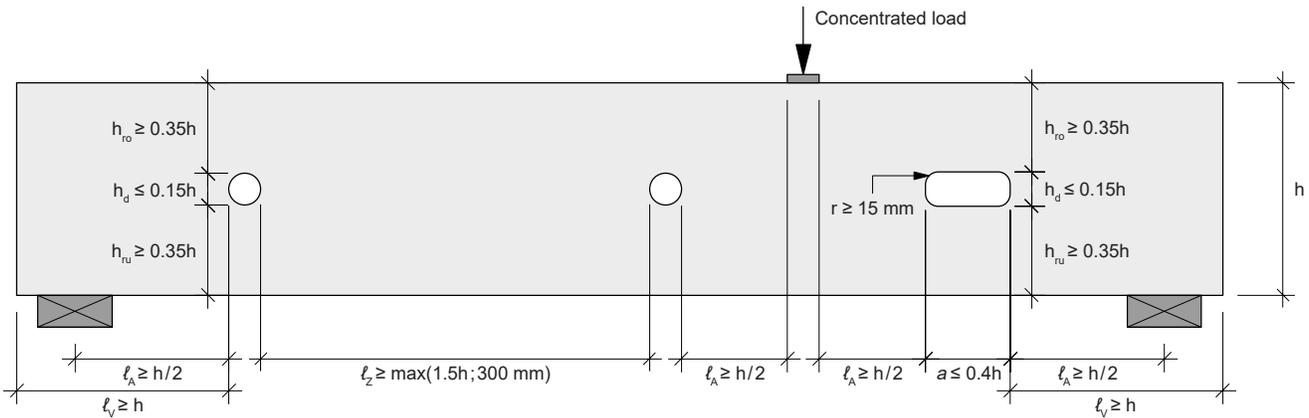


Openings in Nordic Lam+ Beams

This technical note provides guidance for the design of openings in Nordic Lam+ beams. The beam must be exposed to dry service conditions only and the openings must conform to the geometries indicated below. Note that all openings must be verified by a qualified mass timber design engineer. The following guidelines are based on DIN EN 1995-1-1/NA:2013-08, National Annex – Eurocode 5: Design of timber structures.

Openings Without Reinforcement

Shear resistance at reduced section, bending stress resistance above and below opening and splitting resistance must be verified.

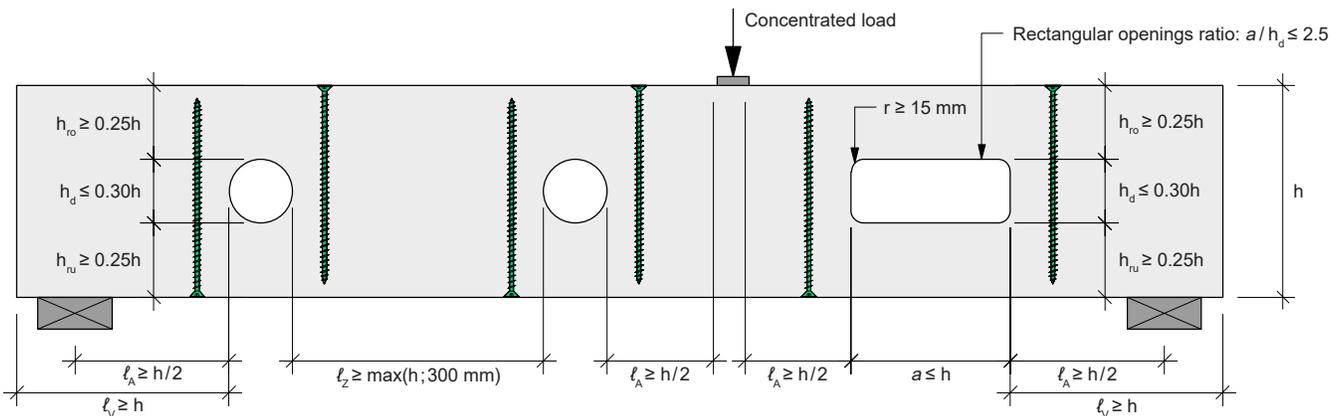


Notes:

- Opening size:** The opening height should not exceed 0.15h, where h is the beam depth. For rectangular openings, the opening width should not exceed 0.4h.
- Opening location:** The opening should have a minimum clear distance, as measured from the edge of the opening, of 0.35h to the top or bottom face of the beam, h to the end of the beam and 0.5h to the center of support. If there is a concentrated load, the opening should have a minimum clear distance of 0.5h, as measured from the edge of the opening to the nearest edge of the load.
- Opening spacing:** The minimum clear distance between any adjacent openings should be 1.5h or 300 mm, whichever is larger.

Openings with Reinforcement

Shear resistance at reduced section and bending stress resistance above and below opening must be verified. Screw reinforcement preventing wood splitting must be designed by a qualified mass timber design engineer. Minimum one screw is required on each side of opening.



Notes:

- Opening size:** The opening height should not exceed 0.3h, where h is the beam depth. For rectangular openings, the opening width should not exceed h.
- Opening location:** The opening should have a minimum clear distance, as measured from the edge of the opening, of 0.25h to the top or bottom face of the beam, h to the end of the beam and 0.5h to the center of support. If there is a concentrated load, the opening should have a minimum clear distance of 0.5h, as measured from the edge of the opening to the nearest edge of the load.
- Opening spacing:** The minimum clear distance between any adjacent openings should be h or 300 mm, whichever is larger.