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### 14.1 CNC-machining service

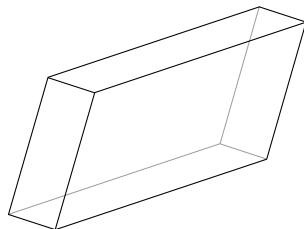
Pollmeier Massivholz GmbH & Co. KG offers BauBuche products cut to size and cnc-machined according to your specifications. Pollmeier operates an Oikos 12 6-axis timber machining centre from SCM catering for a wealth of machining tasks. The cnc-machining options described below cover the most common jobs we perform for customers. We are however able to provide many more cnc-machining services. For details and pricing, please contact our cnc-machining service team who would be delighted to answer your queries.

#### 14.1.1 Machinable dimensions and weights

Min. cross section (W x H)*	50 x 20	mm	*The dimensions refer to the element placed in the machine. Beams are machined in horizontal position.
Max. cross section (W x H)*	1250 x 300	mm	
Min. length (1-side face machining)	100	mm	
Min. length (2-side face machining)	800	mm	
Min. length (continuous machining)	1200	mm	
Max. length	12,000	mm	
Max. weight	2500	kg	
Tolerances	± 1.5	mm	

#### 14.1.2 CNC-machining options

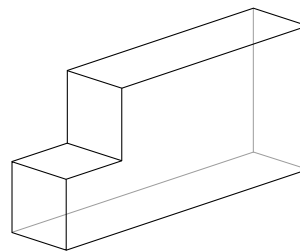
##### (Mitre or angle) cut



Tool  
Sawblade



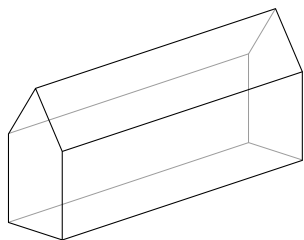
##### Ridge scarf



Tool  
Sawblade



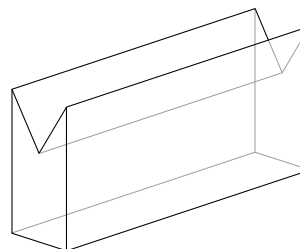
##### Hip rafter cut



Tool  
Sawblade



##### Collar cut



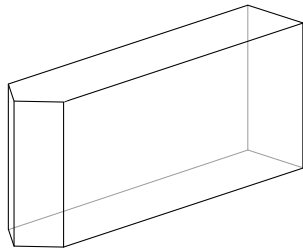
Tool  
Sawblade



**Limitations**  
max. cut depth (diagonal) 160 mm

**Limitations**  
max. cut depth (diagonal) 160 mm

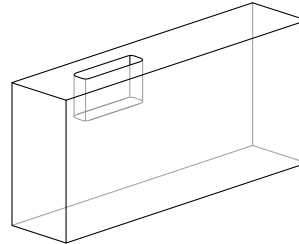
**Side cut**



Tool  
Sawblade



**Slot**



Tool  
End mill



**Limitations**

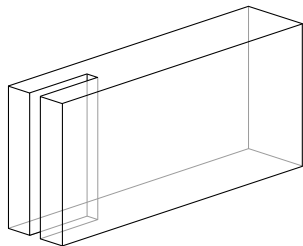
min. width 21 mm; max. depth 85 mm;  
corner radius 10 mm

d = 20

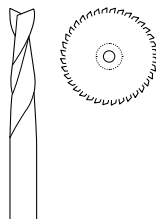
min. width 31 mm; max. depth 150 mm;  
corner radius 15 mm

d = 30

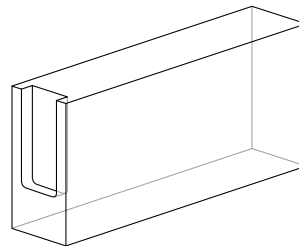
**End slot**



Tool  
End mill  
Sawblade



**End groove**



Tool  
End mill



**Limitations**

Continuous only; min. width 5 mm;  
max. depth 160 mm

d = 20

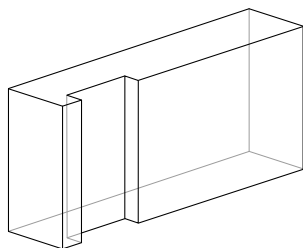
d = 30

**Limitations**

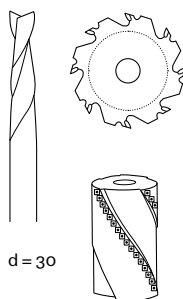
min. width 31 mm; max. depth 150 mm;  
corner radius 15 mm

d = 30

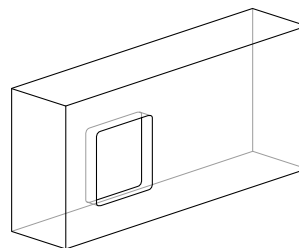
**Face groove**



Tool  
End mill  
Side milling cutter  
Planer head



**Pocket**



Tool  
End mill



**Limitations**

min. width 31 mm;  
max. depth 150 mm

d = 30

**Limitations**

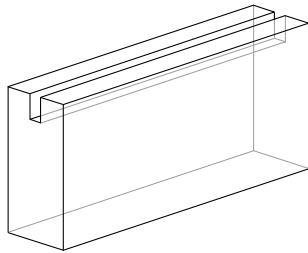
min. width 21 mm; min. length 21 mm;  
max. depth 85 mm; corner radius 10 mm

d = 20

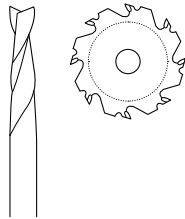
min. width 31 mm; min. length 31 mm;  
max. depth 150 mm; corner radius 15 mm

d = 30

### Groove



**Tool**  
End mill  
Side milling cutter



#### Limitations

Min. width 21 mm; max. depth 85 mm

d = 20

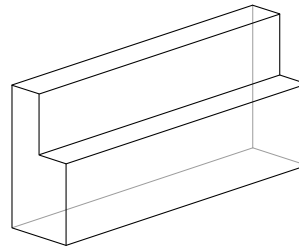
Min. width 31 mm; max. depth 150 mm

d = 30

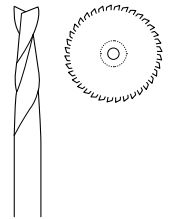
Min. width 60 mm; max. depth 140 mm

d = 350

### Rabbet



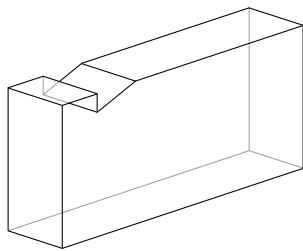
**Tool**  
End mill  
Sawblade



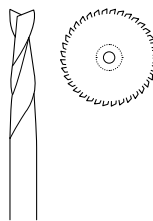
d = 20

d = 30

### Notch



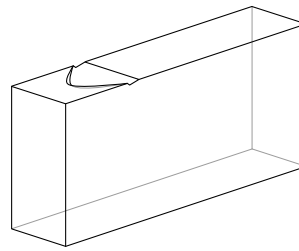
**Tool**  
Sawblade



#### Limitations

Min. cutting depth 160 mm; max. depth 150 mm

### Heart notch



**Tool**  
End mill

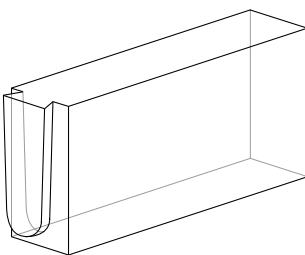


#### Limitations

Max. depth 150 mm; corner radius 15 mm

d = 30

### Dovetail (tongue)



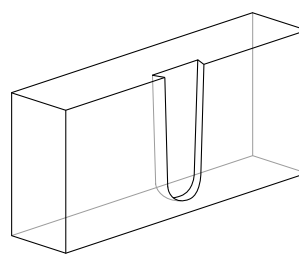
**Tool**  
Dovetail cutter



#### Limitations

Min. width 40 mm; min. radius 20 mm;  
max. depth 28 mm; angle 15°

### Dovetail groove



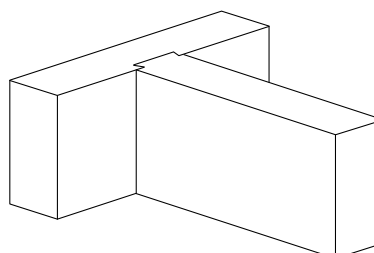
**Tool**  
Dovetail cutter



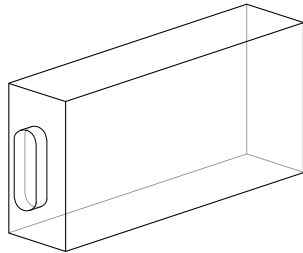
#### Limitations

Offset: length 0.2 mm; width 0.6 mm;  
depth 1.5 mm (other dimensions on request)

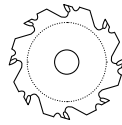
### Complete dovetail joint



### Stub tenon

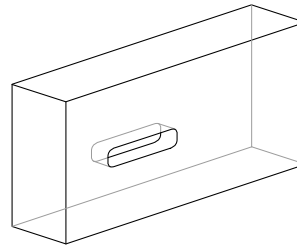


**Tool**  
Side milling cutter



**Limitations**  
Min. width 31 mm  
(round pegs only)

### Mortise



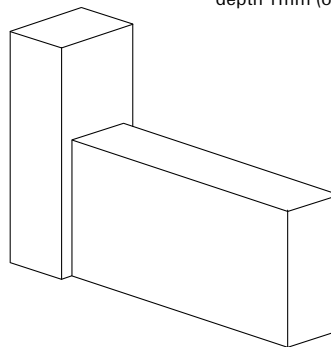
**Tool**  
End mill



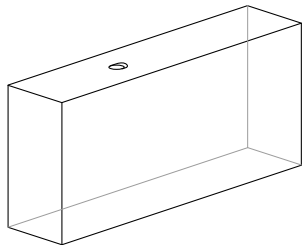
**Limitations**  
Offset: length 0.5 mm; width 0.3 mm;  
depth 1 mm (other dimensions on request)

d = 30

### Complete mortise joint



### Through bore



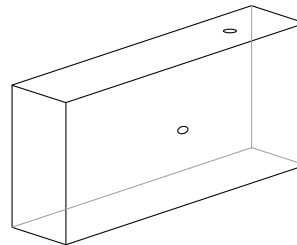
**Tool**  
Drill bit  
End mill



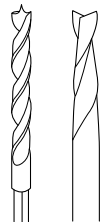
Diameter [mm]			
8, 10, 12, 16, 18, 20	> 21	> 31	d = 20
Limitations [mm]			
Max. length: 300	150	280	d = 30

Length < 160 mm normally drilled from one side  
(other dimensions on request)  
For bores at an angle, a plane face with a diameter  
of 31 mm is milled.

### Blind hole



**Tool**  
Drill bit  
End mill



Diameter [mm]			
8, 10, 12, 16, 18, 20	> 21	> 31	d = 20
Limitations [mm]			
Max. length 300	85	150	d = 30

Length < 160 mm, normally drilled from one side  
(other dimensions on request)  
For bores at an angle, a plane face with a diameter  
of 31 mm is milled.

### 14.1.3 Tools

Pollmeier uses the tools listed below. The recommendations in the table refer to the Oikos 12 machining centre with 25 kW spindles and might not be suitable for other machining centres.

Type	Tool	Dia- meter [mm]	Thick- ness [mm]	Size [mm]	Useful length			Advance [mm/min]		Speed [rpm]
					axial	radial	both sides	X and Y	Z	
<b>Saw</b>	Sawblade	500	5	complete	100	160	310	6000	3200	2700
<b>Mill</b>	VHM end mill	30		25	150		260	3500	1500	14000
	VHM end mill	20		21	85		160	3500	1500	16000
	Indexable end mill	20		21	50		90	3000	1500	14000
	Indexable milling cutter	350	58	20	130	140		6500	2000	3500
	Indexable planer head	80	80	20	140			8000	2000	8000
	Indexable dovetail cutter 15°	25	40	complete	28			3500	1500	14000
<b>Drill bit</b>	Multi-purpose drill bit	8		60	160		300	2000	2000	1750
	HM head bit	10		25	160		300	2000	2000	1800
		12		25	160		300	2000	2000	1800
		16		40	160		300	2000	2000	2600
		18		40	160		300	2000	2000	2600
		20		40	160		300	2000	2000	2600

For tool parameters for the Hundegger K2i and other tool and machining recommendations, please refer to chapter 14.4 »General machining information«.

#### 14.2 Project execution

To submit an offer, Pollmeier requires the following data and information regarding your project:

- \_ Customer name
- \_ Construction project
- \_ Delivery date
- \_ Exact dimensions (width, height, length) and quantities
- \_ Veneer orientation in elements
- \_ Special packaging requirements (if applicable)
- \_ 3D file in one of the formats specified below

Pollmeier can process the following file formats (in order of preference):

1. Cadwork 3D (\*.3d)
2. Cadwork 2D (\*.2d)
3. BTL (\*.btl)
4. ACIS (\*.sat)
5. STEP (\*.stp)
6. DWG/DXF (\*.dwg / \*.dxf)
7. PDF file of single element drawing (\*.pdf)

The compilation of machining data from PDF files, corrections in drawings and other additional services that exceed the normal scope of preparation are not included in the prices for cnc-machining and will be charged separately. Please make sure that the dimensions are correct and complete. We regret that we cannot process documents or requests that are incomplete or incorrect.

Normally, Pollmeier will submit an offer within 3 working days. The offers for BauBuche elements with cnc-machining do not include static structural calculations or checks regarding the compliance of the elements with structural strength and general construction requirements. All machining tasks are performed based on the specifications of the client as submitted in the files provided.

Special requirements for packaging must be submitted together with the order. Unless instructed otherwise, Pollmeier will pack the elements according to its own best practice in bundles of maximum 3 tons.

Production of the ordered elements will begin after transmission of the order confirmation signed by Pollmeier. Subsequent changes to the order can only be accepted in exceptional circumstances and following prior consultation with Pollmeier. Any resulting additional costs shall be payable by the customer, who might also need to accept delays in delivery.





#### 14.4 General machining information

BauBuche has a high density, which must be taken into account when choosing tools, plants and machining processes. Machining in cnc-wood cutting machines requires extra care and experience.

Never leave the machine unsupervised! There is always a risk of fire, especially when worn tools are used. Therefore always keep a fire extinguisher ready.

In large mills, always mill up-cut to prevent excessive heat generation. For the same reason, we recommend working with high advance speeds and smaller cutting rates. Change the tools the moment advance slows down.

The following tool parameters have been tested in the Hundegger K2i and are suitable for the cnc-machining of BauBuche

Type	Tool	Dia- meter [mm]	Thick- ness [mm]	Machining depth / length [mm] / area [mm <sup>2</sup> ]	Useful length [mm]	Speed [mm/s]			Speed [rpm]
						Advance	Insertion	Removal	
Saw	Sawblade	800	6	160		150	120	200	1500
Mill	Plain milling cutter	300	60	2000		120	120	300	4000
	HSS end mill	40		800	160	40	40	200	4000
	Dovetail cutter 15°	45	60	1680	28	40	40	200	4000
Drill bit	HSS G-Lang wood twist drill bit	all		45			35	120	1800

The following tools have been generally found suitable for the machining of BauBuche in cnc-wood cutting machines:

- \_ HSS drill bits (especially type »G-Lang« bits from Famag)
- \_ Fisch® multi-purpose drill bits
- \_ Fisch® »Elite« auger bits
- \_ HM sawblades
- \_ VHM mills
- \_ HSS mills
- \_ Indexable milling cutters (with smallest possible indexable inserts)

All drill bits are available from Kanne Werkzeugtechnik GmbH ([www.kanne-werkzeuge.de](http://www.kanne-werkzeuge.de)).

In our experience, good results can also be achieved with drilling units that work with compressed air and matching drill bits. In the K2i from Hundegger, such a configuration can be achieved with the universal drilling unit in conjunction with deep hole bits from Gühring (EB80 single-fluted deep hole gun drill or ZB80 two-fluted deep hole gun drills with soldered HM head). For more information, please contact the manufacturer of your machining centre.

#### 14.5 Handling / storage on construction site

For easy transport and handling, beams can be fitted with lifting fixtures at the factory. Pollmeier uses the following lifting systems, which are available on request.

- \_ ASSY lifting anchors
- \_ RAMPA sleeves with eyes

The costs for lifting systems are invoiced separately. We also provide holes / cuts for other lifting systems.

BauBuche shrinks and swells more than standard softwood. In particular, exposure of end-grain surfaces (ends of beams, step joints, incisions, drill holes, etc.) to moisture can result in significant expansion of the cross-section. Moisture can also leave behind spots on the material. To prevent damage during storage and installation, we strongly recommend treating the BauBuche elements with a protective coating that minimises moisture absorption.

For suitable coating systems and competent advice, contact Koch und Schulte GmbH & Co. KG ([www.kochundschulte.de](http://www.kochundschulte.de)). For more detailed information, refer to our brochure og »Wood preservation & surface treatment« ([www.pollmeier.com/de/service/downloads-im-ueberblick/Broschueren.html](http://www.pollmeier.com/de/service/downloads-im-ueberblick/Broschueren.html)).

During storage on the building site, make sure that the BauBuche elements are not in contact with the ground. We recommend placing them on stack squares, removing the transport packaging (to prevent condensation) and covering them with a suitable sheet. Ensure good ventilation, secure the BauBuche parts against toppling over and protect them from the elements and dirt.

