



WMH GROUP GERMANY
SINCE 1932

Information for architects and engineers.

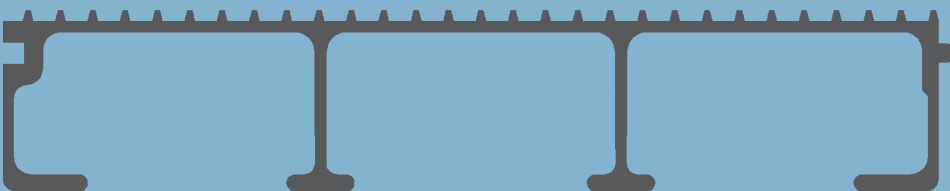
DESIGN **PLANKS**



GRATING **PLANKS**



INDUSTRIAL **PLANKS**



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Attractive, durable and lightweight.

Design Planks, Industrial Planks and Grating Planks are very versatile and find multiple applications in industry, as well as in building and plant construction. They are used for walkways, stairs and operating platforms. These aluminium products are lightweight, but combine a high load-bearing capacity with great durability and anti-slip properties. Their lightness, in particular, offers users a range of benefits. They can be cut and measured on site and are quick and easy to install, a feature that is supported by our carefully thought-out mounting solutions. We source the high-quality products from Constellium Singen GmbH and are the exclusive worldwide distributors.

If you have any questions about our products, please contact us.
We would be happy to help.

Your points of contact are:

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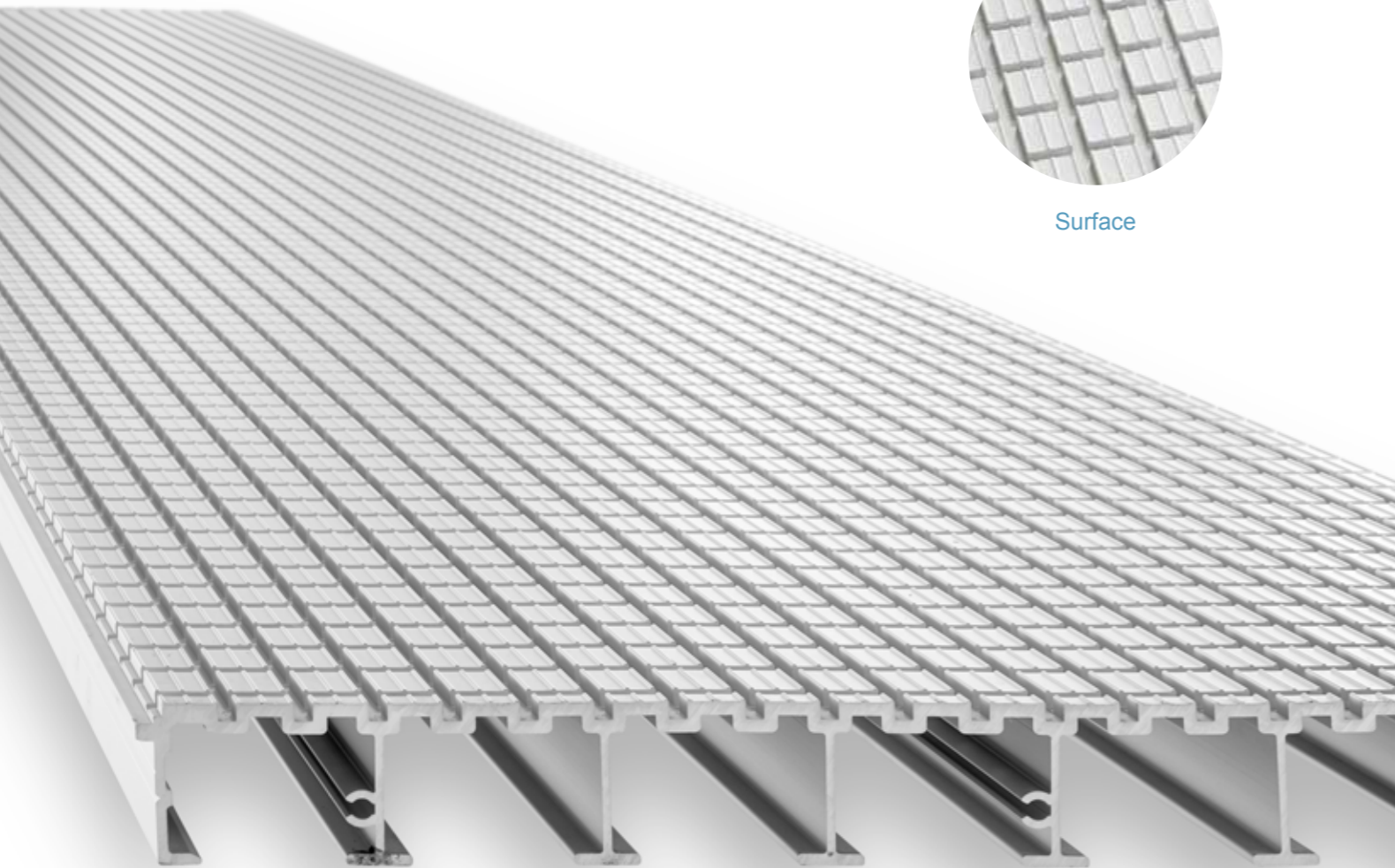
DESIGNPLANKS

An attractive solution.

- High-quality design range for interior and exterior use
- Ideally suited for modern architecture
e.g. for stairs, bridges and walkways
- Versatile in use for industrial applications
 - warehouse floors, platforms, shelving
 - gangways and aircraft passenger stairs
 - ship and aircraft construction
 - walkways and service gangways,
e.g. for the food industry
- Ready to install, anti-slip and low maintenance
- Anodised as standard



Surface



DESIGNPLANKS

Product portfolio

Walkway plank for pedestrian and traffic areas with limited traffic. Planks for stairs in high-end architectural applications – cross-milled, with perforations, anodised natural (E6EV1).

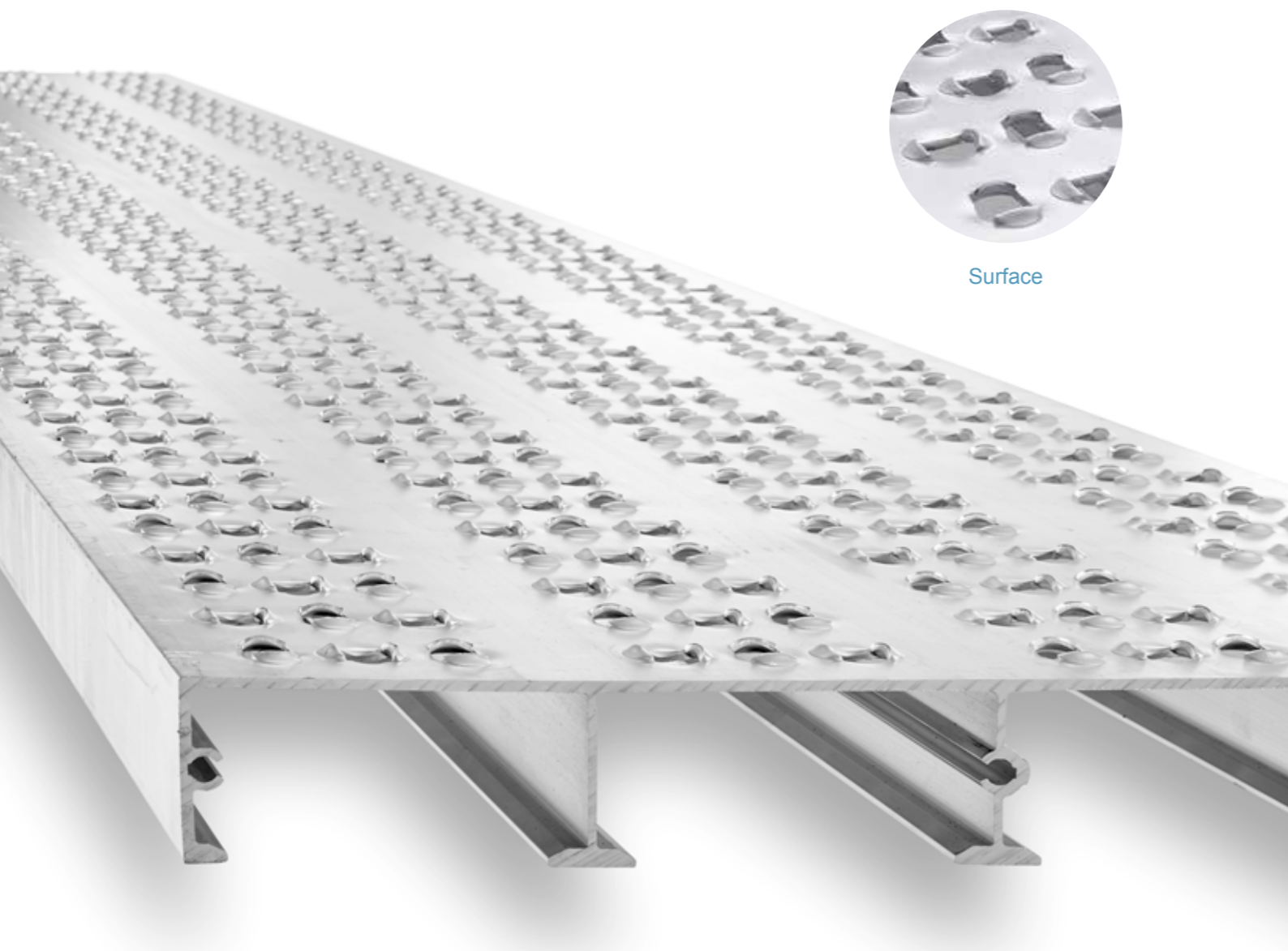
section no	sketch	height mm	width mm	weight		geometric values (cross-milled)		anti slip class
				kg/m	kg/m ²	I _x cm ⁴	W _x cm ³	
38443	profile for continuous areas non-barrierless access	40	400	6.22	15.55	31.11	13.48	R10
43344	profile for continuous areas - barrierless access / areas of concentrated point loads	40	400	7.43	18.58	31.3	14.98	R10
41581	supplement section for edge of area for 38443 or 43344	40	100	2.19	21.90	9.15	3.90	R10
38442	edge nose for landings suitable for 38443 or 43344; connection with hammer-head bolt ca. every 30-40 mm	40	43	1.2	—	—	—	R10
41582	edge support for 38443 at free/cut-off edges	33.5	30	0.65	—	—	—	—
41220	profile for continuous areas with heavy loads	57	400	11.29	28.22	119.81	41.83	R10
38130	stair section	40	300	5.22	17.39	24.76	10.87	R10
40823	stair section - wide spans	50	300	6.22	20.73	53.02	19.15	R10
40822	stair section - wide spans / high loads	50	345	7.34	21.27	64.74	24.23	R10

alloy: EN AW-6063 T66

GRATINGPLANKS

A light solution.

- Lightweight
- Fast to install and dismantle
- Multiple applications:
 - stair and floor covering
 - floor surfaces, bridges and gangways, etc.
- Maximum flexibility:
 - for scaffolding and fairground construction
 - for the construction of special machinery (maintenance gangways and walkways)
- Ready to install, anti-slip and low maintenance



Surface

GRATINGPLANKS

Product portfolio

Very light walkway planks for areas with limited traffic. Quick to install and dismantle. Stamped with perforations, raw aluminium.

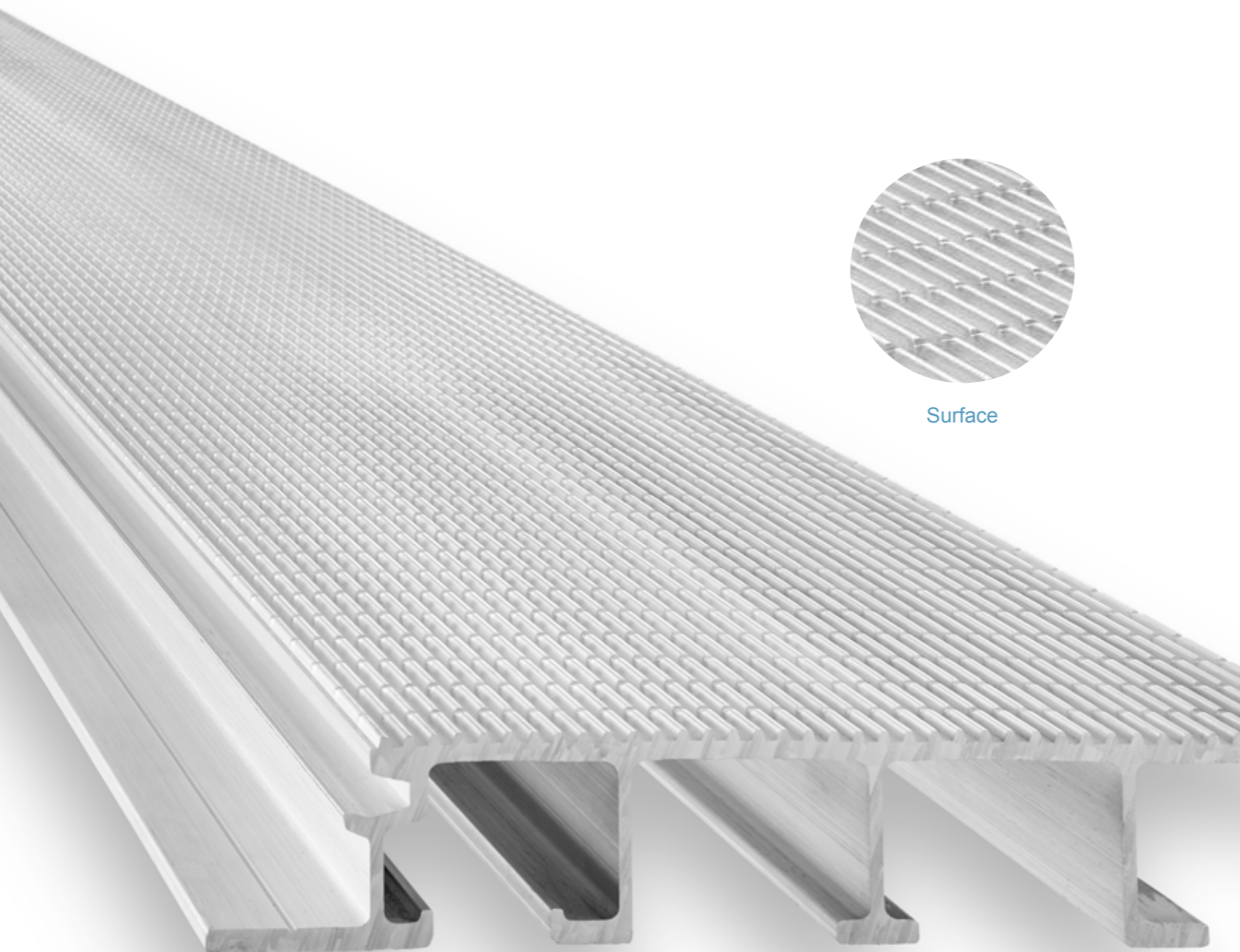
section no	sketch	height mm	width mm	weight		geometric values (cross-milled)		anti slip class
				kg/m	kg/m ²	I _x cm ⁴	W _x cm ³	
31118	 Light grating plank, can be laid separately (blunt edge)	30	300	3.31	11.10	11.78	6.56	R10
34895	 see 31118; alternative width	30	400	4.35	10.9	15.59	8.65	R10
31119	 see 31118; alternative width	30	600	6.48	10.8	23.21	12.84	R10
36723	 see 34895 for wider spans	50	400	5.23	13.1	56.61	19.17	R10
31903	 stair tread	40	215	3.01	—	21.61	9.42	R10
31904	 nose for stair tread	40	35	0.64	—	3.76	1.96	—

Alloy: EN AW-6082 T5

INDUSTRIAL PLANKS

A robust solution.


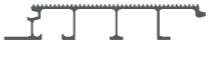

- Available in two versions depending on loads: Standard planks and heavy-duty planks
- Suitable for use in industrial, trade and office applications:
 - Warehouse facilities, gangway surfaces
 - Mobile bridges
 - Vehicle superstructures
 - Pit covers
- Ready to install and low maintenance



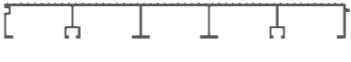

INDUSTRIAL PLANKS

Product portfolio

Higher strength planks for industrial applications, vehicle construction, etc. Impermeable surface. In case of interest, please request additional information on heavy-duty planks.

section no	sketch	height mm	width mm	weight		geometric values (cross-milled)		surface	anti slip class
				kg/m	kg/m ²	I _x cm ⁴	W _x cm ³		
24524	 Plank with higher strength, universally applicable	40	220	3.99	18.15	33.6	12.5	corrugated across w/o cross corrugation	R9 —
24520	 Plank with higher strength for industrial applications, weldable	40	200	4.97	24.86	43.9	16.8	corrugated across w/o cross corrugation	R9 —
27435	 light plank with higher strength for industrial applications, weldable	30	200	2.82	14.1	12.1	5.5	corrugated across w/o cross corrugation	R9 —

Alloy: EN AW-6082 T 5

34774	 light plank, no perforations, tongue-groove	40	400	5.63	14.07	45	16.4	corrugated across w/o cross corrugation	R9 —
41985	 heavy duty plank	68	400/ 370	18.1	45.1/ 48.8	458.1	125.9	— —	— —

Alloy: EN AW-6106 T 6

Planks

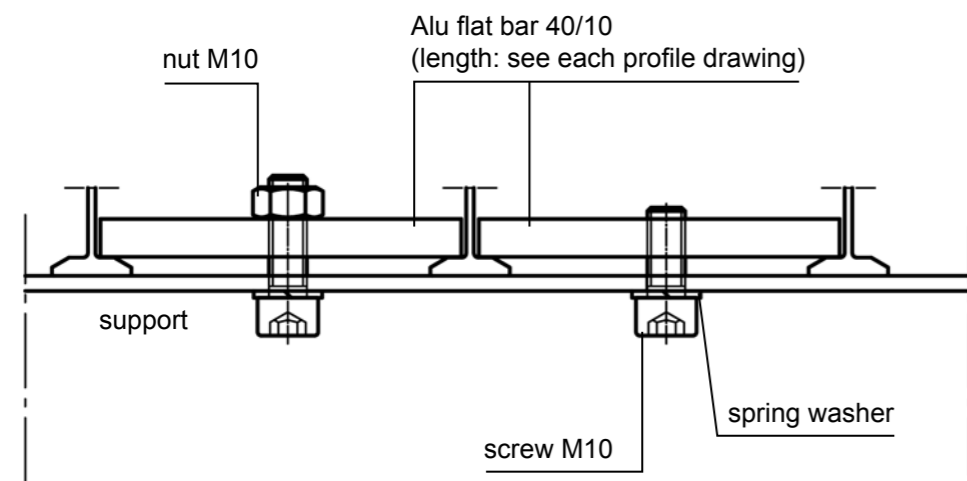
Fast and simple fixing. Mounting with BU1



- 1 Mounting and joining of the planks should be carried out with BU1 wedges. Please clamp over adjoining edge feet and lightly tighten the bolt of the wedge.
- 2 Drive fixing wedge beneath the support projection using a hammer.
- 3 Tighten the bolt firmly – done!

As an alternative to fixing the planks with BU1 wedges, they can also be installed using clamp plates - the principle is the same as for the stair sections.

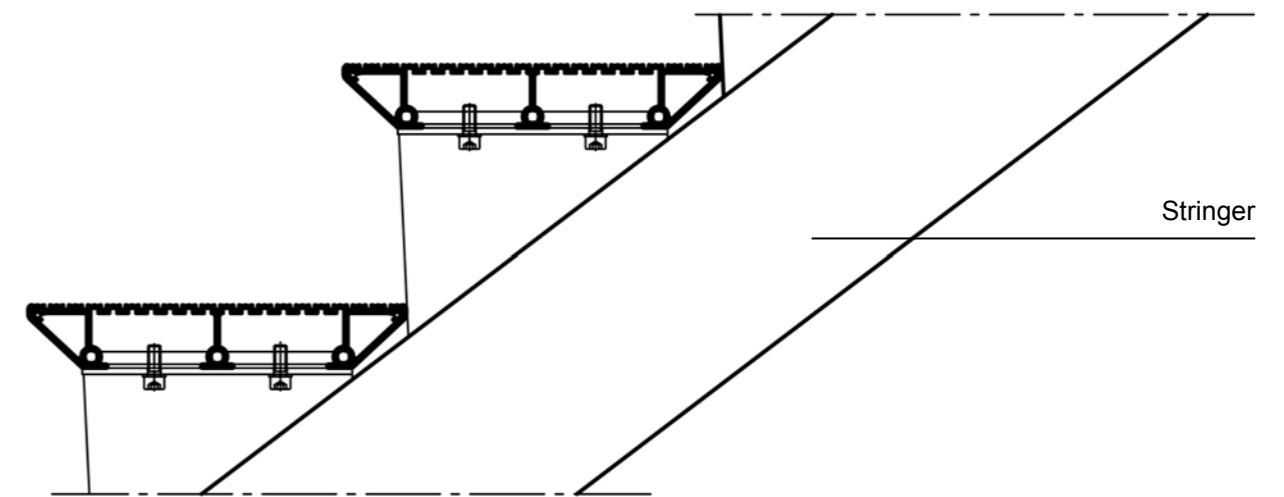
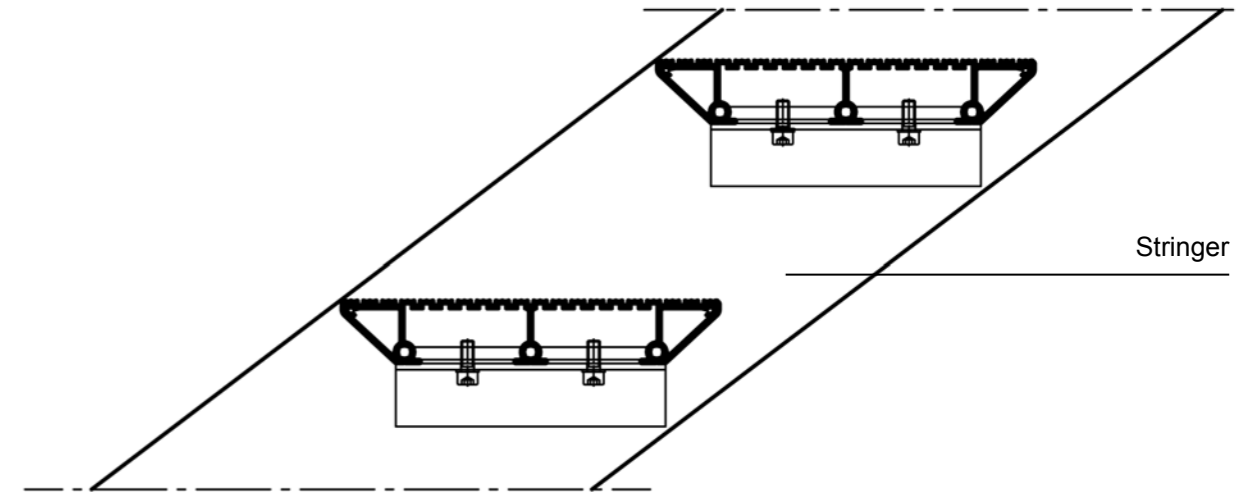
Fixing with clamp plates



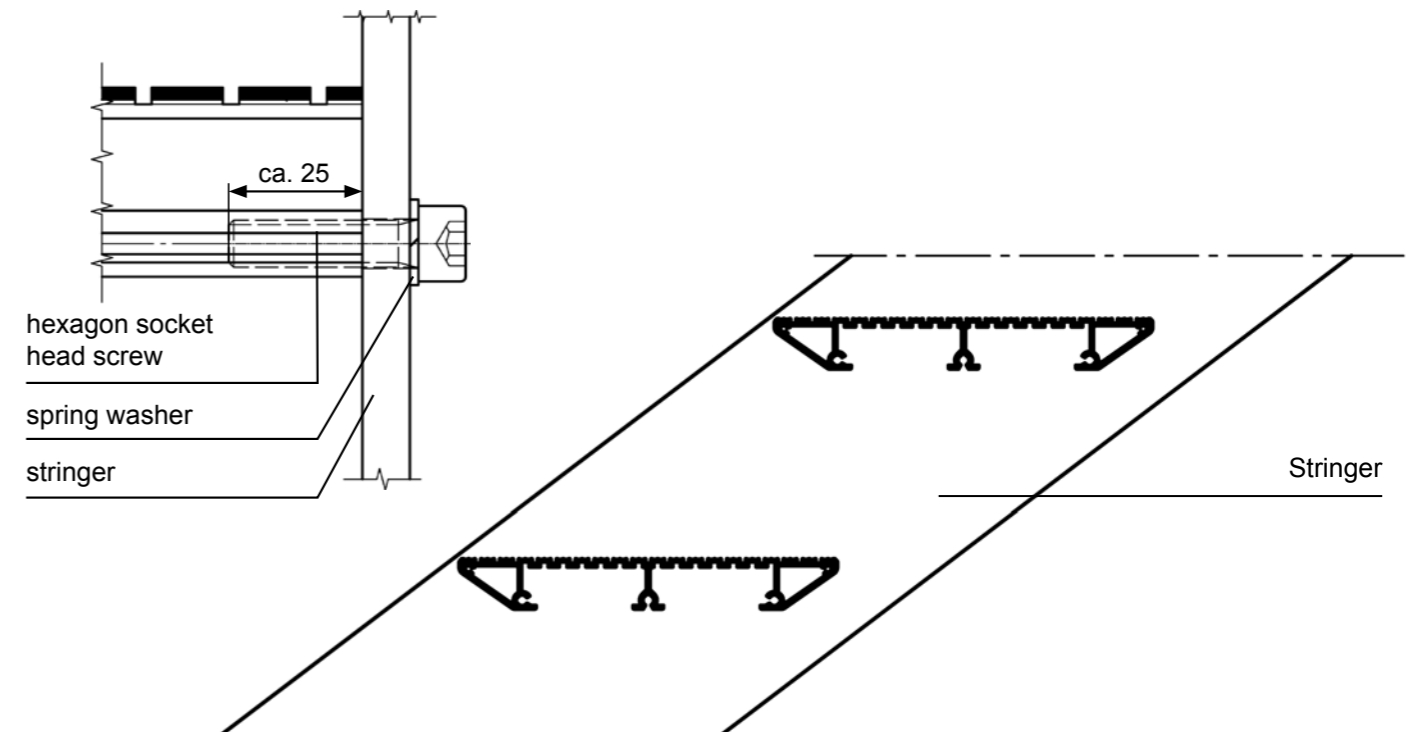
screw, nut and spring washer stainless steel V4A (e.g. 1.4401 or 1.4571 or equivalent)

Steps

Fixing on support structures



Fixing with bolts into screw ports



Installation and Handling Instructions

Installation of planks

Installation should always be carried out by qualified, skilled tradesmen preferably using a direct support on angles with a flange width of > 50 mm.

If galvanised steel supports are used for planks exposed to weathering or poor ventilation, a galvanic insulation such as neoprene or similar is required, which also offers a simple noise dampening solution. Make sure that the insulation is properly fixed and that the edges of any cut-outs required for railings etc. are suitably reinforced. The installation of the planks should be based on the technical considerations of qualified tradesmen.

Planks are fixed with fixing wedges BU 1 (see page 10). For areas of heavy use or wide spans the alternative fixing method using clamp plates is recommended. Fixing with bolts (counter-sunk or visible) is also possible from above.

Installation of stairs

The semis do not have any pre-cut threads in the screw channels. Spring washers are required when installing the planks using screw channels. Regular retightening is recommended. For stairs wider than 1.20 m or frequently used areas, it is recommended to fix the planks with the help of clamp plates.

Expansion joints

During installation, the different thermal expansion of aluminium and steel has to be taken into account to avoid unplanned restraint, especially in wintertime. Due to annual temperature fluctuations in Central Europe the difference in thermal expansion may be up to 1 mm per metre.

When installing planks over a larger area, expansion joints should be provided at intervals of approx. 6 - 10 cm transverse to the direction of the plank span. (see example in the set of drawings).

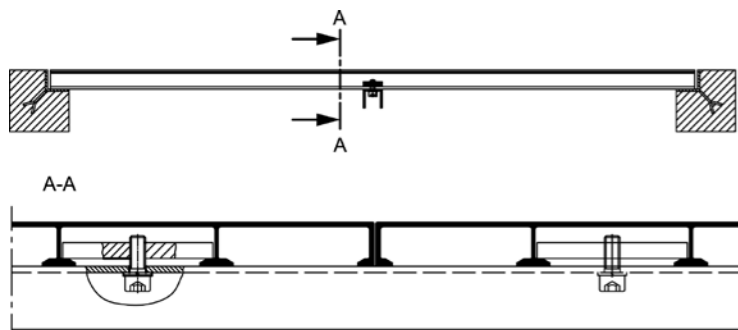
Please take into consideration that aluminium planks have production-related tolerances.

Coupling of planks

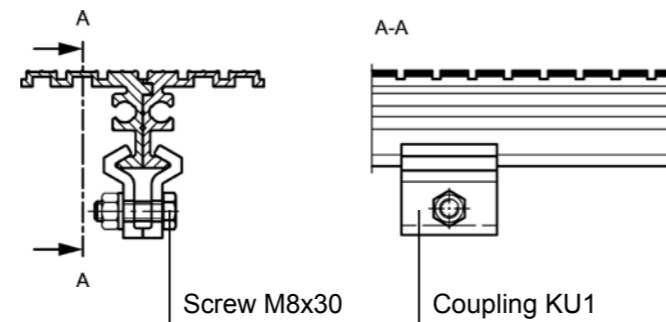
The tongue-and-groove joint allows only for very small transverse load transmission. When using wide spans, the planks have to be supported in the middle of the field with KU1 fixings.

A suspended load distribution beam can significantly reduce deflection under single loads.

Load distribution beam



Coupling



Note:

Plank 38443 is not suitable for concentrated point loads such as roll containers, pallet trucks, pianos. For barrier-free areas we recommend using plank 43344 (half the spacing of the feet).

max. span limit [m]

stairs and landings category T2 (EN 1991) single load 2.0 kN; distributed load 5.0 kN/m ²		
section no	single span system	multi span system
38443/41581	1.32 (1.41)	1.51 (1.54)
43344	1.32 (1.41)	1.51 (1.55)
41220	2.21 (2.21)	2.42 (2.42)
38130	1.18	1.34
40823	1.72 (1.85)	1.96 (2.03)
40822	1.89 (1.89)	2.07 (2.07)
31118	0.81 (1.11)	0.92 (1.23)
34895	0.93 (1.11)	1.06 (1.22)
31119	0.93 (1.11)	1.06 (1.22)
36723	1.72 (1.72)	1.88 (1.88)
31903	1.10 (1.53)	1.25 (1.68)
24524	1.37 (1.76)	1.56 (1.93)
24520	1.57 (1.99)	1.79 (2.18)
27435	0.82 (1.16)	0.94 (1.33)
34774	1.59 (1.59)	1.74 (1.74)

high loads; areas with barriers for rolling devices or vehicles category B3; C3; C5; D2 (EN 1991) single load 4.0 kN; distributed load 5.0 kN/m ²		
section no	single span system	multi span system
38443/41581	0.93 (1.32)	1.07 (1.50)
43344	0.93 (1.32)	1.07 (1.51)
41220	1.83 (2.21)	2.09 (2.42)
38130	n.a. **)	n.a. **)
40823	n.a. **)	n.a. **)
40822	n.a. **)	n.a. **)
31118	0.57 (0.81)	0.65 (0.93)
34895	0.66 (0.93)	0.75 (1.06)
31119	0.81 (0.93)	0.92 (1.06)
36723	1.26 (1.72)	1.43 (1.88)
31903	n.a. **)	n.a. **)
24524	0.97 (1.37)	1.11 (1.56)
24520	1.11 (1.57)	1.26 (1.79)
27435	0.58 (0.82)	0.66 (0.94)
34774	1.12 (1.59)	1.28 (1.74)

work areas category B2 (EN 1991) single load 3.0 kN; distributed load 3.0 kN/m ²		
section no	single span system	multi span system
38443/41581	1.08 (1.52)	1.23 (1.74)
43344	1.08 (1.53)	1.23 (1.74)
41220	2.11 (2.62)	2.41 (2.87)
38130	n.a. **)	n.a. **)
40823	1.41 (1.99)	1.60 (2.27)
40822	1.55 (2.20)	1.77 (2.45)
31118	0.66 (0.94)	0.76 (1.07)
34895	0.76 (1.08)	0.87 (1.23)
31119	0.76 (1.08)	0.87 (1.45)
36723	1.45 (2.06)	1.66 (2.23)
31903	0.90 (1.27)	1.02 (1.45)
24524	1.12 (1.58)	1.28 (1.81)
24520	1.28 (1.81)	1.46 (2.06)
27435	0.67 (0.95)	0.77 (1.08)
34774	1.30 (1.83)	1.48 (2.07)

high loads; areas with barrierless access for maintenance vehicles category B3; C3; C5; D2 (EN 1991) single load 10.0 kN *) ; distributed load 5.0 kN/m ²		
section no	single span system	multi span system
38443/41581	n.a. **)	n.a. **)
43344	1.03 (1.41)	1.17 (1.48)
41220	1.82 (2.21)	1.98 (2.42)
38130	n.a. **)	n.a. **)
40823	n.a. **)	n.a. **)
40822	n.a. **)	n.a. **)
31118	n.a. **)	n.a. **)
34895	n.a. **)	n.a. **)
31119	n.a. **)	n.a. **)
36723	n.a. **)	n.a. **)
31903	n.a. **)	n.a. **)
24524	1.05 (1.35)	1.21 (1.54)
24520	1.21 (1.54)	1.38 (1.75)
27435	n.a. **)	n.a. **)
34774	n.a. **)	n.a. **)

The values in brackets may be used when a load distribution beam is installed (see p. 10). The load distribution beam must be fixed to each plank element and needs to have an inertia of $J \geq 8.0 \text{ cm}^4$ (e.g. U 50 x 50 x 4 or L 50 x 50 x 5).

Values in **bold** are obtained when the stress limit has been reached, as calculated acc. to EN 1999. Values in normal print result from deflection of max. $L/300$ and max 1.0 cm.

*) ATTENTION: the single load 10kN on a contact area of 10 x 10 cm ("cherry picker") is regarded as an exceptional load (maintenance issue). Maximum deflection has therefore been calculated on the basis of $L/100$ resp. 1.5 cm and the tension set at $\gamma_F = 1.0$.

**) n.a. = not applicable

Material properties Design values

Aluminium alloys for extrusion, general properties

Modulus of elasticity:	70.000	MPa
Thermal expansion coefficient:	23.5 x 10 ⁻⁶	1 / K
Specific mass:	2.7	g / cm ³
Low-temperature performance:	no cold-embrittlement	

EN AW-6063 T66 EN AW-6106 T6 EN AW-6082 T5

Weldability	good	very good	good
Welding consumable (MIG/TIG)	4043A (AlSi5) or 5356 (AlMg5)	4043A (AlSi5) or 5356 (AlMg5)	4043A (AlSi5) or 5356 (AlMg5)
Anodisability	very good	good	technically anodisable (moderately decorative)
Corrosion resistance	very good	very good	very good
Brinell hardness (typical value)	~ 80	~ 75	~ 90

Mechanical values for calculation acc. to EN 1999-1-1:2014

Ultimate strength	f_u	245 MPa	250 MPa	270 MPa
Partial safety factor	γ_{M2}	1.25	1.25	1.25
Design value	-> $f_{u,d}^{Al}$	196 MPa	200 MPa	216 MPa
0.2 %-Yield strength	f_o	200 MPa	200 MPa	230 MPa
Partial safety factor	γ_{M1}	1.1	1.1	1.1
Design value	-> $f_{o,d}^{Al}$	181.8 MPa	181.8 MPa	209 MPa
Ultimate strength heat-affected zone	$f_{u,haz}$	130 MPa	160 MPa	185 MPa
0.2 %-yield strength HAZ	$f_{o,haz}$	75 MPa	95 MPa	125 MPa
Partial safety factor	γ_{MW}	1.25	1.25	1.25
Design value	-> $f_{o,haz}$	60 MPa	76 MPa	100 MPa
Buckling class		A	A	A

Attention: when welding, please always work with the heat-affected zone (HAZ) values.

Care and Safety Instructions, Exclusion of Liability

Storage

Upon receipt the material has to be unpacked immediately. It is important to stock the planks in dry and well ventilated conditions. If the planks are covered with foil or similar materials, brownish/greyish stains may appear on the surface, the so-called wet storage stains. These develop mostly in summer or at very high humidity levels. The coloured hydroxide layer does not affect the durability of the planks. If required, it can be removed mechanically.

Both Industrial and Grating planks are not anodised. This initially leads to the appearance of an irregular, grey natural oxide film that provides corrosion protection. Design Planks, which are anodised as standard, are more corrosion and weather resistant.

For corrosion protection the following conditions apply: galvanic isolation, cleaning, ventilation and fasteners (see installation instructions, p. 12) must consist of stainless steel of corrosion resistance class III (e.g. 1.4401 or 1.4571 or equivalent).

Care

Fixings must be checked and retightened regularly. Planks must also regularly be cleared of dirt and road salt, especially in corners and in poorly ventilated areas.

Cleaning: clear water is sufficient. Only use alkaline solutions with caution and in extremely diluted form. Very sticky pollution should be removed with simple mechanical products that are not too harsh. If steel components have been installed nearby, red rust may appear. This rust will not harm the aluminium. Nonetheless, we recommend removing it as soon as possible.

Exclusion of liability

The installation must always be carried out by qualified, skilled tradesmen.

No liability is assumed for faulty installation or any damages caused by incorrect handling. All information is provided without guarantee; no claim is made with regard to its completeness. Other aspects may need to be taken into consideration on a case by case basis. Static values given by the manufacturer only serve as a guideline. Customers are responsible for ensuring proper measurements are taken in every case. We would be happy to provide further information or drawings on request, subject to availability. The manufacturer reserves the right to carry out modifications for the purpose of further product development without prior notice.



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