

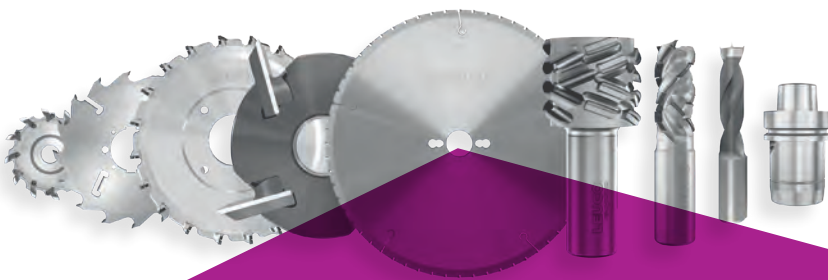
# TOOL RECOMMENDATION

Manufacturer

**REHAU**

Material

**RAUVISIO NOIR COMPACT BOARD**



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**Version 08/2023**

# TOOL RECOMMENDATION

## REHAU RAUVISIO NOIR COMPACT BOARD



The following tool recommendations are based on a wide variety of test series by LEUCO Ledermann GmbH & Co. KG, with the best machining results in each case.

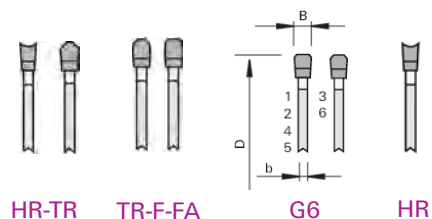
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### DEFINITION OF TERMS:

**DP** = DIA; **HW** = carbide; **HR** = hollow back; **L-S** = slow, fast; **L-S-L** = slow, fast, slow; **vc** = cutting speed; **fz** = tooth feed; **vf** = feed rate; **ü** = saw blade projection

## 1. TRIMMING / SIZING

Various factors are responsible for good cutting results: Good side facing up, correct saw blade projection, feed rate, tooth configuration, tooth pitch, rpm and cutting speed. Depending on the volume to be cut, tungsten-carbide-tipped (HW) or diamond-tipped (DP) circular saw blades are used. **Recommended tooth configurations:**



### 1.2 SIZING SAW

In general, the panels can be processed with most of the HW and DP panel sizing saw blades available on the market. However, there are major differences in the cutting quality. In order to achieve very good cutting results, the HW sizing saw blade solid Surface "TR-F-FA" is most suitable. Very good cutting results are also possible with the nn-System DP flex sizing saw blades.

**Optimum application data:** (for a 300 mm circular saw blade)

Saw blade projection:	$\ddot{u} = 15-20$ mm
Speed:	$n = 5,500-6,000$ rpm
Feed speed:	$v_f = 4-6$ m/min
Cutting speed:	$v_c = 53$ m/s

These circular saw blades should also be used for trimming cuts on CNC machines.

### 1.3 PANEL SIZING SAW

The panels can also be cut on panel sizing lines using various HW and DP circular saw blades. For a nearly optimum cutting result, an HW Q-Cut "G6" panel sizing saw blade should be used for trimming. For larger volumes, we recommend using an "HR-TR" DP panel sizing saw blade for the trimming cut. Very good cutting results can also be achieved with this.

HW saws:	Q-Cut "G6" HW panel sizing saw blades
DP saws:	DP "HR-TR" topcoat panel sizing saw blades

**Optimum application data:** (for a 450 mm circular saw blade)

Saw blade projection:	$\ddot{u} = 25$ mm
Speed:	$n = 3,600$ rpm
Feed speed:	$V_f = 25-40$ m/min
Feed per tooth:	$f_z = 0.04-0.06$ mm

It is also important to ensure the correct saw blade projection, which has an impact on the cutting quality and depends on the diameter.

Circular saw blade diameter

- D = 250 mm
- D = 300 mm
- D = 350 mm
- D = 400 mm
- D = 450 mm

Saw blade projection

- approx. 15-20 mm
- approx. 15-25 mm
- approx. 18-28 mm
- approx. 25-30 mm
- approx. 25-30 mm

The recommended cutting speed is 60-80 m/sec. The upper value should be selected in the case of DP-tipped circular saw blades. A feed per tooth of 0.04-0.06 mm should be targeted.

Please refer to our YouTube channel for more information about the optimum saw blade projection. >>> Scan QR code and watch video on YouTube! Or go to [www.youtube.com/leucotooling](http://www.youtube.com/leucotooling) <<<



## 2. PROCESSING ON STATIONARY CNC MACHINES

For milling, tungsten carbide tools (turnover knives or VHW spiral shank-type cutters) or diamond-tipped tools should preferably be used. HW cutters are suitable for small production quantities here. Diamond-tipped tools, ideally with continuous cutting edges with slight shear angles, guarantee high processing quality and significantly higher edge lives.

**Edge life can be increased by:**

- Best possible workpiece clamping. Use of as many suction devices as possible in best possible condition on the console tables. Regular cleaning of the surfaces of the suction devices has a positive effect on adhesion. Aluminum vacuum cups can improve milling results even further.
- Use of the tools in high precision clamping elements (hydro expansion chuck, TRIBOS or heat-shrinking chucks).
- Occasional cleaning of the cutting edge (face and clearance face) e.g. with acetone. Avoidance of lumpy chips = heat! In this case, it helps to reduce the speed or increase the feed!
- Optional milling strategy in case of frequent dividing cuts/full cuts: first, use of a roughing cutter followed by a finish cutting step provides a high machining quality and guarantees the longest possible edge life of the finishing tool. The finishing tool can then be moved at a much higher feed speed, which dramatically reduces the additional expense resulting from two milling passes.

**Edge life can be increased by:**

Tool data:

Number of teeth	Z=2+1	Z=1+1	Z=1+1	Z=2+1	Z=2+1	Z=2+1	Z=2+1	Z=3+1	Z=3+1
Ø D	Ø14	Ø8	Ø10	Ø12	Ø12	Ø14	Ø16	Ø12	Ø12
Cut length	20	10	10	15	22	28	20	15	20
Basic body	Steel	VHW	VHW	Steel	Steel	Steel	Steel	Steel	Steel
Geometry	Roughing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing
Ident-No.	186579	187261	187262	186436	186437	186438	186439	186305	186431

Processing:	rpm	Feed speed Vf m/min								
		Jointing: Vf (m/min)	14.000	-	8-11	8,5-11	7-9,5	6-8,5	6-8,5	7,5-10
16.000	-		9-12,5	9-13	8-11	7-9,5	7-9,5	8,5-11	12-16,5	13-17,5
Cutting: Vf (m/min)	14.000	6-8	6-8,5	6-9	5-7	4-6	4-6	5,5-8	8-10,5	8-11,5
	16.000	8-9	7-9,5	7-10	6-8	5-7	5-7	6-8,5	9-12	10-13,5

Dividing cut: Lower value ranges, depending on the machining situation, the values must be further reduced if necessary

Jointing cuts: Higher value ranges

#### Information on pocket milling:

If common tools with normal basic cutting edges are used for pocket milling, the milling paths are often visible. In this case, it can be useful to observe the following:

1. Use of tools with a modified cutting edge geometry. Example LEUCO reference drawing AD-380807
2. Milling in clockwise direction
3. Use the program function "Smoothing without ramp factor"
4. Lateral stepover 5%
5. Revolutions per minute:  $n=8,000$  /min
6. Feed speed Vf: approx. 2-3 m/min
7. Milling with several stepovers according to the depth, if necessary

The bottom of the pocket will become somewhat smoother, feed speed-related grooves are reduced.

## 3. DRILLING

#### Dowel hole drilling:

Conventional HW or VHW dowel bits can be used.

**Application data:** Speed: 4,500 rpm      Feed speed: 1.5-2 m/min  
Drilling mode: S-S (fast-fast)

#### Through holes:

HW and VHW through-hole bits can be used.

**Application data:** Speed: 4,500 rpm      Feed speed: 1.5-2 m/min  
Drilling mode: S-S (fast-fast)

**In the case of material thicknesses over 12 mm, the machining should take place with a retracting movement.**

#### Drilling of hinges and concealed hinges:

We recommend using a standard cylinder boring bit or the LEUCO cylinder boring bit "Light".

**Application data:** Speed: 4,000 rpm      Feed speed: 1.5-2 m/min  
Speeds of more than  $n=4,500$  rpm are not recommended.

## 4. FORMULAS

### 4.1 CUTTING SPEED - VC

- | Unit: m/s
- | Data required: diameter = D [mm];  
tool speed = n [rpm]
- | Calculation:  $vc = (D * \pi * n) / (60 * 1000)$

### 4.2 TOOTH FEED - FZ

- | Unit: mm
- | Data required: feed speed = vf [m/min];  
tool speed = n [rpm]; number of teeth = z
- | Calculation:  $fz = (vf * 1,000) / (n * z)$

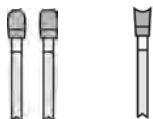
### 4.3 FEED SPEED - VF

- | Unit: m/min
- | Data required: feed speed = vf [m/min];  
tool speed = n [rpm]; number of teeth = z
- | Calculation:  $vf = (fz * n * z) / 1,000$

## 5. LEUCO TOOLS FOR PROCESSING REHAU RAUVISIO NOIR COMPACT BOARDS

### 5.1 CIRCULAR SAW BLADES FOR SIZING SAWS

Dimension	Designation	Z	Tooth config.	Cutting material	Projection	Ident-No.
Ø 303 x 3,2 x Ø 30	HW "TR-F-FA" solid Surface sizing saw blade	84	TR-F-FA	HL Board O6	approx. 20 mm	193133
Ø 300 x 2,5 x Ø 30	DP "HR" sizing saw blade nn-System DP flex	60	HR	DP	approx. 20 mm	192444

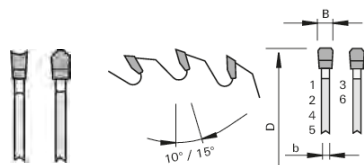


TR-F-FA      HR

| Additional saws with different diameters, cutting widths, bores and numbers of teeth **available on request**.

### 5.2 CIRCULAR SAW BLADES FOR PANEL SIZING SAWS

Dimension	Designation	Z	Tooth config.	Cutting material	Projection	Ident-No.
Ø 300 x 4,4 x Ø 60	Q-Cut „G6“	72	G6	HL Board O4 plus	15-25 mm	193137
Ø 350 x 4,4 x Ø 30	Q-Cut „G6“	72	G6	HL Board O4 plus	18-28 mm	193146
Ø 350 x 4,4 x Ø 60	Q-Cut „G6“	72	G6	HL Board O4 plus	25-30 mm	193148
Ø 350 x 4,4 x Ø 60	DP panel sizing saw blade	72	HR-TR	DP	18-28 mm	193046



HR-TR

G6

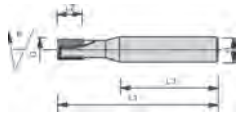
| Additional saws with different diameters, cutting widths, bores and number of teeth **available on request**.

| Number of teeth and feed rate depend on cutting-height and application for single panels or stack cuts.

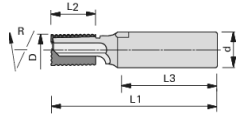
### 5.3 CNC SHANK-TYPE CUTTERS

Dimension	Designation	Z	Cutting material	Ident-No.
Ø 8 x 10 x Ø 10	Shank-type cutters for solid core panels	1+1	DP	187261
Ø 10 x 10 x Ø 10	Shank-type cutters for solid core panels	1+1	DP	187262
Ø 12 x 15 x Ø 16	Shank-type cutters for solid core panels	2+1	DP	186436
Ø 12 x 15 x Ø 16	Shank-type cutters for solid core panels	3+1	DP	186305
Ø 16 x 20 x Ø 20	Shank-type cutters for solid core panels	2+1	DP	186439
Ø 16 x 20 x Ø 20	Shank-type cutters for solid core panels	3+1	DP	186431
Ø 14 x 20 x Ø 16	Roughing cutters for solid core panels	2+1	DP	186579
Ø 16 x 35 x Ø 16	Spiral shank-type cutter, positive	3	VHW	178341
Ø 16 x 30 x Ø 25	TOK shank-type cutter	2	HW	180804

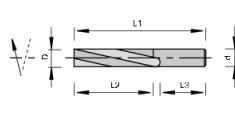
Additional shank-type cutters with other dimensions are **available on request**.



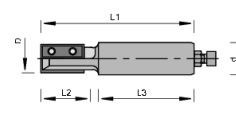
Shank-type cutters for solid core panels



Roughing cutters for solid core panels



Spiral shank-type cutter, positive



TOK shank-type cutter

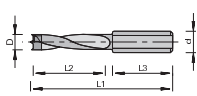
### 5.4 DOWEL DRILL BITS, THROUGH-HOLE DRILL BITS AND CYLINDER BORING BITS

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	HW dowel bit	HW	167203	167194
Ø 8 x L1=70 x Ø 10	HW dowel bit	HW	167205	167196
Ø 5 x L1=70 x Ø 10	topline dowel bit	VHW	185760	185759
Ø 8 x L1=70 x Ø 10	topline dowel bit	VHW	185764	185763

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	HW through-hole bit	HW	176255	176254
Ø 8 x L1=70 x Ø 10	HW through-hole bit	HW	176257	176256
Ø 5 x L1=70 x Ø 10	Mosquito through-hole bit	VHW	183153	183152
Ø 8 x L1=70 x Ø 10	Mosquito through-hole bit	VHW	183157	183156
Ø 5 x L1=70 x Ø 10	topline through-hole bit	VHW	185742	185741
Ø 8 x L1=70 x Ø 10	topline through-hole bit	VHW	185744	185743

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 15 x L1=70 x Ø 10	"Light" cylinder boring bits	HW	184685	184684
Ø 35 x L1=70 x Ø 10	"Light" cylinder boring bits	HW	184689	184688

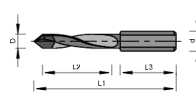
Additional drill bits with other diameters, cutting lengths and shank dimensions are **available on request**.



HW dowel bit



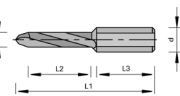
topline dowel bit



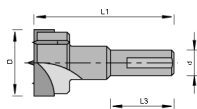
HW through-hole bit



topline through-hole bit



Mosquito through-hole bit



"Light" cylinder boring bits



Couldn't find the tool type or tool dimensions you want?  
Please contact LEUCO Sales.

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## TIP – LEUCO ONLINE CATALOG

You can find the LEUCO tool recommendations for processing REHAU RAUVISIO Noir laminate panels in the LEUCO online catalog.



Alternative:  
Scan the QR code and  
learn about the LEUCO  
warehouse program.

**QUICK &  
EASY**

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- 4 „REHAU“
- 5 Rauvisio Noir compact boards

→ Select saw blades, cutters, drill bits



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