

Drilling

Leitz Lexicon Edition 7

Version 2

08/2023



Explanation of abbreviations

A	= dimension A	LH	= left hand rotation
a_e	= cutting thickness (radial)	M	= metric thread
a_p	= cutting depth (axial)	MBM	= minimum order quantity
ABM	= dimension	MC	= multi-purpose steel, coated
APL	= panel raising length	MD	= thickness of knife
APT	= panel raising depth	min^{-1}	= revolutions per minute (RPM)
AL	= working length	MK	= morse taper
AM	= number of knives	m min^{-1}	= metres per minute
AS	= anti sound (low noise design)	m s^{-1}	= metres per second
b	= overhang	n	= RPM
B	= width	n_{max}	= maximum permissible RPM
BDD	= thickness of shoulder	NAL	= position of hub
BEM	= note	ND	= thickness of hub
BEZ	= description	NH	= zero height
BH	= tipping height	NL	= cutting length
BO	= bore diameter	NLA	= pinhole dimensions
CNC	= Computerized Numerical Control	NT	= grooving depth
d	= diameter	P	= profile
D	= cutting circle diameter	POS	= cutter position
D0	= zero diameter	PT	= profile depth
DA	= outside Diameter	PG	= profile group
DB	= diameter of shoulder	QAL	= cutting material quality
DFC	= Dust Flow Control (optimised chip clearance)	R	= radius
DGL	= number of links	RD	= right hand twist
DIK	= thickness	RH	= right hand rotation
DKN	= double keyway	RP	= radius of cutter
DP	= polycrystalline diamond	S	= shank dimension
DRI	= rotation	SB	= cutting width
FAB	= width of rebate	SET	= set
FAT	= depth of rebate	SLB	= slotting width
FAW	= bevel angle	SLL	= slotting length
FLD	= flange diameter	SLT	= slotting depth
f_z	= tooth feed	SP	= tool steel
$f_{z \text{ eff}}$	= effective tooth feed	ST	= Cobalt-basis cast alloys, e.g. Stellite®
GEW	= thread	STO	= shank tolerance
GL	= total length	SW	= cutting angle
GS	= Plunging edge	TD	= diameter of tool body
H	= height	TDI	= thickness of tool
HC	= tungsten carbide, coated	TG	= pitch
HD	= wood thickness (thickness of workpiece)	TK	= reference diameter
HL	= high-alloyed tool steel	UT	= cutting edges with irregular pitch
HS	= high-speed steel (HSS)	V	= number of spurs
HW	= tungsten carbide (TCT)	v_c	= cutting speed
ID	= ident number	v_f	= feed speed
IV	= insulation glazing	VE	= packing unit
KBZ	= abbreviation	VSB	= adjustment range
KLH	= clamping height	WSS	= workpiece material
KM	= edge breaker	Z	= number of teeth
KN	= single keyway	ZA	= number of fingers
KNL	= combination pinhole consists of 2/7/42 2/9/46,35 2/10/60	ZF	= tooth shape (cutting edge shape)
L	= length	ZL	= finger length
l	= clamping length		
LD	= left hand twist		
LEN	= Leitz standard profiles		

Notes to the Lexicon concerning the diagrams and tables

The statements made in the diagrams and tables relate to specific conditions and represent parameters from tests subjected to defined conditions. Variations when using tools in individual case due to special application conditions may be possible. Our support team will provide you with detailed information.



6. Drilling

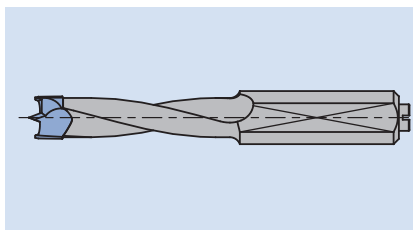
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6. Drilling

6.1 Dowel drilling

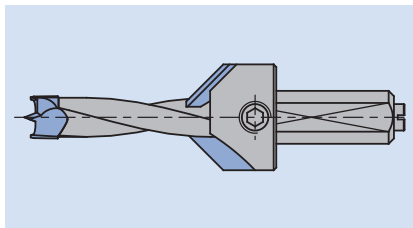
Application	To drill tear-free dowel holes and blind holes.
Workpiece material	Softwood and hardwood. Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. Laminated veneer lumber (plywood, multiplex plywood, glued lumber etc.). Plastomers.
Machine	Through feed drilling machines, Point-to-point drilling machines, CNC Machining centres, Hinge boring machines, Special purpose drilling machines.

Design Two dowel drill designs available:



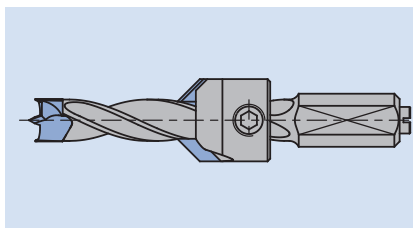
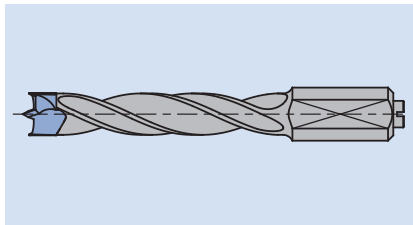
1. Design without heel

Optimised dowel drill for machining panels in the furniture industry. Minimum friction and feed forces as the flute has a smaller diameter. A loose countersink can be clamped on the shank.



2. Design with heel

Dowel drills with heel are used to drill holes in solid wood and for machines with insufficient guidance during drilling and return stroke. The drill has better guidance during the return stroke to prevent tear-outs at the edge. A loose countersink can be clamped on the heel and allows adjustment of the drilling and countersink depth.



Shank Dowel drills usually have a shank diameter $d = 10$ mm. Drilling machines with only a small pitch between the drilling spindles may use dowel drills with a shank diameter $d = 8$ mm. Additionally, it is possible to mount the dowel drills directly on the drilling spindles with a threaded adaptor.

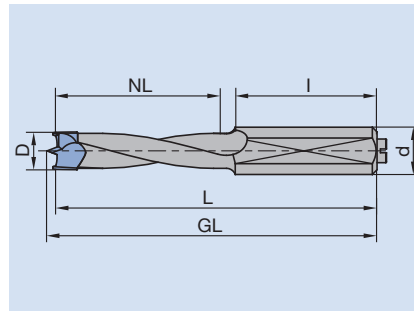
Adaptors are available with different combinations of threads and either cylindrical or tapered seatings.

Special shank dimensions available on request.

Technical features

The dimensions listed in the tool tables refer to the following tool parameters:

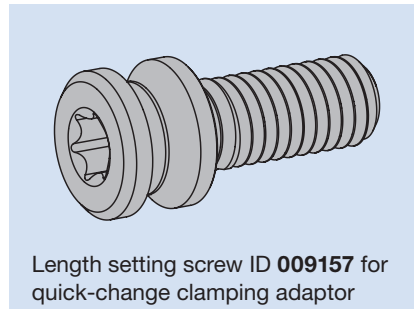
D	Drill diameter
d	Shank diameter
l	Shank length
NL	Working length = possible drilling depth
GL	Total length of the drill including the projection of the centre point
L	Total length of the drill excluding the projection of the centre point

**Application data****RPM/feed speeds**

The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables. Identification of the rotation: RH - black; LH - red.

Information

The existing allen screws in the shanks must be replaced by the length setting screw ID **009157** when using dowel drills in Leitz quick-change drill adaptors.



6. Drilling

6.1 Dowel drilling

6.1.1 Dowel drills



Shank 8 mm

Application:

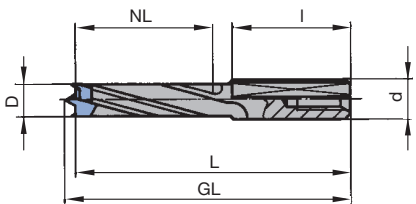
For drilling blind holes, particularly dowel holes in furniture construction. Recommended on drill spindles with limited rigidity.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

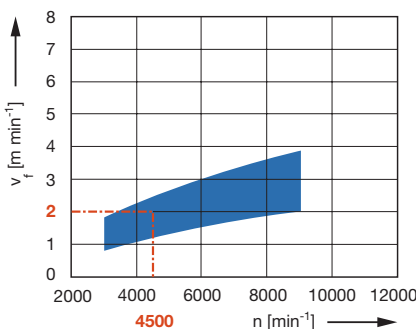
Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



Design with heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

Technical information:

Spur geometry with shear cut. Drills can be combined with countersink WB 701 0 03. Countersink fixed on heel. Continuously adjustable boring and countersink depth. Good guidance on return stroke for tear-free holes.

GL 55.5 mm, with heel, Z 2 / V 2

WB 120 0 23

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
5	55.5	54	30	8x19	042552 ●	042553 ●
6	55.5	54	30	8x19		042555 ●
8	55.5	53.5	30	8x19	042558 ●	042559 ●
10	55.5	53.5	30	8x21		042563 ●

GL 67 mm, with heel, Z 2 / V 2

WB 120 0 24

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
5	67	65.5	40	8x19	042568 ●	042569 ●
6	67	65.5	40	8x19	042570 ●	042571 ●
7	67	65.5	40	8x19		042573 ●
8	67	65	40	8x19	042574 ●	042575 ●
10	67	65	40	8x21		042579 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●

6. Drilling

6.1 Dowel drilling

6.1.1 Dowel drills



Shank 10 mm

Application:

For drilling blind holes, particularly dowel holes in furniture construction.

Machine:

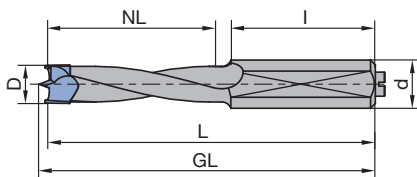
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

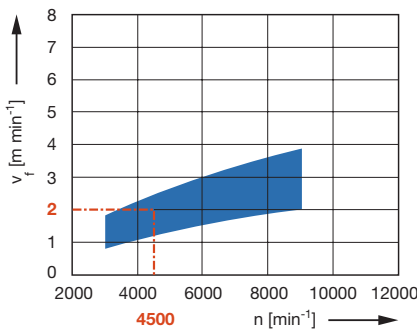
Technical information:

Spur geometry with shear cut. Recessed flute for minimised friction and feed force. Drills can be combined with countersink WB 701 0 02. Countersinks can be clamped on the shank.



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

GL 57.5 mm, without heel, Z 2 / V 2

WB 120 0 12, WB 120 0 32

D mm	GL mm	L mm	NL mm	S mm	ID	
					LH	RH
3	57.5	56	25	10x25	033788 ●	033789 ●
3.18	57.5	56	25	10x27		033701 ●
4	57.5	56	25	10x27	033670 ●	033671 ●
4.5	57.5	56	25	10x27	033710 ●	033711 ●
5	57.5	56	25	10x27	033672 ●	033673 ●
5.1	57.5	56	25	10x27		033675 ●
5.2	57.5	56	25	10x27		033677 ●
6	57.5	56	25	10x27	033678 ●	033679 ●
7	57.5	56	25	10x27	033680 ●	033681 ●
8	57.5	55.5	25	10x27	033682 ●	033683 ●
8.2	57.5	55.5	25	10x27	033686 ●	033687 ●
9	57.5	55.5	25	10x27	033688 ●	033689 ●
10	57.5	55.5	25	10x27	033690 ●	033691 ●
12	57.5	55.5	30	10x22	033692 ●	033693 ●
15	57.5	55.5	30	10x22	033696 ●	033697 ●
16	57.5	55.5	30	10x22		033699 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw	M5x17	for quick-change drill	009157 ●
Torx® 20		adaptors	

6. Drilling

6.1 Dowel drilling

6.1.1 Dowel drills



Shank 10 mm

Application:

For drilling blind holes, particularly dowel holes in furniture construction.

Machine:

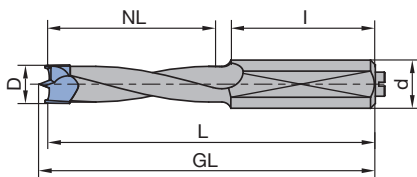
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

Spur geometry with shear cut. Recessed flute for minimised friction and feed force. Drills can be combined with countersink WB 701 0 02. Countersinks can be clamped on the shank.



Design without heel

GL 70 mm, without heel, Z 2 / V 2

WB 120 0 10, WB 120 0 33

D mm	GL mm	L mm	NL mm	S mm	ID	
					LH	RH
4	70	68.5	35	10x30	033476 ●	033477 ●
5	70	68.5	35	10x30	033440 ●	033441 ●
6	70	68.5	35	10x30	033442 ●	033443 ●
7	70	68.5	35	10x30	033444 ●	033445 ●
8	70	68	35	10x30	033446 ●	033447 ●
9	70	68	35	10x30	033478 ●	033479 ●
10	70	68	35	10x30	033448 ●	033449 ●
11	70	68	35	10x30	033480 ●	033481 ●
12	70	68	35	10x30	033450 ●	033451 ●
13	70	68	35	10x30	033452 ●	033453 ●
14	70	68	35	10x30	033454 ●	033455 ●
16	70	67.5	35	10x30	033456 ●	033457 ●

GL 77 - 78.5 mm, without heel, Z 2 / V 2

WB 120 0 07

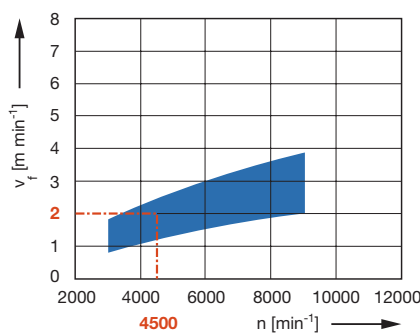
D mm	GL mm	L mm	NL mm	S mm	ID	
					LH	RH
5	78.5	77	45	10x30	033370 ●	033371 ●
6	78.5	77	45	10x30	033372 ●	033373 ●
7	78.5	77	45	10x30	033374 ●	033375 ●
8	77	75.5	45	10x30	033376 ●	033377 ●
10	77	75	45	10x30	033378 ●	033379 ●
12	77	75	45	10x30	033380 ●	033381 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw	M5x17	for quick-change drill	009157 ●
Torx® 20		adaptors	

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

6. Drilling

6.1 Dowel drilling

6.1.1 Dowel drills



Shank 10 mm

Application:

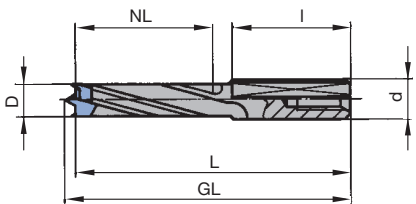
For drilling blind holes, particularly dowel holes in furniture construction. Recommended on drill spindles with limited rigidity.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

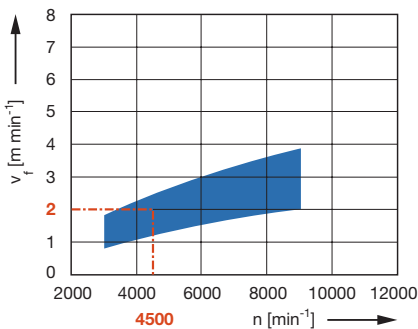
Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



Design with heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

Technical information:

Spur geometry with shear cut. Drills can be combined with countersink WB 701 0 03. Countersink fixed on heel. Continuously adjustable boring and countersink depth. Good guidance on return stroke for tear-free holes.

GL 70 mm, with heel, Z 2 / V 2

WB 120 0 25, WB 120 0 26

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
5	70	68.5	43	10x19	042586 ●	042587 ●
6	70	68.5	43	10x19	042588 ●	042589 ●
8	70	68	43	10x19	042590 ●	042591 ●
10	70	68	43	10x19	042592 ●	042593 ●
12	70	68	43	10x19	042594 ●	042595 ●
25	70	68	40	10x25		042610 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Note:

ID **042610** for holes in window manufacture.

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.1 Dowel drilling

6.1.1 Dowel drills



Threaded shank

Application:

For drilling blind holes, particularly dowel holes in furniture construction.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

Spur geometry with shear cut. Recessed flute for minimised friction and feed force. Threaded shank for direct mounting in the drilling spindle.

M10, threaded shank with seating 11 mm, without heel, Z 2 / V 2

WB 120 0 17

D	GL	NL	A	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
5	75	40	60	M10	035200 ●	035201 ●
8	75	40	60	M10	035204 ●	035205 ●

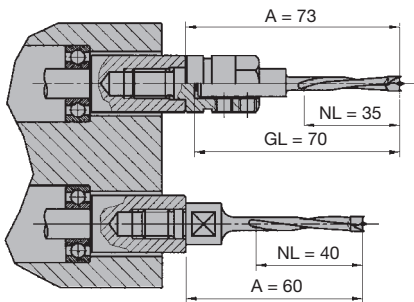
M10, threaded shank, without heel, Z 2 / V 2

WB 120 0 18

D	GL	NL	A	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
5	78	43	63	M10	035260 ●	035261 ●
8	78	43	63	M10	035264 ●	035265 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

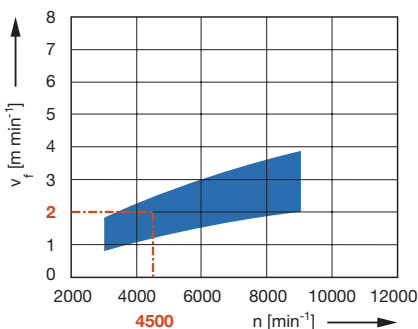
Boring bit mounted in reducing chucks



Boring bit with threaded shank mounted directly in the boring spindle

Length comparison: Dowel drills with threaded shank have a deeper boring depth than a comparable boring bit with cylindrical shank mounted in drill adaptors while having a lower overhang A with regard to the boring spindle.

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

6. Drilling

6.1 Dowel drilling 6.1.2 Dowel drills - Premium



Shank 10 mm, HW tipped

Application:

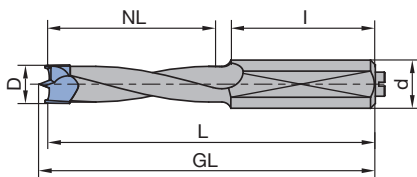
For drilling blind holes, particularly dowel holes in furniture construction. Suitable for drilling tear-free blind holes in visible areas and for machining panel materials which are covered with laminations difficult to machine (e.g. thin decorative paper).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

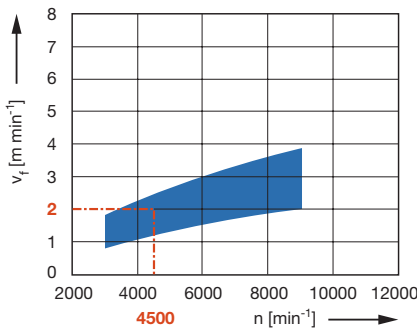
Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Technical information:

Spur geometry with high shear cut. High wear resistant tungsten carbide grade for maximum life time. Drills can be combined with countersink WB 701 0 02.

Countersinks can be clamped on the shank. Recessed flute for minimised friction and feed forces.

GL 57.5 mm, Z 2 / V 2

WB 120 0 29

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
4	57.5	56	25	10x27		033715 ●
5	57.5	56	25	10x27	033716 ●	033717 ●
6	57.5	56	25	10x27	033718 ●	033719 ●
8	57.5	55.5	25	10x27	033720 ●	033721 ●
10	57.5	55.5	25	10x27	033722 ●	033723 ●

GL 70 mm, Z 2 / V 2

WB 120 0 30

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
4	70	68.5	35	10x30	033482 ●	033483 ●
5	70	68.5	35	10x30	033484 ●	033485 ●
5.1	70	68.5	35	10x30	033492 ●	033493 ●
6	70	68.5	35	10x30	033486 ●	033487 ●
8	70	68.5	35	10x30	033488 ●	033489 ●
8.2	70	68.5	35	10x30	033494 ●	033495 ●
10	70	68.5	35	10x30	033490 ●	033491 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.1 Dowel drilling 6.1.3 Dowel drills - *Excellent*



Shank 10 mm, HW solid

Application:

For drilling blind holes, particularly dowel holes in furniture construction. Suitable for drilling tear-free blind holes in visible areas and for machining panel materials which are covered with laminations difficult to machine (e.g. thin decorative paper).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

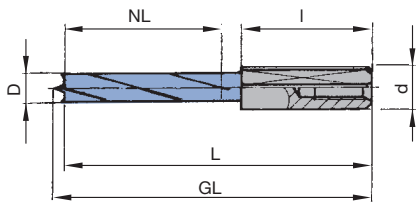
Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



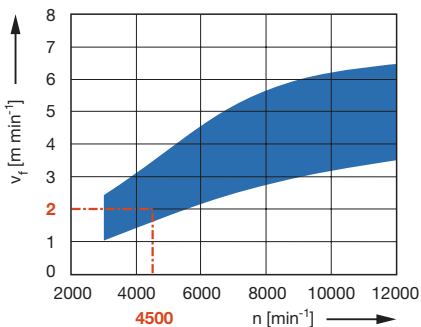
Technical information:

Spur geometry with high shear cut. Solid tungsten carbide design with high wear resistant tungsten carbide grade. High stability and long performance time. Polished gullet for minimum friction and feed forces. Very large resharping area.



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

GL 57.5 mm, Z 2 / V 2

WB 120 0 32

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
3	57.5	56	25	10x25	033788 ●	033789 ●
4	57.5	56	25	10x25	033784 ●	033785 ●
5	57.5	56	25	10x25	033728 ●	033729 ●
6	57.5	56	25	10x25	033730 ●	033731 ●
8	57.5	56	25	10x25	033732 ●	033733 ●
10	57.5	55.5	25	10x25	033786 ●	033787 ●

GL 70 mm, Z 2 / V 2

WB 120 0 33

D	GL	L	NL	S	ID	ID
mm	mm	mm	mm	mm	LH	RH
3	70	68.5	25	10x25	033550 ●	033551 ●
4	70	68.5	35	10x25	033542 ●	033543 ●
5	70	68.5	35	10x25	033496 ●	033497 ●
6	70	68.5	35	10x25	033498 ●	033499 ●
7	70	68.5	35	10x25	033548 ●	033549 ●
8	70	68.5	35	10x25	033500 ●	033501 ●
10	70	68	35	10x25	033540 ●	033541 ●

RPM: $n = 3000 - 12000 \text{ min}^{-1}$

Spare parts:

BEZ	for S	ABM	BEM	ID
	mm	mm		
Allen screw	10x27	M5x8	Length adjustment	006378 ●
Allen screw	10x34/45	M5x10	Length adjustment	005802 ●
Anti-twist allen screw		M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20		M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.1 Dowel drilling 6.1.4 Boring pins, HW solid



Shank 10 mm

Application:

For drilling blind holes, particularly dowel holes on the side of panel furniture parts.

Machine:

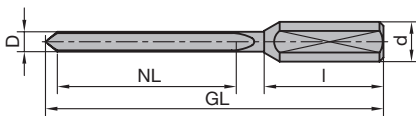
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

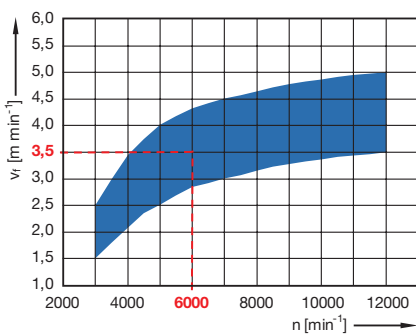
Technical information:

Solid tungsten carbide design for high performance time. Large resharpening area. Tool suitable for RH and LH rotation. Drill design D = 3 mm particularly suitable for pre-drilling screw holes in plastic coated and veneered furniture parts. Infeed depth in hardwood and glulam maximum 2 x D.



Boring pin WB 100 0 01

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard / MDF

Operation:

Horizontal edge drilling

GL 57.5 / GL 70 mm, Z 1/1

WB 100 0 01

D	GL	NL	S	DRI	ID
mm	mm	mm	mm		
3	57.5	25	10x27	LH, RH	230200 ●
3	70	35	10x27	LH, RH	230201 ●
5	70	35	10x27	LH, RH	230208 ●
6	70	35	10x27	LH, RH	230209 ●
8	70	35	10x27	LH, RH	230210 ●
5	57.5	25	10x27	LH, RH	230211 ●
6	57.5	25	10x27	LH, RH	230212 ●
8	57.5	25	10x27	LH, RH	230213 ●

GL 85 mm, Z 1/1

WB 100 0 01

D	GL	NL	S	DRI	ID
mm	mm	mm	mm		
5	85	45	10x30	LH, RH	230202 ●
8	85	45	10x30	LH, RH	230204 ●

GL 105 mm, Z 1/1

WB 100 0 01

D	GL	NL	S	DRI	ID
mm	mm	mm	mm		
5	105	65	10x30	LH, RH	230205 ●
8	105	65	10x30	LH, RH	230207 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Note:

When using the bore pins in hardwood and glulam, the potential bore depth is restricted. Interim chip removal (return stroke) then is obligatory.

Boring pins require more power compared to dowel drills. The maximum number of boring pins, used in one drilling unit, depends on the power of the machine.

Spare parts:

BEZ	for S	ABM	BEM	ID
	mm	mm		
Allen screw	10x27	M5x8	Length adjustment	006378 ●
Allen screw	10x30	M5x10	Length adjustment	005802 ●
Anti-twist allen screw		M5x10	Length adjustment	007438 ●
Length adjustment screw		M5x17	for quick-change drill	009157 ●
Torx® 20			adaptors	

● available ex stock

□ available at short notice

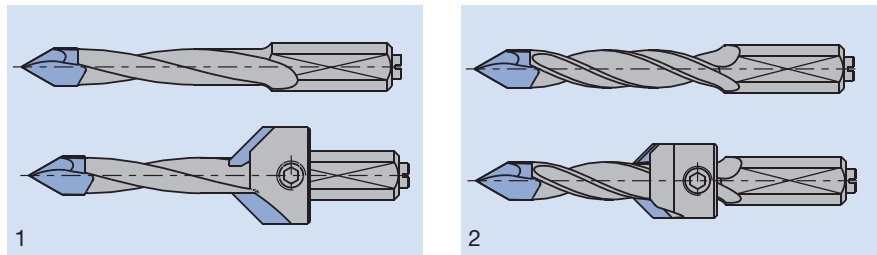
Instruction manual visit www.leitz.org

6. Drilling

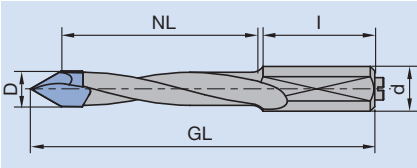
6.2 Through hole drilling

Application	To drill tear-free through holes in panels.
Workpiece material	Softwood and hardwood. Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. Laminated veneer lumber (plywood, multiplex plywood, glued lumber etc.). Plastomers.
Machine	Through feed drilling machines, Point-to-point drilling machines, CNC machining centres, Hinge boring machines, Special purpose drilling machines.

Design	<p>Two available through hole drill designs:</p> <p>1. Design without heel Optimised through hole drill for machining panels in the furniture industry. Minimum friction and feed forces as the flute has a smaller diameter. A loose countersink can be clamped on the shank.</p> <p>2. Design with heel Through hole drills with heel are used to drill holes in solid wood and for machines with insufficient guidance during drilling and return stroke. The drill has better guidance during the return stroke to prevent tear-outs at the edge. A loose countersink can be clamped on the heel and allows adjustment of the drilling and countersink depth.</p>
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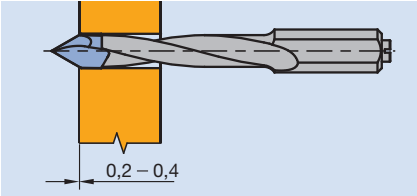


Shank	Through hole drills usually have a shank diameter $d = 10$ mm. Drilling machines with a small pitch between the drilling spindles may use drills with a shank diameter $d = 8$ mm.
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Technical features	The dimensions listed in the tool tables refer to the following tool parameters:										
	<table border="1"> <tr> <td>D</td> <td>Drill diameter</td> </tr> <tr> <td>d</td> <td>Shank diameter</td> </tr> <tr> <td>I</td> <td>Shank length</td> </tr> <tr> <td>NL</td> <td>Working length = possible drilling depth</td> </tr> <tr> <td>GL</td> <td>Total length of the drill</td> </tr> </table>	D	Drill diameter	d	Shank diameter	I	Shank length	NL	Working length = possible drilling depth	GL	Total length of the drill
D	Drill diameter										
d	Shank diameter										
I	Shank length										
NL	Working length = possible drilling depth										
GL	Total length of the drill										

Application data	<p>RPM/feed rates The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables. Identification of rotation: RH - black; LH - red.</p>
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Application recommendation	The drilling quality in brittle or low-adhesive surfaces can be improved when the feed speed is reduced as the drill breaks through the workpiece.
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6. Drilling

6.2 Through hole drilling

6.2.1 Through hole drills



Shank 10 mm

Application:

For drilling through holes, particularly in furniture construction.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.), elastomers.

Technical information:

Drills can be combined with countersink WB 701 0 02. Countersinks can be clamped on the shank. Recessed flute for minimised friction and feed forces.



GL 57.5 mm, without heel, Z 2

WB 101 0 02

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	57.5	25	10x24	034000 ●	034001 ●
6	57.5	25	10x24		034009 ●
8	57.5	25	10x24	034002 ●	034003 ●

GL 70 mm, without heel, Z 2

WB 101 0 07

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	70	35	10x24	034074 ●	034075 ●
7	70	35	10x24	034106 ●	034107 ●
8	70	35	10x24	034076 ●	034077 ●
9	70	35	10x24	034108 ●	034109 ●
10	70	35	10x24	034110 ●	034111 ●

GL 77 mm, without heel, Z 2

WB 101 0 03

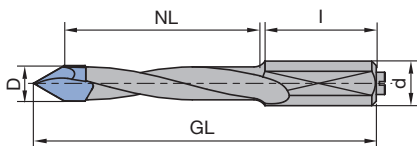
D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	77	44	10x24	034060 ●	034061 ●
6	77	44	10x24	034068 ●	034069 ●
8	77	44	10x24	034062 ●	034063 ●
10	77	44	10x24	034070 ●	034071 ●
12	77	44	10x24	034072 ●	034073 ●

RPM: n = 3000 - 9000 min⁻¹

For diameters below 5 mm use type WB 101 0 04.

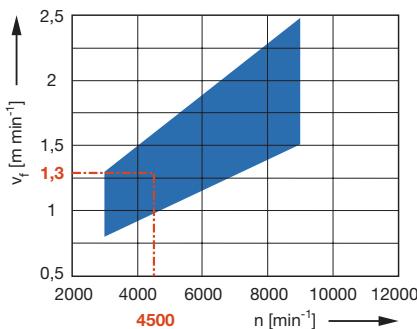
Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

MDF = 0.7

Chipboard, uncoated = 1.3

● available ex stock

□ available at short notice

Instruction manual visit www.leitz.org

6. Drilling

6.2 Through hole drilling

6.2.1 Through hole drills



Shank 10 mm

Application:

For drilling through holes, particularly in furniture construction. Recommended on drill spindles with limited rigidity

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.), elastomers.



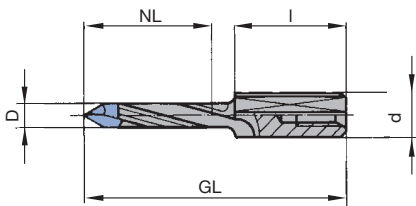
Technical information:

Drills can be combined with countersink WB 701 0 03. Countersinks fixed on heel. Continuously adjustable boring and countersink depth. Good guidance on return stroke for tear-free holes.

GL 57.5 mm, with heel, Z 2

WB 101 0 05

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	57.5	25	10x24	042630 ●	042631 ●



Design with heel

GL 77 mm, with heel, Z 2

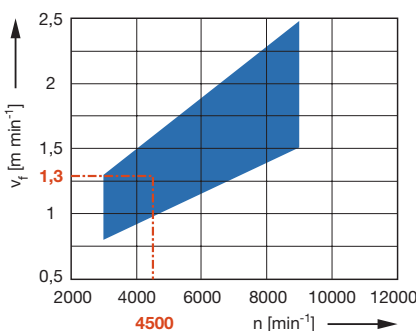
WB 101 0 06

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	77	44	10x24	042640 ●	042641 ●
5.2	77	44	10x24	042644 ●	042645 ●
6	77	44	10x24		042647 ●
8	77	44	10x24	042648 ●	042649 ●
10	77	44	10x24		042651 ●
12	77	44	10x24		042653 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

For diameters below 5 mm use type WB 101 0 04.

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

MDF = 0.7

Chipboard, uncoated = 1.3

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.2 Through hole drilling 6.2.2 Through hole drills - Premium



Shank 10 mm, HW tipped

Application:

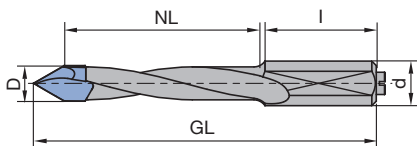
For drilling tear-free through holes, particularly in furniture construction, with maximised quality on the bottom side (exit).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

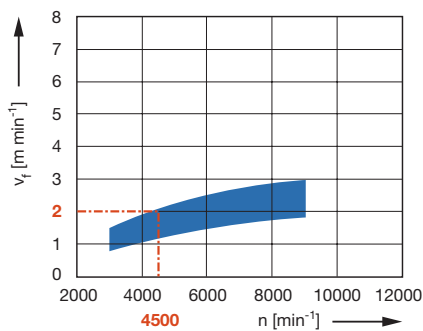
Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

Technical information:

V-point tip with 2 bevels for maximised quality on the bottom side (exit). High wear resistant tungsten carbide grade for maximum lifetime. Drills can be combined with countersink WB 701 0 02. Countersinks can be clamped on the shank. Recessed flute for minimised friction and feed forces.

GL 57.5 mm, Z 2

WB 101 0 10

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	57.5	25	10x25	033960 ●	033961 ●
8	57.5	25	10x25	033962 ●	033963 ●

GL 70 mm, Z 2

WB 101 0 10

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	70	35	10x25	033964 ●	033965 ●
8	70	35	10x25	033966 ●	033967 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

(recommended $n = 4500 - 9000 \text{ min}^{-1}$)

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.2 Through hole drilling 6.2.3 Through hole drills - *Excellent*



Shank 10 mm, HW solid

Application:

For drilling tear-free through holes, particularly in furniture construction, with maximised quality on the bottom side (exit).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



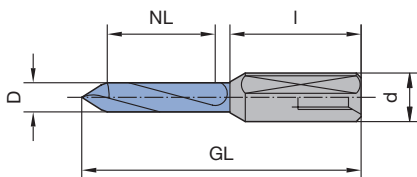
Technical information:

V-point tip with 2 bevels for maximised quality on the bottom side (exit). Solid tungsten carbide design with high wear resistant tungsten carbide grade. High stability and long performance time. Polished gullet for minimum friction and feed forces. Very large reshaping area.

GL 57.5 mm, without heel, Z 2

WB 101 0 02

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	57.5	25	10x25	034018 ●	034019 ●
6	57.5	25	10x25	034020 ●	034021 ●
8	57.5	25	10x25	034022 ●	034023 ●



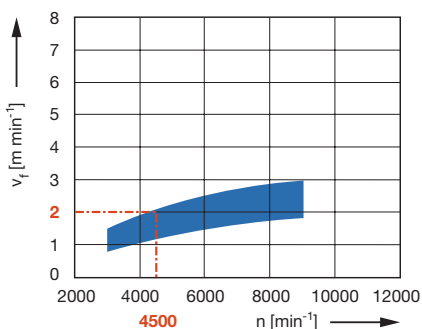
Design without heel

GL 70 mm, without heel, Z 2

WB 101 0 07

D	GL	NL	S	ID	ID
mm	mm	mm	mm	LH	RH
5	70	35	10x25	034100 ●	034101 ●
6	70	35	10x25	034102 ●	034103 ●
7	70	35	10x25	034117 ●	034118 ●
8	70	35	10x25	034104 ●	034105 ●
10	70	35	10x25	034114 ●	034115 ●

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

GL 100 mm, without heel, Z 2

WB 101 0 07

D	GL	NL	S	DRI	ID
mm	mm	mm	mm		
6	100	35	10x57	RH	034116 ●

RPM: $n = 3000 - 12000 \text{ min}^{-1}$

For diameters below 5 mm use type WB 101 0 04.

Spare parts:

BEZ	for S	ABM	BEM	ID
	mm	mm		
Allen screw	10x22/25/27	M5x8	Length adjustment	006378 ●
Allen screw	10x57	M5x10	Length adjustment	005802 ●
Anti-twist allen screw		M5x10	Length adjustment	007438 ●
Length adjustment screw		M5x17	for quick-change drill	009157 ●
Torx® 20			adaptors	

6. Drilling

6.2 Through hole drilling 6.2.4 Through hole drills, DP



Shank 10 mm

Application:

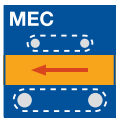
For drilling tear-free through holes. Particularly suitable for drilling panel materials with abrasive components (fire proof material etc.).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Gypsum bonded particle and fibre materials, cement bonded particle and fibre materials, flame resistant particle and fibre materials, solid resin glulam, fibre reinforced plastics.



Technical information:

DP tipped through hole boring bit for maximum lifetime, particularly in abrasive materials. Large gullet for optimum chip removal.

GL 70 mm, Z 1

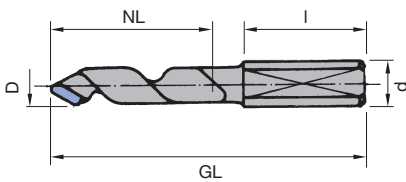
WB 100 0 50

D mm	GL mm	NL mm	S mm	Z	ID LH	ID RH
5	70	30	10x27	1	091186 ●	091185 ●
6	70	30	10x27	1	091188 ●	091187 ●
8	70	30	10x27	1	091192 ●	091191 ●
10	70	30	10x27	1	091194 ●	091193 ●

RPM: $n = 4000 - 9000 \text{ min}^{-1}$

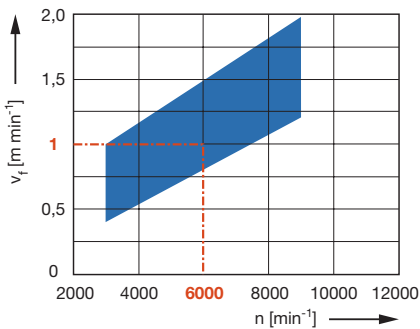
Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●



WB 100 0 50

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

MDF = 0.7

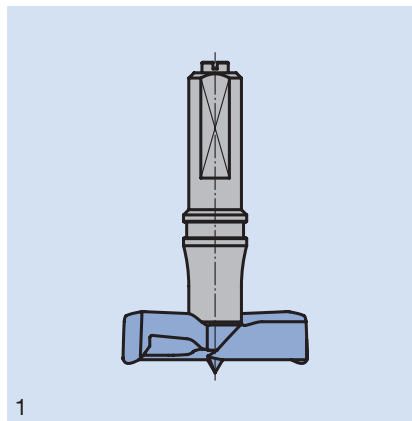
Chipboard, uncoated = 1.2

6. Drilling

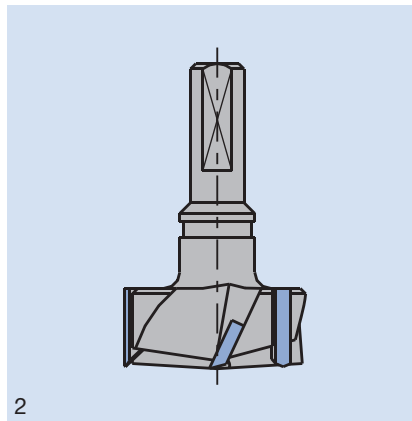
6.3 Hinge drilling

Application	To drill tear-free hinge holes.
Workpiece material	Softwood and hardwood. Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. Laminated veneer lumber (plywood, multiplex plywood etc.).
Machine	Through feed drilling machines, Point-to-point drilling machines, CNC machining centres, Hinge boring machines, Special purpose drilling machines.

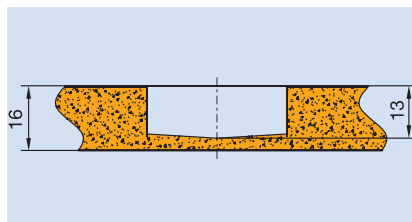
Design Two available hinge drill designs:



1. Design with centre point,
2 spurs and 2 spiral cutting edges
(Z 2/V 2). These drills are optimised for
machining standard panels in the
furniture industry.
Design with short tip for deep holes
in thin panels.



2. Design without centre point,
3 spurs and 3 spiral cutting edges
ground to a V point (Z 3/V 3). Recom-
mended when there is the risk of the
centre point marking or breaking
through the back of the panel, e.g.
when drilling a 13 mm deep hole in a
16 mm thick workpiece.

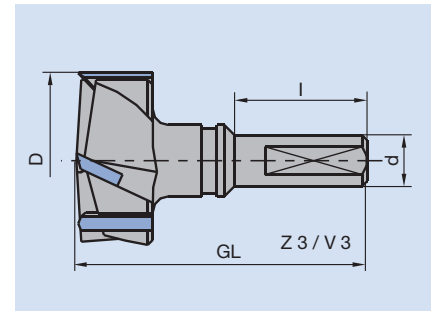
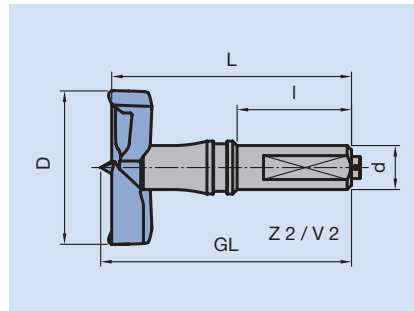


Shank Hinge drills usually have a shank diameter of $d = 10$ mm.

Technical features

The dimensions listed in the tool tables refer to the following tool parameters:

D	Drill diameter
d	Shank diameter
l	Shank length
L	Total length of the hinge drill excluding the projection of the centre point
GL	Total length of the hinge drill including the projection of the centre point

**Application data****RPM feed speeds**

The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.

6. Drilling

6.3 Hinge drilling

6.3.1 Hinge drills



Shank 10 mm

Application:

For drilling hinge holes, particularly in furniture construction.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

Good centering in solid wood by protruding centre point.



GL 57 mm, Z 2 / V 2

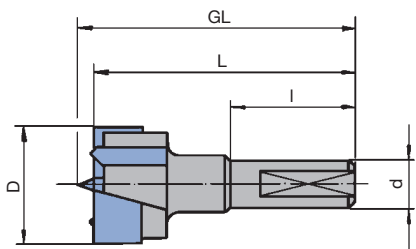
WB 310 0 04

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	57	54.5	10x26	034630 ●	034631 ●
20	57	54.5	10x26		034637 ●
25	57	54.5	10x26		034643 ●
35	57	54.5	10x26		034651 ●
40	57	54.5	10x26		034677 ●

GL 72.5 mm, Z 2 / V 2

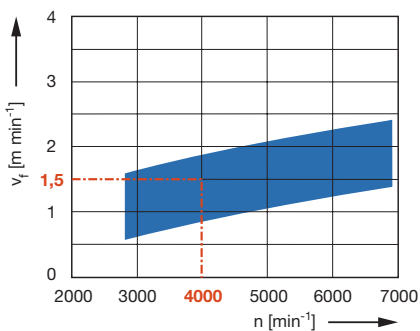
WB 310 0 04

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	72.5	70	10x26	034663 ●	034664 ●
18	72.5	70	10x26		034678 ●
20	72.5	70	10x26	034665 ●	034666 ●
25	72.5	70	10x26		034668 ●
35	72.5	70	10x26	034671 ●	034672 ●



Z 2 / V 2 with centre point

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF, solid wood = 0.7

RPM: $n = 2800 - 7000 \text{ min}^{-1}$

Spare parts:

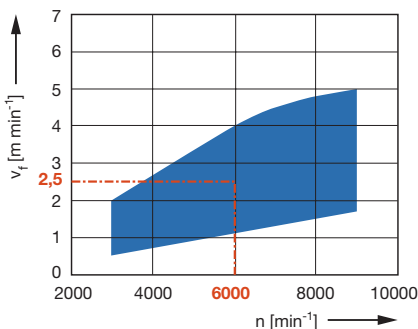
BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.3 Hinge drilling 6.3.2 Hinge drills, HW solid



Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Chipboard paper coated = 0.7

Chipboard veneered = 0.7

MDF plastic coated = 1.0

Glulam = 0.6

Solid wood = 1.0

Shank 10 mm

Application:

For drilling hinge holes, particularly in furniture construction, with increased lifetime and high-quality edge.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

Round spur geometry for increased edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide grade. Tear-free edges in panels with glued plastic edgebanders when used on main spindle or stable drilling units.

GL 59.5 mm, Z 2 / V 2

WB 310 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	59.5	54.5	10x26	034800 ●	034801 ●
16	59.5	54.5	10x26	034824 ●	034825 ●
18	59.5	54.5	10x26	034826 ●	034827 ●
20	59.5	54.5	10x26	034802 ●	034803 ●
22	59.5	54.5	10x26	034828 ●	034829 ●
24	59.5	54.5	10x26		034831 ●
25	59.5	54.5	10x26	034804 ●	034805 ●
26	59.5	54.5	10x26	034806 ●	034807 ●
28	59.5	54.5	10x26		034833 ●
30	59.5	54.5	10x26	034808 ●	034809 ●
35	59.5	54.5	10x26	034810 ●	034811 ●

GL 72.5 mm, Z 2 / V 2

WB 310 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	72.5	68	10x26	034812 ●	034813 ●
18	72.5	68	10x26	034834 ●	034835 ●
20	72.5	68	10x26	034814 ●	034815 ●
25	72.5	68	10x26	034816 ●	034817 ●
26	72.5	68	10x26	034818 ●	034819 ●
30	72.5	68	10x26	034820 ●	034821 ●
34	72.5	68	10x26		037215 ●
35	72.5	68	10x26	034822 ●	034823 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.3 Hinge drilling 6.3.2 Hinge drills, HW solid



Shank 10 mm, short centre point

Application:

For drilling hinge holes, particularly in furniture construction, with increased lifetime and high-quality edge.

Machine:

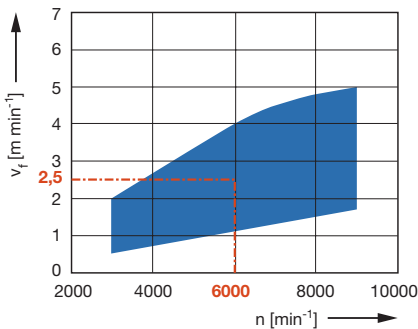
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).



Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Chipboard paper coated = 0.7

Chipboard veneered = 0.7

MDF plastic coated = 1.0

Glulam = 0.6

Solid wood = 1.0

Technical information:

Round spur geometry for increased edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide grade. Tear-free edges in panels with glued plastic edgebanders when used on main spindles or stable drilling units. Design with reduced protrusion of centre point and spurs for deep holes in thin panels.

GL 58 mm, Z 2 / V 2

WB 310 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	58	54.5	10x26	034841 ●	034842 ●
20	58	54.5	10x26	034843 ●	034844 ●
25	58	54.5	10x26	034845 ●	034846 ●
26	58	54.5	10x26	034847 ●	034848 ●
35	58	54.5	10x26	037201 ●	037202 ●

GL 71 mm, Z 2 / V 2

WB 310 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	71	68	10x26	037203 ●	037204 ●
20	71	68	10x26	037205 ●	037206 ●
25	71	68	10x26	037207 ●	037208 ●
26	71	68	10x26	037209 ●	037210 ●
30	71	68	10x26	037211 ●	037212 ●
35	71	68	10x26	037213 ●	037214 ●

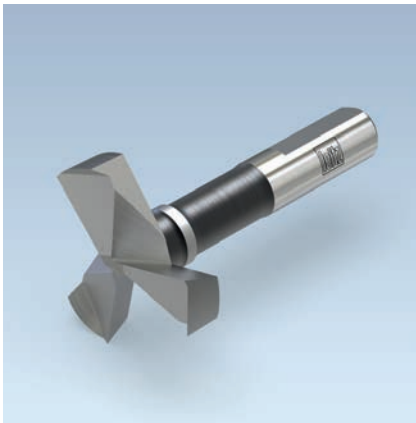
RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.3 Hinge drilling 6.3.2 Hinge drills, HW solid



Shank 10 mm, short centre point

Application:

For drilling hinge holes, particularly in furniture construction, with increased lifetime and high-quality edge. Design for higher feed speed in comparison to boring bits with Z 2 / V 2.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

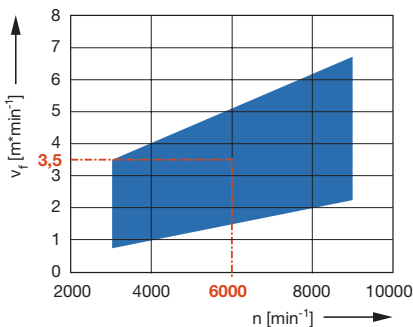


Technical information:

Round spur geometry for increased edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide grade. Tear-free edges in panels with glued plastic edgebanders when used on main spindle, boring units as well as drilling machines.

HW

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Chipboard paper coated = 0.7

Chipboard veneered = 0.7

MDF plastic coated = 1.0

Glulam = 0.6

Solid wood = 1.0

GL 57 mm, Z 3 / V 3

WB 320 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
18	57	54.5	10x26	037250 □	037251 □
20	57	54.5	10x26	037252 ●	037253 ●
22	57	54.5	10x26	037254 □	037255 □
24	57	54.5	10x26	037256 □	037257 □
25	57	54.5	10x26	037258 ●	037259 ●
26	57	54.5	10x26	037260 ●	037261 ●
28	57	54.5	10x26	037262 □	037263 □
30	57	54.5	10x26	037264 ●	037265 ●
35	57	54.5	10x26	037266 ●	037267 ●

GL 70 mm, Z 3 / V 3

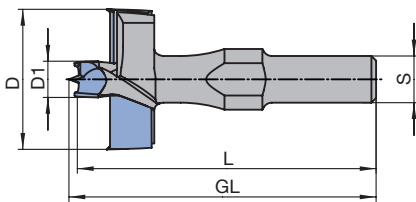
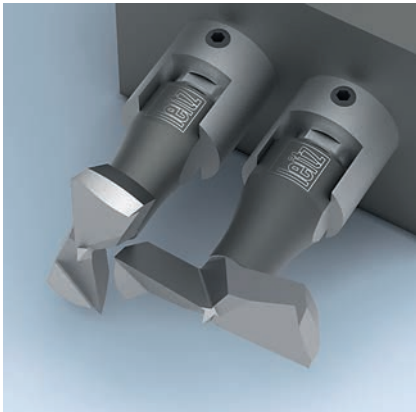
WB 320 0 13

D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
18	70	68	10x26	037268 □	037269 □
20	70	68	10x26	037270 ●	037271 ●
25	70	68	10x26	037272 ●	037273 ●
26	70	68	10x26	037274 ●	037275 ●
30	70	68	10x26	037276 ●	037277 ●
34	70	68	10x26	037278 □	037279 □
35	70	68	10x26	037280 ●	037281 ●

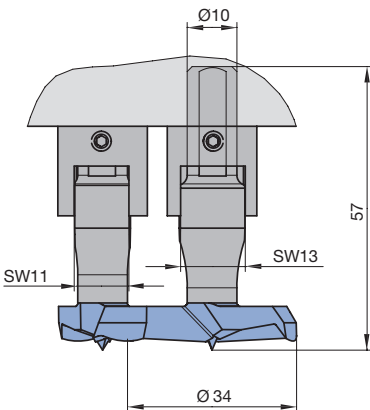
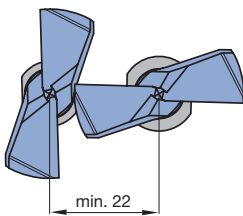
RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●



Double hinge drill with pre-drill



Double hinge drills in aggregate

Shank 10 mm, double furniture hinge

Application:

For drilling hinges and pivots in window manufacturing in single or twin drill design.

Machine:

Stationary routers with/without CNC control, machining centres, special boring machines for frame production, automatic boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, modified timber for window construction, laminated veneer lumber (plywood, multiplex plywood etc.), glued lumber.

Technical information:

Round spur geometry for high edge quality. Solid tungsten carbide design (ID **037218** / **037219** TC-tipped). High wear resistant tungsten carbide grade. Minimum distance of drill spindle 22 mm. ID **037218** / **037219** with pre-drill for corner pivots with pilot pin.

Boring bit set, consisting of 1 pc. RH and LH

AB 710 0

D	D1	GL	L	S	QAL	DRI	ID
mm	mm	mm	mm	mm			
34		57	54.5	10x23	HW solid	LH, RH	036784 □
30		57	54.5	10x23	HW solid	LH, RH	036785 □
30	8	66	64	10x23	HW	LH, RH	036786

Universally applicable for drilling hinges and pivots on machines and aggregates of the following manufacturers: Weinig, SCM, Ganner, Götzinger, Striffler etc.

GL 57 mm, Z 2 / V 2, single tool

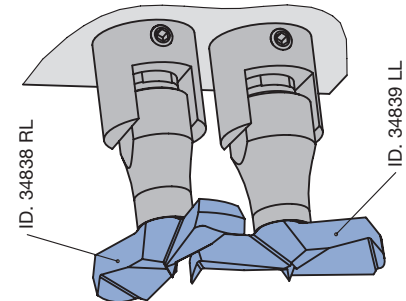
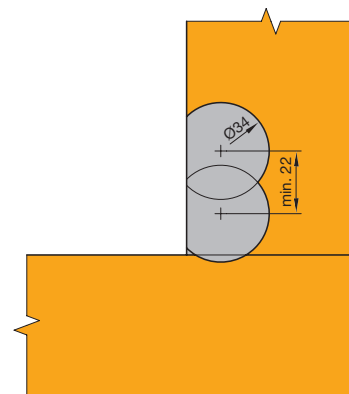
WB 203 0, WB 310 0 13

D	D1	GL	L	S	QAL	ID	ID
mm	mm	mm	mm	mm		LH	RH
34		57	54.5	10x23	HW solid	034839 ●	034838 ●
30		57	54.5	10x23	HW solid	037216 ●	037217 ●
30	8	66	64	10x23	HW	037218	037219

RPM: n = 3000 - 9000 min⁻¹

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●



Application example:
Double hinges for corner pivots.

6. Drilling

6.3 Hinge drilling 6.3.2 Hinge drills, HW solid



Shank 6 mm, Lamello® Cabineo®-System

Application:

For drilling the holes for the cabinet connectors of the Lamello® Cabineo®-System.

Machine:

Stationary routers with/without CNC control, machining centres, automatic boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

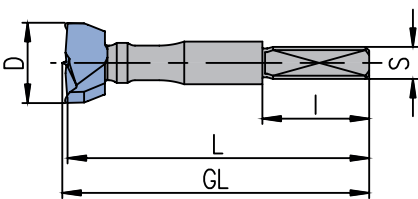
Round spur geometry for high edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide grade.

Boring bit set, consisting of 1 pc. RL and 2 pcs. LL

AB 710 0

D	GL	L	S	QAL	DRI	ID
mm	mm	mm	mm			
15	57.5	56.5	6x20	HW solid	LH, RH	036788 □

Can be used in aggregates from Benz and Atemag.



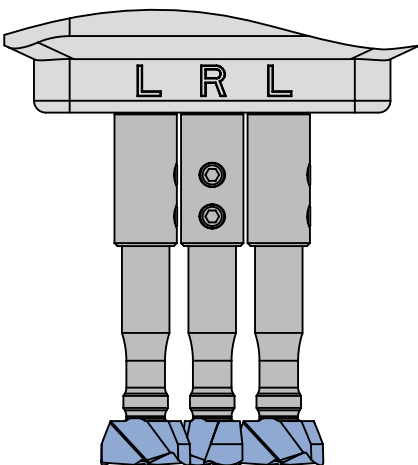
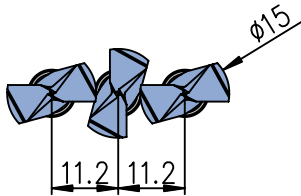
Z 2 / V 2 with centre point

GL 57 mm, Z 2 / V 2, single tool

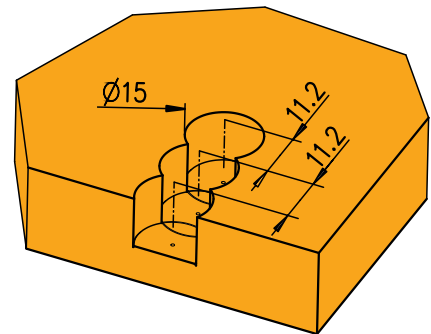
WB 310 0 13

D	GL	L	S	QAL	ID	ID
mm	mm	mm	mm		LH	RH
15	57.5	56.5	6x20	HW solid	037220 ●	037221 ●

RPM: n = 3000 - 9000 min⁻¹



Drills in the unit

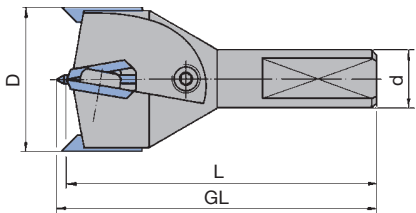


Application example:
3-way drilling in the body component

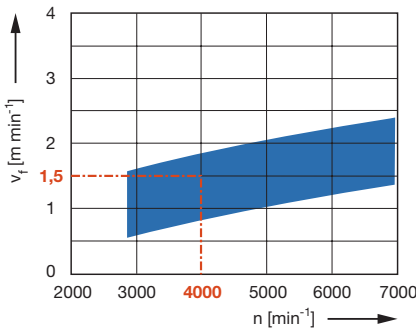
6. Drilling

6.3 Hinge drilling

6.3.3 Hinge drills, turnblade design



Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF = 0.7

Shank 10 mm

Application:

For drilling hinge holes, particularly in furniture construction.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

Spurs and main cutting edge in turnblade design. Replaceable centre point, resharpenable and adjustable for deep holes near to the bottom surface layer without marks. Diameter constant tool.

GL 57 mm, Z 2 / V 2

WL 920 0

D	GL	L	S	ID
mm	mm	mm	mm	RH
35	57	54.5	10x26	034565 ●

RPM: $n = 2800 - 7000 \text{ min}^{-1}$

Spare knives:

BEZ	ABM	QAL	BEM	ID
	mm			
Turnblade knife	15.7x12x1.5	HW	Ø35	007673 ●
Turnblade spur	18x6x3.5	HW		007669 ●
Centering pin	D3x40			008151 ●

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Screw	M3.5x4 (head D7)		006068 ●
Countersink screw	M3,5x6	Clamping screw for spur	007062 ●
Allen screw	M6x4	Clamping screw for centre point	005837 ●
Torx® key	Torx® 15		005457 ●
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw	M5x17	for quick-change drill	009157 ●
Torx® 20		adaptors	

6. Drilling

6.3 Hinge drilling 6.3.4 Hinge drills, DP



Shank 10 mm

Application:

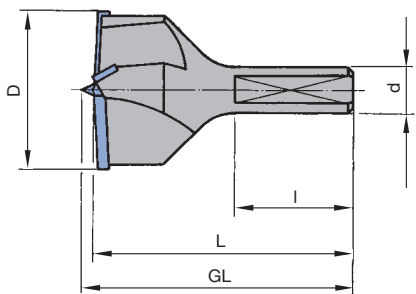
For drilling hinge holes, particularly in furniture construction with maximum durability. Specially for drilling materials with hard and abrasive coatings (e.g. HPL, CPL etc.).

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:

Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., fire resistant particle and fibre materials, laminated veneer lumber (plywood, multiplex plywood etc.).



Technical information:

DP tipped for increased performance time compared to tungsten carbide. Suitability for high volume production. Diamaster PRO tipping, resharpenable two/three times with normal wear. Preferred used on automatic machines. Drills can only be used in vertical drilling machines when workpieces are clamped tightly.

GL 57 / GL 70 mm, Z 2 / V 2

WB 310 0 50

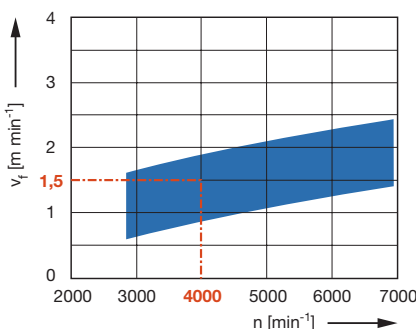
D	GL	L	S	ID	ID
mm	mm	mm	mm	LH	RH
15	70	68.5	10x26		191023 ●
20	57	54.5	10x26		191022 ●
25	70	68.5	10x26		091197 ●
26	70	68.5	10x26		191029 ●
35	57	54.5	10x26		091181 ●
35	70	68.5	10x26	091184 ●	091183 ●

RPM: $n = 2800 - 7000 \text{ min}^{-1}$

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Veneered = 0.8

Paper coated = 0.8

MDF = 0.7

6. Drilling

6.4 Multi-purpose drilling

Application To drill holes for the furniture industry and in timber frame construction.

Workpiece material [recommended cutting material] Softwood and hardwood.
Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. [only HW].
Laminated veneer lumber (plywood, multiplex plywood etc.) [only HW].

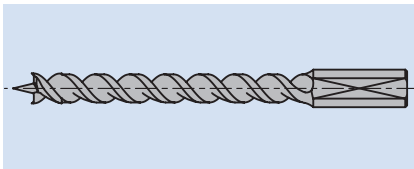
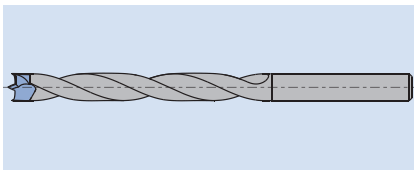
Machine Column drilling machines,
Drilling machines,
Special purpose drilling machines,
Portable drills.

Design

1. Twist drills

Twist drills with a centre point and spurs (Z 2/V 2) are used to drill holes deeper than possible with dowel drills.

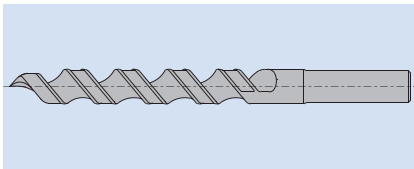
There is a choice of cutting materials – SP, HS and HW. The matrix shows the recommended cutting material for the different workpiece materials:



	SP	HS	HW
Softwood, dry	◆	◆	◆
Softwood, wet	◆	◆	◇
Hardwood, dry	◇	◆	◆
Hardwood, wet	◇	◆	◇
Laminated wood (plywood, etc.)			◆
Chipboard and fibre materials			
- paper coated			◆
- plastic coated			◆
- veneered			◆
Solid wood, veneered			◆

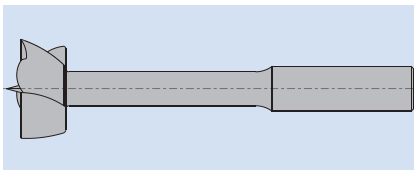
◆ suitable ◇ partly suitable

Tungsten carbide spiral drills are available with single or double heel. The design with double heel improves guidance during boring and return stroke and reduces the friction between flute and hole. Solid tungsten carbide Z 2/V 2 design suitable for drilling deep holes in solid wood without interim clearance strokes and for high feed speeds.



2. Levin type drill

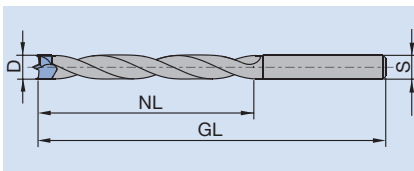
Levin type drills are used to drill deep holes. The key feature is a spiral flute with a large chip gullet cross section giving excellent chip clearance. With V point in HS, recommended for through hole drilling and drilling holes in end grain.



3. Cylinder head drills

Cylinder head drills are used to drill tear-free holes in solid wood, for blind holes, for hinge holes and holes for repair plugs.

Technical features



The dimensions listed in the tool tables refer to the following tool parameters:

D	Drill diameter
S	Shank diameter x shank length
NL	Working length = possible drilling depth
GL	Total length of the drill including the projection of the centre point

Application data

RPM/feed speeds

The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW solid, Z 2

Application:

For multi-purpose drilling of blind and through holes.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units, column drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NF-metals (aluminium, copper etc.).



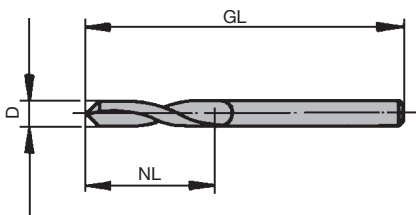
Technical information:

Flat V-point. Shank diameter identical to drill diameter. Convert for shank D 10 mm with reducing sleeve TB 110 0 or PM 320 0 25 (see following pages). Drilling in NF-metal requires suitable lubrication (spray mist or minimal lubrication).

V-point 120°

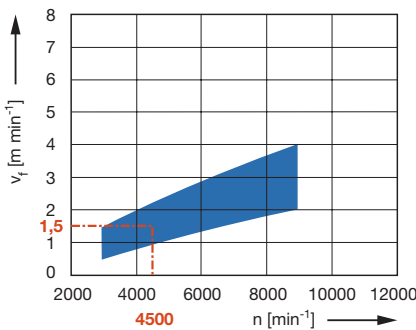
WB 101 0 04

D	GL	NL	QAL	ID LH	ID RH
mm	mm	mm			
2	40	17.5	HW solid	034410 ●	034411 ●
2.5	40	18	HW solid	034412 ●	034413 ●
3	46	16	HW solid	034414 ●	034415 ●
3.2	49	18	HW solid	034420 ●	034421 ●
3.5	52	20	HW solid	034416 ●	034417 ●
4	55	22	HW solid	034418 ●	034419 ●
5	62	26	HW solid	034424 ●	034425 ●



RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

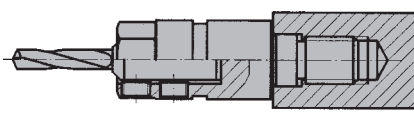
MDF, solid wood = 0.7

Chipboard, uncoated = 1.3

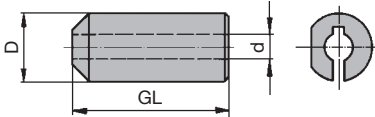
6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



Drill bit clamping using the reducing sleeve TB 110 0 to use the full drill working length



Reducing sleeve with short clamping length

Application:

For clamping of twist drills WB 101 0 04. This enables the complete utilization of the drill working length.

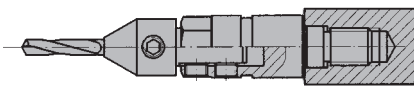
Technical information:

Adaptor can be used in drilling spindles or adjustable drill chucks with side clamping screw. Not suitable for use in most quick-change drill adaptors such as PM 320 0 55/56/57/58/59.

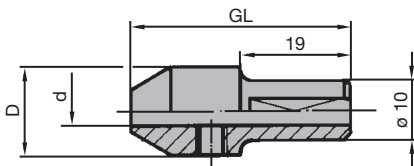
Reducing sleeves with short clamping length

TB 110 0

D	d	GL	ID
mm	mm	mm	
10	2	23	034520 ●
10	2.5	23	034521 ●
10	3	23	034522 ●
10	3.18 / 3.2	23	034525 ●
10	3.5	23	034523 ●
10	4	23	034524 ●
10	5	23	034526 ●



Drill bit clamping with increased stability using reducing sleeve PM 320 0 25



Reducing sleeve with increased clamping length

Application:

For clamping of twist drills WB 101 0 04 with reduced risk of breaking of the clamped drill by reducing the length of the unsupported drill.

Technical information:

Adaptor with shank 10 mm and clamping area. Usable in drilling spindles or drill chucks with side clamping screw. By mounting the length adjustment screw ID 009157 in the shank of the reducing sleeve, easy clamping in the quick-change drill chuck PM 320 0 55/56/57/58/59 is possible.

Reducing sleeves with increased clamping length

PM 320 0 25

D	d	GL	S	ID
mm	mm	mm	mm	
15	2	38	10x19	034490 ●
15	2.5	38	10x19	034491 ●
15	3	38	10x19	034492 ●
15	3.18 / 3.2	38	10x19	034495 ●
15	3.5	38	10x19	034493 ●
15	4	38	10x19	034494 ●
15	5	38	10x19	034496 ●

Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen key	SW 3		005433 ●
Allen screw	M6x5		005836 ●
Length adjustment screw Torx® 20	M5x17	for quick-change drill adaptors	009157 ●

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HS solid, Z 2

Application:

For universal boring of blind and through holes.

Machine:

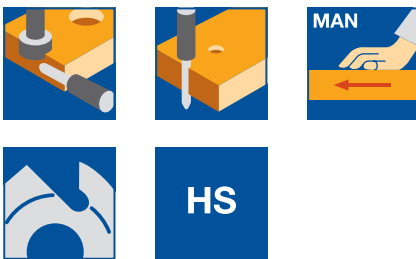
CNC machining centres, machining centres, hinge boring machines, column drilling machines.

Workpiece material:

Plastic profiles with and without steel reinforcement, aluminium profiles, non-ferrous metals.

Technical information:

HS-solid spiral drill.



Short design, Z 2

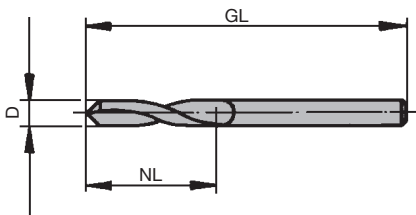
WB 101 0

D	GL	NL	QAL	DRI	ID
mm	mm	mm			
3	61	33	HS	RH	780041 ●
5	86	52	HS	RH	780044 ●
6	93	57	HS	RH	743200 ●
8	117	75	HS	RH	743201 ●

Long design, Z 2

WB 101 0

D	GL	NL	QAL	DRI	ID
mm	mm	mm			
3	95	62	HS	RH	780043 ●
5	132	87	HS	RH	743400 ●
6.2	148	97	HS	RH	743401 ●
8.2	165	109	HS	RH	743402 ●
10.2	184	121	HS	RH	743403 ●



RPM: n = 1200 - 3500 min⁻¹



HS solid, Z 2 / V 2

Application:

For multi-purpose drilling of tear-free blind holes.

Machine:

Column drilling machines, drilling machines, multi spindle units, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, laminated veneer lumber (plywood, multiplex plywood etc.), plastics (thermoplastic).

Technical information:

Design in HS solid with long centre point and round spurs. Shank diameter identical to drill diameter. Design with single heel to reduce friction in the hole.



WB 120 0 02/05, with single heel

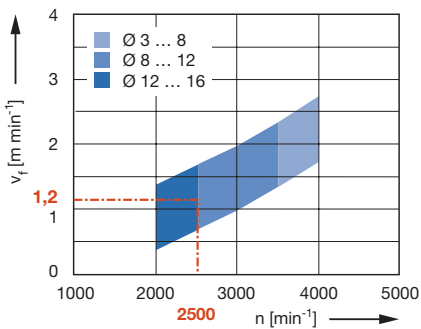
Shank diameter identical to drill diameter

WB 120 0 05

D	GL	NL	S	QAL	DRI	ID
mm	mm	mm	mm			
3	70	35	3x30	HS	RH	035852 ●
4	80	45	4x30	HS	RH	035853 ●
4.5	85	50	4.5x30	HS	RH	035892 ●
5	90	50	5x30	HS	RH	035854 ●
5.5	95	55	5.5x35	HS	RH	035893 ●
6	100	60	6x35	HS	RH	035855 ●
6.5	105	65	6.5x35	HS	RH	035894 ●
7	110	65	7x40	HS	RH	035856 ●
7.5	115	70	7.5x40	HS	RH	035895 ●
8	120	75	8x40	HS	RH	035857 ●
10	140	85	10x50	HS	RH	035859 ●
12	155	95	12x50	HS	RH	035861 ●

RPM: $n = 1500 - 4000 \text{ min}^{-1}$

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Softwood

Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.7

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW, Z 2 / V 2, with heel

Application:

For multi-purpose drilling of tear-free blind holes.

Machine:

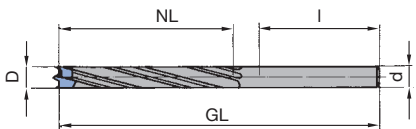
Column drilling machines, drilling machines, multi spindle units, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

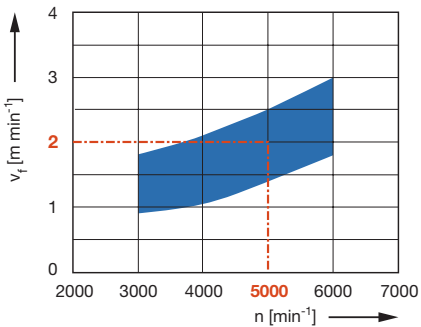
Technical information:

Tungsten carbide tipped design. Shank diameter identical to the drill diameter. Design with double heel for improved guidance during drilling and return stroke from the hole.



WB 120 0 25/27, with double heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Drilling

Correction factor for v_f :

Solid wood = 0.7

Laminated veneer lumber = 0.8

When drilling holes with a depth greater than $4 \times D$ interim clearance stroke is recommended!

Short design

WB 120 0 27

D mm	GL mm	NL mm	S mm	QAL	DRI	ID
5	70	35	5x35	HW	RH	035885 ●
6	70	35	6x35	HW	RH	035886 ●
8	70	35	8x35	HW	RH	035888 ●
10	70	35	10x35	HW	RH	035889 ●

Long design

WB 120 0 25

D mm	GL mm	NL mm	S mm	QAL	DRI	ID
4	80	55	4x25	HW	RH	035882 ●
5	90	60	5x30	HW	RH	035872 ●
6	100	65	6x35	HW	RH	035874 ●
7	110	70	7x40	HW	RH	035876 ●
8	120	75	8x45	HW	RH	035877 ●
9	130	80	9x50	HW	RH	035878 ●
10	140	90	10x50	HW	RH	035879 ●
12	155	100	12x55	HW	RH	035881 ●

RPM: $n = 3000 - 6000 \text{ min}^{-1}$

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW solid, Z 2 / V2, with heel

Application:

For drilling deep holes. Particularly suitable for drilling connection and dowel holes in timber frame and window construction.

Machine:

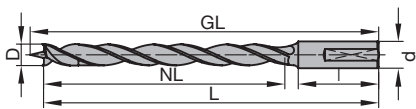
Stationary routers with/without CNC control, machining centres, special cutting machines to machine frame parts, column drilling machines, drilling machines, multi spindle units, portable drills.

Workpiece material:

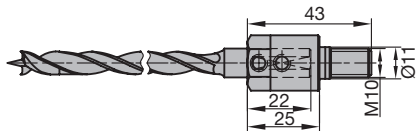
Softwood and hardwood, modified timber for window construction, laminated veneer lumber (plywood, multiplex etc.), glued lumber.

Technical information:

Design in solid tungsten carbide, Z 2/V 2 and centre point. Extra-long centre point for use of the drills at an angle. Design with double heel for improved guidance while drilling and return stroke from the hole. Shank design with reduced clamping area for good centering in shrink and collet chucks.

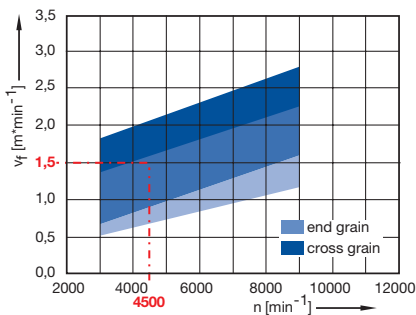


WB 120 0 35, solid tungsten carbide drill



WB 120 0 35, solid tungsten carbide drill with adaptor

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Softwood

Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.8

Laminated veneer lumber = 1.1

GL 105 mm

WB 120 0 35

D mm	GL mm	L mm	NL mm	S mm	QAL	DRI	ID with adaptor	ID without adaptor
6	105	100.5	70	10x25	HW solid	RH	230158 □	230058 ●
6	105	100.5	70	10x25	HW solid	LH	230159 □	230059 ●
8	105	100	70	10x25	HW solid	RH	230160 □	230060 ●
8	105	100	70	10x25	HW solid	LH	230161 □	230061 ●
10	105	99.5	70	10x25	HW solid	RH	230162 □	230062 ●
10	105	99.5	70	10x25	HW solid	LH	230163 □	230063 ●
12	105	99	70	10x25	HW solid	RH	230164 □	230064 ●
12	105	99	70	10x25	HW solid	LH	230165 □	230065 ●

GL 130 mm

WB 120 0 35

D mm	GL mm	L mm	NL mm	S mm	QAL	DRI	ID with adaptor	ID without adaptor
6	130	125.5	90	10x30	HW solid	RH	230150 □	230050 ●
6	130	125.5	90	10x30	HW solid	LH	230151 □	230051 ●
6.5	130	125.5	90	10x30	HW solid	RH	230170 □	230070 ●
8	130	125	90	10x30	HW solid	RH	230152 □	230052 ●
8	130	125	90	10x30	HW solid	LH	230153 □	230053 ●
10	130	124.5	90	10x30	HW solid	RH	230154 □	230054 ●
10	130	124.5	90	10x30	HW solid	LH	230155 □	230055 ●
12	130	124	90	10x30	HW solid	RH	230156 □	230056 ●
12	130	124	90	10x30	HW solid	LH	230157 □	230057 ●

GL 150 mm

WB 120 0 35

D mm	GL mm	L mm	NL mm	S mm	QAL	DRI	ID without adaptor
14	150	143.5	100	10x30	HW solid	RH	230066 ●
16	150	143	100	10x30	HW solid	RH	230068 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW solid, Z 2 / V 2, Marathon

Application:

For drilling very deep holes without interim clearance strokes. Particularly suitable for drilling connection and dowel holes in timber frame and window construction.

Machine:

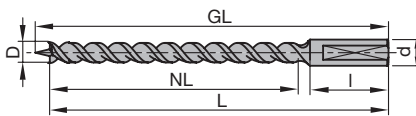
Stationary routers with/without CNC control, machining centres, special cutting machines to machine frame parts, column drilling machines, drilling machines, multi spindle units, portable drills.

Workpiece material:

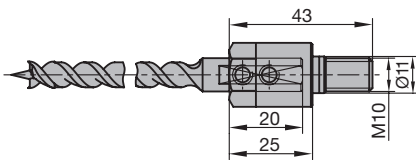
Softwood and hardwood, modified timber for window construction, laminated veneer lumber (plywood, multiplex etc.), glued lumber.

Technical information:

Design in solid tungsten carbide, Z 2/V 2 and centre point. Marathon coating for increased performance time. Extra-long centre point for use of the drills at an angle. Very large gullets for perfect chip removal particularly when drilling in end grain. Shank design with reduced clamping area for good centering in shrink and collet chucks.

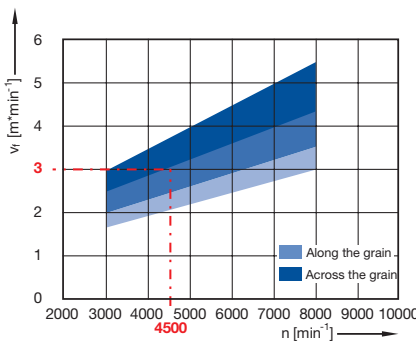


WB 120 0 34, solid tungsten carbide drill



WB 120 0 34, solid tungsten carbide drill with adaptor

Feed speed v_f depending on the spindle RPM n



GL 105 mm

WB 120 0 34

D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor	ID without adaptor
3	105	102	70	10x25	RH	230121 □	230021 ●
3.5	105	102	70	10x25	RH	230122 □	230022 ●
4.5	105	101	70	10x25	RH	230123 □	230023 ●
6	105	100.5	70	10x25	RH	230108 □	230008 ●
6	105	100.5	70	10x25	LH	230109 □	230009 ●
8	105	99.5	70	10x25	RH	230110 □	230010 ●
8	105	99.5	70	10x25	LH	230111 □	230011 ●
10	105	98.5	70	10x25	RH	230112 □	230012 ●
10	105	98.5	70	10x25	LH	230113 □	230013 ●
12	105	97.5	70	10x25	RH	230114 □	230014 ●
12	105	97.5	70	10x25	LH	230115 □	230015 ●

GL 130 mm

WB 120 0 34

D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor	ID without adaptor
6	130	125.5	90	10x30	RH	230100 □	230000 ●
6	130	125.5	90	10x30	LH	230101 □	230001 ●
6.5	130	125.5	90	10x30	RH	230120 □	230020 ●
8	130	124.5	90	10x30	RH	230102 □	230002 ●
8	130	124.5	90	10x30	LH	230103 □	230003 ●
10	130	123.5	90	10x30	RH	230104 □	230004 ●
10	130	123.5	90	10x30	LH	230105 □	230005 ●
12	130	122.5	90	10x30	RH	230106 □	230006 ●
12	130	122.5	90	10x30	LH	230107 □	230007 ●

Diameter:

$D \leq 6$ mm

Workpiece material:

Softwood

Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.8

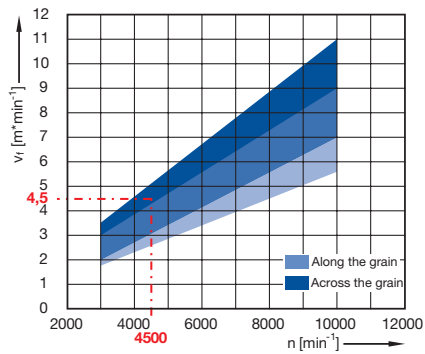
Laminated veneer lumber = 1.2

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills

Feed speed v_f depending on the spindle RPM n



GL 150 mm

WB 120 0 34

D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor	ID without adaptor
14	150	140.5	100	10x30	RH	230116 □	230016 ●
16	150	140	100	10x30	RH	230118 □	230018 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Diameter:

$D = 6 - 12 \text{ mm}$

Workpiece material:

Softwood

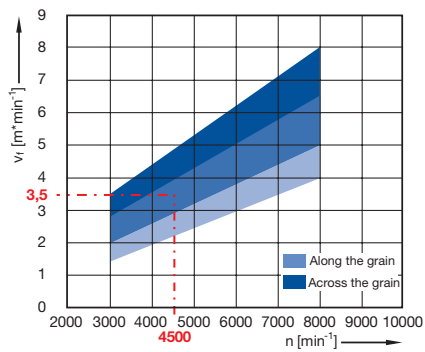
Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.8

Laminated veneer lumber = 1.2



Diameter:

$D > 12 \text{ mm}$

Workpiece material:

Softwood

Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.8

Laminated veneer lumber = 1.2



HS-twist drill XL, Z 2 / V 2

Application:

For drilling very deep through holes without interim clearance strokes.

Machine:

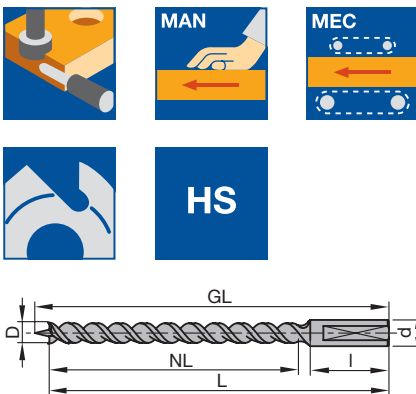
Joinery machines, column drilling machines, drilling machines, multi spindle units, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

Technical information:

Design in HS solid, Z 2 / V 2 with long centre point. Polished gullets for perfect chip removal. Extra-long centre point for use of the drills at an angle.



GL 235 mm

WB 120 0 34

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	ID Triangular shank
12	235	165	12x50	HS	RH	230702	230802
14	235	165	14x50	HS	RH	230703	230803
16	235	165	16x50	HS	RH	230704	230804
18	235	165	16x50	HS	RH	230705	230805
20	235	165	16x50	HS	RH	230706	230806
22	235	165	16x50	HS	RH	230707	230807
24	235	165	16x50	HS	RH	230708	230808
26	235	165	16x50	HS	RH	230709	230809
32	235	165	16x50	HS	RH	230710	230810

GL 360 mm

WB 120 0 34

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	ID Triangular shank
12	360	290	12x50	HS	RH	230713	230813
14	360	290	14x50	HS	RH	230714	230814
16	360	290	16x50	HS	RH	230715	230815
18	360	290	16x50	HS	RH	230716	230816
20	360	290	16x50	HS	RH	230717	230817
22	360	290	16x50	HS	RH	230718	230818
24	360	290	16x50	HS	RH	230719	230819
26	360	290	16x50	HS	RH	230720	230820
32	360	290	16x50	HS	RH	230721	230821



Optionally with triangular shank, for mounting in drill chucks

GL 460 mm

WB 120 0 34

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	ID Triangular shank
12	460	390	12x50	HS	RH	230724	230824
14	460	390	14x50	HS	RH	230725	230825
16	460	390	16x50	HS	RH	230726	230826
18	460	390	16x50	HS	RH	230727	230827
20	460	390	16x50	HS	RH	230728	230828
22	460	390	16x50	HS	RH	230729	230829
24	460	390	16x50	HS	RH	230730	230830
26	460	390	16x50	HS	RH	230731	230831
32	460	390	16x50	HS	RH	230732	230832

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW solid, Z 2, V-point

Application:

For drilling deep holes. Particularly for timber frame and window construction.

Machine:

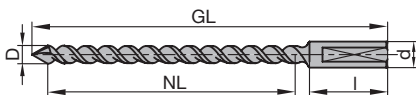
Stationary routers with/without CNC control, machining centres, special cutting machines to machine frame parts, column drilling machines, drilling machines, multi spindle units, portable drills.

Workpiece material:

Softwood and hardwood, modified timber for window construction, laminated veneer lumber (plywood, multiplex etc.), glued lumber.

Technical information:

Solid tungsten carbide design, Z 2 with V-point. Design with double heel for improved guidance while drilling and return stroke from the hole. Shank design with reduced clamping area for good centering in shrink and collet chucks.



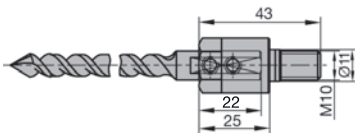
WB 101 0 13, twist drill with V-point

GL 130 / 160 mm

WB 101 0 13

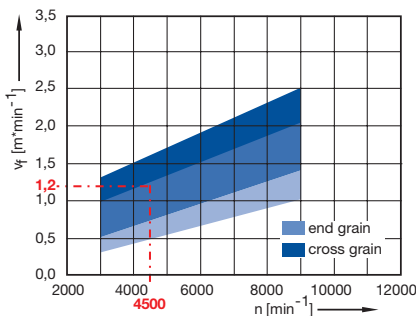
D mm	GL mm	NL mm	S mm	QAL	DRI	ID with adaptor	ID without adaptor
7	130	90	10x30	HW solid	RH	230451 □	230351 ●
8	160	120	10x30	HW solid	RH	230455 □	230355 ●
9	160	120	10x30	HW solid	RH	230452 □	230352 ●
10	160	120	10x30	HW solid	RH	230453 □	230353 ●
12	160	120	10x30	HW solid	RH	230454 □	230354 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$



WB 101 0 13, twist drill with V-point, with adaptor

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Softwood

Operation:

Drilling

Correction factor for v_f :

Hardwood = 0.8

Laminated veneer lumber = 1.1

6. Drilling

6.4 Multi-purpose drilling

6.4.1 Twist drills



HW solid, Z 2, V-point, Marathon

Application:

For drilling very deep holes without interim clearance strokes at high feed speed particularly for timber frame and window construction.

Machine:

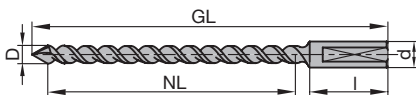
Stationary routers with/without CNC control, machining centres, special cutting machines to machine frame parts, column drilling machines, drilling machines, multi spindle units, portable drills.

Workpiece material:

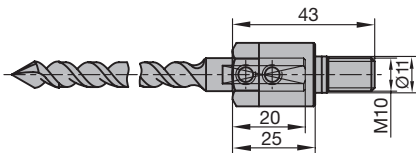
Softwood and hardwood, modified timber for window construction, laminated veneer lumber (plywood, multiplex etc.), glued lumber.

Technical information:

Solid tungsten carbide design, Z 2 with V-point. Marathon coating for increased performance time. Large gullets for perfect chip removal. Shank design with reduced clamping area for good centering in shrink and collet chucks.

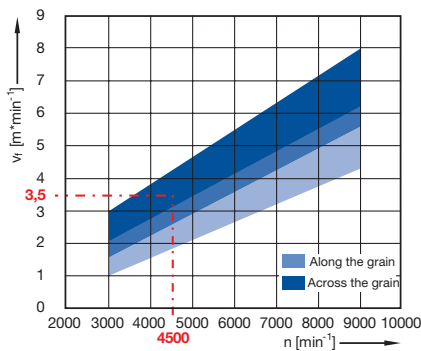


WB 101 0 12,
twist drill with V-point



WB 101 0 12,
twist drill with V-point, with adaptor

Feed speed v_f depending on the spindle
RPM n



GL 130 / 160 mm

WB 101 0 12

D mm	GL mm	NL mm	S mm	DRI	ID with adaptor	ID without adaptor
6	130	90	10x30	RH	230400 □	230300 ●
7	130	90	10x30	RH	230401 □	230301 ●
8	160	120	10x30	RH	230405 □	230305 ●
9	160	120	10x30	RH	230402 □	230302 ●
10	160	120	10x30	RH	230403 □	230303 ●
12	160	120	10x30	RH	230404 □	230304 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$

Diameter:

$D = 6 - 12 \text{ mm}$

Workpiece material:

Softwood

Operation:

Drilling, through hole

Correction factor for v_f :

Hardwood = 0.8

Laminated veneer lumber = 1.2

6. Drilling

6.4 Multi-purpose drilling

6.4.2 Levin type drills



HS solid, Z 1

Application:

For drilling deep holes. Suitable for depths up to approx. 4 x D without interim clearance strokes.

Machine:

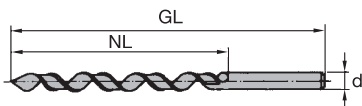
Column drilling machines, drilling machines, multi spindle units, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

Technical information:

Solid HS design, Z 1. V-point for producing tear-free holes on both sides when drilling through holes. Very large gullets for perfect chip removal particularly when drilling in end grain.



V-point for through hole drilling

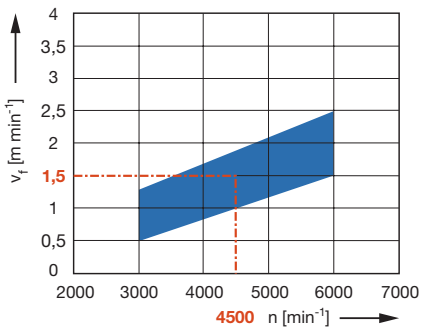
WB 100 0

D	GL	NL	S	QAL	Z	DRI	ID
mm	mm	mm	mm				
5	90	50	5x35	HS	1	RH	036110 ●
6	100	60	6x35	HS	1	RH	036111 ●
8	120	80	8x40	HS	1	RH	036112 ●
10	120	80	10x40	HS	1	RH	036113 ●
12	140	100	12x40	HS	1	RH	036114 ●

RPM: $n = 3000 - 6000 \text{ min}^{-1}$

WB 100 0, with V-point

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Solid wood

Operation:

Drilling

Correction factor for v_f :

Drilling depth $> 4 \times D = 0.8$

6. Drilling

6.4 Multi-purpose drilling

6.4.2 Levin type drills



HW, Z 1 / V 1

Application:

For drilling deep holes. Suitable for depths up to 75 mm without interim clearance strokes. Particularly suitable for producing joint holes in timber frame construction.

Machine:

Column drilling machines, drilling machines, multi spindle units, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, laminated veneer lumber (plywood, multiplex plywood etc.), glued lumber.

Technical information:

Tungsten carbide design, Z 1/V 1 and centre point. Very large gullets for good chip removal, particularly when drilling in end grain.



Drill point for blind holes

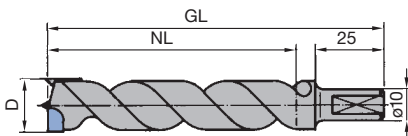
WB 110 0

D	GL	NL	S	QAL	ID	ID
mm	mm	mm	mm		LH	RH
12	110	80	10x25	HW	036174 ●	036175 ●
14	110	80	10x25	HW		036177 ●
16	110	80	10x25	HW	036178 ●	036179 ●

RPM: $n = 3000 - 7500 \text{ min}^{-1}$

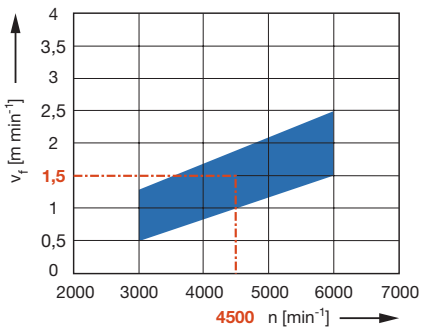
Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen screw	M5x10	Length adjustment	005802 ●
Anti-twist allen screw	M5x10	Length adjustment	007438 ●



WB 110 0, shank with clamping flat and adjusting screw

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Solid wood

Operation:

Drilling

Correction factor for v_f :

Drilling depth $> 4 \times D = 0.8$

6. Drilling

6.4 Multi-purpose drilling

6.4.3 Cylinder head drills



SP, Z 2 / V 2

Application:

For drilling hinge holes, particularly in furniture construction and for fittings in timber construction.

Machine:

Column drilling machines, special purpose drilling machines, portable drills.

Workpiece material:

Softwood.

Technical information:

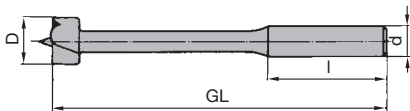
SP solid, Z 2/V 2. Shank 10 mm suitable for stationary boring machines and portable drills.



Shank 10 mm

WB 310 0 03

D mm	GL mm	S mm	DRI	ID
15	90	10x55	RH	036650 ●
20	90	10x55	RH	036655 ●
25	90	10x70	RH	036658 ●
30	90	10x70	RH	036661 ●
35	90	10x65	RH	036664 ●
40	90	10x65	RH	036667 ●

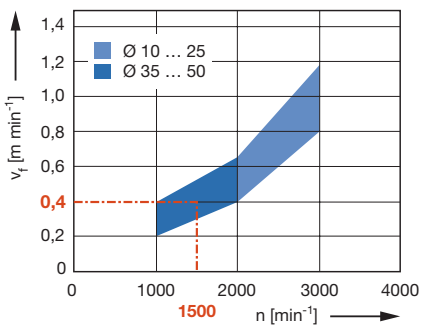


Technical information:

SP solid, Z 2/V 2. Reinforced shank for heavy machining in column drilling machines and powerful portable drills.

WB 310 0 02, reinforced shank
13/16 mm

Feed speed v_f depending on the spindle
RPM n



Shank 13 / 16 mm, reinforced design

WB 310 0 02

D mm	GL mm	S mm	DRI	ID
10	120	13x50	RH	036421 ●
12	120	13x50	RH	036422 ●
15	140	13x50	RH	036424 ●
20	140	13x50	RH	036427 ●
25	140	13x50	RH	036430 ●
30	140	13x50	RH	036433 ●
35	140	16x50	RH	036436 ●

RPM: $n = 1000 - 3000 \text{ min}^{-1}$

Workpiece material:

Softwood

Operation:

Drilling

6. Drilling

6.4 Multi-purpose drilling

6.4.3 Cylinder head drills



HW, Z 2 / V 2

Application:

For drilling hinge holes, particularly in furniture construction.

Machine:

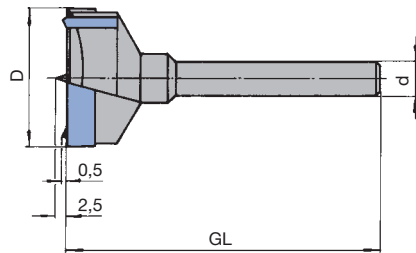
Column drilling machines, drilling machines, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

Technical information:

Tungsten carbide design, Z 2/V 2. Shank 10 mm suitable for stationary drilling machines and portable drills.



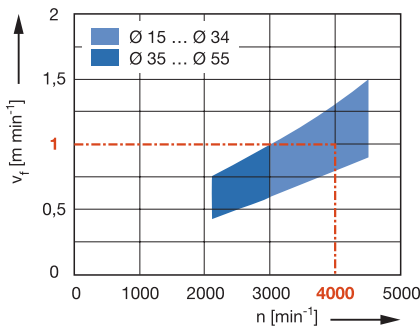
Shank 10 mm
WB 310 0 03

D	GL	S	DRI	ID
mm	mm	mm		
15	90	10x55	RH	036668 ●
16	90	10x55	RH	036669 ●
17	90	10x55	RH	036670 ●
18	90	10x55	RH	036671 ●
19	90	10x55	RH	036672 ●
20	90	10x55	RH	036673 ●
22	90	10x55	RH	036674 ●
24	90	10x70	RH	036676 ●
25	90	10x70	RH	036677 ●
26	90	10x70	RH	036678 ●
28	90	10x70	RH	036679 ●
30	90	10x70	RH	036680 ●
34	90	10x65	RH	036682 ●
35	90	10x65	RH	036683 ●
40	90	10x65	RH	036686 ●

RPM: n = 1200 - 4500 min⁻¹

WB 310 0 03, shank 10 mm,
GL = 90 mm

Feed speed v_f depending on the spindle
RPM n



Workpiece material:

Hardwood

Operation:

Drilling

Correction factor for v_f :

Chipboard = 1.2

Laminated veneer lumber = 1.1

6. Drilling

6.4 Multi-purpose drilling

6.4.3 Cylinder head drills



HW, Z 2 / V 2

Application:

For drilling hinge holes, particularly in furniture construction.

Machine:

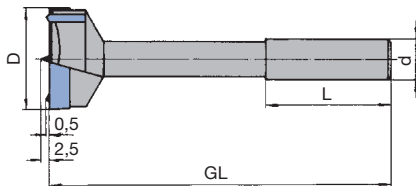
Column drilling machines, drilling machines, special purpose drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

Technical information:

Tungsten carbide design, Z 2/V 2. Reinforced shank for heavy machining in column drilling machines and powerful portable drills.



Shank 13 / 16 mm, reinforced design

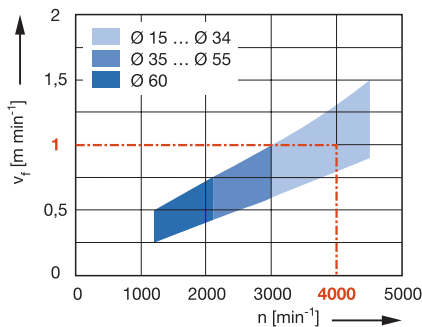
WB 310 0 02

D	GL	S	DRI	ID
mm	mm	mm		
20	140	13x50	RH	036462 ●
22	140	13x50	RH	036463 ●
25	140	13x50	RH	036465 ●
30	140	13x50	RH	036468 ●
35	140	16x50	RH	036471 ●
40	140	16x50	RH	036474 ●
50	150	16x50	RH	036480 ●
55	150	16x50	RH	036483 ●
60	150	16x50	RH	036486 ●

RPM: n = 1200 - 4500 min⁻¹

Tungsten carbide tipping with large resharpening area

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Hardwood

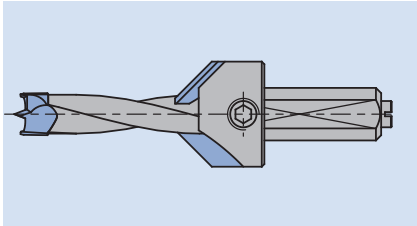
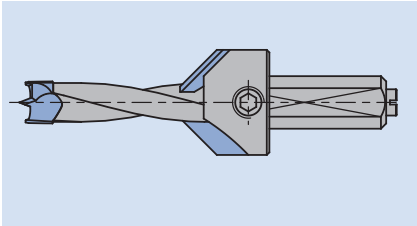
Operation:

Drilling

Correction factor for v_f :

Chipboard = 1.2

Laminated veneer lumber = 1.1

Application	Countersink of holes.
Workpiece material [recommended cutting material]	Softwood and hardwood. Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. [only HW]. Laminated veneer lumber (plywood, multiplex plywood etc.) [only HW]. Plastomers [only HW]. Duromers [only HW]. Solid surface material (Corian, Varicor, Noblan, etc.) [only HW]. Decorative laminates (HPL-compact laminate, Trespa etc.) [only HW]. Compound materials [only HW]. Non-ferrous metals [only HW].
Machine	Through feed drilling machines, Point-to-point drilling machines, CNC machining centres, Column drilling machines, Drilling machines, Special purpose drilling machines, Portable drills.
Design	<p>1. Loose countersink for mounting on dowel drills. The loose countersink is clamped on the shank or heel (for dowel drills or through hole drills with heel). It allows drilling and countersinking in one operation. It is possible to clamp and adjust the loose countersink on the heel of drills with heel.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>2. Loose countersink for mounting on twist drills. Countersink with a countersink angle of 90° or 180° can be clamped on twist drills.</p> <p>3. Single part countersink. Single part countersinks are used for subsequent countersinking of holes. Nearly all materials can be countersunk with tungsten carbide design. Usually this countersink is used to countersink holes for flush screws.</p>

6. Drilling

6.5 Countersink 6.5.1 Loose countersinks



HW, Z 2

Application:

To countersink and drill in one operation.

Machine:

Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units, column drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NF-metals (aluminium, copper etc.).



Technical information:

Loose countersink 90°, fixed on the shank of dowel or through hole drills.

Fixed on shank

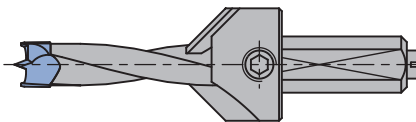
WB 701 0 02

D	GL	d	D _{Drill}	Allan screw	ID	ID
mm	mm	mm	mm	mm	LH	RH
20	17.5	10	6 - 10	M6x5	034350 ●	034351 ●

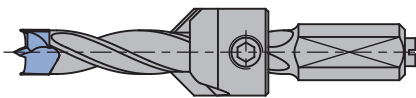
RPM: n = 3000 - 9000 min⁻¹

Spare parts:

BEZ	ABM	for S	ID
	mm	mm	
Allen key	SW 3	M6	005433 ●
Allen screw	M6x5	SW 3	005836 ●



Mounting example fixing on drill shank



Mounting example fixing on heel

Technical information:

Loose countersink 90°. Fixed on heel of dowel and through hole drills with double heel. Stepless axial positioning of countersink on heel for variable drilling and countersink depth.

Fixed on heel

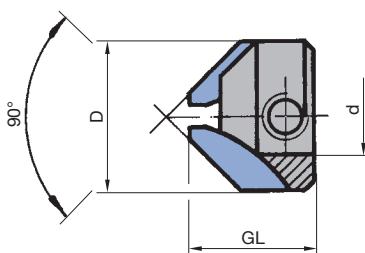
WB 701 0 03

D	GL	d	D _{Drill}	Allan screw	ID	ID
mm	mm	mm	mm	mm	LH	RH
15.5	17.5	4	4	M5x5		034371 ●
15.5	17.5	5	5	M5x5	034372 ●	034373 ●
15.5	17.5	6	6	M6x5	034374 ●	034375 ●
15.5	17.5	8	8	M6x4	034376 ●	034377 ●
20	17.5	10	10	M6x5	034378 ●	034379 ●

RPM: n = 3000 - 9000 min⁻¹

Spare parts:

BEZ	ABM	for S	ID
	mm	mm	
Allen key	SW 2.5	M5	005432 ●
Allen key	SW 3	M6	005433 ●
Allen screw	M5x5	SW 2.5	005805 ●
Allen screw	M6x5	SW 3	005836 ●
Allen screw	M6x4	SW 3	005837 ●



WB 701 0 02

Countersink fixing on drill shank, suitable drill types

WB 120 0 10/11/12/29/30

WB 701 0 03

Countersink fixing on heel, suitable drill types

WB 101 0 05/06

WB 120 0 23/24/26

6. Drilling

6.5 Countersink 6.5.1 Loose countersinks



SP, Z 2

Application:

To countersink and drill in one operation.

Machine:

Multi spindle unit, column drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

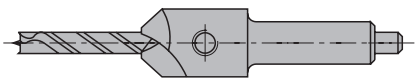
Technical information:

Loose countersink 90°, to mount on drills WB 120 0 05.

Countersink 90°

WB 701 0 01

D	GL	S	d	QAL	DRI	ID
mm	mm	mm	mm			
16	55	10x30	3	SP	RH	036250 ●
16	55	10x30	4	SP	RH	036251 ●
16	55	10x30	5	SP	RH	036252 ●
16	55	10x30	6	SP	RH	036253 ●



Countersink 90°, with drill

SB 204 0

D	d	GL	NL	S	QAL	DRI	ID
mm	mm	mm	mm	mm			
16	3	136	38/15	10x60	SP/HS	RH	036257 □

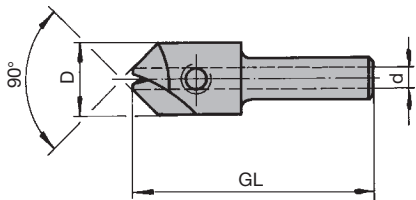
RPM: n = 3000 - 6000 min⁻¹

Spare parts:

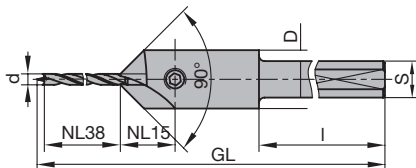
BEZ	ABM	ID
	mm	
Allen key	SW 3	005433 ●
Allen screw	M6x5	005836 ●
Twist drill	D3/S3x30/GL70	035852 ●

Mounting example

Countersink WB 701 0 01 mounted on drill WB 120 0 05



WB 701 0 01, cylindrical shank



SB 204 0, countersink with drill

6. Drilling

6.5 Countersink 6.5.1 Loose countersinks



HS, Z 2

Application:

To countersink and drill in one operation.

Machine:

Multi spindle units, column drilling machines, portable drills.

Workpiece material:

Softwood and hardwood.

Technical information:

Loose countersink 180°, to mount on drills WB 120 2 05.

Countersink 180°

WB 711 0

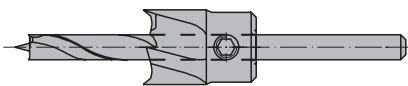


D	GL	NL	d	QAL	DRI	ID
mm	mm	mm	mm			
15	22	10	6	HS	RH	036301 ●
20	25	12	8	HS	RH	036303 ●
25	25	12	10	HS	RH	036305 ●

RPM: n = 3000 - 6000 min⁻¹

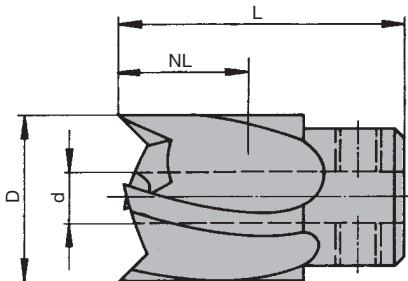
Spare parts:

BEZ	ABM	BEM	ID
	mm		
Allen key	SW 2,5	for D = 15 - 25 mm / 180°	005432 ●
Allen screw	M5x5	for D = 15 - 25 mm / 180°	005805 ●
Allen key	SW 3	for D = 30 mm / 180°	005433 ●
Allen screw	M6x5	for D = 30 mm / 180°	005836 ●

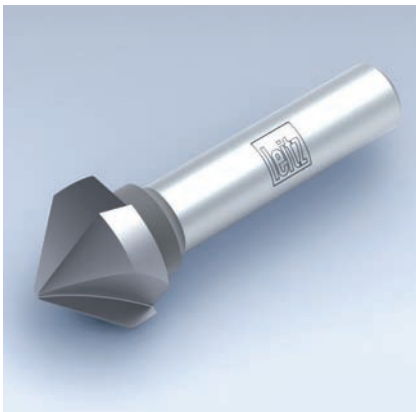


Mounting example

WB 711 0, cylindrical shank



WB 711 0, with 2 clamping screws



Shank 10 mm

Application:

For the additional countersinking of holes.

Machine:

Multi spindle units, column drilling machines, portable drills.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NF-metals (aluminium, copper etc.).

Technical information:

Countersink 90° Z 1 solid SP (only for softwood and hardwood).

Countersink 90° Z 3 solid tungsten carbide. Special grinded section for clean and chatter-free cut.

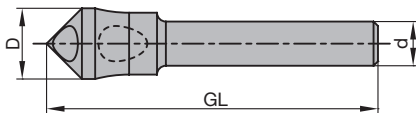


Countersink 90°

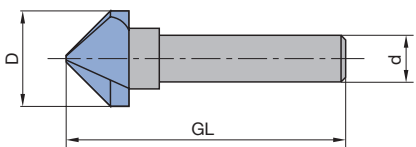
WB 700 0, WB 702 0

D	GL	S	QAL	DRI	ID
mm	mm	mm			
16	75	10x50	SP	RH	036220 ●
20.5	58	10x40	HW solid	RH	036255 ●

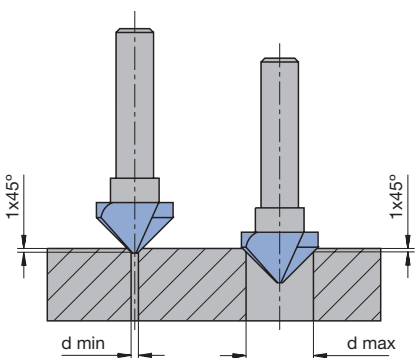
RPM: $n = 2500 - 6000 \text{ min}^{-1}$



WB 700 0 countersink 90° SP, Z1



WB 702 0 countersink 90° solid tungsten carbide, Z 3



The illustrations shows the smallest and largest hole diameters possible, countersink with a 1x45° bevel:

Countersink 90° SP:

$d_{\min} = 4.00 \text{ mm}$, $d_{\max} = 12.00 \text{ mm}$

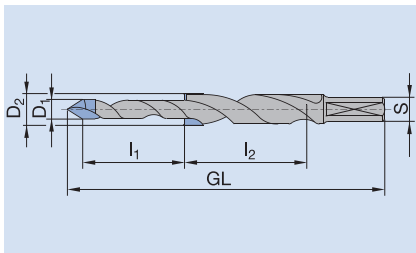
Countersink 90° HW:

$d_{\min} = 2.00 \text{ mm}$, $d_{\max} = 18.00 \text{ mm}$

Application	To drill stepped holes.
Workpiece material	Softwood and hardwood. Chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc. Laminated veneer lumber (plywood, multiplex plywood etc.). Plastomers. Duromers. Solid surface material (Corian, Varicor, Noblan etc.). Compound materials. Non-ferrous metals.
Machine	Through feed drilling machines, Point-to-point drilling machines, CNC machining centres, Column drilling machines, Drilling machines, Special purpose drilling machines, Portable drills.
Design	Step drills are characterized by two drilling operations. The first drill can have either a V point or a centre point with spurs. The second operation can have either a flat 180° counterbore or an angled countersink < 180°.

Technical features

The dimensions listed in the tool tables refer to the following tool parameters:



D_1	Diameter, pre-drill
D_2	Diameter, first step
I_1	Working length pre-drill
I_2	Working length, first step
S	Shank diameter x shank length
GL	Total length of the drill bit including the projection to the centre point

Application data

RPM/feed speeds

The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.

6. Drilling

6.6 Step drilling

6.6.1 Step drills



HW solid, Z 2, Marathon

Application:

To produce stepped holes, particularly for screwed hinge holes for doors.

Machine:

Multi spindle units, CNC machining centres, portable drills.

Workpiece material:

Softwood and hardwood, chipboard and fibre materials (MDF, HDF etc.), uncoated, plastic coated, veneered etc., laminated veneer lumber (plywood, multiplex plywood etc.).

Technical information:

HW solid design, Z 2, two-steps. Extra-long centre point for perfect positioning of the boring bits even on inclined surfaces. Marathon coating for increased performance time.

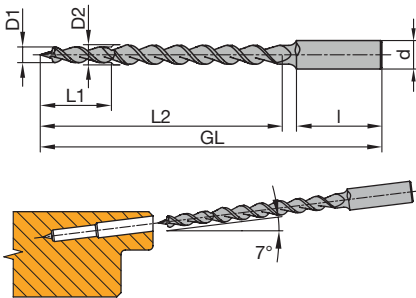


HW solid, Z 2

WB 201 0

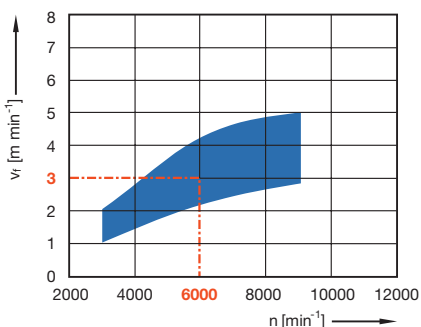
Type	D1 mm	D2 mm	GL mm	L1 mm	L2 mm	S mm	DRI	ID
Anuba 14,5	5.5	7.1	120	25	85	10x30	RH	035804 ●
Anuba 16	6.2	7.7	120	30	85	10x30	RH	035805 ●
Anuba 18	7.5	8.8	120	30	85	10x30	RH	035806 ●
Simons	5.5	6.8	120	25	85	10x30	RH	035807 ●

RPM: $n = 3000 - 9000 \text{ min}^{-1}$



Drilling hole for screwed hinge at an inclined angle of 7° up to 9°

Feed speed v_f depending on the spindle RPM n



Workpiece material:

Chipboard plastic coated

Operation:

Step drilling

Correction factor for v_f :

MDF, solid wood = 0.7

Problem	Possible cause	Action
Drill wears quickly	– Feed rate per rotation too low	Increase feed rate or reduce RPM (see charts on product pages)
High wear to spurs	– Tool remains stationary at the reversal point when drilling dowel holes	Reduce RPM or increase acceleration of the feed axis (when possible) Change program
	– Abrasive workpiece material	Select drills with more wear resistant cutting edge material (HW or DP)
Uneven edges (new drill)	– Feed rate per rotation too high as the bit enters or leaves the workpiece	Reduce feed rate or increase RPM (see charts on product pages)
	– Insufficient concentricity of drill	Check concentric clamping of bit and chuck Check spindle and chuck for deformation
	– Insufficient centering on return stroke of the drill	Check spindle and chuck for signs of wear Use drills with heel
Chips and workpiece become hot	– Tool too long at the reversal point when drilling dowel holes	Reduce RPM or increase acceleration of the feed axis (when possible) Change program
Burn marks at the bore wall (new drill)	– Insufficient chip flow	Clear gullet from time to time when drilling deep holes. Select drill type for high chip volumes (e.g. Levin type)
Bore too large	– Error in concentricity or the centre-point is not central	Check boring bit clamping for concentricity. Check boring bit chuck and motor spindle for deformation and wear Check the concentric running of the centre point
Unclean countersunk wood	– Chips jammed between flute and loose countersink	Use one-piece stepped boring bit when machining solid wood
Broken drill	– Wrong application parameters	Reduce feed rate, increase RPM (see charts on product pages)
	– Bore is full of chips	Clear gullet from time to time when boring deep holes. Select boring bit type for large chip quantities (e.g. Levin type).
	– Non-uniform workpiece material	Check workpiece for foreign objects Reduce feed rate
	– Premature loosening of workpiece clamping	Adjust program
	– Worn drilling spindle	Check spindle bearing, repair if necessary
Broken spurs	– High feed rate when drilling hard workpiece materials	Reduce feed rate
	– Workpiece material not suitable for machining with spurs	Grind off spur and chamfer cutting edge at change-over to the minor cutting edge

6. Drilling

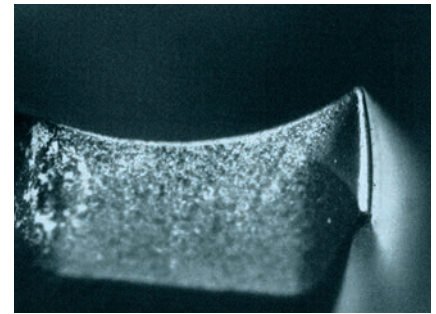
Signs of wear

Worn spurs (abrasive wear)

The natural end of the performance time of a dowel or hinge boring bit is determined by worn spurs by abrasion. The cutting forces on the workpiece surface increase with increasing wear. The surface is subject to severe deformation before it is cut.

Consequently, the edge of the boring hole arches. Coated panel materials will show tear-outs and veneered surfaces crack at the edge of the boring hole. The boring bit must be replaced.

The performance time is set by the quality requirement of the holes. With visible holes such as holes for shelves, drill replacement should be carried out earlier than for holes for dowel joints.



Worn spurs.

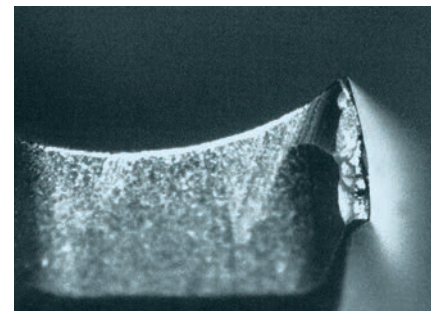
Broken spurs

The sharp and precise spurs of dowel and hinge boring bits are prone to mechanical overstress. They can break when used under unfavourable operating conditions.

This can be caused by worn spindles or chucks if the workpiece is not clamped firmly, or by hard foreign objects in the workpiece such as small stones or metal particles.

Broken spurs do not produce a clean cut since the break geometry is random. As a rule, this results in break-outs or tear-outs at the edge of the hole.

If the break geometry is favourable, the drilling quality does not deteriorate immediately. With continued use, these broken spurs are subject to fast abrasive wear. Performance times are considerably reduced. The wear can conceal the damaged spurs.



Broken spurs.

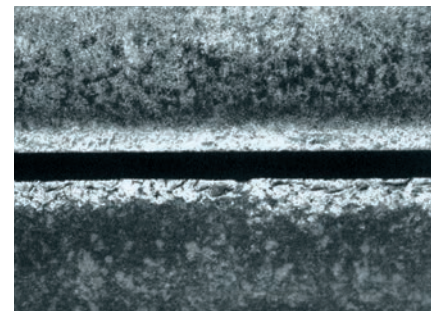
Thermal wear

Because of the permanent contact between the cutting edges and the workpiece material and the deep boring depth, operating conditions can occur which lead to heat stress.

Heat stress occurs when the heat developed by the friction at the main cutting edges cannot be dispersed by the chips. This can be caused by the wrong operating conditions such as high RPM at a low feed rate or when the boring bit remains stationary too long at the reversal point when boring dowel holes.

Insufficient chip removal at deep depths or resin build-up at the gullet can also lead to frictional heat.

The structure of the cutting material is destroyed thermally regardless of using HS, HW or DP. HS cutting materials overheat and lose hardness. The binding agent of sintered cutting materials such as HW or DP is attacked, grain breakage at the cutting edge can occur.



The cutting edges in the illustrations show the difference between abrasive wear (top) and wear caused by heat (bottom).

Enquiry/order form special tools – drilling

Customer details: Customer number:

(if known)

Enquiry
 Order

Delivery date: (not binding) CW

Company: _____

Street: _____

Date: _____

Post code/place: _____

Enquiry/order no.: _____

Country: _____

Tool ID: (if known) _____

Phone/fax: _____

No. of pieces: _____

Contact person: _____

Signature: _____

Workpiece material:

Type:
 Solid wood Type: _____
 Wood-derived material Type: _____
 Others Type: _____

Type of coating: _____
 Type of coating: _____
 Type of coating: _____

Machining:

along grain/across grain (solid wood only) through hole boring
 in end grain (solid wood only) pocket boring

Boring depth: _____ mm

Boring depth: _____ mm

Machine:

Manufacturer: _____
 Type: _____

Application data:
 Feed rate: _____ m/min⁻¹
 RPM: _____ min⁻¹

Tool:

Tool type (see selection pages):
 Dimensions:
 Diameter: _____ mm
 Working length: _____ mm
 Shank diameter: _____ mm
 Total length: _____ mm
 No. of teeth: _____

Cutting material:
 SP
 HS
 HW
 HW solid
 DP

Direction of rotation:
 left hand
 right hand

Please indicate existing data on tool, machine and workpiece material.

Key to pictograms



Drilling blind holes



Tungsten carbide



Drilling through holes



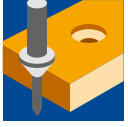
Polycrystalline diamond (PCD)



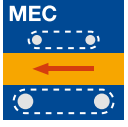
Step drilling



Carbide metal coating



Counter-sinking



Mechanical feed



Manual feed



Solid metal tool



Tipped tool



Mechanical knife clamping, reversible



Alloyed tool steel



High-speed steel

