

## Lumon Post Balustrade



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Version	Date	Author	Approved	Modifications
1.0	25.01.2019	NHo	LHu	
1.1	20.03.2019	NHo	LHu	Glass max. 1650x1200, profile lenght 5100mm

Lumon Post Balustrade ARK			
Author:	NHo	Version:	1.1
Verified:	JHo	Date:	20.03.2019
Approved:	LHu	Code:	02.03.01.01.EN

1	Technical Description
2	Product Range
3	Sections
4	Measuring Instructions
5	Fixing Details
6	<b>Appendices</b> <ul style="list-style-type: none"><li>- Claddings</li><li>- Dimensioning</li><li>- RAL-price groups</li><li>- Definition of quality</li><li>- Warranty</li></ul>

**General Information**

The Lumon balcony balustrade system consists of matching aluminum profiles designed for use as balustrades. The slender balustrade structure includes handrails and glass frame profiles used for attaching the cladding. The cladding is installed on either the in- or outside of the posts. Water and smoke tightness is achieved with seals.

The product has been optimized for 0,8 kN/m<sup>2</sup> and 1,5 kN/m<sup>2</sup> wind pressure with a normal and a strong balustrade post

The Lumon balustrade system has been designed to work perfectly with the Lumon balcony glazing system. Complementing structures like louvers and dividing partitions can be added to the balustrade system. Balustrade elevations on top of concrete balustrades are not possible.

The Lumon balcony facade (balustrade + balcony glazing) gives added value and increased sustainability to the building.

**Materials**

The aluminum profiles are made of silicon and magnesium alloyed aluminum. These additives improve the strength properties of aluminum and the workability without degrading the surface quality. These alloys are readily anodized.

Matt polyester powder is used as a top coat. The profiles are powder coated according to the RAL color chart. All fasteners used in the system are made from non-corrosive materials.

Glass or suitable building board can be used as infill for the closed parts of the balustrade. The type of glass varies depending on local requirements. The typical glass is laminated glass 4+4, but up to 12mm (6+6) claddings are possible. The max. width of the cladding is 1200mm. The gap between the claddings is not situated at the posts by default, this is a selectable feature. A double frame is not available with the Lumon Post Railing.

The raw material for the plastic components is thermoplastic. Plastic components colour is dark grey RAL 7024.

The seals used in frame profiles are made of TPE. The seal colour is dark grey.

Screws and rivets which are used in aluminum profile joints are either aluminum or stainless steel. Balustrade brackets are also made of aluminum or stainless steel. The installation brackets are of cast aluminium (side installation) and stainless steel (top installation). The hatbracket is painted in the profile colour or in some other separately chosen RAL-colour. The steel pedestal can not be painted.

**Design and manufacturing of railing elements**

Lumon's services always include the production and design of the aluminum balustrade elements. Each project is treated with equal importance, and project-specific special features, such as different fastening and drainage solutions, are provided. Actual designing is not available, the railings are made solely based on the information entered into the sales system. The railing is automatically cut, the max length of the profiles are 5100mm. The minimum side dimension is 300mm. The max. number of sides on an individual balcony is 9.

Project-specific structural analyses are made according to official regulations. Extra wind load caused by (potential) balcony glazing is taken into consideration in the calculations.

The fastening method of the railing is based on the mast attachment method. The distance between balustrade posts depends on loading caused by local conditions, properties of the balustrade posts and attachment methods. The typical distance between balustrade posts is 800...1500 mm.

The balustrade element is either installed on the front edge of the slab with hatbrackets or on top of the slab with pedestals. The slab thickness must be between 160-300mm.

The lower glass frame is attached with a lighter fastening since the the load bearing capacity needed is minimal. The handrail can be strengthened with support posts. The amount of support posts needed is depends on environmental conditions on site and local regulations. The lower glassframe also works as a fastener, no additional brackets are needed. The cladding is always on the outside of the supporting posts.

The cladding can not be divided horizontally with a double frame. Cladding variations must be made with vertical cladding sections only. Other types of cladding variations can be reached by patterning the glass panes or building boards (eg. screen printing, digital print or sandblasting). The lack of vertical post also excludes slab overhangs.

**Installation and logistics**

The balustrade elements are prepared at the modern Lumon production facilities in Kouvola. The balustrades are assembled from ready-made parts on site. Alternatively the railing elements can be delivered assembled on special pallets.

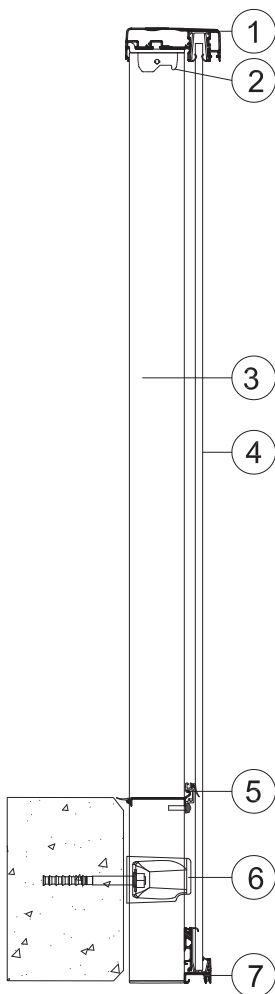
The prefabricated profiles are packed in balcony-specific packages and transported to the site. The Lumon balustrade system is a secure and safe, complete solution, which takes into account the local conditions and local building regulations. conditions and local building regulations.

**A side installed balustrade with a hat bracket,  
Cladding on the inner or outer side of the post**

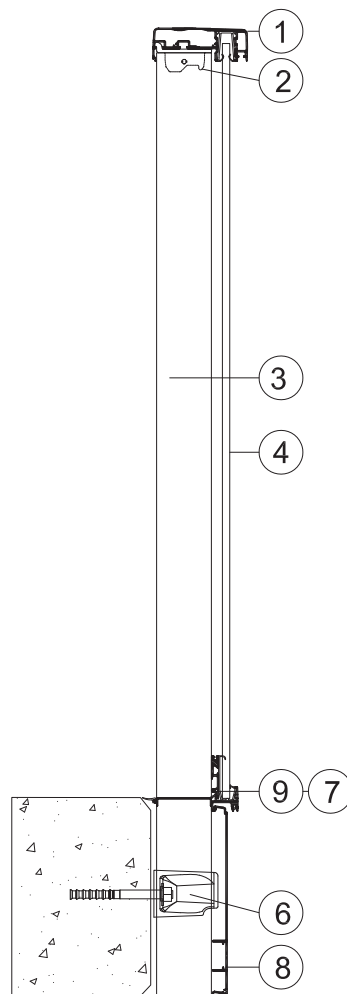
The balcony glazing is installed on the top of the handrail

1. Handrail 130
2. Post installation handrail bracket LTK
3. Post 75x32
4. Cladding
5. Lower gap profile + Installation profile
6. Hatbracket LTK
7. Lower frame LTK
8. Verhousprofiili
9. Lower gap profile

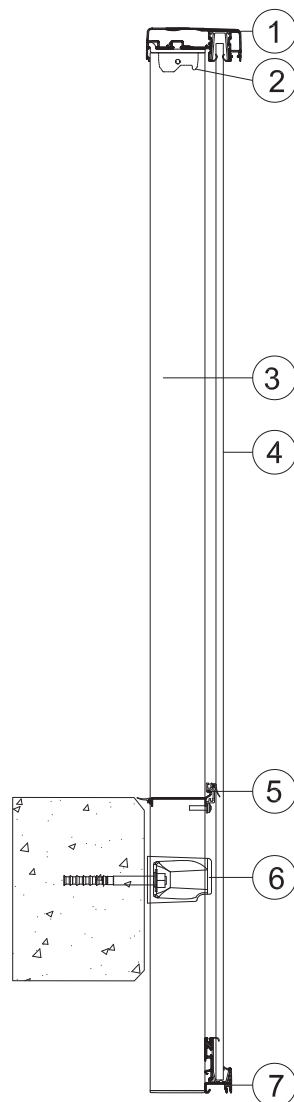
Cladding on the outside



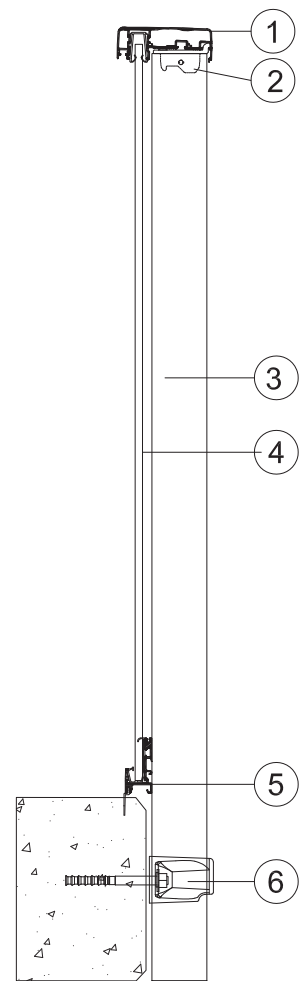
Cladding on the outside +  
verhousprofiili



Cladding on the outside with post  
extension



Cladding on the inside

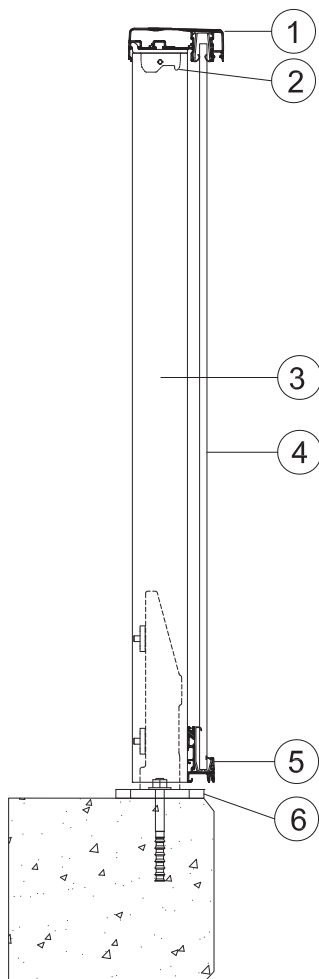


**A top installed balustrade with a steel pedestal.  
Cladding on the inner or outer side of the post**

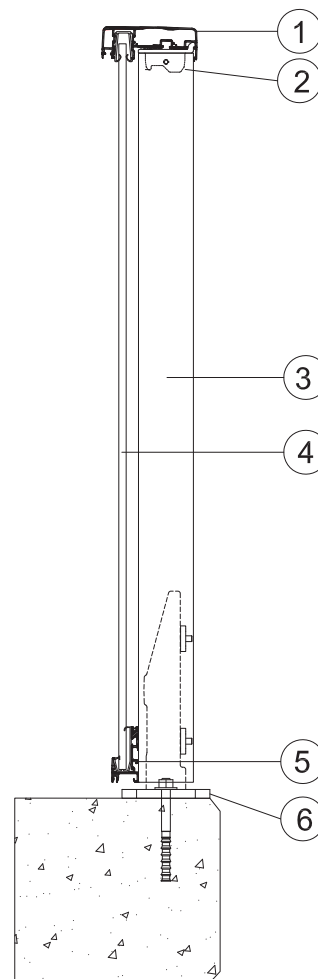
The balcony glazing is installed on the top of the handrail

1. Handrail 130
2. Post installation handrail bracket LTK
3. Post 75x32
4. Cladding
5. Lower frame LTK
6. Steel pedestal 160x120

Cladding on the outside



Cladding on the inside



**A side installed balustrade with a hat bracket.  
Special claddings**

The balcony glazing is installed on the top of the handrail

1. Handrail 160
2. Post installation handrail bracket LTK
3. Post 75x32
4. Cladding
5. Lower frame LTK
6. Hatbracket LTK
7. Plaster board
8. Handrail 220
9. U-profile
10. Handrail 130
11. Sheet metal cladding

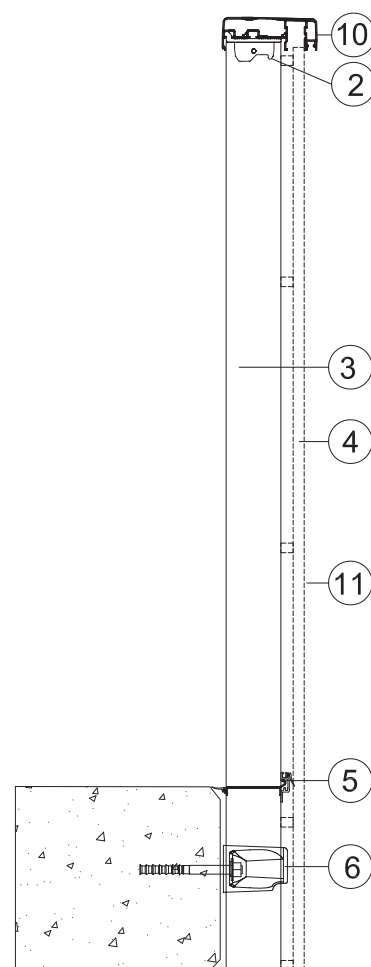
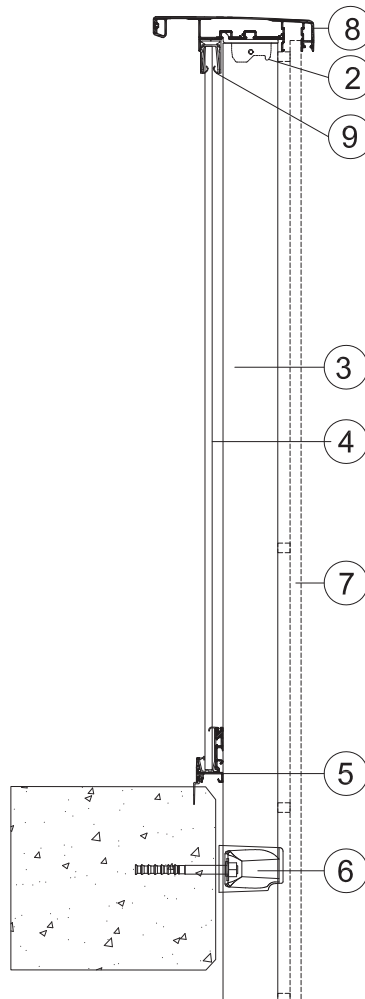
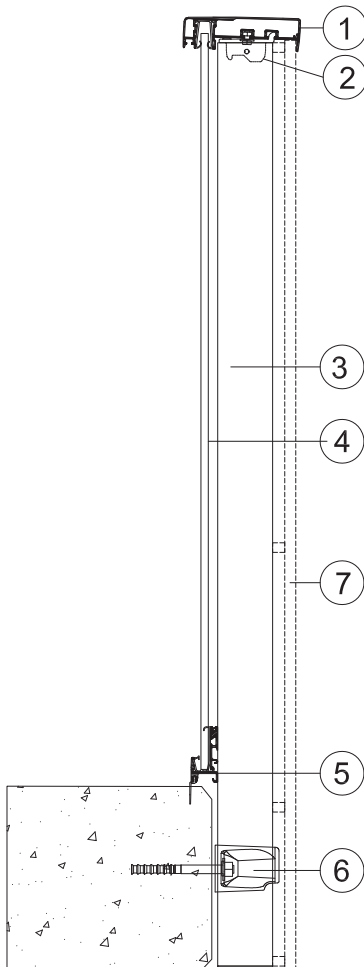
**NOTE!**

**The Lumon delivery doesn't include the plaster board or sheet metal cladding**

Plaster board +  
inside cladding

Plaster board + inside cladding  
with post extension

Cladding on the  
outside



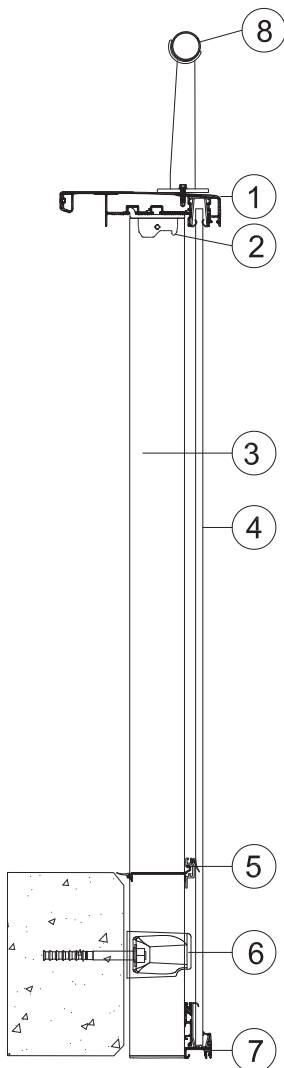


**Balustrade with decor profiles. Ø20mm decor profiles can only be selected with the cladding on the inside of the post**

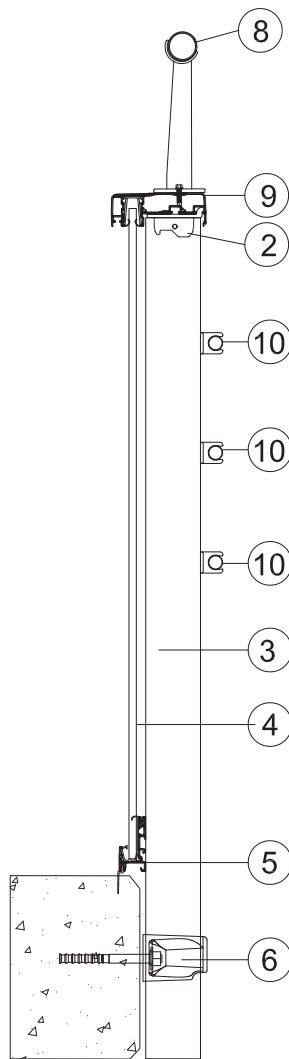
The balcony glazing is installed on the top of the handrail

1. Handrail 220
2. Post installation handrail bracket LTK
3. Post 75x32
4. Cladding
5. Lower gap profile + Installation profile
6. Hatbracket LTK
7. Lower frame LTK
8. Decor profile Ø40 + bracket
9. Handrail 130
10. Decor profile Ø20 + bracket

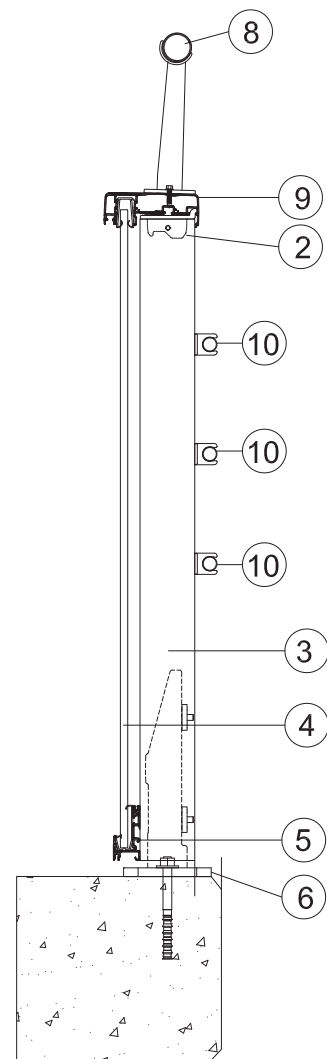
Cladding on the outside+ Ø40 decor profile



Cladding on the inside + Ø40 decor profile + Ø20 decor profiles



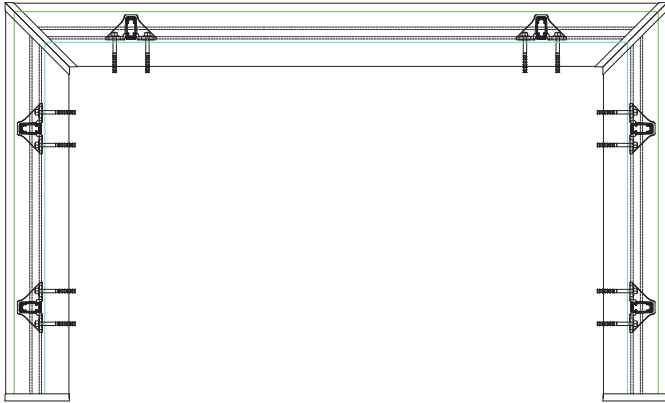
Cladding on the inside + Ø40 decor profile + Ø20 decor profiles



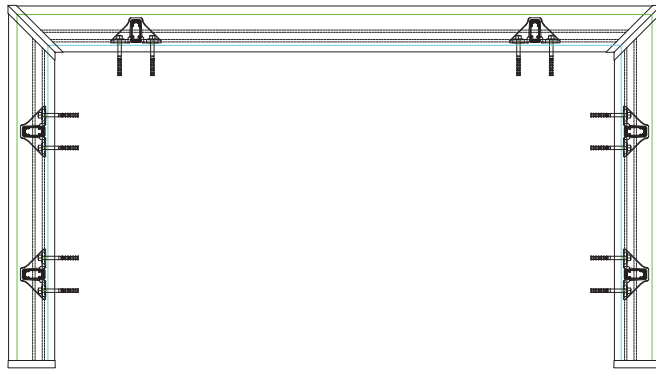
**Side installation with hatbracket**

The product is optimized for 0,8 kN/m<sup>2</sup> and 1,5 kN/m<sup>2</sup> wind pressure, with a standard and a strong post.

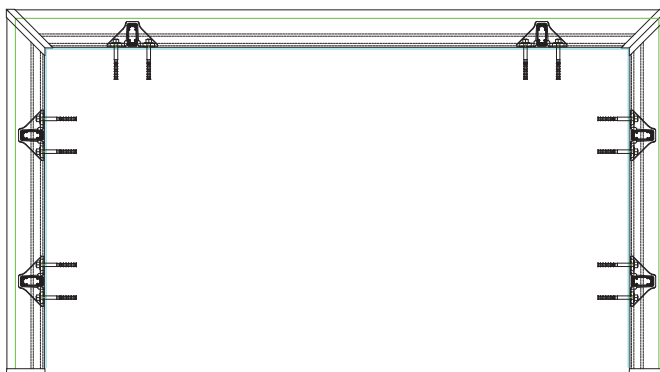
The railing is automatically cut, the max length of the profiles are 5100mm. The minimum side dimension is 300mm. The max. number of sides on an individual balcony is 9. The max. distance between the posts is due to environmental conditions, the post type and the fixing methods. The distance between posts is typically 800-1500mm. The side posts are positioned 150-400mm from the structure edge. Dimensioning always from left to right.



Handrail 220



Handrail 160

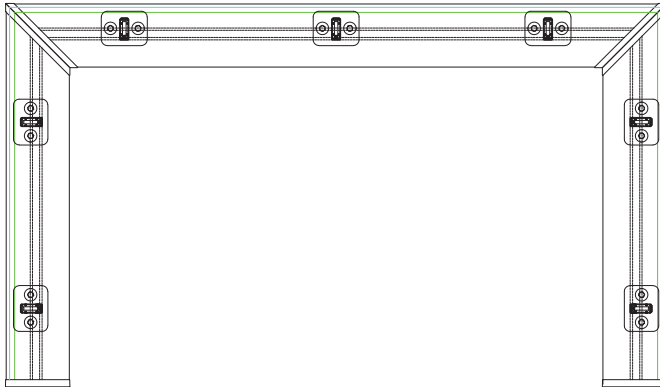


Handrail 130

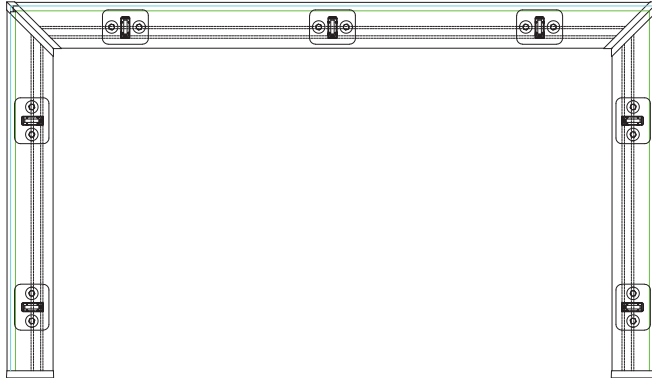
**Top installation with steel pedestal**

The railing is automatically cut, the max length of the profiles are 5100mm. The minimum side dimension is 300mm. The max. number of sides on an individual balcony is 9. The max. distance between the posts is due to environmental conditions, the post type and the fixing methods. The distance between posts is typically 800...1000mm.

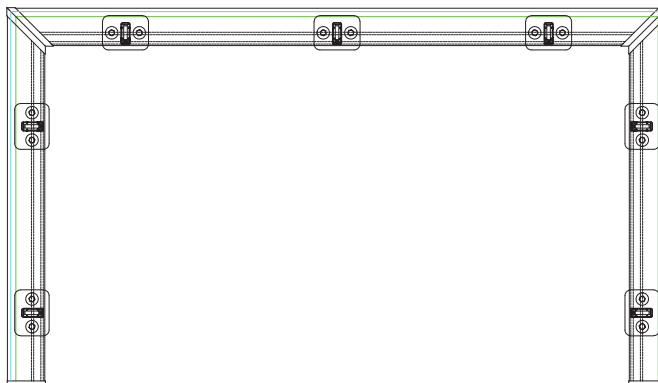
The strong post can not be used with the steel pedestal.



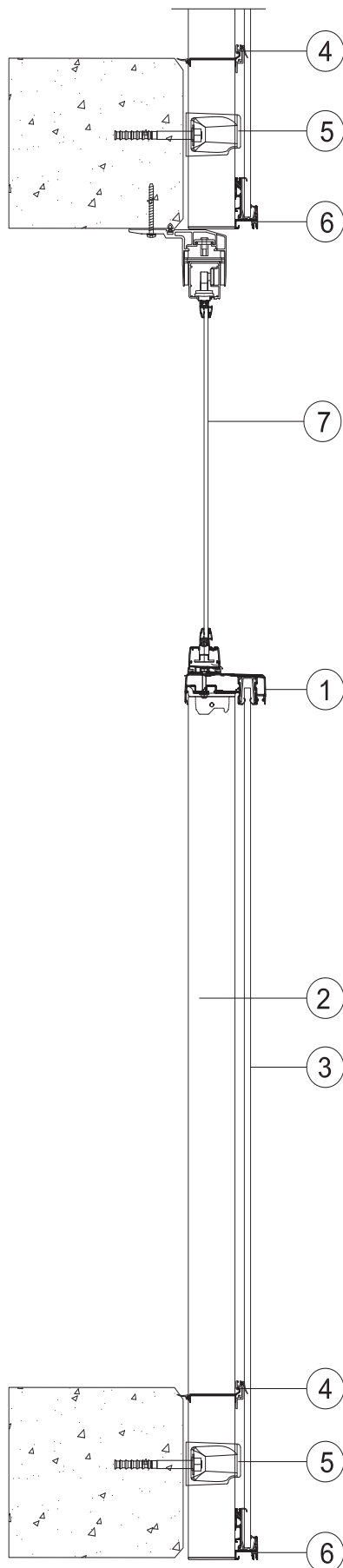
Handrail 220



Handrail 160

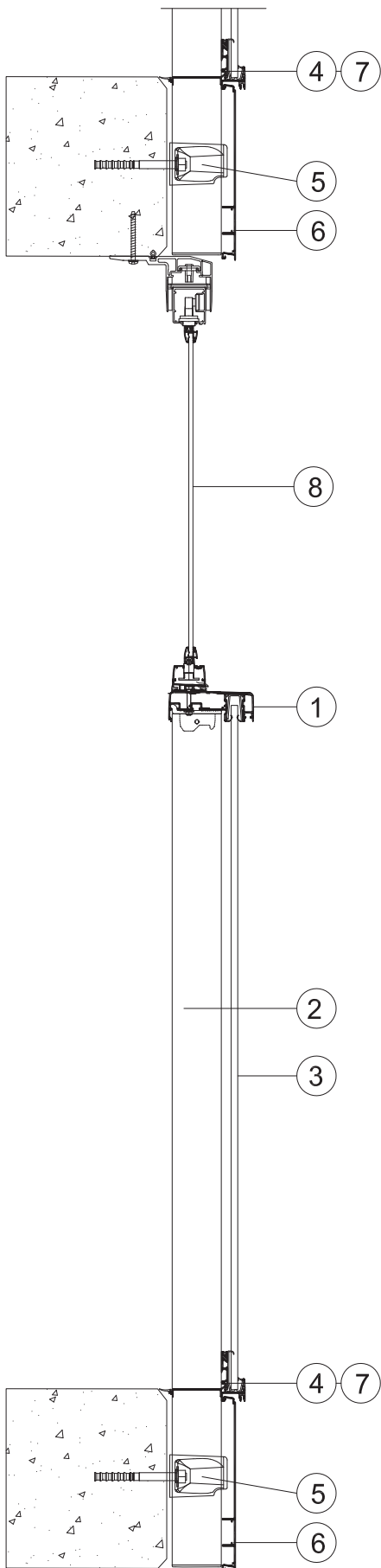


Handrail 130



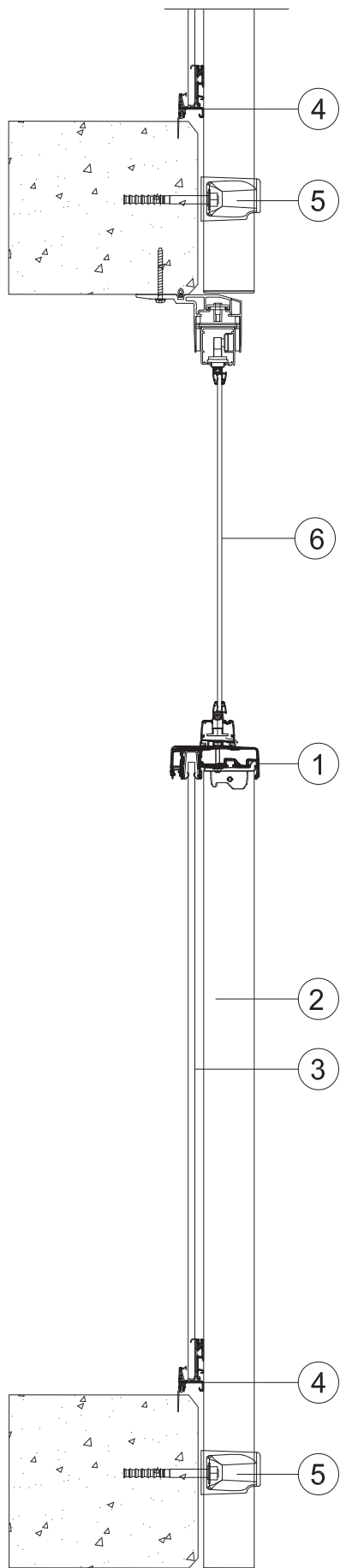
**A side installed balustrade with 130mm handrail. Cladding on the outside of the post**

1. Handrail 130, 11 37 0025
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
5. Hatbracket LTK
6. Lower frame LTK, 11 37 0024
7. Balcony glazing



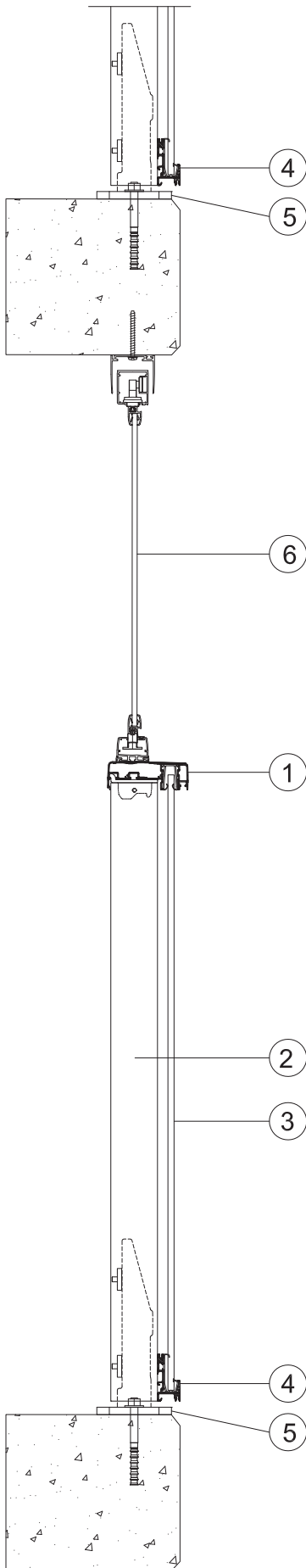
**A side installed balustrade with 130mm handrail. Cladding and facade cover profile on the outside of the post**

1. Handrail 130, 11 37 0025
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027
5. Hatbracket LTK
6. Facade cover profile
7. Lower frame LTK, 11 37 0024
8. Balcony glazing



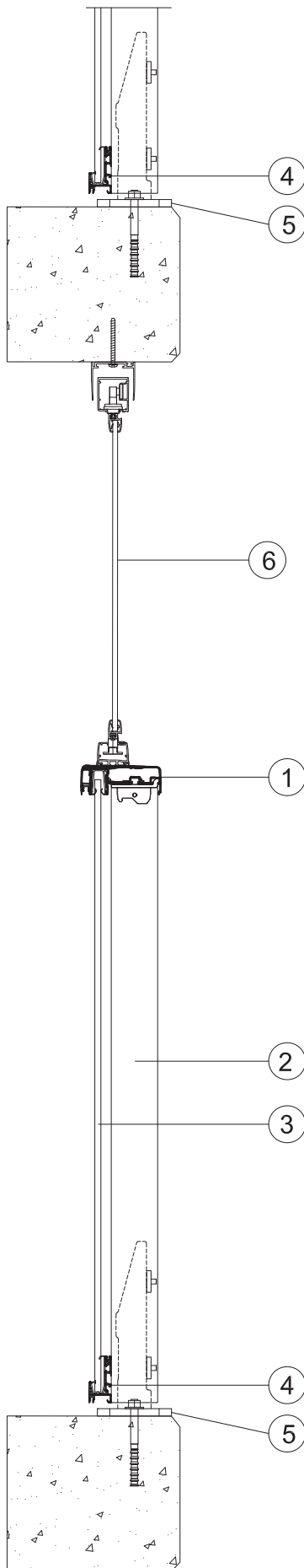
**A side installed balustrade with 130mm handrail. Cladding on the inside of the post**

1. Handrail 130, 11 37 0025
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Hatbracket LTK
6. Balcony glazing



**A top installed balustrade with 130mm handrail. Cladding on the outside of the post**

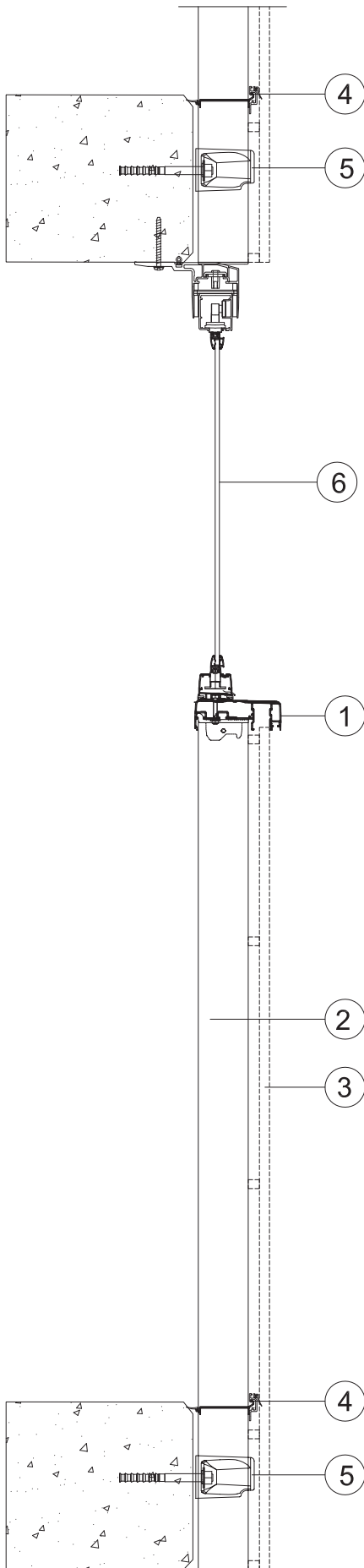
1. Handrail 130, 11 37 0025
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Steel pedestal LTK
6. Balcony glazing



**A top installed balustrade with 130mm handrail. Cladding on the inside of the post**

1. Handrail 130, 11 37 0025
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Steel pedestal LTK
6. Balcony glazing



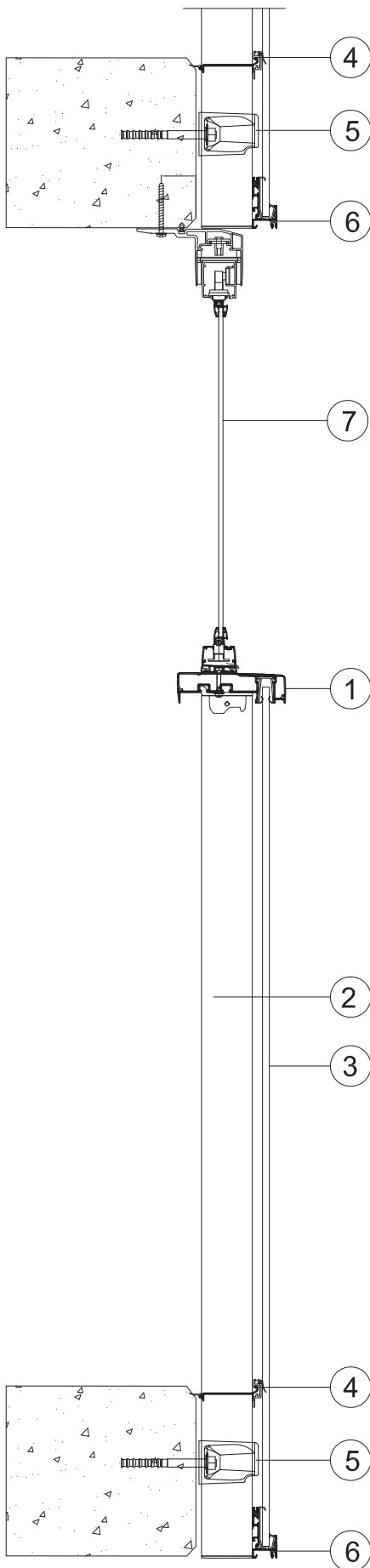


**A top installed balustrade with 130mm handrail. Sheet metal cladding on the outside of the post**

- 1. Handrail 130, 11 37 0029
- 2. Post 75x32 LTK
- 3. Cladding
- 4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
- 5. Hatrocket LTK
- 6. Balcony glazing

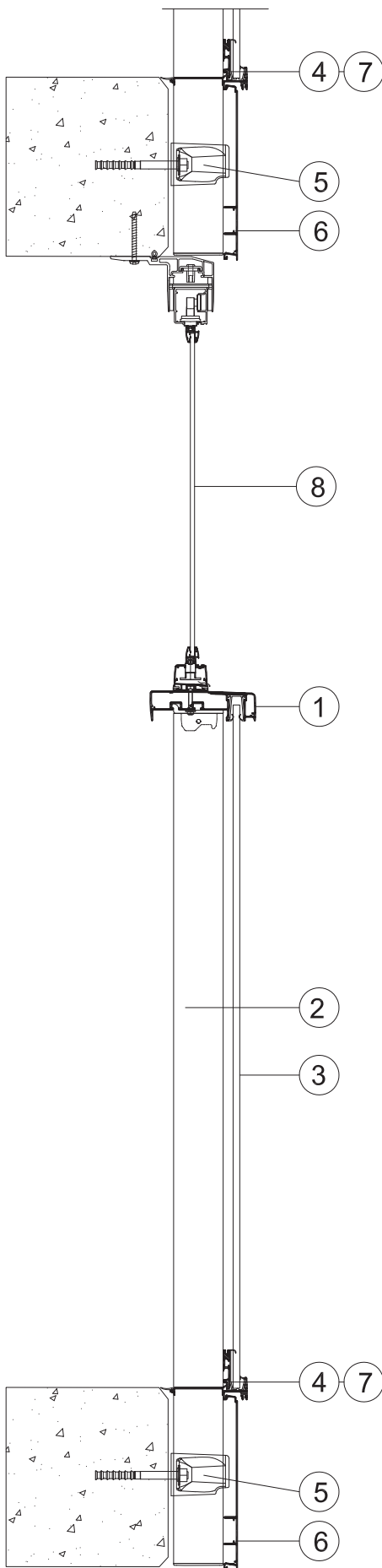
**Note!**

**The sheet metal is not included in the delivery!**



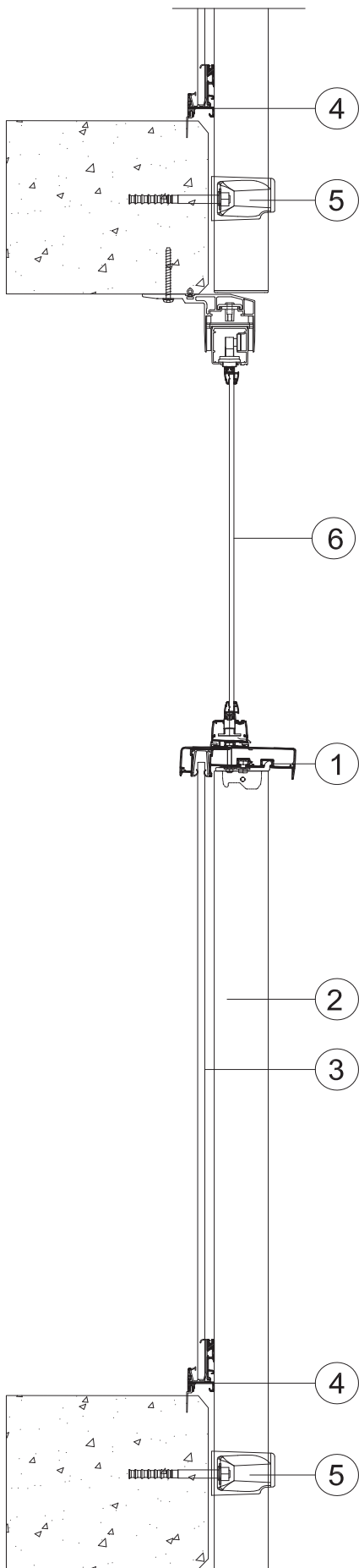
**A side installed balustrade with 160mm handrail. Cladding on the outside of the post**

1. Handrail 160, 11 37 0002
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
5. Hatracket LTK
6. Lower frame LTK, 11 37 0024
7. Balcony glazing



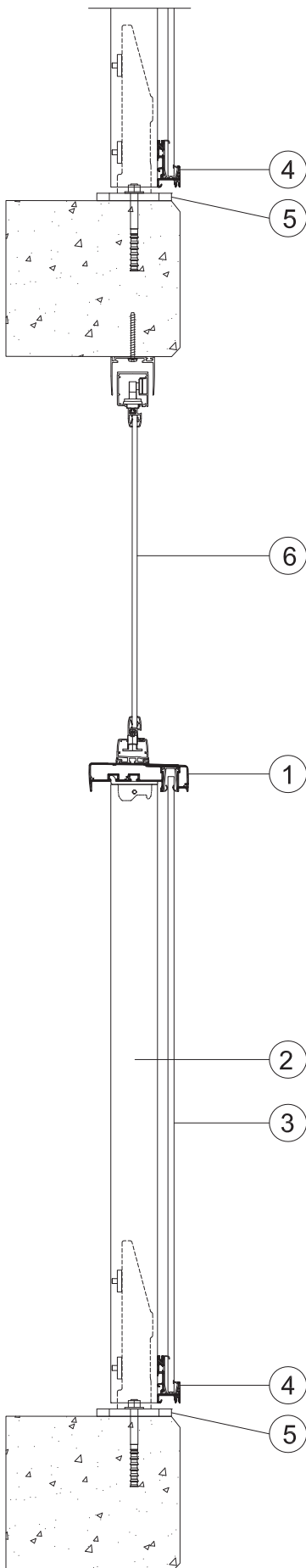
**A side installed balustrade with 130mm handrail. Cladding and facade cover profile on the outside of the post**

- 1. Handrail 130, 11 37 0025
- 2. Post 75x32 LTK
- 3. Cladding
- 4. Lower gap profile, 11 37 0027
- 5. Hatbracket LTK
- 6. Facade cover profile
- 7. Lower frame LTK, 11 37 0024
- 8. Balcony glazing



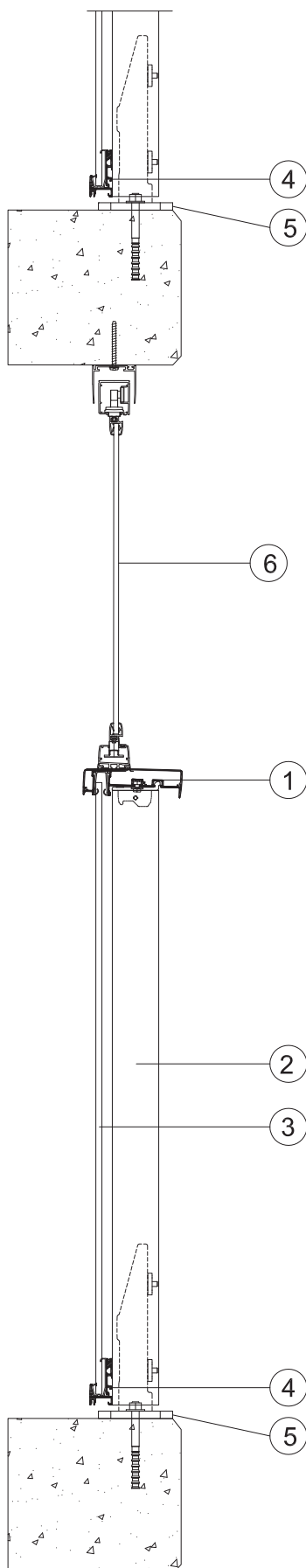
**A side installed balustrade with 160mm handrail. Cladding on the inside of the post**

1. Handrail 160, 11 37 0002
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Hatbracket LTK
6. Balcony glazing



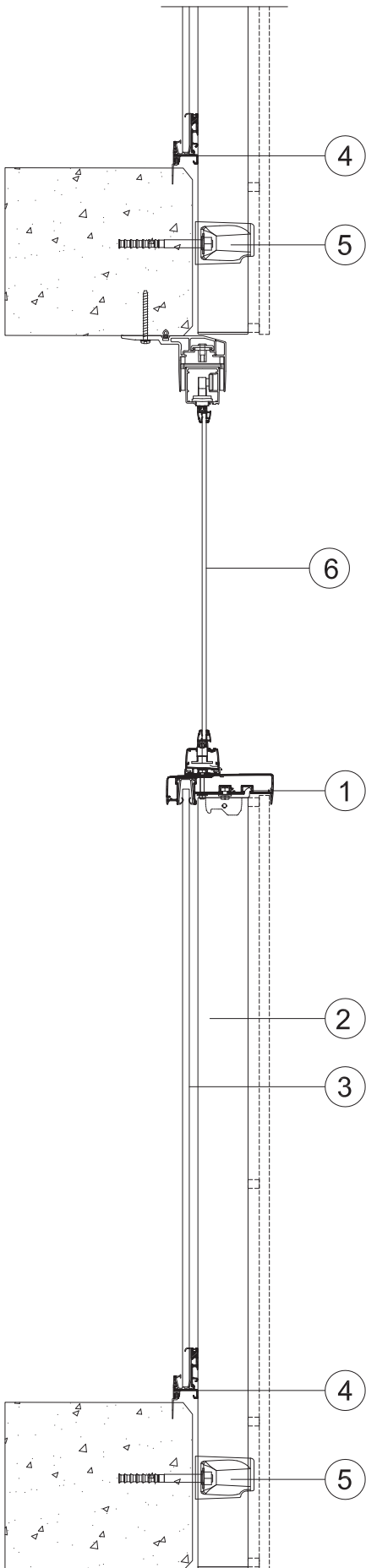
**A top installed balustrade with 160mm handrail. Cladding on the outside of the post**

1. Handrail 160, 11 37 0002
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Steel pedestal LTK
6. Balcony glazing



**A top installed balustrade with 160mm handrail. Cladding on the inside of the post**

1. Handrail 160, 11 37 0002
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Steel pedestal LTK
6. Balcony glazing

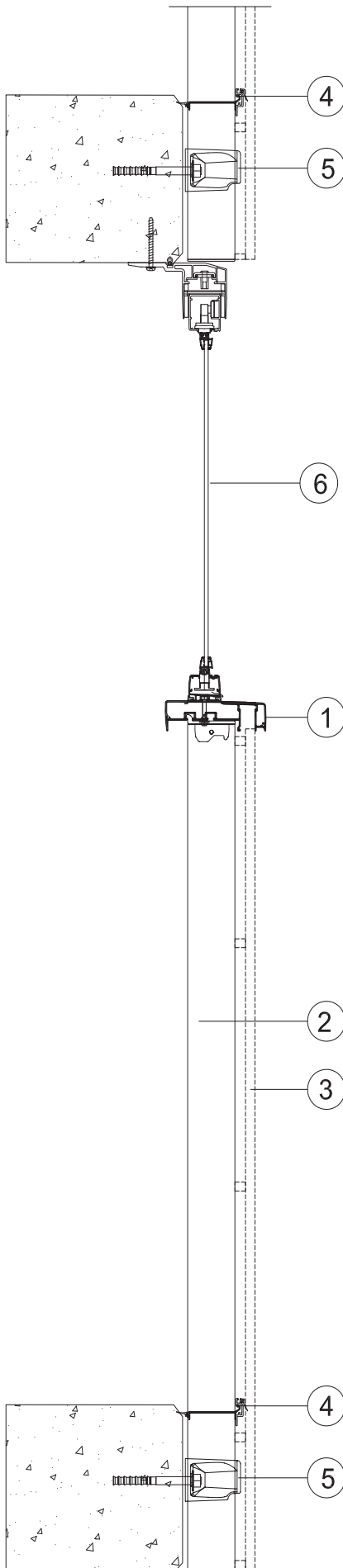


**A side installed balustrade with 160mm handrail. Cladding on the inside, plaster board cladding on the outside of the post**

- 1. Handrail 160, 11 37 0002
- 2. Post 75x32 LTK
- 3. Cladding
- 4. Lower frame LTK, 11 37 0024
- 5. Hatbracket LTK
- 6. Balcony glazing

**Note!**

**The plaster board is not included in the delivery!**



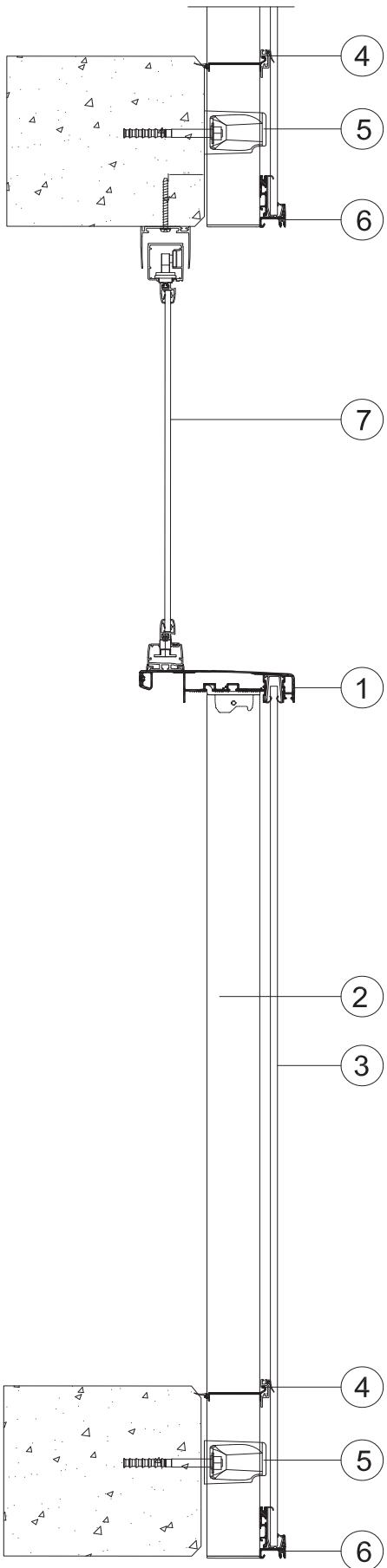
**A side installed balustrade with 160mm handrail. Sheet metal cladding on the outside of the post**

1. Handrail 160, 11 37 0002
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 + Installation profile for Lower gap profile 11 37 0026
5. Hatbracket LTK
6. Balcony glazing

**Note!**

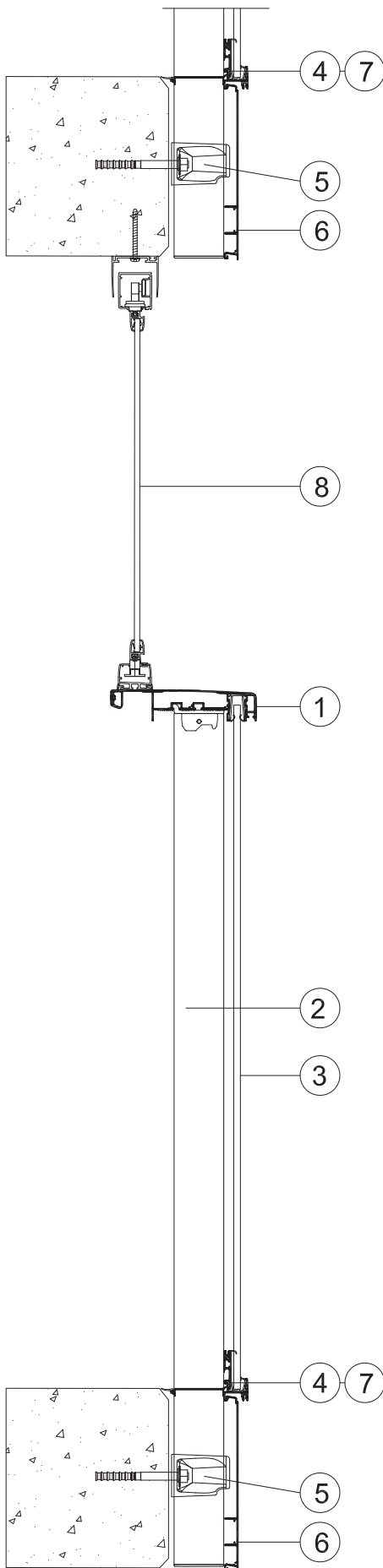
**The sheet metal is not included in the delivery!**





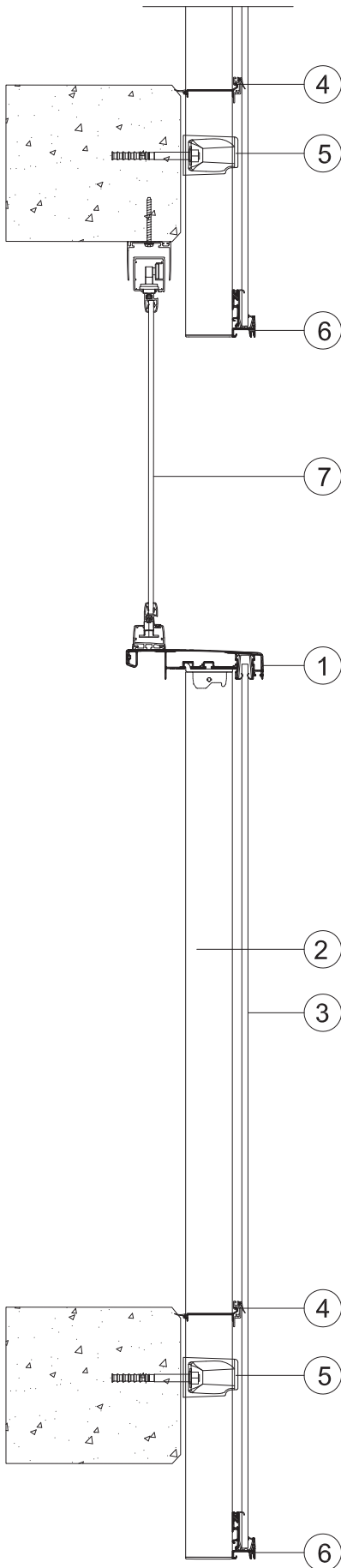
**A side installed balustrade with 220mm handrail. Cladding on the outside of the post**

1. Handrail 220, 11 37 0029
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
5. Hatbracket LTK
6. Lower frame LTK, 11 37 0024
7. Balcony glazing



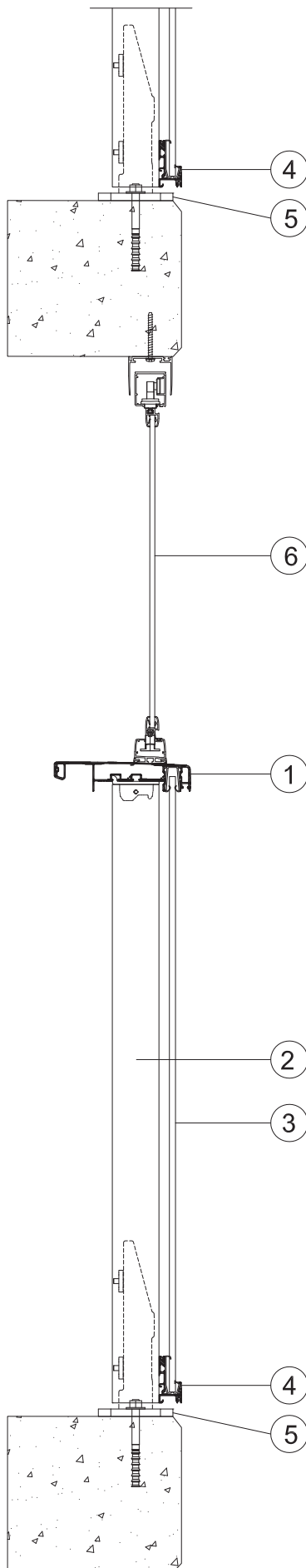
**A side installed balustrade with 220mm handrail. Cladding and facade cover profile on the outside of the post**

1. Handrail 220, 11 37 0029
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027
5. Hatbracket LTK
6. Facade cover profile
7. Lower frame LTK, 11 37 0024
8. Balcony glazing

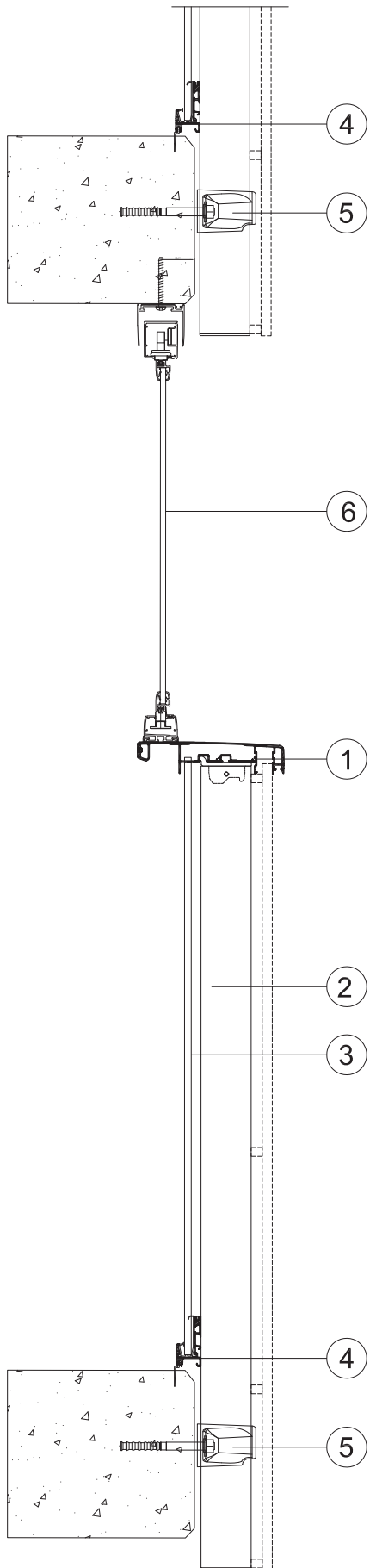


**A side installed balustrade with 220mm handrail. Cladding on the outside of the extended post**

1. Handrail 220, 11 37 0029
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
5. Hatbracket LTK
6. Lower frame LTK, 11 37 0024
7. Balcony glazing

**A top installed balustrade with 220mm handrail. Cladding on the outside of the post**

1. Handrail 220, 11 37 0029
2. Post 75x32 LTK
3. Cladding
4. Lower frame LTK, 11 37 0024
5. Steel pedestal LTK
6. Balcony glazing



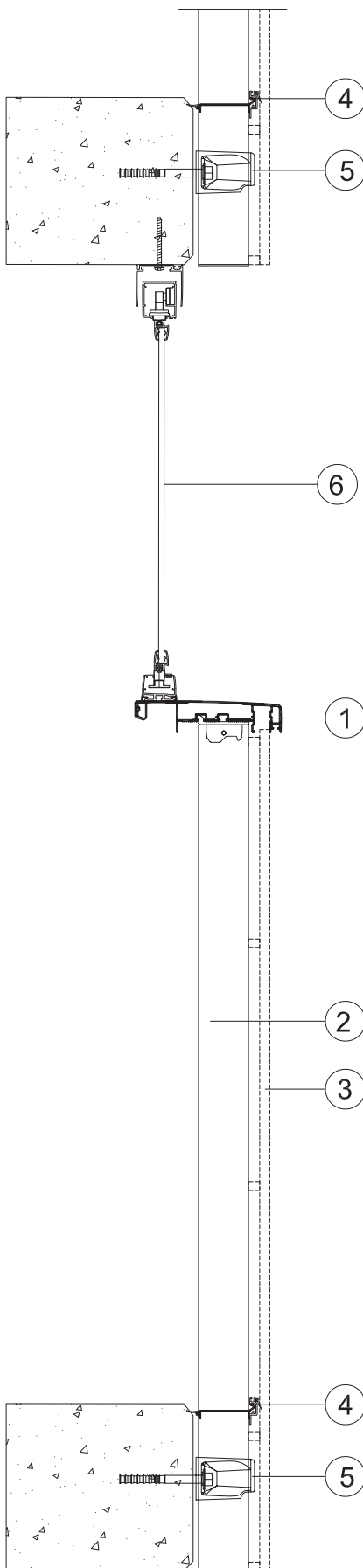
**A side installed balustrade with 220mm handrail. Cladding on the inside, plaster board cladding on the outside of the post**

- 1. Handrail 220, 11 37 0029
- 2. Post 75x32 LTK
- 3. Cladding
- 4. Lower frame LTK, 11 37 0024
- 5. Hatbracket LTK
- 6. Balcony glazing

**Note!**

**The plaster board is not included in the delivery!**

**A side installed balustrade with 220mm handrail. Sheet metal cladding on the outside of the post**

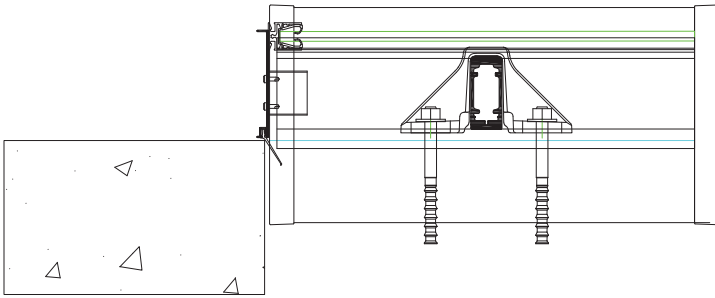


1. Handrail 220, 11 37 0029
2. Post 75x32 LTK
3. Cladding
4. Lower gap profile, 11 37 0027 +  
Installation profile for Lower gap profile  
11 37 0026
5. Hatbracket LTK
6. Balcony glazing

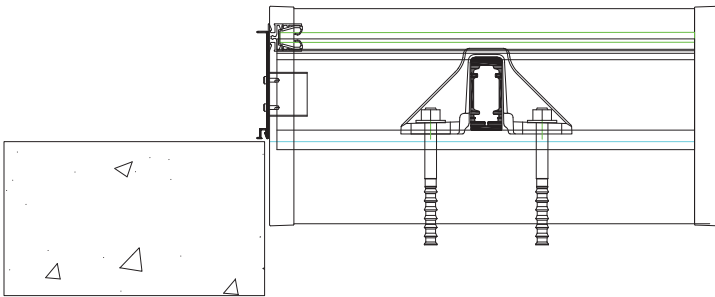
**Note!**

**The sheet metal is not included in the delivery!**

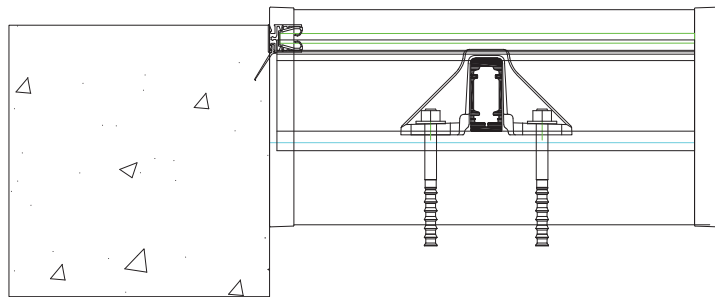
**Wall junctions with 85°-95° start and end angles:**



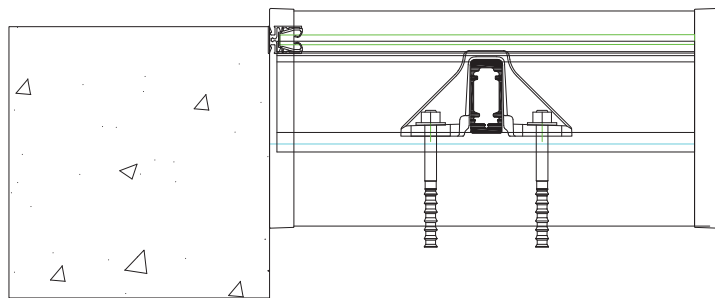
End gap profile 11 37 0028 +  
Wall frame 11 37 0003 +  
Wedge seal 54 37 0105



End gap profile 11 37 0028 +  
Wall frame 11 37 0003



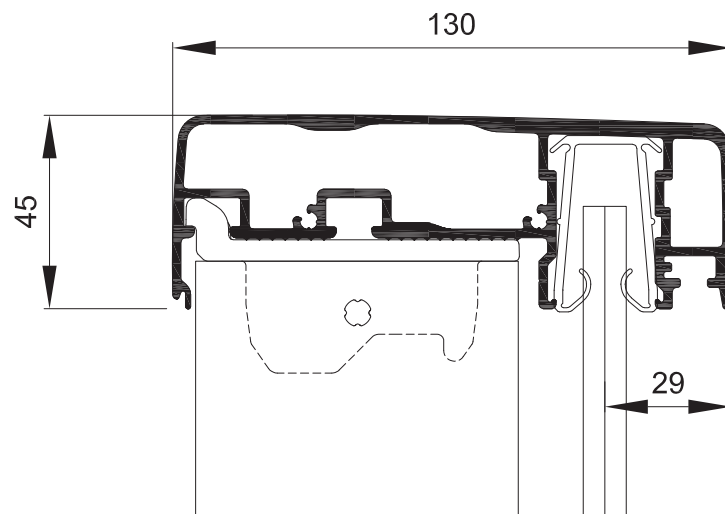
Wall frame 11 37 0003 +  
Wedge seal 54 37 0105



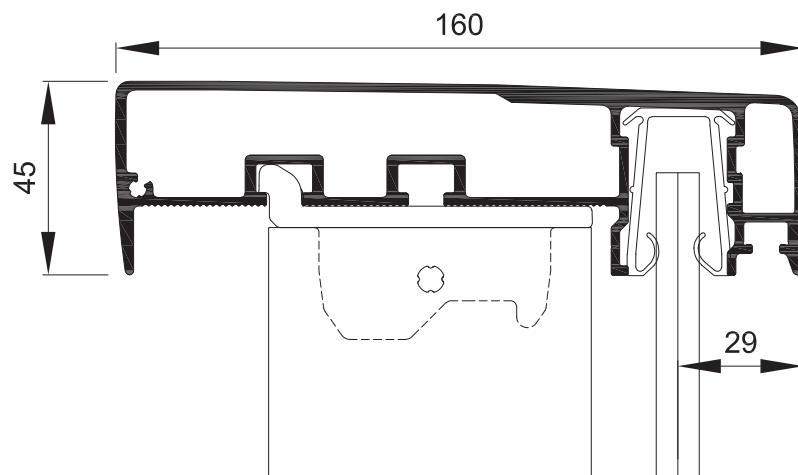
Wall frame 11 37 0003

**Handrail 130**

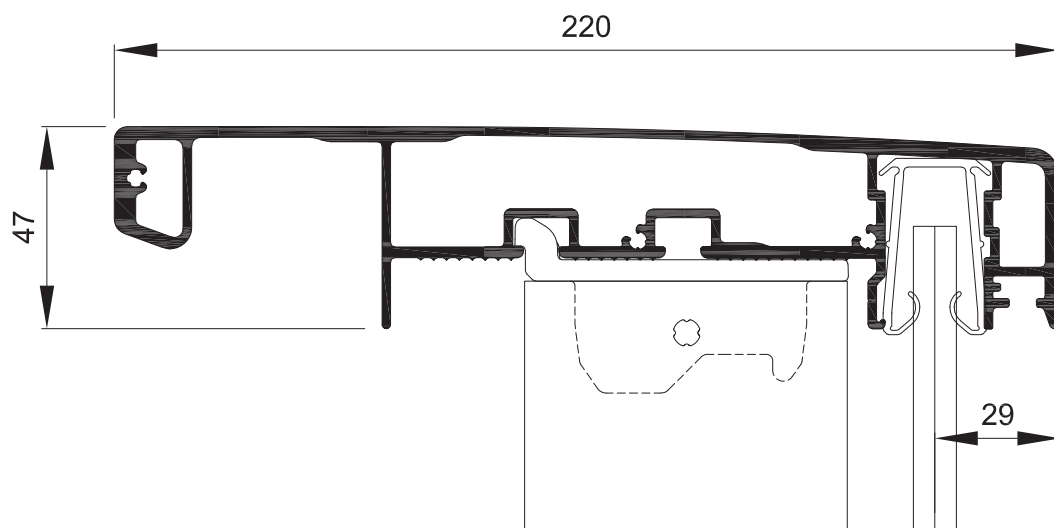
11 37 0025

**Handrail 160**

11 37 0002

**Handrail 220**

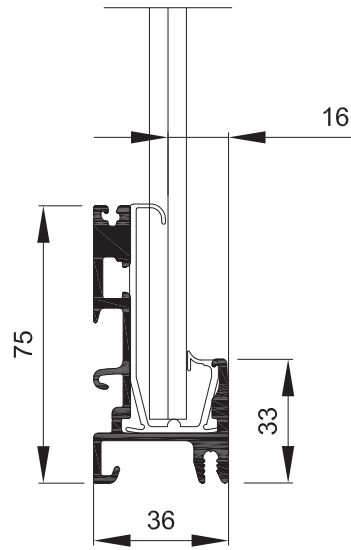
11 37 0029





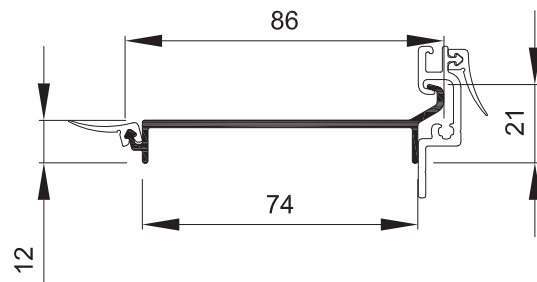
**Lower frame LTK**

11 37 0024



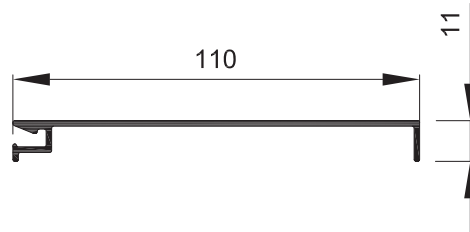
**Lower gap profile + installation profile**

11 37 0027 + 11 37 0026



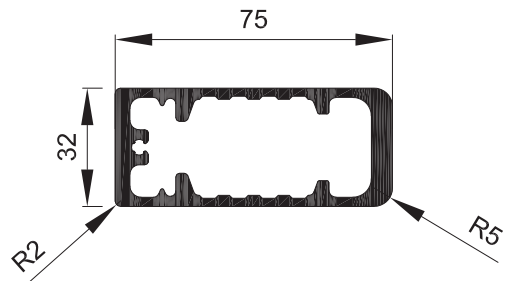
**End gap profile**

11 37 0028



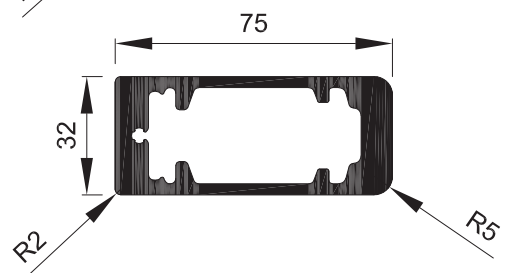
**Post 75x32 LTK**

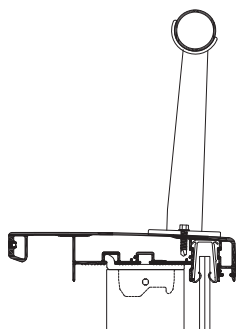
11 37 0022



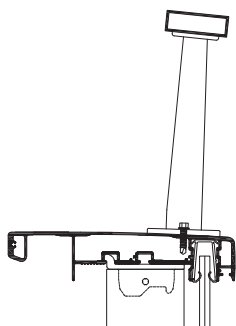
**Strong post 75x32 LTK**

11 37 0023

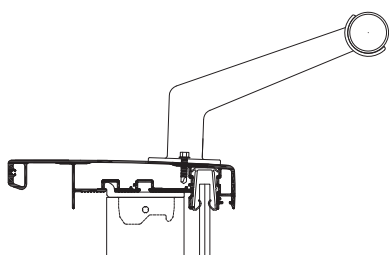




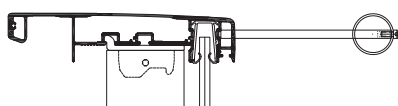
Ø40 decor profile 11 31 5304  
+ bracket T4 50 37 9106



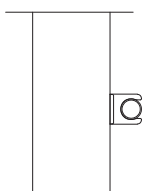
60x20 decor profile 11 31 5221  
+ bracket 50 37 9109



Ø40 decor profile 11 31 5304  
+ bracket T3 50 37 9107

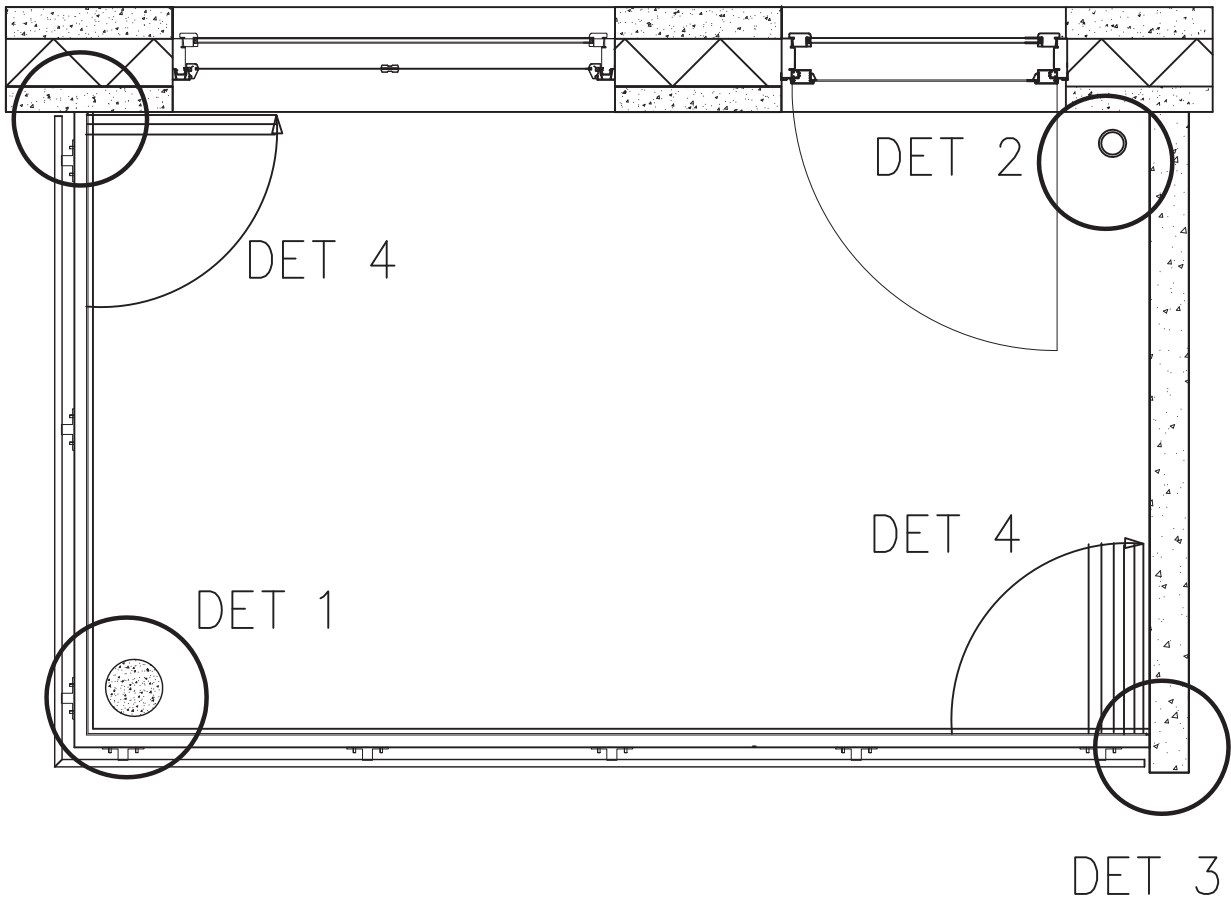


Ø40 decor profile 11 31 5304  
+ bracket 8mm 71 09 4192



Ø20 decor profile 11 31 5301  
+ decor fastener 53 37 0117

DET 3



DET 1: The concrete colons of the balcony must be placed so that they do not prevent the opening of the balcony glazing system. The gap between the vertical pillar and the slab must be at least 110mm, so that the top installed lower frame fits.

DET 2: The placing of the draining pipe must consider the opening of the balcony glazing. With balcony-specific drainage, a pipe is piercing the slab facade.

DET 3: The frame walls must be vertical and plain for functional and good looking junctions on both balustrades and balcony glazings. Profile panels, windowsills and big variations in the wall surface often need flashings to cover the interface.

DET 4: The balcony glazings are supported from the upper profile. There for the fastening must be into a stationary structure. Wood structures should be avoided.

**Selecting the facade cover profile according to slab thickness**

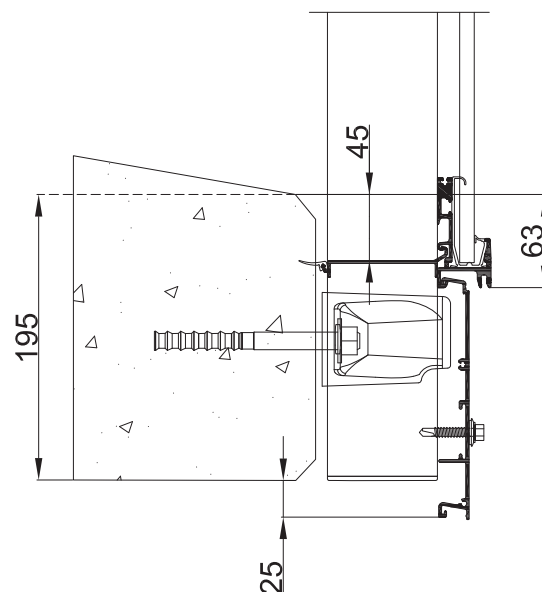
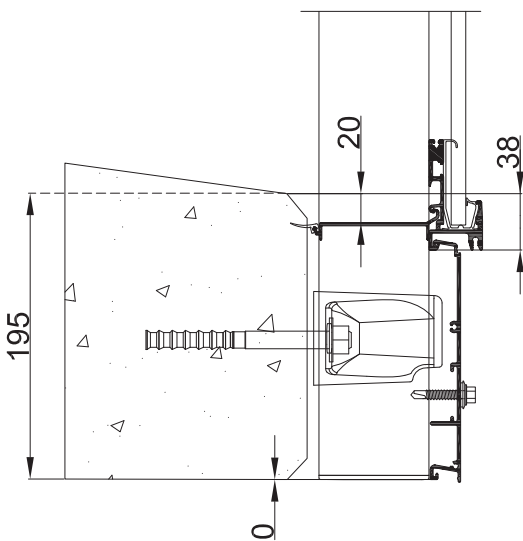
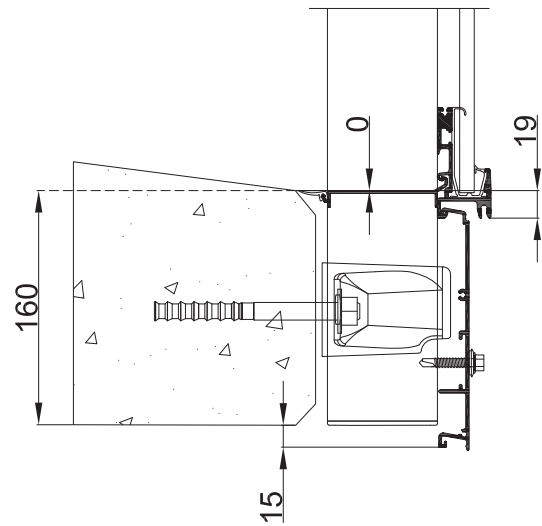
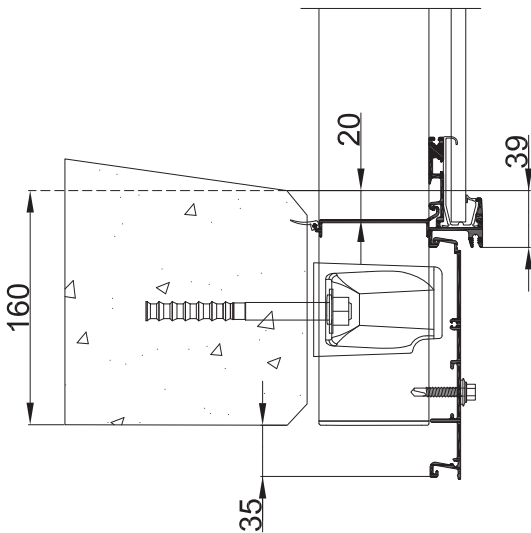
On SalesTori the facade cover profile is selected yes/no. Depending on the selections the system provides a functional solution of profiles and height positionings for them. The profiles and heights can be replaced and changed if an other solution is desired.

The height of the lower frame height determines the positioning of the facade cover profile and the lower gap profile. They are configurated in such a way that including the the adjustments, the lower gap profile will never rise above the upper slab edge and the facade cover will always cover the slab edge.

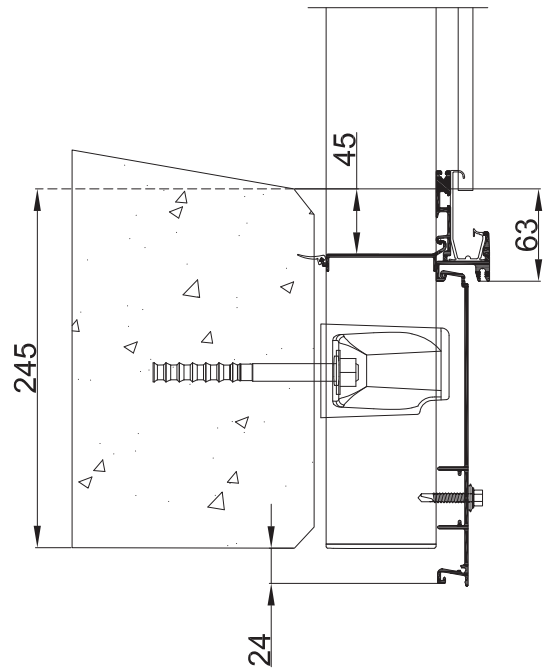
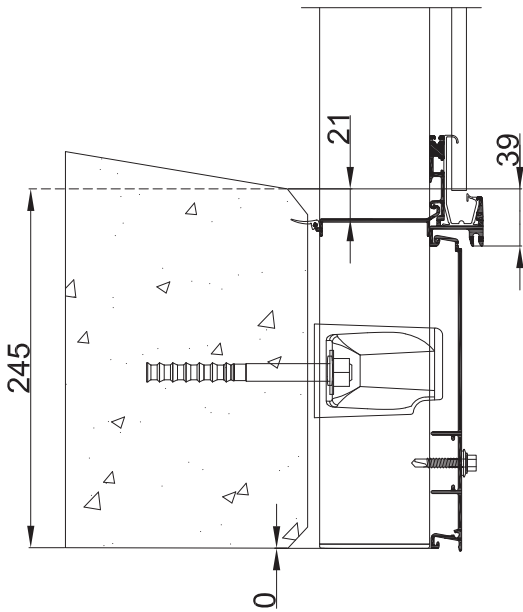
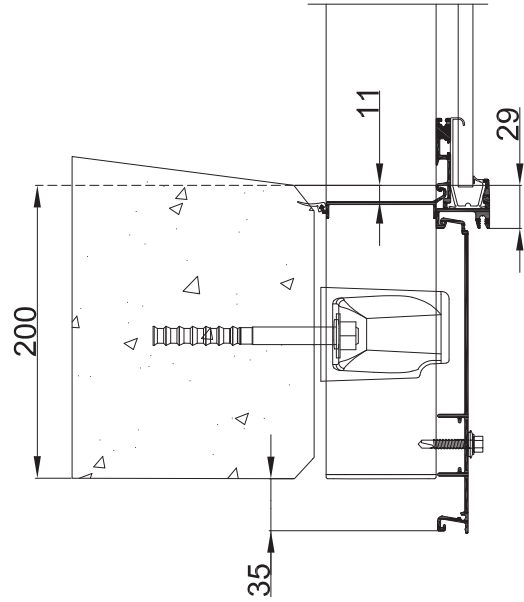
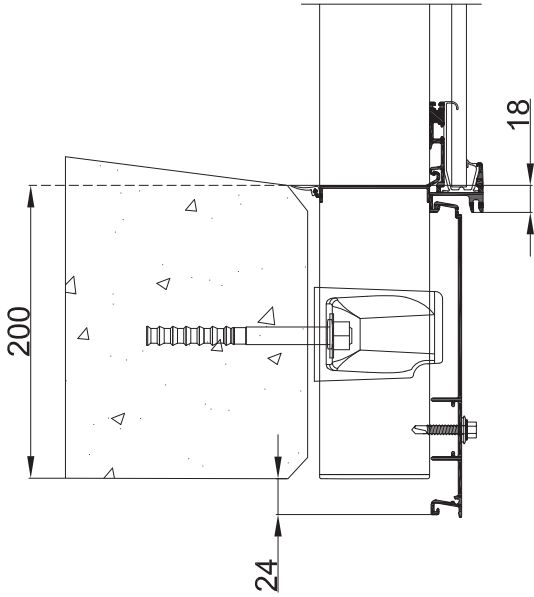
The distance of the lower gap profile is positioned between 0-45mm from the upper slab edge, measured at the min. slab thickness

The distance of the facade cover profile exeeding the lower slab edge is between 0-35mm, measured at the min. slab thickness.

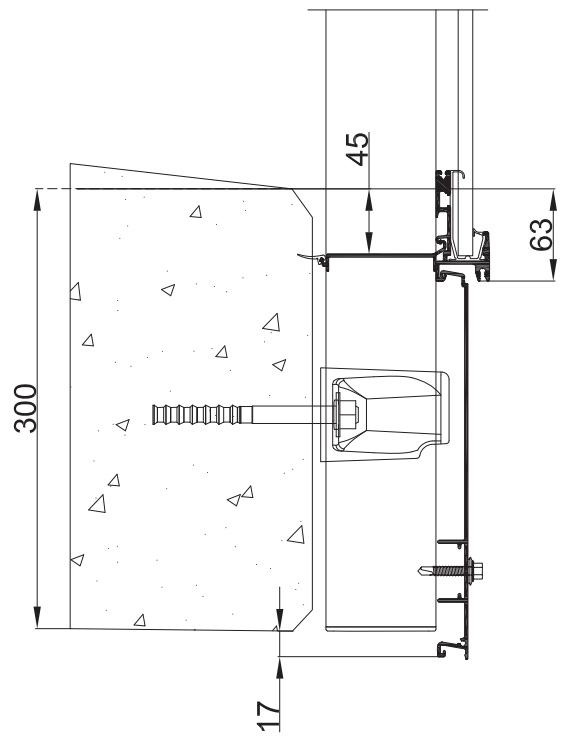
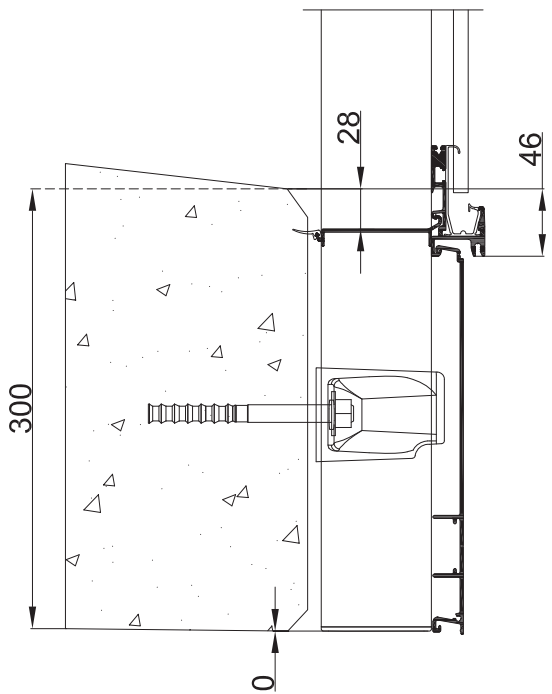
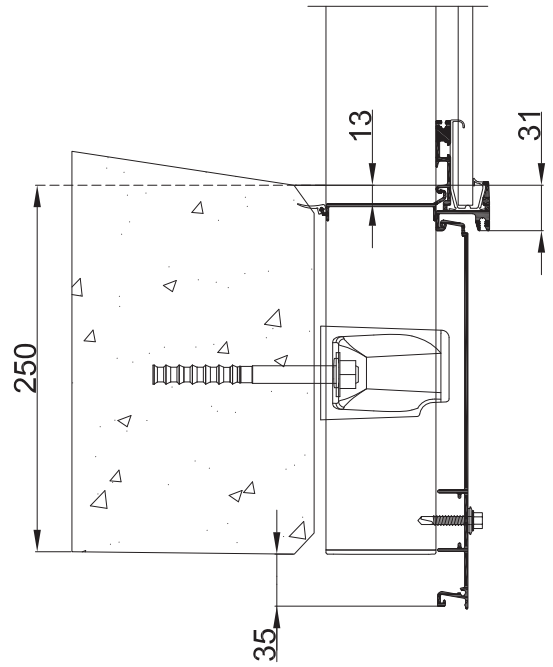
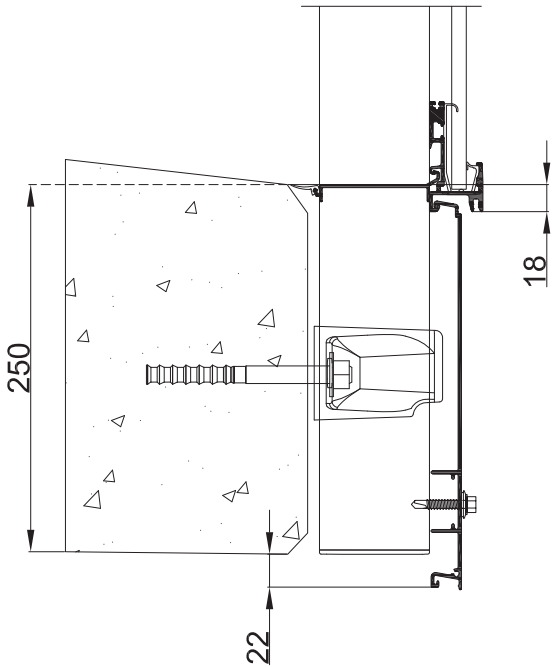
**Slab thickness 160-195mm: 165 facade cover profile**



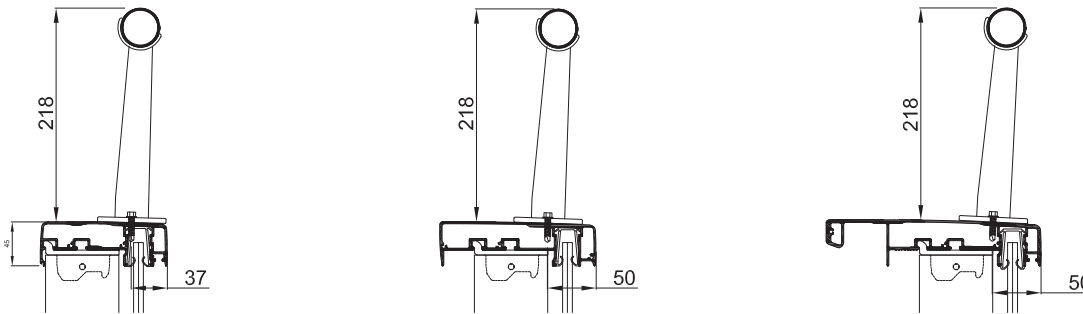
**Slab thickness 200-245mm: 215 facade cover profile**



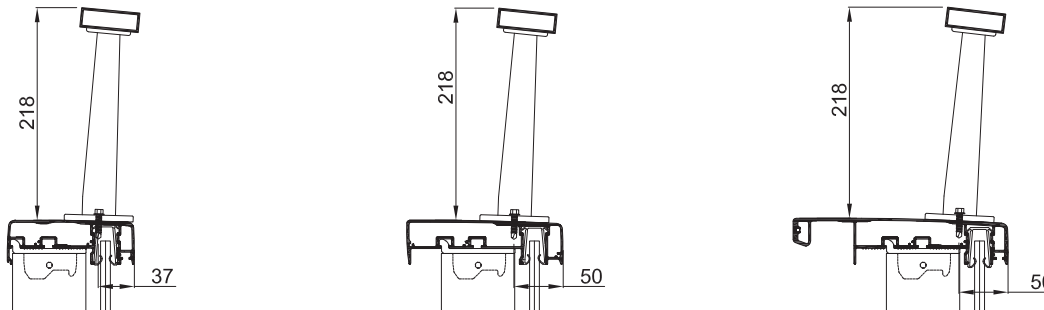
Slab thickness 250-300mm: 265 facade cover profile



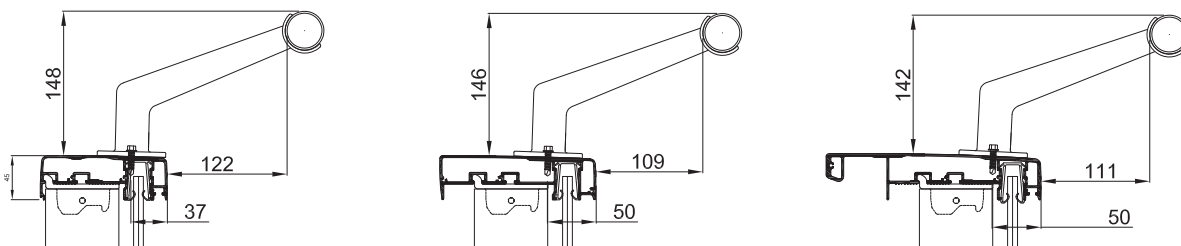
**Ø40 decor profile 11 31 5304 + bracket T4 50 37 9106**



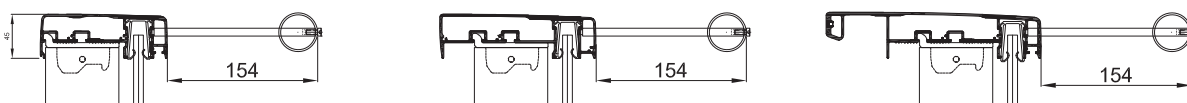
**60x20 decor profile 11 31 5221 + bracket 50 37 9109**



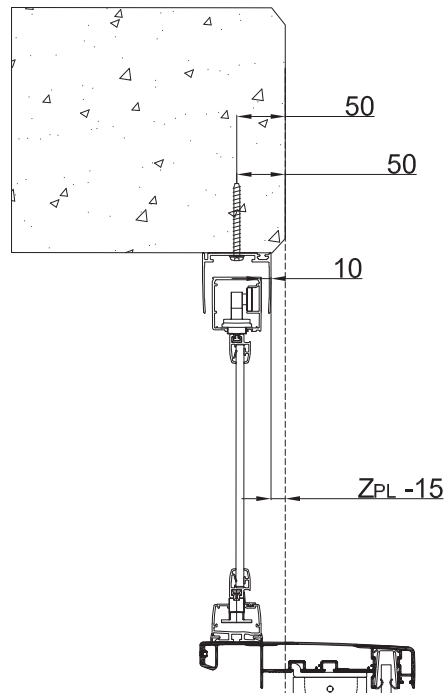
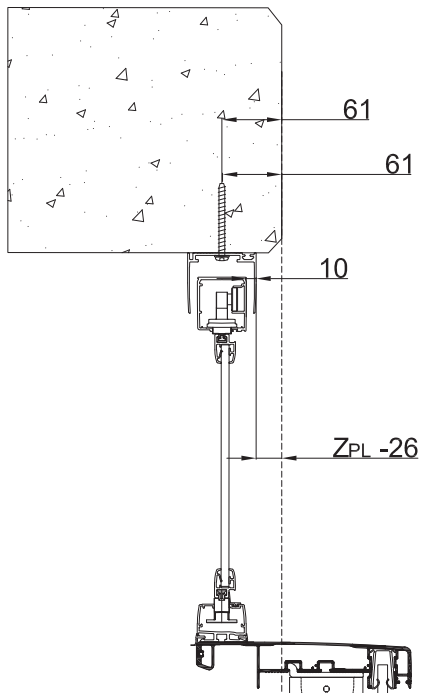
**Ø40 decor profile 11 31 5304 + bracket T3 50 37 9107**



**Ø40 decor profile 11 31 5304 + bracket 8mm 71 09 4192**

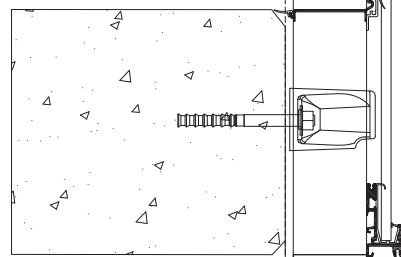
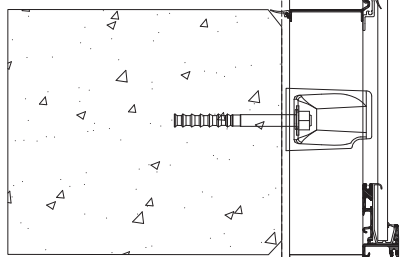


**Handrail 220, side installation**



Measuring line  
Product dimensioning line

Measuring line  
Product dimensioning line

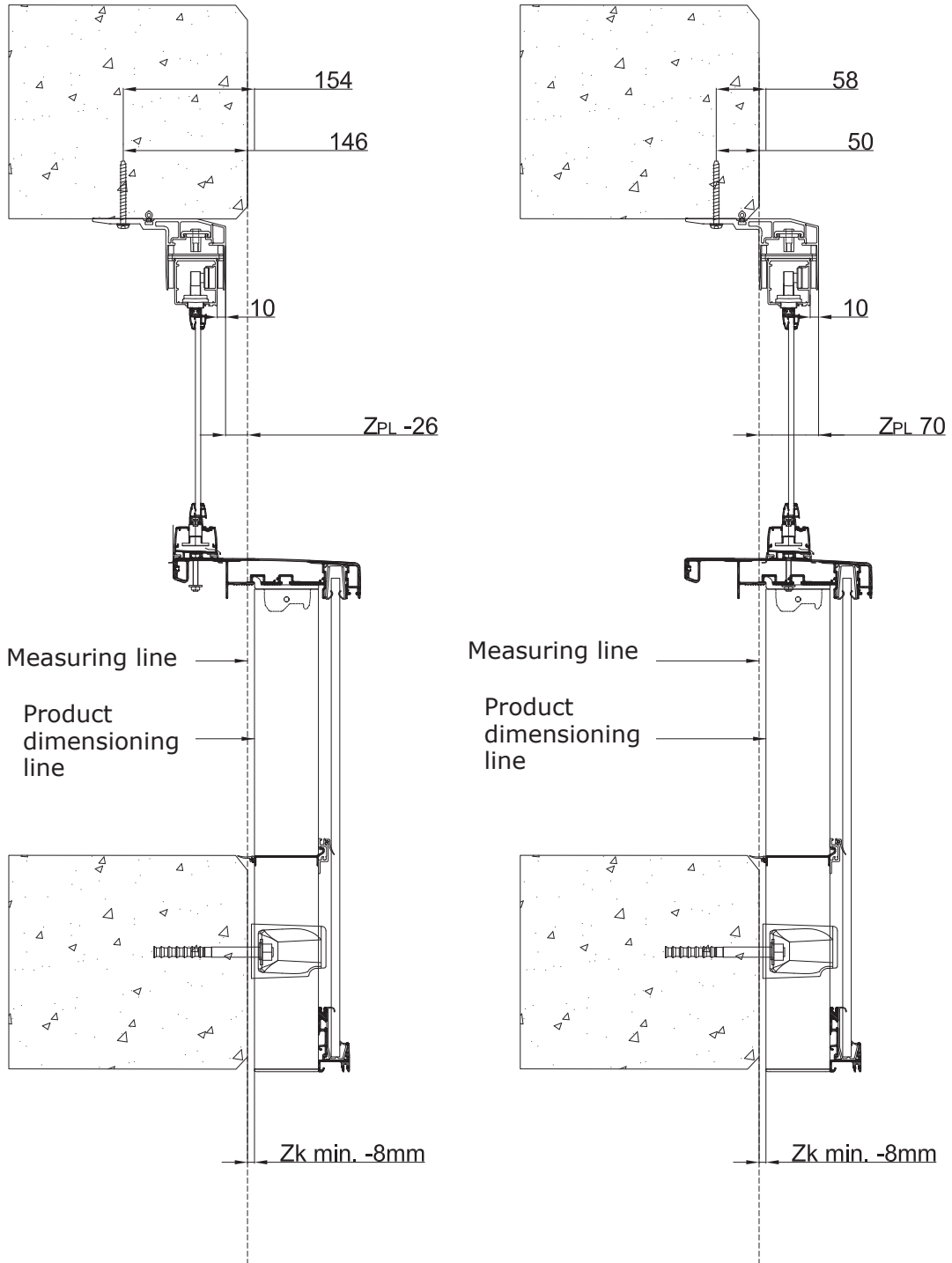


Zk min. -8mm

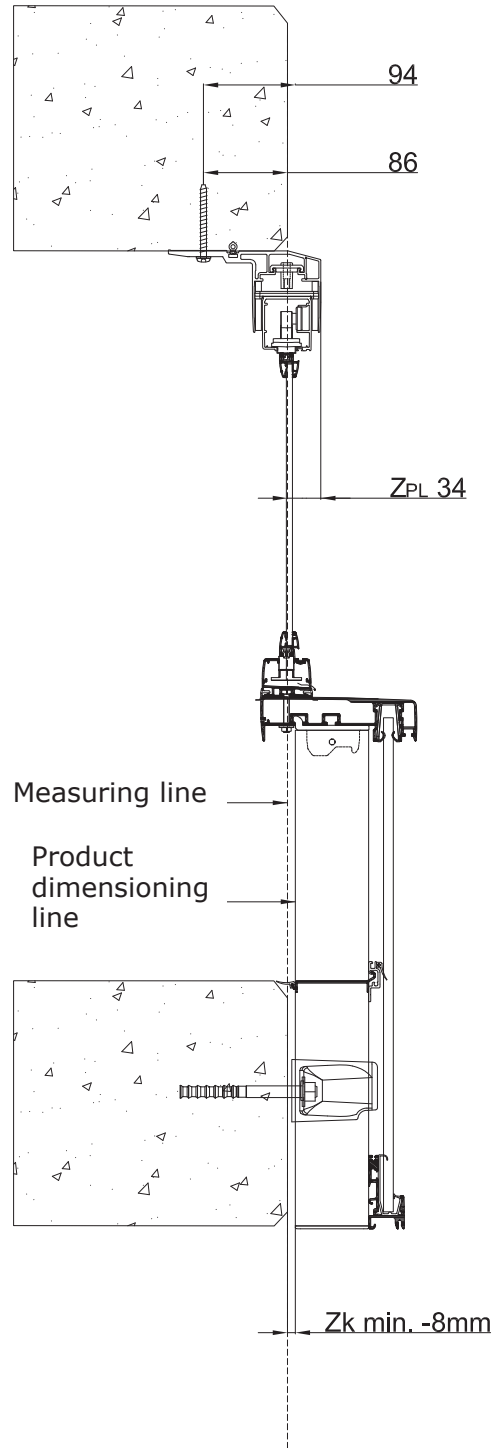
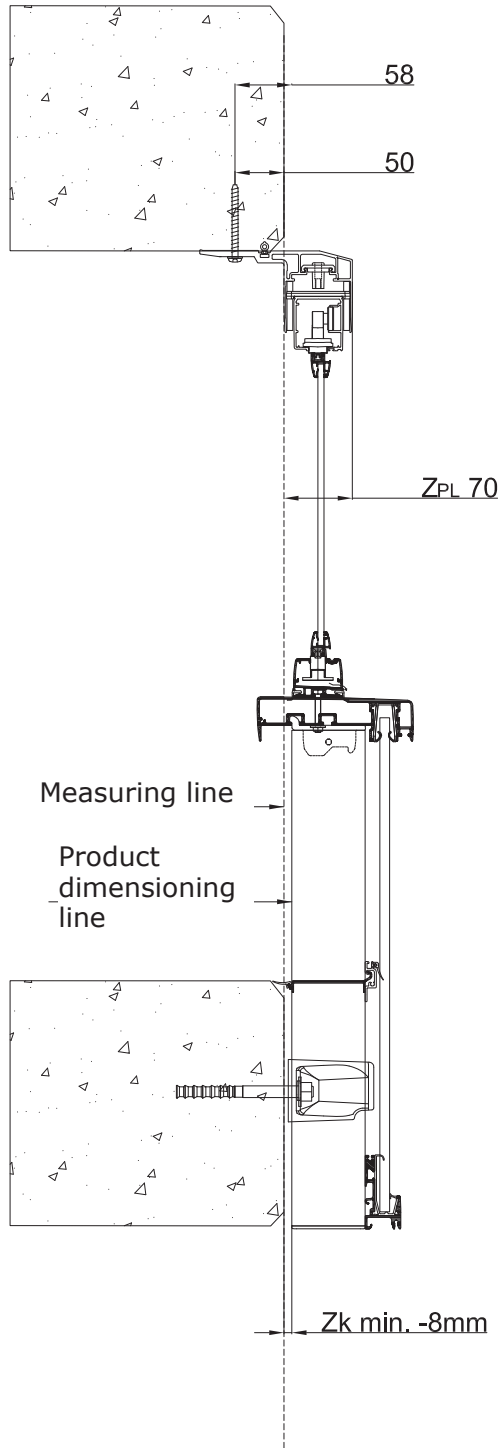
Zk min. -8mm



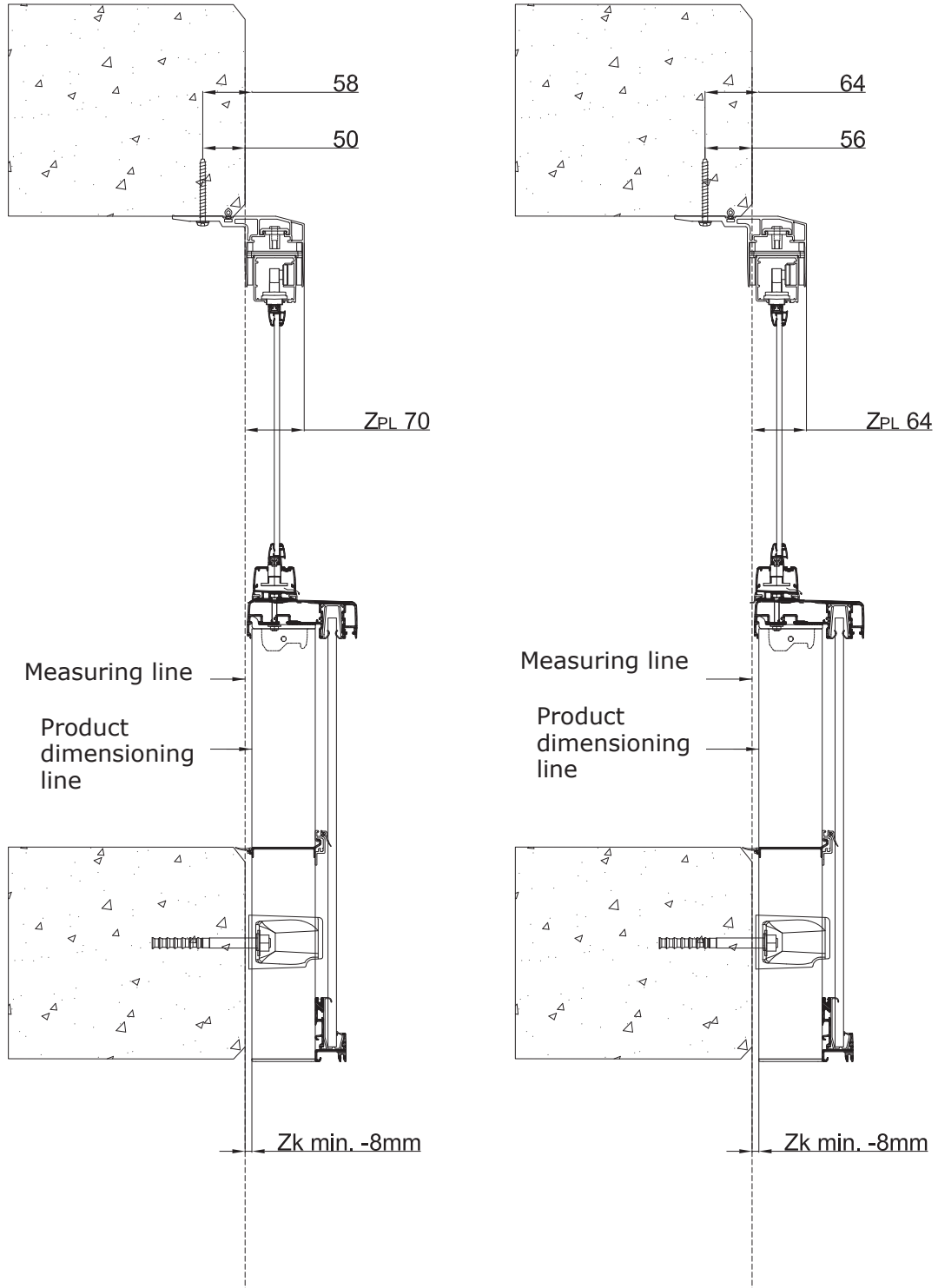
**Handrail 220, side installation**



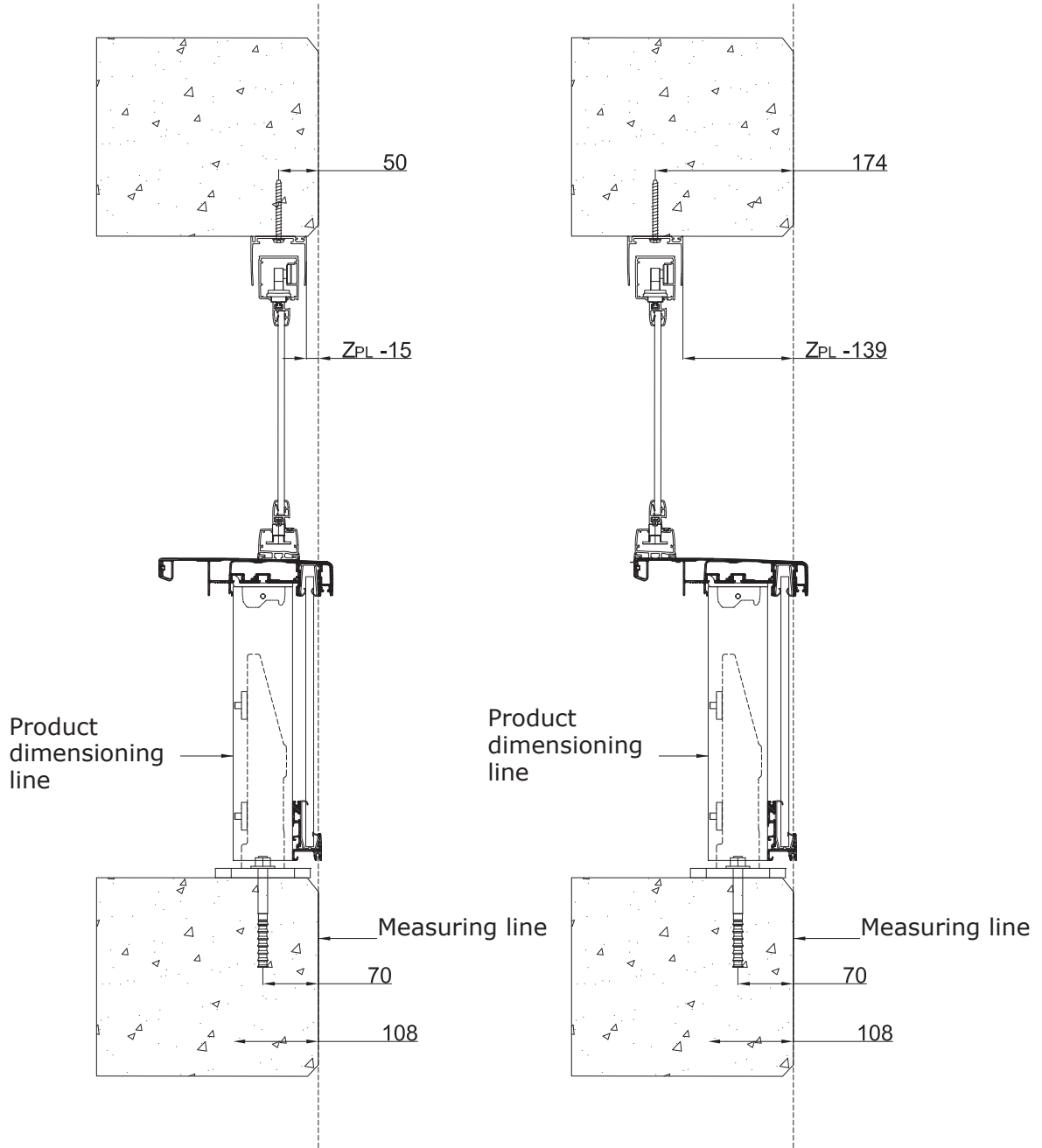
**Handrail 160, side installation**



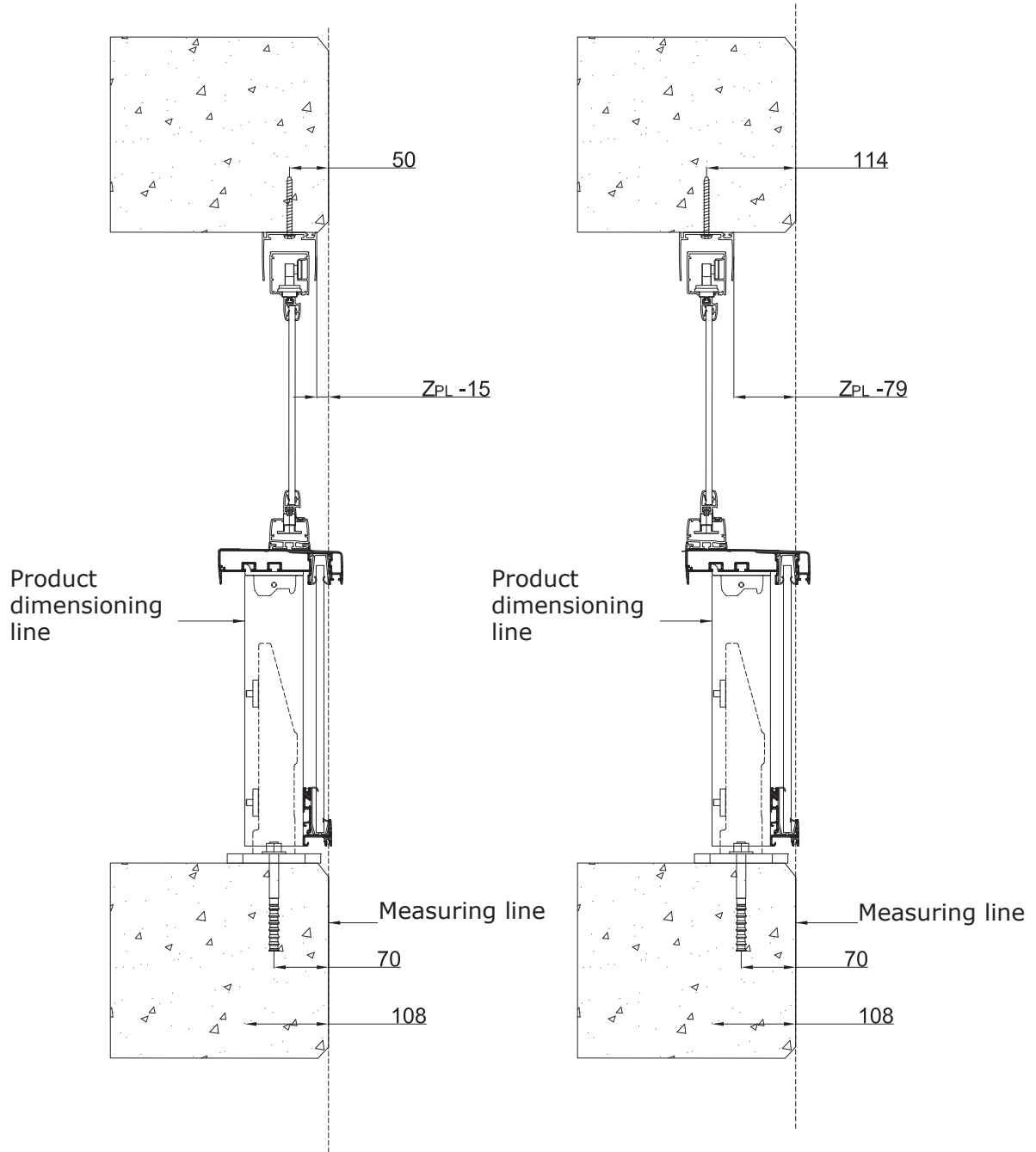
Handrail 130, side installation



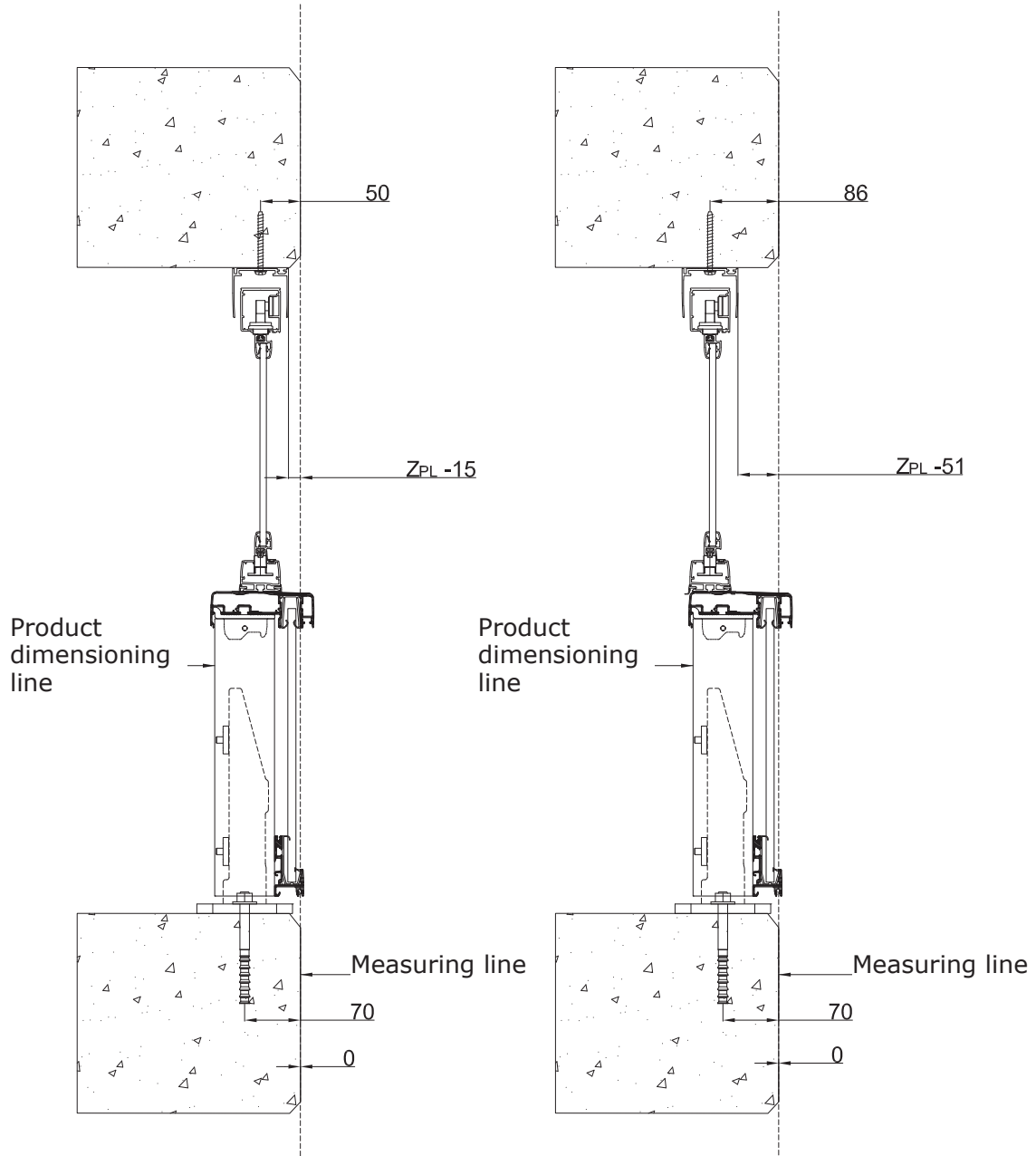
Handrail 220, top installation



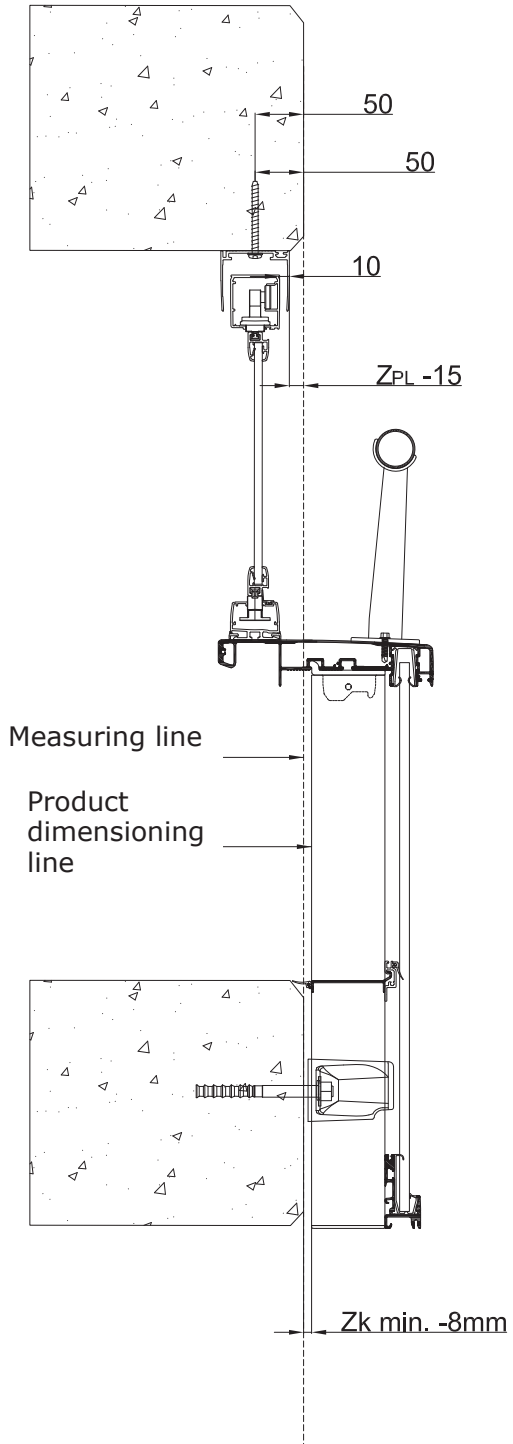
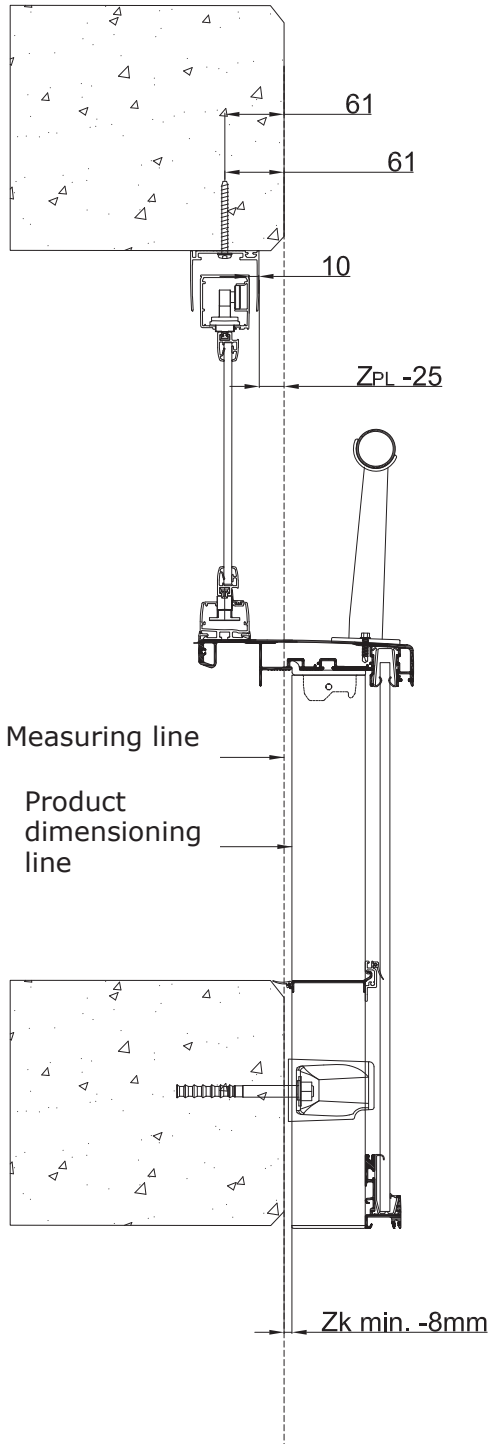
## Handrail 160, top installation



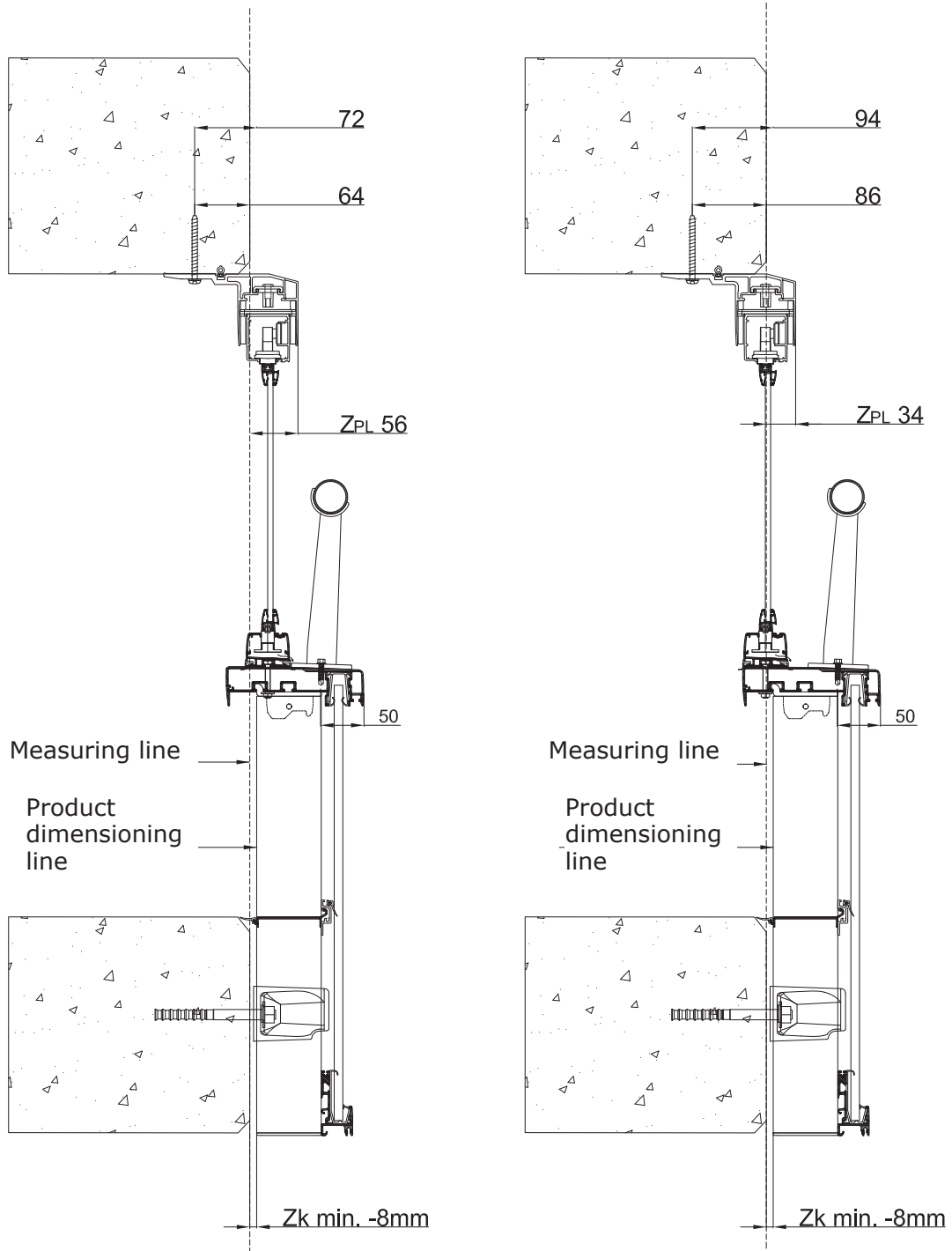
**Handrail 130, top installation**



**Handrail 220 + decor profile, side installation**

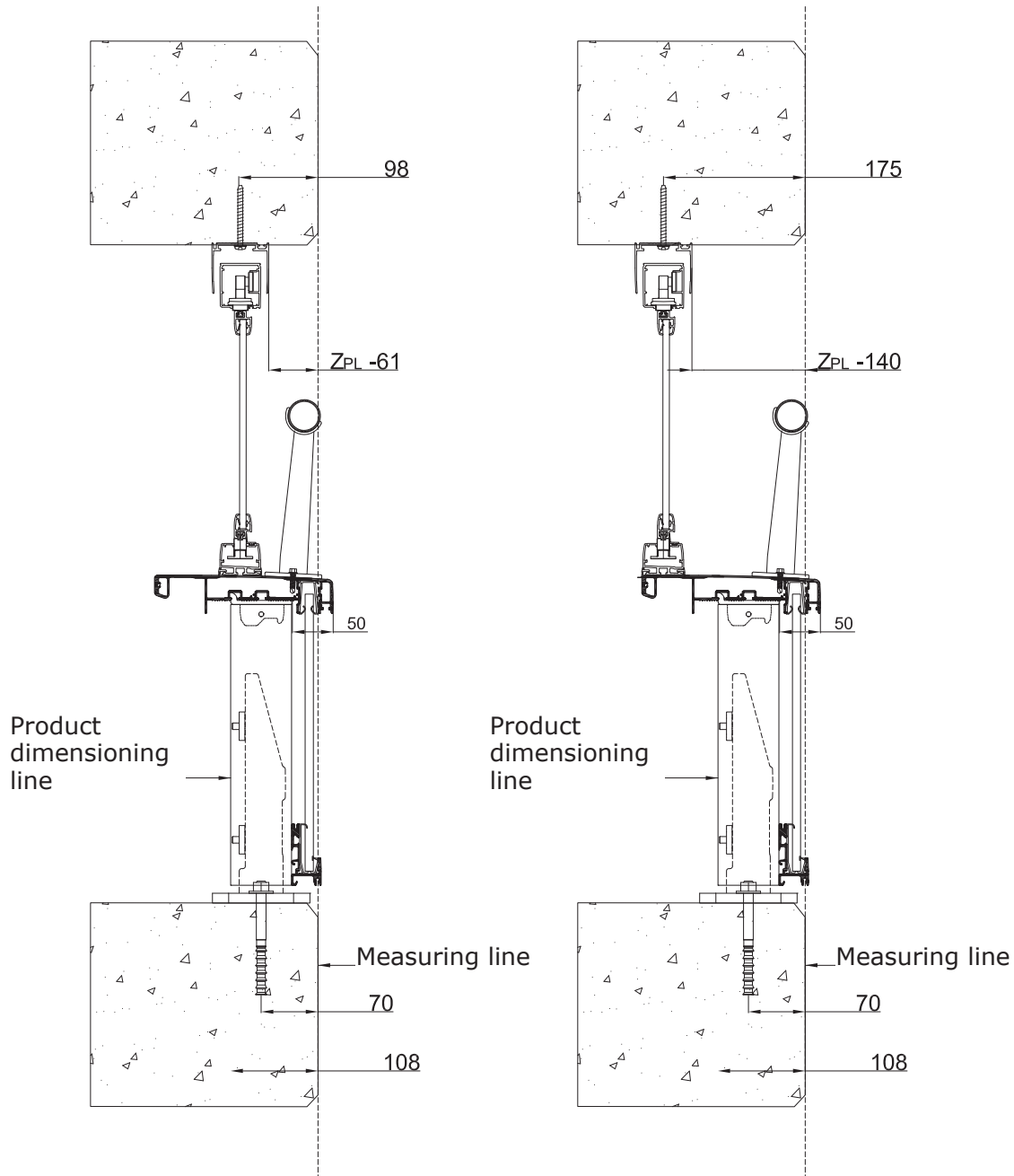


**Handrail 160 + decor profile, side installation**

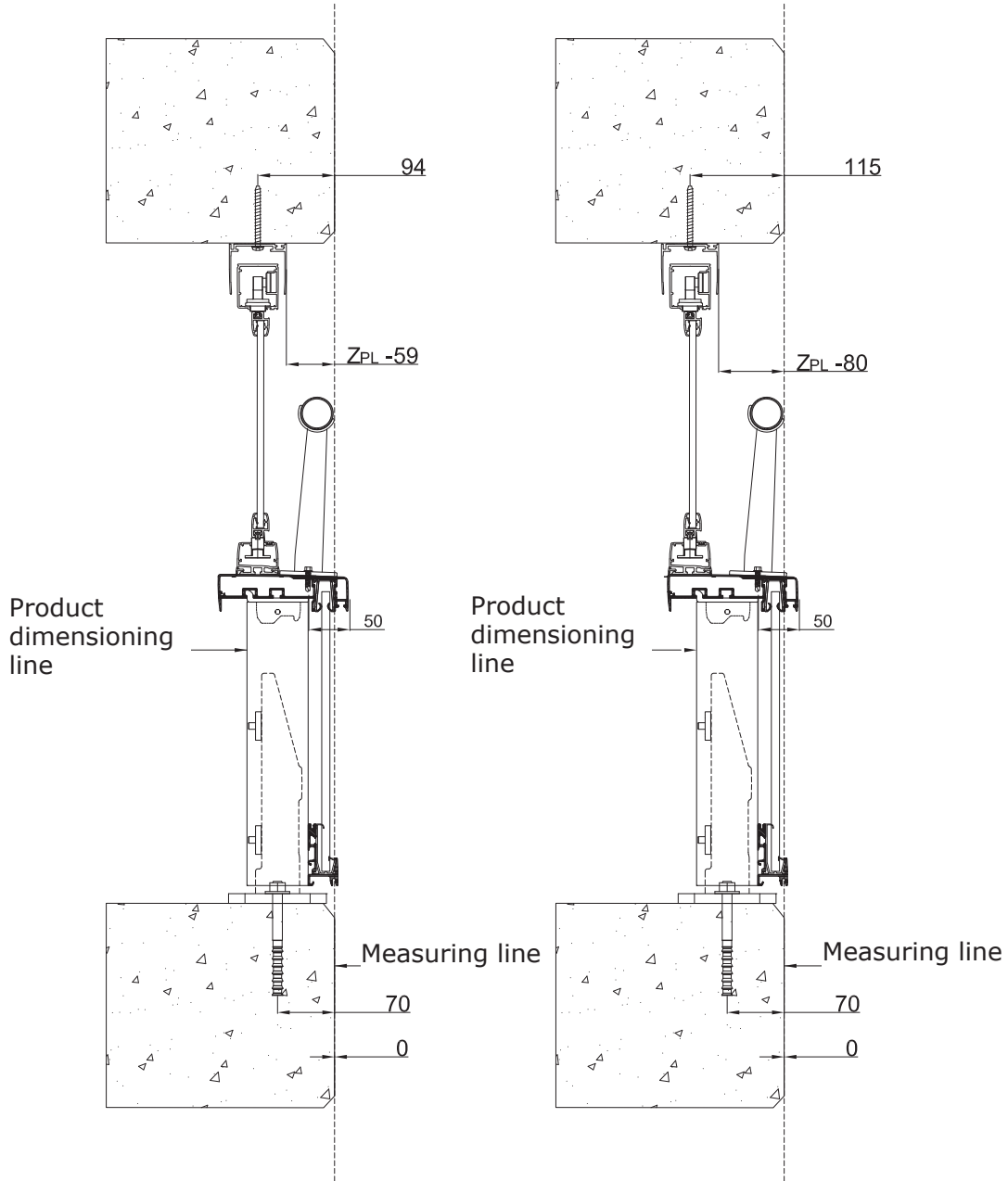


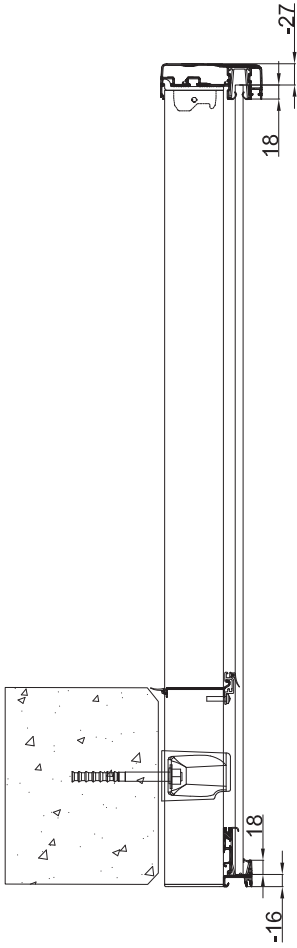


**Handrail 220 + decor profile, top installation**

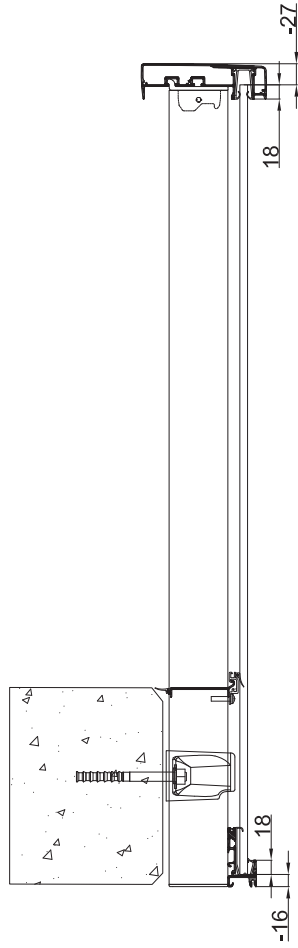


**Handrail 160 + decor profile, top installation**

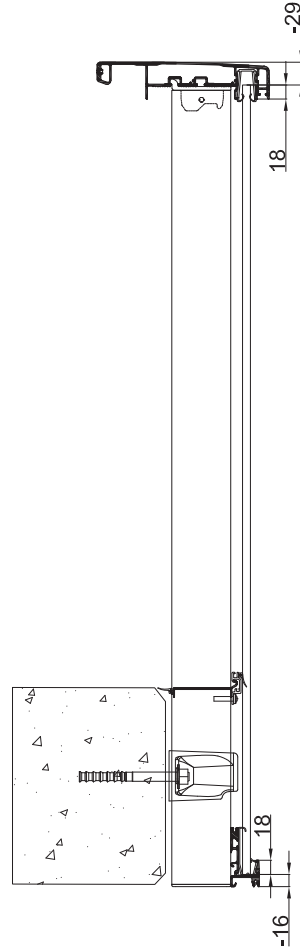




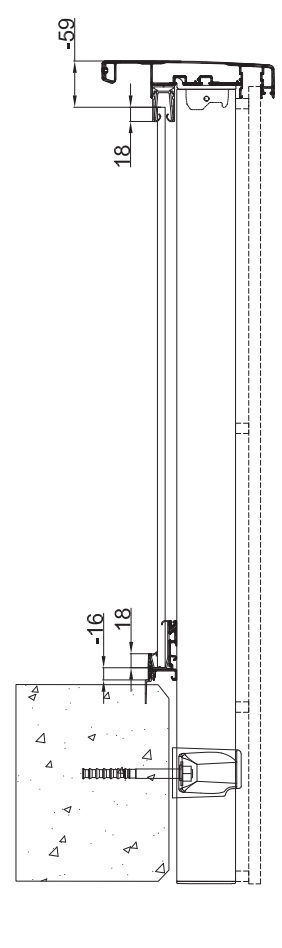
Handrail 130  
11 37 0025



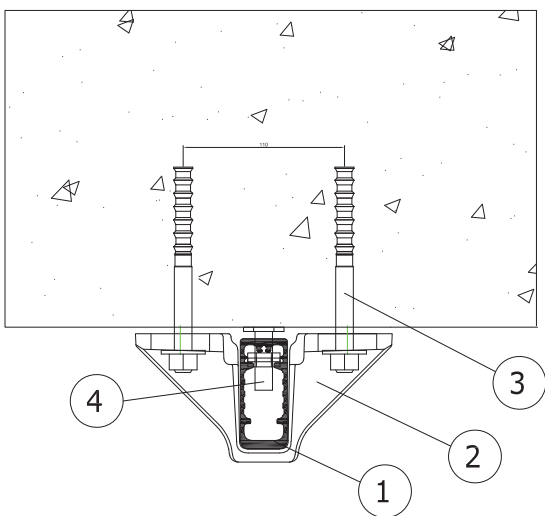
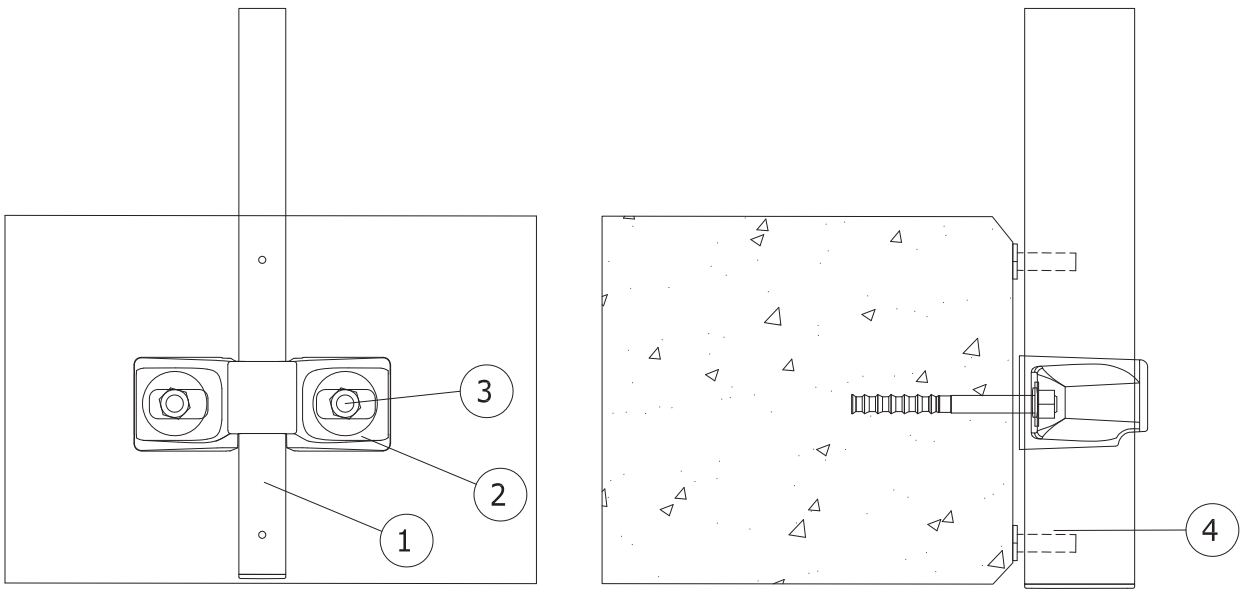
Handrail 160  
11 37 0002



Handrail 220  
11 37 0029



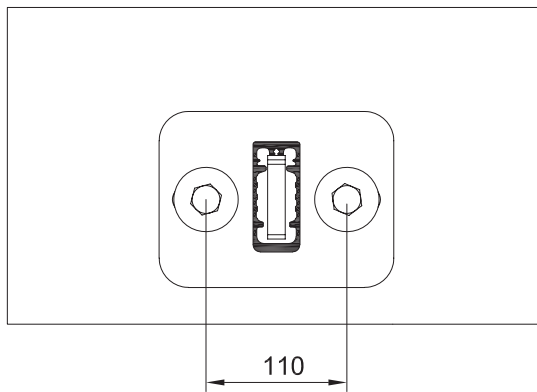
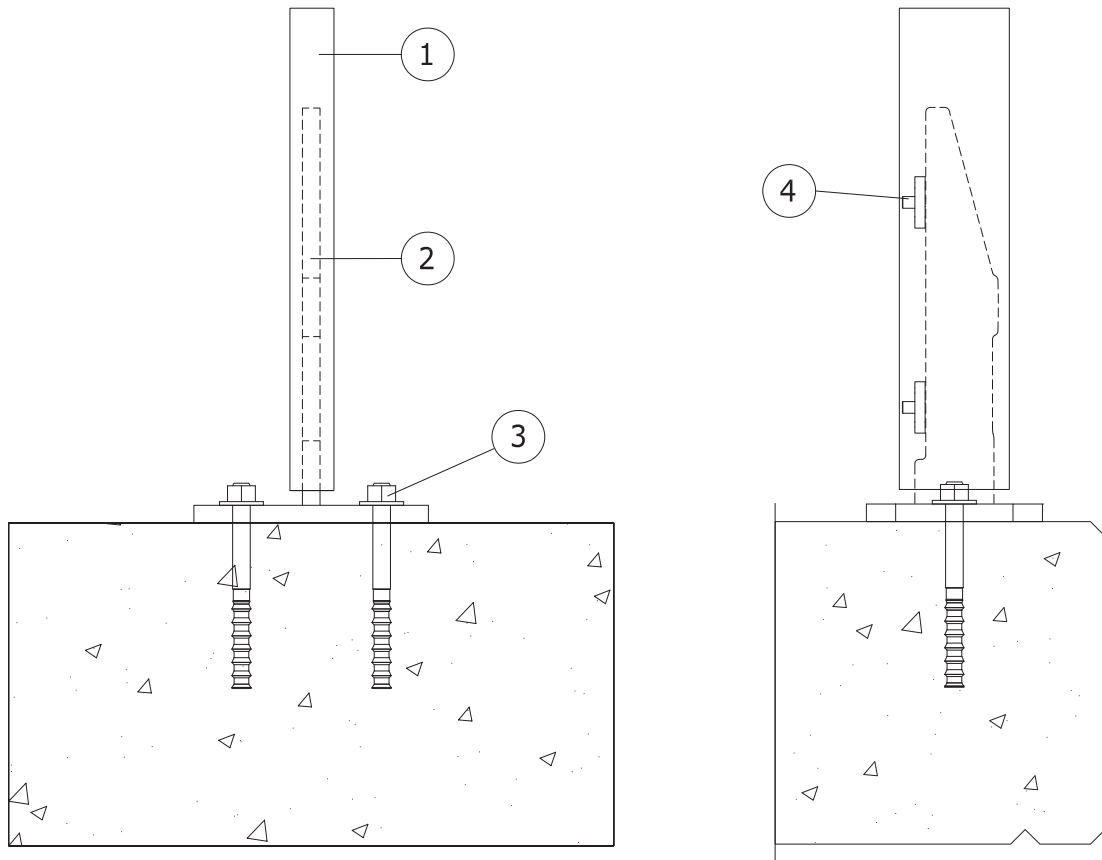
Handrail 220  
11 37 0029



1. Post 75x32 LTK 11 37 0022 / Strong post 11 37 0023
2. Hatbracket LTK 51 37 0029
3. Anchoring
4. Post adjustment screw LTK 68 98 0589

Fastening methods:

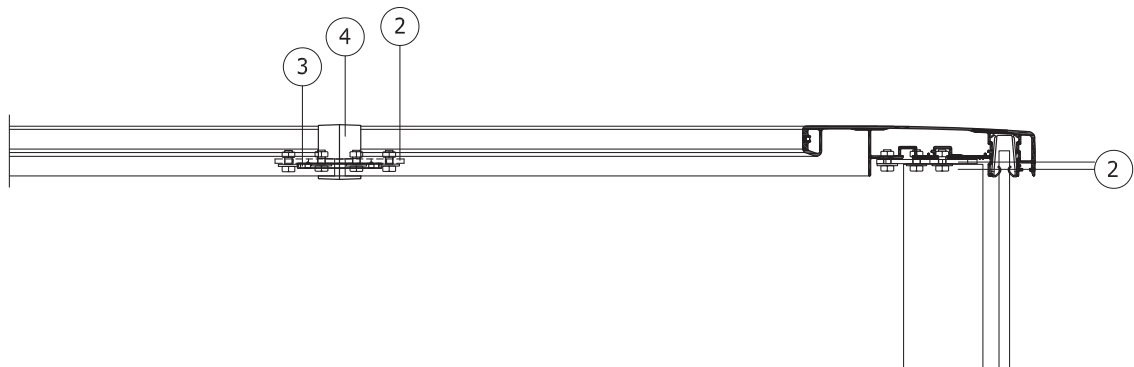
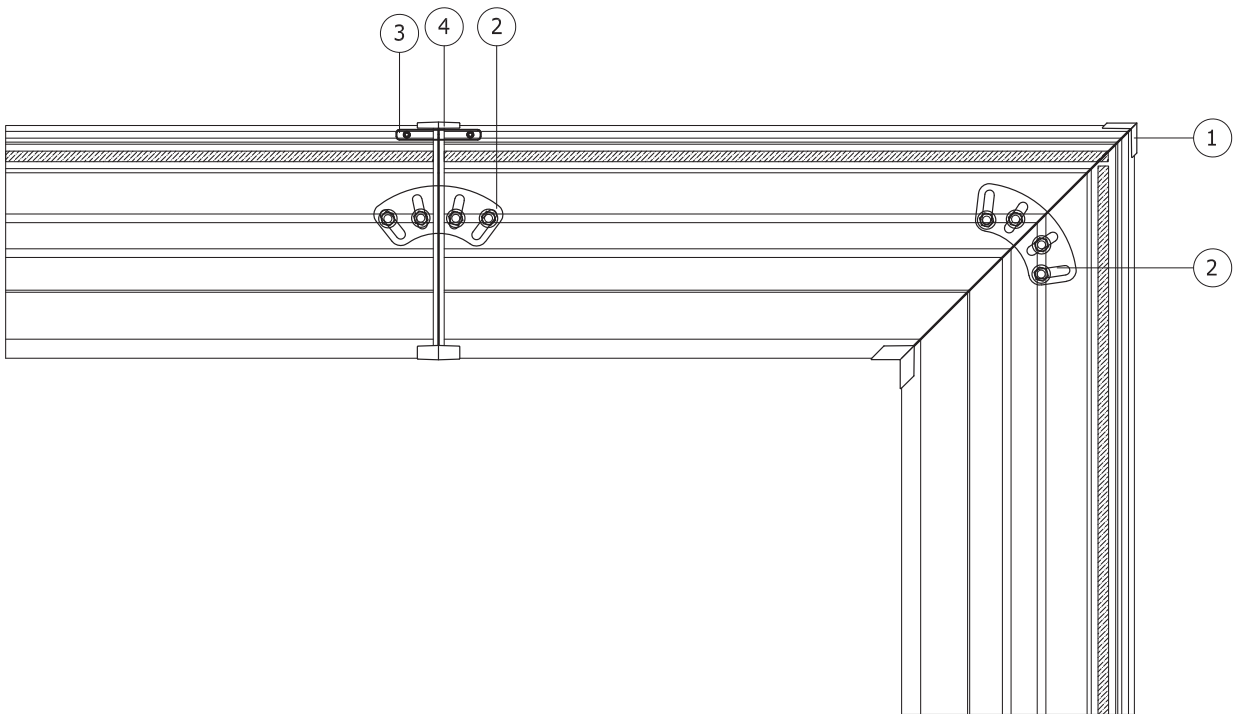
- Chemical anchoring + threaded rod M12, nut M12 and washer M12
- Concrete screw HUS-HR 10x115
- Bolting through wood
- Wood screw



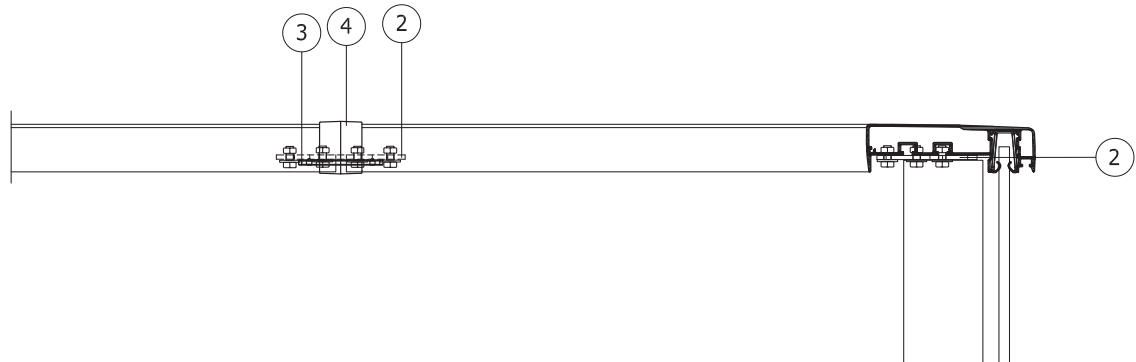
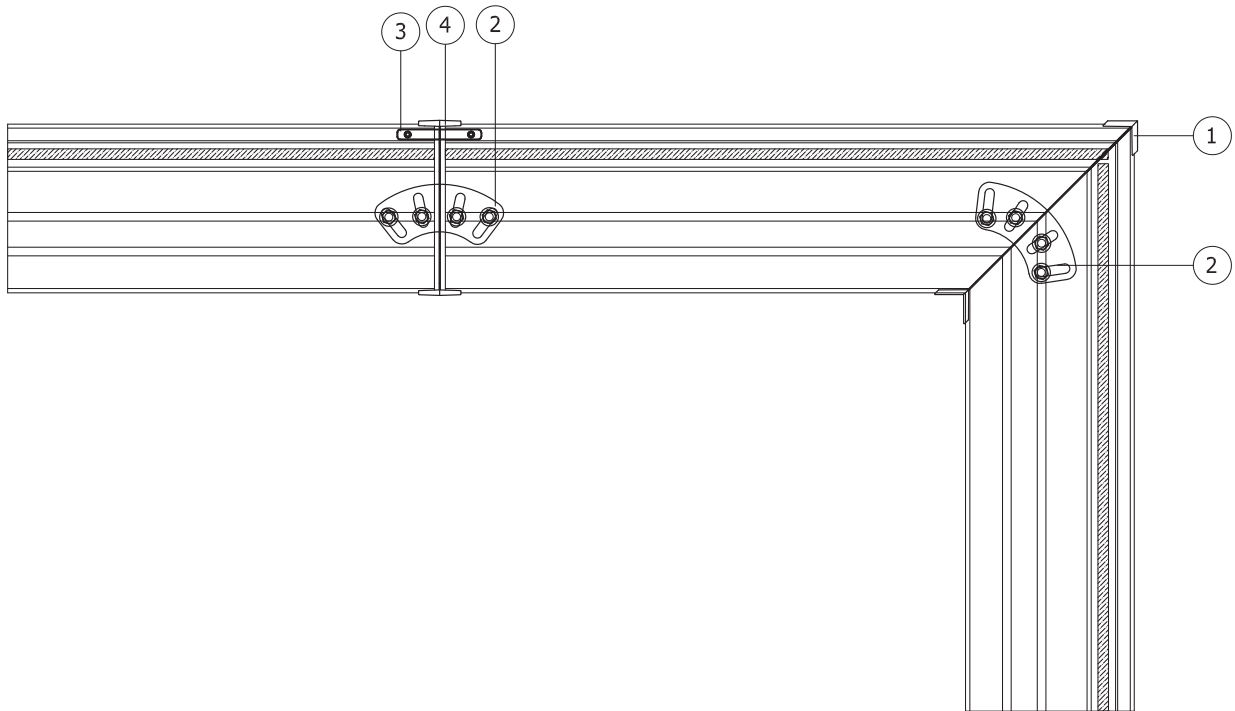
1. Steel pedestal 160x120 LTK 51 37 0031
2. Anchoring
3. Post 75x32 LTK 11 37 0022
4. Post thread piece LTK 51 37 0033

Fastening methods:

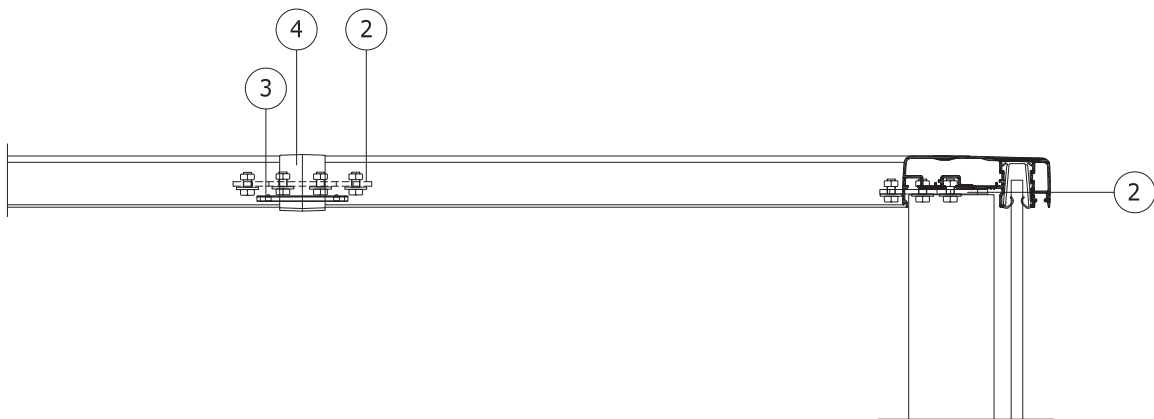
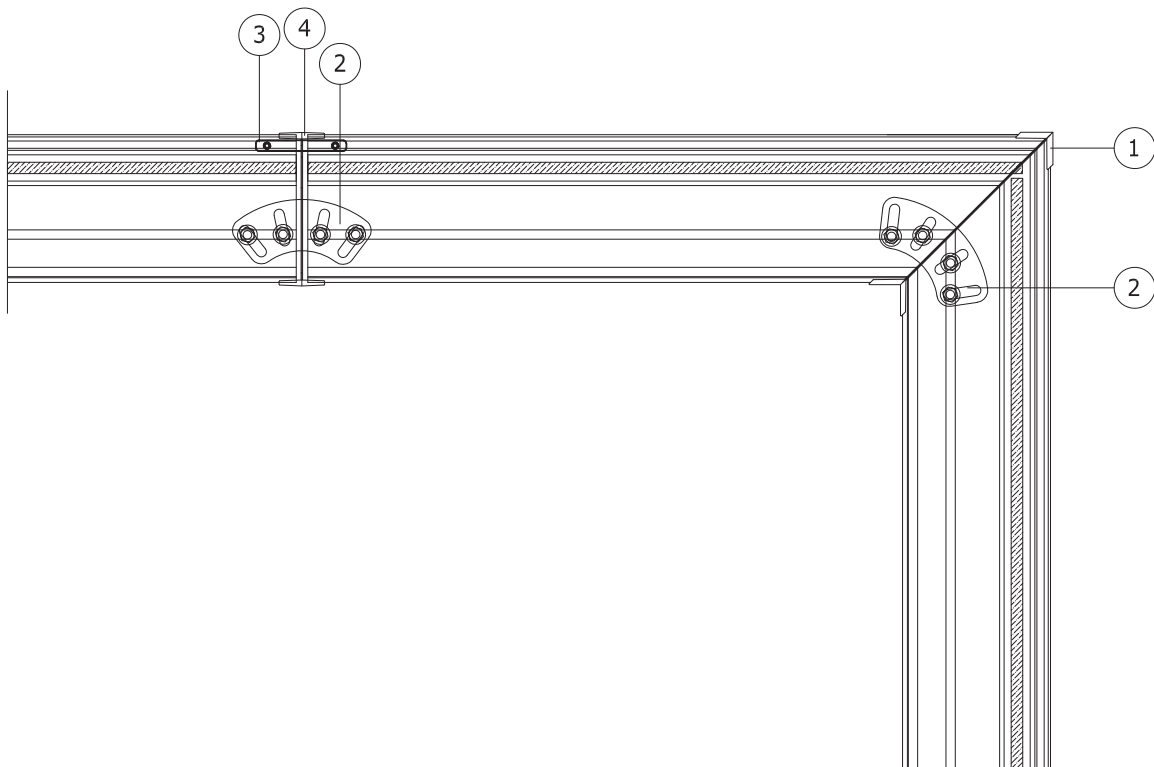
- Chemical anchoring + threaded rod M12, nut M12 and washer M12
- Concrete screw HUS-HR 10x115
- Bolting through wood
- Wood screw



1. Corner end plug for handrail 220 LTK 53 37 0142
2. Handrail corner joint piece 130 LTK 51 37 0032
3. Joint piece for lower profile (in Installation bag for straight joint LTK 50 37 0168)
4. Expansion joint end plug for handrail LTK 53 37 0143

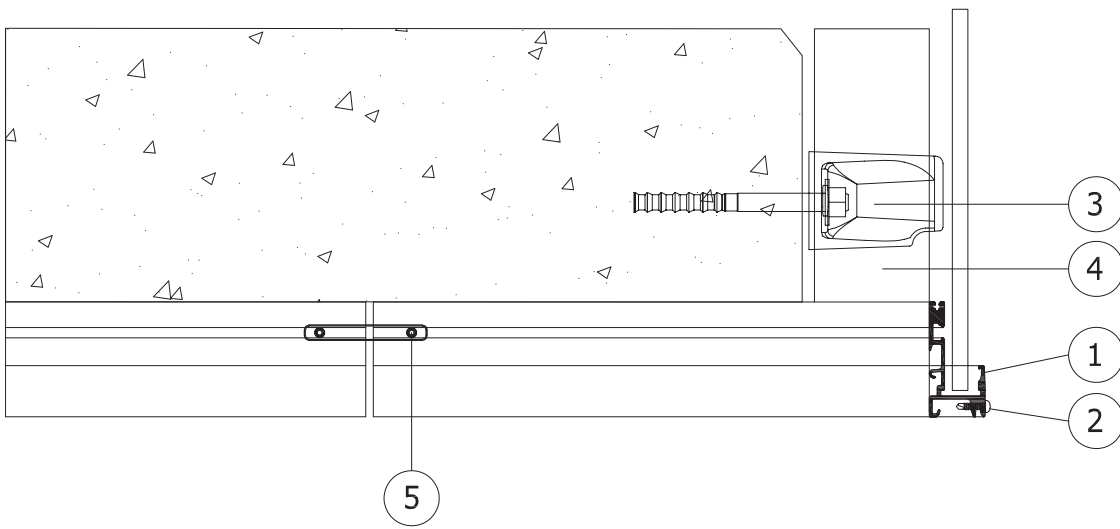
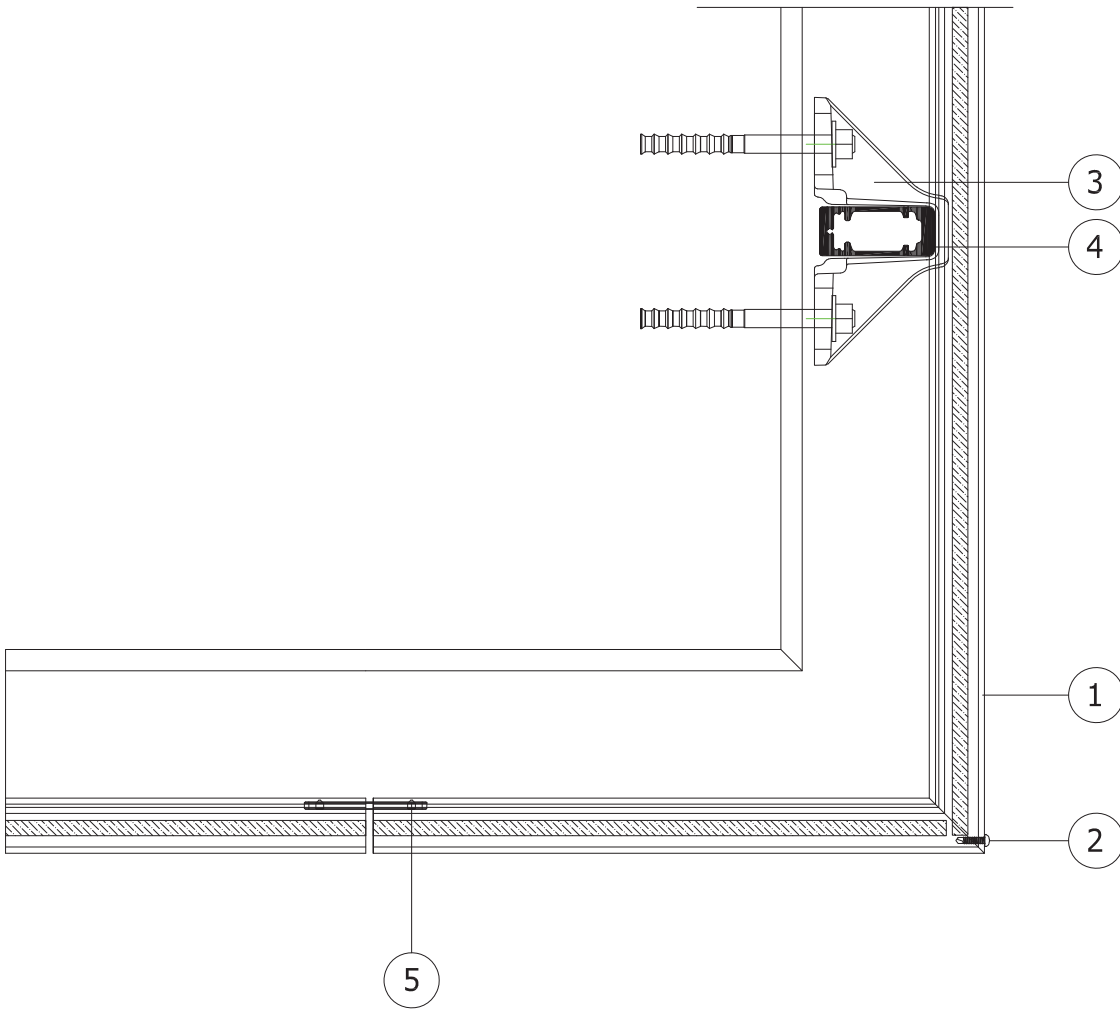


1. Mitre-joint end plug bag for 160 handrail LK
2. Handrail corner joint piece 130 LTK 51 37 0032
3. Joint piece for lower profile (in Installation bag for straight joint LTK 50 37 0168)
4. Expansion joint end plug for handrail LTK

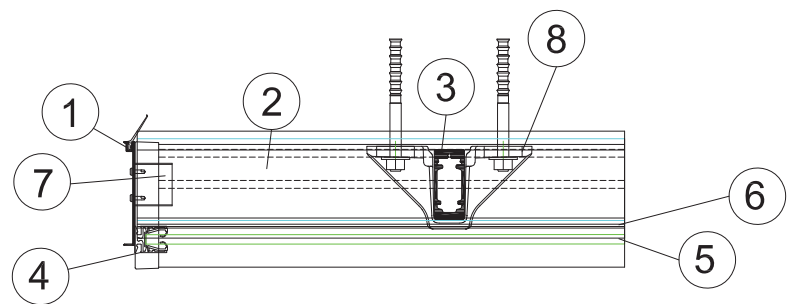
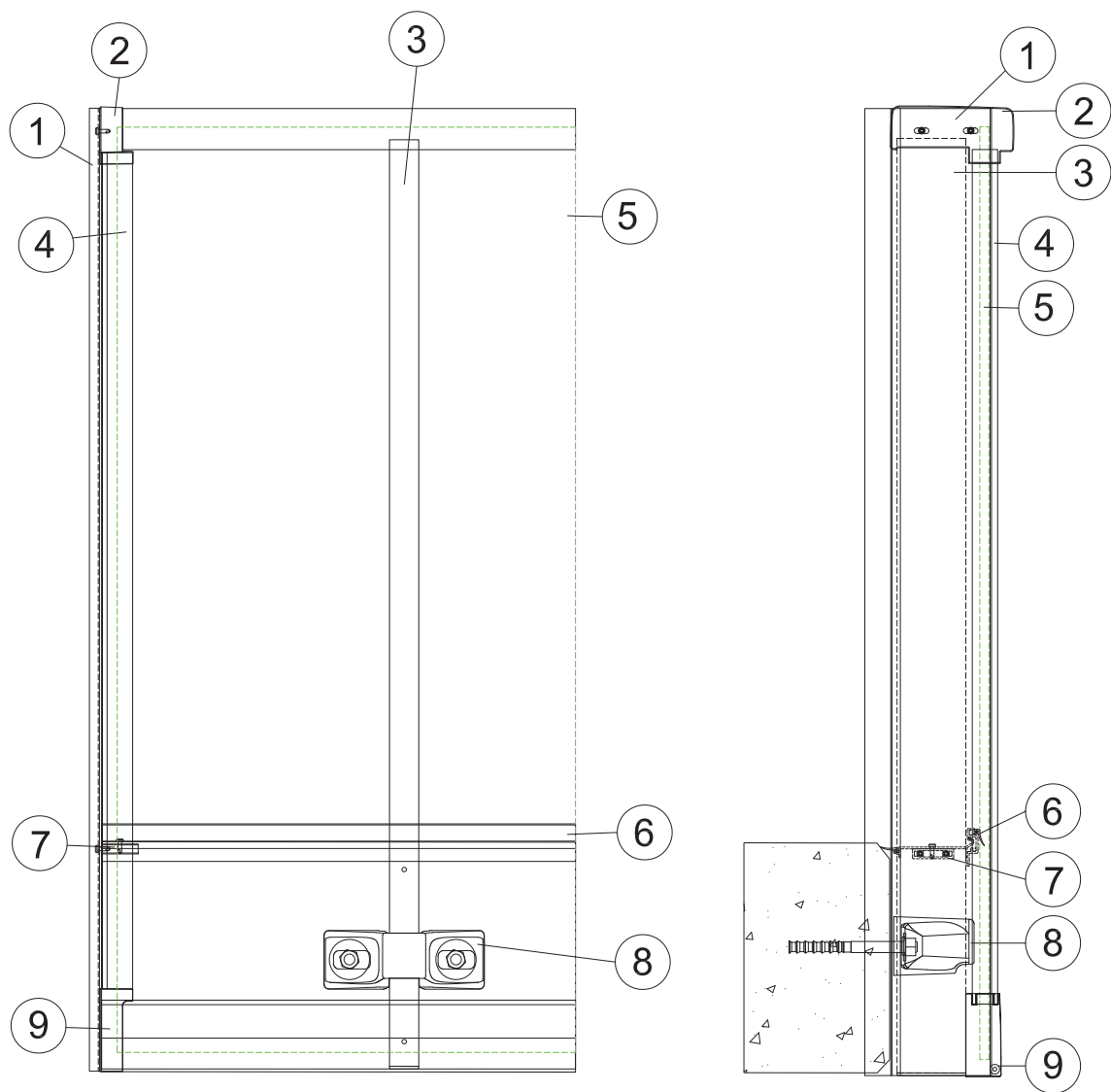


1. Corner end plug for handrail 130 LTK 53 37 0135
2. Handrail corner joint piece 130 LTK 51 37 0032
3. Joint piece for lower profile (in Installation bag for straight joint LTK 50 37 0168)
4. Expansion joint end plug for handrail 130 LTK 53 37 0136



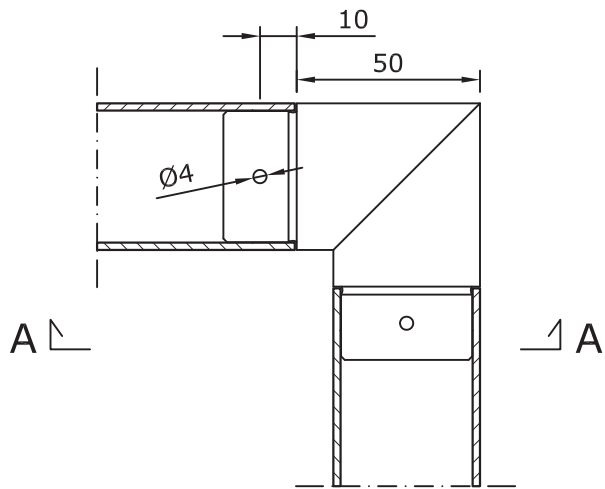


1. Lower frame LTK
2. Ball Head Screw tx20 4,2x19mm A2/A4 DIN7981 68980570
3. Hatbracket LTK
4. Post 75x32 LTK
5. Joint piece for lower profile (in Installation bag for straight joint LTK 50 37 0168)

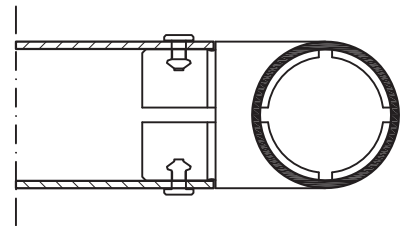


- |                            |   |
|----------------------------|---|
| 1. End gap profile + seal  | 6. Lower gap profile + Installation profile |
| 2. Handrail 130 + end plug | 7. End profile fastening piece              |
| 3. Post 75x32 LTK          | 8. Hatbracket LTK                           |
| 4. Wall profile            | 9. Lower frame+ end plug                    |
| 5. Cladding                |   |

90° Corner component for Ø40 decor profile 50 37 3337

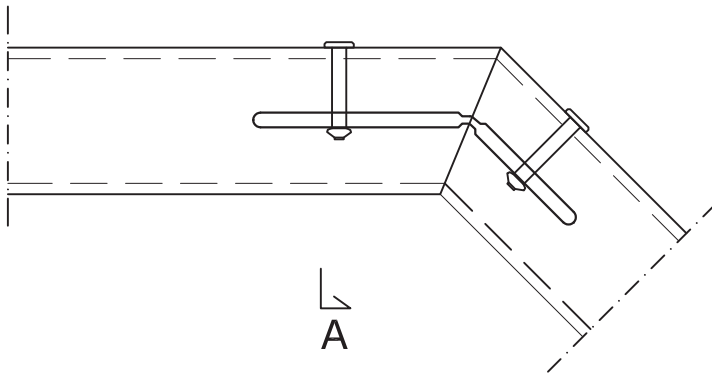


A-A

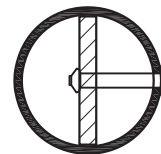


Ø40 decor profile with adjustable joint piece 51 30 0008

A



A-A



Balustrade claddings consist usually of laminated glass, in some cases toughened glass can be used

Weight of glass:

8 mm: 20 kg/m<sup>2</sup>

10 mm: 25 kg/m<sup>2</sup>

12 mm: 30 kg/m<sup>2</sup>

### Laminated Glass

Laminated glass thicknesses are 4+4, 5+5 and 6+6 mm. Horizontal edges are Flat edge polished and vertical edges are Flat edge and arris polished. Laminated toughened glass can be used depending on local regulations

There are two color series for laminated glasses. In the Lumon IG- series there are many standard color options in different tones. By using the different shades of Vanceva Design the interlayer can be combined to produce vast variety on different alternatives.

Maximum size of the glass is 1650x1200 mm. However, the size if glass is defined case-by-case in each project.

Note! In case that laminated glass has more than one interlayer, or the other glass is a stippolyte glass of sand blasted, when placing the order it must be clearly stated which side of glass is facing outwards.

### Glass tones:

IG87 clear

IG88 clear

IG65 opal

IG80 opal

IG50 green

IG56 green

IG72 green

IG73 green

IG08 brown

IG09 brown

IG28 brown

IG55 brown

IG49 blue

IG53 blue

IG70 blue

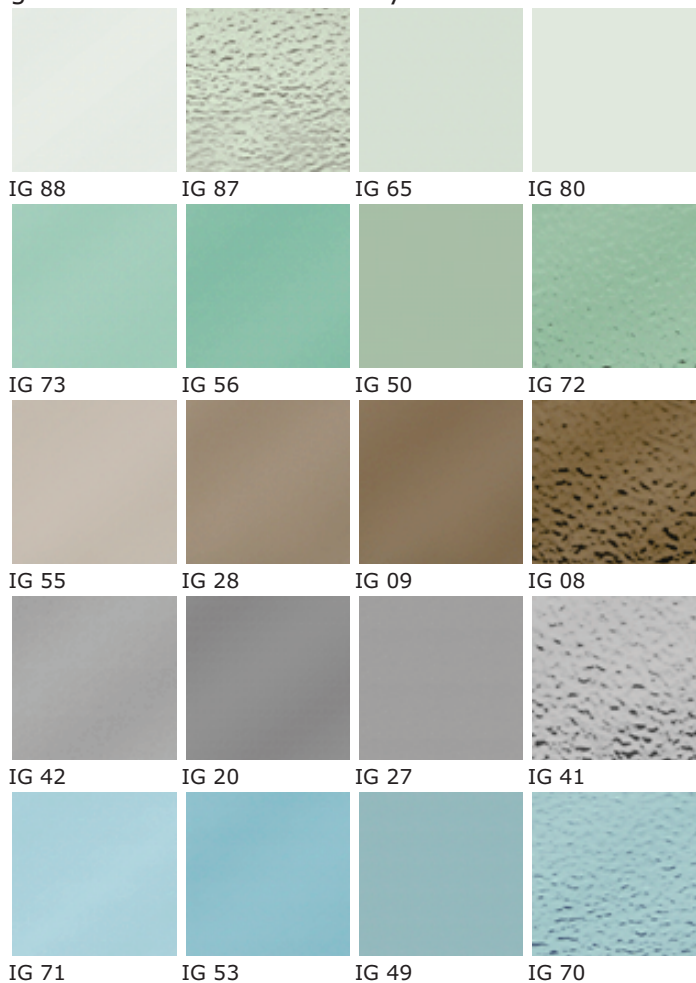
IG71 blue

IG20 grey

IG27 grey

IG41 grey

IG42 grey



The figure in the code indicates the light transmission percentage.

E.g. IG 73 = light transmission 73 %

Due to technical reasons in printing, the color tones in nature differ from the tones shown alongside.

**Vanceva Design-series**

Following colors are available as standard: white non-transparent Polar White 000F, blue True Blue 000D and red Deep Red 000C.

It can be combined 1-4 inter layers per lamination. There are more colors in the table below. More detailed information about the color shades is available through the survey offer. The figure after the code indicates the visible light transmission (e.g. = 0,79 means, that 79% of visible light transmit glasses and laminating films).



0001 Coral Rose  
 $\tau_v = 0,76$



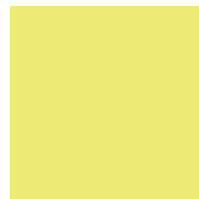
0005 Ruby Red  
 $\tau_v = 0,48$



000C Deep Red  
 $\tau_v = 0,15$



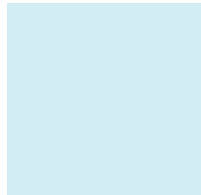
0004 Sahara Sun  
 $\tau_v = 0,78$



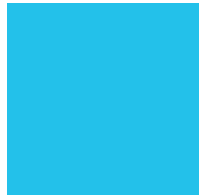
0008 Golden Light  
 $\tau_v = 0,85$



000E Tangerine  
 $\tau_v = 0,41$



0002 Aquamarine  
 $\tau_v = 0,77$



0006 Sapphire Blue  
 $\tau_v = 0,52$



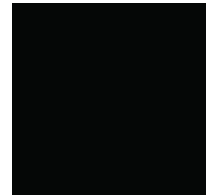
000D True Blue  
 $\tau_v = 0,12$



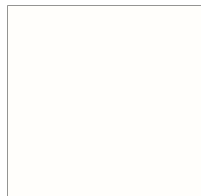
0003 Smoke Grey  
 $\tau_v = 0,78$



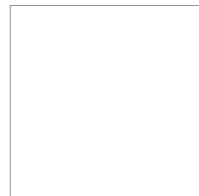
0007 Evening Shadow  
 $\tau_v = 0,49$



000G Absolute Black  
 $\tau_v = 0$



000F Polar White  
 $\tau_v = 0,07$



000A Cool White  
 $\tau_v = 0,81$

**Toughened glass**

Toughened glass can be used depending on local regulations. The maximum size of the toughened glass is 1500x1200mm. Due to the requirements and processability of the application, the size of glass should be defined separately in every case.

**Sandblasted and laminated or toughened glass**

Frosted coverage can be obtained by sandblasting glass. After sand blasting the surface of glass is washed and sprayed with teflon three times. This process prevent from glass getting dirty. A high shine facade can be created by replacing the smooth unsandblasted surface outwards. The mat surface is placed inside for easier cleaning. The mat surface can also be placed outwards. Sandblasted surface can be placed indoors or outdoors.

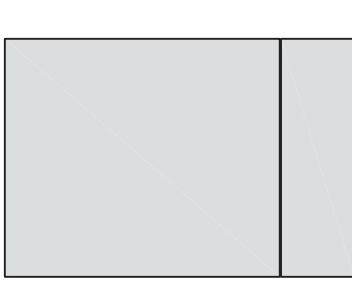
Light transmission percentage of the sandblasted glass is 50-60% depending on the intensity of the sandblast. It is also possible to sandblast only part of glass or according to a desired pattern.

**Sandblasted figures**

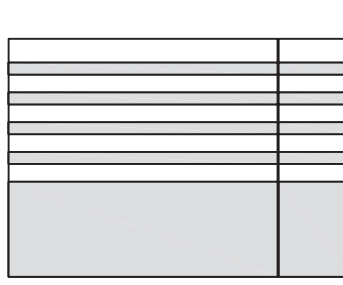
When creating figures and shapes it is suggested to choose a pattern that allows use of "mould" which is more economical than taping. The figure must be regular in order to avoid mismatches between adjacent panes. See pictures below for examples of sandblasted figures which can be created by using molding technique. Note! When placing the order it must be clearly stated which side of the glass is exterior.

**Sandblasted models**

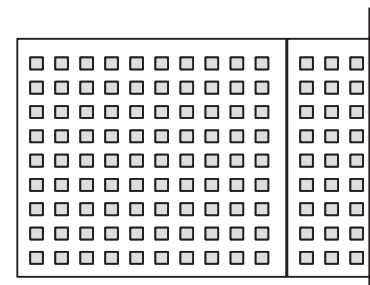
Opaque (4 bar)



The entire glass is sandblasted



The glass is partly sandblasted.  
The pattern overlaps the glass



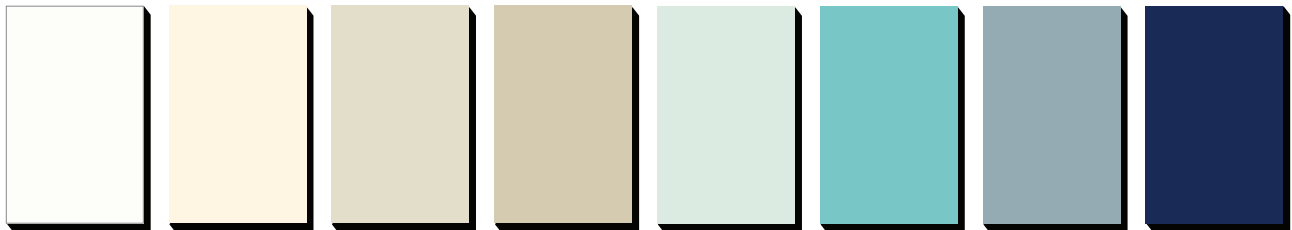
The glass is partly sandblasted

Patterns and figures can also be produced onto the glass by digital - or silk - screen printing.

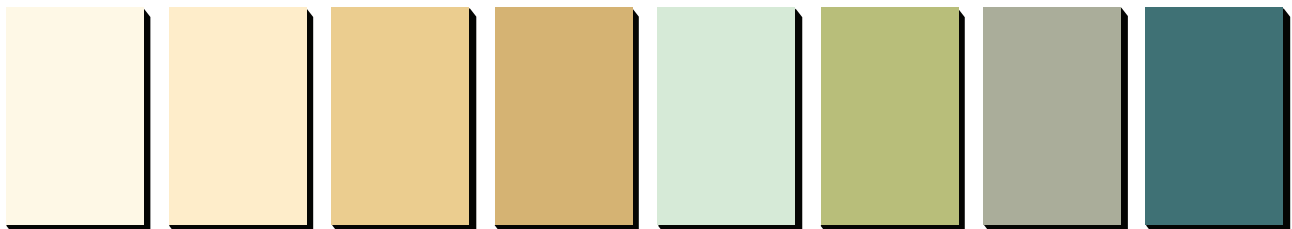
Formica Exterior Vivix combines excellent weather and Uv resistance with strong scratch resistance for enhanced durability and easy handling. Maximum board size is 3050x1270mm. Sheets of Formica Exterior Vivix installed on the same facade at the same time are guaranteed to match in colour for ten years from the date of delivery. Formica Exterior Vivix is a 12mm thick self-supporting sheet of homogenous highpressure laminate that can be installed onto wood or in an metal framing. Formica Exterior Vivix is not available in other than Formica Exterior Vivix colours:



F0949 White	K2010 Malibu	K2001 Baikal	F7927 Folkestone	F5493 Arctic Blue	F7884 China Blue	F4168 Campanula	F7851 Spectrum Blue
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K1040 Alpino	K1181 Irish Cream	F7858 Pumice	F2302 Doeskin	F5494 Aquamarine	F5347 Maui	K1998 Oslo	F7969 Navy Blue
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K1192 Porcelana	K1301 Gobi	K1902 Eldorado	K1903 Café	F2966 Opal	F3007 Pale Olive	F7853 Ocean Grey	F7846 Grotto
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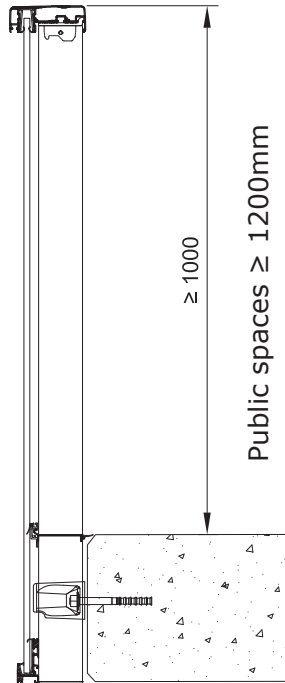


F2833 Sandstone	F8751 Mojave	K1834 Kashmir	F2200 Dark Chocolate	F2288 Peach	F7940 Spectrum Yellow	F6901 Vibrant Green	F7967 Hunter Green
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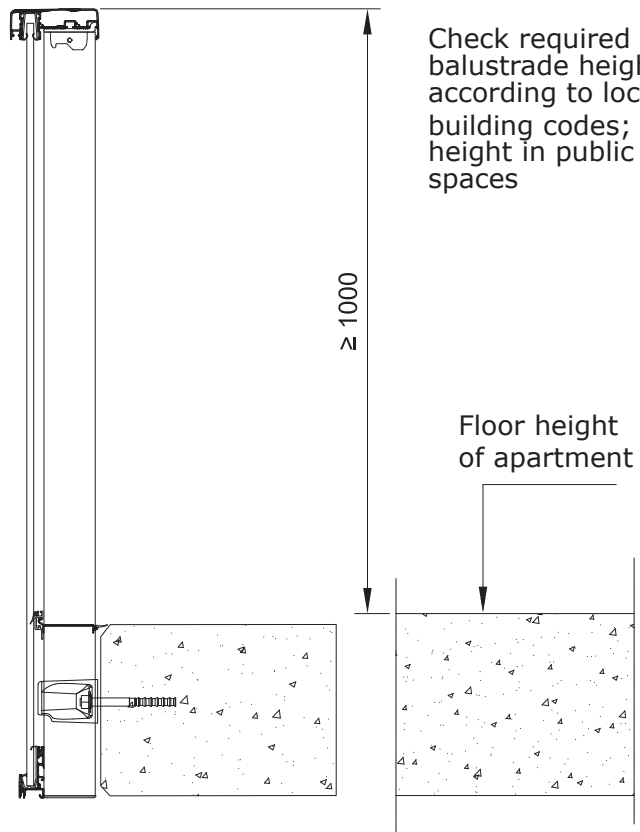
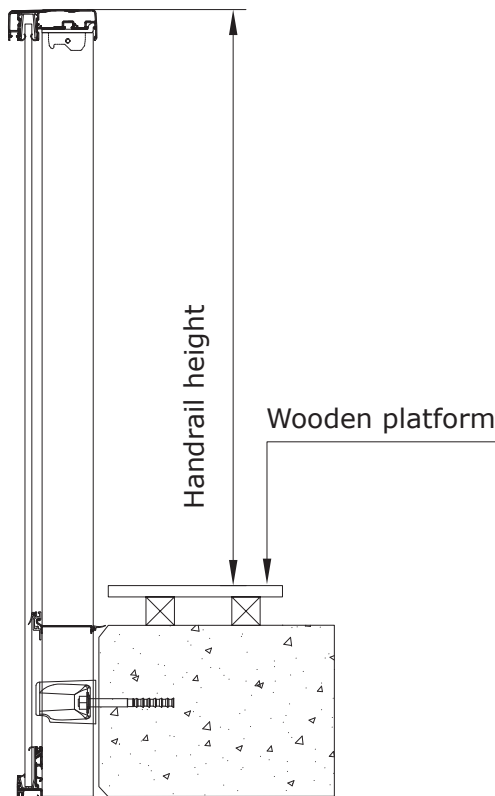
K2020 Tornado	F7912 Storm	F2297 Terril	F2253 Diamond Black	F4161 Terracotta	K1238 Carnaval	K2005 Paprika	K3734 Radon
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**Balustrade dimensioning:**



Check required balustrade height according to local building codes; also height in public spaces

**Barrier-free building**



Check required balustrade height according to local building codes; also height in public spaces



**Construction Engineering Principles**

The dimensioning is based on the standards EN 1990, EN 1991-1-1, EN 1991-1-3, EN 1991-1-4 and National Annexes.

In the durability evaluation for the structure, calculated are:

- wind loads
- anchor loads
- drilling points and distances from edges
- the effect of the fastening platform type to the anchoring

The increased load for the balustrade due to the balcony glazing is always taken into account in the durability evaluation.

**Wind pressure:**

The wind pressures based on location and height are illustrated in the tables on the next page. The terrain classes are illustrated in Table 2 and the wind pressures in different terrain classes in Table 3.

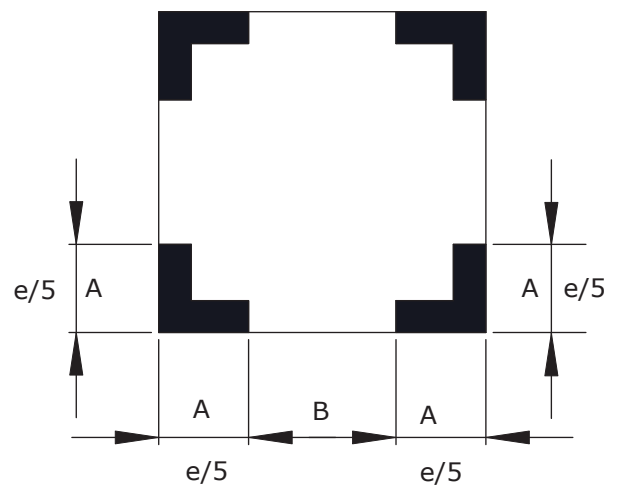
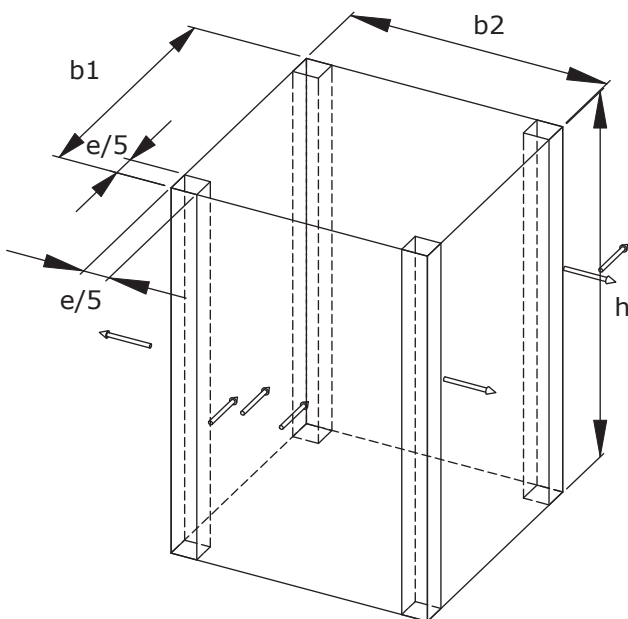
**Wind suction load:**

The corners of buildings, shown as "A" in the figure below, are also subject to wind suction loads.

Table 1

Zone	A	B
C <sub>pe10</sub>	-1,2	±0,8

Simplified table for vertical walls



e = the smaller is selected b or 2h  
for example if 2h=30m and b=25m e/5 =5m

**Standard Colours: (Price group 1)**

RAL 7024 Graphite grey  
 RAL 9006 White aluminium  
 RAL 9016 Traffic white  
 RAL 8019 Grey brown

**Lumon Colours: (Price group 2)**

RAL 7015  
 RAL 7016  
 RAL 7040  
 RAL 8004  
 RAL 8016  
 RAL 9005  
 RAL 9007  
 RAL 9010

**Other Colours: (Price group 3)**

RAL1000	RAL2000	RAL3000	RAL4001	RAL5000	RAL6000	RAL7000	RAL8000	RAL9001
RAL1001	RAL2001	RAL3001	RAL4002	RAL5001	RAL6001	RAL7001	RAL8001	RAL9002
RAL1002	RAL2002	RAL3002	RAL4003	RAL5002	RAL6002	RAL7002	RAL8002	RAL9003
RAL1003	RAL2003	RAL3003	RAL4004	RAL5003	RAL6003	RAL7003	RAL8003	RAL9004
RAL1004	RAL2004	RAL3004	RAL4005	RAL5004	RAL6004	RAL7004	RAL8007	RAL9007
RAL1005	RAL2008	RAL3005	RAL4007	RAL5005	RAL6005	RAL7005	RAL8008	RAL9011
RAL1006	RAL2009	RAL3007	RAL4008	RAL5007	RAL6006	RAL7006	RAL8011	RAL9017
RAL1007	RAL2010	RAL3009	RAL4009	RAL5008	RAL6007	RAL7008	RAL8012	RAL9018
RAL1011	RAL2011	RAL3011	RAL4010	RAL5009	RAL6008	RAL7009	RAL8014	RAL9022
RAL1012	RAL2012	RAL3012	RAL4011	RAL5010	RAL6009	RAL7010	RAL8015	RAL9023
RAL1013	RAL2013	RAL3013	RAL4012	RAL5011	RAL6010	RAL7011	RAL8017	
RAL1014		RAL3014		RAL5012	RAL6011	RAL7012	RAL8022	
RAL1015		RAL3015		RAL5013	RAL6012	RAL7013	RAL8023	
RAL1016		RAL3016		RAL5014	RAL6013	RAL7014	RAL8024	
RAL1017		RAL3017		RAL5015	RAL6014	RAL7021	RAL8025	
RAL1018		RAL3018		RAL5017	RAL6015	RAL7022	RAL8028	
RAL1019		RAL3020		RAL5018	RAL6016	RAL7023	RAL8029	
RAL1020		RAL3022		RAL5019	RAL6017	RAL7026		
RAL1021		RAL3027		RAL5020	RAL6018	RAL7030		
RAL1023		RAL3031		RAL5021	RAL6019	RAL7031		
RAL1024		RAL3032		RAL5022	RAL6020	RAL7032		
RAL1027		RAL3033		RAL5023	RAL6021	RAL7033		
RAL1028				RAL5024	RAL6022	RAL7034		
RAL1032				RAL5025	RAL6024	RAL7035		
RAL1033				RAL5026	RAL6025	RAL7036		
RAL1034					RAL6026	RAL7037		
RAL1035					RAL6027	RAL7038		
RAL1036					RAL6028	RAL7039		
					RAL6029	RAL7042		
					RAL6032	RAL7043		
					RAL6033	RAL7044		
					RAL6034	RAL7045		
					RAL6035	RAL7046		
					RAL6036	RAL7047		
						RAL7048		

**Quality Specifications for Toughened Glass Manufactured by Lumon**

**1. General**

Lumon Oy uses glass that conforms to the standard quality level of building glass, which is regulated with strict quality standards. The currently applied quality assurance instructions are prepared in accordance with standard EN 572-2. The instructions also take into account standard EN 572-8 for cut glass (Supplied and final cut sizes). Lumon manufactures tempered glass according to standard EN 12150-1.

**2. Inspection**

These instructions are for toughened or laminated glass delivered by Lumon Oy. Unless otherwise specified, the quality of glass is inspected from a distance of two meters in normal daylight, against a homogeneous background, and perpendicularly. Normal daylight refers to sunlight, however, not direct sunlight to the glass. The glass must be inspected when it's dry. Misted glass may show amorphous patterns because of surface tension.

**3. Assessment of Quality**

**3.1 Optical Distortion**

When examined in close range, slight optical distortion characteristically occurs in toughened glass. Especially distortion in the fringe areas is allowable.

**3.2 Point Defects**

Point defects with diameter less than 0.5mm are innate properties of glass. Two defects with diameter of 0.5-1.0 mm are allowable in any parts of the glass provided that their relative distance is not less than 500 mm. Point defects measuring over 1.0 mm in diameter are not allowable anywhere in the glass.

**3.3 Scratches**

Transparent scratches up to 150 mm are allowable, but not closer than within relative distance of 500 mm. Deep scratches detectable from a 2 meter distance under the specified conditions shall not be wider than 0.5 mm and/or 5 mm long. One deep scratch per glass is allowable. Scratches that are smaller than the above measurements can be characteristic to glass and therefore allowable.

**3.4 Edge Finishing**

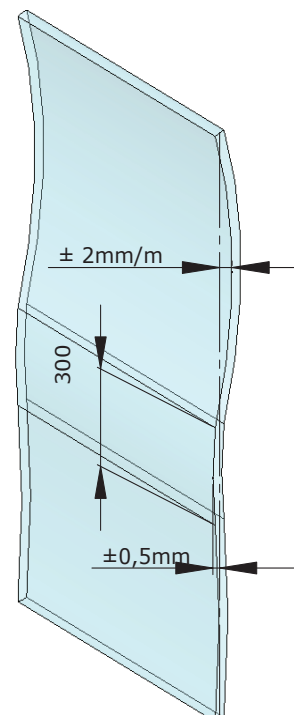
The visible edges of glass are polished to a rounded edge according to standard EN ISO 12543-1. Clearly detectable cracks totaling over 50 mm on each edge are not allowable.

**3.5 Overall and Local Bow**

Toughened glass has a slight innate bow. Standard EN 12150-1 allows overall bow not exceeding  $\pm 3 \text{ mm/m}$ . Local bow of  $\pm 0.5 \text{ mm}$  can occur over length of 300 mm. Local bow is measured by using a straight 300 mm metal ruler placed on the surface of the glass. Overall bow can be determined similarly by placing a straight ruler over the entire surface of the glass. Lumon Oy has specified even stricter total dimensional tolerances for balcony glazing, which is measured at the manufacturing plant. Tempered glass delivered by Lumon Oy must have an overall bow of less than  $\pm 2 \text{ mm/m}$ .

**3.6 Other Defects in Surface**

Dimness of glass due to alkali-silicate on the surface is not allowable. Such glass has lost its polish and it is less transparent. So called anisotropy phenomenon may occur in toughened glass. This is a normal property of glass and therefore allowable. The phenomenon becomes



visible in certain conditions as "leopard spots" caused by stress in the glass. Dirt and stranding are normal, but they should not be visible in a correctly cleaned glass from a distance over 2 meters. If the dirt cannot be removed, the manufacturing plant should be contacted for reference of a suitable detergent. Misting may show patterns that result from different surface tensions over the glass.

**3.7 Tolerance Limits for Dimensions**

The dimensional tolerance of the glass panes is determined according to standard EN 572-8:

Length of Edge	Glass Pane Thickness	
	3-6mm	8-12mm
≤ 1,5 m	±1,0mm	±1,5 mm
1,5 ≤ 3,0 m	±1,5 mm	±2,0mm

Lumon Oy has determined the following dimensional tolerances for glass panes applied in glazing system: glass pane thickness 6 mm: ±1.0 mm and glass pane thickness 8-10 mm: ±1.5 mm. Cross-dimensional tolerances for individual panes are: Glass pane thickness 6 mm: ± 2.0 mm and glass pane thickness 8-10 mm: ± 3.0 mm.

**Quality Specifications for Laminated Glass Manufactured by Lumon Oy**

**1. General**

These specifications apply to finished laminated glass panes and the defects on their see-through area.

**2. Definitions**

Point defects including dull spots, seeds and foreign particles, hairline defects include scratches in glass and film. Other defects include creases, stripes or contract of laminating film.

**3. Defects in the See-trough Area**

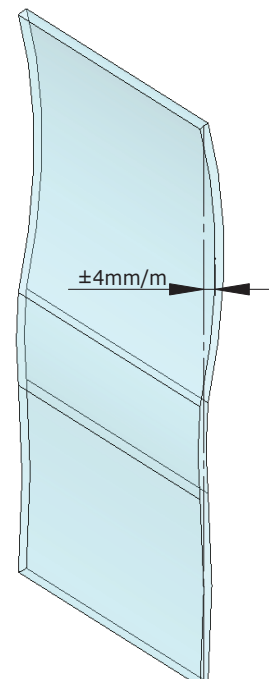
Point defects < 0.5 mm in laminated glass are not observed. Defects >3.0 mm are not allowable. The number of defects < 1.0 mm is not restricted provided that their relative distance is > 400 mm. One point defect measuring 1.0-3.0 mm is allowable per square meter. Hairline defects (i.e. scratches) measuring >30 mm are not allowable. Hairline defects measuring < 30 mm are allowable provided that their relative distance is not shorter than 200 mm. Any foreign particles such as hairs are not allowable in laminated glass.

**4. Defects in the Fringe Area**

In laminated glass to be framed, 15 mm from the edge of the glass is deemed the fringe area. Point defects of 5 mm are allowable in the fringe area or around holes. Laminated glass panes not intended for framing must have finished (arised edge with blank spots or ground edge with blank spots), polished, or faceted edges according to standard EN14449 and EN12543 . Thus seeds, blemishes and contract of laminating film etc. are allowable, if they are not detectable when an upright glass pane is inspected from a distance of two meters, against a pale matte-finished wall in daylight (not in direct sunlight).

**5. Overall Bow in Laminated Glass**

The tolerance for overall bow in laminated glass is ± 4 mm/m.



**Quality Specifications for Building Boards**

Quality specifications for building board panes are based on standard EN 438-6. Panes are inspected within distance of 1.5 m. The size of an individual defect shall not exceed 2 mm<sup>2</sup>/m<sup>2</sup>. The allowable total number of surface defects is 20 mm<sup>2</sup>/m<sup>2</sup>, and the allowable cracks on edges totals 3 mm.

**Quality Requirements for Aluminium Profiles Used in Lumon Oy's Products**

**1. Surface Quality**


Profiles must not show obtrusive surface defects when inspected from a distance of 5 m. Visible surfaces of the profile at end product must not show obtrusive defects when inspected from an arm's length (60 cm). According to GSB specifications, the thickness of paint coating shall be 60 - 120 µm.

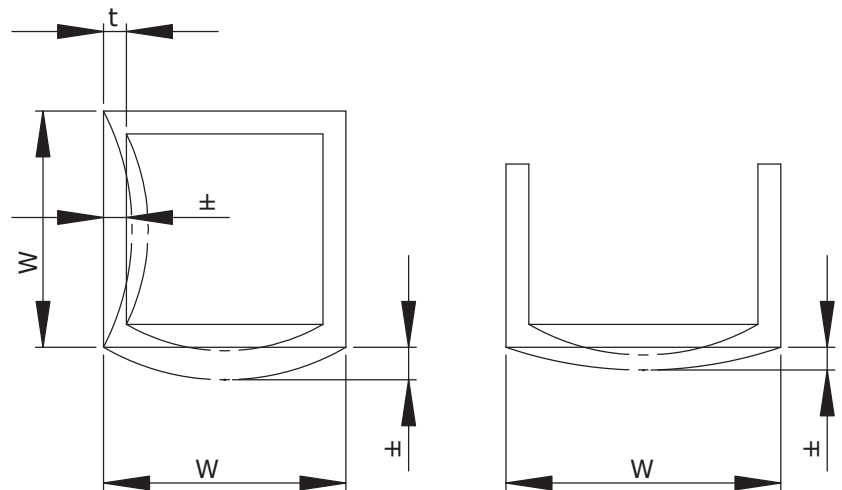
Inspection distances for finished products are:

- 1 m indoors
- 5 m outdoors.

**2. Dimensional and Shape Tolerances of Aluminium Profiles**

Straightness and shape tolerances for the special profiles used in the products are presented in the profile product cards. In standard profiles (L-shaped corners, rectangular profiles etc.) the overall straightness tolerance is ±1,5mm/m, and locally not more than 0,6 mm/ 300 mm. Tolerances for convexity and concavity of profiles are determined according to the shape and width of the profile. The allowable values for open profiles are presented in the last column of the table below. In closed profiles, another factor contributing to tolerance values in addition to profile width is the thickness of the profile bevel (t). Tolerances for closed profiles are presented in the middle column of the table below. W represents the width of the profile bevel.

W [mm]		t [mm]		
min.	max.	max. 5	min. 5	
0	30	±0,30	±0,20	±0,20
30	60	±0,40	±0,30	±0,30
60	100	±0,60	±0,40	±0,40
100	150	±0,90	±0,60	±0,60
150	200	±1,2	±0,80	±0,80
200	300	±1,8	±1,2	±1,2
300	400	±2,4	±1,6	±1,6



**3. Tolerances for Sawing and Tooling, Dimensional Tolerances for a Finished Product**

Tolerance in sawing and tooling aluminium profiles is ± 0,5 mm.

Overall dimensional tolerances of finished Lumon products are:

- Lumon balustrade ± 5 mm
- Terrace door pane ± 1 mm.

**Manufacturer's Warranty Clauses for Lumon products****Warranty Preconditions**

Warranty is valid, providing that the Customer approves the delivery. If the Customer is not present at the time of installing and does not make a complaint within of seven (7) days of the installation, the delivery is considered as accepted and the warranty period begins.

**Warranty Period**

The warranty period for the installation work is two (2) years and for raw material and manufacturing defects five (5) years from the approved delivery or the actual introduction date. Spare parts availability is ten (10) years from the end of production. Wooden parts have a warranty period of two (2) years for raw material and manufacturing defects. For solar blinds and insect nets, the manufacturer grants a two (2) year warranty

**Restrictions of Warranty****Warranty does not cover:**

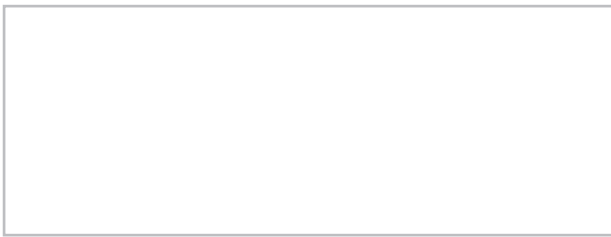
- Cleaning after the approved delivery or after the actual introduction.
- Work resulting from the glazing and the associated structures getting dirty in course of time.
- Glass breakage caused by other than a manufacturing defect.
- Breaking caused by incorrect use or vandalism
- Adjustments, repairs and spare part replacements, due to normal wear and tear, the customer or the inhabitants of improper use of, or the fact that the operating instructions have not been followed
- Damage and malfunctioning caused by subsidence of the surrounding structures, abnormal stress to the glazing, a sudden unpredictable event affecting the glazing or a natural disaster.
- Changes, repairs or re-installations that have been made without the manufacturer's or retailer's approval
- Patterns that occur on the surface of toughened glass
- Indirect costs.

Toughened safety glass must not be installed with any type of films or tapes. If the glass has been retrofitted with films or tapes, Lumon Oy is not responsible for product breakage or damage to property or persons caused by product dropping or costs caused by this.

Toughened glass is manufactured according to EN 12150-1 and EN 572-8 standards.

Laminated glass is prepared in accordance with the standard EN 14449 and EN 12543 .

A glazed balcony / terrace is a not thermally insulated space. It remains a cold outdoor space that is not fully sealed. Balustrade and balcony glazings can have 5-15 mm gaps between the glass panes. Interfaces to other structures can have 10 to 50 mm gaps. When decorating the balcony / terrace the possibility of water, snow, dust and wind entering, must be taken into account.



Valmistaja / Tillverkare / Produsent / Producent / Framleiðandi /  
Producer / Fabricante / Producent / Fabricante / Fabriqué par /  
Производитель

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