

Steel staircases

Date
05.08.2026

Edition
1

Page
1 (7)

1. Introduction

Weland AB was founded in 1947 and has been manufacturing steel staircases since the 1950s, with all production based in Sweden. This standard describes the design guidelines for steel staircases used in industrial environments. These staircases are intended to be connected to floor structure and steel gangways and service landings.

The standard acts as a support in both planning and procurement processes, providing all parties involved with clear information about the technical criteria at an early stage. It is also used as guidance during the design phase.

Note that staircases that are connected to machines are also covered by the provisions of the Machinery Directive.

2. Design criteria

Staircases are dimensioned and designed in accordance with the following:

- SS EN 1090-2. Technical requirements for steel structures.
- EKS. National regulations for the application of Euro codes.

The staircases are dimensioned in accordance with load category C3. Please note, other load requirements may also apply. Normally, the staircases are dimensioned in accordance with load category C3. If so requested by the customer, staircases may be dimensioned in accordance with load category C5.

Steel staircases

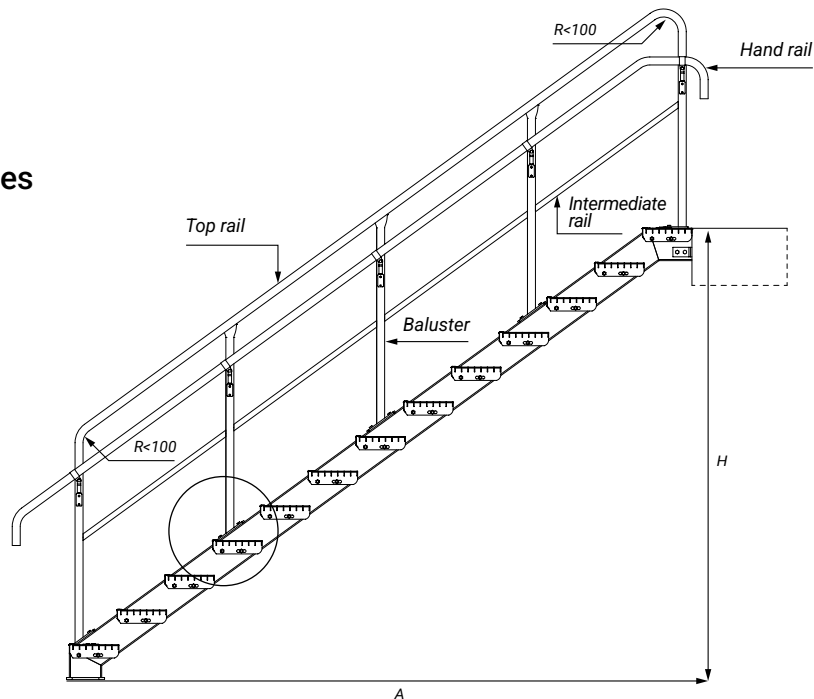
Date
05.08.2026

Edition
1

Page
2 (7)

3. Design

3.1 Railing types

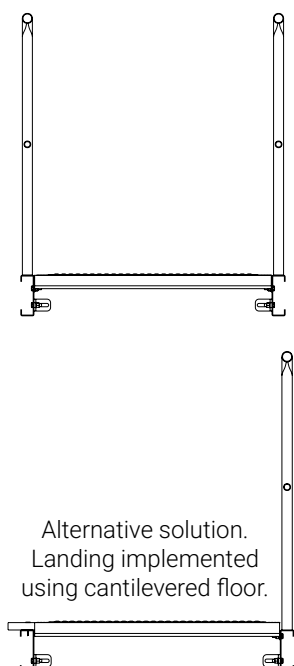
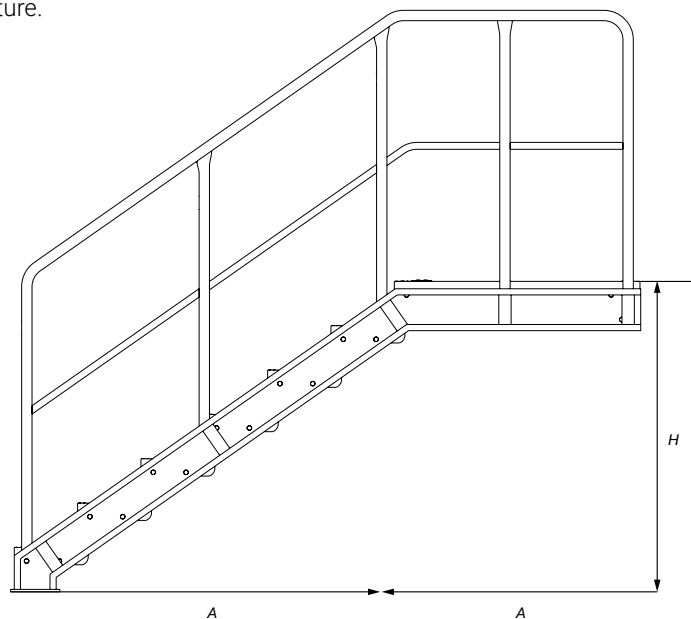


Alternative railing mounting.
Removable railing (bolted).

The handrail is manufactured as a single continuous piece along the entire length of the flight of stairs. Where a longer handrail is required, 300 mm of extra handrail is added at the beginning and end of the staircase.

Fig. 1 – Standard railing mounting (welded)

The staircase is designed with the uppermost tread being level with the floor structure.



Alternative solution.
Landing implemented
using cantilevered floor.

Fig. 2– Staircase with landing

Staircase with step-off landing.
Landing level with floor structure.

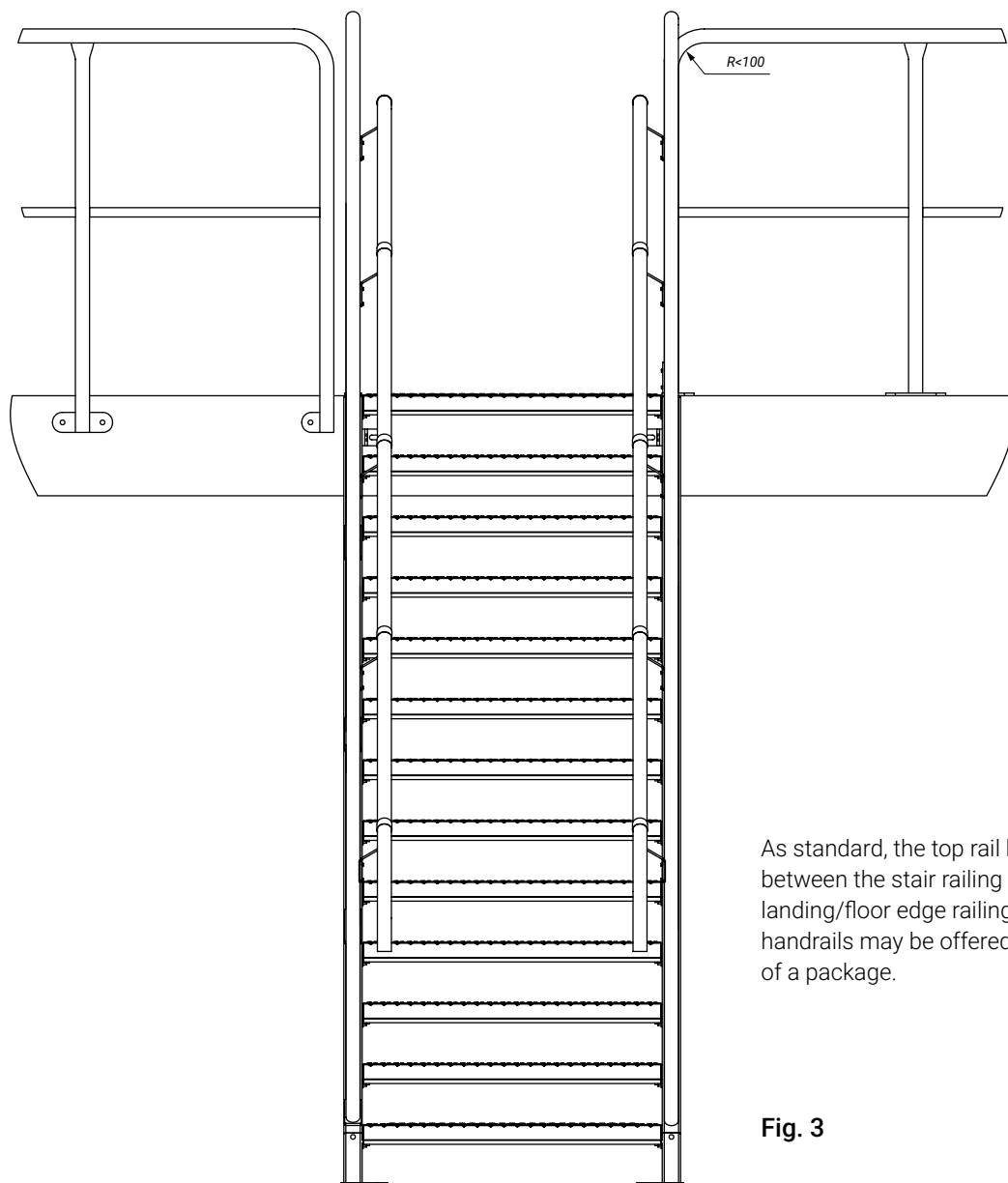
Steel staircases

Date
05.08.2026

Edition
1

Page
3 (7)

3.2 Connection to landing



As standard, the top rail breaks between the stair railing and the landing/floor edge railing. Extra handrails may be offered as part of a package.

Fig. 3

Steel staircases

Date
05.08.2026Edition
1Page
4 (7)

3.3 Tread width, tread depth, riser height and stair width

For a staircase to be safe and comfortable to use, the sum of two riser heights (D) and one tread depth (E) should be between 600 and 640 mm.

$2 \times \text{riser heights (D)} + \text{tread depth (E)} = 600\text{--}640 \text{ mm.}$

Tread width (A) + external stringers (B) = stair width (C). Riser height is the vertical distance between the top sides of each step (D). Tread depth (E) is measured horizontally from the leading edge of one tread to the leading edge of the next tread. Actual tread depth (F) is the distance from the front edge of the step to the back edge of the step.

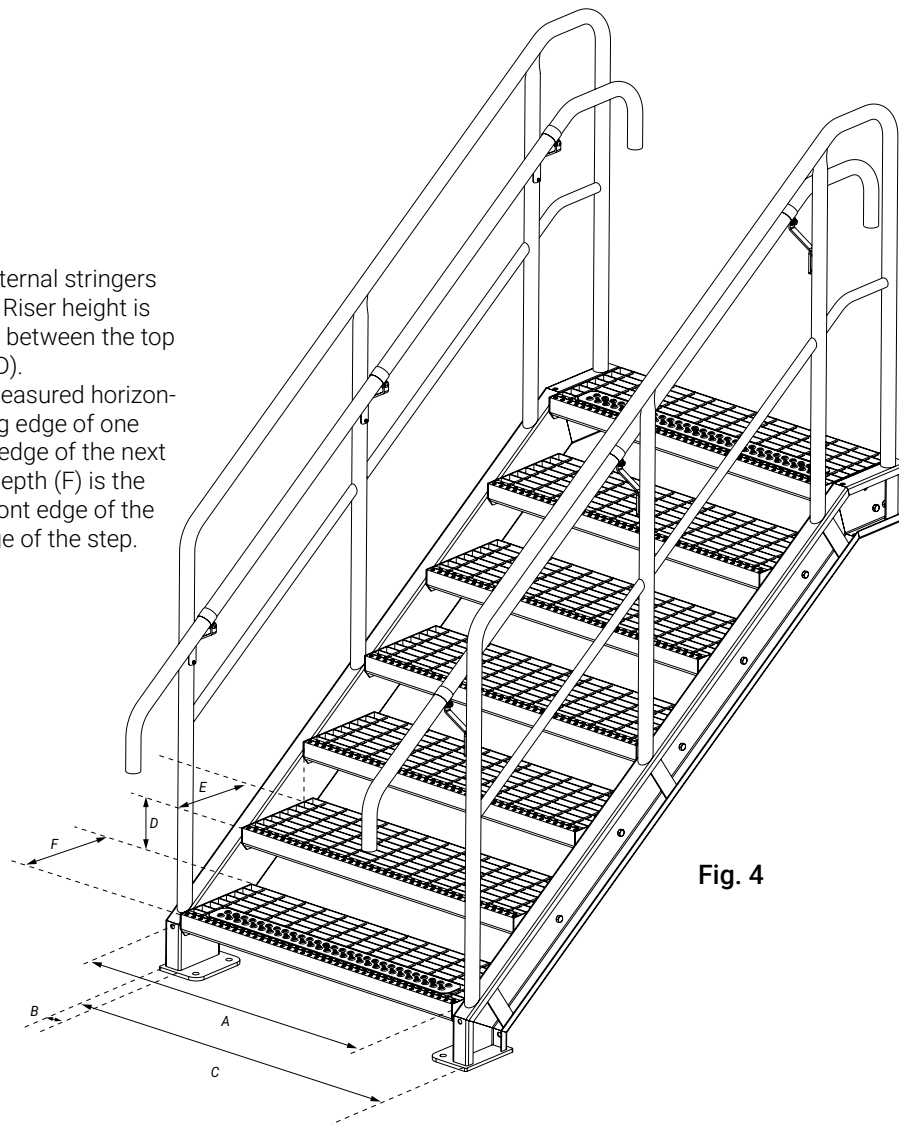


Fig. 4

Steel staircases

Date
05.08.2026

Edition
1

Page
5 (7)

3.4 Stringer

Stringers are selected as either WUC, UPE, or flat bar. Our in-house produced WUC-profile is used as standard and is available in 5 different dimensions, sufficient to handle the vast majority of staircase solutions. The choice of profile is based on the design and intended usage of the staircase.

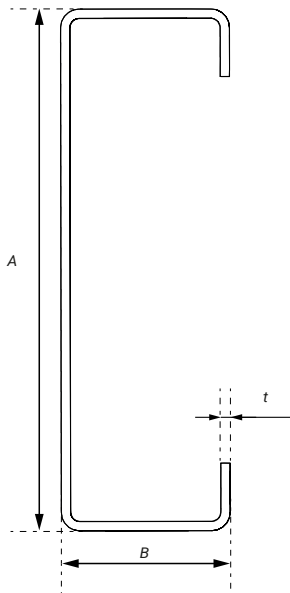


Fig. 5 – WUC

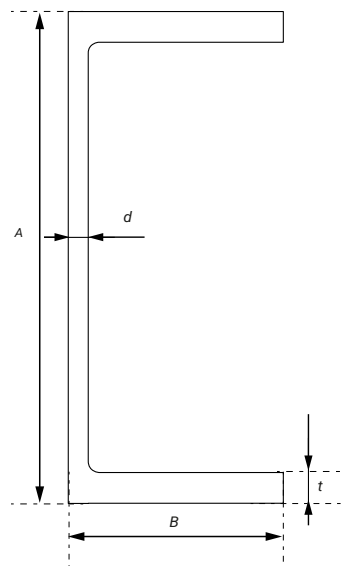


Fig. 6 – UPE

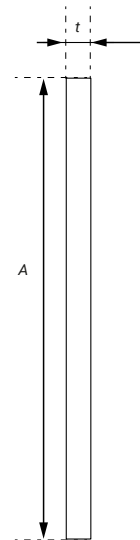


Fig. 7 – Flat bar

Stringer alternatives	A (mm)	B (mm)	d (mm)	t (mm)
Flat bar 120x8	120			8
Flat bar 150x8	150			8
WUC 120/3	120	55		3
WUC 170/3	170	55		3
WUC 170/4	170	55		4
WUC 170/5	170	55		5
WUC 200/5	200	55		5
UPE 100	100	55	5.0	8.5
UPE 120	120	60	5.5	9.0
UPE 140	140	65	6.0	9.5
UPE 160	160	70	6.5	10.0
UPE 180	180	75	7.0	10.5
UPE 200	200	80	7.5	11.0

Steel staircases

Date
05.08.2026

Edition
1

Page
6 (7)

3.5 Stair treads

Stair treads are usually made from TH6-S steel grating treads but we also offer a number of other types, including durbar plate, slit plank flooring, and solid and perforated plank type flooring. Stocked tread lengths from 400 up to 1800 mm in intervals of 100 mm.

Visit our website www.weland.com to see our full range.

3.6 Upper fixing

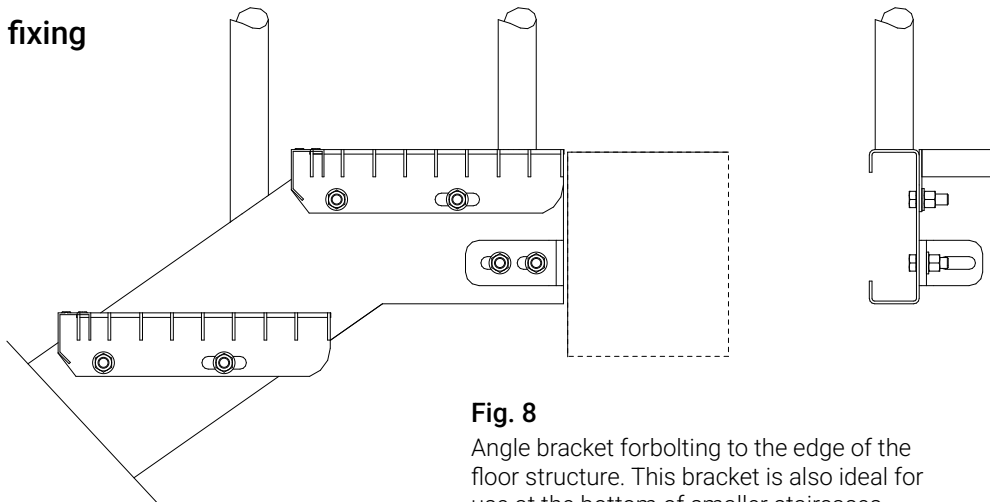


Fig. 8

Angle bracket for bolting to the edge of the floor structure. This bracket is also ideal for use at the bottom of smaller staircases.

3.7 Lower fixing

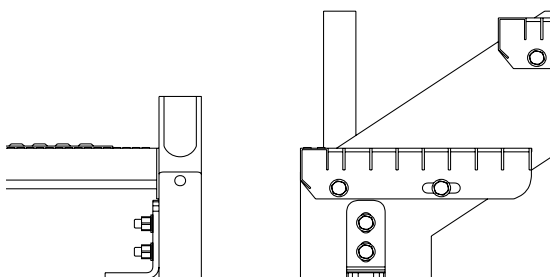


Fig. 9

Angle bracket

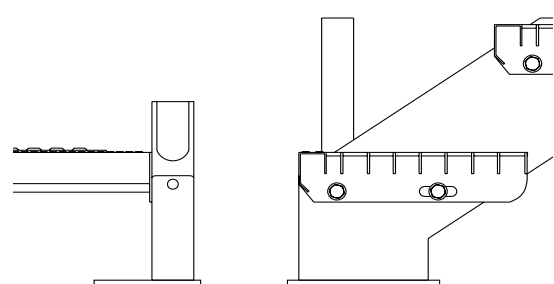


Fig. 10

Welded platform

Steel staircases

Date
05.08.2026

Edition
1

Page
7 (7)

4. Materials and dimensions

Railings are produced in the following alternative materials and dimensions

Material	Baluster	Top rail, extra handrail	Intermediate rail
Steel tube compliant with EN10204-3.1. EN10305-3, S370H.	Ø42x2.5	Ø42x2.5	Ø28x2.5

Stringers are offered in various materials depending on type.

WUC profile: EN10204 240YP

UPE Profile: SS-EN 10025-3 S350

Sheet metal: SS-EN 10025-2 S355N

Staircase stringers are drilled at the factory and adapted to steps and landings. Staircase is supplied complete incl. bolts and nuts between treads and stringers.

Visit our website www.weland.com to see our full range.

5. Surface treatment and colour

We offer a total of four different surface treatment variants as standard.

- Hot-dip galvanized in accordance with SS-EN-ISO 1461 (C3)
- Hot-dip galvanized in accordance with SS-EN ISO 1461FE/ZN 115 (C4)
- Hot-dip galvanized in accordance with SS-EN-ISO 1461 + finished in accordance with SS-EN-ISO 12944-5 2019 C4.A7.10
- Finishing for interior use in accordance with SS-EN ISO 12944-5 2019 C2.A2.06

6. References

Standard	Title
SS-EN 1090-2:2018	Execution of steel structures and aluminium structures. Part 2: Steel structures. (2018)
SS-EN ISO 1461:2009	Inorganic coatings - Hot-dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods. (2009)
SS-EN 1993-1- 1:2005/A1:2014	Eurocode 3: Design of steel structures. Part 1-1 General rules and rules for buildings. (2005)
BBR	Swedish Board of Housing, Building and Planning's Building Regulations
BFS 2024:9	Swedish Board of Housing, Building and Planning Code of Statutes