# Instructions for installation

# and handling of pontoons

HAKA Plast OÜ

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# 1. APPLICATION OF PONTOONS

The main field of application for pontoons are floating bridges, rafts, floating saunas and bog paths. The pictures below are some photos of the use of pontoons made by HAKA Plast.



**Picrure 1.** Barrel campings of Paekalda Holiday Center raft



**Picture 2.** Paekalda Holiday Center



**Picture 3.** Floating bridge

# 2. PONTOONS

Thanks to the pontoon manufacturing technology developed by HAKA Plast, the pontoons are waterproof and safe to use. Pontoon pipes are made of PEHD REG material. During the production of the pontoon, a PE plate is fused to the pipe ends and according to the customer's wishes, also fixing ears can be mounted. If the floating structure is intended to move in water, the ends of the pontoons can be made streamlined, ie at an angle of 45 °.



**Picture 4.** HAKA Plast pontoons



100 mm
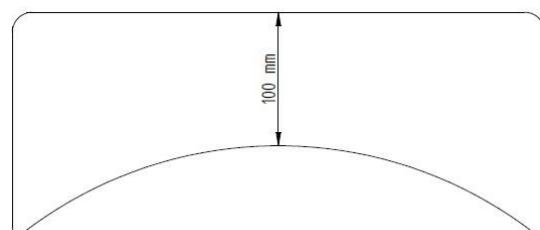
**Figure 1.** Standard fixing ear

# 3. NOMINAL DIMENSIONS AND LOAD CAPACITY OF PONTOONS

HAKA Plast produces pontoons with an outer diameter of 200mm, 250mm, 315mm, 400mm, 500mm, 560mm and 630mm with a length of up to 12m. Pontoons are made to the length desired by the customer.

To calculate the load-bearing capacity of a pontoon, the cylinder volume formula is used, where r or radius is half of the inner diameter of the pontoon (outer diameter - 2 x wall thickness), and h denotes the length of the pontoon.

$$V = \pi \times r^2 \times h$$

> **For example.** The calculation of the load capacity of a Ø400 x 9.8 pontoon with a length of 5m is as follows:
>
> $$V = 3{,}14 \times 0{,}1902^2 \times 5$$
>
> *Answer:* ~ 0.568 m3 or 568 l or 568 kg

*Note!* *When calculating the load-bearing capacity, keep in mind that in the case of the answer, the upper edge of the pontoon is level with the water surface.*

Ideally, the pontoon is semi-submerged (pontoon does not sink deeper than its centerline). Based on the example above, the recommended load capacity of a pontoon is 568/2 = 284 kg.

When considering the need for pontoons, the total weight of the structure to be built on the pontoons (building + people intended on top at the same time) must be taken into account. In the case of pontoons, the rule of thumb applies, the larger the diameter, the greater the load capacity.

## 3.1 Fixing ears

The fixing ears are cut out of polyethylene sheet using a CNC bench. The standard height of the ears is 100 mm, but it is also possible to make fixing ears with the customer's desired dimensions.

The fixing ears are welded to the pontoon according to the dimensioned drawing sent by the customer. If customer does not know how and which fixing ears to use, then HAKA Plast will advise. The placement tolerance of the ears is ± 5mm. The distance of the first fixing ear from the end of the pontoon is minimum: 90 ° from the end 50 mm and 45 ° from the end 100 mm.

# 4. HANDLING AND INSTALLATION

- Pontoons must not be dragged and pushed over the ground, as this may damage the pontoons.
- If possible, move pontoons carefully with lifting slings or other genuine lifting techniques/machinery.
- When moving pontoons, monitor the surrounding environment to avoid unpredictable pontoon movements and danger to people or property.
- If there is a risk to people or property, the movement of pontoons must be stopped immediately!
- Pontoons must be stored on a level surface to prevent unpredictable movements.
- If the pontoons are stacked on top of each other then the pontoons must be secured to prevent unpredictable movements.
- Pontoons must not be stored on fixing ears!
- Prior to installation, the pontoons must be protected from direct sunlight.
- When installing pontoons side by side, the distance between the pontoons must be at least 10 mm.
- When installing the pontoon on the frame, make sure that the fixing ears are not tightened against the frame. A small gap must be left so that the polyethylene can expand and contract freely without damaging the pontoon.
  - The coefficient of linear expansion of PE material is 0.18 mm / m ° C

> **For example:** If the temperature drops to 0 ° C at night and 30 ° C during the day, the temperature difference is 30 ° C.
>
> 0.18 mm x 100 m x 30 (temperature difference) = 540 mm (0.54 m)

- When loading pontoons, it is recommended that the pontoon does not sink deeper than its centerline.
- It is recommended to remove pontoons from the water for the winter. This is especially important if the pontoons are in moving water. Moving ice can break the pontoon.

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