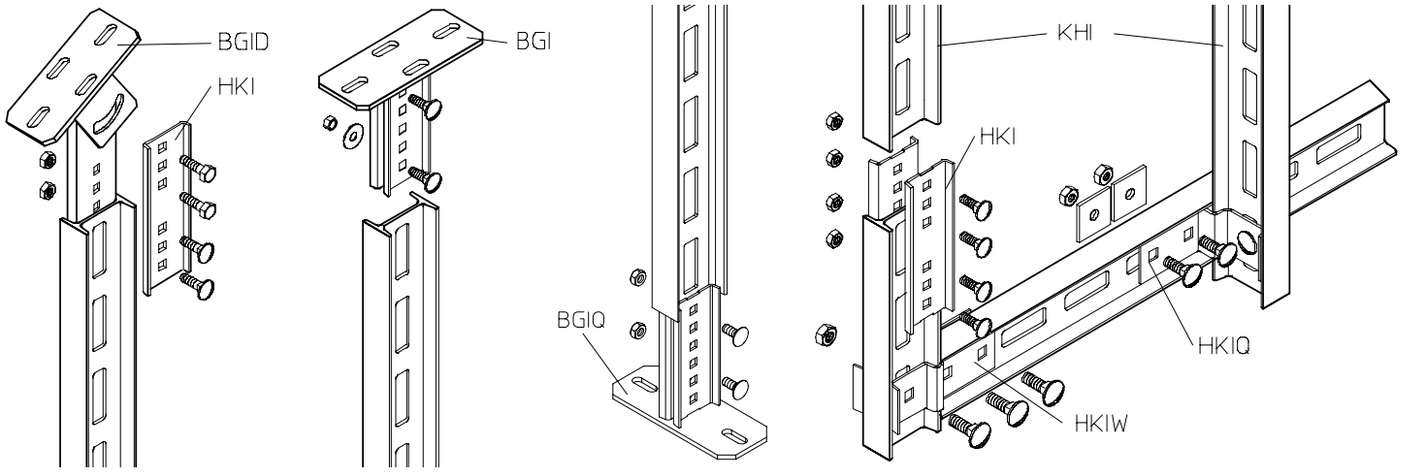
Profile assembly



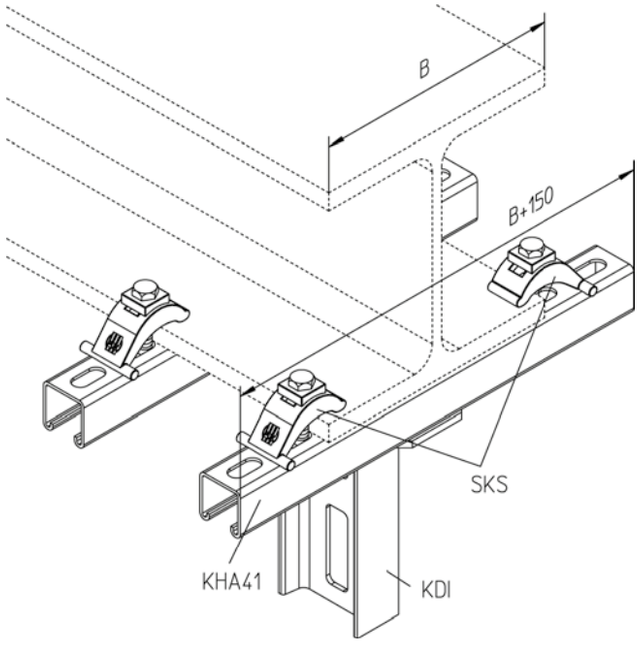
Bracket assembly

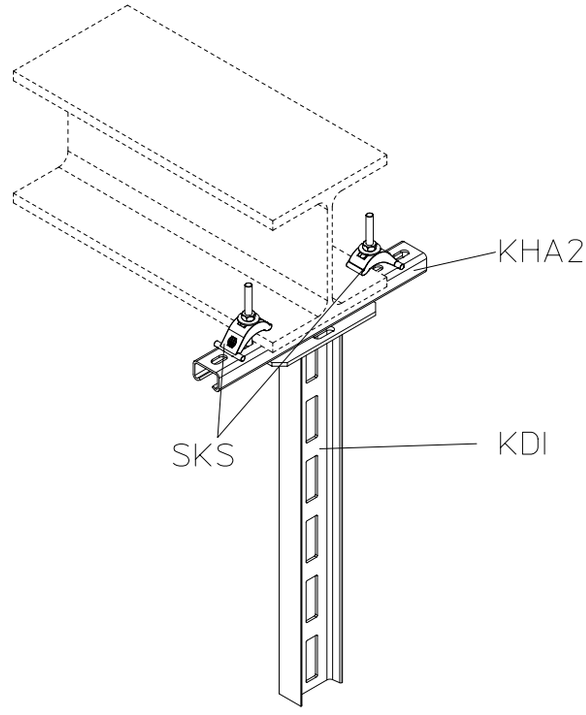


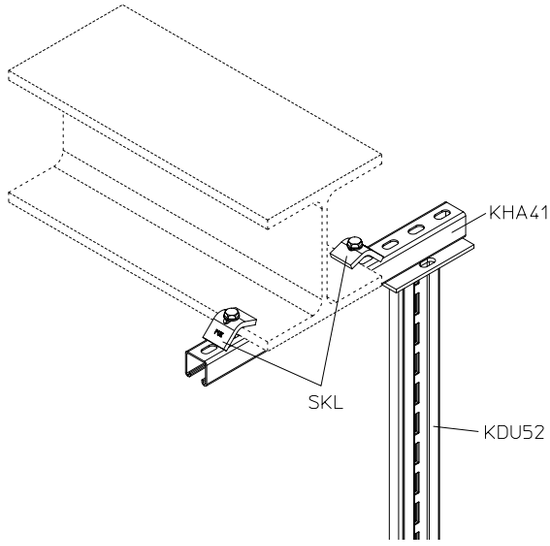
Assembly of KHI

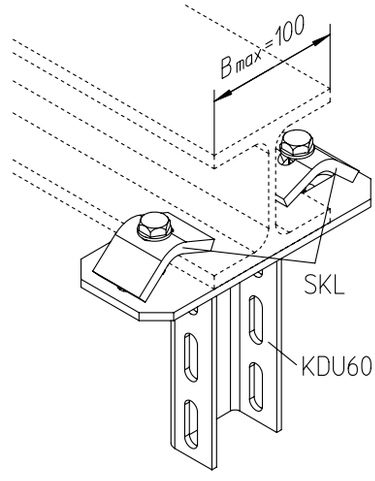


Clamping assembly on steel beams

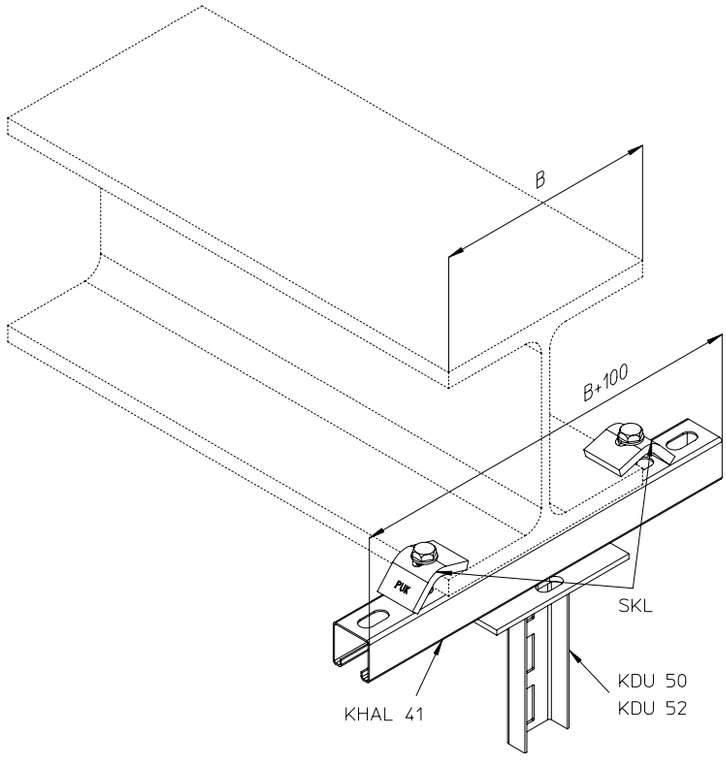




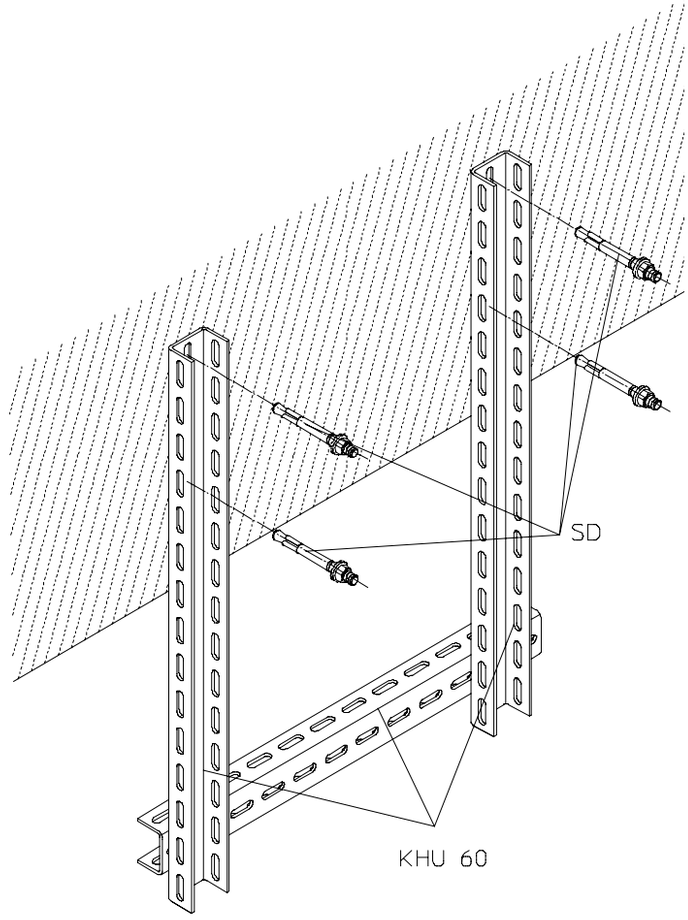




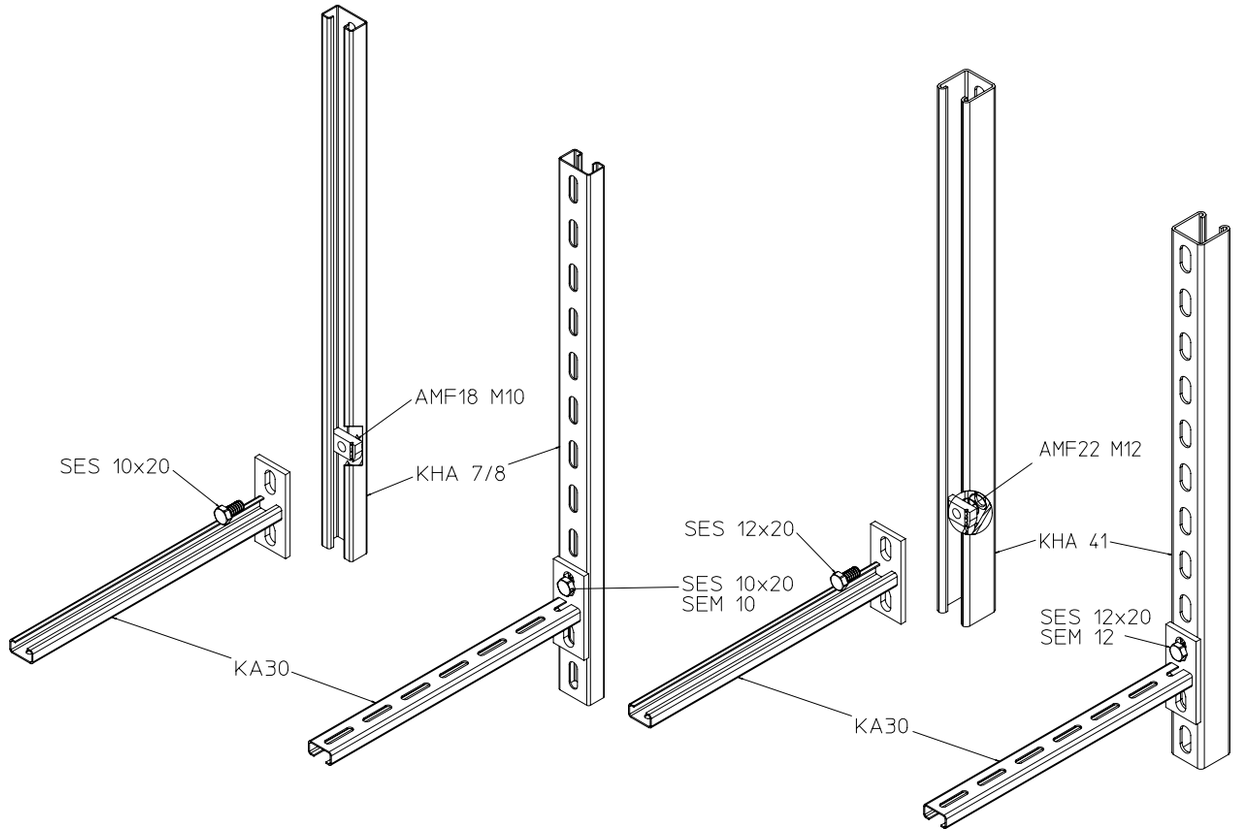
Strut assembly



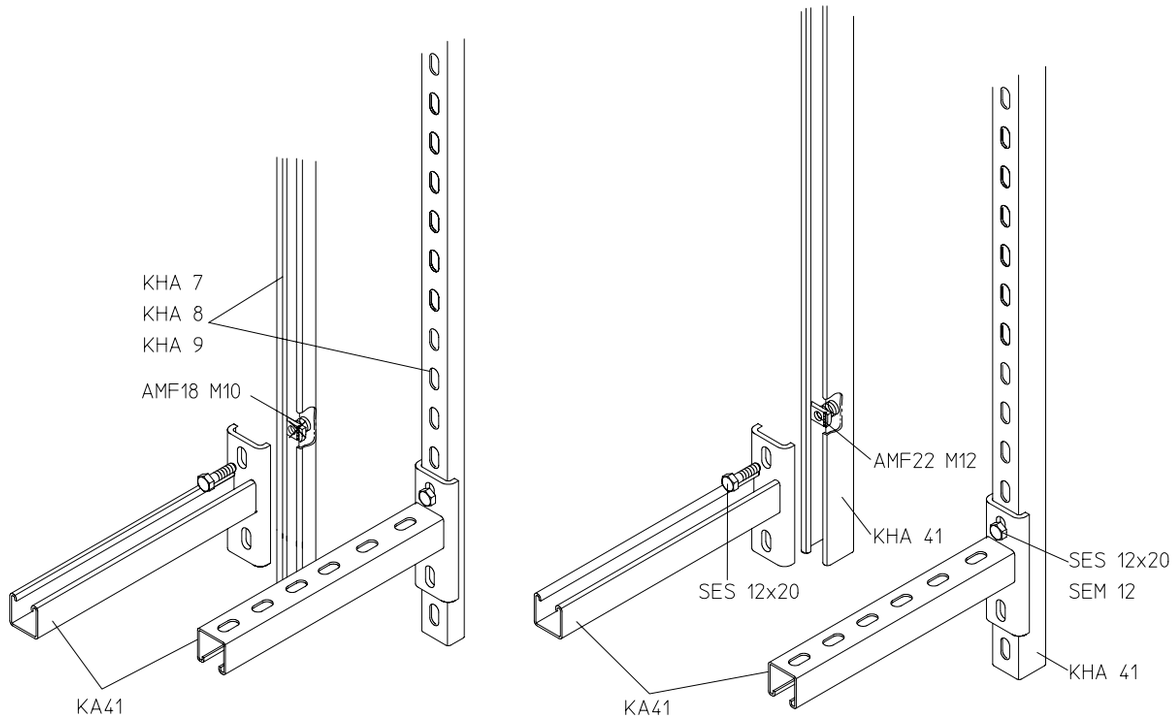
Profile assembly for concrete beams



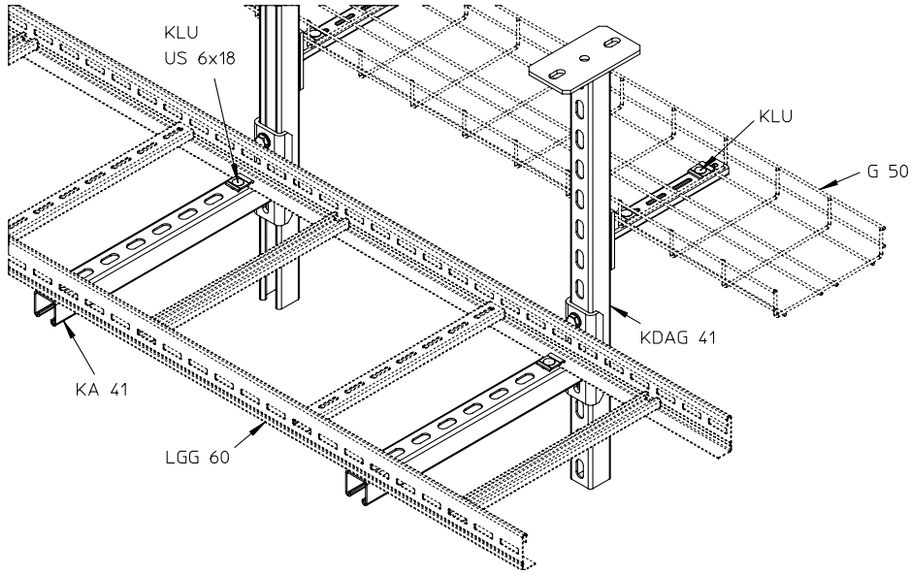
Strut assembly



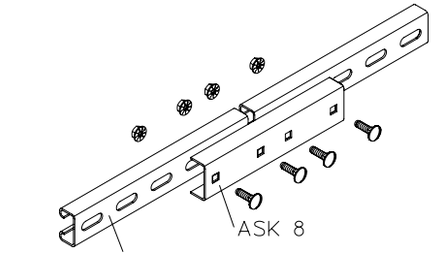
Strut assembly



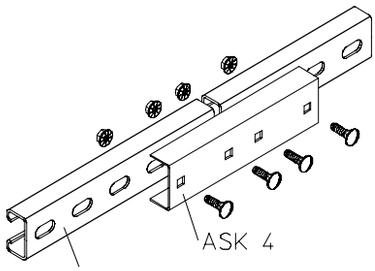
Strut assembly



C-rail connection

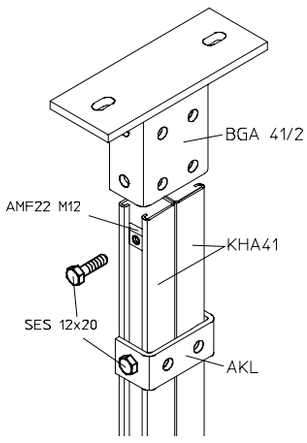


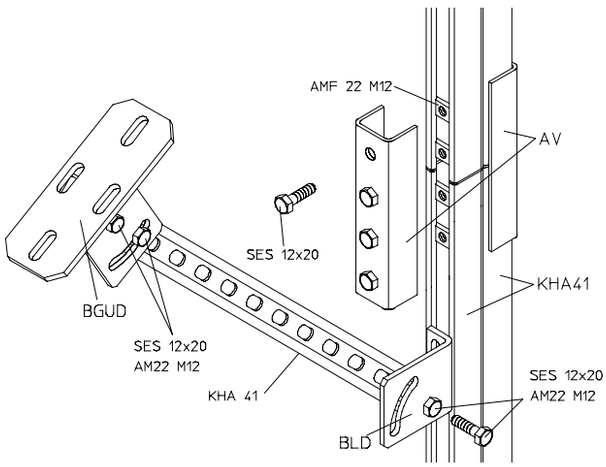
A7, A8, A9
KHA 7, KHA 8, KHA 9
39,5/22, 40/22, 39,5/25

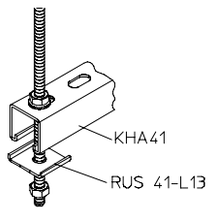


A4; KHA4
48/26

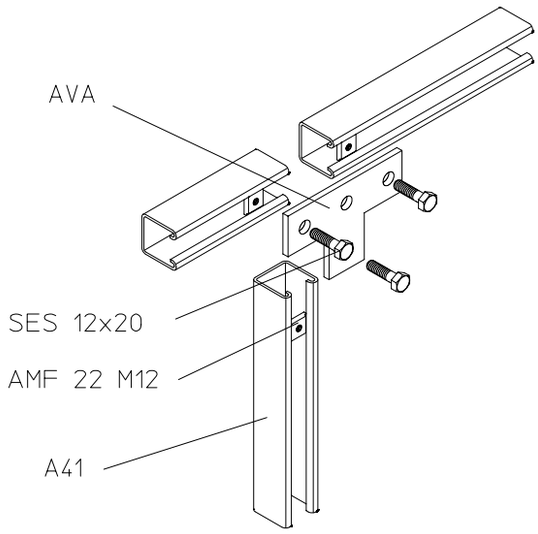
Strut assembly

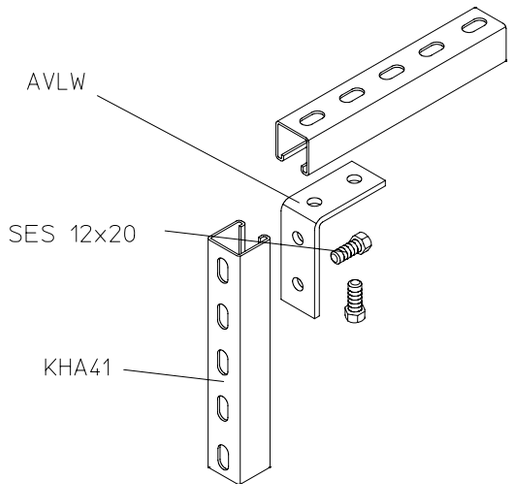




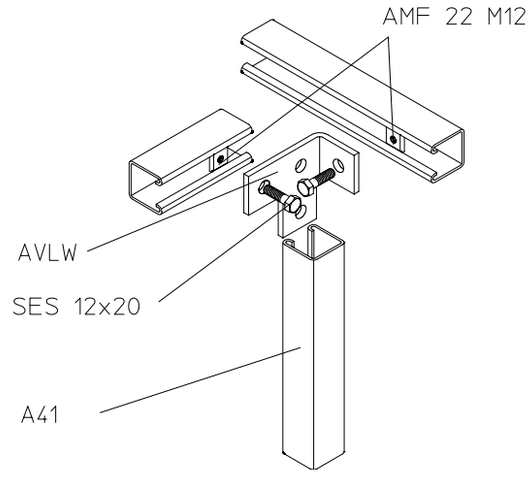


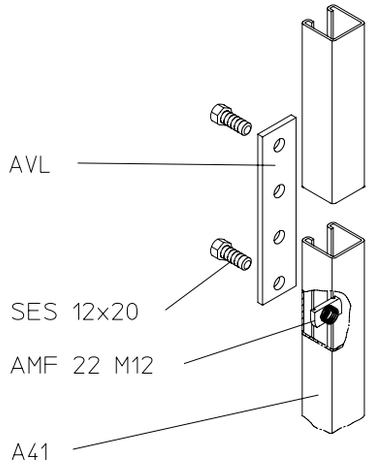
Strut assembly



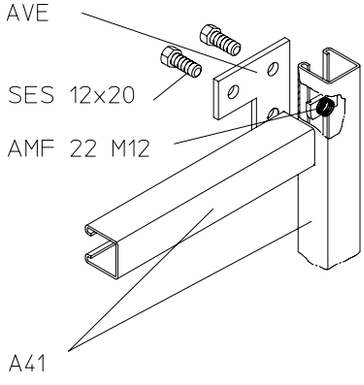


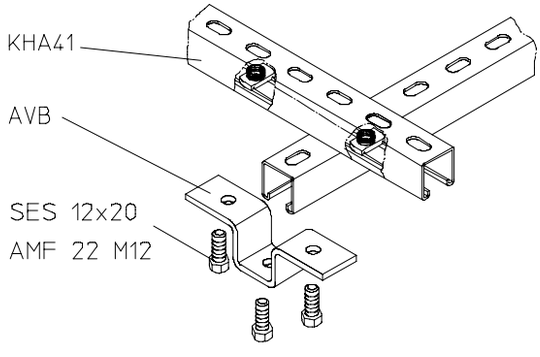
Strut assembly



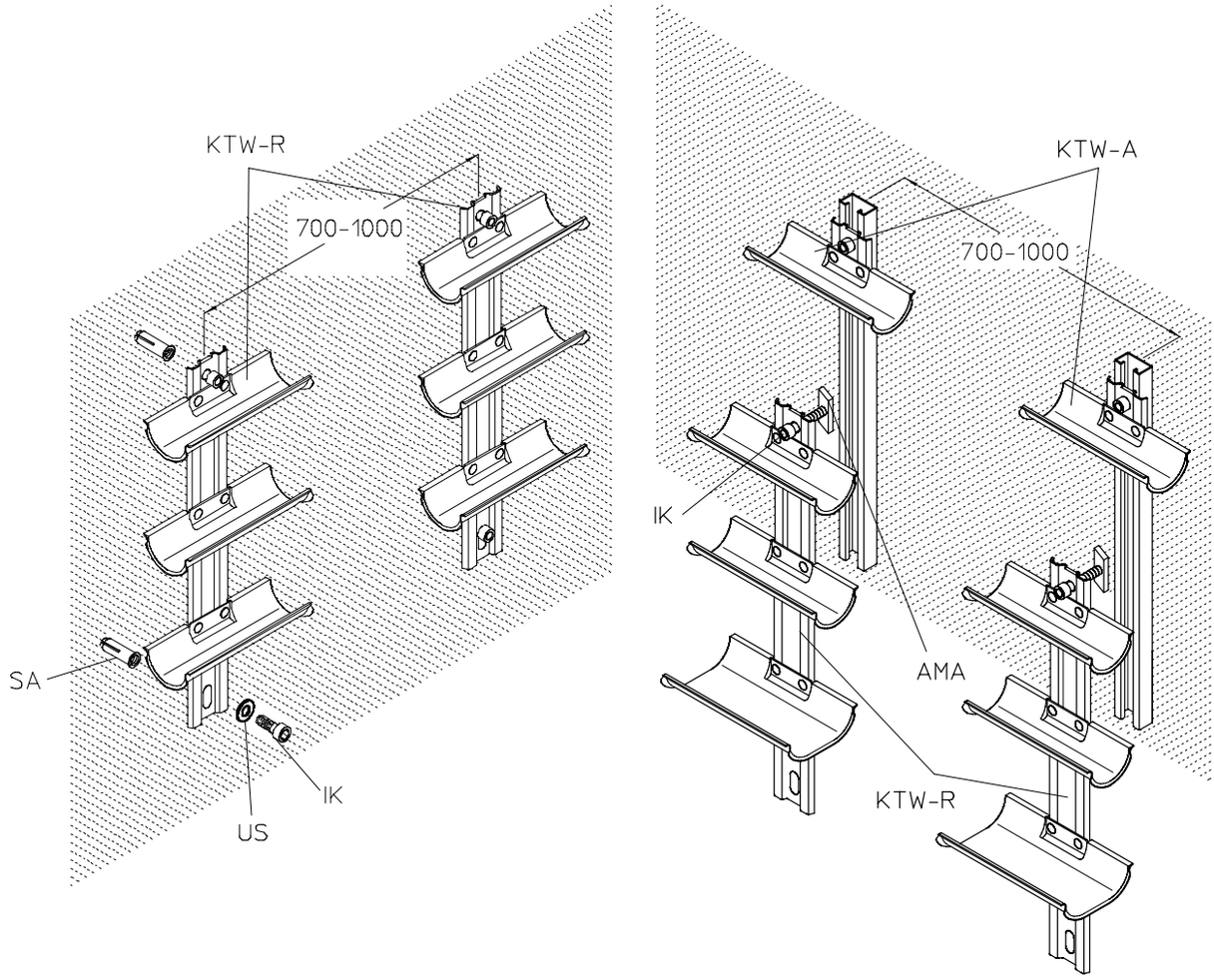


Strut assembly

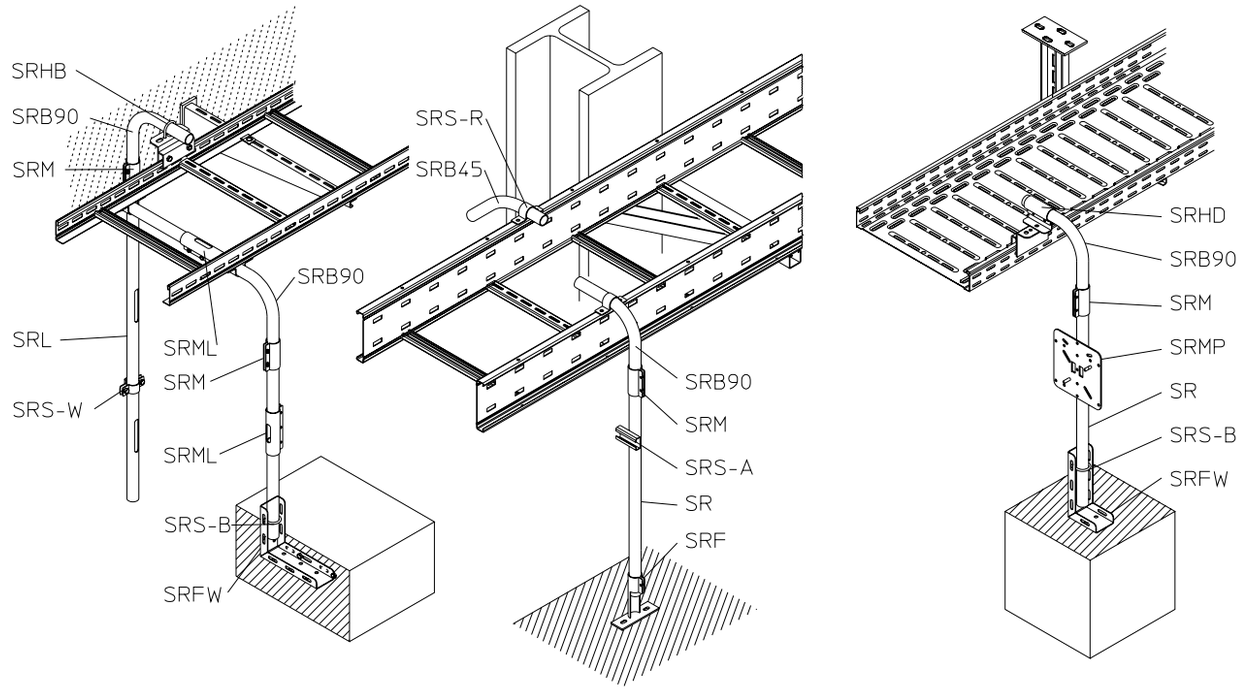




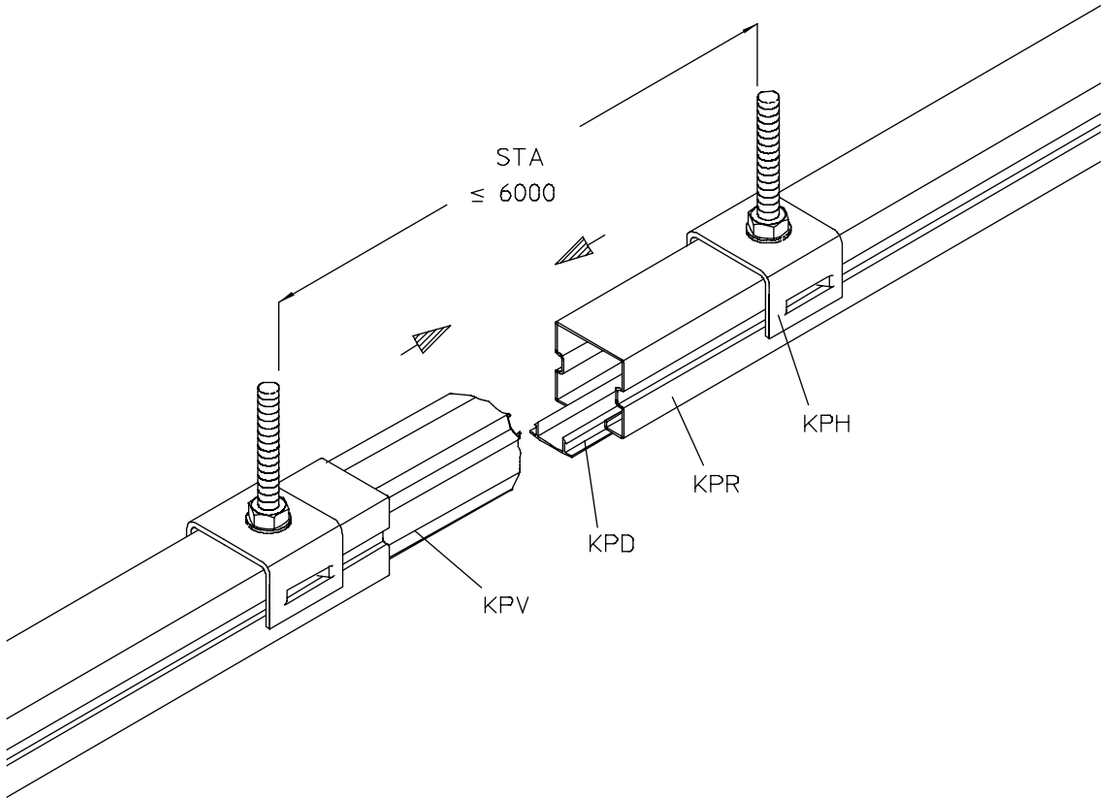
Cable support trough



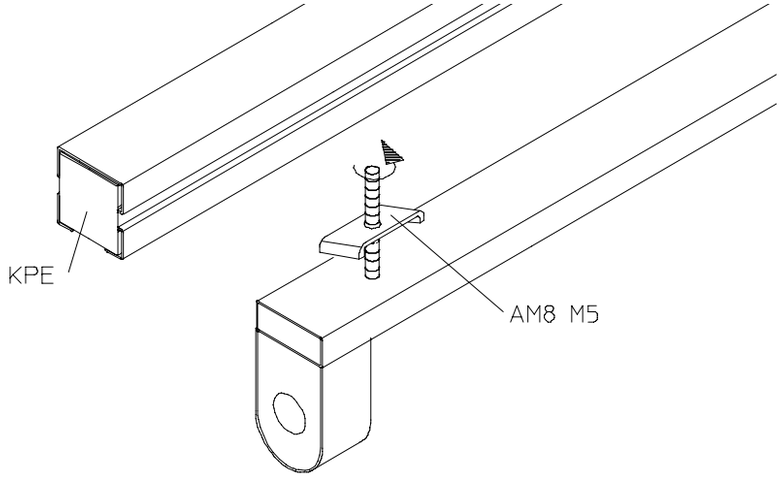
Protective tube assembly



Lighting channel system



Lamp mounting on lighting channel system



Ceiling assembly of lighting channel system