

RAMP OPERATING INSTRUCTIONS

These operating instructions only apply to ramps marketed and sold by Elpac Oy. Please observe these instructions to ensure the safe use and long service life of the ramps. Five different ramp models are available: Ramp 4800, Ramp 6000, Ramp 8000, Ramp 8000 Heavy, and Ramp 10000 Heavy. Technical specifications of the ramps are shown in the table below.

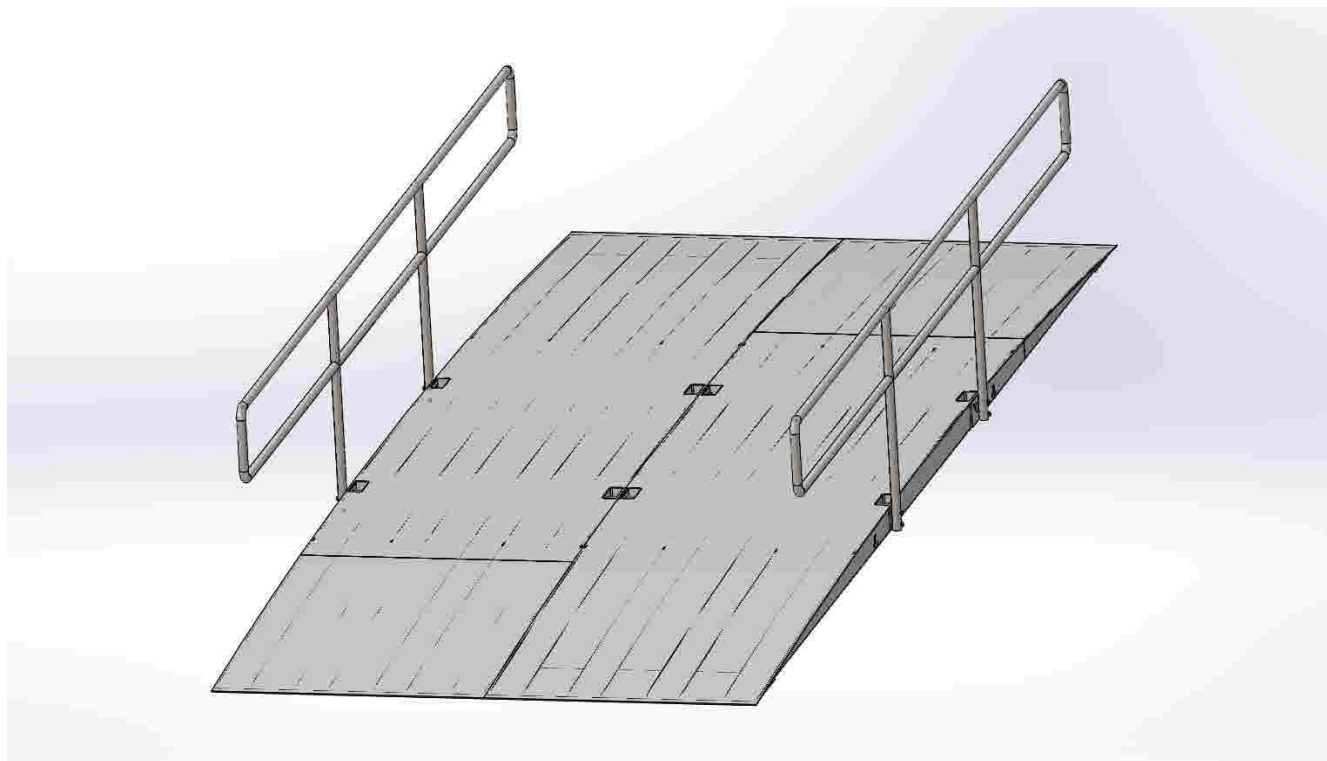


Figure 1. Two model Ramp 8000 ramps with guard rails.

	Ramp 4800	Ramp 6000	Ramp 8000	Ramp 8000 Heavy	Ramp 10000 Heavy
Dimensions	1.5 x 4.8 m	1.5 x 6.0 m	1.5 x 8.0 m	1.5 x 8.0 m	1.5 x 10.0 m
Weight, kg	585	785	1,025	1,163	1,690
Max. trench span	1.6 m	2.0 m	2.6 m	4.0 m	5.5 m
Max. tandem-axle load, kg	15,000	15,000	15,000	15,000	15,000

Table 1. Technical specifications of ramps

Moving the ramps

The ramps can be lifted using two different lifting points, blue-coloured reinforcing bars or the openings at the sides of the ramp. When the openings at the sides are used for lifting, no more than four ramps may be stacked one on top of the other. The customer is responsible for the appropriateness of the lifting equipment and its proper use.

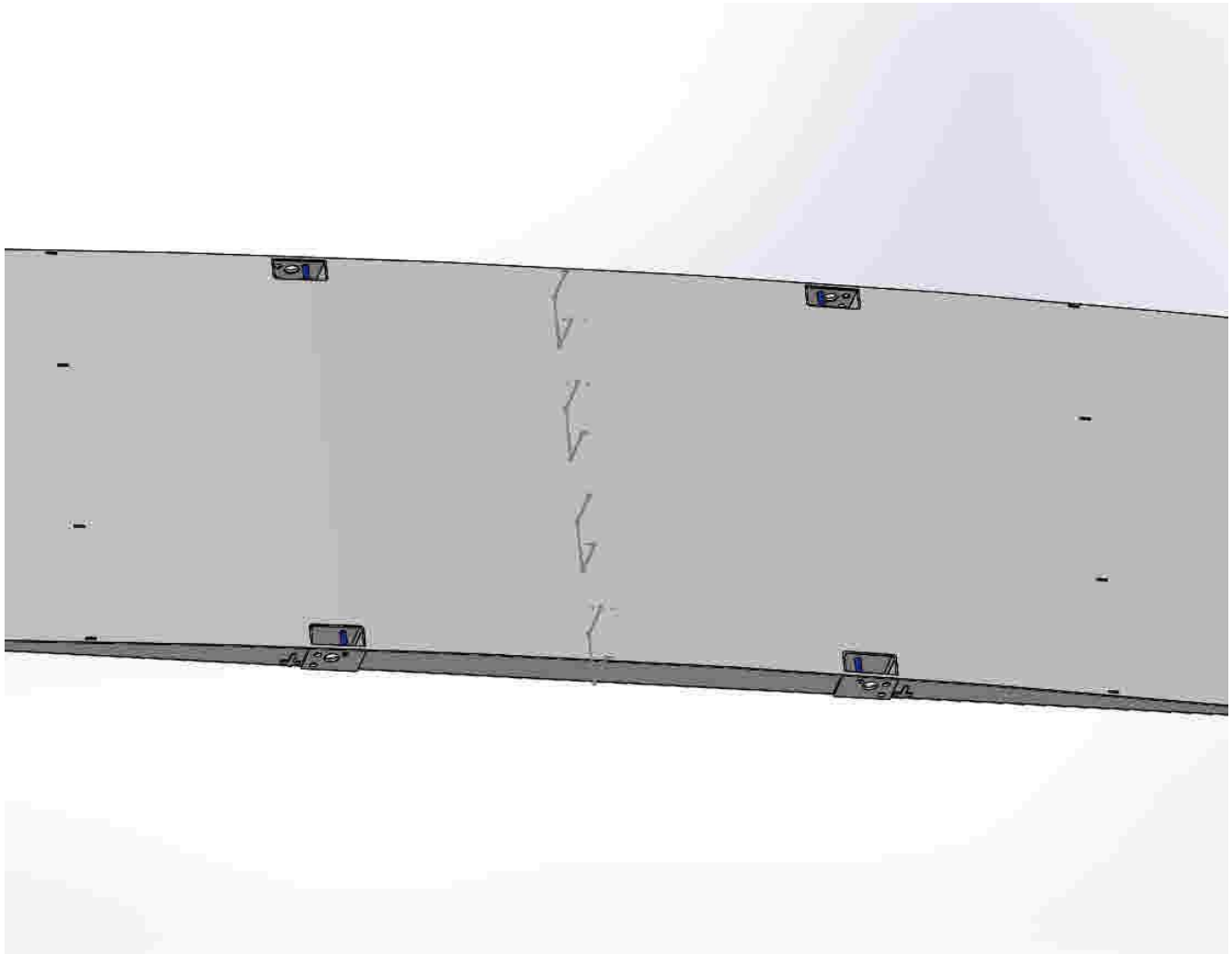


Figure 2. Lifting points of the ramps

Installing and using the ramps

The ramps must always be visually checked before use to verify their proper condition (welds, dents, wear, deflections, etc.). Should any defects or faults be detected during the check, the use of these ramps is strictly prohibited to avoid any damage. Ramps with different dimensions must not be used side by side. While using the ramps, the customer is responsible for road signs that comply with road transport requirements.

The maximum trench span defined for the ramp must not be exceeded during installation (maximum trench spans are shown in table 1). The maximum trench spans are marked with downward arrows at the sides of the ramps. Ramps should be installed side by side on a firm and level surface. Ramps are secured together, as shown in Figure 3, at both ends using the points of connection next to the lifting points.

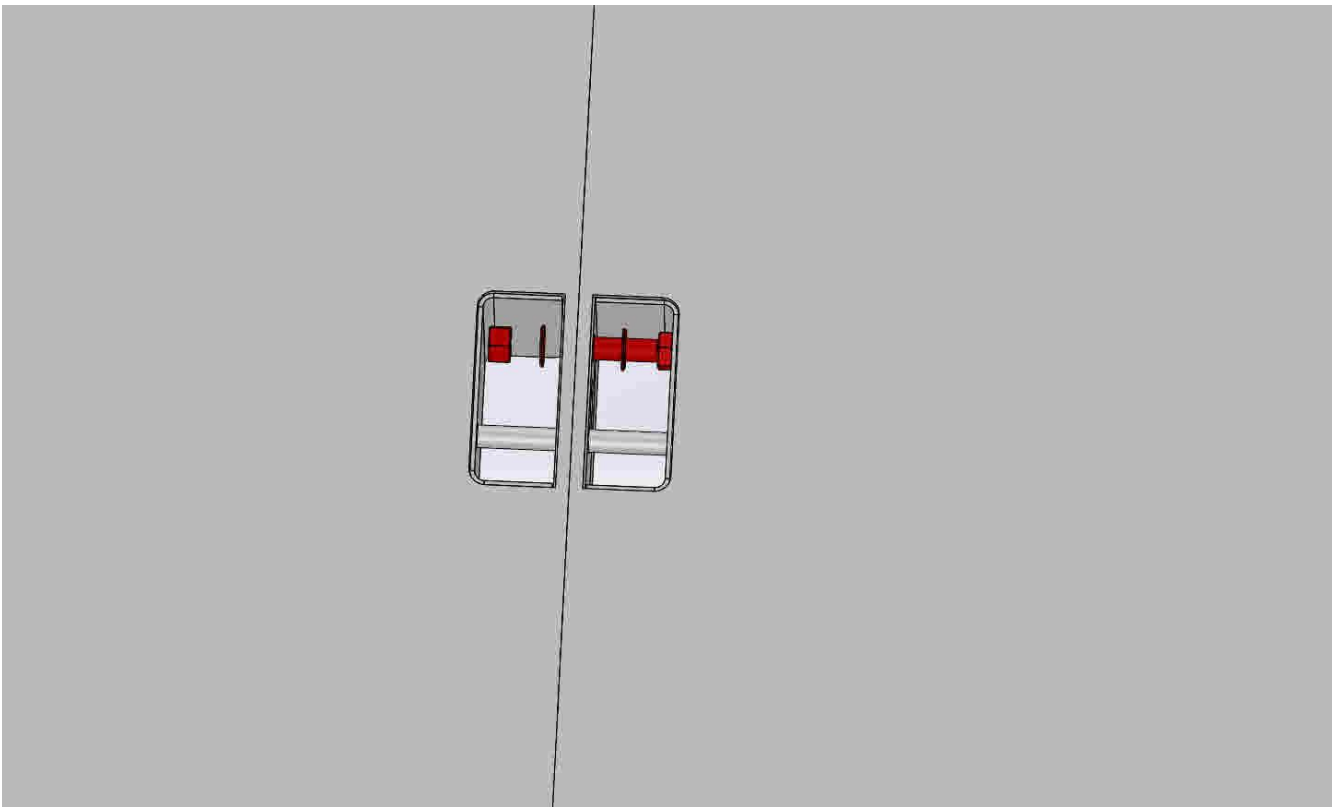


Figure 3. Attachment of ramps, M20 x 50 hexagon bolt, two M20 washers, and M20 hexagon nut.

Installing guard rails

Guard rails are installed on the outside edges of the outer ramps. Rails are installed at both ends as shown in Figure 4.

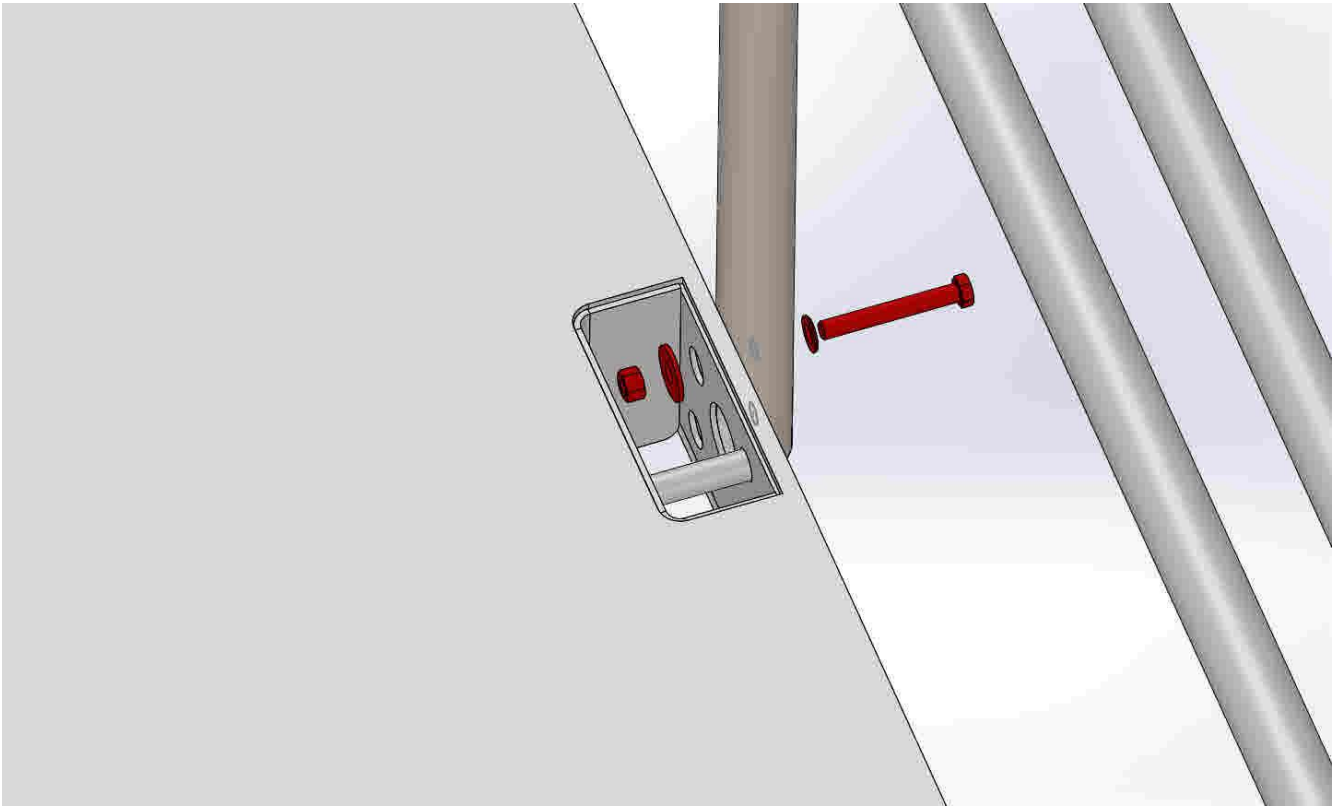


Figure 4. Installation of ramps, M12 x 90 hexagon bolts, M12 washers, M12 wing repair washers, and M12 hexagon nuts.

ASSESSING RAMP STRENGTH

The strength of ramp models Ramp 4800, Ramp 6000, Ramp 8000, Ramp 8000 Heavy, and Ramp 10000 Heavy has been assessed in accordance with standard SFS-EN 1993-1-1. The strength assessment was carried out by Rejlers Oy. The maximum trench spans and tandem-axle loads stated on page 1 have been used in the calculation.

The calculation takes into account the tandem-axle load on the ramp 150 kN (15,000 kg). The distance between tyre surfaces 400 x 110 mm from each other is 1.2 m and tyre pressure is 8.5 bar. According to the EN standard, this includes safety factors with regard to the ramp's own weight and the force applied from the wheel on the ramp. The surface of the tyre has also been increased using a safety factor in accordance with the EN Standard. The force used in calculations is thus 56.25 kN (5,625 kg) for a surface of 400 x 165 mm.