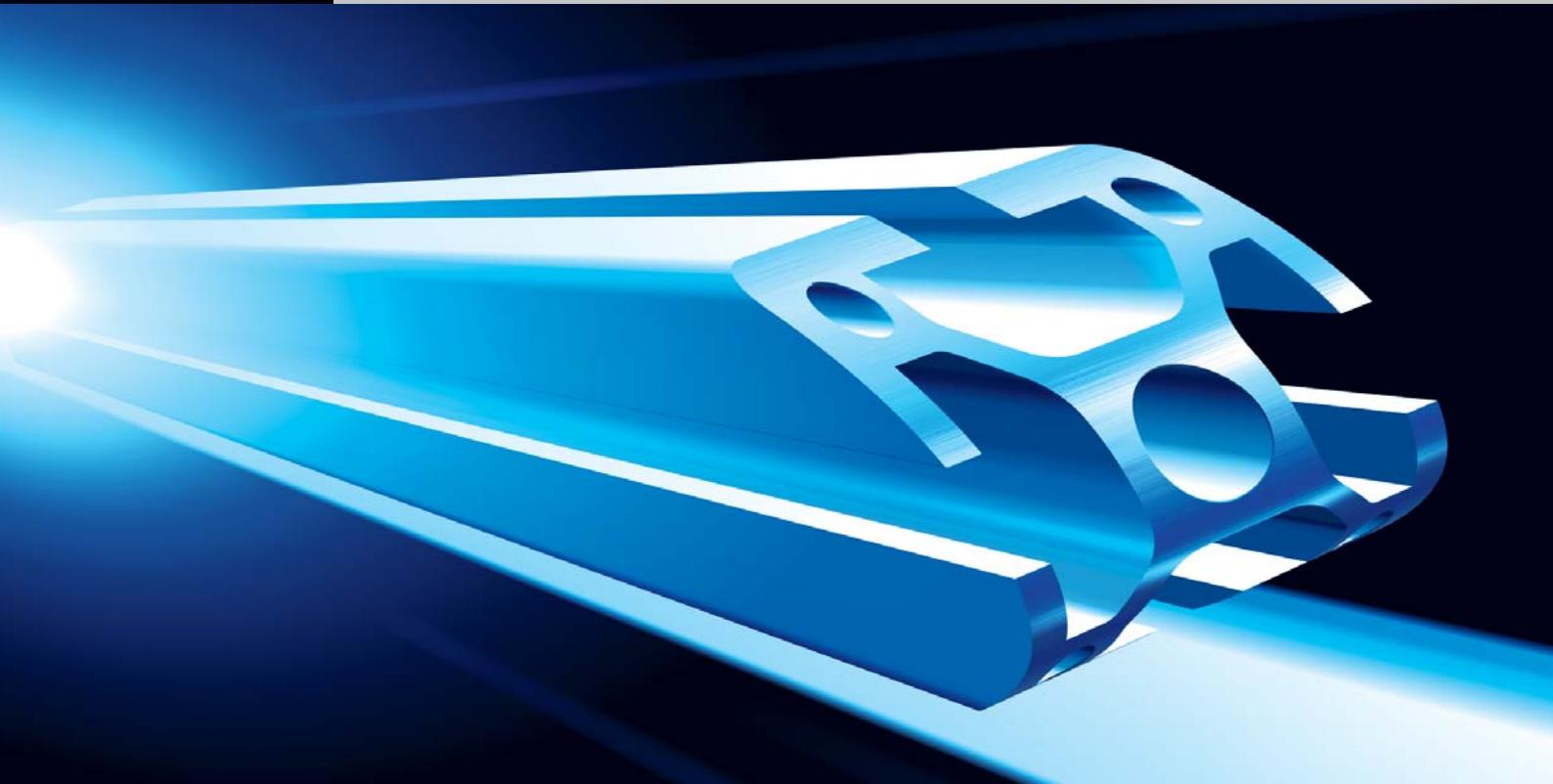


English

1/2007



## The Profile System Inch

 MayTec®

Article number group	Page	Article number group	Page
		<b>Subject index</b> .....	<b>35</b>
		<b>Introduction</b> .....	<b>3</b>
2.01	Symbols, Abbreviations, Special characters .....		3
2.02	Slot system .....		4
2.03	Numerical key for articles .....		5
<b>2.1</b>	<b>Profiles</b> .....		<b>6</b>
2.11	Profile group 1", F-slot, P .....		6
2.11	Profile group 1.5", E3-slot, P .....		7
2.1A	Profile machining .....		8
2.1A	Summary .....		8
2.1A	Order description .....		8
2.1A	Order example .....		8
2.1A	Direction and Position .....		9
2.1A	Saw cut .....		9
2.1A	Cross bushing bore .....		10
2.1A	Bores .....		10
2.1A	Cross bore .....		10
2.1A	Thread .....		10
2.1B	Profile machining: Coding examples .....		11
2.1B	for price group 1 .....		11
2.1B	for price group 2 .....		11
2.1B	for price group 3 .....		11
2.1B	Order example for special design .....		12
2.1C	Technical data .....		13
<b>2.2</b>	<b>Connection System</b> .....		<b>15</b>
2.2	Manufacture a connection .....		16
2.2	Connector selection .....		17
2.2A	Connectors .....		18
2.2B	Connector - Cross bushings .....		20
2.2B	Drill dimensions for cross bushings .....		20
2.2C	Connector - Components .....		21
<b>2.3</b>	<b>Fastening elements</b> .....		<b>22</b>
2.31	Threaded plates .....		22
2.32	T-Nuts .....		23
2.35	Threaded inserts .....		25
<b>2.4</b>	<b>Installation accessories</b> .....		<b>26</b>
2.42	Cover caps for profiles .....		26
2.42	Cover plugs for cross bushings .....		27
2.47	Base plates .....		28
<b>2.6</b>	<b>Additional accessories</b> .....		<b>29</b>
2.64	Mounting blocks .....		29
<b>2.9</b>	<b>Tools</b> .....		<b>30</b>
2.99	Drill jigs .....		30
2.99	Milling cutters .....		31
2.99	Drills .....		31
2.99	Screw taps .....		32
<b>2.A</b>	<b>Conversion tables</b> .....		<b>33</b>
2.A1	Metric and English Conversion Table .....		33
2.A2	Metric / U.S. Customary Unit .....		34

## General

### Profile group

**1", 1.5"**

The profiles of the MayTec Profile System are divided into two **profile groups (PG)**. They can be determined by the basic measure of each profile.

### Slot

#### H-slot, F-slot, E-slot

In order to connect the profiles or to mount accessories the profiles have slots. The MayTec Slot System (↔ 2.02) distinguishes between the three slot types H-slot, F-slot and E-slot, whereas E-slot exists as **E3-slot** and **E4-slot** (3 or 4 mm resp. .118 or .157 in. wall thickness). The profile System Inch uses only F-slot and E3-slot.

## Symbols

Many articles (fastening elements, accessories and tools) can only be used especially for individual profile groups or slot types.

In this case these articles are marked with the corresponding symbols.



#### Profile group

dark symbol: suitable for the corresponding profile group

light symbol: not suitable

#### Slot type

dark symbol: suitable for the corresponding slot type

light symbol: not suitable

#### Remark

The symbol for the E-slot is used, if the article is (un)suitable for the two slot types E3 and E4.



#### Cut

These articles are offered with cut.



#### Stainless steel

These articles are made of stainless steel.



#### Cleanroom

These articles are suitable for the use in and around cleanrooms.



#### Attention!

Important notice

## Abbreviations

PG **profile group**

L **light**

S **heavy**

P **plain**

e.g.: PG 1" = profile group 1"

profile characteristic: light type of construction

profile characteristic: heavy type of construction

profile characteristic: no ornamental slots

## Special characters



#### Placeholder

Article-No.

#### Example

2.31.F□.□□□□

#### identifies the articles:

2.31.F4.08-32

2.31.F5.10-32

2.31.F6.1/4-20



#### Example

14

2.31

2.31.F4.08-32

2.31.F□□□□

#### Reference

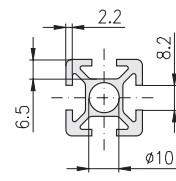
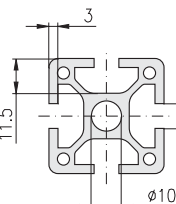
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to article number group

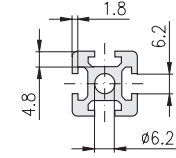
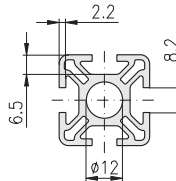
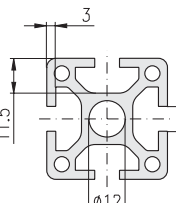
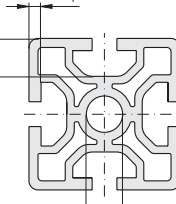
to single article

to group of articles

## Inch-System

Cross section of slots	Dimensions		Core hole-Ø	Slot width	Slot depth	Wall thickness	PG
	mm	inch					
<b>F-slot</b>  			mm				
			10.0	8.2	6.5	2.2	1"
			inch				
			.394	.323	.256	.087	
<b>E3-slot</b>  			mm				
			10.0	8.2	11.5	3.0	1.5"
			inch				
			.394	.323	.453	.118	

## Metric-System

Cross section of slots	Dimensions		Core hole-Ø	Slot width	Slot depth	Wall thickness	PG
	mm	inch					
<b>H-slot</b>  			mm				
			6.2	6.2	4.8	1.8	20
			inch				
			.244	.244	.189	.071	
<b>F-slot</b>  			mm				
			12.0	8.2	6.5	2.2	20
							30
			inch				
		.472	.323	.256	.087		
<b>E3-slot</b>  			mm				
			12.0	8.2	11.5	3.0	40
			inch				
			.472	.323	.453	.118	
<b>E4-slot</b>  			mm				
			12.0	8.2	12.5	4.0	30
							45
							50
						60	
		inch					
		.472	.323	.492	.157		

## Profiles

2.1 □ . □□□□□□ . □□□□□□	<b>Key</b>	<sup>1)</sup> 1 = 10 mm (.394 in.)
2.1 □ . □□□□□□ . □□□□□□	Core hole-Ø <sup>1)</sup>	<sup>2)</sup> 2-digit off 10 slots
2.1 □ . □□□□□□ . □□□□□□	Profile width	<sup>3)</sup> 0 = Round
2.1 □ . □□□□□□ . □□□□□□	Profile height (all, but special profiles)	1 = Soft
2.1 □ . □□□□□□ . □□□□□□	Number of degrees (round profiles)	2 = Corner
2.1 □ . □□□□□□ . □□□□□□	Number of edges (special profiles)	3 = Cubic
2.1 □ . □□□□□□ . □□□□□□	Slot quantity <sup>2)</sup>	4 = Rectangle
2.1 □ . □□□□□□ . □□□□□□	Contour <sup>3)</sup>	5 = Pneumatic
2.1 □ . □□□□□□ . □□□□□□	Version light	7 = Angle
2.1 □ . □□□□□□ . □□□□□□	Type B	8 = Oblique
2.1 □ . □□□□□□ . □□□□□□	Version light, Type B	9 = Special
2.1 □ . □□□□□□ . □□□□□□	Plain	

## Connectors - general

2.2 □ . □□□□□□	<b>Key</b>	<sup>1)</sup> 1 = 10 mm (.394 in.)
2.2 □ . □□□□□□	Core hole <sup>1)</sup>	<sup>2)</sup> 10 = 1 in.
2.2 □ . □□□□□□	Profile width <sup>2)</sup>	20 = 1.5 in.
2.2 □ . □□□□□□	Head-variant <sup>3)</sup>	<sup>3)</sup> E = E-head
2.2 □ . □□□□□□	Connection-variant <sup>4)</sup>	F = F-head
2.2 □ . □□□□□□	Stainless	H = H-head
2.2 □ . □□□□□□	Ground	V = Extension
2.2 □ . □□□□□□		<sup>4)</sup> 0 = Universal/Neutral
□/□	<b>Special cases:</b> Parallel-connector across and high	1 = Standard
□/□	Profile width for cross bushing	2 = Standard 90°
□/□	Profile width for anchor	5 = Parallel

## -Oblique-hinge

2.2 □ . □□□□□□	<b>Key</b>	<sup>1)</sup> 1 = Standard
2.2 □ . □□□□□□	Oblique-connector, hinge	2 = Standard 90°
2.2 □ . □□□□□□	Connection-variant <sup>1)</sup>	
2.2 □ . □□□□□□	Stainless	

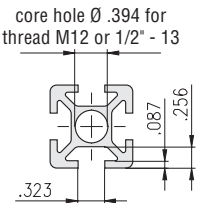

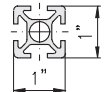

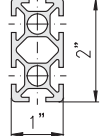

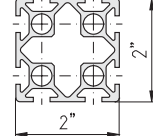
## -Miter-hinge

2.2 □ . □□□□□□	<b>Key</b>	<sup>1)</sup> 1 = Standard
2.2 □ . □□□□□□	Miter-connector, hinge	2 = Standard 90°
2.2 □ . □□□□□□	Connection-variant <sup>1)</sup>	
2.2 □ . □□□□□□	Stainless	

## -Screw-type

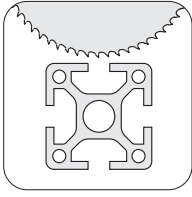
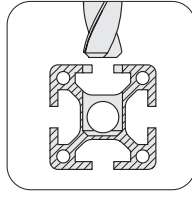
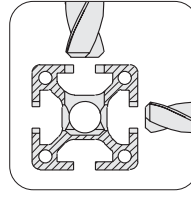
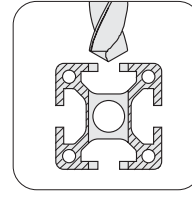
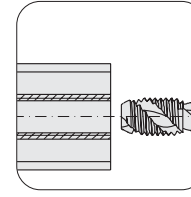
2.2 □ . □□□□□□ / □□	<b>Key</b>	<sup>1)</sup> 1 = Standard
2.2 □ . □□□□□□ / □□	Screw-type-connector	
2.2 □ . □□□□□□ / □□	Type of anchor <sup>1)</sup>	
2.2 □ . □□□□□□ / □□	Thread	
2.2 □ . □□□□□□ / □□	Thread-Ø	
2.2 □ . □□□□□□ / □□	Screw special length	
□/□	<b>Special cases:</b> Screw-type connector parallel across and high	
□/□	Profile width for cross bushing	
□/□	Profile width for anchor	

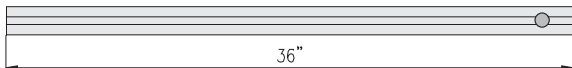
light				
Description				
bar, 19.685 ft.				
packing unit (bars)				
moment of inertia in. <sup>4</sup>				
moment of resistance in. <sup>3</sup>				
weight per foot lbs.				

heavy				
	 	 	 	
Description	Profile 1"×1", 4F, P	Profile 1"×2", 6F, P	Profile 2"×2", 8F, P	
bar, 19.685 ft.	2.11.010010.43P.60	2.11.010020.64P.60	2.11.020020.83P.60	
packing unit (bars)	2.11.010010.43P.61 (12)	2.11.010020.64P.61 (6)	2.11.020020.83P.61 (6)	
moment of inertia in. <sup>4</sup>	$I_x = .046$ $I_y = .046$	$I_x = .304$ $I_y = .086$	$I_x = .551$ $I_y = .551$	
moment of resistance in. <sup>3</sup>	$W_x = .092$ $W_y = .092$	$W_x = .304$ $W_y = .172$	$W_x = .551$ $W_y = .551$	
weight per foot lbs.	G = .497	G = .900	G = 1.438	

<b>light</b>				
<b>Description</b>	Profile 1.5"×1.5", 4E, LP	Profile 1.5"×3", 6E, LP		
<b>bar, 19.685 ft.</b>	2.11.015015.43LP.60	2.11.015030.64LP.60		
<b>packing unit (bars)</b>	2.11.015015.43LP.61 (8)	2.11.015030.64LP.61 (4)		
<b>moment of inertia in.<sup>4</sup></b>	$I_x = .180$	$I_y = .180$	$I_x = 1.217$	$I_y = .340$
<b>moment of resistance in.<sup>3</sup></b>	$W_x = .237$	$W_y = .237$	$W_x = .813$	$W_y = .455$
<b>weight per foot lbs.</b>	$G = .894$	$G = 1.557$		

<b>heavy</b>				
<b>Description</b>	Profile 1.5"×1.5", 4E, P	Profile 1.5"×3", 6E, P	Profile 3"×3", 8E, P	Profile 3"×6", 12E, P
<b>bar, 19.685 ft.</b>	2.11.015015.43P.60	2.11.015030.64P.60	2.11.030030.83P.60	2.11.030060.124P.60
<b>packing unit (bars)</b>	2.11.015015.43P.61 (8)	2.11.015030.64P.61 (4)	2.11.030030.83P.61 (2)	2.11.030060.124P.61 (2)
<b>moment of inertia in.<sup>4</sup></b>	$I_x = .224$	$I_y = .224$	$I_x = 1.525$	$I_y = .436$
<b>moment of resistance in.<sup>3</sup></b>	$W_x = .301$	$W_y = .301$	$W_x = 1.012$	$W_y = .583$
<b>weight per foot lbs.</b>	$G = 1.121$	$G = 2.050$	$G = 3.219$	$G = 5.745$

Summary				
 Saw cut ↗ 9	 Cross bushing bores for connectors ↗ 10	 Bores for parallel-connector ↗ 10	 Cross bore ↗ 10	 Thread ↗ 10
<b>Comments</b> <ul style="list-style-type: none"> <li>Profile machinings are defined by the article-number of the profile.</li> <li>For more complex machinings, additional order descriptions are needed.</li> <li>Non-standard machinings will be completed as per drawings</li> </ul>				

Order description		
<b>Profile</b>  Order-No.: 2.11.□□□□□□.□□□□	<b>machining</b> left right - □□□□□□ / □□□□ □ □ □ □ □ □ / □□□□ saw cut □ □ □ □ □ □ / □□□□ cross bushing bores, bores for parallel-connector, cross bore, thread □ □ □ □ □ □ / □□□□ direction □□□□□□ / □□□□ length in inch	profile side
Order example		
		
<b>Description</b> Profile 1.5"×1.5", 4E-slots Length: 36" right side: 1 connector bore	<b>Article-No.</b> 2.11.015015.43-A00AA4/36"	<b>Article-Description</b> Profile 1.5"×1.5", 4E-slots □□□□ .... Specifications for special profile machining

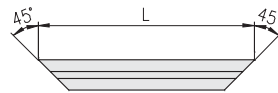
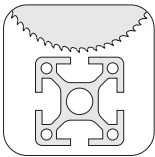
coding examples ↗ 2.1B

**Direction and Position**

**Description**  
 Direction: 1 - 4  
 Position of slot: A - M  
 Position of thread: a - h

**Saw cut**

Saw cut tolerance:  $\pm 3.937 \times 10^{-3}$  in.



Disposition of angles

**Cut is right view**

- For angle cuts specify the absolute length
- Angle cuts without specification = 45°

Specification for special angle:

Special angle, left: °

Special angle, right: °

**Price group 1**

	A	1	1"×1"
	B	4F	
	C	1.5	1.5"×1.5"
	D	4E	
	E		

**Price group 2**

	F	1	1"×2"
	G	6F	
	H	8F	2"×2"
	J	1.5	1.5"×3"
	K	6E	

**Price group 3**

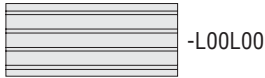
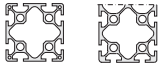
	L	1.5	3"×3"
	M	8E	
	N		3"×6"
	O		
	P	12E	



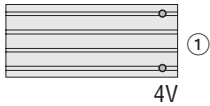
for price group 1	for price group 2		for price group 3
-A00A00	-F00F00		-L00L00
-A00AA4 1V	-F00FB4 2V	-F00FB1 2V	-L00LB4 2V
-AA4AA4 1V 1V	-FB4FB4 2V 2V	-FB1FB1 2V 2V	-LB4LB4 2V 2V
-A00AL0 1G	-F00FL0 1G		-L00LD2 4V
-AL0AL0 1G 1G	-FLOFL0 1G 1G		-LB4LD2 2V 4V
-AL0AA4 1G 1V	-FLOFB4 1G 2V	-FLOFB1 1G 2V	-LD2LD2 4V 4V
-A00AQ1 1Q	-FM0FB4 2G 2V	-FM0FB1 2G 2V	-LP0LD2 4G 4V
-AA4AQ1 1V 1Q	-F00FM0 2G		-L00LP0 4G
-AQ1AQ1 1Q 1Q	-FM0FM0 2G 2G		-LP0LP0 4G 4G
-AL0AQ1 1G 1Q	-FLOFM0 1G 2G	top view	-L00N00
-A00C00	-F00H00	-F00K00	-LL0ND2 1G 4V
-A00CA4 1V	-F00HB4 2V	-F00KB1 2V	-LD2ND2 4V 4V
-AA4CA4 1V 1V	-FB4HB4 2V 2V	-FB1KB1 2V 2V	-LD1ND1 4V 4V
-AL0CA4 1G 1V	-FLOHB4 1G 2V	-FLOKB1 1G 2V	-N00N00
-C00C00	-H00H00	-K00K00	-ND2ND2 4V 4V
-CA4CA4 1V 1V	-HB4HB4 2V 2V	-KB1KB1 2V 2V	-ND1ND1 4V 4V

V = connector bore, G = thread, Q = cross bore

for price group 3

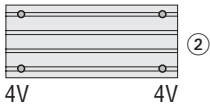


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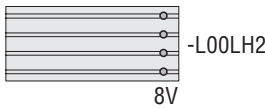
①

4V



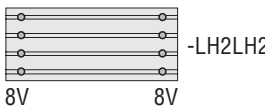
②

4V 4V



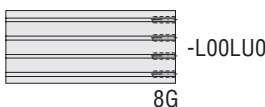
-L00LH2

8V



-LH2LH2

8V 8V

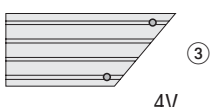


-L00LU0

8G

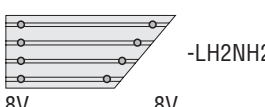


-L00N00



③

4V

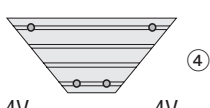


-LH2NH2

8V 8V

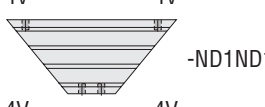


-N00N00



④

4V 4V



-ND1ND1

4V 4V

Order examples for special design

**Article-No..**

- ① 2.11.□□□□□□.□□□□ -L00LD2
- ② 2.11.□□□□□□.□□□□ -LD2LD2
- ③ 2.11.□□□□□□.□□□□ -L00ND2
- ④ 2.11.□□□□□□.□□□□ -ND2ND2

**Description**

- Profile □□□×□□□.□□  
Connector position, right: CFIM *(additional description)*
- Profile □□□×□□□.□□  
Connector position, left: CFIM *(additional description)*  
Connector position, right: CFIM
- Profile □□□×□□□.□□  
Connector position, right: CFIM *(additional description)*
- Profile □□□×□□□.□□  
Connector position, left: CFIM *(additional description)*  
Connector position, right: CFIM

V = connector bore, G = thread, Q = cross bore

**Extruded profile**  
**as per DIN EN 12020-1**  
 (fine)  
 (Replacement for DIN 17615)

Aluminium alloy Al Mg Si 0.5 F25  
 Material Nr. 3.3206.72 (low temp. annealed)

**Functional length:** 19.685 ft.  
**Delivery length:** 19.685 ft. + .394 in.

**Mechanical data**

(Values given in the direction of the press flow)

Tensile strength R<sub>m</sub>: min. 36,260 lbs./in.<sup>2</sup>  
 Elongation 0.2: min. 29,008 lbs./in.<sup>2</sup>  
 Stress point A<sub>5</sub>: min. 10 %  
 Stress point A<sub>10</sub>: min. 8 %  
 E-Module: approx. 10,2×10<sup>6</sup> lbs./in.<sup>2</sup>  
 Brinell hardness: approx. 75 HB 2.5/187.5  
 Co-efficient of elongation: 23.8×10<sup>-6</sup>/K

Surface as per DIN 17611:  
 E6/EV1 - dull finish and anodised colours  
 Coat thickness approx. .3937×10<sup>-3</sup> in.  
 Coat hardness 250-350 HV  
 Special colours upon request.  
 The surface area - subject to technical procedure - can show optical changes.

**Profile tolerance**

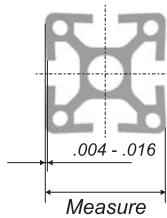
(Excerpt from DIN EN 12020-2)

Nominal dimensions:

The dimension deviation depends on the precision with which the tooling is manufactured, the tooling wear and the variation during the extrusion process. For one manufacturing setup the variation within one profile is .3937×10<sup>-3</sup> in.

Profile tolerance		
Dim. range in inch from	to	Tolerance in inch
-	.394	± .0059
.394	.591	± .0079
.591	1.181	± .0098
1.181	1.772	± .0118
1.772	2.362	± .0157
2.362	3.543	± .0177
3.543	4.724	± .0236
4.724	5.906	± .0315
5.906	7.087	± .0394
7.087	9.449	± .0472
9.449	11.811	± .0591

**Flatness of profile surfaces**

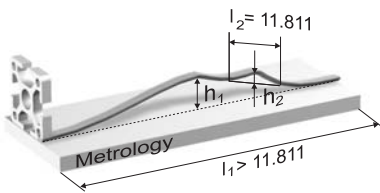


In order to optimize the connection stability, all profile surfaces are designed and manufactured with concave surfaces. This assures that the assembled profiles contact on the outer edges only (line of contact).

When tightening the connectors the slot flanks will be drawn to the mounting profile within the elastic range and will keep the connectors under tension.

**Straightness tolerance**

of the edge in longitudinal direction

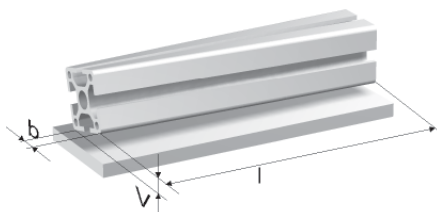


At a certain length l<sub>1</sub> the given tolerance h<sub>1</sub> is not to be exceeded.  
 For each incremental length of l<sub>2</sub> = 11.811 in. the deviation h<sub>2</sub> is not to exceed .012 in.

Straightness tolerance		
Length l <sub>1</sub> in foot from	to	Tolerance h <sub>1</sub> in inch
-	3.3	.028
3.3	6.6	.051
6.6	9.8	.071
9.8	13.1	.087
13.1	16.4	.102
16.4	19.7	.118

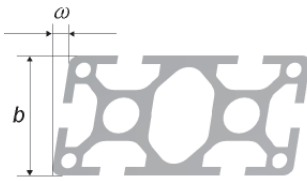
**Flatness tolerance**

(Twist tolerance)



Width b in inch		Flatness tolerance in inch					
Dim. range		at length l in foot					
from	to	to 3.3	3.3 to 6.6	6.6 to 9.8	9.8 to 13.1	13.1 to 16.4	16.4 to 19.7
-	.984	.039	.059	.059	.079	.079	.079
.984	1.969	.039	.047	.059	.071	.079	.079
1.969	2.953	.039	.047	.047	.059	.079	.079
2.953	3.937	.039	.047	.059	.079	.087	.098
3.937	4.921	.039	.059	.071	.087	.098	.118
4.921	5.906	.047	.059	.071	.087	.098	.118
5.906	7.874	.059	.071	.087	.102	.118	.138
7.874	11.811	.071	.098	.118	.138	.157	.177

**Parallelism tolerance**  
(Angular tolerance)



The parallelism tolerance  $\omega$  (angular tolerance) refers to unequal sides to the shorter side of the angle, i.e. it is measured from the longer side.

Parallelism tolerance		
Width $b$ in inch from	to	max. size tolerance $\omega$ in inch
-	1.181	.012
1.181	1.969	.016
1.969	3.150	.020
3.150	3.937	.024
3.937	4.724	.028
4.724	5.512	.031
5.512	6.299	.035
6.299	7.087	.039
7.087	7.874	.047
7.874	9.449	.059

**Bending strength**

For the computation of deflection use formulas on this page.

For the computation of deflection by the profiles own weight, apply "Type of load" 3, 6 or 9.

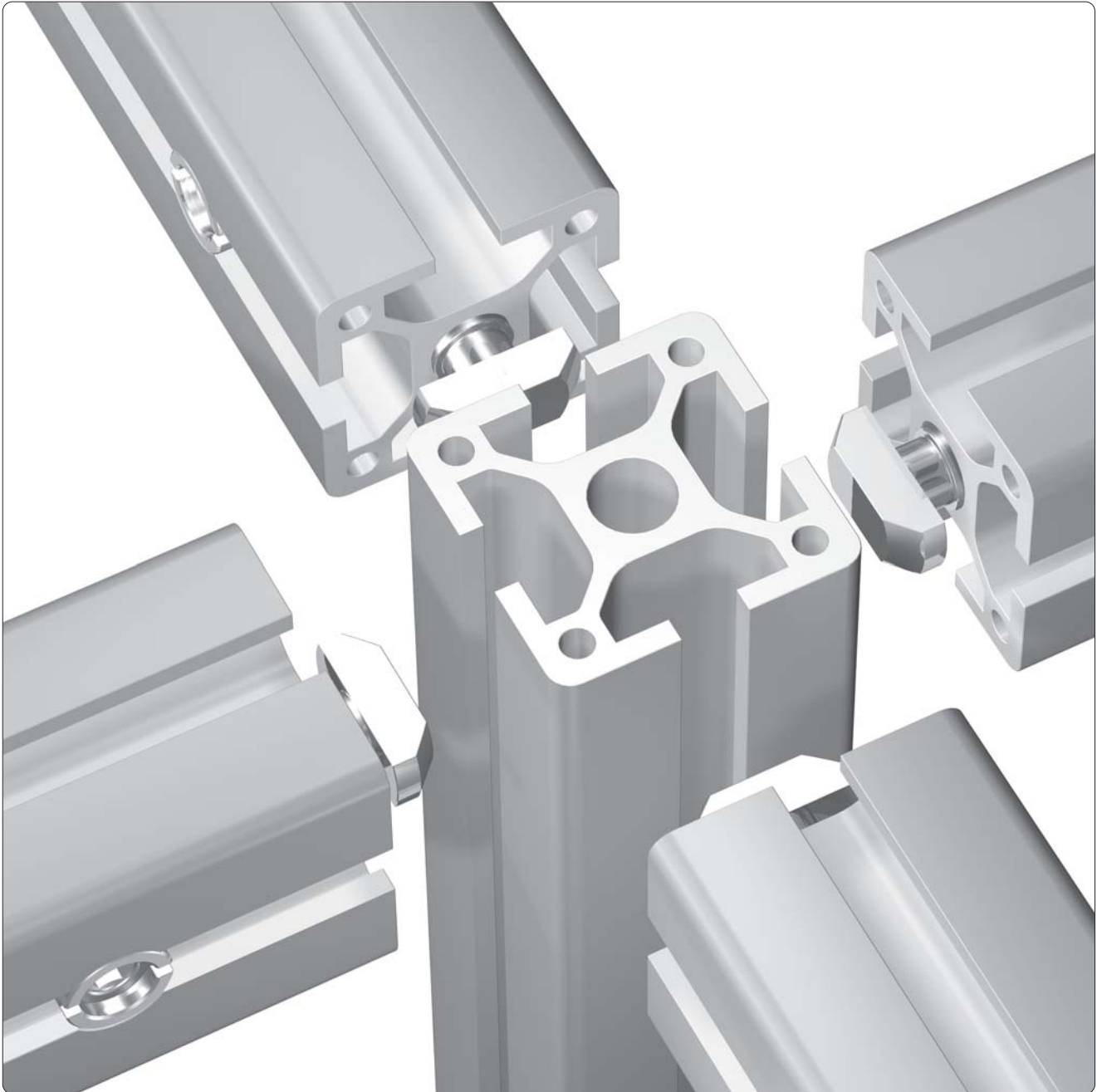
- $f$  = Deflection in in.
- $F$  = Type of load in lbs.
- $l$  = Profile length in in.
- $J$  <sup>1)</sup> = Moment of inertia in in.<sup>4</sup>
- $E$  = Module of elasticity in lbs./in.<sup>2</sup>
- $E_{AL}$  =  $10,2 \times 10^6$  lbs./in.<sup>2</sup>

**1) Comments**

The moments of inertia of a certain profile are listed on the respective profile page (↪ 2.11).

Type of load		
<b>1</b>		$f = \frac{F \cdot l^3}{3E \cdot J}$
<b>2</b>		$f = \frac{F \cdot l^3 + F_1 \cdot l_1^2 \cdot l + F_2 \cdot l_2^2 \cdot l}{3E \cdot J}$
<b>3</b>		$f = \frac{F \cdot l^3}{8E \cdot J}$
<b>4</b>		$f = \frac{F \cdot l^3}{48E \cdot J}$
<b>5</b>		$f = \frac{F \cdot l^3}{\left(48 + \frac{29m}{l}\right) \cdot E \cdot J}$
<b>6</b>		$f = \frac{5F \cdot l^3}{384E \cdot J}$
<b>7</b>		$f = \frac{F \cdot a^2 \cdot b^2}{3E \cdot J \cdot l}$
<b>8</b>		$f = \frac{F \cdot l^3}{192E \cdot J}$ <sup>2)</sup>
<b>9</b>		$f = \frac{F \cdot l^3}{384E \cdot J}$

<sup>2)</sup> approximate value



**Simple**

**Quick**

**Economical**

**Functional**

**The proven connection system!**

The MayTec quick-connection system allows combination of all MayTec profiles in any way imaginable.

It carries same stability out after all four sides.

**The connection allows:**

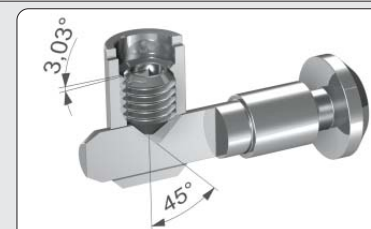
- easy machining
- quick assembly
- innumerable (dis)assemblies

**The connection system is:**

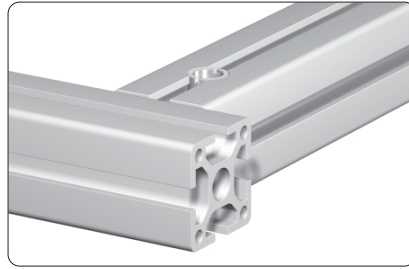
- complete
- stable
- functional

**Vibration proof**

The different direction angles of lead of thread and clamping cone prevent the loosening of the connection by vibration.



**Manufacture a connection**



**Example**

Connection of two profiles 1.5"×1.5" with one standard connector

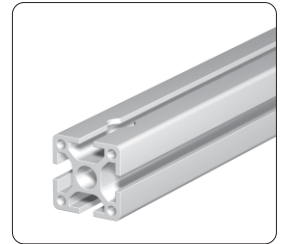
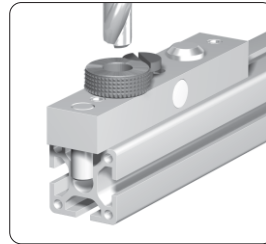
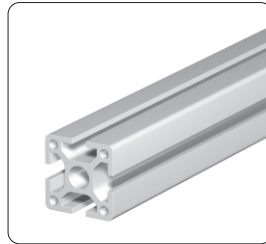
**1. Connector selection**

➔ 2.2, Connector selection

**2. Profile machining**

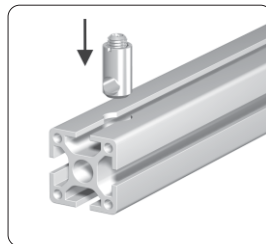
➔ 2.1A, Profile machining

➔ 2.99, Tools

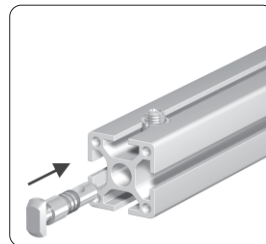


Manufacture the cross bushing bore with the aid of a drill jig

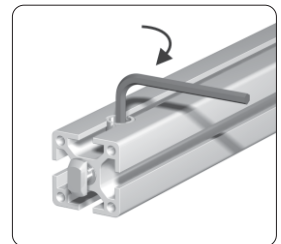
**3. Pre-assembly of the connector**



Insert the cross bushing

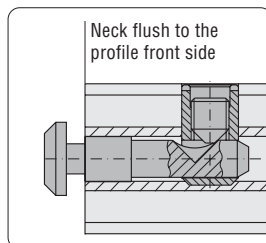


Push in the anchor



Pretension the anchor

**⚠ Mounting position**

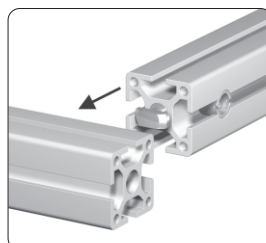


**Comments**

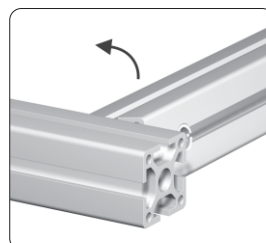
For the optimal assembly of the profiles the connector is to be installed in such a way that the neck is flush to the profile front side

**4. Final assembly**

①



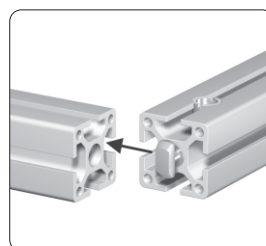
Push in sideways



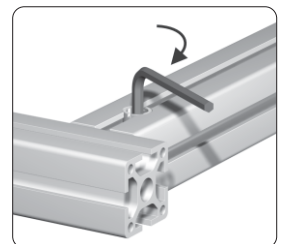
Turn the profile

or

②



Push in front sided




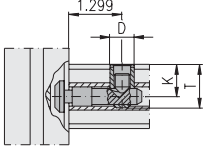
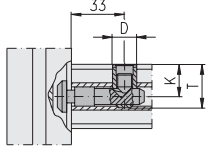
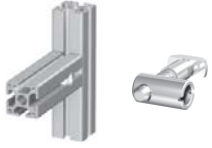
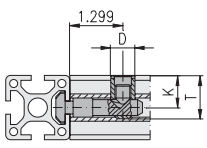
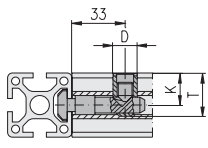

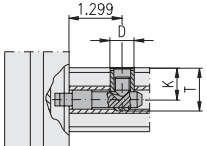
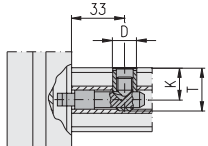
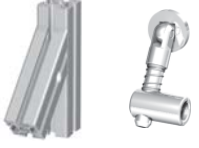
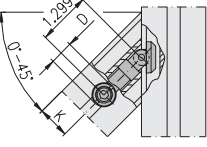
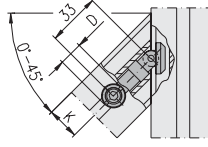

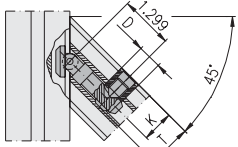
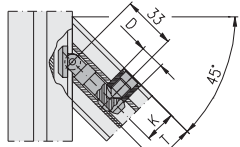

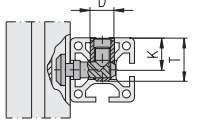
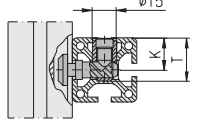
Tighten the setscrew


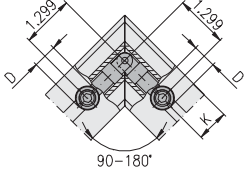
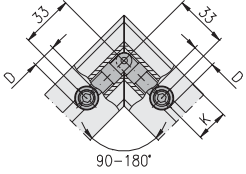
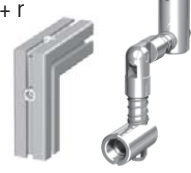
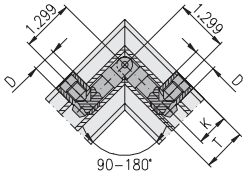
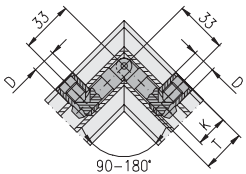
Connector selection		
Procedure		Example
① <b>Connection</b>	Selection of connector-variant	Standard
② <b>Profile 1</b>	Size of the profile in which the connector should be built into	1.5"×1.5"
③ <b>Core hole</b>	Determination of the core hole Ø	Ø .394 in.
④ <b>Profile 2</b>	Determination of the connector-head according to slot-variant of the profile on which it will be joined	1.5"×1.5" in. / E-slot
⑤ <b>Connector</b>	Determination of connector	<b>2.21.15E1</b>

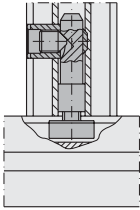
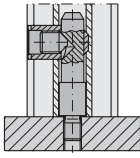
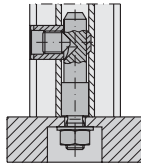
Connector types and materials		
Connector	Article-No.	Technical data
Standard	2.21.10E0	material: steel strength: $\geq 94,355 \text{ lbs./in.}^2$
Standard, ground	2.21.10E0 E	surface: galvanised

**MayTec** Connectors for profiles with core hole-Ø .394 in. (10 mm) **2.2A**

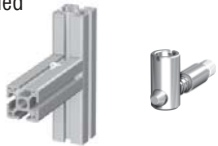
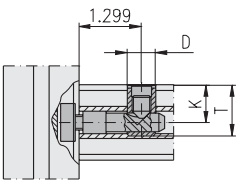
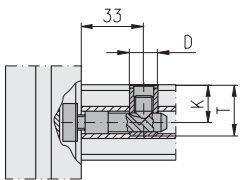
Connection / Connector	Finished dimension		PG	Article-No. for connector with			
	inch	mm		F-head		E-head	
				steel standard	E	steel standard	E
Universal 	 1.299	 33	1"	2.21.10F0		2.21.10E0	E
			1.5"	2.21.15F0		2.21.15E0	E
Standard 	 1.299	 33	1"	2.21.10F1		2.21.10E1	
			1.5"	2.21.15F1		2.21.15E1	
90° 	 1.299	 33	1"	2.21.10F2		2.21.10E2	
			1.5"	2.21.15F2		2.21.15E2	
Oblique -hinge l + r 	 1.299	 33	1"	2.21.10FK1		2.21.10EK1	
			1.5"	2.21.15FK1		2.21.15EK1	
Oblique 90° -hinge 	 1.299	 33	1"	2.21.10FK2		2.21.10EK2	
			1.5"	2.21.15FK2		2.21.15EK2	

Connection / Connector	Finished dimension		PG	Article-No. for connector with			
	inch	mm		F-head		E-head	
				steel standard	E	steel standard	E
Universal 			1"	2.21.10F0		2.21.10E0	E
			1.5"	2.21.15F0		2.21.15E0	E
Standard 			1"	2.21.10F1		2.21.10E1	
			1.5"	2.21.15F1		2.21.15E1	
90° 			1"	2.21.10F2		2.21.10E2	
			1.5"	2.21.15F2		2.21.15E2	
Oblique -hinge l + r 			1"	2.21.10FK1		2.21.10EK1	
			1.5"	2.21.15FK1		2.21.15EK1	
Oblique 90° -hinge 			1"	2.21.10FK2		2.21.10EK2	
			1.5"	2.21.15FK2		2.21.15EK2	
Parallel -square 			1"	2.21.10F5		2.21.10E5	
			1.5"	2.21.15F5		2.21.15E5	

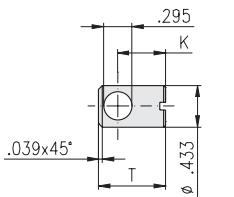
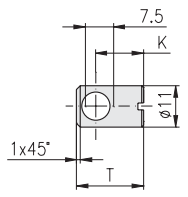
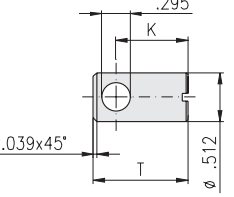
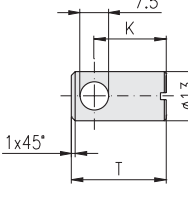
Connection / Connector	Finished dimension		PG	Article-No. for connector	
	inch	mm		steel standard	E
Miter -hinge l + r 			1"	2.21.10G1	
			1.5"	2.21.15G1	
Miter 90° -hinge l + r 			1"	2.21.10G2	
			1.5"	2.21.15G2	

Connection variants with screw-type connectors		
		
Profile with profile	Profile to plate with thread	Profile to plate with through-hole

Mounting instruction for screw-type connectors
1. Screw anchor in until it stops against the shoulder 2. Unscrew anchor until it lines-up with the cross bushing position (max. one turn) 3. Set up profile with cross bushing

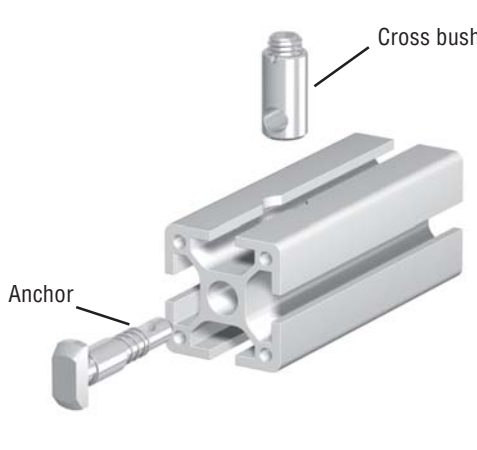
Connection / Connector	Finished dimension		PG	thread	Article-No. for connector	
	inch	mm			steel standard	E
Screw-type front sided 			1"	5/16-18	2.21.10SM8.5/1618	
			1.5"	5/16-18	2.21.15SM8.5/1618	

## Drill dimensions for connector cross bushings

Slot type	Cross bushing dimension		PG <b>K</b>	Core hole distance <b>T</b>	Boring depth, Cross bushing length	Article-No. steel
	inch	mm				
F-slot			1"	1/2 in. (12.7 mm)	.697 in. (17.7 mm)	2.21.B10
E-slot			1.5"	3/4 in. (19.05 mm)	.984 in. (25 mm)	2.21.B15

tools  2.99

**Connector components**




Cross bushing

Anchor

As an alternative to the complete connector it is also possible to order the component parts. Because of the extensive combination possibilities, storage of the complete connectors will be reduced by over 80%.

**Single parts**


Anchor



Base with spring

---

Cross bushing

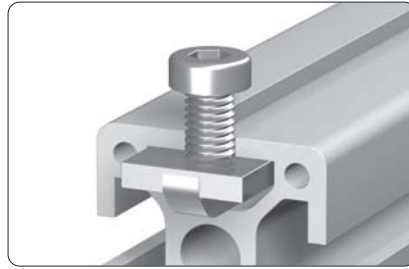


Base with setscrew

Connector for core hole Ø.394 in. (10 mm)			Connectors, complete				Single parts	
			PG 1"		PG 1.5"		Anchor	Piece
			steel standard	E	steel standard	E		
		Universal	2.21.10F0		2.21.15F0		2.21.A1F0	1
			2.21.10E0	E	2.21.15E0	E	2.21.A1E0	E
		Standard	2.21.10F1		2.21.15F1		2.21.A1F1	1
			2.21.10E1		2.21.15E1		2.21.A1E1	1
		90°	2.21.10F2		2.21.15F2		2.21.A1F2	1
			2.21.10E2		2.21.15E2		2.21.A1E2	1
		Oblique -hinge l + r	2.21.10FK1		2.21.15FK1		2.21.A1FK1	1
			2.21.10EK1		2.21.15EK1		2.21.A1EK1	1
		90° -hinge	2.21.10FK2		2.21.15FK2		2.21.A1FK2	1
			2.21.10EK2		2.21.15EK2		2.21.A1EK2	1
		Parallel -square	2.21.10F5				2.21.A10F5	1
			2.21.10E5				2.21.A10E5	1
					2.21.15F5		2.21.A15F5	1
					2.21.15E5		2.21.A15E5	1
		Miter -hinge l + r	2.21.10G1		2.21.15G1		2.21.A1G1	1
		90° -hinge l + r	2.21.10G2		2.21.15G2		2.21.A1G2	1
		Screw-type -front sided	2.21.10SM8.5/1618		2.21.15SM8.5/1618		2.21.A1SM8.5/1618	1
		Cross bushing, steel	2.21.B10		2.21.B15		Cross bushing, steel	

E = ground-connector

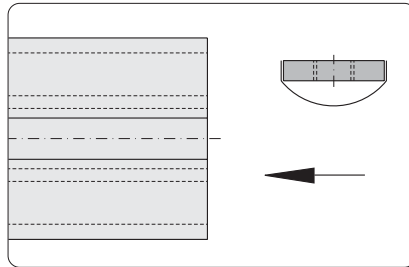
**Threaded plates**



Fixed into position with leaf spring

**Application**

Fastening element for screw-type connections

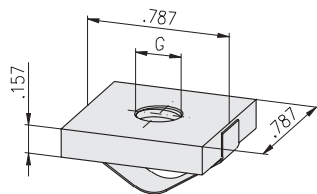
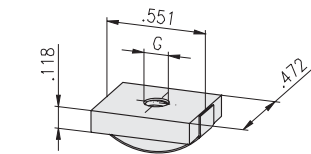


**Assembly**

Insert from end

**Technical data**

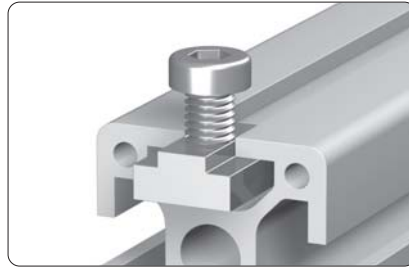
material: steel  
 surface: galvanised  
 max. moment of torque:  $M_{A, max}$



Description	G	$M_{A, max}$	Weight	Article-No.
Threaded plate F	8-32	2.213 lbs.×ft.	.0082 lbs.	2.31.F4.08-32
Threaded plate F	10-32	3.688 lbs.×ft.	.0079 lbs.	2.31.F5.10-32
Threaded plate F	1/4-20	5.163 lbs.×ft.	.0073 lbs.	2.31.F6.1/4-20

Description	G	$M_{A, max}$	Weight	Article-No.
Threaded plate E	8-32	2.213 lbs.×ft.	.0260 lbs.	2.31.E4.08-32
Threaded plate E	10-32	3.688 lbs.×ft.	.0256 lbs.	2.31.E5.10-32
Threaded plate E	1/4-20	7.376 lbs.×ft.	.0249 lbs.	2.31.E6.1/4-20
Threaded plate E	5/16-18	11.063 lbs.×ft.	.0243 lbs.	2.31.E8.5/16-18

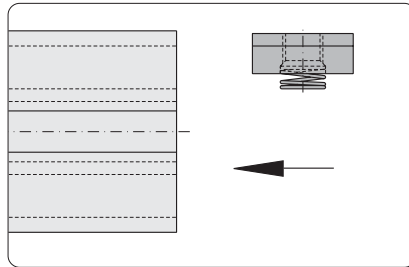
**T-Nuts**



Fixing with compressing spring

**Application**

Fastening element for screw-type connections



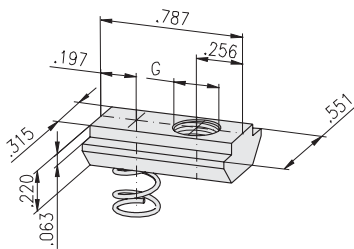
Insert from end

**Assembly**

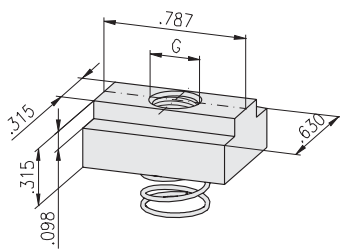
Insert from end

**Technical data**

material: steel  
 surface: galvanised  
 max. moment of torque:  $M_{A, max}$

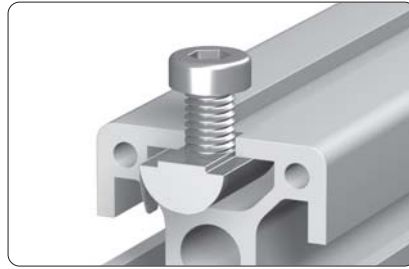


Description	G	$M_{A, max}$	Weight	Article-No.
T-Nut F	1/4-20	7.376 lbs.xft.	.0154 lbs.	2.32.F6.1/4-20
T-Nut F	5/16-18	19.177 lbs.xft.	.0146 lbs.	2.32.F8.5/16-18



Description	G	$M_{A, max}$	Weight	Article-No.
T-Nut E	1/4-20	7.376 lbs.xft.	.0331 lbs.	2.32.E6.1/4-20
T-Nut E	5/16-18	19.177 lbs.xft.	.0309 lbs.	2.32.E8.5/16-18

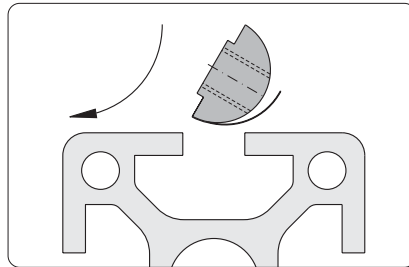
**T-Nuts  
for subsequent insertion**



Fixing with leaf spring

**Application**

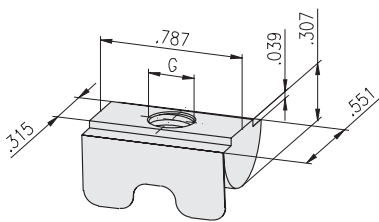
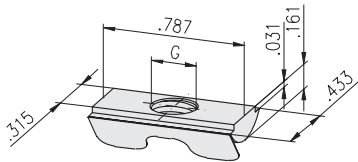
Fastening element for screw-type connections



Insert front-sided and rotate

**Technical data**

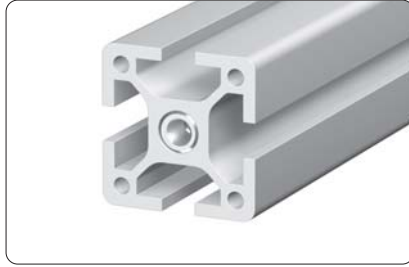
material: steel  
 surface: galvanised  
 max. moment of torque:  $M_{A, max}$



Description	G	$M_{A, max}$	Weight	Article-No.
T-Nut for subs. insertion F	8-32	2.213 lbs.×ft.	.0108 lbs.	2.324.F4.08-32
T-Nut for subs. insertion F	10-32	3.688 lbs.×ft.	.0101 lbs.	2.324.F5.10-32
T-Nut for subs. insertion F	1/4-20	7.376 lbs.×ft.	.0095 lbs.	2.324.F6.1/4-20
T-Nut for subs. insertion F	5/16-18	7.376 lbs.×ft.	.0082 lbs.	2.324.F8.5/16-18

Description	G	$M_{A, max}$	Weight	Article-No.
T-Nut for subs. insertion E	8-32	2.213 lbs.×ft.	.0220 lbs.	2.324.E4.08-32
T-Nut for subs. insertion E	10-32	3.688 lbs.×ft.	.0220 lbs.	2.324.E5.10-32
T-Nut for subs. insertion E	1/4-20	7.376 lbs.×ft.	.0220 lbs.	2.324.E6.1/4-20
T-Nut for subs. insertion E	5/16-18	19.177 lbs.×ft.	.0198 lbs.	2.324.E8.5/16-18

Threaded inserts

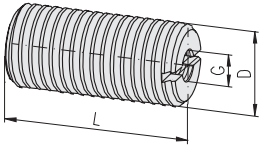


**Application**

For mounting on front end and fastening of any profile with core hole Ø.394 in.

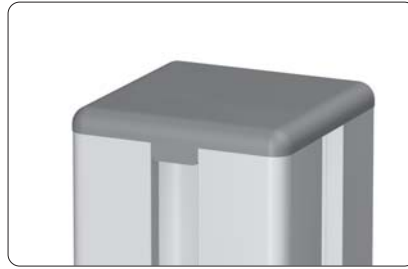
**Technical data**

material: steel  
surface: galvanised



Description	D/G	L	Weight	Article-No.
Threaded insert	1/2"-13 / 1/4"-20	.591	.0161 lbs.	2.35.11214
Threaded insert	1/2"-13 / 5/16"-18	.591	.0121 lbs.	2.35.112516

## Cover caps



### Application

Cover caps prevent dirt from entering and avoid lacerations.

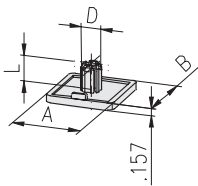
### Technical data

material: PA-GF  
 temperature range: -20°C to +85°C

### Comments

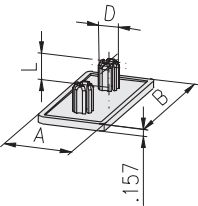
Before mounting debur core hole

### Square



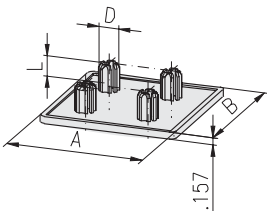
Description	AxB	D	L	Colour	Weight	Article-No.
Cover cap	1"×1"	Ø.433	.551	grey	.013 lbs.	2.42.1010010.1
Cover cap	1"×1"	Ø.433	.551	black	.013 lbs.	2.42.1010010.2
Cover cap	1.5"×1.5"	Ø.433	.551	grey	.022 lbs.	2.42.2015015.1
Cover cap	1.5"×1.5"	Ø.433	.551	black	.022 lbs.	2.42.2015015.1

### Rectangle



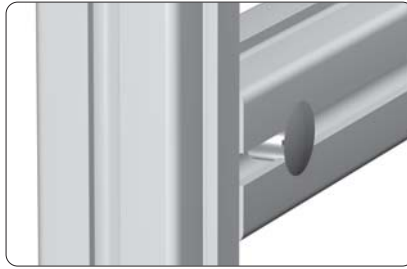
Description	AxB	D	L	Colour	Weight	Article-No.
Cover cap	1.5"×3"	Ø.433	.551	grey	.040 lbs.	2.42.2015030.1
Cover cap	1.5"×3"	Ø.433	.551	black	.040 lbs.	2.42.2015030.2

### Square



Description	AxB	D	L	Colour	Weight	Article-No.
Cover cap	2"×2"	Ø.433	.551	grey	.026 lbs.	2.42.1020020.1
Cover cap	2"×2"	Ø.433	.551	black	.026 lbs.	2.42.1020020.2
Cover cap	3"×3"	Ø.433	.551	grey	.075 lbs.	2.42.2030030.1
Cover cap	3"×3"	Ø.433	.551	black	.075 lbs.	2.42.2030030.2

**Cover plugs domed**

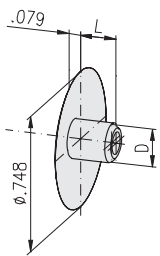
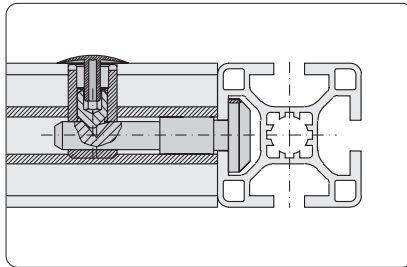


**Application**

The cover plug allows the closing of the connector cross bushing bore

**Technical data**

material: PE



Description	Colour	D	L	Weight	Article-No.
Cover plug 1" domed	grey	Ø.169	.177	.002 lbs.	2.42.5110.1
Cover plug 1" domed	black	Ø.169	.177	.002 lbs.	2.42.5110.2
Cover plug 1.5" domed	grey	Ø.169	.433	.002 lbs.	2.42.5115.1
Cover plug 1.5" domed	black	Ø.169	.433	.002 lbs.	2.42.5115.2

**Base plates**



Fastening of levelling feet

**Application**

Base and transporting plate for profiles without centric core hole



Fastening of castors



Fastening of eye-bolts

**Technical data**

material: aluminium  
 strength: F22  
 surface: black powder-coated

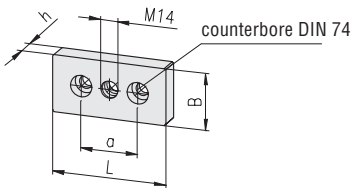
**Accessories**

(↔ *Catalogue, 'The Profile System'*)

- threaded insert
- cap-screw DIN 912

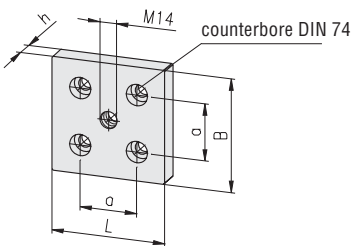
**Comments**

Counterbore DIN 74 for cap-screw DIN 912



1 1.5

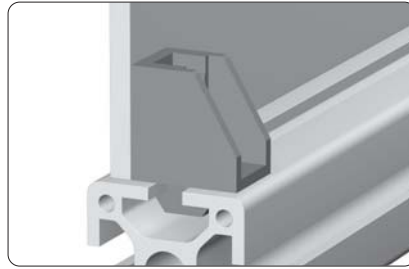
Description	B×L	DIN 74	h	a	Weight	Article-No.
Base plate	1.5"×3"	M14 - Km8	.591	1.5	.048 lbs.	2.47.2015030



1 1.5

Description	B×L	DIN 74	h	a	Weight	Article-No.
Base plate	2"×2"	M14 - Km6	.591	1.0	.044 lbs.	2.47.2020020
Base plate	3"×3"	M14 - Km8	.591	1.5	.106 lbs.	2.47.2030030

**Mounting blocks  
for subsequent insertion**

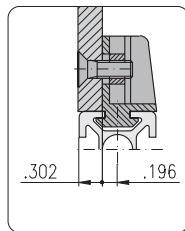


**Application**

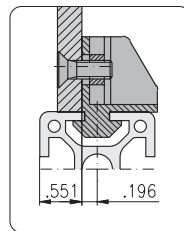
For the mounting of panels with subsequent insertion  
Variable mounting position of panels with distancing plate

**Technical data**

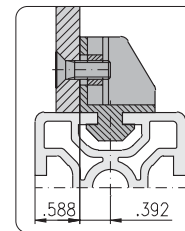
material: PA-GF  
colour: black  
square nut: steel , galvanised  
max. static load: 250 N, rectangular to slot



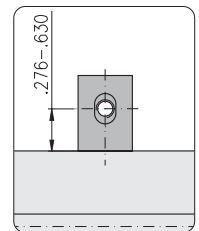
F-slot



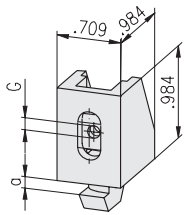
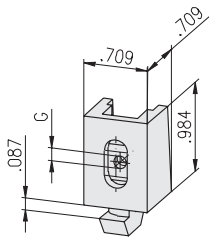
E3-slot



E4-slot



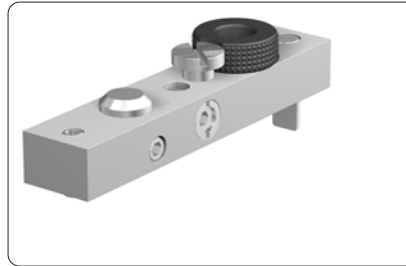
Tolerance equalisation: .354 in.



Description	G	Weight	Article-No.
Mounting block F	1/4"-20	.022 lbs.	2.64.2F2M6.1/4-20

Description	G	a	Weight	Article-No.
Mounting block E3	1/4"-20	.118	.022 lbs.	2.64.2E3M6.1/4-20
Mounting block E4	1/4"-20	.157	.022 lbs.	2.64.2E4M6.1/4-20

**Drill jigs**  
for profiles with F- and E-slots



Drill jig with setscrew



Drill jig with clamping lever

**Application**

Tools for precise machining of connection bore

- for drilling machine: - drill jig  
- drill
- for milling machine: - milling cutter
- the drill jig is located and fastened in the profile slot
- suitable for any profile angle cut

**Technical data**

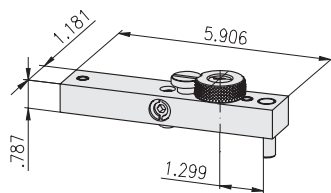
Base body:

- material: aluminium
- surface: neutral anodised

Drill bush:

- material: steel
- surface: hardened and polished

**Drill jig**  
with setscrew

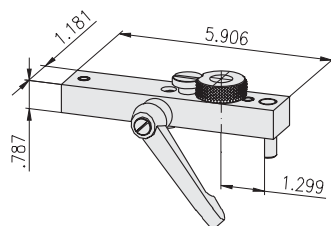


Description	Weight	Article-No.
Drill jig FE with setscrew	.827 lbs.	2.99.01111
<b>Single parts</b>		
Base body	.414 lbs.	1.99.01112-01
Drill bush for cross bushing, Ø.441	.231 lbs.	2.99.01112-02
Drill bush for cross bushing, Ø.520	.231 lbs.	2.99.01112-03
Safety screw for drill bush, M8×5.5	.024 lbs.	1.99.01112-04
Stop pin	.042 lbs.	1.99.01112-05
Setscrew for stop pin	.004 lbs.	1.99.01112-06
Connector, parallel-high	.066 lbs.	1.21.31/2F5
Anchor	.044 lbs.	1.21.A2E5

**Accessories**

Drill bush for parallel-anchor, Ø.398	.198 lbs.	2.99.01112-12
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**Drill jig**  
with clamping lever

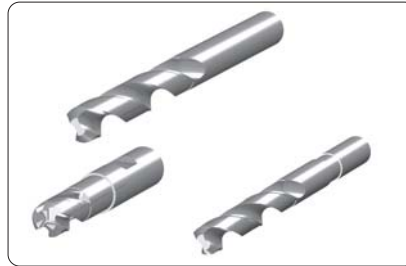


Description	Weight	Article-No.
Drill jig FE with clamping lever	.966 lbs.	2.99.01112
<b>Single parts</b>		
Base body	.414 lbs.	1.99.01112-01
Drill bush for cross bushing, Ø.441	.231 lbs.	2.99.01112-02
Drill bush for cross bushing, Ø.520	.231 lbs.	2.99.01112-03
Safety screw for drill bush, M8×5.5	.024 lbs.	1.99.01112-04
Stop pin	.042 lbs.	1.99.01112-05
Setscrew for stop pin	.004 lbs.	1.99.01112-06
Connector, parallel-high	.066 lbs.	1.21.31/2F5
Anchor	.044 lbs.	1.21.A2E5
Clamping lever 80, for connector, M10×20	.139 lbs.	1.29.801020

**Accessories**

Drill bush for parallel-anchor, Ø.398	.198 lbs.	2.99.01112-12
---------------------------------------	-----------	---------------

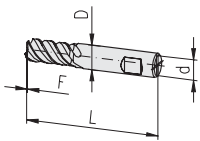
**Tools**  
for profiles with F- and E-slots



Drill, Milling cutter

**Milling cutter**

- for • parallel-anchor
- cross bushing



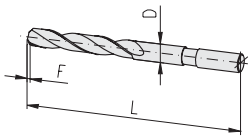
**Technical data**

material: HSS  
4 cutting edges  
cutting geometry for aluminium machining  
off-centre cutting edges

Description	D	L	F	d	Weight	Article-No.
Milling cutter f. par.-anchor	Ø.398	3.150	.079×45°	.472	.130 lbs.	2.99.0211045
Milling cutter f. cross bush.	Ø.441	3.543	.039×45°	.630	.256 lbs.	2.99.0211145
Milling cutter f. cross bush.	Ø.520	3.543	.039×45°	.630	.256 lbs.	2.99.0211345

**Drill**

for parallel-anchor



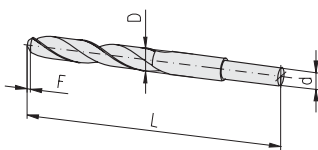
**Technical data**

material: HSS  
2 cutting edges  
cutting geometry for aluminium machining  
off-centre cutting edges

Description	D	L	F	Weight	Article-No.
Drill for parallel-anchor	Ø.398	5.906	.079×45°	.205 lbs.	2.99.0311045

**Drills**

for cross bushing

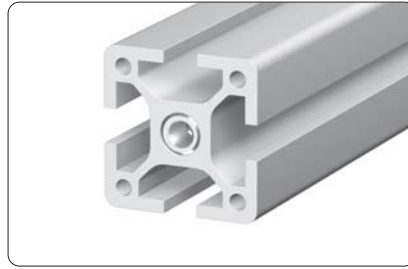


**Technical data**

material: HSS  
2 cutting edges  
cutting geometry for aluminium machining  
off-centre cutting edges

Description	D	L	F	d	Weight	Article-No.
Drill for cross bushing	Ø.441	5.591	.039×45°	.472	.201 lbs.	2.99.0321145
Drill for cross bushing	Ø.520	5.945	.039×45°	.472	.205 lbs.	2.99.0321345

**Screw taps  
for aluminium machining**



**Application**

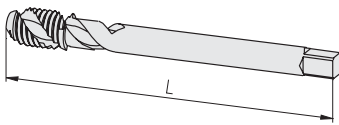
Mounting threads in profile centre core holes

**Technical data**

material: HSS/E

machine threading tap:

- right hand cutting, 20° left spiral fluted
- enlarged chip flute
- 2-pitch thread start
- tolerance class: 6H



Description	G	L	Weight	Article-No.
Screw tap	M12	4.331	.231 lbs.	2.99.0412110
Screw tap	1/2"-13	4.331	.245 lbs.	2.99.14102013

**Metric and English Conversion Table**

<b>Linear Measure</b>					
1 km	=	0.6214 mi	1 mi	=	1.61 km
1 m	=	0.0006214 mi	1 mi	=	1,610 m
1 m	=	3.28 ft	1 ft	=	0.305 m
1 cm	=	0.3937 in	1 in	=	2.54 cm
1 mm	=	0.03937 in	1 in	=	25.4 mm

<b>Square Measure</b>					
1 km <sup>2</sup>	=	0.3861 mi <sup>2</sup>	1 mi <sup>2</sup>	=	2.59 km <sup>2</sup>
1 m <sup>2</sup>	=	10.76 ft <sup>2</sup>	1 ft <sup>2</sup>	=	0.093 m <sup>2</sup>
1 cm <sup>2</sup>	=	0.155 in <sup>2</sup>	1 in <sup>2</sup>	=	0.65 cm <sup>2</sup>
1 mm <sup>2</sup>	=	0.00155 in <sup>2</sup>	1 in <sup>2</sup>	=	845.2 mm <sup>2</sup>

<b>Weight Measure</b>					
1 kg	=	2.2 lbs	1 lb	=	0.455 kg
1 kg	=	35.274 ozs	1 oz	=	0.028 kg

<b>Force Measure</b>					
1 Newton (N)	=	0.225 lbs	1 lb	=	4.448 N
1 daN	=	2.2 lbs	1 lb	=	0.455 daN
1 kg Force	=	9.8 Newton (N)	1 N	=	0.102 kg Force
1 Kilopound	=	9.5 Newton (N)	1 N	=	0.105 Kilopound
1 Pound/Inch	=	175.127 Newton/Meter	1 N/m	=	0.0057 Pound/Inch
1 Pound/Foot	=	14.59 Newton/Meter	1 N/m	=	0.0685 Pound/Foot

<b>Pressure Measure</b>					
1 Bar	=	14.5 P.S.I.	1 P.S.I.	=	0.690 Bar
1 kg/m <sup>2</sup>	=	9.8 Newton/Meter <sup>2</sup>	1 N/m <sup>2</sup>	=	0.102 kg/m <sup>2</sup>
1 kg/m <sup>2</sup>	=	9.8 Pascal (Pa)	1 Pa	=	0.102 kg/m <sup>2</sup>
1 Kilonewton/Meter	=	0.145 P.S.I.	1 P.S.I.	=	6.897 KN/m <sup>2</sup>

<b>Other</b>					
1 in <sup>3</sup>	=	16.3871 cm <sup>3</sup>	1 cm <sup>3</sup>	=	0.0610 in <sup>3</sup>
1 in <sup>4</sup>	=	41.623 cm <sup>4</sup>	1 cm <sup>4</sup>	=	0.024 in <sup>4</sup>
1 lb/ft	=	1.4882 kg/m	1 kg/m	=	0.67195 lb/ft
1 Nm	=	8.858 inch-pounds	1 inch-pound	=	0.113 Nm

## Metric / U.S. Customary Unit Equivalents

Linear				
miles	× 1.6093	= kilometers (km)	× 0.6214	= miles
yards	× 0.9144	= meters (m)	× 1.0936	= yards
feet	× 0.3048	= meters (m)	× 3.281	= feet
inches	× 2.54	= centimeters (cm)	× 0.3937	= inches
inches	× 25.4	= millimeters (mm)	× 0.03937	= inches

Area				
miles <sup>2</sup>	× 2.59	= kilometers <sup>2</sup> (km <sup>2</sup> )	× 0.3861	= miles <sup>2</sup>
yards <sup>2</sup>	× 0.8361	= meters <sup>2</sup> (m <sup>2</sup> )	× 1.196	= yards <sup>2</sup>
inches <sup>2</sup>	× 6.452	= centimeters <sup>2</sup> (cm <sup>2</sup> )	× 0.155	= inches <sup>2</sup>
acres <sup>2</sup>	× 0.4047	= hectares <sup>2</sup> (10 <sup>4</sup> m <sup>2</sup> ) or (ha)	× 2.471	= acres <sup>2</sup>
feet <sup>2</sup>	× 0.0929	= meters <sup>2</sup> (m <sup>2</sup> )	× 10.764	= feet <sup>2</sup>

Mass				
ounces (av)	× 28.35	= grams (g)	× 0.03527	= ounces (av)
pounds (av)	× 0.4536	= kilograms (kg)	× 2.2046	= pounds (av)
tons (2000 lb)	× 907.18	= kilograms (kg)	× 0.001102	= tons (2000 lb)
tons (2000 lb)	× 0.90718	= metric tons (t)	× 1.1023	= tons (2000 lb)

Force				
ounces - f	× 0.278	= newtons (N)	× 3.597	= ounces - f
pounds - f	× 4.448	= newtons (N)	× 0.2248	= pounds - f
kilograms - f	× 9.807	= newtons (N)	× 0.10197	= kilograms - f

Thread	mm			inch		
	Outside dia	Core dia		Outside dia	Core dia	
metric		Bolt	Nut		Bolt	Nut
M4	4	3.141	3.242	0.15748	0.12362	0.12756
M5	5	4.019	4.134	0.19685	0.15827	0.16260
M6	6	4.773	4.917	0.23622	0.18779	0.19370
M8	8	6.466	6.647	0.31496	0.25472	0.26181
M10	10	8.160	8.376	0.39370	0.32126	0.32992
M12	12	9.853	10.106	0.47244	0.38779	0.39803
M14	14	11.546	11.835	0.55118	0.45827	0.46614
M16	16	13.546	13.835	0.62992	0.53346	0.54488

Thread	inch			mm		
	Outside dia	Core dia		Outside dia	Core dia	
UNF, NF / UNC, NC		Bolt	Nut		Bolt	Nut
8 - 32	0.16402	0.12571	0.13020	4.166	3.193	3.307
10 - 32	0.19000	0.15169	0.15618	4.826	3.853	3.967
1/4" - 20	0.25000	0.18870	0.19591	6.350	4.793	4.967
5/16" - 18	0.31252	0.24429	0.25240	7.938	6.205	6.411
3/8" - 16	0.37500	0.29831	0.30728	9.525	7.577	7.805
1/2" - 13	0.50000	0.40551	0.41669	12.700	10.300	10.584
9/16" - 12	0.56252	0.46031	0.47228	14.288	11.692	11.996
5/8" - 11	0.62500	0.51350	0.52661	15.875	13.043	13.376

<b>A</b>			
Abbreviations .....	3	Flatness of profile surfaces .....	13
Additional accessories .....	29	Flatness tolerance .....	13
Angular Tolerance .....	14	F-slot .....	3-5
		Functional length .....	13
<b>B</b>		<b>H</b>	
Base plates .....	28	H-slot .....	3-5
Bending strength .....	14	<b>I</b>	
Bores for parallel-connector .....	10	Inch-System .....	4
<b>C</b>		Installation accessories .....	26
Coding examples .....	11	Base plates .....	28
Connection System .....	15	Cover caps .....	26
Connector components .....	21	Cover plugs domed .....	27
Anchor .....	21	<b>K</b>	
Cross bushing .....	21	Key .....	5
Setscrew .....	21	<b>M</b>	
Single parts .....	21	Metric / U.S. Customary Unit .....	
Spring .....	21	Equivalents .....	34
Connector selection .....	17	Metric and English Conversion Table .....	33
Connectors .....	16	Metric-System .....	4
Manufacture a connection .....	16	Milling cutter .....	31
types and materials .....	17	Mounting blocks for subsequent .....	
Conversion tables .....	33	insertion .....	29
Metric / U.S. Customary Unit .....		<b>N</b>	
Equivalents .....	34	Numerical key for articles .....	5
Metric and English Conversion .....		<b>O</b>	
Table .....	33	Order description .....	8
Core hole-Ø .....	4	<b>P</b>	
Cover caps .....	26	Parallelism tolerance .....	14
Cover plugs domed .....	27	Placeholder .....	3
Cross bore .....	10	Price groups (1-3) .....	9
Cross bushing .....	20	Profile group .....	3
Drill dimensions .....	20	1" .....	6
Cross bushing bore .....	10	1.5" .....	7
		Profile machining .....	8
<b>D</b>		Bores for parallel-connector .....	10
Delivery length .....	13	Coding examples .....	11
Direction and Position .....	9	Cross bore .....	10
Drill .....	31	Cross bushing bore .....	10
Drill jig .....	30	Order description .....	8
		Price group 1-3 .....	9
<b>E</b>		Saw cut .....	9
E3-slot .....	3-5	Saw cut tolerance .....	9
E4-slot .....	3-5	Summary .....	8
E-slot .....	3-5	Thread .....	10
Extruded profile as per DIN EN 12020-1 ..	13	Profile tolerance .....	13
<b>F</b>			
Fastening elements .....	22	<b>S</b>	
Threaded inserts .....	25	Saw cut .....	9
Threaded plates .....	22	tolerance .....	9
T-Nuts .....	23	Screw taps .....	32
T-Nuts for subsequent insertion .....	24	Slot .....	3
		depth .....	4
		system .....	4
		type .....	3
		width .....	4
		Special characters .....	3
		Straightness tolerance .....	13
		Subject Index .....	35
		Symbols .....	3
		<b>T</b>	
		Technical data .....	13
		Angular Tolerance .....	14
		Bending strength .....	14
		Delivery length .....	13
		Extruded profile as per .....	
		DIN EN 12020-1 .....	13
		Flatness of profile surfaces .....	13
		Flatness tolerance .....	13
		Functional length .....	13
		Parallelism tolerance .....	14
		Profile tolerance .....	13
		Straightness tolerance .....	13
		Thread .....	10
		Threaded inserts .....	25
		Threaded plates .....	22
		T-Nuts .....	23
		T-Nuts for subsequent insertion .....	24
		Tools .....	30
		Drill jigs .....	30
		Drills .....	31
		for profiles with F- and E-slots .....	31
		Milling cutter .....	31
		Screw taps .....	32
		<b>V</b>	
		Vibration proof .....	15
		<b>W</b>	
		Wall thickness .....	4

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