1.0 System Description

Qbiss Screen HR is modular façade metal element for ventilated façades (Fig 1.1 & Fig 1.2). The architectural facade has a flat surface with recessed or flush joints. The element is a composite panel made from two pre-painted galvanized steel sheets with joints and honeycomb core. The composition of materials gives elements visibly higher level of surface flatness, high load-bearing capacity, minimal thermal expansion, thermal deflection and it is insensitive to humidity. Prepared joints are intended for positioning elements relative to each other and for fixing with screws. The element is suitable for horizontal and vertical installation.

Fig. 1.1: Qbiss Screen HR facade ventilated facade system

Fig. 1.2: Qbiss Screen HR facade element composition
### 1.1 System Composition

Main parts of the system are rectangular façade elements, corner elements and flashings. The modular façade element dimensions are defined by the distance between supports "R" and façade module width by "M". The façade elements form longitudinal and transversal joints of the façade system. Installation methods are shown on figure (Fig. 1.3 & Fig. 1.4) for horizontal installation and on figure (Fig. 1.5) for vertical installation.

Longitudinal joint is formed by a tongue with dimensions of 23 x 24 mm (width x depth).

Transversal joint consists of the façade element’s transversal edges through which the façade elements are fixed to the structure, using fixing profile HF63 with screws. The completion of the transversal joint is performed by inserting a decorative profile.

---

Fig. 1.3: Horizontal installation

![Fig. 1.3: Horizontal installation](image)

R - distance between supports [raster]
M - module width

Fig. 1.4: Brick structured horizontal installation

![Fig. 1.4: Brick structured horizontal installation](image)

Fig. 1.5: Vertical installation

![Fig. 1.5: Vertical installation](image)
1.2 Element composition

Qbiss Screen HR elements are made in 10 different types prepared for horizontal and vertical installation and two types of visual appearances of the longitudinal joint (Tab. 1.1).

Table 1.1 : Elements types

<table>
<thead>
<tr>
<th>Element type</th>
<th>Element name</th>
<th>Installation method</th>
<th>Longitudinal joint</th>
<th>Made from element</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Qbiss Screen HR B</td>
<td>Horizontal</td>
<td>Recessed</td>
<td>-</td>
</tr>
<tr>
<td>S2</td>
<td>Qbiss Screen HR B</td>
<td>Vertical</td>
<td>Recessed</td>
<td>-</td>
</tr>
<tr>
<td>S3</td>
<td>Qbiss Screen HR B</td>
<td>Horizontal - Brick</td>
<td>Recessed</td>
<td>S1</td>
</tr>
<tr>
<td>S4</td>
<td>Qbiss Screen HR B</td>
<td>Vertical - Brick</td>
<td>Recessed</td>
<td>S2</td>
</tr>
<tr>
<td>S5</td>
<td>Qbiss Screen HR F-B</td>
<td>Horizontal</td>
<td>Flush</td>
<td>-</td>
</tr>
<tr>
<td>S6</td>
<td>Qbiss Screen HR F-B</td>
<td>Horizontal - Brick</td>
<td>Flush</td>
<td>S5</td>
</tr>
<tr>
<td>S7</td>
<td>Qbiss Screen HR B</td>
<td>Horizontal L- and U -shape corner</td>
<td>Recessed</td>
<td>-</td>
</tr>
<tr>
<td>S8</td>
<td>Qbiss Screen HR F-B</td>
<td>Horizontal L- and U -shape corner</td>
<td>Flush</td>
<td>-</td>
</tr>
<tr>
<td>S9</td>
<td>Qbiss Screen HR B</td>
<td>Vertical L- shape corner</td>
<td>Recessed</td>
<td>S2</td>
</tr>
<tr>
<td>S10</td>
<td>Qbiss Screen HR B</td>
<td>Vertical Brick L- shape corner</td>
<td>Recessed</td>
<td>S4</td>
</tr>
</tbody>
</table>

Two basic element types are possible with recessed longitudinal joints “B” (Fig.1.6) and with flush look “F-B” (Fig.1.7). The difference between elements is in length of the tongue joint.

Fig. 1.6: Qbiss Screen HR B
According to installation methods (horizontal, transversal corner and vertical) elements have pre-prepared holes within the back side of steel sheet for weight fixing and also element positioning (lap joints). Differences are shown on figures (Fig.1.8, Fig.1.9 and Fig.1.10). With horizontal installation, the weight fixing points are at the top of the back side steel sheet on the left and right side (Fig. 1.8). Similar is by transversal corner fixing (Fig. 1.9) only holes in laps joints are a different type. The larger transversal corner is supported by intermediate support (Fig. 1.10, Pos. 4). For vertical elements laps, joint is located on all corners (Fig. 1.9).

Fig 1.8 : Horizontal type of facade element (front and back view)
Fig 1.9: Vertical type of facade element (front and back view)

Fig 1.10: Transversal corner type of facade element (front and back view)
Qbiss Screen HR element is made of pre-painted galvanized steel sheet manufactured with a particular procedure to ensure joint shape fixing and sealing. Preprinted steel sheets are glued onto aluminium honeycomb. Protective foils are applied on both sides of the element as protection during handling, transportation, and installation. Only prefabricated rectangular elements are possible with a flat surface.

Table 1.2: Technical data

<table>
<thead>
<tr>
<th>Properties</th>
<th>Qbiss Screen HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element thickness d [mm]</td>
<td>50</td>
</tr>
<tr>
<td>Weight [kg/m²] for element size 1mx1m</td>
<td>Fe 0.7/Fe 0.6</td>
</tr>
<tr>
<td>Core</td>
<td>Aluminium honeycomb</td>
</tr>
<tr>
<td>Core combustibility [EN 13501-1, EN13823]</td>
<td>Non-combustible Class A1</td>
</tr>
<tr>
<td>Element width [mm]</td>
<td>600-1200</td>
</tr>
<tr>
<td>Length [mm]</td>
<td>550-6500</td>
</tr>
<tr>
<td>Reaction to fire of element [EN 13501-1]</td>
<td>A2-s1, d0**</td>
</tr>
<tr>
<td>Suitable for corrosion environment</td>
<td>C2, C3, C4***</td>
</tr>
</tbody>
</table>

* m² weight will increase if specifying smaller dimensions or thicker steel sheet and reduce for larger format from 12.7kg/m² to 18.4 kg/m²
** According to classification report No. P 1150/17-530-4 [ZAG, 2018]
*** Warranties are defined individually by projects

1.3 Accessories

Fig. 1.11: Fixing screw for fixing profile HF 63
Fig. 1.12 Fixing profile HF 63

Fig. 1.13: Fixing screw for fixing lap joints
Fig. 1.14: Transversal gasket

Fig. 1.15: Decorative profile HF 64 for recessed look of transversal joint
Fig. 1.16: Corner support element 60x90x1

Fig. 1.17: Cross spacer for Qbiss Screen HR F-B installation
Fig. 1.18: Cross spacer for Qbiss Screen HR B installation

Fig. 1.19: Installation device for fixing profile
1.4 Installation

1.4.1 Installation options

Qbiss Screen HR cladding elements are indented for horizontal and vertical installation. The main difference is in fixing procedure.

NOTE: Horizontal and vertical elements are not compatible to each other.

**Horizontal installation with aligned joints**

Horizontal installation with aligned joints is the classic and most frequent type of façade elements installation. Horizontal modular façade system is composed of individual façade elements, joined in a horizontal direction (longitudinal) with a tongue - groove system and fixed to the vertical supporting structure. Transversal joints are for fixing of the element (vertical joints) and is a sealing system created with a specially profiled gasket.

**Horizontal installation with shifted vertical joints**

Horizontal installation by shifting or so-called “Brick Structured Installation” is the solution that enables a symmetrical shift (shifting of the vertical joint in the middle of the upper or lower façade element) but also means that the vertical joints can be located anywhere on the longitudinal axis of neighbouring horizontal façade elements.

**Vertical installation (vertical element)**

Vertical installation system is composed of individual façade elements, joined in a vertical direction (longitudinal joint) with a tongue - groove system and fixed to the horizontal supporting structure.
**Vertical Installation with shifted joints in vertical direction (longitudinal direction)**

Vertical installation with shifted longitudinal joints is so-called “Brick Structured Installation”.

Vertical installation system is composed of individual façade elements, joined in a vertical direction (longitudinal joint) with a tongue-groove system and affixed to the horizontal supporting structure.

**1.4.2 Joint visual appearance**

Qbiss Screen system allows combining various combinations of recessed and flush joints by horizontal installation (Fig. 1.24) and by vertical installation (Fig. 1.25).

**Fig. 1.23:** Vertical installation with shifted longitudinal joints

![Vertical installation with shifted joints](image)

**Fig. 1.24:** Joints options for horizontal installation

![Joints options for horizontal installation](image)

**Qbiss Screen HR B**

**Qbiss Screen HR F-B**

**Fig. 1.25:** Joints options for vertical installation

![Joints options for vertical installation](image)

**Qbiss Screen HR B**
1.4.3 Installation tolerances

Installation tolerances are valid for elements temperature between 5 °C to 15 °C. Transversal joint has to be adjusted for temperature outside described range in accordance to Qbiss Screen installation document.

**Qbiss Screen HR B horizontal element**

Fig. 1.26: Recessed transversal joint and recessed longitudinal joints

![Recessed transversal joint and Recessed longitudinal joint](image1)

Transversal joint dimensions: 25 mm x 24 mm

Longitudinal joint dimensions: 23 mm x 24 mm

**Qbiss Screen HR F-B horizontal element**

Fig. 1.27: Recessed transversal and flush longitudinal joint

![Recessed transversal joint and Flush longitudinal joint](image2)

Transversal joint dimensions: 25 mm x 24 mm

**Combination of Qbiss Screen HR B and Qbiss Screen HR F-B**

All variants of joints of horizontal element could be used at the same facade.

Fig. 1.28: Facade element combination Qbiss Screen HR B + Qbiss Screen HR F-B
Recessed longitudinal and recessed transversal joints

Longitudinal joint dimensions: 23 mm x 24 mm
1.5. Element shapes

1.5.1 Dimension convention of corner elements

**Transversal L-shape corner** for B and F-B type of element has length $R_A$ and $R_B$.
The element length is: $R = R_A + R_B + 25\text{mm}$

![Transversal L-shape corner B or F-B element](image)

**Longitudinal L-shape corner** for B and F-B type of element has length $A$ and $B$.
The module for B type of element: $M = A + B + 23\text{mm}$
The module for F-B type of element: $M = A + B + 4\text{mm}$

![Longitudinal L-shape corner B](image) ![Longitudinal L-shape corner F-B](image)
1.5.2 Corner elements shapes

1.5.2.1 Transversal L - shape corner element for horizontal installation

Possibilities:

- Element types: S7, S8
- Optional combining of two different colours
- Element thickness \(d\) [mm]: 50
- Module width \(M\) [mm]: 600 - 1200
- Minimum leg length [mm]: \(R_{A_{\text{min}}} = R_{B_{\text{min}}} = 200\,\text{mm}\) \((R_{A_{\text{min}}} + R_{B_{\text{min}}} = \text{min.} 550\,\text{mm})\)
- Maximum leg length [mm]:
  - \(A_{\text{max}}\), \(B_{\text{max}}\) [mm] = 1000
- Bending angle [deg]: 60° - 175°

Fig. 1.33: L - shape corner

![L shape corner diagram](image)

Fig. 1.34: Isometric view

![Isometric view](image)

1. Transversal L - shape corner
2. Corner support plate

Figure 1.35: The principle for designating the sides of corner elements - shown is a top-down view of four corners of a building with side designations
1.5.2.2 Transversal U - shape corner for horizontal installation

Possibilities:
- Element types: S7, S8
- Optional combining of two different colours
- Element thickness \(d\) [mm]: 50
- Module width \(M\) [mm]: 600 - 1200
- Minimum leg length \(R_{\text{min}}\) = \(R_{C_{\text{min}}}\) = 200 mm
- Maximum element length \(R_{\text{max}}\) = 3000 mm
- Maximum leg length \(R_{A_{\text{max}}}, R_{B_{\text{max}}}, R_{C_{\text{max}}}\): 1000 mm
- Bending angle [deg]: 90°-135°

Figure 1.36: U - shape corner

Fig. 1.37: Isometric view

Figure 1.38: The principle for designating the sides of corner U - shape corners - shown is a top-down view of four corners of a building with side designations.
1.5.2.3 Longitudinal L - shape corner element for vertical installation

Possibilities:
- Element types: S9, S10
- Optional combining of two different colours
- Element thickness d [mm]: 50
- Module width M [mm]: 760 - 1200
- Minimum leg length [mm]:
  - A\textsubscript{min} = 380
  - B\textsubscript{min} = 380
- Maximum leg length [mm]:
  - A\textsubscript{max} = 820
  - B\textsubscript{max} = 820
- Element length R [mm]: 550 - 4000
- Angle between legs 70° - 175°

Fig. 1.39: L - shape corner

Fig. 1.40: Combination two different colours

Fig. 1.41 The principle for designating the sides of corner elements - shown is a top-down view of four corners of a building with side designations
1.0 Qbiss screen typical system

1.1 Components of the Qbiss Screen modular façade system
- Modular façade elements:
  - Different colour options and combinations
  - Qbiss Screen HR B and HR F-B (deep-of-longitudinal joints)
- Screws self-tapping (stainless A2, A4)
- Decorative profiles HF 64
- Standard steel sheet flashings
- Corner elements U and L shape
- Corner flashings

1.2 Installation methods
- Horizontal assembly
- Horizontal installation, shifted horizontally (BRICK)
- Vertical installation
- Vertical installation, shifted vertically (BRICK)

2.0 Additional required elements defined by project and delivery by third party
- Fire barriers
- Electrochemical potential isolation tape
- Perforated profiles
- Substructure
- Isolation
2.0 Design and fixing procedure

2.1 Design procedure

Static proof of Qbiss Screen HR façade elements stability and their fixing is required in accordance to local building regulations and standards.

Basic information required for designing are:

1. Information on the facility (location, type of the facility, purpose of the facility, desired appearance of the facility, geometry, size etc.).

2. Façade element information:
   - Modular width
   - Element length
   - Orientation of elements
   - Aligned or shifted joints
   - Colour of element

2. Façade system elements:
   - Substructure material
   - Construction for details (base point, windows opening, ...)
   - Building details

3. Loads
   a. Wind load:
      - Basic wind load
      - Height of the façade above the terrain
      - Position on the façade (edge areas)
   b. Self weight load
      - Element size

4. Design criteria:
   - Load-bearing capacity of element (ULS)
   - Load-bearing capacity of end support (ULS), support width \( b_{\text{min}} \)
   - Deflection limit check \( L/100 \) (SLS) or is defined by project requirements
   - Weight and wind load fixing (ULS)

5. Corrosion resistance
   - Corrosion environments
   - Life span of system
   - Element and system corrosion protection

6. Fire barriers
   - Design in accordance with national regulations and project requirements

End support load bearing capacity depends on support width and must be determined by structural calculation. Minimal width of support is \( b_{\text{min}} = 50 \text{ mm} \) shown on [Fig2.1].

Fig 2.1: Elements width of support

1. Qbiss Screen element
2. Fixing screw (wind load)
3. Gasket profile
4. Fixing aluminium profile
5. Decorative aluminium profile
6. Substructure
7. Electrochemical potential isolation tape
2.2 Horizontal installation fixing

Installation procedure consists of positioning, fixing and installation of sealing elements. To ensure constant space between two elements, during installation, cross spacers may be used (Fig. 2.2).

Fig 2.2: Connection to the substructure

After positioning facade elements with the help of the spacer the panel is fixed and positioned with two screws on each side. After installation, the next element with the same fixing procedure is in a transversal joint with screws and aluminium fixing profile. Aluminium fixing profile must be positioned in the middle of the joint to allow enough gap for thermal expansion of elements. Proper position can be achieved with positioning of the device. The first step is of an insertion aluminium profile into the device, placing device with the profile into the groove, fixing aluminium profile with a screw and removing the device. After fixing of all aluminium profiles, gasket with a decorative profile is inserted into transversal joint Fig. 2.3. The procedure is for horizontal and vertical installation.

Fig 2.3: Procedure for installing aluminium fixing profile in transversal joint
Primary is element fixed with screws through the lap joints in steel sheet for weight load and for positioning (Fig 2.4).

Fig 2.4: Fixing element through back side steel sheet-lab joint

Secondary is the element fixed in the transversal joint with load bearing profiles (Pos.5, Fig 2.5) and screws which have the function of carrying wind load. Fixing design allows thermal expansion of elements. Number of fixing profiles has to be defined by structural calculation in accordance to project requirements with the requirements of the project [Fig 2.5].

Fig 2.5: Fixing of panel in transversal joint

<table>
<thead>
<tr>
<th>Position</th>
<th>Fixing function</th>
<th>Self-drilling screw (A4)</th>
<th>Quantity per elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Weight fixing</td>
<td>5.5 x 30</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Wind load fixing</td>
<td>5.5x30 + aluminium profile</td>
<td>3 - 5</td>
</tr>
</tbody>
</table>
Figure [Fig 2.6] shows required distance between fixings, depending on element width [Table 2.2]. Distribution of fixing profile and screws is the same for horizontal and vertical installation.

Fig 2.6: Number of fixing elements depends on element width (M)

Table 2.2: Distance between fixing elements

<table>
<thead>
<tr>
<th>Element Width</th>
<th>N</th>
<th>(M-373mm)/4</th>
<th>(M-354mm)/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>813mm-1200mm</td>
<td>5</td>
<td>(M-373mm)/4</td>
<td>(M-354mm)/4</td>
</tr>
<tr>
<td>703mm-812mm</td>
<td>4</td>
<td>(M-373mm)/3</td>
<td>(M-354mm)/3</td>
</tr>
<tr>
<td>600mm-702mm</td>
<td>3</td>
<td>(M-373mm)/2</td>
<td>(M-354mm)/2</td>
</tr>
</tbody>
</table>
### 2.3 Construction requirements for Qbiss Screen HR

#### Table 2.3.1: Construction requirements for Qbiss Screen HR

<table>
<thead>
<tr>
<th>Material</th>
<th>S min (mm)</th>
<th>B min (mm)</th>
<th>Screw type</th>
<th>Nkr [kN] Wind load</th>
<th>Vkr [kN] Weight</th>
<th>Reference to ETA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td>3</td>
<td>50</td>
<td>Ejot JT4 6-5.5-30 A2</td>
<td>2.16</td>
<td>2.88</td>
<td>ETA-10/0200</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>Ejot JT9 6-5.5-30 A4</td>
<td>1.36</td>
<td>2.65</td>
<td>ETA-10/0200</td>
</tr>
<tr>
<td>Steel</td>
<td>2</td>
<td>50</td>
<td>Ejot JT3 6-5.5-35 A2</td>
<td>2.60</td>
<td>4.40</td>
<td>ETA-10/0200</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>Ejot JT6 6-5.5-35 A4</td>
<td>2.60</td>
<td>4.40</td>
<td>ETA-10/0198</td>
</tr>
<tr>
<td>Inox</td>
<td>2</td>
<td>50</td>
<td>SFS SX5-5.5x 35 A2</td>
<td>2.87</td>
<td>4.31</td>
<td>ETA-10/0198</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>SFS SX5-5.5x 35 A4</td>
<td>2.87</td>
<td>4.31</td>
<td>ETA-10/0198</td>
</tr>
</tbody>
</table>

* Screw tested in Trimo for assembly. ETA not available
** According to project and offer

#### Load bearing capacity of Qbiss Screen HR joint [kN] ***

<table>
<thead>
<tr>
<th>No. of fixing profiles per double sided joint **</th>
<th>3 fixing profiles*</th>
<th>4 fixing profiles*</th>
<th>5 fixing profiles*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force per joint length $F_{ULT,5%\text{joint}}$</td>
<td>17.06</td>
<td>21.43</td>
<td>22.63</td>
</tr>
<tr>
<td>Force per 1 fixing point $F_{ULT,5%,1\text{FIX}}$</td>
<td>5.69</td>
<td>5.36</td>
<td>4.53</td>
</tr>
</tbody>
</table>

* Standard aluminium profile
** Maximum quantity of fixing profiles is 5
*** Values for suction obtained under static load calculated at 5% fractile value per 1 fixing profile at M1200

#### Load bearing capacity of Qbiss Screen HR Self weight fixing $F_{ULT,5%,SW}$ [kN] *

<table>
<thead>
<tr>
<th>Layout and location on the panel</th>
<th>Horizontal - left</th>
<th>Horizontal – right</th>
<th>Vertical</th>
<th>Vertical (1 screw)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.78</td>
<td>2.85</td>
<td>6.34</td>
<td>2.96</td>
</tr>
</tbody>
</table>

* Test performed with 2 screws except for vertical (1 screw)

Fig 2.4: Fixing element through back side steel sheet-lap joint

1. Qbiss Screen HR element
2. Substructure
3. Screw for lab joint fixing
1. Lap joint flanges with stub ends
2.4 **Vertical installation fixing**

Installation procedure consists of positioning, fixing and installation of sealing elements. To ensure constant space between Qbiss screen elements, special cross and linear spacers need to be used (Fig. 2.7).

**Fig 2.7:** Connection to the horizontal substructure

1. Qbiss Screen element  
2. Substructure  
3. Fixing screw for weight load  
4. Fixing screw  
5. Fixing profile  
6. Cross spacer  
7. Decorative profile with gaskets  
8. Positioning device for fixing profile linear spacer

**Fig 2.8:** Location of fixing in joint

1. Qbiss Screen element  
2. Substructure  
3. Fixing screw for weight load
First step is fixing elements on both sides with one or two screws depending on the size of the element (Table 2.2) through back side of steel sheet into substructure in order to position the element. Positions of screws must be in the middle of elongated holes (Fig 2.9).

Table 2.3: Screws for elements fixing

<table>
<thead>
<tr>
<th>Position</th>
<th>Fixing function</th>
<th>Self - drilling screw (A4)</th>
<th>Quantity per elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Weight fixing</td>
<td>5,5 x 30</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Wind load fixing</td>
<td>5.5x30 +aluminium profile</td>
<td>3 - 5</td>
</tr>
</tbody>
</table>

Fig 2.9: Connection to the horizontal substructure
3.0 Installation requirements

3.1 Installation and checking of the basic structure or substructure

1. Base support angle profile must be horizontally aligned, otherwise, the vertical joints will not be of the same width.
2. Permissible tolerances of the substructure for Qbiss Screen façade are shown below [point b]. and apply to vertical axes.
3. For already installed substructure, the distances between vertical support must be checked
4. The secondary substructure must be installed as per instructions in Technical document with a tolerance of ±2 mm!

The functionality of Qbiss Screen façade system can only be guaranteed if it is installed according to the following requirements.

The following MUST be provided:

- a) HORIZONTAL ALIGNMENT OF THE BASE SUPPORT ANGLE - perform measurements to ensure that it is level

This is crucial for ensuring that the contact surface of the first row of Qbiss Screen façade elements is level, otherwise, irregular vertical placing of Qbiss Screen façade elements will occur, causing size increases of transversal joints. As a consequence, it will be impossible to finish the transversal joints.

Figure 3.1: Measurement procedure for ensuring the horizontal alignment of the base support angle

Permissible deviations of alignment for base angle profile must satisfy two conditions (A and B):
A. Permissible deviation along the whole length of individual Qbiss One Screen façade elements is +/- 0.5 mm.
B. Permissible deviation of complete building alignment is +/-2 mm.
b) VERTICAL ALIGNMENT OF THE STRUCTURE/SUBSTRUCTURE perpendicular to facade surface - perform measurements to ensure that it is leveled

This is crucial for ensuring that the corner elements connect properly - otherwise, façades will not connect perpendicularly but at an angle, causing the CORNER FACADE ELEMENTS TO STACK IMPROPERLY. Consequently, it is impossible to finish the corner of the Qbiss Screen façade system, leading to loss of visual appearance of the façade.

![Figure 3.2: The measurement procedure ensuring vertical alignment of the structure/substructure](image)

\[ \Delta 5 = \pm \frac{H}{1000} \]

or

\[ \Delta 7 = \pm 2 \text{ mm} \]

c) FACADE RASTER - distances between vertical supports and the total distance of the structure/substructure - performing the measurement to check for eventual deviations from predicted position.

Distances between vertical supports differ between those specified in the design and the actual distances. THEREFORE, BEFORE INSTALLING Qbiss Screen FACADE ELEMENTS, DEVIATIONS MUST BE MEASURED. Deviations can be compensated using Qbiss Screen façade elements with the transversal joint tolerance by compressing or expanding the area by +2 / -1 mm.
Deviations of vertical substructure in ground plan from the building axis in facade direction – $\Delta 1$

$\Delta 1 = \pm 2\text{mm}$

Deviation of the distance between two adjacent verticals in ground plan – $\Delta 2$

$\Delta 2 = \pm 2\text{mm}$

Permissible deviations for distances between verticals are +/- 2 mm.

The transversal joint of the Qbiss Screen façade system allows some tolerance for façade structure/substructure deviations, of up to +2 / -1 mm.

This is crucial to ensure that all transversal joint are of the right width. Otherwise, narrowing or widening of the joint can occur. As a consequence, it will be impossible to finish the transversal joints.

Figure 3.4: Deviations of substructure for Qbiss Screen element
Deviations of the vertical line to the ideal line connecting its adjacent verticals – Δ3
Δ3 = ± 2mm
Rotation of the vertical substructure according to the liner line – Δ4
Δ4 = ± 0,5°
Deviations from the vertical line perpendicular to the facade surface H – Δ5
Δ5 = ± H/1000 mm
Deviations of the vertical substructure length – Δ6
Δ6 = ± 10mm
Curvature of the vertical substructure according from the center line – Δ7
Δ7 = ± 2mm

3.2 Installation procedure

Installation is preferably initiated using a Qbiss Screen corner element at the outer boundary axis of the building. Alternatively, installation can start with the first adjacent Qbiss Screen façade element and the bottom row. Regardless of installation direction, the first row on the main beam should be constructed and on it all the other rows should be installed as “pyramidal” system, as shown on (Fig. 3.6 & 3.7) (horizontal installation) and the same procedure is for vertical installation.

![Figure 3.6: Installation procedure from the LEFT to the RIGHT](image)

![Figure 3.7: Installation procedure from the RIGHT to the LEFT](image)

NOTE:
Before starting the installation, tolerances and actual straitness of substructure has to be prepared or checked to ensure levelling and flatness of facade.
3.3 Preparing element prior to installation

Removing protective foil

A protective foil is for protection of varnished surfaces against minor scratches caused during transport, handling, and assembly, is applied on both sides of Qbiss Screen façade elements. Immediately before the placement of the Qbiss Screen façade element to the installation location it is necessary to:
1. Completely remove protective foil from element’s back side
2. Partially remove protective foil from the front side of elements around fixing locations and both longitudinal joints (Fig. 3.8) and remove completely when installation is completed.

Fig 3.8: Removal of the protective foil

NOTE:
- A protective standard self-adhesive protective foil on sheet metal must be removed within three months
- If the Qbiss Screen façade elements are to be stored in the open, they should be protected against the sun; otherwise the complete removal of foil is no longer possible.
- During installation, the foil must be removed from all joints of the Qbiss Screen façade element.
- After finishing installation of the façade foils have to be remove completely.

Elements cutting

Qbiss Screen façade elements are made in accordance with project requirements and their cutting is generally not allowed! Cuttings are allowable to be made only with sheet metal shears and saws that do not overheat reprinted galvanized steel sheet.

Fig. 3.9: Elements cutting is allowed with sheet metal shears and saws

Recommended use

Restricted use

NOTE:
- Marking and scratching with nails or similar sharp objects that can damage the protective paint layer is strictly prohibited.
- Use of any disc grinding machines and welding devices destroys the anti-corrosion protection.
- Small metal particles that appear as a result of cutting and drilling MUST be immediately removed from the surfaces of façade elements by completion of the day’s work at the latest (metal particles exposed to moisture cause corrosion).
3.4 Handling and Lifting of Façade Elements

Qbiss Screen elements must be handled carefully during transport and unloading. Do not move open pallets. Upon delivery, palettes must be examined any damage due to moisture (elements that have become wet must be dried to avoid the formation of spots for corrosion). Any damage must be reported immediately and confirmed by the forwarding agent.

Carry elements vertically. Wear protective gloves to prevent injury and avoid making any marks on elements. Individual elements must be handled from the palettes by two man team, standing on each side of the element. The lifting is possible with vacuum griper (Fig. 3.10) or with hand grippers.

Fig. 3.10: Vacuum gripper
4.0 Horizontal Installation details

4.1 Base detail

Fig. 4.1: Base detail

1. Qbiss Screen façade element
2. Drip flashing
3. Perforated profile (not scope of supply)
4. Element supporting profile
5. Horizontal fire barrier (not scope of supply)
6. Fixing screw
7. Electrochemical potential isolation tape (not scope of supply)
8. Substructure (not scope of supply)

Fire barrier is mandatory above base detail!

4.2 Horizontal fire barrier between slabs

Fig. 4.2: Fire barrier between slabs

1. Qbiss Screen façade element
2. Horizontal fire barrier (not scope of supply)
3. Electrochemical potential isolation tape (not scope of supply)
4. Substructure (not scope of supply)
4.3 Vertical fire barrier

Fig. 4.3: Vertical fire barriers

1. Qbiss Screen façade element
2. Vertical fire barrier (not scope of supply)
3. Fire resistance mineral wool (not scope of supply)
4. Electrochemical potential isolation tape (not scope of supply)
5. Substructure (not scope of supply)

4.4 Parapet detail

Fig. 4.4: Parapet detail

1. Qbiss Screen façade element
2. Parapet cap
3. Perforated flashing (not scope of supply)
4. Cap support profile (not scope of supply)
5. Rivet (not scope of supply)
6. Fixing screw
7. Substructure (not scope of supply)
8. Electrochemical potential isolation tape (not scope of supply)
4.5 Corner element

Fig. 4.5: Prefabricated sharp-edge corner

1. Qbiss Screen facade element
2. Transversal L - shape corner element
3. Corner supporting element

4.6 Sharp-edge corner flashing and round corner flashing

Fig. 4.6: Preformed sharp-edge corner flashing

1. Qbiss Screen facade element
2. Sharp - edge corner flashing
Fig. 4.7: Preformed round-corner flashing

1. Qbiss Screen facade element
2. Round-corner flashing
5.0 Vertical Installation details

5.1 Base detail

Fig. 5.1: Base detail

1. Qbiss Screen façade element
2. Drip flashing
3. Decorative profile
4. Fire barrier (not scope of supply)
5. Horizontal substructure (not scope of supply)
6. Fire barrier (not scope of supply)
7. Vertical substructure (not scope of supply)
8. Electrochemical potential isolation tape (not scope of supply)

! Fire barrier is mandatory above base detail!

5.2 Horizontal fire barrier between slabs

Fig. 5.2: Fire barrier between slabs

1. Qbiss Screen façade element
2. Decorative profile
3. Electrochemical potential isolation tape (not scope of supply)
4. Horizontal substructure (not scope of supply)
5. Vertical substructure (not scope of supply)
6. Fire barrier (not scope of supply)
5.3 Vertical fire barrier between slabs

Fig. 5.3: Fire barrier between slabs

1. Qbiss Screen façade element
2. Decorative profile
3. Electrochemical potential isolation tape (not scope of supply)
4. Horizontal substructure (not scope of supply)
5. Vertical substructure (not scope of supply)
6. Fire barrier (not scope of supply)
7. Fire resistance mineral wool (not scope of supply)

5.4 Parapet detail

Fig. 5.4: Parapet detail

1. Qbiss Screen façade element
2. Parapet cap
3. Cap support profile (not scope of supply)
4. Substructure (not scope of supply)
5. Electrochemical potential isolation tape (not scope of supply)
6. Perforated steel sheet (not scope of supply)
7. Fixing profile with screw
8. Decorative profile
5.5 Corner Element

Fig. 5.5: Prefabricated sharp-edge corner

1. Qbiss Screen façade element
2. Longitudinal corner element
3. Fixing profile with screw
4. Horizontal substructure (not scope of supply)
5. Electrochemical potential isolation tape (not scope of supply)
6. Decorative profile
7. Vertical substructure (not scope of supply)

5.6 Sharp-edge corner flashing and round corner flashing

Fig. 5.6: Preformed sharp-edge flashing

1. Qbiss Screen façade element
2. Sharp-edge corner flashing
Fig. 5.7: Preformed round-corner flashing

1. Qbiss Screen facade element
2. Round - corner flashing
6.0 Packing, Transport and Storing

6.1 Packing

Qbiss Screen elements are packed in standard packages of heights between 200 and 1320 mm (depends on number and thickness) and up to 1240 mm (depends on the type and module width). Package is placed on EPS boards with 90 mm height and 300 mm width. The external coloured surface of element is protected with self-adhesive protective foil, which is removed during installation of an individual Qbiss Screen element. Each package is protected with protective cardboard elements and wrapped in stretchable, waterproof, packaging foil.

Possible types of packaging:
- truck transport (standard package)
- wagon transport (additional strengthened) *
- container transport (packaging for overseas transport) *

* Type of packaging is specifically defined for each individual project

Table 6.1: Maximum package dimensions (including packaging)

<table>
<thead>
<tr>
<th></th>
<th>1220</th>
<th>20</th>
<th>1240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum width (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum height (mm)</td>
<td>500</td>
<td>120</td>
<td>620</td>
</tr>
<tr>
<td>Maximum length (mm)</td>
<td>6525</td>
<td>100</td>
<td>6600</td>
</tr>
<tr>
<td>Maximum weight (kg)</td>
<td>1500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Package is max. ten elements high

Fig. 6.1: Side view of a stack prepared for transport by truck

1. Cover
2. Protective corner
3. Label
4. Front side
5. Polystyrene
6. Handling instructions
7. Façade elements and all protective elements wrapped in packaging foil

6.2 Transport

Qbiss Screen façade elements can be transported from the factory to the construction site either by road or railway transport. The load-bearing textile bands with underlying wooden battens must be used to attach the cargo to the means of transport.

NOTE:
- Crane, mobile crane or fork lifter may be used for handling packages.
- Moving or pushing of packages with forks of a fork-lifter is strictly forbidden.
- The use of steel wire ropes is not allowed during handling by crane. Packages must be attached with appropriate load-bearing bands.
- The centre of gravity must always be between forks or load-bearing bands.

IT IS STRICTLY FORBIDDEN TO LIFT MORE THAN ONE PACKAGE AT A TIME!
During unloading, the truck cover must be fully open. Cover supports must be removed in such a manner that enables safe manipulation of packages and prevents Qbiss Screen façade elements from damage during lifting of the truck.

**NOTE:**
- It is not allowed to lift more than one package at a time.
- To prevent unnecessary damage, consistently follow the handling instructions, attached to every package.
- The recipient is liable to report all visual damages to the carrier upon the reception of packages on construction site.

### 6.2.1 Fastening Packages for Transport

Packages must be fastened to the truck with textile bands at maximal distance of 2.5 m or less (depending on package length). The use of steel wire rope is not allowed. While fastening the bands, it is necessary to control the contact of the underlying wood battens with the upper Qbiss Screen façade element in the package, to protect possible deformation of the upper façade element’s sheet metal.

During transport, the driver should occasionally check the stability of the cargo and to re-tighten the bands if necessary.

**Fastening Packages for Wagon Transport**

Packages must be fastened together and to the means of transport - wagon. Packages must be fastened together with steel bands at a maximum distance of 2.5 m, or at least twice for each package. Smaller packages must be bundled together and protected against possible movements. Packages must be fastened to the wagon with textile bands. The use of steel wire rope is not allowed. It is necessary to exclude possibility of upper façade element deformation.
To prevent unnecessary damage during unloading, consistently follow the handling instructions, attached to every package.

### 6.3 Storing

The following provisions must be considered when storing Qbiss Screen façade elements:
- It is highly recommended to store Qbiss Screen façade elements in their original packaging thus assuring adequate protection against exposure to dust and sun.
- While storing the products outdoors, Qbiss Screen façade elements should remain in its original packaging until commencement of installation to prevent eventual damage.
- Removal of stretchable protective foil from the Qbiss Screen façade elements may become difficult when storing the products unpacked for certain periods. The foil MUST be removed within three months at the latest.
- In other case, Qbiss façade elements should be stored in closed, covered, and dry premises - they should not be exposed to the sun and other weather impacts.
- Packages should be stacked on flat and solid surfaces to prevent immersion, leaning, and falling of separate packages, especially in winter periods, when the package’s protective foil is covered with ice.

Fig. 6.5: Stacking of packages
7.0 Maintenance of Buildings with Qbiss Façade Elements

7.1 Annual Service Inspection of Façade

The service inspection of the entire building and façade should be performed at least once per year. The purpose of the annual service inspection is detection and repairing of eventual deficiencies and thus prolonging the façade’s life-span. The annual service inspection includes:
- Cleaning of all dirt and, if necessary, washing of the façade.
- Eventual damage to the façade must be repaired immediately when noticed.
  The damaged spots are mechanically cleaned with fine abrasive cleaner (Scotch bright M600), dusted and degreased (cleansing alcohol, isopropyl alcohol). Then a layer of foundation paint is applied to the surface (air-dried coating based on epoxy binders and Zn pigments) and after that the final protection (air-dried coating based on polyurethane or acrylic binders).

7.2 General Recommendations

- Use of the aggressive substances for cleaning façades is not allowed since they may cause damage to the anti-corrosion protection.
- Use of disc grinding machines (disc-cutting machines) near Qbiss Screen façade elements is strictly forbidden, to prevent hot particles from damaging the varnish of façade elements.
- In the case of any additional questions regarding building maintenance or eventual necessity of damage repairs, consult Trimo Service Department.

8.0 Warranty

Trimo facade elements guarantee - see Trimo guarantee terms and conditions.