Notes on Stairs and Platforms

9

» Safe access
for safe work. «

With our platforms, we offer custom solutions for safely accessing work areas and performing work on vehicles, machines and systems. The platforms we offer include custom assembly and maintenance platforms, simple standard platforms, and footbridges for use in production areas.

mk platforms are planned and manufactured to order. We take into account the specific conditions on site, such as large heights or the need for extended reach. Appropriate functions are then planned, such as height adjustment, mobile capabilities or integrated rotary joints. By utilising the mk profile system, we can fulfil virtually any requirement in terms of effective area, travel distance or minimum clearance, depending on the specific application.

The size of the platforms can vary from simple footbridges to assembly platforms that are 15 m long and 6 m high. Foamed combined profiles can be used to construct free-standing bridges of up 8 m.

Benefits of Stairs and Platforms

- Variety of designs and options that fulfil safety requirements and improve workstation ergonomics
- Modular design allows for easy assembly and disassembly using standard tools
- Large selection of configurations provided by the profile system gives us maximum flexibility to implement customer-specific functions
- High material quality, sturdy connection technology and high-quality accessories ensure high load capacities and long service lives
- Compatible modules and removable connection technology allow for easy modifications and additions
- High-quality aluminium profiles for an attractive design
- Mobile designs available with fixed or swivel casters or air cushions

Ergonomics

Safety

Flexibility

Stairs

Notes/Technical Data

Stairs are made from mk 2040.68, mk 2040.69 and mk 2040.06 profiles. The profiles used in the stairs have a slip-reducing surface structure. The screw connections in the profile slots eliminate the need for machining components.

Sample order

Width (B)	=	1000 mm
Height (H)	=	1800 mm
Angle	=	45°
Number of steps	=	10

Incline angle

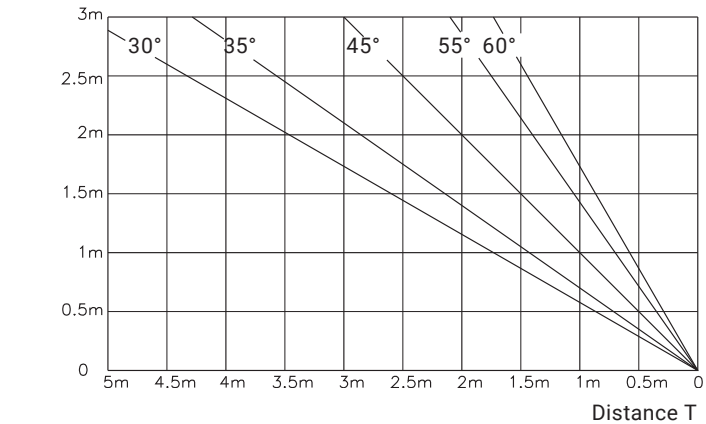
Stairs can be designed with various inclines depending on the intended function or available space. The recommended inclines for the stairs are based on the type of use. Our standard stairs have angles up to 45° For frequently used stairs on which loads are transported, the stairs should have an incline angle of 30° or 35°. If space is limited, the stairs can have a 60° incline.

Note:

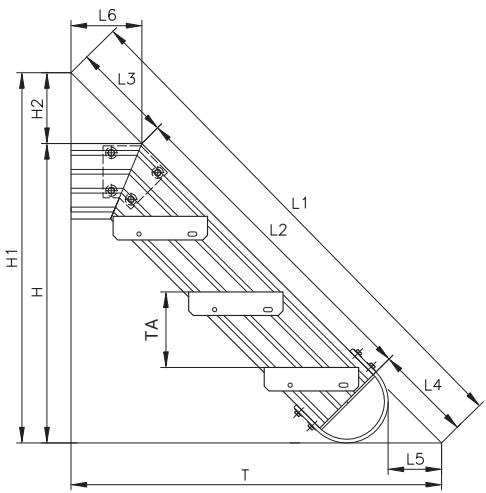
The distance between steps of 160 mm is suitable for climbing while transporting heavy loads.

Step distance TA = 160 mm
Number of steps = (height H ÷ 160) - 1
(rounded down)

Step distance TA = 190 mm
Number of steps = (height H ÷ 190) - 1
(rounded down)



Step height 160 mm		Step height 190 mm	
No. of steps	Height	No. of steps	Height
18	3040	15	3040
17	2880	14	2850
16	2720	13	2660
15	2560	12	2470
14	2400	11	2280
13	2240	10	2090
12	2080	9	1900
11	1920	8	1710
10	1760	7	1520
9	1600	6	1330
8	1440	5	1140
7	1280	4	950
6	1120	3	760
5	960	2	570
4	800	1	380
3	640	0	190
2	480		0
1	320		
0	160		
	0		



Formulas for calculation:

30° T = H1 x 1.732
L2 = H x 2 - 314.5

35° T = H1 x 1.428
L2 = H x 1.743 - 267.5

45° T = H1
L2 = H x 1.414 - 204.4

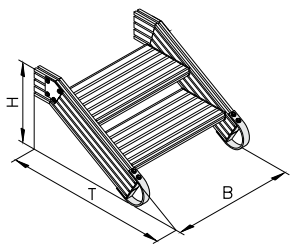
55° T = H1 x 0.7002
L2 = H x 1.22 - 163.5

60° T = H1 x 0.5774
L2 = H x 1.155 - 147.7

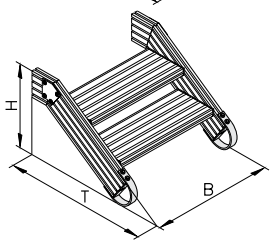
	H1	H2	L1	L3	L4	L5	L6
30°	H+86.6	86.6	L1=L2+487.5	173.2	314.5	224.5	150
35°	H+105	105	L1=L2+450.5	183.1	267.5	177	150
45°	H+150	150	L1=L2+416.5	212.1	204.5	113	150
55°	H+214	214	L1=L2+425	261.5	163.5	71	150
60°	H+260	260	L1=L2+448	300	148	55	150

H = platform height

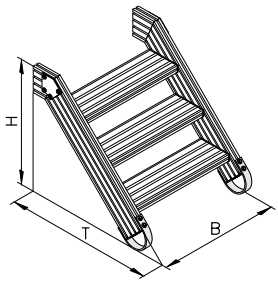
Stairs



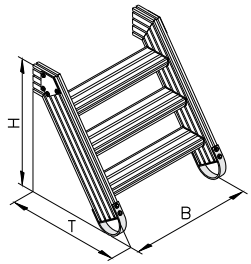
Stairs 30°
B02.31.005



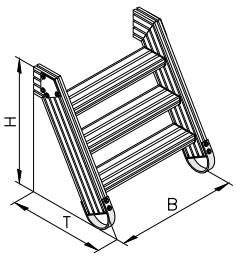
Stairs 35°
B02.31.006



Stairs 45°
B02.31.007

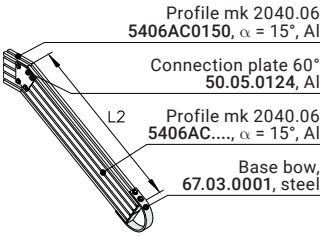


Stairs 55°
B02.31.008

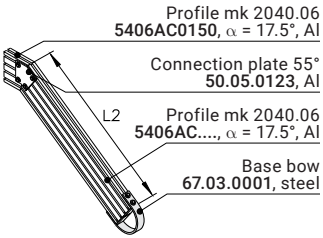


Stairs 60°
B02.31.009

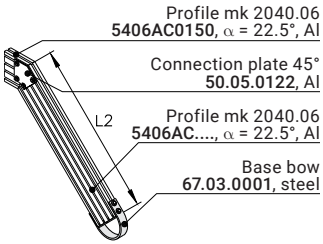
Side Walls



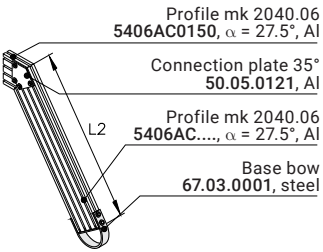
Side wall 40/30°
B02.34.006



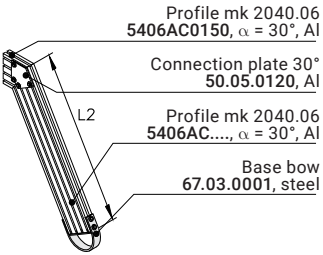
Side wall 40/35°
B02.34.007



Side wall 40/45°
B02.34.008



Side wall 40/55°
B02.34.009

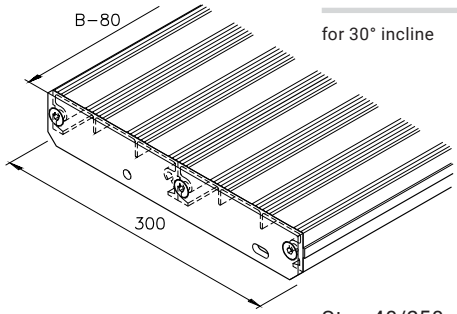


Side wall 40/60°
B02.34.010

Steps

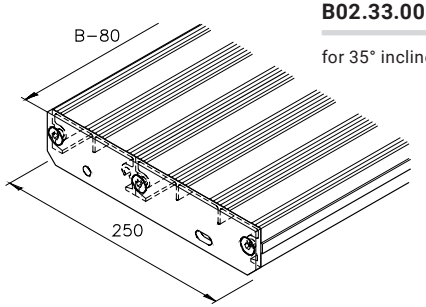
Step 40/300
B02.33.004

for 30° incline



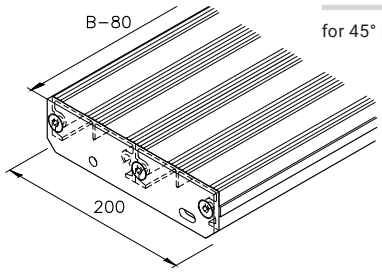
Step 40/250
B02.33.003

for 35° incline



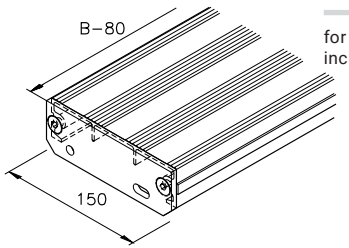
Step 40/200
B02.33.005

for 45° incline



Step 40/150
B02.33.002

for 55° and 60° incline

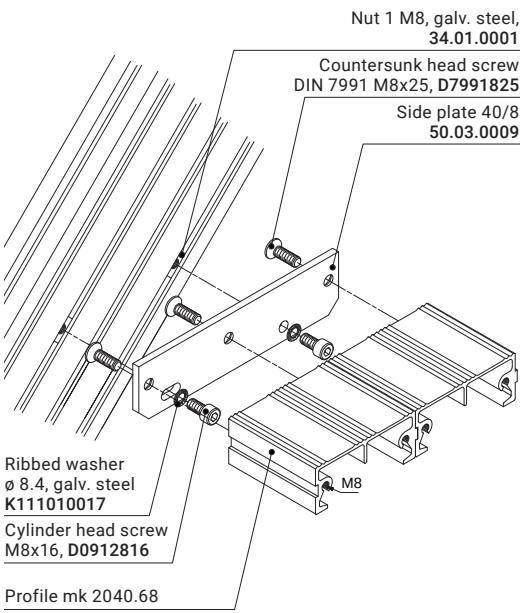


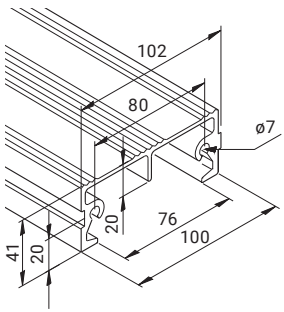
Profiles for Steps

Special profiles for building steps, machine platforms, walkways and platforms. The profiles can be connected side to side to create large stepping surfaces.

Material: Anodised aluminium

Fastening example

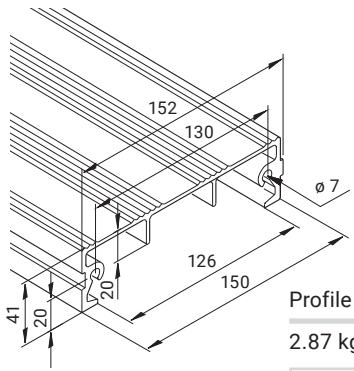




Profile mk 2040.68

2.37 kg/m

Stock length	**54.68.6100**
Cut	**54.68. ....**



Profile mk 2040.69

2.87 kg/m

Stock length	**54.69.6100**
Cut	**54.69. ....**

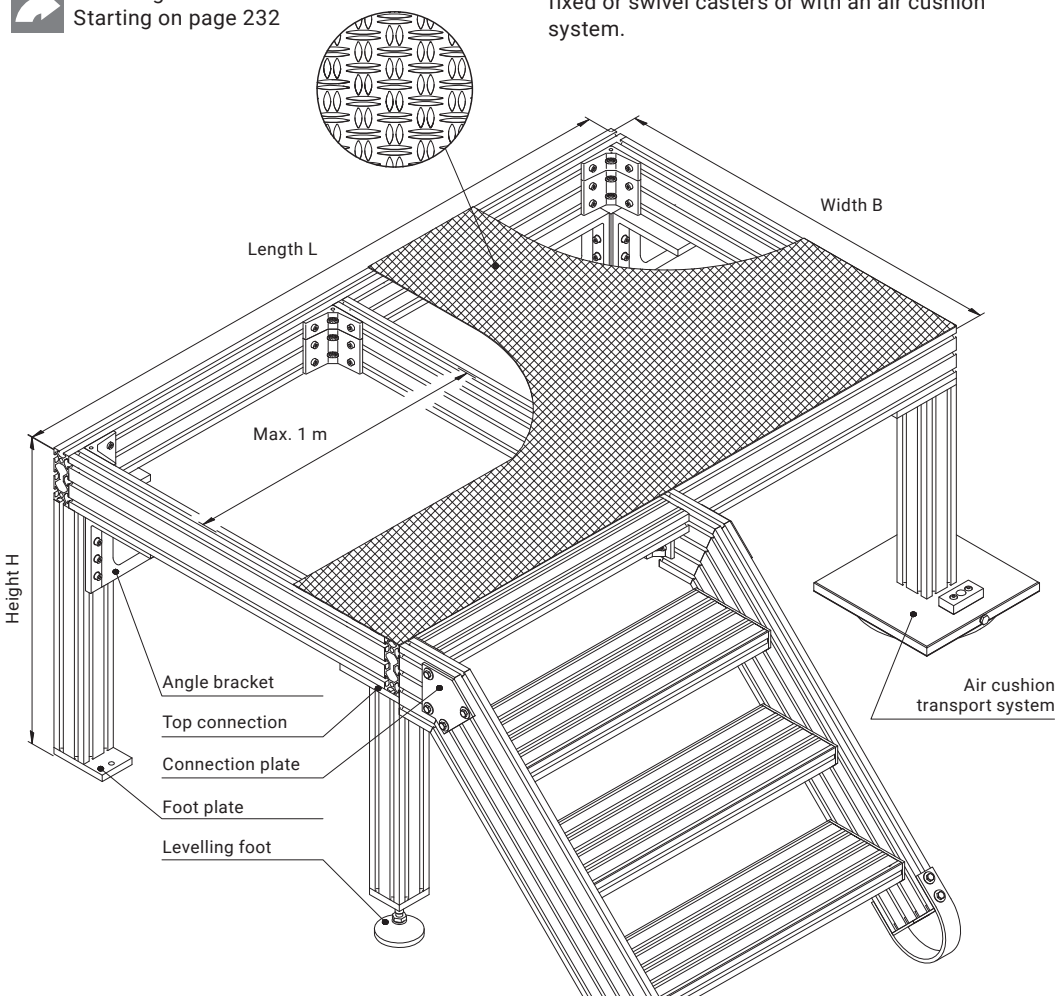
Platforms

Notes/Technical Data

With its four series of profiles, the mk profile system offers nearly endless combinations for constructing platforms. Span widths of up to 8 m can be achieved, for example with foamed combined profiles. The components listed below are only our basic components.

Platforms are covered with chequer sheets as standard or with profiles on request. For industrial applications, the platform's outer contours are equipped with toe kicks (100 mm minimum height) in accordance with DIN EN ISO 14122-2. Platforms can also have a mobile design, for example with fixed or swivel casters or with an air cushion system.

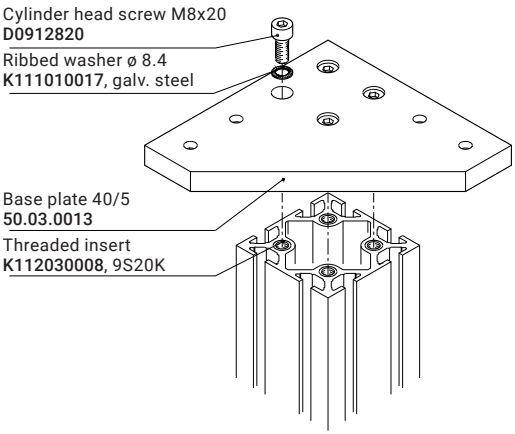
Panelling
Starting on page 232



Connection Details

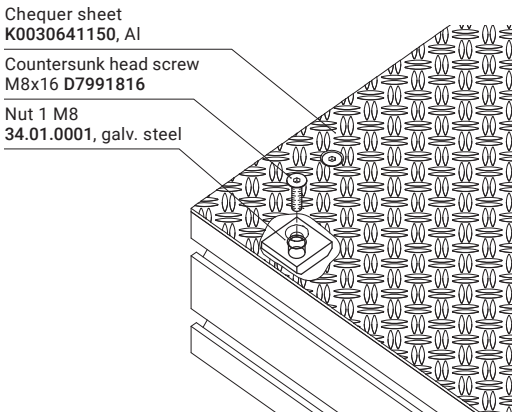
Base plate connection

A base plate is a safe and simple option for connecting the stairs. Three profiles are connected with single element.



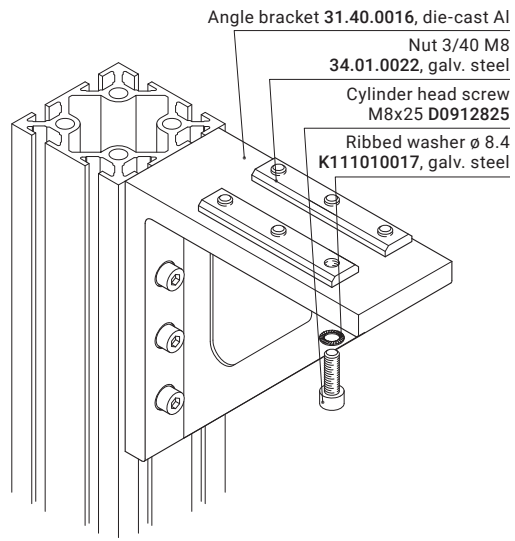
Floor fastening

The Duet chequer sheet can be used as the floor surface as an alternative to floor profiles. It is easily screwed onto the base structure.



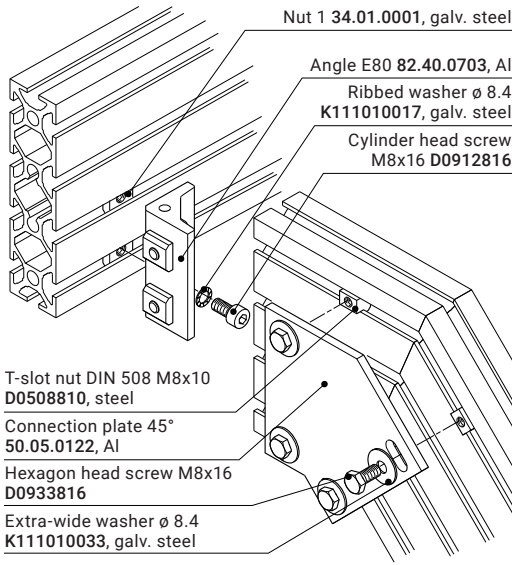
Angle bracket connection

The angle bracket connection option is intended for the most demanding stability requirements. The die-cast aluminium angle brackets have 12 mounting bores and are designed for large span widths.



Side wall fastening

The stair's side walls consist of two cut profile sections each that are connected at their mitre-cut ends with a connection plate, allowing the horizontal profile section to be screwed to the platform using angle E80.



Guardrails

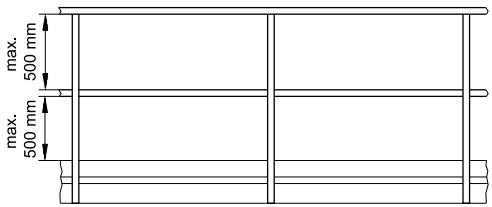
Notes/Technical Data

Guardrails have many applications, such as stairs, work platforms and other platforms. Stairs with four or more steps must have a guardrail.

For steps up to 1500 mm in width, the guardrail must be mounted on the right side in the descending direction. Steps wider than this require a guardrail on both sides.

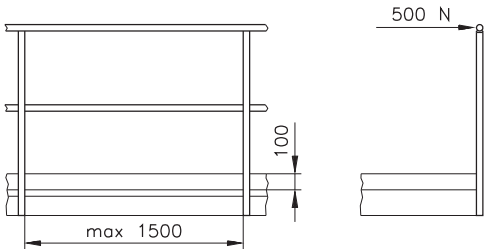
Knee braces

Guardrails are always equipped with knee braces (cross struts between two rail posts). The distance from the knee brace to the platform floor can be 500 mm at maximum.



Post spacing

The distance between the posts must be less than 1500 mm. The distance must be chosen so that the guardrail can support a lateral force of 500 N/m.



Hand rail

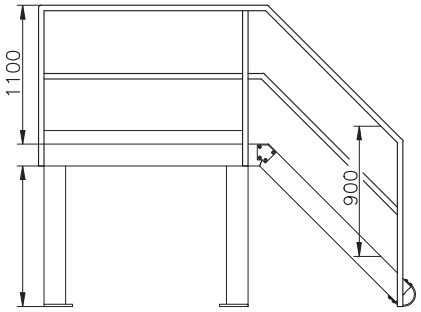
The mk 2040.16 profile has a diameter of 40 mm that complies with the requirements of the DIN EN ISO 14122-3 standard. Both the connection equipment and the end caps of the hand rails have large radii to prevent injuries.

Rail height

Legal regulations specify various minimum heights for guardrails. Guardrails on stairs must be at least 900 mm height, and guardrails on platforms must be 1100 mm.

Toe kicks

Min. height = 100 mm

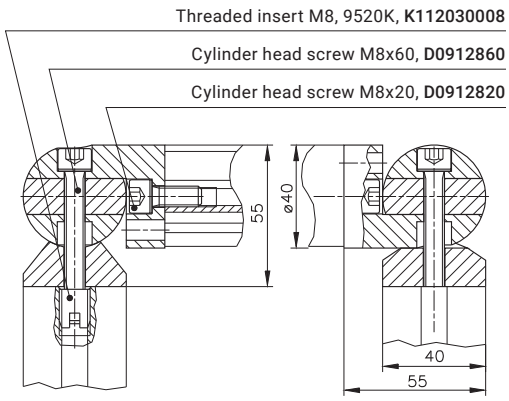


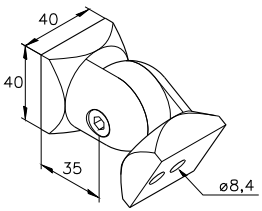
Hinges for Hand Rails

Our lightweight and sturdy hinges for hand rails are always used in combination with mk 2040.01 and mk 2040.16 profiles. The hinges are also available in optional surface variants, such as anodised or painted in various RAL colours.

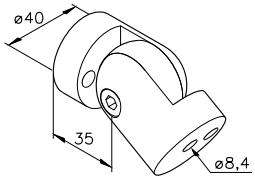
Material: Tumbled aluminium

Fastening example with hinge 40/H5 **B46.01.026**

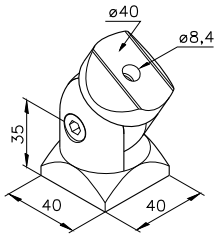




Hinge 40/H1
B46.01.022*



Hinge 40/H2
B46.01.023*



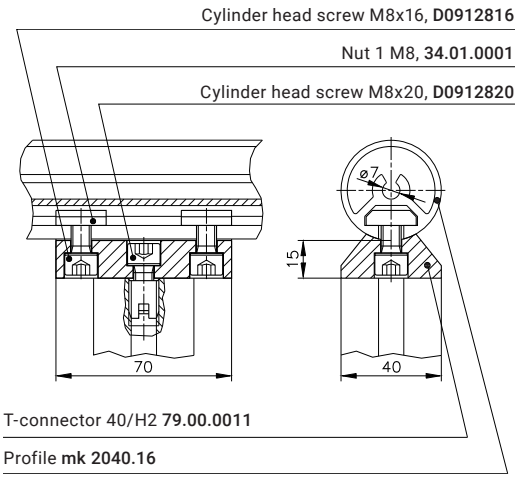
Hinge 40/H4
B46.01.025*

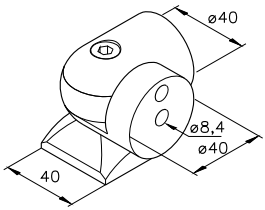
*With fastening accessories

Hinges for hand rails

Material: Tumbled aluminium

Fastening example with T-connector





Hinge 40/H5
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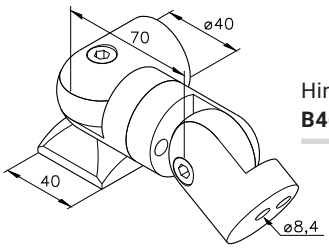
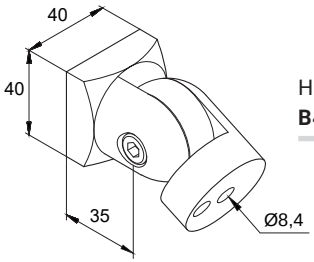


Hinge 40/H3
B46.01.024*

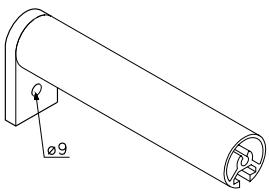


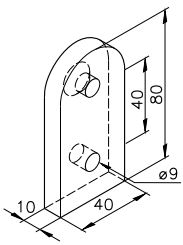
Hinge 40/H6
B46.01.027*

*With fastening accessories

Wall Joint

Material: Tumbled aluminium

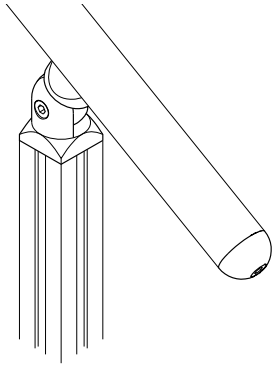


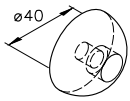


Wall joint
50.03.0034

Cap

Material: Tumbled aluminium

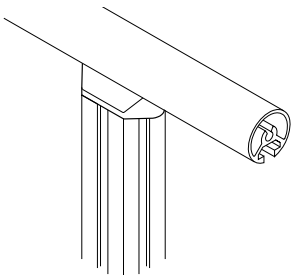


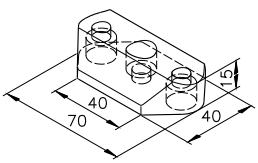


Cap
76.01.0002

T-connection

Material: Tumbled aluminium





T-connector 40/H2
79.00.0011