Sub-construction for Wall-mounted Longlight 5-45°

VELUX Modular Skylights

Version 2.0
Before you start

Before you can build a durable and secure sub-construction to provide the supporting base of the VELUX modular skylights, you will need to have the following three specification documents at hand and follow them closely:
Sub-construction for Wall-mounted Longlight 5-45°

VELUX modular skylights installed in a Wall-mounted Longlight solution are built on a sub-construction made of steel, concrete or wood. The sub-construction raises the modules above the roof surface, protecting the construction against water and drifting snow, and provides the supporting base for the modular skylights.

The sub-construction is not included in the VELUX delivery.

**Wall-mounted Longlight 5-45°**
A delivery of VELUX Commercial

To ensure a high quality installation of VELUX modular skylights and to prevent condensation occurring within the sub-construction, it is highly recommended to install the BCX vapour barrier connection strip. The factory-finished BCX creates an easy connection between the VELUX modular skylights and the vapour barrier of the building.
## Building site measurements – Axonometric

<table>
<thead>
<tr>
<th>Axonometric</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Sub-construction width – Tolerance ± ³/16&quot;</td>
</tr>
<tr>
<td>D</td>
<td>Sub-construction length – Tolerance ± ³/16&quot;</td>
</tr>
<tr>
<td>O</td>
<td>Gable height – Tolerance ± ³/16&quot;</td>
</tr>
<tr>
<td>P</td>
<td>Mounting height, wall steel profile. Measured from sub-construction to top of steel profile – Tolerance ± ³/16&quot;</td>
</tr>
<tr>
<td>R</td>
<td>Flashing groove placement – Tolerance – ³/8&quot;, + 1 ³/8&quot;, * Groove size: Height ³/16&quot;, Depth 1 ³/8&quot;</td>
</tr>
</tbody>
</table>

- Minimum length of bottom steel profile is equal to opening length (B (see next page))
- Length of top steel profile is equal to total sum of module width in the skylight
Building site measurements

<table>
<thead>
<tr>
<th>Plan</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Opening width</td>
</tr>
<tr>
<td>B</td>
<td>Opening length</td>
</tr>
<tr>
<td>C</td>
<td>Sub-construction width – Tolerance ± ³/₁₆”</td>
</tr>
<tr>
<td>D</td>
<td>Sub-construction length – Tolerance ± ³/₁₆”</td>
</tr>
<tr>
<td>O</td>
<td>Difference in height of sub-construction – Tolerance ± ³/₁₆”</td>
</tr>
<tr>
<td>P</td>
<td>Mounting height, wall steel profile. Measured from sub-construction to top of steel profile – Tolerance ± ³/₁₆”</td>
</tr>
<tr>
<td>S</td>
<td>Distance between steel, internal measurement between steel – Tolerance ± ³/₁₆”</td>
</tr>
<tr>
<td>R</td>
<td>Distance from steel profile on wall to flashing groove</td>
</tr>
</tbody>
</table>

- Minimum length of bottom steel profile is equal to opening length (B)
- Length of top steel profile is equal to total sum of module width in the skylight
Sub-construction variants

Cross-section bottom

Options of sub-constructions for Wall-mounted Longlight solutions. Please note that the width stated indicates the distance from the exterior of the roofing material to the interior edge of the steel profile or wooden batten.
Sub-construction variants

Cross-section top

Options of sub-constructions for Wall-mounted Longlight solutions. Note, that the top groove in the wall can be left out. Making it a single water protection system with the head flashing sealed to the wall with a suitable mastic sealant or equivalent. The only protection against water penetration from the wall above the skylight.

Longitudinal section

In the gable construction for Wall-mounted Longlight at 5-45° pitch, the height of the sub-construction must be at least 8" measured from finished roof surface. It is important that the surface of the gable construction is suitable for fixation of screws.
Securing modular skylights to the sub-construction

The sub-construction can be finished at the top with a steel profile, which provides a level and stable surface for the skylight modules and forms a base for fitting mounting brackets with clamps.

Using steel profile

When mounting the modular skylight on a steel profile, the top flange of the profile must be 4" in width and $\frac{5}{16} - \frac{7}{16}$" in thickness. In addition, there must be at least $\frac{9}{16}$" free space underneath the flange both vertically and horizontally to give room for the clamp.

Steel, concrete or wood construction with steel profile

The number, size, and type of fixings for securing the steel profile to the sub-construction must be dimensioned by the customer to fit each project.

Straightness of steel profile

Requirements as to the straightness of the steel profile are $\frac{1}{16}$" per 6' horizontally and vertically.

The following standard steel profiles are suited for installation of VELUX modular skylights in Wall-mounted Longlight solutions.

<table>
<thead>
<tr>
<th>EU steel beams</th>
<th>British steel beams</th>
<th>US steel beams</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPE 200</td>
<td>UB 203 x 102 x 23</td>
<td>W 12 x 22</td>
</tr>
<tr>
<td>INP 220</td>
<td>UB 254 x 102 x 22</td>
<td>W 12 x 19</td>
</tr>
<tr>
<td>HE 100 A</td>
<td>UB 254 x 102 x 25</td>
<td>W 10 x 19</td>
</tr>
<tr>
<td>HE 100 B</td>
<td>UB 305 x 102 x 25</td>
<td>W 10 x 17</td>
</tr>
<tr>
<td></td>
<td>UB 305 x 102 x 28</td>
<td>W 8 x 15</td>
</tr>
<tr>
<td></td>
<td>UB 305 x 102 x 33</td>
<td>W 6 x 16</td>
</tr>
<tr>
<td></td>
<td>S 8 x 23</td>
<td>W 4 x 13</td>
</tr>
<tr>
<td></td>
<td>S 8 x 18.4</td>
<td>S 8 x 23</td>
</tr>
</tbody>
</table>

In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, longer installation bolts must be ordered separately from a VELUX Commercial sales office.

The following profiles can be combined with the longer bolts.

<table>
<thead>
<tr>
<th>EU steel beams</th>
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<th>US steel beams</th>
</tr>
</thead>
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<tr>
<td>IPE 220, 240</td>
<td>UB 305 x 127 x 37</td>
<td>S 10 x 25.4</td>
</tr>
<tr>
<td>HE 120 A</td>
<td>UB 305 x 127 x 42</td>
<td></td>
</tr>
<tr>
<td>HE 120 B</td>
<td>UB 356 x 127 x 33</td>
<td></td>
</tr>
</tbody>
</table>

Connection of steel profiles must not collide with clamps
Using flat steel profile

When the sub-construction is finished with a flat steel profile, the steel profile must be 4" in width and \( \frac{5}{16} \text{"} - \frac{7}{16} \text{"} \) in height. In addition, there must be at least \( \frac{9}{16} \text{"} \) free space underneath the steel both vertically and horizontally to give room for the clamps.

- The distance pieces under the flat steel profile must be for the full length of the steel profile.
- The flat steel profile must be secured using screws along the middle of the steel profile.

Straightness of flat steel

Requirements as to the straightness of the flat steel are \( \frac{1}{16} \text{"} \) per 6' horizontally and vertically.

The following standard flat steel profiles are suited for installation of VELUX modular skylights in Wall-mounted Longlight solutions.

<table>
<thead>
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<tr>
<td>100 x 8</td>
<td>5/16 x 4</td>
</tr>
<tr>
<td>100 x 10</td>
<td>3/8 x 4</td>
</tr>
</tbody>
</table>

In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, longer installation bolts must be ordered separately from a VELUX Commercial sales office.

The following flat steel profiles can be used combined with the longer bolts.

<table>
<thead>
<tr>
<th>Standard EU flat steel</th>
<th>Standard US flat steel</th>
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<tr>
<td>110 x 8</td>
<td>3/8 x 4 1/2</td>
</tr>
<tr>
<td>110 x 10</td>
<td></td>
</tr>
<tr>
<td>120 x 8</td>
<td></td>
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The number, size, and type of fixings for securing the flat steel profile to the sub-construction must be dimensioned by the customer to fit each project.

- Connection of flat steel profiles must not collide with clamps.
Using wooden battens

The sub-construction for Wall-mounted Longlight can also be finished with the use of a wooden batten on which the mounting brackets of the modular skylight can be secured directly, without having to use the mounting clamps.

The skylight modules are mounted on the batten using screws through the bottom and top mounting brackets.

There are 4 holes in each mounting bracket, 2 x 3/16” and 2 x 5/16”.

These screws are not included in the VELUX delivery, and the correct dimensions must be ensured by the customer.
Securing modular skylights to the wall

**Flat steel profile**

Wall-mounted modular skylights must be mounted on a flat steel profile on the wall. The steel profile must be 4” wide and \( \frac{5}{16} " - \frac{7}{16} " \) thick. There must be at least \( \frac{1}{16} " \) free space underneath the steel, both vertically and horizontally to allow room for the clamps.

- The blocking-up of the steel must be in the full length of the steel profile
- The steel profile must be secured using screws or bolts along the middle of the steel profile
- Connection of steel profiles must not collide with clamps

**Steel, concrete or wood construction with flat steel profile**

The number, size, and type of fixings for securing the steel profile to the building must be dimensioned by the customer to fit each project.

**Requirements to the flat steel profile:**

- Steel, concrete or wood construction with flat steel profile
- In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, a longer size installation bolt must be ordered separately from a VELUX Commercial sales office.

**Straightness of steel profile**

Requirements as to the straightness of the flat steel are \( \frac{1}{16} " \) per 6’.

The following standard flat steel profiles are suited for installation of VELUX modular skylights in Wall-mounted Longlight solutions.

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Connecting flashing to the wall

The surface of the wall must be suited for fixation of screws, cutting a groove and applying mastic sealant. These must be prepared according to applicable standards.

When cutting a groove for the top head flashing, the groove must subsequently be sealed again.

If the wall is not suited for cutting a groove, the top head flashing is left out, and the main head flashing is secured to the wall using a sealant. In this case, the sealant is the only water protection. The choice of sealant to use in the groove and on the flashing must be according to national requirements, local practice, and the directions of other building suppliers.

The sealant is not part of the VELUX delivery.
Connecting to the roof

The surface on which roofing felt is laid must be prepared according to applicable standards for roofing materials and best building practice.

The ideal installation order, is to apply the roofing felt to the outside of the sub-construction before mounting the skylights.
Sub-construction for Wall-mounted Longlight 5-45°

Static information for dimensioning

As an additional service, VELUX Commercial offers to provide static calculation for the skylight solution based on the actual loads given by the customer. For static calculation please contact a VELUX Commercial sales office.

Static model of reactions

Characteristic loads

Fill out please

Name of your project:

Snowload pressure in psf

Windload pressure in psf

Windload suction in psf

Sub-construction dimensioning requirements

The roof construction is subject to deflection after installation of the skylight modules. These deflections include subsequent roof covering, various building installations and external loads such as snow and wind etc. The sub-construction must be designed to withstand all these loads and the deflections must be limited to maximum 1/400 over the full length of the sub-construction.

After completing the sub-construction, it must be secured against water penetrating the roof construction and insulation.