CINTRALUX® ALU BARREL VAULT EP 16/16
Fixed parts

Assembly instructions

EN 14963
Assembly instructions fixed parts Cintralux® aluminium barrel vault:

Cintralux® alu EP 16/16mm

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Ex ante control
a. Curb:
Before the barrel vault can be mounted, the customer must provide a sufficiently strong curb with roof covering. The maximum roof pitch is 5°. Before getting started with mounting, check whether the following specifications have been met:

- Material: wood/galvanized steel min. thickness of 3mm
  If the curb is in concrete, a wooden batten of at least 44mm thick must be firmly anchored into the concrete with countersunk and appropriate screws, in advance. The wooden batten must also be covered with roof covering. The agreed dimensions must be strictly observed.
  - height above finished roof: min. 200mm
  - Min finished thickness: 65mm
  - Max finished thickness: 100mm
  - The top flange and the curb must share the same thickness.
    Insulation may not protrude or be thinner than the top flange.
- The upper flanges of each of the 4 sides must be on the same plane!
- Curb construction must be unobstructed on all sides: neither of the two curbs may run through at the corner of the longitudinal side of the end of the curb.
- Slope top flange:
  - barrel vault at right angles to the roof ridge: perpendicular to the roof surface (follow roof pitch)
  - barrel vault parallel to the roof ridge, 2 options:
    - horizontally: Both sides must be of the same height, levelled (i.e. lower side of the curb must protrude higher above the roof surface than the uppermost side). The top flange may protrude slightly, up to a max of 2°.
    - It’s also possible to follow the roof pitch (up to max 5°)
  - Durability: must be able to withstand the horizontal and vertical loads. See Eurocodes and our technical sheet to determine the maximum force on the curb. If in doubt, consult your architect or engineering office.
  - Deformation: maximum 5 mm at the maximum horizontal load on the curb. Ensure that there are enough anchors for this provided on top of the curb. If in doubt, consult your architect or engineering office.
b. **Dimensions:**
The barrel vault is made to customer specifications. It's for this reason that the **curb’s overall length and width** (roof covering included) must perfectly conform with the dimensions ordered at all points of the barrel vault. Look for the narrowest and broadest spot* and measure the minimum and maximum overall width.

**Permissible tolerances** with respect to the size ordered:

- **Width:**
  - Min: -2cm
  - Max: +1cm
- **Length:** ±0.05%
  - (± 5cm for a length of 100m)
  - The barrel vault could possibly still be shortened in length on site, but try to avoid this.

* Check the straightness* (±1cm/5m), parallelism* (±1 cm/5m) and squareness (± 1°)

* : tighten a rope on both sides of the curb (or use lasers). Find the average position of the curb edge to tighten the rope. This rope will also be used later to mount the lateral profiles nicely aligned with each other.

c. **Glazing and arches:**
- The glazing panels are only clamped to allow the expansion and contraction as a function of fluctuations in temperature. The system is designed to render any silicone or rubber seals between the aluminium and glazing redundant (and even forbidden).
- All profiles and glazing panels (with the exception of the head retainer plates and the end divisions) are tailor-made, pre-bent, pre-drilled and screw thread tapped.
- Use caution with the exposed UV-protected top side of the plates (glazing).
- Always connect the bolts manually, so that before an electric screwdriver is employed, a couple of full rotations have already been made in the pre-tapped arches. Otherwise, there is a risk of damaging the pre-tapped thread.
- As a last step, do not forget to remove the protective film from the glazing plates.

d. **Sealing works:**
- When using roofing materials, it must be properly fitted over the top of the curb. The curb must be clad entirely up to the daylight opening. If the barrel vault is obstructed, meaning that it is adjacent to one or more walls, the connection must be vertical and flat. This can be done by means of a lead flashing. Before assembling: clean, remove sawdust, irregularities, etc...

e. **Checking the curb:**
Check the agreed upon correct measurements of the curb in advance (overall sizes - including roof covering). Also check whether the curbs run parallel in a row of two, verify the squareness and see whether the top is flat and smooth. Clean it in advance, if necessary, and remove sawdust, irregularities, etc...

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**Should one of these requirements fail to be met, then mounting must not take place.** Should you nevertheless assemble the unit, it may have an adverse effect on several different parameters (stability, air and water tightness, etc.), thus rendering any guarantee null and void.
Fixed Cintralux and opening Cintramax sections: assembly sequence

1. Mount the ends and lateral profiles. For additional detail, consult the first step of assembly in these assembly instructions.

2. After this, assemble the support bars of the opening sections (see separate assembly instructions for opening Cintramax sections).

3. Following this, get started on finishing off the fixed part as described in these assembly instructions. One or two arches will not be installed in the area in which the opening sections are located, depending on whether the opening section consists of 2 modules (2010mm) or 3 modules (3082mm).

4. This should be followed by finishing the opening sections according to the specifications found in the separate instructions for opening Cintramax components.

**TIP:** (only in case of combination with opening sections): Make sure that the power supply’s (electric or pneumatic) location corresponds with the position of the opening section.

Outline drawing Cintralux alu EP16/16 - fixed and opening sections:

1. PVC spacer of 2x16mm (=EP 16/16) or plate strip of 2x10mm (=EP 10/10)
2. Gutter
3. Side arch
4. Sealing profile
5. Lower arch (type dependent on the span)
Outline drawing fixed parts Cintralux alu EP16/16:

- 2x16mm (= EP 16/16):

![Outline drawing fixed parts Cintralux alu EP16/16](image)

Fig. Cross-section composition Cintralux alu EP16/16

Fixed parts Cintralux EP16/16 mm: assembly sequence

1. Placement of end and lateral profile
2. Placement of lower arches and the inner walls
3. Placement of intermediate arches and outer walls
4. Placement of upper arches
5. Placement of head retainers
6. Placement of storm battens
7. Finishing with draft strips
8. Placement of PVC clips with connecting pieces and corner pieces
9. Checking arch tension
10. Continue finishing off the opening sections, if applicable
### 1. Placement of end and lateral profiles:

<table>
<thead>
<tr>
<th>Set out the lateral profiles around the curb according to the enclosed layout.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position the end profile first and the first lateral profile afterward.</strong></td>
</tr>
<tr>
<td>(After all, the lateral profiles will be on top of the end profiles.)</td>
</tr>
<tr>
<td>(Lateral profiles on barrel vaults longer than 4 m, are comprised of multiple parts and are packed by reference, along with the draft strips.)</td>
</tr>
<tr>
<td>Make sure that the lateral profile just meets the head retainer plate.</td>
</tr>
<tr>
<td>Fix the end profile securely onto the curb and use the supplied screws with neoprene seal.</td>
</tr>
<tr>
<td>A screw must be supplied every 50 cm in the area designated for screws. Always use the right screws (metal screws for a metal curb, wood screws for wood, etc...).</td>
</tr>
<tr>
<td>Tighten the screws so that the pinion fits perfectly onto the profile.</td>
</tr>
<tr>
<td>Seal the edges.</td>
</tr>
</tbody>
</table>

Assemble all lateral profiles at 1 side of the curb, nicely aligned (use the rope). |

The lateral profiles slide into each other via the pre-assembled connection profile. |

Consistently leave 5 mm (±2mm) of clearance between the lateral profiles. Divide the lateral profiles evenly along the length of the curb so that the clearance is approximately the same everywhere. This way, small errors in the curb length can be corrected. |

**Tip:** If the curb is still too short, the head retainers may each be slid outwards up to 2 cm, to cover the difference. |

Fix the lateral profile securely onto the curb and use the supplied screws with neoprene seal. |

A screw must be supplied every 50 cm in the area designated for screws. Always use the right screws (metal screws for a metal curb, wood screws for wood, etc...). |

Tighten the screws so that the pinion runs flush with the profile. |

Seal the seams at the bottom thoroughly so that water that comes onto the lateral profile definitely cannot seep inside. |

After that, affix the lateral profiles on the other side of the curb: |

Ensure that the lateral profiles lie perfectly two by two in parallel and are connected to each other at the correct distance, especially with regard to opening sections. (Equal daylight opening) |

**TIP:** Use the support bar of an opening section in order to keep the correct distance.
2. Placement of the lower arches and the inner walls

In the event that opening sections are also installed in the barrel vault:

Begin by assembling the support bars of the opening sections (see separate assembly instructions for opening Cintramax sections).

Following this, continue finishing off the fixed part as described in these assembly instructions. One or two lower arches will not be installed in the area in which the opening sections are located, depending on whether the opening section consists of 2 modules (2010mm) or 3 modules (3082mm).

Next, install the lower arches of the fixed part. Securing the lower arches depends on the type of arch:

- 'Light' or 'heavy' lower arches:

  TIP: (only in case of combination with opening sections): Make sure that the power supply's (electric or pneumatic) location corresponds with the position of the opening section.

Securing 'light' lower arches:

For smaller spans, the 'light' lower arches are secured from above with a 'quick-screw 04,2x16 mm on the lateral profile. The position of the lower arches must match the pre-drilled holes in the lateral profile.
Securing ‘heavy’ lower arches:
For larger spans, the ‘heavy’ lower arches are installed on the lower edge of the lateral profile and tightened with M8 x 60 mm Allen bolts from the outside through the lowest of the 3 pre-drilled holes in the lateral profile.

Placement of inner plates:
Only remove the protective film right before installation to avoid scratches, and place the inner multi-layered sheets 16mm with the UV side upwards.
Place the sheet on 1 side in the lateral profile and bend it over the lower arch. Push it up slightly along the other side, in order to be able to slide it into the slot provided.

TIPS:
- On the UV-side (side which must face upwards outside/upwards) a small imprint can be found on the edge which can serve for verification purposes after the protective foil has been removed.
- The inner walls are about 2.5 cm shorter than the outer walls.
- The sheets for opening sections are about 13cm shorter than the sheets for the fixed parts.

12. Placement of intermediate arches and outer walls:

Place the intermediate arches:
Mount the intermediate arches with M8x60 mm bolts. Tighten these so that both sides of the intermediate arch are just flush with the lateral profile. As a result, the lateral profile will be pulled slightly inside.
### Placement of outer walls:

Place the outer walls, multi-layered 16mm plates, in the same manner as the inner walls.

Always be sure that the **UV side is facing up**!

### 3. Placement of top arches:

Mount the **upper arches** with M8x60 mm bolts. Pull it until the aluminium upper arch fits snug against the outer wall. Do not fasten too tightly.

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! For head retainers and opening sections, **side arches** are used. See also: ‘Placement of the head retainers’
4. Placement of the head retainers

Detail at the head retainer level, with specific profiles:

Insert the full 32mm head retainer plate into the lowest end profile and mark the upper side of the intermediate arch off on the protective film. Also mark off the tips of the lowest end profile to get the right plate length. Make sure that the UV side is on the outside.
Remove the plate again from the lowest end profile.

Saw the plate **10mm above the mark** in the shape of an arch.

Saw the plate's sides vertically, the same length as the lowest end profile.

Blow the sawdust out of the grooves and tape up the sawed edges with the supplied BB32 tape.

Now reinstall the plate in the lowest end profile.

Tighten the side arch with the upper end profile using the M8x60 mm bolts.

5. Placement of the storm battens:

Depending on the barrel vault's width, each end piece will have either none, one or two storm batten(s) to span the first three arches (or first two plates).

Always fasten the storm batten with 2 ‘quick’ screws 04.2x16 mm per arch.
6. Finishing with draft strips:

**Place the draft strips:**

Fasten the plates onto the lateral profile by placing the draft strips under the edge of the lateral profile. Start at one side, press and carefully beat the draft strips into place.

7. This is essential for the thermal barrier.

Start with a head retainer. Click the first **PVC clips** onto the lateral profile. The PVC clips must continue until the head retainer.
Slide the **corner piece** over the PVC-clips and working from the side **tighten** with 2 white ZSG 05.5x32 (TX 25) screws.

Screw a third ZSG screw in the top in order to block the PVC clips.

(Altogether there are four corner pieces per barrel vault, of which two left and two right)

Begin with one corner piece for each long edge of the barrel vault.

Slide the **PVC connecting pieces** onto the PVC clips to be assembled.

! Do not use connecting pieces at the level of the opening sections, in order to achieve an optimum airtightness.

Now mount the **next PVC clips** onto the lateral profile using the connecting piece. There must always be around 15mm clearance (at 20°C) between 2 consecutive PVC clips.

! This clearance is crucial because it allows the PVC clips to expand sufficiently at higher temperatures. This prevents these PVC clips from pushing against each other or causing any unwanted damage.

Always install the **connecting pieces** on the curb in the designated zone using a white ZSG 05.5x32 (TX25) **screw**.

Finish it off with the **two remaining corner pieces**.
8. Checking arch tension:
Check whether the upper arches are tensed evenly at all points across the plates. Gently tighten where needed.

9. Finish opening sections, where applicable

In the event of a combination with Cintramax opening sections, these must be finished off. See separate Assembly instructions for Cintramax opening sections.

**Maintenance:**
The client should perform annual maintenance on the opening sections of the Cintramax and on the fixed parts of the barrel vault. At minimum, this maintenance includes cleaning of the plates with water and a light PH-neutral soap. All fastenings must be checked and loose or damaged parts of the Cintramax must immediately be fixed or replaced with original parts as described in the Cintralux ETA.

At least once a year the condensation drains (in lateral profile, in PVC-clips, etc.) need to be cleared and the inside of the lateral profile cleaned.

**Snow and wind load**
The barrel vaults are designed for normal wind and snow loads. For specific locations (seaside or very high buildings > 12 m) sealant boards can be supplied against extra fee (only at the request of the customer).
**DISCLAIMERS:**

**Warning and:**

Mechanics: installation should be performed by trained technicians with sufficient knowledge and experience on the installation of barrel vaults.

Fixing material: use suitable fixing material depending on the surface and the load. If in doubt, contact the supplier of the screws or a specialised engineering office. We supply fixing material that is suitable for most metal or wooden surfaces, but you should check this before starting the installation. G.PLASTICS is not responsible for the used fixing materials.

Compatibility: only use polycarbonate friendly materials. Avoid using silicone, polyurethane foam, detergents, paints, varnishes, wood protectors, lubricants, insecticides, ... A lead sheet may not come into contact with the multi-layered sheets.

Covering: covering the barrel vault (e.g., heat-deflecting effect) only with canvas that does not contain softeners. It is not recommended to cover acrylic or polycarbonate with a coating or paint. In this case our guarantee will become invalid. It is in your interest that the manufacturer of the coating or paint gives guarantees on compatibility with acrylic and polycarbonate.

Dust: if still some work should be performed with which dust particles is released (such as grinding, drilling, patchwork, ...), the opening under the barrel vault should be hermetically sealed, for example with a PVC film. The dust can accumulate on, in, or between the plastic sheets. The grooves of the multi-layered sheets are taped. When sawing multi-layered sheets on the project, all grooves must be carefully blown out and taped with a suitable tape. Before assembly, double check that the grooves are properly taped and correct where necessary. Ensure that the tapes are not damaged during installation. There is no warranty for dust inclusion.

UV side and scratches: always mount the multi-layered sheets with UV protective side upwards. This ‘sunny side’ is indicated on the protective film. Only remove the protective film just before installation to avoid scratches.

Point load: avoid point load on multi-layered sheets. These can cause permanent prints. Never lean or walk on the multi-layered sheets.

Snow accumulation: do not mount barrel vaults in places where snow can slide from a higher structure and can end up on the barrel vault.

Original parts, use only original parts and install them according to the assembly instructions.

AG.Plastics reserves the right to amend this product or instructions without prior notice. Changes in the assembly instruction or to the product carry no right to compensation or exchange of parts. The most recent version of this instructions can be consulted at any time at www.agplastics.com.

**Safety during assembly:**

Observe the necessary and required safety precautions, such as safety nets in the roof opening(s), fall protection, protection of the roof edge, safety shoes, protective glasses, gloves, helmet, ...

An opening part of a barrel vault (Cintramax CE) has moving parts. During assembly, it is necessary to open and close the Cintramax (partially). Make sure no one is close to the moving parts.

**Pneumatic Cintramaxes:**

These may be manually be pulled and pushed open and close, without compressed air.

Warning: once past the equilibrium, the Cintramaxes automatically slide open due to the gas springs. Make sure no one is close to the moving parts.

**Physical properties multi-layered sheets:**

Expansion and settlement sounds: Acrylic and polycarbonate sheets are plastic sheets and will expand and contract as the temperature rises and falls. The profile system allows for this. Expansion or contraction can cause settlement noises.

Condensation: Acrylic and polycarbonate sheets are very slightly permeable to moisture. This means that condensation can form in the ducts. This usually happens at the start because large amounts of building moisture are evaporating at that time. This is a physical phenomenon which will disappear after a while. This condensation does not influence the characteristics of the plastic sheets or the guarantee.

Reflection: Acrylic and polycarbonate sheets can, in some cases, depending on orientation and slope, reflect the sunlight to the inside or outside.

These guidelines are only advisory in nature. They only serve as information. The installation will be conducted under the sole responsibility of the customer.

The DoP is also available on the website www.cintralux.com