

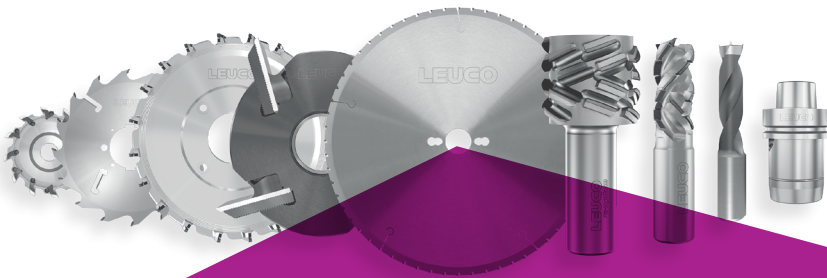
TOOL RECOMMENDATION

Manufacturer

UNILIN

Material

HIGH PRESSURE LAMINATE



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General Information	3
1. Trimming cut / Sizing	3
1.2 Sizing saw	3
1.3 Panel sizing saw	3
1.4 Through-feed hogger systems	4
2. Milling / edging	4
3. Processing on stationary CNC machines	5
4. Drilling	5
5. Formulas	5
5.1 Cutting speed - vc	5
5.2 Tooth feed - fz	5
5.3 Feed speed - vf	5
6. LEUCO tools for processing of UNILIN high pressure laminate	6
6.1 Circular saw blades for sizing saws	6
6.2 Circular saw blades for panel sizing saws	6
6.3 Hoggers	7
6.4 Jointing cutters	7
6.5 CNC shank-type cutters	7
6.6 Dowel drill bits, through-hole drill bits and cylinder boring bits	8

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; **VHW** = solid tungsten carbide

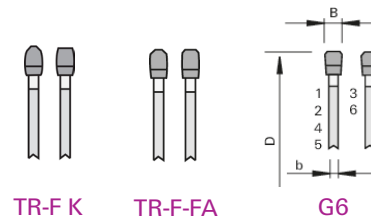
GENERAL INFORMATION

UNILIN Decorative Range of wood-based materials, e.g. melamine faced boards, high pressure laminates and compact HPL should be stored and processed in a closed storage or workshop space with constant climatic conditions $T \geq 10^\circ\text{C}$ at a relative humidity of approx. 50-60%. The storage and processing conditions should correspond to the climatic conditions during later use.

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

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. For a very good cutting result, the "TR-F K" HW sizing saw blade is best suited. Care must be taken that any deposits adhering to the tooth sides are regularly removed by cleaning. Good cutting results are also possible with the "TR-F-FA" HW solid Surface sizing saw blades.

Optimal application data: (for a $\varnothing$ 300 mm circular saw blade)

Saw blade projection: $\ddot{u} = 20 \text{ mm}$
 Speed: $n = 5,000 \text{ rpm}$
 Feed: $vf = 7 \text{ m/min}$
 Cutting speed: $vc = 80 \text{ m/s}$

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

1.3 PANEL SIZING SAW

On panel sizing saws, the panels can be cut with HW and DP circular saw blades. For an almost optimum finish-cut quality, the trimming cut should be made using a Q-Cut "TR-F-K" HW panel sizing circular saw blade. A good cutting result can also be achieved with the HW panel sizing circular saw blade Q-Cut "G6". For larger volumes, we recommend using a "G6" DP panel sizing circular saw blade for the trimming cut. Here, however, it is not possible to achieve finish-cut quality.

HW saws: Q-Cut "TR-F K" HW panel sizing saw blades

DP saws: "G6" DP panel sizing saw blades

Optimum application data: (for a Ø 450 mm circular saw blade)Saw blade projection: $\ddot{u} = 25 \text{ mm}$ Speed: $n = 3,600 \text{ 1/min}$ Feed per tooth: $fz = 0.08\text{-}0.09 \text{ mm}$ Cutting speed: $vc = 80 \text{ m/s}$

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 0.08-0.09 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 <<<

**1.4 THROUGH-FEED MACHINES: HOGGERS**

Industrial sizing on through-feed machines is done using diamond-tipped tools. The panel material has proved to be difficult for sizing using hoggers. The best result in a double hogging procedure was achieved with the PowerTec airFace hogger line.



PowerTec airFace

2. MILLING / EDGING

In general, tools with DP blades should be used for jointing work in the run-through process. Tools with different shear angles have been tested. Very good results were achieved when processing these panels. When looking at the processing results of all jointing cutter variants, that no chipping occurs at the upper edge of the panel. The best result was achieved with a shear angle of 48°. It is highly recommended to reduce the tooth feed (fz)! The tooth feed should be between 0.4 and max. 0.55 mm.



DIAREX airFace

3. PROCESSING ON STATIONARY CNC MACHINES

For the processing on CNC machines, shank-type cutter with large shear angles should be used. When large volumes need to be cut, high-performance DP shank-type cutters $Z=3+3$ or $Z=4+2+4$ with large shear angles in the range between 35° and 48° are particularly suited. Particularly for the nesting technology, DP high-performance cutters $Z=3+3$ or DP DIA Curve should be used. The feed rates mentioned below must not be exceeded. Always make sure that the cutting edge never lies on a cutting edge overcut. This can lead to premature indentations.

Feed rates:

Designation	Dimension	Z	U/min	Feed rate Vf (m/min)	Feed/tooth fz (mm)
DP HP shank-type cutter	25x28x25	3+3	18.000	15	0,27
DP HP shank-type cutter	48x28x25	4+2+4	18.000	25	0,34
DP Nesting shank-type cutter	12x22x16	3+3	24.000	15	0,21
DP Nesting DIA Curve	12x22x12	3	24.000	15	0,21

4. DRILLING

Note: This surface is mainly used for furniture fronts and rarely for the furniture body. Nevertheless, here are some hints for a possible processing: The panel can be processed with standard HW-tipped dowel and through-hole bits. Good results can also be achieved with LEUCO topline drill bits. For hinge holes, standard HW cylinder boring bits can be used. The following application data can be used for drilling:

Speed: $n = 4,500$ rpm

Feed: $vf = 1.5$ m/min

5. FORMULAS

5.1 CUTTING SPEED - VC

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

5.2 TOOTH FEED - FZ

- I Unit: mm
- I Data required: feed speed = vf [m/min];
tool speed = n [rpm]; number of teeth = z
- I Calculation: $fz = (vf * 1000) / (n * z)$

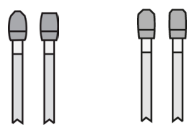
5.3 FEED SPEED- VF

- I Unit: m/min
- I Data required: feed speed = vf [m/min];
tool speed = n [rpm]; number of teeth = z
- I Calculation: $vf = (fz * n * z) / 1000$

6. LEUCO TOOLS FOR PROCESSING OF UNILIN HIGH PRESSURE LAMINATE

6.1 CIRCULAR SAW BLADES FOR SIZING SAWS

Dimension	Designation	Z	Tooth config.	Cutting material	Projection	Ident-No.
Ø 300 x 3,2 x Ø 30	„TR-F K“ anti-fingerprint HW sizing saw blade	84	TR-F K	HW	approx. 20 mm	193195
Ø 303 x 3,2 x Ø 30	HW solid Surface sizing saw blade	84	TR-F-FA	HW	approx. 20 mm	193133



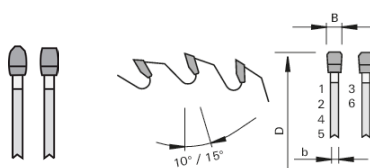
TR-F K

TR-F-FA

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

6.2 CIRCULAR SAW BLADES FOR PANEL SIZING SAWS

Dimension	Designation	Z	Tooth config.	Cutting material	Projection	Ident-No.
Ø 350 x 4,0 x Ø 30	Q-Cut „TR-F K“	72	TR-F K	HW	18-28 mm	192974
Ø 350 x 4,0 x Ø 60	Q-Cut „TR-F K“	72	TR-F K	HW	18-28 mm	192975
Ø 380 x 4,0 x Ø 60	Q-Cut „TR-F K“	72	TR-F K	HW	25-30 mm	192976
Ø 300 x 4,4 x Ø 60	Q-Cut „G6“	72	G6	HW	15-25 mm	193137
Ø 320 x 4,4 x Ø 30	Q-Cut „G6“	60	G6	HW	15-25 mm	193142
Ø 350 x 4,4 x Ø 60	Q-Cut „G6“	72	G6	HW	18-28 mm	193148
Ø 300 x 4,4 x Ø 30	Q-Cut „G6“	72	G6	DP	15-25 mm	193409
Ø 320 x 4,4 x Ø 30	Q-Cut „G6“	72	G6	DP	15-25 mm	193410
Ø 350 x 4,4 x Ø 30	Q-Cut „G6“	72	G6	DP	18-28 mm	193411



TR-F K

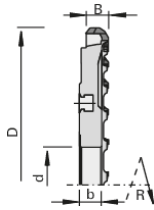
G6

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

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

6.3 HOGGERS

Dimension	Designation	Z	Cutting material	Ident-No.(L)	Ident-No.(R)
Ø 250 x 9,5 x Ø 60	PowerTec airFace	20+10	DP	186528	186527
Ø 250 x 9,5 x Ø 60	PowerTec airFace S	20+20	DP	186552	186551



PowerTec airFace

! Additional hogsers with other dimensions **available on request**.

! **Attention:** Processing without chipping cannot be achieved!

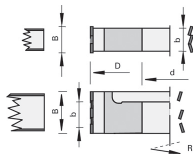
6.4 JOINTING CUTTERS

Dimension	Designation	Z	Cutting material	Machine	Shear <	Ident-No. (L)	Ident-No. (R)
Ø 125 x 42,8 x Ø 30	DIAREX airFace	4+4	DP	Homag	48°	186336	186337
Ø 125 x 42,8 x Ø 30	DIAREX airFace	4+4	DP	IMA 08.378	48°	186338	186339

! Jointing cutters for further machine brands with different diameters, cutting widths, bores and number of cutting edges **available on request**.

! **Attention:** Processing without chipping cannot be achieved!

! **Attention:** Match the number of teeth to the feed per tooth between 0.4 and 0.55 mm!

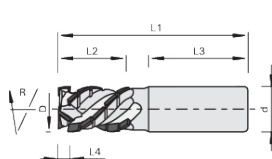


DIAREX airFace

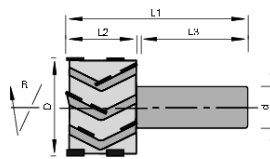
6.5 CNC SHANK-TYPE CUTTERS

Dimension	Designation	Z	Cutting material	Ident-No. (R)
Ø 25 x 28 x Ø 25	High-performance shank-type cutter	3+3	DP	186120
Ø 48 x 28 x Ø 25	High-performance trimming cutter	4+2+4	DP	186142
Ø 12 x 22 x Ø 16	Nesting shank-type cutter	3+3	DP	186571
Ø 12 x 22 x Ø 12	Nesting shank-type cutter DIA Curve	3+3	DP	187688

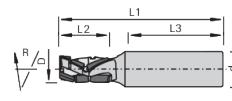
! Additional shank-type cutters with other dimensions are **available on request**.



High-performance shank-type cutter



High-performance trimming cutter



Nesting shank-type cutter

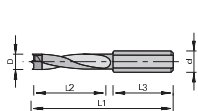
6.6 DOWEL DRILL BITS, THROUGH-HOLE DRILL BITS AND CYLINDER BORING BITS

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	Standard dowel bit	HW	167203	167194
Ø 8 x L1=70 x Ø 10	Standard 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

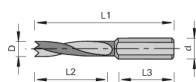
Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	Standard through-hole bit	HW	176255	176254
Ø 8 x L1=70 x Ø 10	Standard through-hole bit	HW	176257	176256
Ø 5 x L1=70 x Ø 10	topline through-hole bit	VHW	185742	185741
Ø 8 x L1=70 x Ø 10	topline through-hole bit	VHW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

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 35 x L1=70 x Ø 10	Standard cylinder boring bit	HW	178982	172254

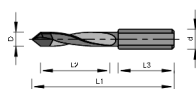
Additional drill bits with other dimensions, cutting lengths and shank dimensions **available on request**.



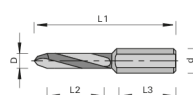
Standard dowel bit



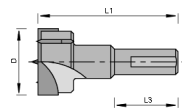
topline dowel bit



Standard
through-hole bit



topline
through-hole bit



Cylinder boring bit



Couldn't find the tool type or tool dimensions you want?
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TIP – LEUCO ONLINE CATALOG

You can find LEUCO tool recommendations
for processing UNILIN high pressure laminate
panels in the LEUCO Online Catalog.



Alternatively:
Scan the QR-Code and
learn about the LEUCO
warehouse program.

**QUICK &
EASY**

- 1 www.leuco.com/products
- 2 Click on "Material" filter
- 3 "Special manufacturer materials"
- 4 „UNILIN“
- 5 High pressure laminate

→ Select saw blades, hoggers, cutters,
drill bits



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