ROLLCO

TECHNICAL INFORMATION

ALUMINIUM PROFILE
SYSTEM 40 - SLOT 8

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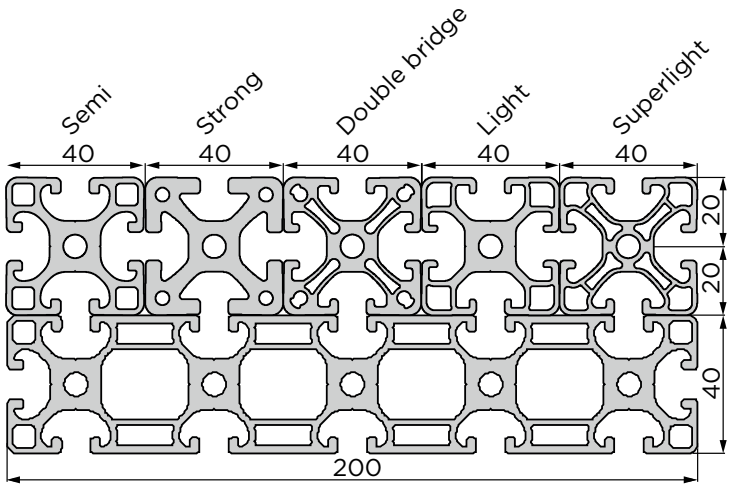
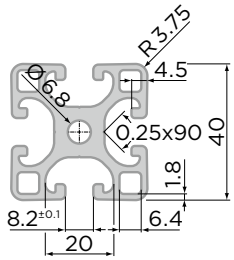
Aluminium Profile Overview

This is the most frequently used profile range, suitable for machine stands and machine covers.
The range includes different versions and all profiles are interchangeable.

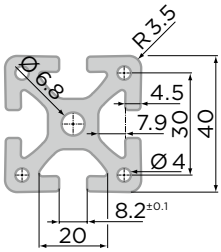


- T-slot 8
- Center hole for M8

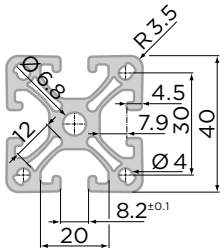
Semi



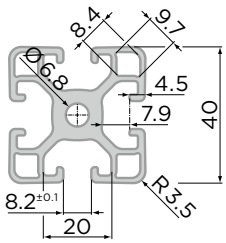
Strong



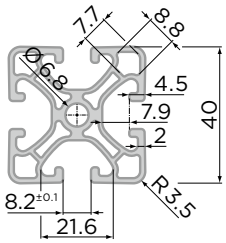
Double bridge



Light



Superlight



Technical Data

Extruding Press Profiles

(according to DIN EN 12020 part 2)

Alloy	Al Mg Si 0.5 F25
Material No.	3.3206.72
Condition	Hardened off by heat

Mechanical Data

(Values in direction of press)

Tensile strength RM	min. 245 N/mm²
Elastic limit RP 0.2	195 N/mm²
Ductile yield	min 10%
Modulus of elasticity	70 kN/mm²
Brinell hardness	75 HB
Thermal expansion 20-100 °C	$23.4 \cdot 10^{-6}$ / °C
Density	2.7 kg/dm³

Tolerances

Production related deviations in regards to straightness, flatness and twist but also outside and t-slot dimensions are in accordance with the standard DIN EN 12020: 9001 part 2.

Surface Treatment

Anodized to	E6 / EV1 (natural) E6 / EV6 (black)
Coating thickness	ca. 15 µm
Coating hardness	250-350 HV
RAL colours powder coating (on request)	

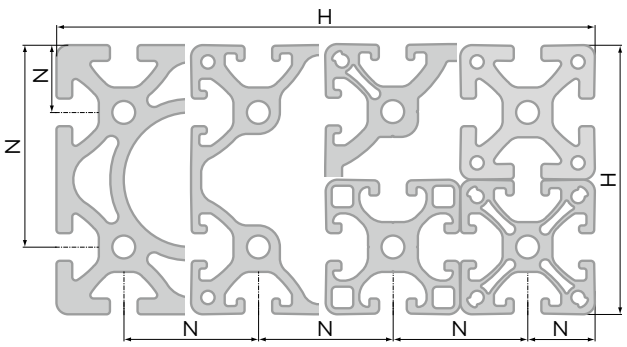
Supplied Lengths

(according to DIN EN 12020 part 2)

Requirements for exact extrusion lengths should be communicated with your order. Standard 3 m or 6 m length extrusions may be slightly longer due to production related requirements.

Manufacturing Tolerances

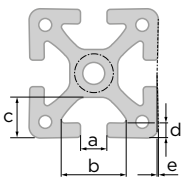
Tolerances Of External Dimensions and T-Slot Positions



Width H (mm) over	Width H (mm) to	Tolerances of external dimension H or rather t-slot position N ± (mm)
0	10	0.10
10	20	0.15
20	40	0.20
40	60	0.30
60	80	0.40
80	100	0.45
100	120	0.50
120	160	0.60
160	240	0.80

T-Slot Dimension Tolerances

The strong, double bridge, semi, light and superlight series profiles possess a standardised t-slot shape. This guarantees that all fasteners and accessories can be utilised with the different profile series and sizes.

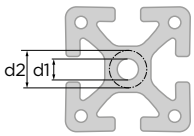


Gauge	
a	8.20 ±0.1
b	20.00 ±0.1
c	12.40 ±0.2
d	4.50 ±0.1
e	0.20 ±0.1

Center Holes

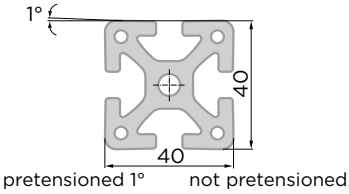
The center hole bore of the profiles can be opened up according to the table. Profiles of the series superlight, however, may not be opened up due to the wall section around the center hole.

Drilling	
d1	Ø 6.8 -0.2 (M8)
Up to max. d2	Ø 13 (M12) (not for superlight)



NV Profile T-Slot

The NV t-slot is not pretensioned. The NV profile range has been designed for use with gauge plates and linear bearings, that require the profile surface to be flat. E.g. jigs, fixtures and special purpose machines.

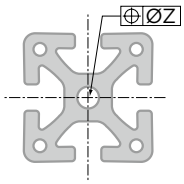


Drilling Position Tolerances

The drilling position tolerance is dependent upon the number of the center hole bores and the contour of the profile.

Profiles with open t-slots	
Number of drillings	**Z (mm)**
1	0.4
2 to 4	0.6
> 4	0.8

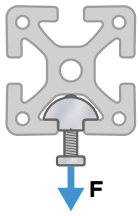
Profiles with closed t-slots	
Number of drillings	**Z (mm)**
1	0.6
> 1	0.8



T-Slot Strength

Information in regards to the maximum allowable t-slot load capability F. These values already include a safety factor (S > 2) against plastic deformation.

Profile	Max. pull charge F
Strong	5000 N
Double bridge	3250 N
Semi	2500 N
Light	2000 N
Superlight	1750 N

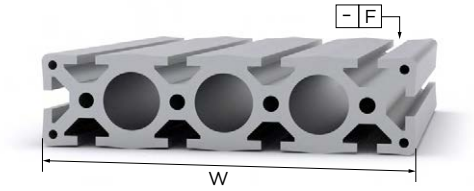


Torsion

Width W (mm)		Torsion tolerance T (mm) for nominal length L (mm)					
over	to	to 1000	to 2000	to 3000	to 4000	to 5000	to 6000
–	25	1.0	1.5	1.5	2.0	2.0	2.0
25	50	1.0	1.2	1.5	1.8	2.0	2.0
50	75	1.0	1.2	1.2	1.5	2.0	2.0
75	100	1.0	1.2	1.5	2.0	2.2	2.5
100	125	1.0	1.5	1.8	2.2	2.5	3.0
125	150	1.2	1.5	1.8	2.2	2.5	3.0
150	200	1.5	1.8	2.2	2.6	3.0	3.5
200	300	1.8	2.5	3.0	3.5	4.0	4.5

Straightness Tolerance

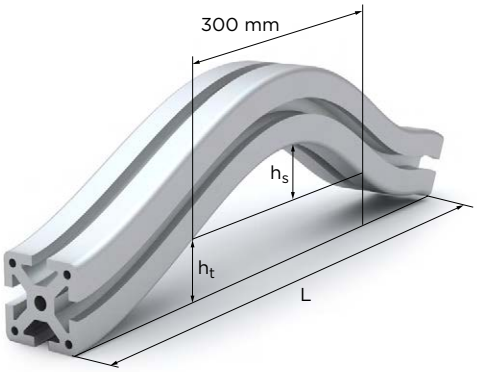
Transverse



Width W (mm)		Straightness tolerance F (mm)
over	to	
0	30	0.20
30	60	0.30
60	100	0.40
100	150	0.50
150	200	0.70
200	250	0.85

Straightness Tolerance

Longitudinal



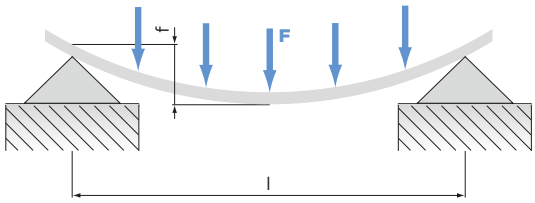
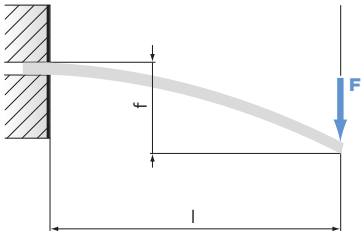
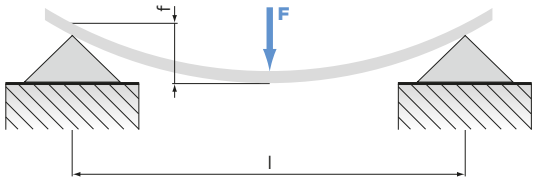
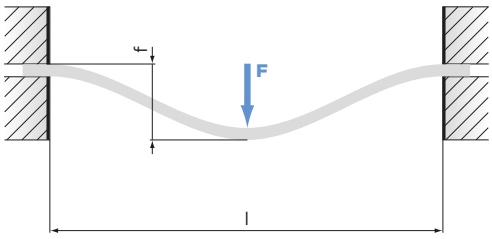
Length L (mm)	Straightness tolerance h_t for nominal length L (mm)
to 1000	0.7
to 2000	1.3
to 3000	1.8
to 5000	2.2
to 5000	2.6
to 6000	3.0

The straightness tolerance h_t is in relation to a corresponding length L and will not exceed the stated value in the table. The straightness tolerance h_s will not exceed 0.3 mm per 300 mm in length.

Angle Tolerance

Width W (mm)		Permissible deflection Z (mm) from a right angle
over	to	
0	20	0.2
20	40	0.4
40	80	0.6
80	120	0.8
120	200	1.2
	200	1.5

Evaluation of Deflection

	Calculation deflection	Calculation deflection, caused by dead weight
 Exposure Case 1 (on two stilts, distributed load)	$f = \frac{5 \cdot F \cdot L^3}{384 \cdot E \cdot I \cdot 10^4}$	$f = \frac{5 \cdot F \cdot L^3}{384 \cdot E \cdot I \cdot 10^4}$
 Exposure Case 2 (fixed one-sided, point load)	$f = \frac{F \cdot L^3}{3 \cdot E \cdot I \cdot 10^4}$	$f = \frac{F \cdot L^3}{8 \cdot E \cdot I \cdot 10^4}$
 Exposure Case 3 (on two stilts, point load)	$f = \frac{F \cdot L^3}{48 \cdot E \cdot I \cdot 10^4}$	$f = \frac{5 \cdot F \cdot L^3}{384 \cdot E \cdot I \cdot 10^4}$
 Exposure Case 4 (fixed two-sided, point load)	$f = \frac{F \cdot L^3}{192 \cdot E \cdot I \cdot 10^4}$	$f = \frac{F \cdot L^3}{384 \cdot E \cdot I \cdot 10^4}$

F = Load (N)
L = Profile length (mm)
I = Moment of inertia (cm^4)
E = Modulus of elasticity (N/mm^2)
EAI = 70,000 N/mm^2

Control of the Deflection

$$s = \frac{M_b}{W \cdot 10^3}$$

s = Deflection (N/mm^2)
M_b = Maximum bending (N/mm)
W = Resistive moment (cm^3)

Example

Known values: Profile 40 x 80 double bridge, upright
F = 10,000 N
L = 500 mm
I = 73.74 cm^4

to calculate: deflection f

Results

Exposure Case 1: f = 1.17 mm
Exposure Case 2: f = 8.07 mm
Exposure Case 3: f = 0.50 mm
Exposure Case 1: f = 0.126 mm

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Rollco AB
Box 22234
Ekvändan 17
250 24 Helsingborg
Sweden
Tel. +46 42 15 00 40
www.rollco.se

Rollco A/S
Skomagervej 13 E
7100 Vejle
Denmark
Tel. +45 75 52 26 66
www.rollco.dk

Rollco Oy
Sarankulmankatu 12
33900 Tampere
Finland
Tel. +358 207 57 97 90
www.rollco.fi

Rollco Norge AS
Industrigata 6
3414 Lierstrada
Norway
Tel. +47 32 84 00 34
www.rollco.no

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