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#### 14.1 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 are recommendations for the CNC system "Oikos 12" with 25 kW spindle and are not generally valid for other CNC systems.

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	
Saw	Sawblade	500	5	complete	100	160	310	6000	3200	2700
Mill	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
Drill bit	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

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

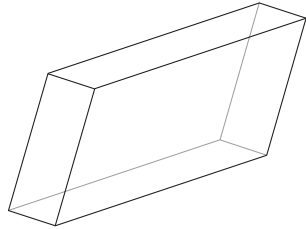
- \_ HSS drill bits (especially type »G-Lang« bits from Famag)
- \_ Fisch® multi-purpose drill bits
- \_ Fisch® »Elite« auger bits
- \_ HM sawblades
- \_ VHM mills
- \_ HSS mills
- \_ Indexable milling cutters (with smallest possible indexable inserts)

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.

14.2 Typical operations on the CNC machine and tools used

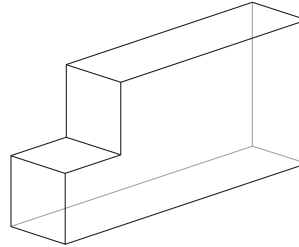
**(Mitre or angle) cut**



**Tool**  
Sawblade



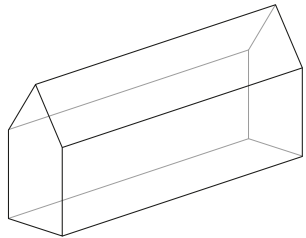
**Ridge scarf**



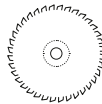
**Tool**  
Sawblade



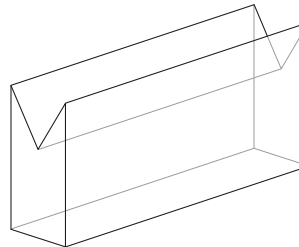
**Hip rafter cut**



**Tool**  
Sawblade



**Collar cut**



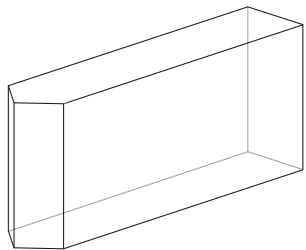
**Tool**  
Sawblade



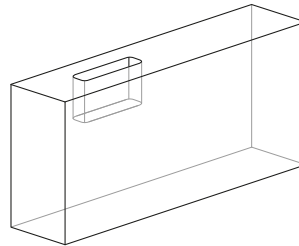
**Limitations**  
max. cut depth (diagonal) 160 mm

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

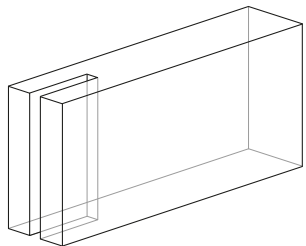
**Side cut**



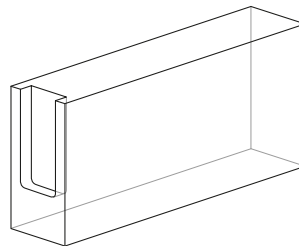
**Slot**



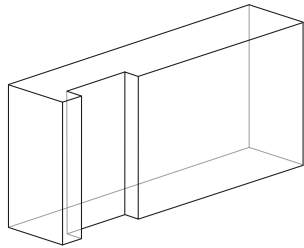
**End slot**



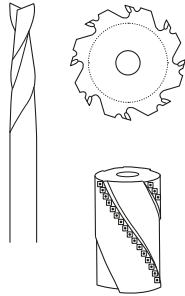
**End groove**



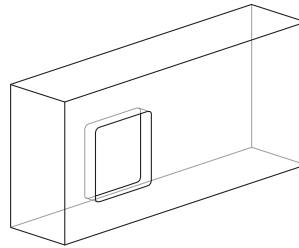
**Face groove**



**Tool**  
End mill  
Side milling cutter  
Planer head



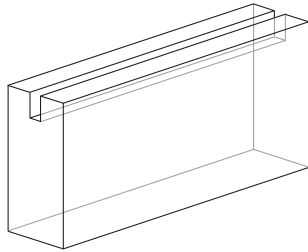
**Pocket**



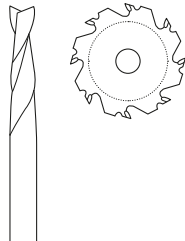
**Tool**  
End mill



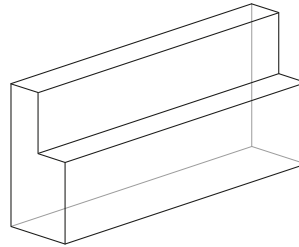
**Groove**



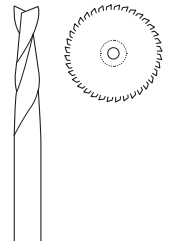
**Tool**  
End mill  
Side milling cutter



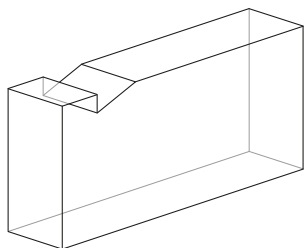
**Rabbet**



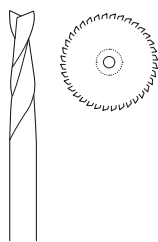
**Tool**  
End mill  
Sawblade



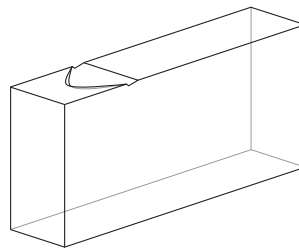
**Notch**



**Tool**  
End mill  
Sawblade



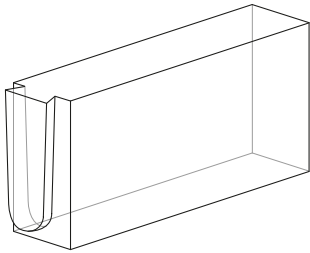
**Heart notch**



**Tool**  
End mill



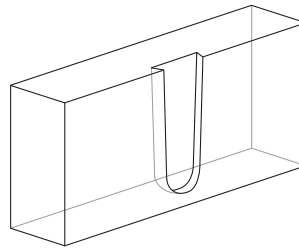
**Dovetail (tongue)**



**Tool**  
Dovetail cutter



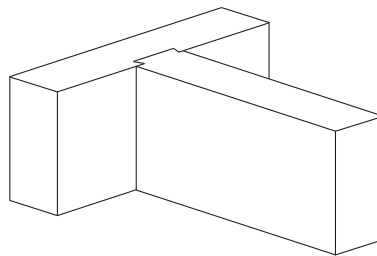
**Dovetail groove**



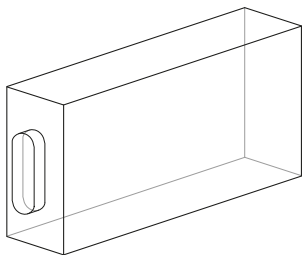
**Tool**  
Dovetail cutter



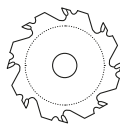
**Complete dovetail joint**



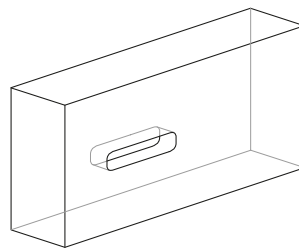
**Stub tenon**



**Tool**  
Side milling cutter



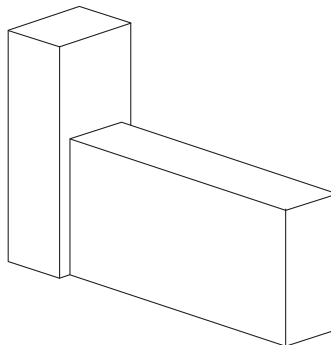
**Mortise**



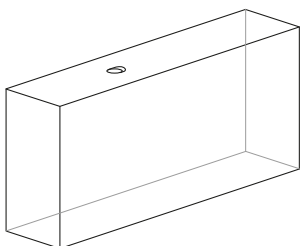
**Tool**  
End mill



**Complete mortise joint**



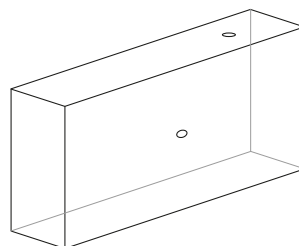
**Through bore**



**Tool**  
Drill bit  
End mill



**Blind hole**



**Tool**  
Drill bit  
End mill



### 14.3 Guide prices for machining

The guide prices have been calculated by Pollmeier on the basis of its own experience. The guide prices are average prices based on the cnc-machining of standard size elements according to our product data sheet.

Please note that the actual prices depend on the following factors:

- \_ Length of element
- \_ Number of (different) machining steps
- \_ Type of machining
- \_ Scope of machining
- \_ Number of tool changes

#### Guide prices

Cross-section group [WxH in cm<sup>2</sup>]

Group	from	to	Price per m <sup>3</sup> [€]
1	40	100	300
2	101	150	225
3	151	500	100
4	501	3750	80

The actual price might deviate significantly from the guide price.

#### Cross-section groups table [mm]

Height	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800	840	880	920	960	1000	1040	1080	1120	1160	1200	1240
50	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3														
60	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3														
80	1	1	2	3	3	3	3	3	3	3	3	3	3	3	4	4														
100	1	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
120	1	2	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
140	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
160	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
180	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
200	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
220	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
240	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
260	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
280	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
300	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Width



#### 14.4 Storage on construction site

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. It is therefore expressly recommended to apply a protective coating to BauBuche immediately after CNC machining, which slows the absorption of moisture and ensures protection against moisture during storage and assembly.

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 on »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.

