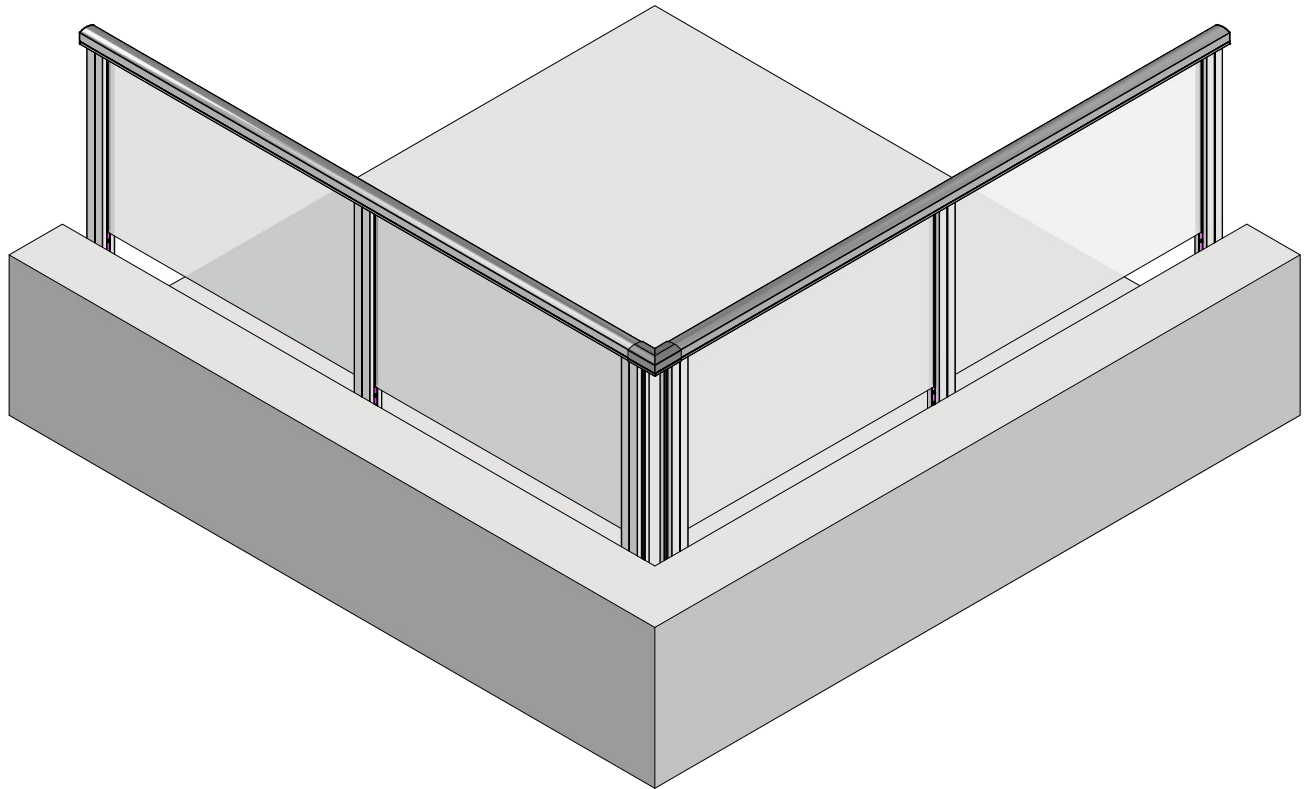
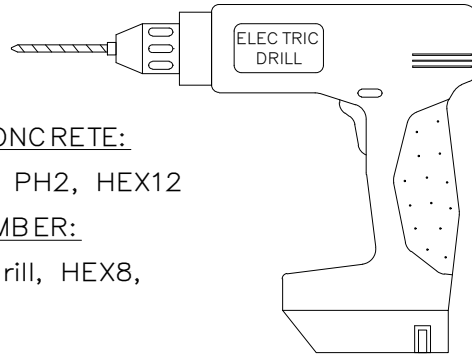


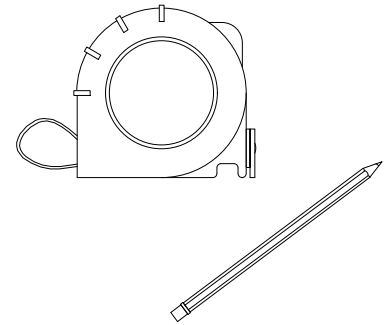
BALCONY RAILING  
**BERGEN**  
PARAPET  
MOUNTED  
INSTALLATION MANUAL



# NECESSARY AND ADDITIONAL HELPFUL ITEMS FOR INSTALLATION:



Drillbits for CONCRETE:  
 SDS plus M12, PH2, HEX12  
 Drillbits for TIMBER:  
 Ø6mm wood drill, HEX8,  
 TX40, PH2

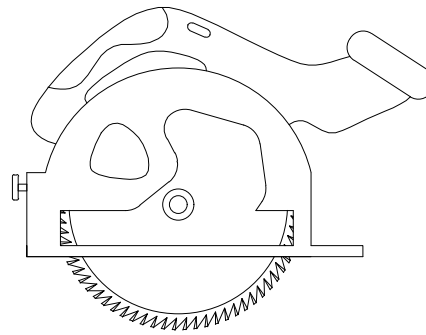


Electric drill for TIMBER  
 Hammer drill for CONCRETE

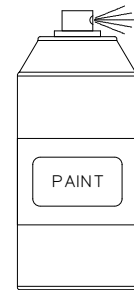
Measuring tape & pencil



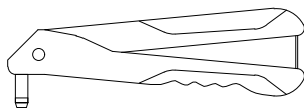
Soapy water spray  
 (Optional)



Angular saw  
 cold cut



Repair paint  
 (Optional)



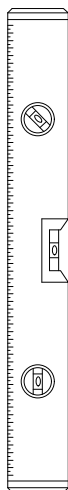
Riveting pliers



## CAUTION

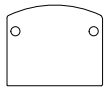
**READ THE WHOLE INSTALLATION MANUAL BEFORE STARTING.**

- It is easy to scratch and/or break glass panels, handle with care, use cut resistant gloves.
- Railings are powder coated, paint can be damaged if profiles are left on uneven surfaces and not handled properly.
- Balcony railing installations have to follow the requirements set by a country's legislation. Innore takes no responsibility of damage and casualties that have occurred due to non-compliant installation.
- Do not install during windy weather conditions. Glass railings are heavy in weight and bear a lot of wind due to a large surface area.
- Safety is number one priority when dealing with heights, always use personal protective equipment.

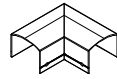


Level

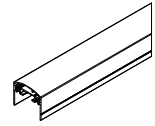
# LIST OF DIFFERENT COMPONENTS:



Handrail 51X43 endplate



Handrail 51X43 corner



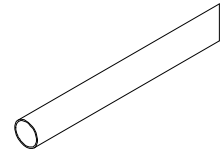
Handrail 51X43



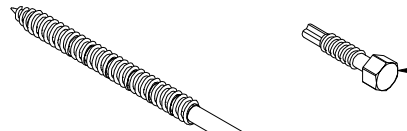
Handrail 42,4X2 end cap



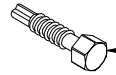
Handrail 42,4X2 corner



Handrail CHS 42,4X2



Self-drill screw, fastening column endplate under the column



TBS EVO screw, connecting column to balcony



Expansion anchor HSA-R w. washer and nut



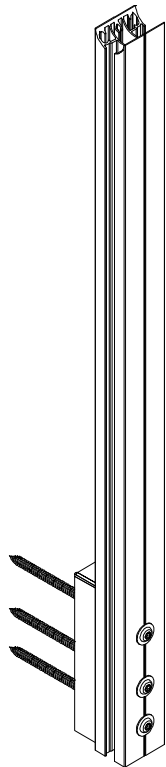
Self-drill screw for handrail fastening



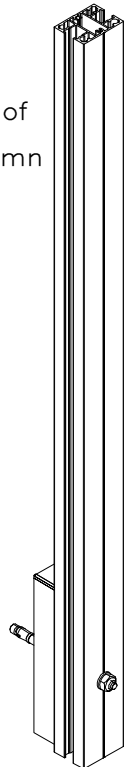
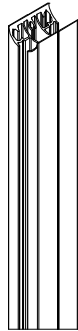
Self-drill screw for fastening 15x15 inside column



Rivet, fastening 51x43 endplates and Holmenkollen endplates on top of column

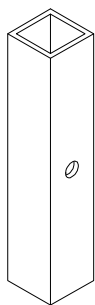


Milled end of railing column for CHS handrail

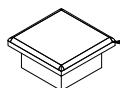


Column with connection to timber

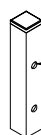
Column with connection to concrete



Distance profile



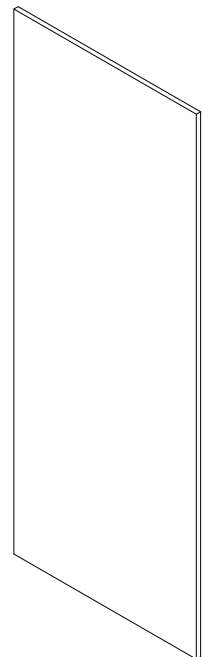
Distance profile end cap



15X15 Inlay with plastic cap

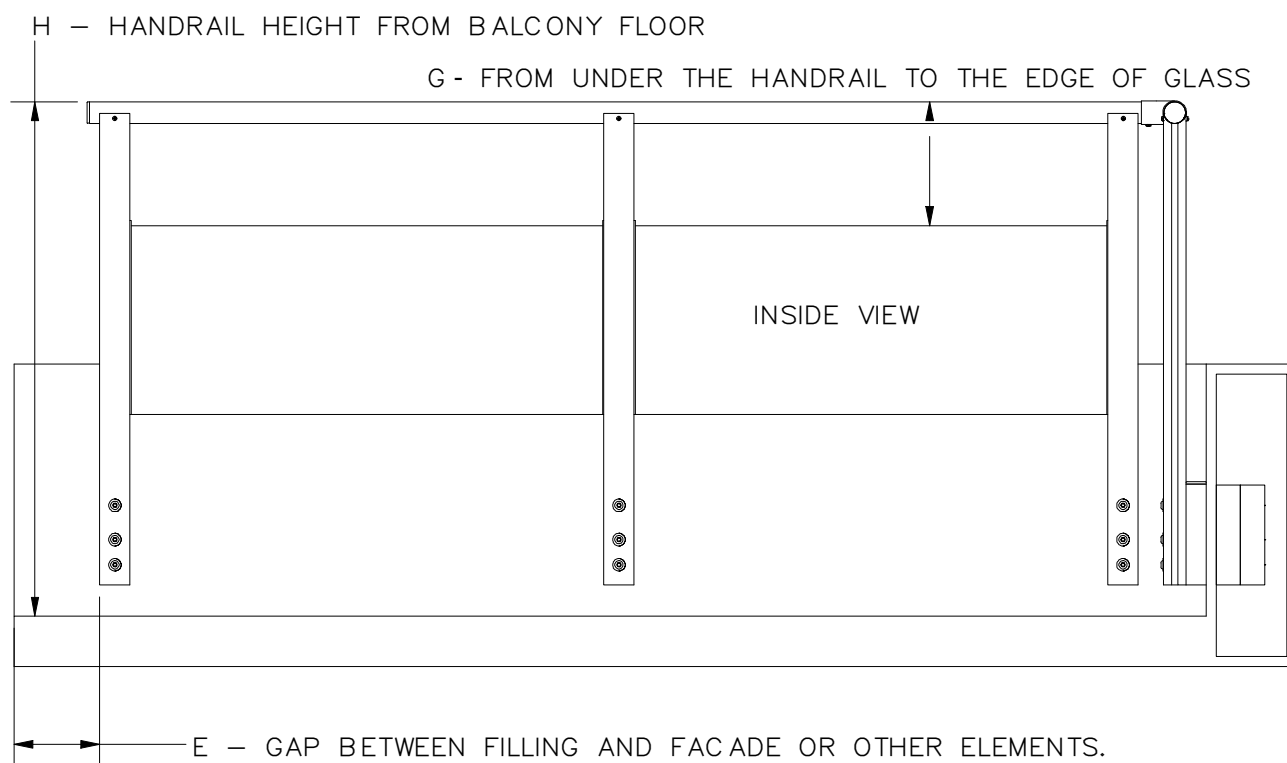


Glass seal, TPV



Glass panel

# OVERALL REGULATIONS



If you ordered from the e-store, you need to cut the column to the correct length.

To calculate the correct length:

1. Measure your glass height.
2. Add the distance between bottom of column to the top of inlay.
3. Add the glass height.
4. Add the G measurement required in your country. (depending on your balcony)
5. Include the portion of the column that is concealed beneath the handrail for its attachment. (For Norway you have to subtract that distance)

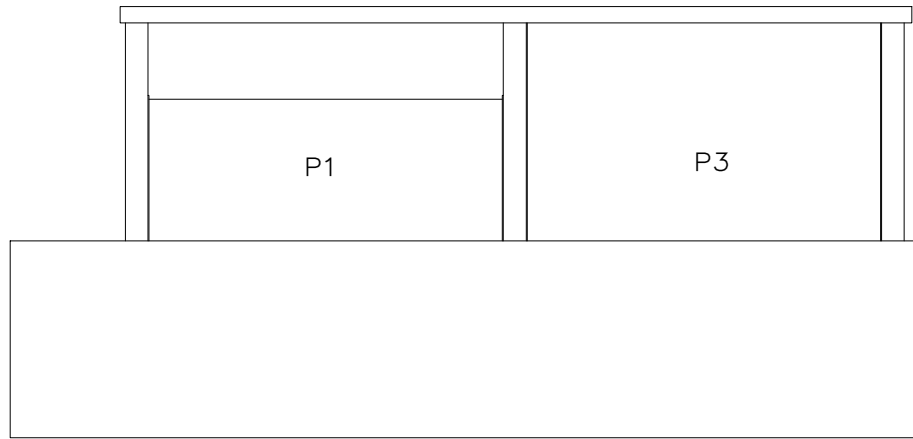
**The sum of these values gives you the column height.**

	Norway	Finland	Estonia	Sweden	Denmark	Germany
G (mm)	MAX 250*	<200	<200	<110 AND >230	MAX 250	MAX 250
E (mm)	MAX 100	MAX 50	MAX 50	MAX 50	MAX 100	MAX 100
H (m)	1 or 1.2	1 or 1.2	1 or 1.2	1.1	1 or 1.2	1 or 1.2

\* Norway has a regulation difference: G – From **TOP** of handrail to the edge of glass

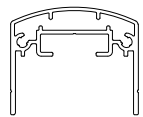
# HANDRAIL AND GLASS LENGTH OPTIONS FOR BOTH BASE STRUCTURES CONCRETE & TIMBER.

## GLASS CHOICE

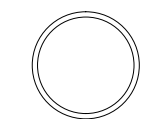
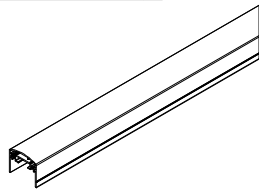


HANDRAIL CHOICE IS DEPENDANT ON GLASS CHOICE.

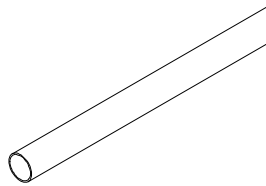
### P1 OPTIONS:



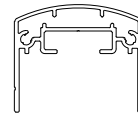
Handrail 51X43



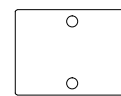
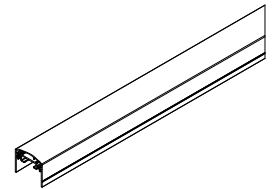
CHS 42,4X2



### P3 OPTIONS:



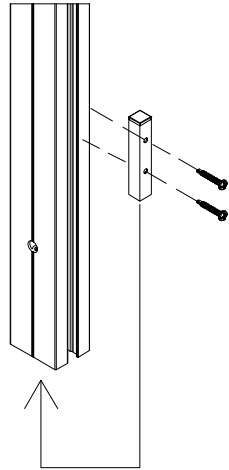
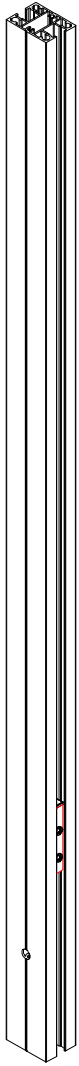
Handrail 51X43



Endcap on top of the column  
(HOLMENKOLLEN)

SEE STEP 6 FOR FURTHER INFORMATION  
ABOUT DIFFERENT TYPES OF HANDRAILS.

# EXTRA INSTALLATION STEPS ARE NEEDED FOR PARTS ORDERED SEPARATELY



If the column has been ordered through the system configurator, the inlay position is pre-set at the correct height and no adjustment is required.

However, if the column has been purchased separately (e.g. without full system configuration), the inlay must be positioned inside the column according to the regulations specified for your country (see relevant section of this manual). The inlay height depends on the glass height. Remove the TPV seal, if necessary, to slide in the inlay, after that put it back. It is fastened with self-drilling screws and includes a plastic cap for the glass to rest on.

Glass seal, TPV

Cut the seal to glass length + 5mm.

Glass seal sits on top of inlay, on plastic cap.

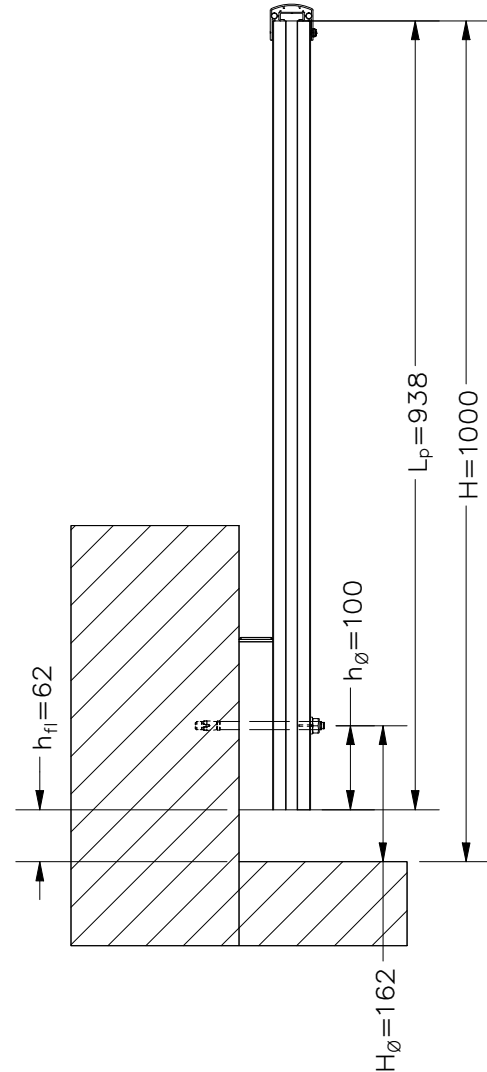
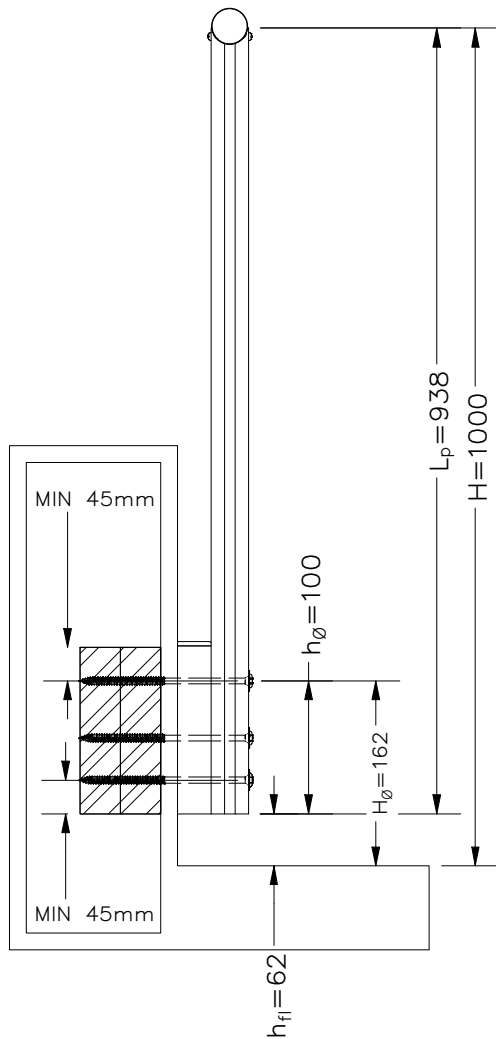


# STEP 1. CALCULATE THE HEIGHT OF DRILL HOLES

MIN. STRUCTURE THICKNESS, TIMBER, 90mm

C25/30 CONCRETE

MIN. 140mm CONCRETE THICKNESS



H = Given measure of the end column height from ground floor

$L_p$  = Given column length

$h_{fi}$  =  $H - L_p$ , Where end result gives column distance from ground

$h_{\emptyset}$  = Given hole is already predrilled

$H_{\emptyset}$  =  $h_{\emptyset} + h_{fi}$  = Hole center from ground

## EXAMPLE OF CALCULATION.

H = 1000mm

$L_p$  = 938mm Column length

$h_{fi}$  =  $H - L_p$  = 62mm Height from floor to bottom of column

$h_{\emptyset}$  = 100mm Hole center from bottom of column

$H_{\emptyset}$  =  $h_{\emptyset} + h_{fi}$  = 162mm Hole center from floor ground

## STEP 2. CALCULATE DESIRED COLUMN

SPACING ( $c/c$ ).  $c/c = \frac{C||C}{\text{DESIRED SPACING NUMBER}}$

Note the glass lengths you have.

$c/c$  measure must be 29mm±2mm longer than glass length.

MAX. RECOMMENDED  $c/c$  IS 1100mm.

Consult with a structural engineer when railing is placed in a windy region or fastening conditions are complicated.

## STEP 3. MARK THE DRILL HOLES TO BALCONY

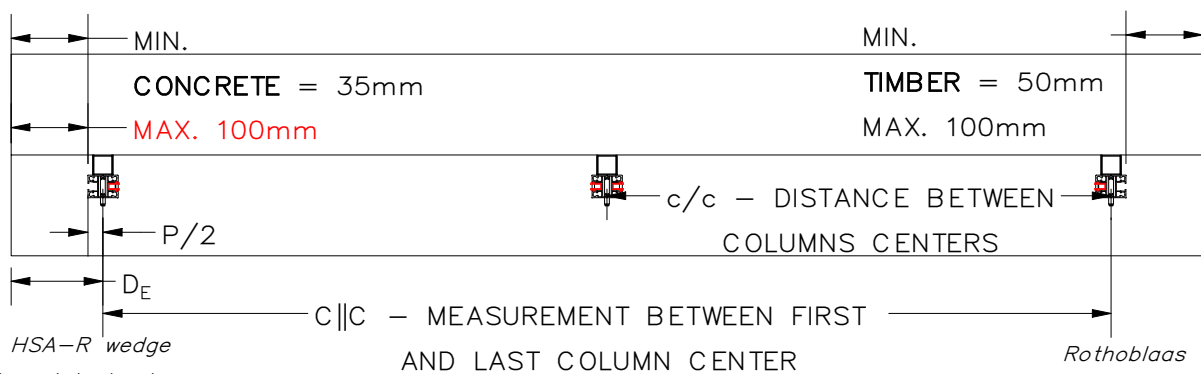
**Important:** ensure all fixing holes follow the handrail height.

If the base surface is not even, the railing will not be straight.

Typically, the lowest point is measured first,

and the same level is then marked across parapet with a laser.

First drill hole center must be the distance  $D_E$  from parapet edge and  $H_0$  (last page) from the ground.



Hilti HSA-R wedge anchor datasheets and information

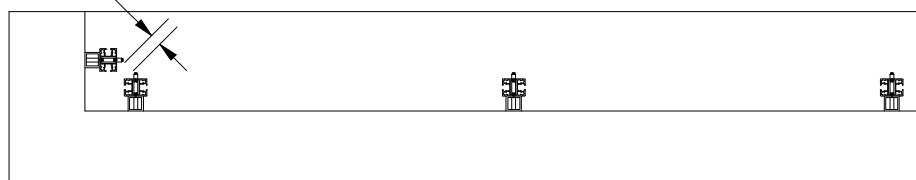
Rothoblaas TBS EVO screw datasheets and information



$D_E$  is in between: A (minimum concrete distance + 1/2 profile) to B (maximum concrete distance + 1/2 profile).



MIN 60mm  
From column edge to column edge



Corner distance from edge to edge has to be over 60mm.

Otherwise there might not be enough space for CHS handrail corner detail installation.

Make sure by trying to fit corner detail between columns in the corner,

if it fits there, you have enough space.

Note that the handrail has to go enough inside corner detail to fasten it.

**INNOR**

PRODUCT:  
BERGEN  
PARAPET

SHEET NAME:  
MEASUREMENTS – PARAPET MOUNTED

DATE:

PAGE:  
8

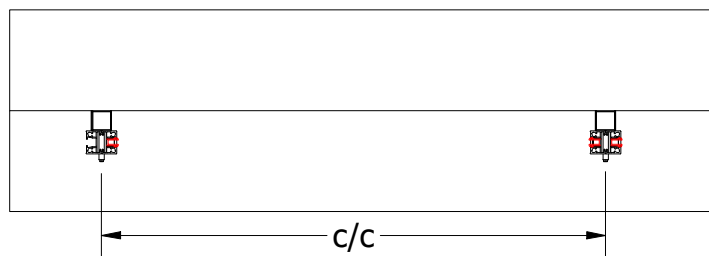
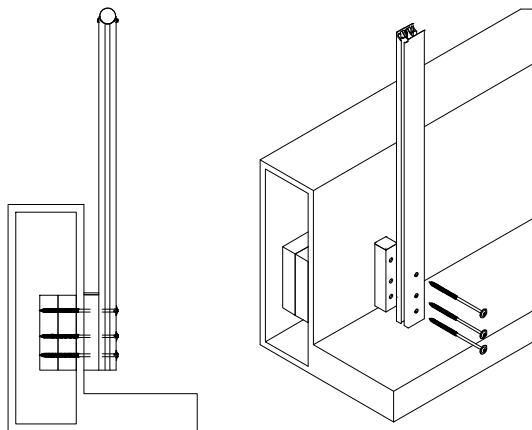
VERSION:

FORMAT:  
A4

# STEP 4. FASTEN COLUMN TO STRUCTURE

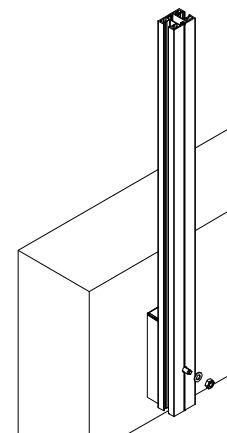
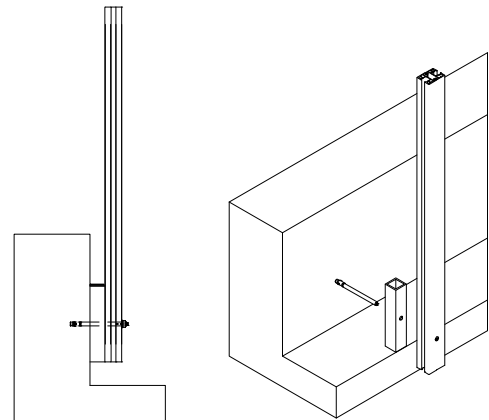
## TIMBER

- Predrill  $\varnothing 6$  holes.
- Align the holes.
- Before fastening timber screws, tip them into roof sealant to eliminate water damage.
- Start with upper screw, fix distance profiles and 45x60 profile.
- Use level before fixing the rest of the screws.
- After each column check distance between columns.
- C/C & c/c Measurements can be with  $\pm 2$ mm tolerance to fit glass correctly between columns.



## CONCRETE

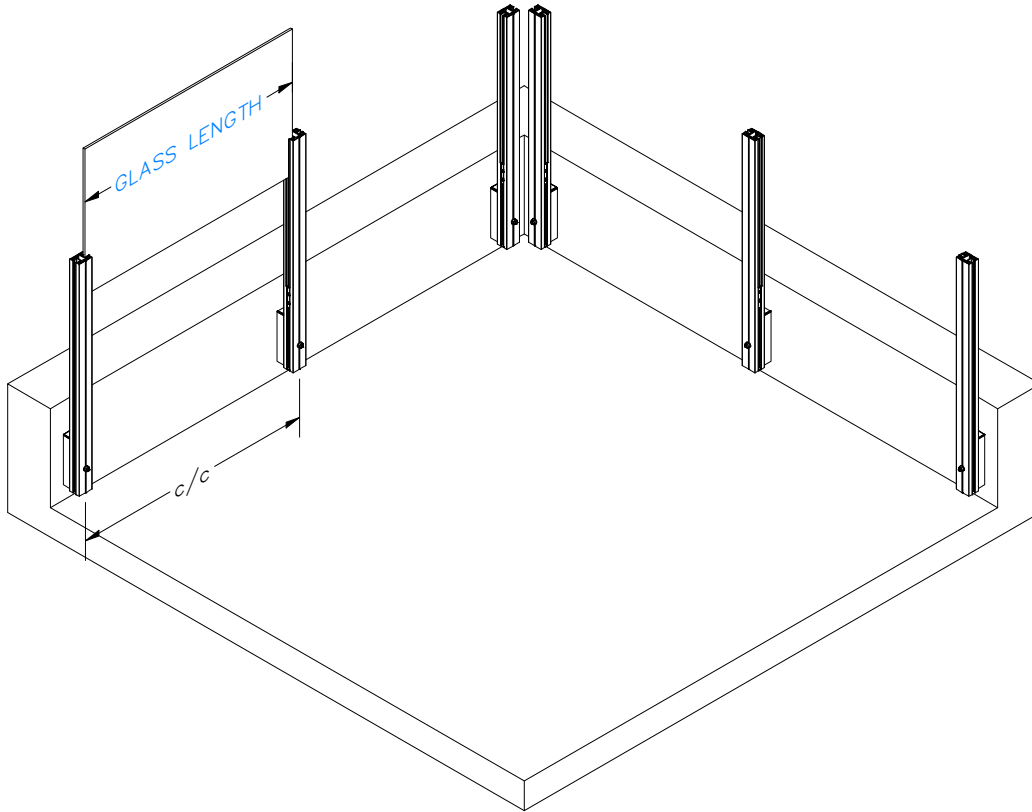
- Mark the drill bit with a marker to set the correct drilling depth (min. 85 mm for expansion anchor).
- Drill  $\varnothing 12$ mm holes.
- Clean the holes with a vacuum cleaner.
- Align the holes.
- Before fixing the anchor, tip the anchor into roof sealant to eliminate water damage.
- Place the anchor, set the distance profile and the column.
- Before final tightening, level the columns.
- After each column, check the distance between columns.
- c/c & C/C measurements can be within  $\pm 2$  mm tolerance to fit glass correctly between columns.



## STEP 5. INSTALL GLASS BETWEEN COLUMNS

CHECK GLASS MEASUREMENTS, REMEASURE COLUMN SPACING TO MAKE SURE THAT GLASS FITS BETWEEN COLUMNS.

c/c, from the centre of column, measure must be 29mm ± 2mm longer than glass length



## GLASS PANEL INSTALLATION GUIDE

**NB! USE GLOVES WHILE HANDLING THE GLASSES. USE OF THE SUCTION CUPS ARE RECOMMENDED FOR LIFTING THE GLASSES.**

1. Use soapy water for sliding glasses into place. Spraying the seals is the easiest and preferred method.
2. Gently lower the panel to its designated slot. While doing that, make sure that the seal does not wrinkle. Also make sure that the glass is lowered simultaneously from each side so it does not go diagonally between the posts, which prevents sliding. It is **recommended to have an assistant** for this step. Glass panels tend to be heavy and react to stronger wind gusts. Having a helping hand will make this safer and easier for you and the glass panels.
3. There are aluminium inlays with plastic caps inside the column for glass panels to rest on. Check again that the glass seal is neatly lodged in its place, lower the glass until it reaches the top of the inlay cap and move on with the next glass panel.
4. Wipe the excess soapy water with cloth if necessary.

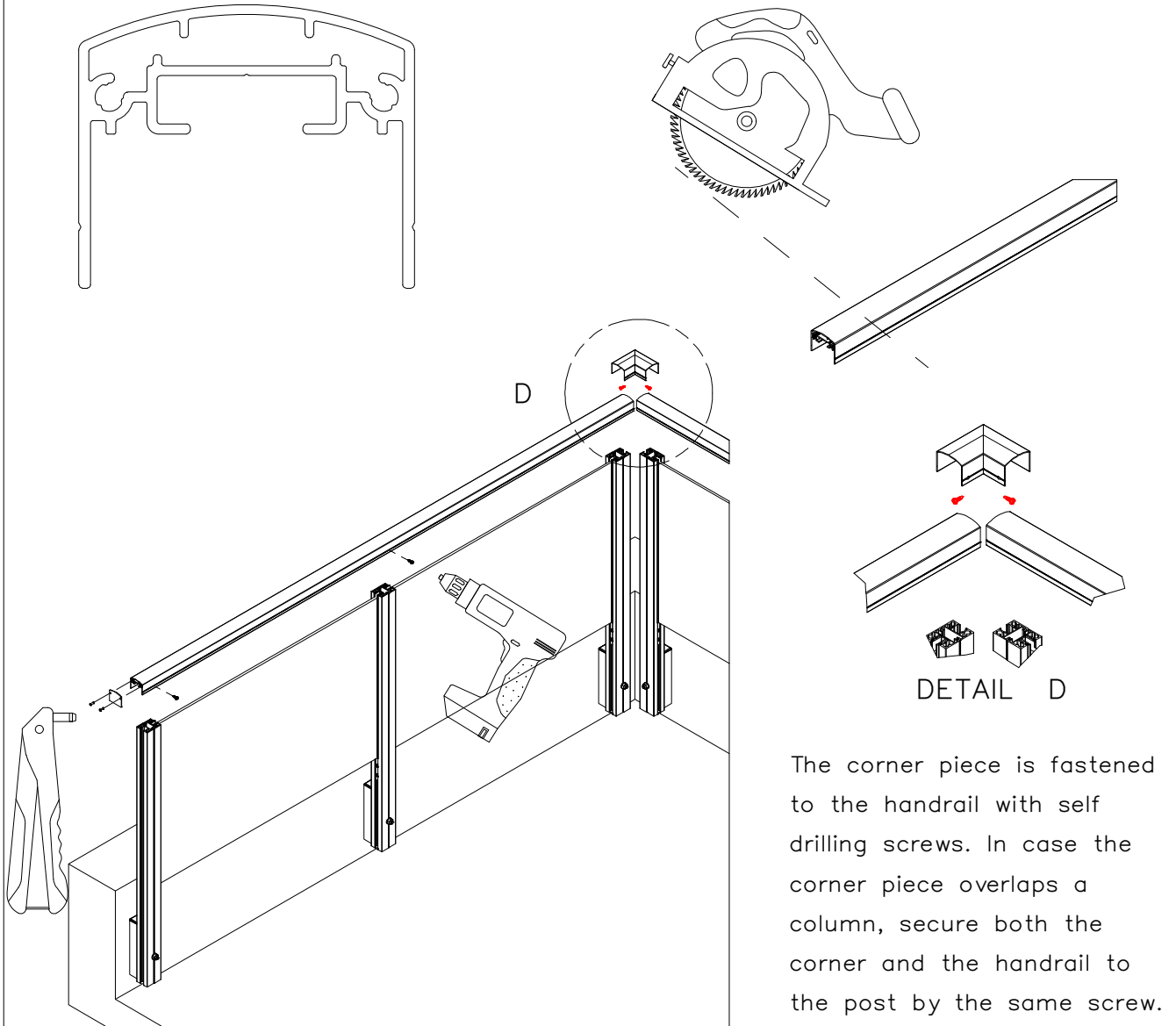
## STEP 6. CUT AND FIX THE HANDRAIL

Cut the handrail to desired length.

Fasten handrail to columns using self-drilling screws.

Optional endplates are installed with rivets.

### HANDRAIL 51X43



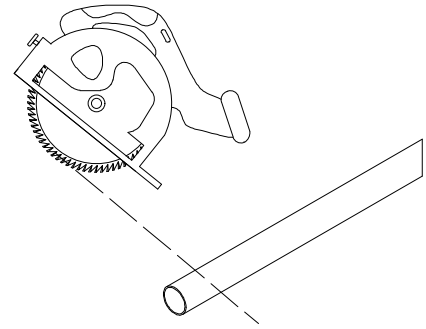
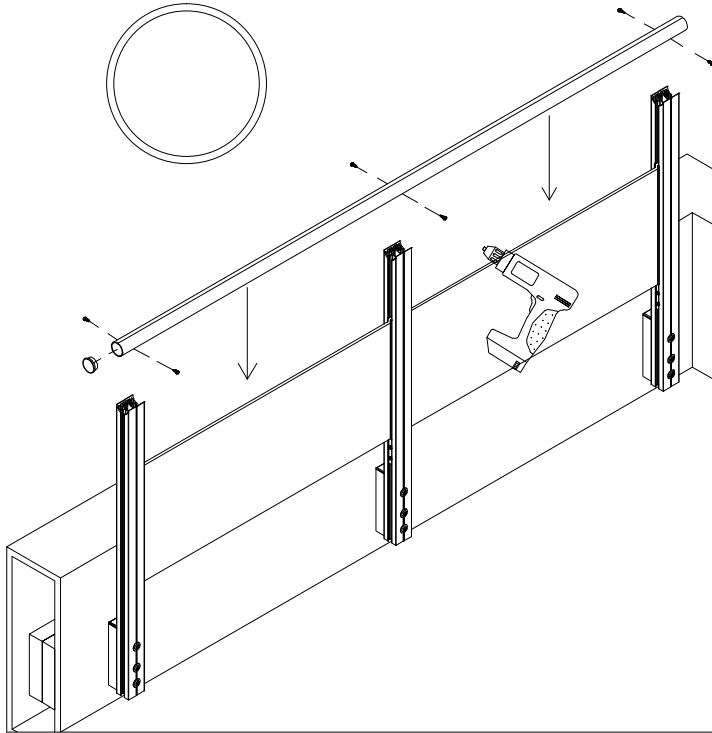
The corner piece is fastened to the handrail with self drilling screws. In case the corner piece overlaps a column, secure both the corner and the handrail to the post by the same screw.

# STEP 6. CUT AND FIX THE HANDRAIL

Cut the handrail to desired length.

Fasten handrail to columns using self-drilling screws.

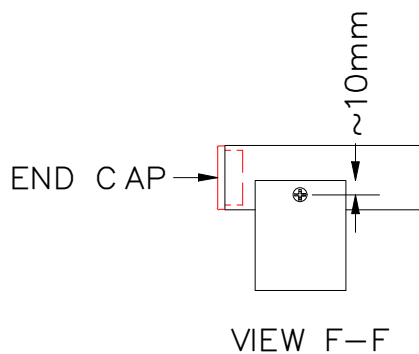
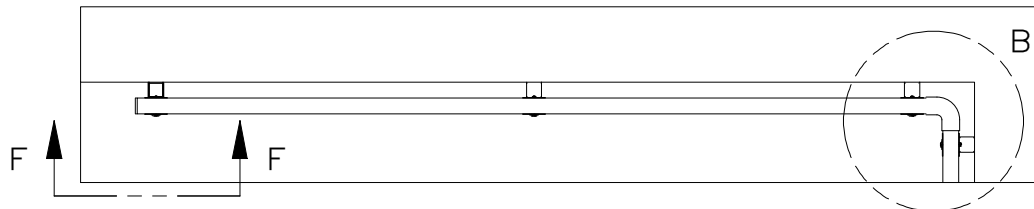
CHS 42,4X2



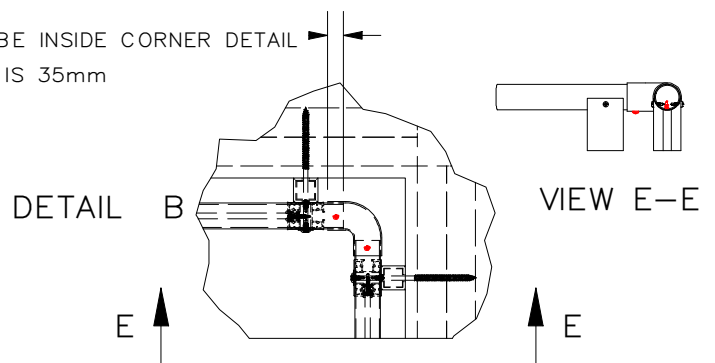
Note that CHS handrail is fastened with self-drilling screws from both sides.

Ensure that the handrail extends at least flush with the column edge so that the fixing screw does not interfere with the end cap.

You need to press the handrail firmly while drilling the screw to prevent it from lifting.



HANDRAIL MUST BE INSIDE CORNER DETAIL  
MIN 20mm; MAX IS 35mm



Handrail has to be at least flush with the column so self drilling screw does not interfere with endcap.

## ROUND HANDRAIL CORNER.

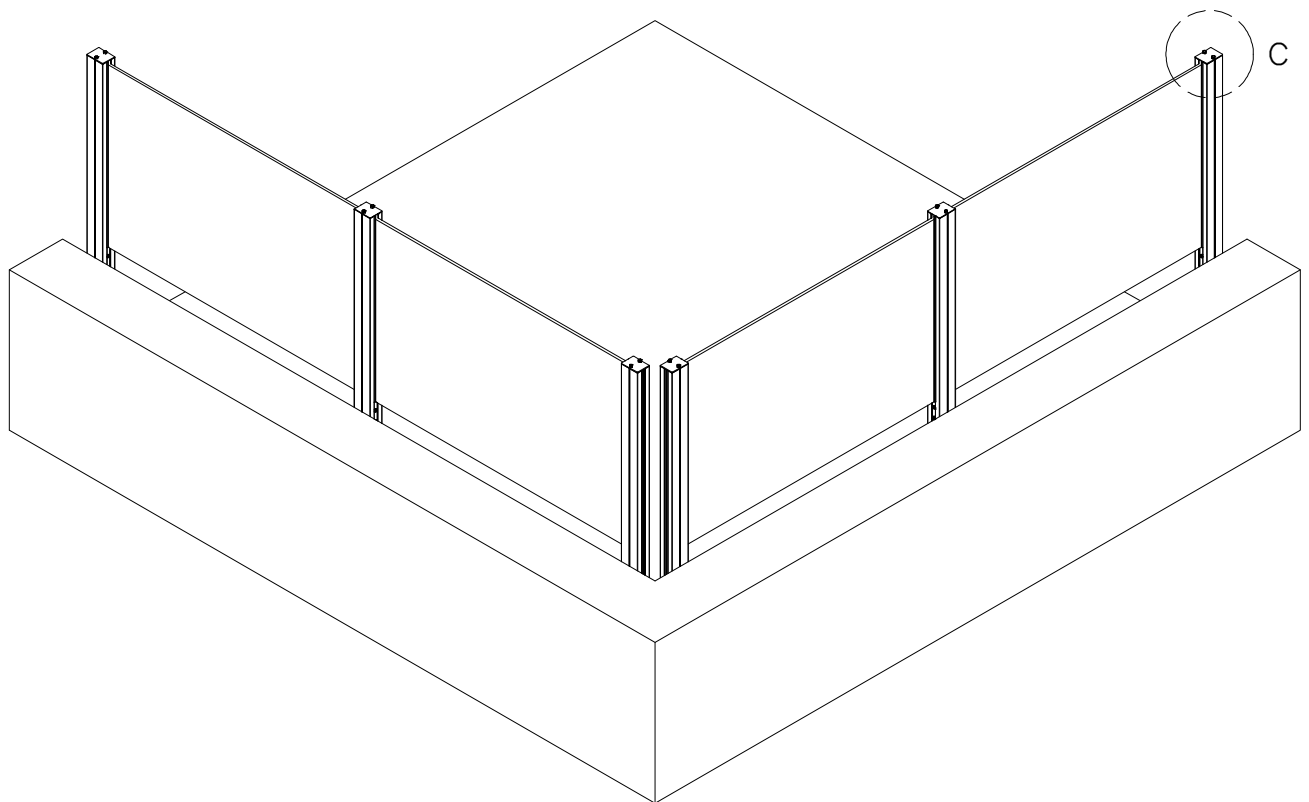
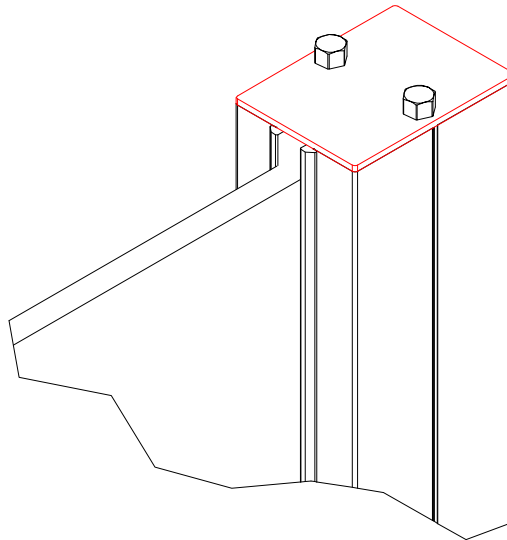
The red-marked screws are used to fasten the corner detail to the handrail. Leave enough room between the handrail end and the column to allow access for the screw underneath or from side.

# STEP 6. WITHOUT HANDRAIL

## HOLMENKOLLEN

This option does not have a handrail, instead it has 2x45x60mm endplates fastened with self-drilling screws to the top of the columns.

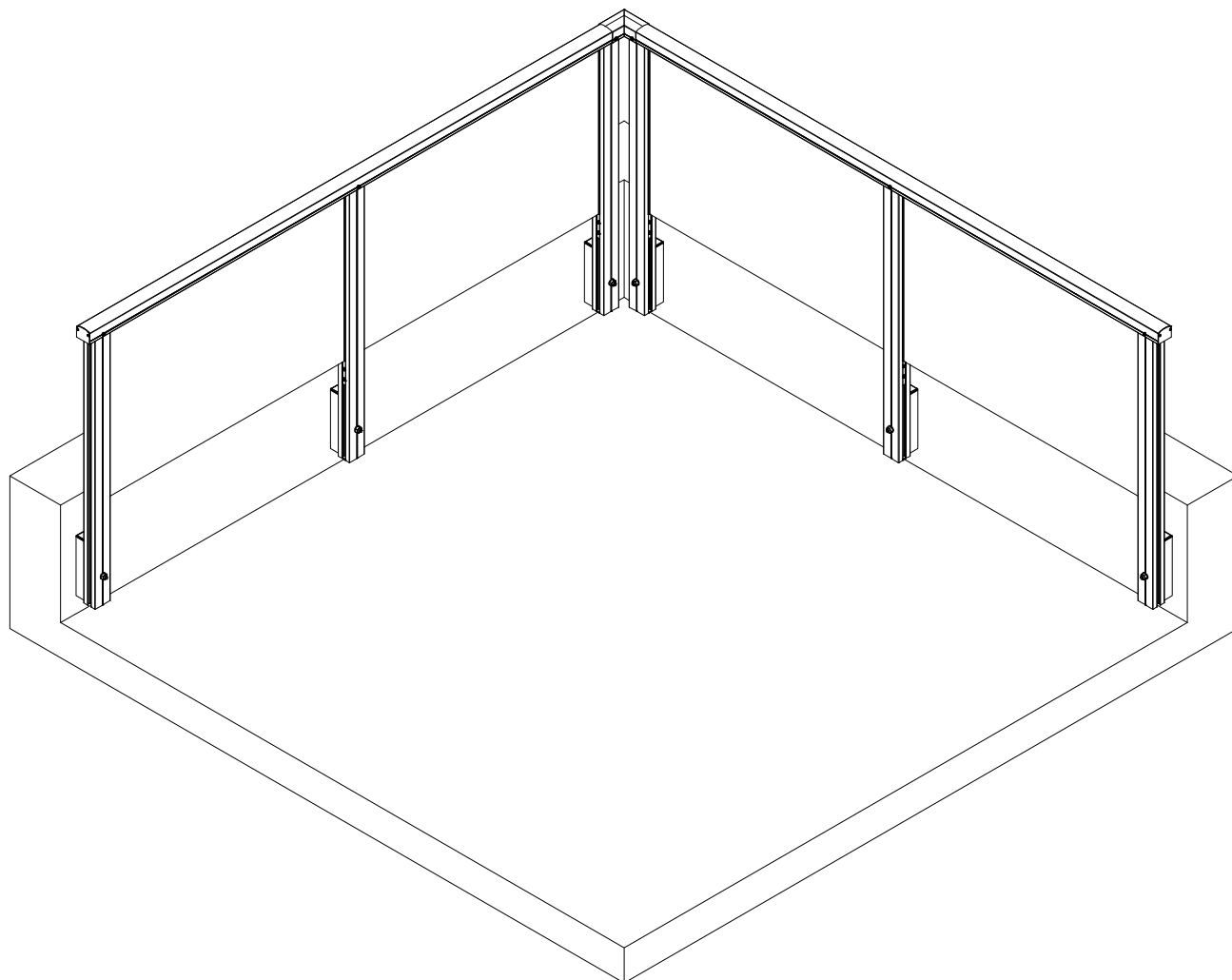
DETAIL C



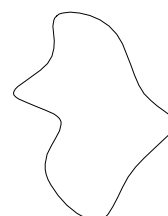
# STEP 7. FINISH THE BALCONY ASSEMBLY

Clean railing with microfiber cloth.

If any damage has occurred during installation to painted parts, repair paint with correct ral code can be used!



RE-PAIN T IF NEEDED



CLEAN THE ASSEMBLY

**Enjoy your new Innore railing and stay safe!**  
Designed for safety, built to last.

Thank you for choosing Innore railing systems – Your Innore railing is designed and manufactured in Estonia with a focus on safety, durability, and timeless design.

Keep your railing in perfect condition:

- Clean regularly with mild detergent and water.
- Check fasteners and joints periodically.
- Avoid harsh chemicals or abrasive cleaners.
- Follow detailed steps in the Maintenance Guide.

For detailed information, see:

Maintenance Guide:

If you have any questions or need assistance, don't hesitate to contact us:

Email: [info@innore.ee](mailto:info@innore.ee)

Website: [www.innore.eu](http://www.innore.eu)

We're here to help you keep your railing safe, beautiful, and long-lasting.  
Stay safe – and enjoy your view!

