CINTRAMAX® opening sections in Aluminium barrel vault with flat curb

ASSEMBLY INSTRUCTIONS

EN 12101-2:2003

Art. no. 41707
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Contents</th>
<th>p. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and warnings</td>
<td>p. 3</td>
</tr>
<tr>
<td>Ex-ante control</td>
<td>p. 3</td>
</tr>
<tr>
<td>Fixed and opening sections: assembly sequence</td>
<td>p. 5</td>
</tr>
<tr>
<td>Cintramax outline drawings examples</td>
<td>p. 5</td>
</tr>
<tr>
<td>2 x 16mm (EP 16/16)</td>
<td>p. 5</td>
</tr>
<tr>
<td>1 x 10mm</td>
<td>p. 5</td>
</tr>
<tr>
<td>Cintramax opening part: assembly</td>
<td>p. 6</td>
</tr>
<tr>
<td>Support bars</td>
<td>p. 6</td>
</tr>
<tr>
<td>Mounting brackets + securing to curb</td>
<td>p. 7</td>
</tr>
<tr>
<td>Mounting the opening part's frame onto the Cintramax</td>
<td>p. 9</td>
</tr>
<tr>
<td>Arch and polycarbonate sheet assembly (idem fixed part)</td>
<td>p. 11</td>
</tr>
<tr>
<td>Check</td>
<td>p. 12</td>
</tr>
<tr>
<td>Final connection</td>
<td>p. 12</td>
</tr>
<tr>
<td>Maintenance</td>
<td>p. 12</td>
</tr>
<tr>
<td>Snow and wind load</td>
<td>p. 12</td>
</tr>
<tr>
<td>Disclaimers</td>
<td>p. 13</td>
</tr>
</tbody>
</table>
Safety and warnings:
See p. 13 of these instructions

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

Roof pitch: max 5°

Curb:

- Materials: wood, galvanised metal, min 3mm thick
- height above finished roof: min. 200mm
- clearance height inside curb: min 300mm
- 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 on each of the 4 sides must be on the same plane.
- 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.
• 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.

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

<table>
<thead>
<tr>
<th></th>
<th>Width B</th>
<th>Min: -2cm</th>
<th>Max: +1cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(When a barrel vault with a width of 313cm has been ordered, the finished curb width must be between 311 and 314cm at all points)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Length L</th>
<th>±0,05%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(± 5cm for a length of 100m)</td>
<td></td>
</tr>
</tbody>
</table>

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.

**Roof covering.**

• Must continue at the top of the curb until the daylight opening
• Top side smooth and flat, limit imperfections due to overlap to a minimum. Before assembling: clean, remove sawdust, irregularities, etc.

**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.
Assembly sequence of fixed and opening sections:

Mount the ends and lateral profiles; see separate Cintralux aluminium barrel vault instructions for fixed parts.

Next, assemble the support bars of the opening sections (see point 1 below).

Following this, get started on finishing off the fixed part as described in the 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).

This should be followed by finishing the opening sections according to the specifications below (point 2, etc.).

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

Outline drawing examples:

- **2x16mm (EP 16/16):**

  ![Diagram of 2x16mm setup]

  1: PVC spacers at 2x16mm (=EP 16/16) or plate strip at 2x10mm (=EP 10/10)
  2: Gutter
  3: Side arch
  4: Sealing profile
  5: Lower arch (type dependent on the span) lxl0mm:

- **1x10mm:**

  ![Diagram of 1x10mm setup]
**Cintramax opening sections, assembly:**

1. Support bars
2. Mounting brackets
3. Mounting the frame of the opening part onto the Cintramax:
4. Arch and polycarbonate sheet assembly (idem fixed part)
5. Check
6. Final connection

---

1. **Support bars:***

- In the electronic version, there is a master and a slave, see label on the box. In the pneumatic version, the two parts are identical.
- The Cintramax Master has a white junction box (electronic top limit switch). This is on the control unit's side.

The support bars serve to perfectly mount the lateral profiles at a correct distance from each other at the level of the opening sections.

The opening part may be 2 (2010mm) or 3 (3082mm) modules wide. Securely screw a support bar on both sides of the opening part onto the lateral profile.

With a barrel vault of type 2x16mm (= EP 16/16) there is not enough space to mount the support bar under the lower arch. Which is why the bars must be slid ± 7cm to the outside with respect to the arches. The exact position of the arches can be seen from the pre-drilled holes in the lateral profile.

- While standing to the side of the Cintramax Master and looking at the roof opening, place the bar with connection cable on the right side.
Finish with sealant at the level of the support bars so that water dripping onto the lateral profile immediately drains at the level of the opening section.

Drill 3 additional drain holes between the support bars Ø of 8 mm in the ‘fixed’ lateral profile.

Now get started assembling the fixed parts of the barrel vault, see separate instructions.

At the transition from fixed part to opening, there will be a side arch and gutters on both sides.

2. **Mounting brackets:**

Mark off the position of the mounting brackets on the lateral profile so that the Cintramax is exactly at the centre of the opening provided. Hang both mounting brackets over the lateral profile and secure with 2 screws Ø 5.5 x 38 mm at the correct position against the curb.
Hang the first Cintramax part on the 2 mounting brackets and secure with 3x5 screws Ø 5.5 x 38 mm against the curb.

Do the same for the second Cintramax part on the other side.

Open the Cintramaxes in order to access all screws.

Opening and closing during assembly:

A) Electrical:

Click the electrical hookups into each other on both sides.

Drill a small hole Ø 7 in the lateral profile where the test cable has been provisionally plugged outside. This way the Cintramax can be closed completely after assembly.

Now connect a 24VDC / 8A battery (or power) to the test cable in order to operate the Cintramaxes.

B) Pneumatic:

The Cintramaxes can manually be pushed open and close.

**Warning:** once past the equilibrium, the Cintramaxes automatically slide open due to the gas springs. Make sure that no one is in the vicinity of the moving parts.

The cylinder locks into the lower position. It can be unlocked by turning the lower ring of the cylinder a quarter of a turn while slightly pulling the Cintramax open.
The 2 mounting brackets can be disassembled and reused. (This is not necessary.)

Slide the housing over the Cintramax and secure it from the top with the 4 screws.

3. Mounting the frame of the opening section onto the Cintramax:

Pre-assemble frame: Slide the 3 sleeves 35x35 mm onto the lateral profiles of the opening part. Secure the sleeves along one side with self-drilling screws Ø 5.5 x 38 mm at 4 cm of the end of the lateral profile.
Place the frame loosely in the opening on the fixed lateral profile.

Allow the Cintramaxes to raise slightly so that the frame is elevated just slightly (± 0.5 cm) above the fixed lateral profile.

Slide the sleeves of the frame in and out so that the lateral profiles of the opening sections are placed at the correct distance against the fixed lateral parts. See table and drawing according to barrel vault type.

Table: distance lateral profiles opening sections fixed as opposed to fixed lateral parts

<table>
<thead>
<tr>
<th>Type alu barrel vault:</th>
<th>1x10mm</th>
<th>2x10mm (=EP 10/10)</th>
<th>2x16mm (=EP 16/16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance:</td>
<td>20mm</td>
<td>38mm</td>
<td>60mm</td>
</tr>
</tbody>
</table>

1X10mm & 1x16mm 20mm

Provisionally secure the frame at this position on the fixed lateral profile so that it can no longer slide. For this, tighten a screw at each of the 4 corners.

2x10mm (= EP 10/10) : 38mm

Provisionally secure the frame at this position on the fixed lateral profile so that it can no longer slide. For this, tighten a screw at each of the 4 corners.

2x16 (= EP 16/16) : 60mm

Provisionally secure the frame at this position with adapters (60mm measured horizontally) on the fixed lateral profile so that it can no longer slide.
Secure the frame with 6 Z-profiles gently over the sleeves on the Cintramax (3 Z profiles on each Cintramax). The sleeves should also be screwed down, so that they can no longer slide. As specified, use at least 3 screws of Ø 5.5 x 38 mm per Z-profile.

Loosen the frame again from the fixed part (remove 4 screws or adapters)

Completely open the opening part Cintramax with frame.

4. Arch and polycarbonate sheet assembly (idem fixed part):

Install the lower arches, (inner walls, intermediate arches), outer walls and the top arches in the same manner as the fixed parts. (cfr. Separate assembly instructions for Cintralux barrel vaults fixed parts)

Placing top arches and side arches with sealing arches.

Ensure that the sealing arches protrude to the same extent on both sides.
Finishing with draft strips:

Placement of transparent PC strips 27 x 3mm, approximately 1 m above the lateral profile. Fasten at each arch with 2 ‘Quick’ screws Ø 4.2 x 16 mm

5. Check

Check the operation:
- Open the Cintramax completely and close again.
- Ensure that no components are able to get stuck.
- Make sure cables are well-secured and cannot be damaged during opening and closing.
- Verify that the surrounding profiles are well connected to the fixed part.

6. Final connection

Electrical version:
The test cable must be disconnected as soon as the Cintramax is permanently connected to the Skycom CE Slave power station (for connection, see www.agplastics.com).

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) storm battens can be supplied for an additional fee (only upon the customer’s request).
DISCLAIMERS:

Warnings

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

Fixing materials: use suitable fixing material depending on the surface and the load. If in doubt, contact the screw supplier or a specialised engineering firm. We supply fixing material that is suitable for most metal or wooden surfaces, but this needs to be checked before starting the installation. G.PLASTICS is not responsible for fixing materials used.

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

Covering: only cover the barrel vault (e.g., heat-deflecting effect) 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 provides guarantees on compatibility with acrylic and polycarbonate.

Dust: in the event that there are still certain works to be carried out that entail the release of dust particles (such as grinding, drilling, patchwork, etc.), then 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 shut. When sawing multi-layered sheets on the project, all grooves must be carefully blown out and taped shut with a suitable tape. Before assembly, double check that the grooves are properly taped and correct where necessary. Ensure that the tape has not bee, damaged during assembly. There is no warranty for dust inclusion.

UV side and scratches: always mount the multi-layered sheets with the UV protective side facing up. 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 imprints. 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 end up on the barrel vault.

Original parts: only use 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 to the assembly instruction or to the product carry no right to compensation or exchange of parts. The most recent version of these 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, etc.

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 that no one is in the vicinity of the moving parts.

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

A Pneumatic Cintramaxes:

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

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