








freud

**Precisely
the best**



**Solid Carbide Cutters
for CNC Nesting Applications**

THE MOST COMPLETE RANGE OF SOLID CARBIDE BITS FOR SIZING AND GROOVING















LAMINATED CHIPBOARD & MDF			● ● ●
CHIPBOARD & MDF			● ● ●
PLYWOOD			● ● ●
SOFTWOOD & HARDWOOD			● ● ●

Key of performance
 ● ● ● Ultimate ● ● High ● Good

FOR CNC AND PORTABLE ROUTERS



Icon guide

 Up spiral	 Sizing	 Non Axial Boring
 Down spiral	 Grooving	 Slotting
 Up and down spiral	 Plunging	 Better finishing on top
	 Ramp Plunging	 Better finishing on bottom
	 Spiral Boring	 Better finishing on top and bottom
	 Axial Boring	



Extended lifetime

Long lasting TiCo Carbide in-house manufactured. Freud's control of the Carbide production cycle ensures that the correct formula is developed to address the specific application needs, delivering maximum performance.

Carbide innovation

Freud constantly invests in new Carbide recipe development to maintain its cutting tools performance at unmatched quality levels. The new micrograin Carbide H05MG specifically formulated for the SCH range presents a high level of hardness and tenacity, to achieve the greatest resistance to wear and impact.

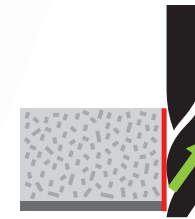
Wide range of shank diameters

From 6 mm to 20 mm.



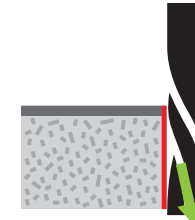
Design innovation

The new helix designs and geometries, designed for the SCH range, deliver flawless results and impeccable finishing also in demanding applications.



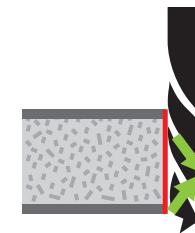
Upcut helix

Universal tool, suitable for all cutting applications and especially for roughing with chipbreaker. Indicated for sizing bottom laminated composite panels.



Downcut helix

Indicated for sizing top laminated composite panels. Not suitable for plunging in case of solid wood.



Up-down cut helix (compression)

Universal tool, suitable for all cutting applications. Indicated for sizing top and bottom laminated composite panels.

TiCo Carbide



TiCo Carbide

- A specially formulated, highly compact Titanium Cobalt Carbide, engineered and manufactured by Freud.
- It provides a sharper edge and flawless finish with a dramatically longer cutting life.



FACTORS INFLUENCING TOOL PERFORMANCE



Vibration

It represents the main cause of tool low performance or breakage. Vibrations could be caused by a poor machine maintenance or by an incorrect fixing of the panel, due to damaged suction system or worn out spoil board.



SCH tolerance

In all industrial cutting tools tolerance is a key factor. In the SCH segment this is determined by the shank dimension and the eccentricity. Freud SCH respect the limits fixed by EN 847 European Regulation.



Tool maintenance

It is important to highlight that tool maintenance applies also to accessories and not only to tools. All accessories must be regularly checked or replaced.



Suction system




Wood chips must be removed from the panel via suction systems for security reasons, to avoid further contact with the tools and the surface.

SCH PERFORMANCE








HOW TO CALCULATE THE CORRECT FEED RATE

To find the suggested feed rates refer to the tables with standard parameters and apply the correction factors.

Standard parameters

Material		Cutting thickness		Rotation speed	
	Softwood		$h=D$		18.000 RPM

Correction factors




Material					
	Hardwood	x0,9		MDF/ Chipboard	x1,1
Cutting thickness					
	$h=Dx1$ to $Dx2$	x0,75		$h=Dx2$ to $Dx3$	x0,5
				$h=over Dx3$	x0,4
Rotation speed *					
	12.000 RPM	x0,66		24.000 RPM	x1,33

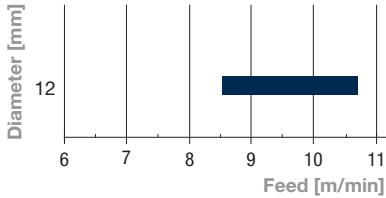
*Suggested speeds are proportional to RPM (e.g. $12.000/18.000=0,66$).

To maximise the tool lifetime, always set the maximum speed that delivers the needed quality of cut.

FEEDING SPEED RATES EXAMPLES FOR SCH2UFN256R


STANDARD PARAMETERS FOR 12 MM DIAMETER BIT

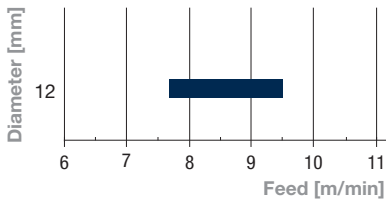
Material	Cutting thickness	Rotation speed
 <p>Softwood</p>	 <p>H=D</p>	 <p>18.000 RPM</p>



Feed rate:
from 8,6 to 10,6 m/min.

CORRECTION FACTORS FOR HARDWOOD (X0,9)




Material	Cutting thickness	Rotation speed
 <p>Hardwood</p>	 <p>H=D</p>	 <p>18.000 RPM</p>

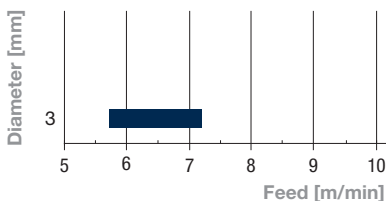


Calculate feed rate:
 $8,6 \times 0,9 = 7,74$
 $10,6 \times 0,9 = 9,54$

Feed rate:
from 7,74 to 9,54 m/min.

CORRECTION FACTORS FOR HARDWOOD (X0,9) AND FOR 24 MM CUTTING DEPTH (X0,75)

Material	Cutting thickness	Rotation speed
 <p>Hardwood</p>	 <p>H=Dx2 (24 mm)</p>	 <p>18.000 RPM</p>



Calculate feed rate:
 $8,6 \times 0,9 \times 0,75 = 5,80$
 $10,6 \times 0,9 \times 0,75 = 7,15$

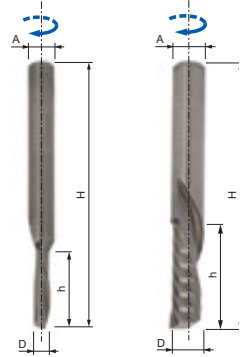
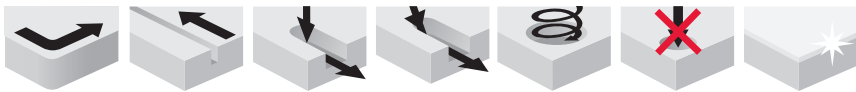
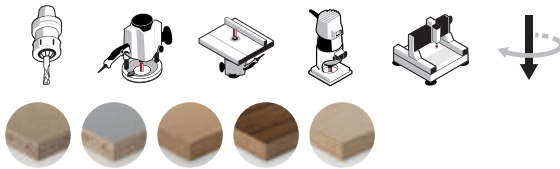
Feed rate:
from 5,8 to 7,15 m/min.



SIZING

SCH1DFN

Finishing router cutter downcut with right-hand Z1

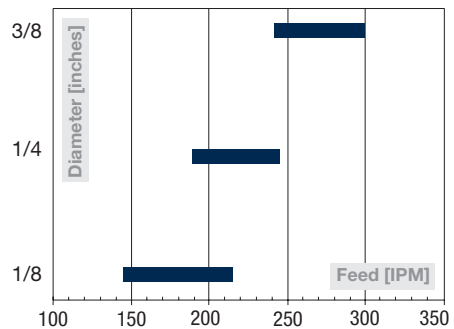
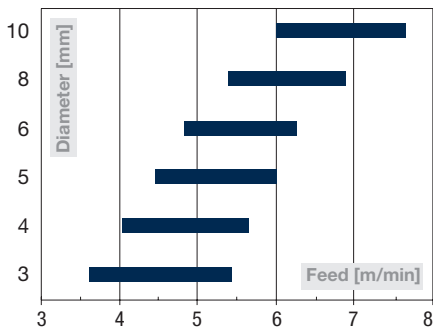


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mm	mm	mm	mm						
3	13	60	6	-20	MG10	1	30000	SCH1DFN110R	F03FR03623
4	15	50	4	-20	MG10	1	30000	SCH1DFN210R	F03FR03629
4	16	60	6	-20	MG10	1	30000	SCH1DFN120R	F03FR03624
5	17	50	5	-20	MG10	1	30000	SCH1DFN215R	F03FR03630
5	17	60	6	-20	MG10	1	30000	SCH1DFN130R	F03FR03625
5	17	60	8	-20	MG10	1	30000	SCH1DFN160R	F03FR03628
6	17	50	6	-20	MG10	1	30000	SCH1DFN220R	F03FR03631

D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
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6	22	60	6	-20	MG10	1	30000	SCH1DFN225R	F03FR03632
8	22	70	8	-30	MG10	1	30000	SCH1DFN235R	F03FR03634
8	32	80	8	-30	MG10	1	30000	SCH1DFN240R	F03FR03635
10	32	80	10	-30	H05MG	1	30000	SCH1DFN255R	F03FR03637
10	42	100	10	-30	H05MG	1	30000	SCH1DFN260R	F03FR03638

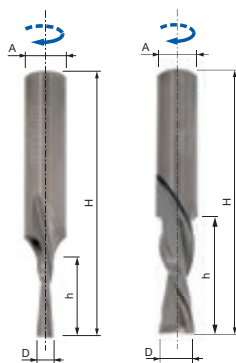
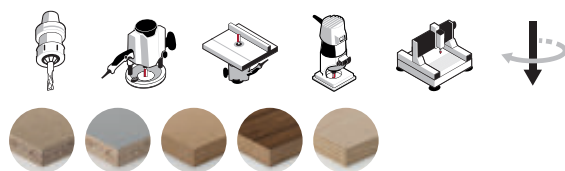
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1/8	1/2	2-1/2	1/4	-20	MG10	1	30000	SCH1DFN140R	F03FR03626
3/16	3/4	2-1/2	1/4	-30	MG10	1	30000	SCH1DFN150R	F03FR03627
1/4	1	2-1/2	1/4	-20	MG10	1	30000	SCH1DFN230R	F03FR03633
3/8	1-1/8	3	3/8	-20	H05MG	1	30000	SCH1DFN250R	F03FR03636

Working parameters for MDF/Chipboard



SCH2DFN

Finishing router cutter downcut with right-hand Z2

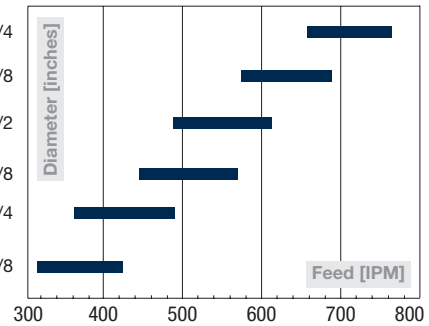
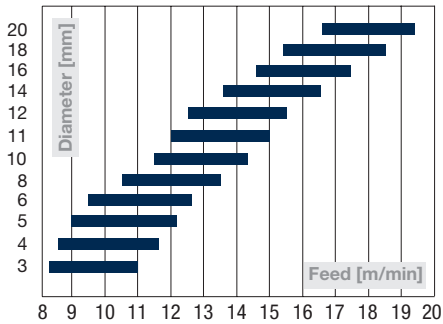


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4	16	50	6	-20	MG10	2	30000	SCH2DFN115R	F03FR03661
4	16	50	8	-20	MG10	2	30000	SCH2DFN140R	F03FR03666
4	15	50	4	-20	MG10	2	30000	SCH2DFN204R	F03FR03673
5	17	60	6	-20	MG10	2	30000	SCH2DFN120R	F03FR03662
5	17	50	8	-20	MG10	2	30000	SCH2DFN145R	F03FR03667
5	17	50	5	-20	MG10	2	30000	SCH2DFN208R	F03FR03674
6	25	60	8	-20	MG10	2	30000	SCH2DFN150R	F03FR03668
6	17	60	6	-20	MG10	2	30000	SCH2DFN212R	F03FR03675
6	22	60	6	-20	MG10	2	30000	SCH2DFN216R	F03FR03676
7	32	80	8	-20	MG10	2	30000	SCH2DFN155R	F03FR03669
8	25	70	12	-30	H05MG	2	30000	SCH2DFN160R	F03FR03670
8	22	70	8	-30	MG10	2	30000	SCH2DFN224R	F03FR03678
8	32	80	8	-30	MG10	2	30000	SCH2DFN228R	F03FR03679
8	42	90	8	-30	MG10	2	30000	SCH2DFN232R	F03FR03680
10	32	80	12	-30	H05MG	2	30000	SCH2DFN170R	F03FR03672
10	32	80	10	-30	H05MG	2	30000	SCH2DFN240R	F03FR03682
10	42	100	10	-30	H05MG	2	30000	SCH2DFN244R	F03FR03683
10	52	100	10	-30	H05MG	2	30000	SCH2DFN248R	F03FR03684
11	37	80	11	-30	H05MG	2	30000	SCH2DFN252R	F03FR03685
12	32	80	12	-30	H05MG	2	30000	SCH2DFN256R	F03FR03686
12	42	90	12	-30	H05MG	2	30000	SCH2DFN260R	F03FR03687
12	52	100	12	-30	H05MG	2	30000	SCH2DFN264R	F03FR03688
14	52	100	14	-30	H05MG	2	25000	SCH2DFN276R	F03FR03691
16	52	100	16	-30	H05MG	2	25000	SCH2DFN280R	F03FR03692
18	52	110	18	-30	H05MG	2	25000	SCH2DFN284R	F03FR03693
20	52	120	20	-30	H05MG	2	25000	SCH2DFN288R	F03FR03694
20	72	140	20	-30	H05MG	2	25000	SCH2DFN292R	F03FR03695

D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
1/8	1/2	2	1/4	-20	MG10	2	30000	SCH2DFN125R	F03FR03663
3/16	3/4	2	1/4	-20	MG10	2	30000	SCH2DFN130R	F03FR03664

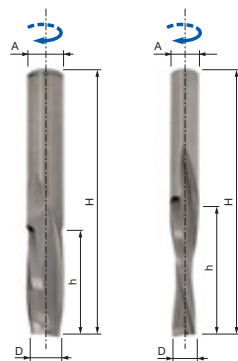
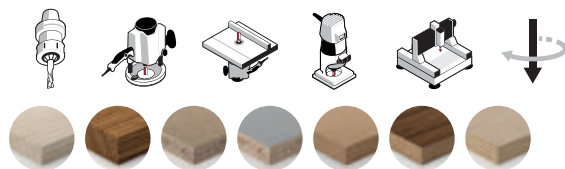
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inch	inch	inch	inch						
3/8	1-1/8	3	3/8	-30	H05MG	2	30000	SCH2DFN236R	F03FR03681
3/8	1-1/4	3	1/2	-30	H05MG	2	30000	SCH2DFN165R	F03FR03671
1/4	1	2-1/2	1/4	-20	MG10	2	30000	SCH2DFN220R	F03FR03677
1/2	1-1/4	3	1/2	-30	H05MG	2	30000	SCH2DFN268R	F03FR03689
1/2	2	4	1/2	-30	H05MG	2	30000	SCH2DFN272R	F03FR03690

Working parameters for MDF/Chipboard



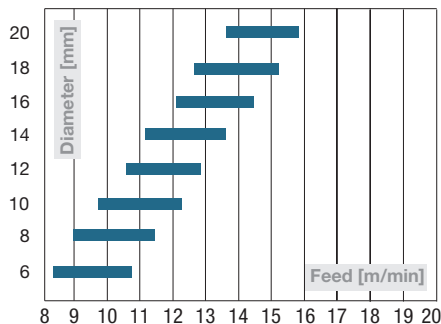
SCH2DFN

Finishing router cutter downcut with right-hand Z2

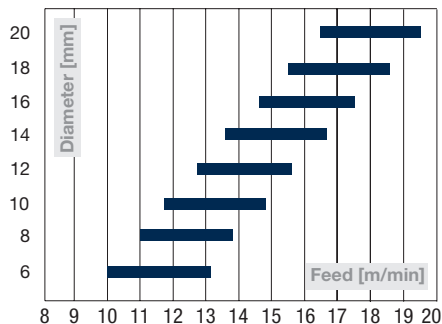


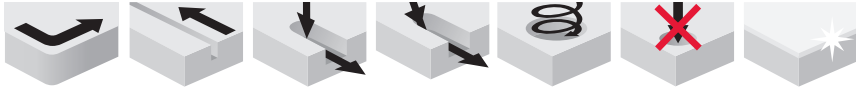
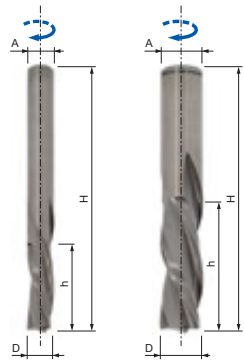
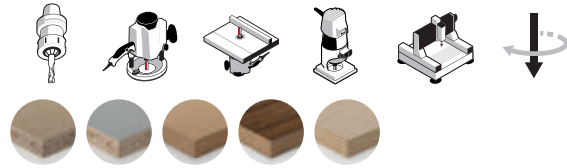
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5	17	60	6	-15	MG10	2	30000	SCH2DFN720R	F03FR04385
6	22	60	6	-15	MG10	2	30000	SCH2DFN816R	F03FR04386
8	22	70	8	-15	MG10	2	30000	SCH2DFN824R	F03FR04387
10	32	80	10	-15	MG10	2	30000	SCH2DFN840R	F03FR04388
12	52	110	12	-15	MG10	2	30000	SCH2DFN864R	F03FR04389
14	52	110	14	-15	MG10	2	25000	SCH2DFN876R	F03FR04390
16	52	120	16	-15	MG10	2	25000	SCH2DFN880R	F03FR04391
18	52	120	18	-15	MG10	2	25000	SCH2DFN884R	F03FR04392
20	52	140	20	-15	MG10	2	25000	SCH2DFN888R	F03FR04393
20	72	160	20	-15	MG10	2	25000	SCH2DFN892R	F03FR04394

Working parameters for Hardwood



Correction factors for Chipboard/MDF

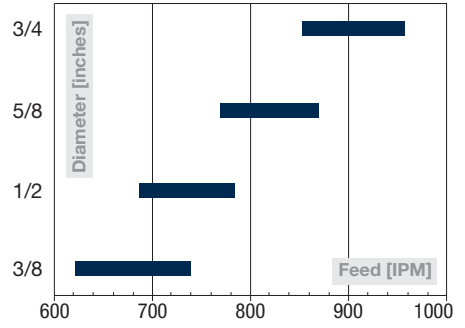
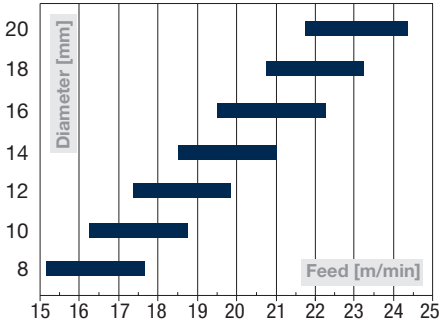


SCH3DFN**Finishing router cutter downcut with right-hand Z3**

D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
8	22	70	8	-30	MG10	3	30000	SCH3DFN208R	F03FR03755
8	32	80	8	-30	MG10	3	30000	SCH3DFN212R	F03FR03756
10	32	80	10	-30	H05MG	3	30000	SCH3DFN220R	F03FR03758
10	42	90	10	-30	H05MG	3	30000	SCH3DFN224R	F03FR03759
10	52	100	10	-30	H05MG	3	30000	SCH3DFN228R	F03FR03760
12	32	80	12	-30	H05MG	3	30000	SCH3DFN232R	F03FR03761
12	42	90	12	-30	H05MG	3	30000	SCH3DFN236R	F03FR03762
12	52	100	12	-30	H05MG	3	30000	SCH3DFN240R	F03FR03763
14	45	150	14	-30	H05MG	3	25000	SCH3DFN102R	F03FR03751
14	42	90	14	-30	H05MG	3	25000	SCH3DFN248R	F03FR03765
14	52	100	14	-30	H05MG	3	25000	SCH3DFN252R	F03FR03766
16	45	150	16	-30	H05MG	3	25000	SCH3DFN104R	F03FR03752
16	42	100	16	-30	H05MG	3	25000	SCH3DFN256R	F03FR03767
16	52	100	16	-30	H05MG	3	25000	SCH3DFN260R	F03FR03768
16	62	120	16	-30	H05MG	3	25000	SCH3DFN264R	F03FR03769
18	45	150	18	-30	H05MG	3	25000	SCH3DFN106R	F03FR03753
18	52	110	18	-30	H05MG	3	25000	SCH3DFN268R	F03FR03770
18	72	130	18	-30	H05MG	3	25000	SCH3DFN272R	F03FR03771
20	52	110	20	-30	H05MG	3	25000	SCH3DFN276R	F03FR03772
20	72	140	20	-30	H05MG	3	25000	SCH3DFN280R	F03FR03773
20	92	170	20	-30	H05MG	3	25000	SCH3DFN284R	F03FR03774

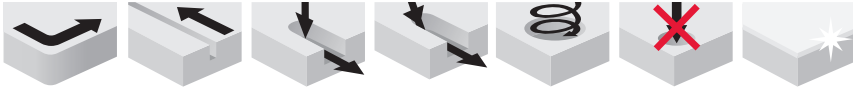
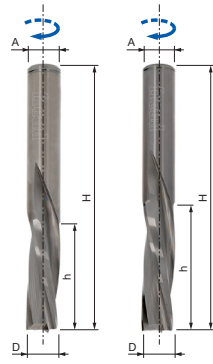
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inch	inch	inch	inch						
1/4	3/4	2-1/2	1/4	-20	MG10	3	30000	SCH3DFN204R	F03FR03754
3/8	1-1/8	3	3/8	-30	H05MG	3	30000	SCH3DFN216R	F03FR03757
1/2	2	4	1/2	-30	H05MG	3	30000	SCH3DFN244R	F03FR03764

Working parameters for MDF/Chipboard



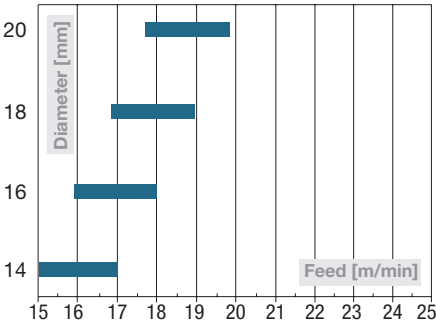
SCH3DFN

Finishing router cutter downcut with right-hand Z3

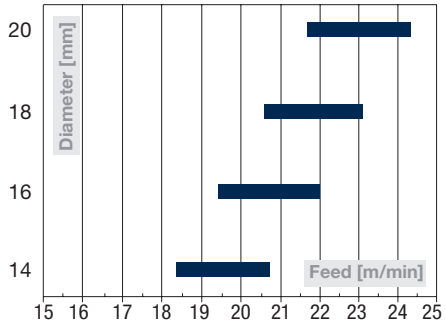


D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
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16	42	110	16	-15	MG10	3	25000	SCH3DFN856R	F03FR04407
16	52	120	16	-15	MG10	3	25000	SCH3DFN860R	F03FR04408
18	52	130	18	-15	MG10	3	25000	SCH3DFN868R	F03FR04409
20	52	140	20	-15	MG10	3	25000	SCH3DFN876R	F03FR04410
20	72	160	20	-15	MG10	3	25000	SCH3DFN880R	F03FR04411

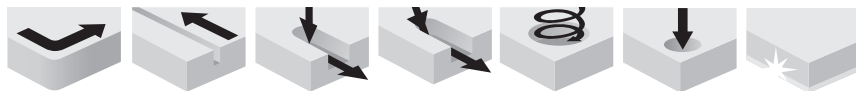
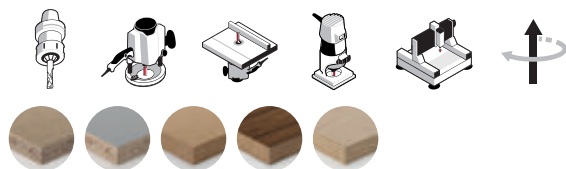
Working parameters for Hardwood



Working parameters for MDF/Chipboard



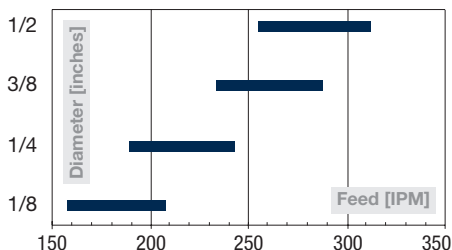
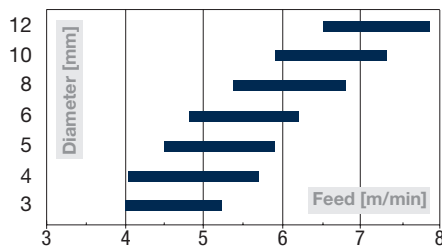
SCH1UFN Finishing router cutter upcut with right-hand Z1



D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
3	13	60	6	20	MG10	1	30000	SCH1UFN110R	F03FR03639
4	15	50	4	20	MG10	1	30000	SCH1UFN210R	F03FR03645
4	16	60	6	20	MG10	1	30000	SCH1UFN120R	F03FR03640
5	17	50	5	20	MG10	1	30000	SCH1UFN215R	F03FR03646
5	17	60	6	20	MG10	1	30000	SCH1UFN130R	F03FR03641
5	17	60	8	20	MG10	1	30000	SCH1UFN160R	F03FR03644
6	17	50	6	20	MG10	1	30000	SCH1UFN220R	F03FR03647
6	22	60	6	20	MG10	1	30000	SCH1UFN225R	F03FR03648
8	22	70	8	30	MG10	1	30000	SCH1UFN235R	F03FR03650
8	32	80	8	30	MG10	1	30000	SCH1UFN240R	F03FR03651
8	42	90	8	30	MG10	1	30000	SCH1UFN245R	F03FR03652
10	32	80	10	30	H05MG	1	30000	SCH1UFN255R	F03FR03654
10	42	100	10	30	H05MG	1	30000	SCH1UFN260R	F03FR03655
10	52	100	10	30	H05MG	1	30000	SCH1UFN265R	F03FR03656
12	32	80	12	30	H05MG	1	30000	SCH1UFN270R	F03FR03657
12	52	100	12	30	H05MG	1	30000	SCH1UFN275R	F03FR03658

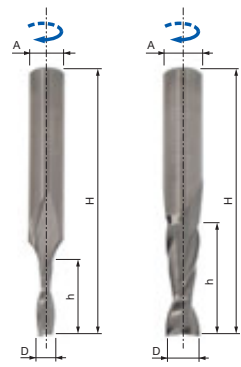
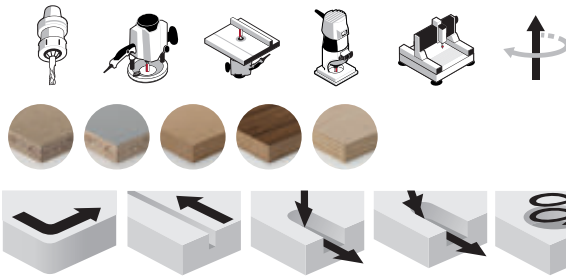
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
1/8	1/2	2-1/2	1/4	20	MG10	1	30000	SCH1UFN140R	F03FR03642
3/16	3/4	2-1/2	1/4	20	MG10	1	30000	SCH1UFN150R	F03FR03643
1/4	1	2-1/2	1/4	20	MG10	1	30000	SCH1UFN230R	F03FR03649
3/8	1-1/8	3	3/8	30	H05MG	1	30000	SCH1UFN250R	F03FR03653
1/2	1-5/16	3	1/2	30	H05MG	1	30000	SCH1UFN280R	F03FR03659

Working parameters for MDF/Chipboard



SCH2UFN

Finishing router cutter upcut with right-hand Z2

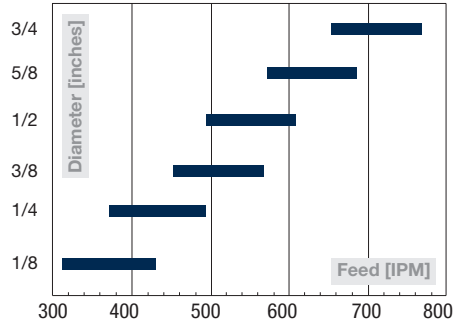
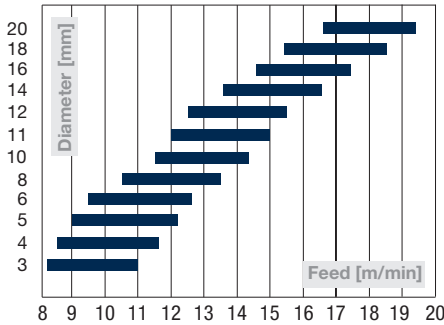


D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
3	13	50	6	20	MG10	2	30000	SCH2UFN110R	F03FR03696
3	13	50	8	20	MG10	2	30000	SCH2UFN135R	F03FR03701
4	16	50	6	20	MG10	2	30000	SCH2UFN115R	F03FR03697
4	16	50	8	20	MG10	2	30000	SCH2UFN140R	F03FR03702
4	15	50	4	20	MG10	2	30000	SCH2UFN204R	F03FR03709
5	17	60	6	20	MG10	2	30000	SCH2UFN120R	F03FR03698
5	17	50	8	20	MG10	2	30000	SCH2UFN145R	F03FR03703
5	17	50	5	20	MG10	2	30000	SCH2UFN208R	F03FR03710
6	25	60	8	20	MG10	2	30000	SCH2UFN150R	F03FR03704
6	17	60	6	20	MG10	2	30000	SCH2UFN212R	F03FR03711
6	22	60	6	20	MG10	2	30000	SCH2UFN216R	F03FR03712
7	32	80	8	20	MG10	2	30000	SCH2UFN155R	F03FR03705
8	25	70	12	30	H05MG	2	30000	SCH2UFN160R	F03FR03706
8	22	70	8	30	MG10	2	30000	SCH2UFN224R	F03FR03714
8	32	80	8	30	MG10	2	30000	SCH2UFN228R	F03FR03715
8	42	90	8	30	MG10	2	30000	SCH2UFN232R	F03FR03716
10	32	80	12	30	H05MG	2	30000	SCH2UFN170R	F03FR03708
10	32	80	10	30	H05MG	2	30000	SCH2UFN240R	F03FR03718
10	42	100	10	30	H05MG	2	30000	SCH2UFN244R	F03FR03719
10	52	100	10	30	H05MG	2	30000	SCH2UFN248R	F03FR03720
11	37	80	11	30	H05MG	2	30000	SCH2UFN252R	F03FR03721
12	32	80	12	30	H05MG	2	30000	SCH2UFN256R	F03FR03722
12	42	90	12	30	H05MG	2	30000	SCH2UFN260R	F03FR03723
12	52	100	12	30	H05MG	2	30000	SCH2UFN264R	F03FR03724
14	52	100	14	30	H05MG	2	25000	SCH2UFN276R	F03FR03727
16	52	100	16	30	H05MG	2	25000	SCH2UFN280R	F03FR03728
18	52	110	18	30	H05MG	2	25000	SCH2UFN284R	F03FR03729
20	52	120	20	30	H05MG	2	25000	SCH2UFN288R	F03FR03730
20	72	140	20	30	H05MG	2	25000	SCH2UFN292R	F03FR03731

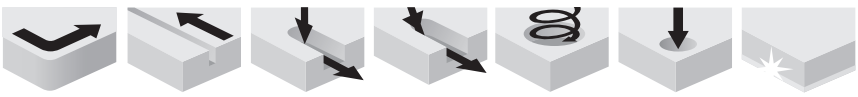
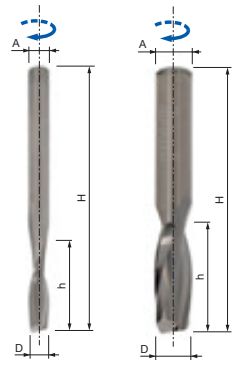
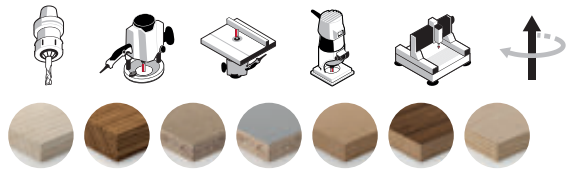
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
1/8	1/2	2	1/4	20	MG10	2	30000	SCH2UFN125R	F03FR03699
3/16	3/4	2	1/4	20	MG10	2	30000	SCH2UFN130R	F03FR03700

D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
3/8	1-1/8	3	3/8	30	H05MG	2	30000	SCH2UFN236R	F03FR03717
3/8	1-1/4	3	1/2	30	H05MG	2	30000	SCH2UFN165R	F03FR03707
1/4	1	2-1/2	1/4	20	MG10	2	30000	SCH2UFN220R	F03FR03713
1/2	1-1/4	3	1/2	30	H05MG	2	30000	SCH2UFN268R	F03FR03725
1/2	2	4	1/2	30	H05MG	2	30000	SCH2UFN272R	F03FR03726

Working parameters for MDF/Chipboard

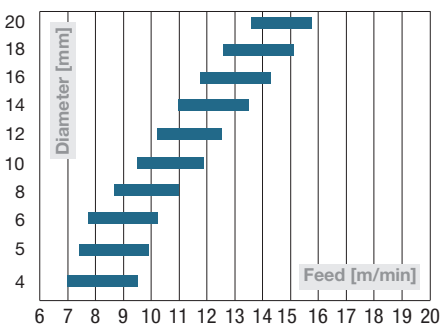


SCH2UFN Finishing router cutter upcut with right-hand Z2

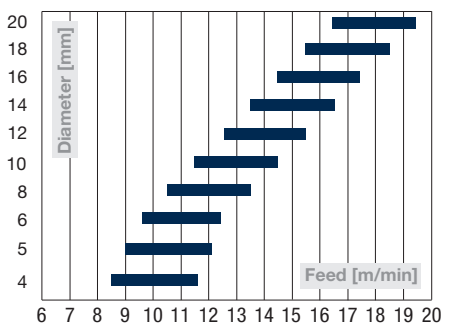


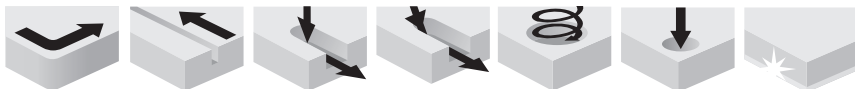
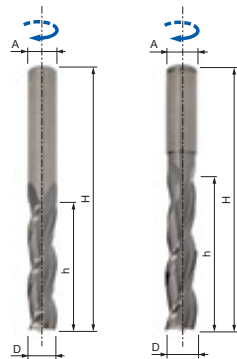
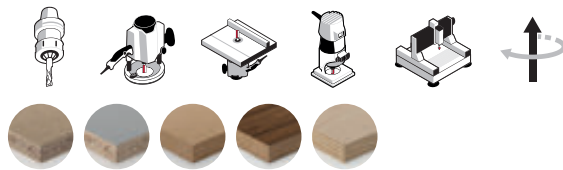
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
4	15	50	4	20	MG10	2	30000	SCH2UFN804R	F03FR04395
5	17	50	5	20	MG10	2	30000	SCH2UFN808R	F03FR04396
6	22	60	6	20	MG10	2	30000	SCH2UFN816R	F03FR04397
8	32	80	8	20	MG10	2	30000	SCH2UFN828R	F03FR04398
10	52	100	10	20	MG10	2	30000	SCH2UFN848R	F03FR04399
12	52	110	12	20	MG10	2	30000	SCH2UFN864R	F03FR04400
14	52	110	14	20	MG10	2	25000	SCH2UFN876R	F03FR04401
16	52	120	16	20	MG10	2	25000	SCH2UFN880R	F03FR04402
18	52	120	18	20	MG10	2	25000	SCH2UFN884R	F03FR04403
20	52	140	20	20	MG10	2	25000	SCH2UFN888R	F03FR04404
20	72	160	20	20	MG10	2	25000	SCH2UFN892R	F03FR04405

Working parameters for Hardwood



Working parameters for MDF/Chipboard

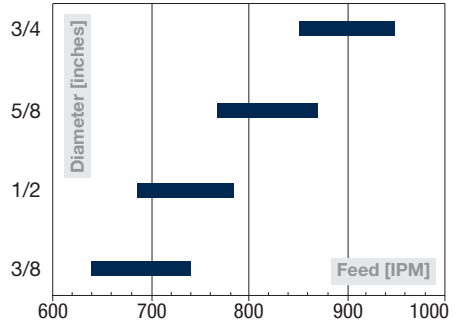
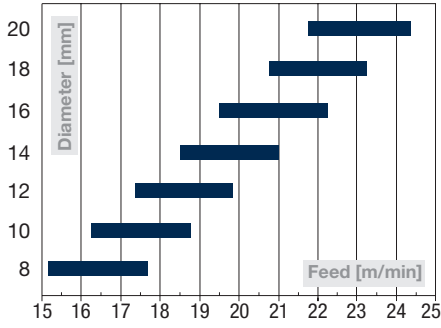


SCH3UFN**Finishing router cutter upcut with right-hand Z3**

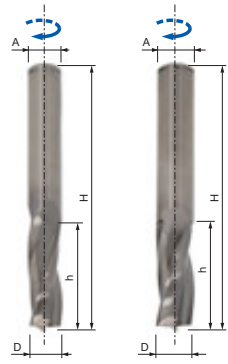
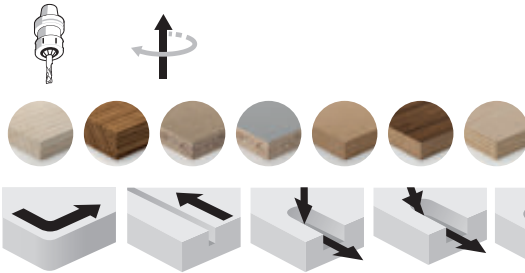
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
8	22	70	8	30	MG10	3	30000	SCH3UFN208R	F03FR03807
8	32	80	8	30	MG10	3	30000	SCH3UFN212R	F03FR03808
10	32	80	10	30	H05MG	3	30000	SCH3UFN220R	F03FR03810
10	42	90	10	30	H05MG	3	30000	SCH3UFN224R	F03FR03811
10	52	100	10	30	H05MG	3	30000	SCH3UFN228R	F03FR03812
12	32	80	12	30	H05MG	3	30000	SCH3UFN232R	F03FR03813
12	42	90	12	30	H05MG	3	30000	SCH3UFN236R	F03FR03814
12	52	100	12	30	H05MG	3	30000	SCH3UFN240R	F03FR03815
14	45	150	14	30	H05MG	3	25000	SCH3UFN102R	F03FR03803
14	42	90	14	30	H05MG	3	25000	SCH3UFN248R	F03FR03817
14	52	100	14	30	H05MG	3	25000	SCH3UFN252R	F03FR03818
16	45	150	16	30	H05MG	3	25000	SCH3UFN104R	F03FR03804
16	42	100	16	30	H05MG	3	25000	SCH3UFN256R	F03FR03819
16	52	100	16	30	H05MG	3	25000	SCH3UFN260R	F03FR03820
16	62	120	16	30	H05MG	3	25000	SCH3UFN264R	F03FR03821
18	45	150	18	30	H05MG	3	25000	SCH3UFN106R	F03FR03805
18	52	110	18	30	H05MG	3	25000	SCH3UFN268R	F03FR03822
18	72	130	18	30	H05MG	3	25000	SCH3UFN272R	F03FR03823
20	52	110	20	30	H05MG	3	25000	SCH3UFN276R	F03FR03824
20	72	140	20	30	H05MG	3	25000	SCH3UFN280R	F03FR03825
20	92	170	20	30	H05MG	3	25000	SCH3UFN284R	F03FR03826

D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
1/4	3/4	2-1/2	1/4	20	MG10	3	30000	SCH3UFN204R	F03FR03806
3/8	1-1/8	3	3/8	30	H05MG	3	30000	SCH3UFN216R	F03FR03809
1/2	2	4	1/2	30	H05MG	3	30000	SCH3UFN244R	F03FR03816

Working parameters for MDF/Chipboard

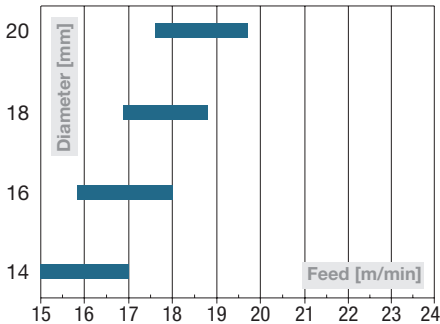


SCH3UFN Finishing router cutter upcut with right-hand Z3

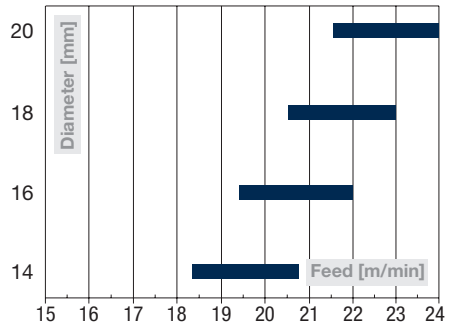


D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
14	42	14	110	20	MG10	3	25000	SCH3UFN848R	F03FR04412
16	42	16	110	20	MG10	3	25000	SCH3UFN856R	F03FR04413
16	52	16	120	20	MG10	3	25000	SCH3UFN860R	F03FR04414
18	52	18	130	20	MG10	3	25000	SCH3UFN868R	F03FR04415
20	52	20	140	20	MG10	3	25000	SCH3UFN876R	F03FR04416
20	72	20	160	20	MG10	3	25000	SCH3UFN880R	F03FR04417

Working parameters for Hardwood

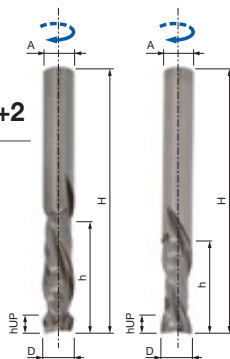
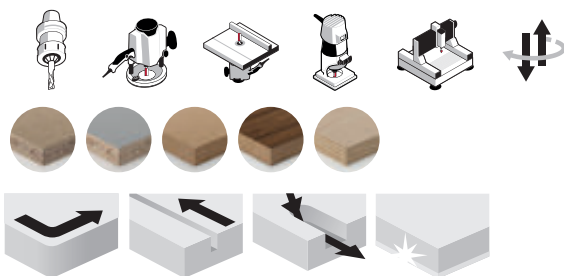


Working parameters for MDF/Chipboard



SCH2XFN

Finishing router cutter compression with right-hand Z2+2

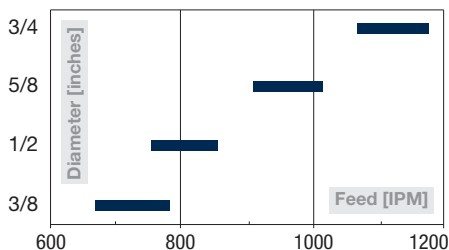
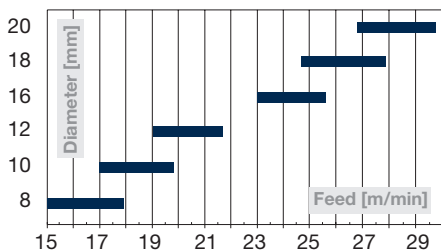


FINISHING
COMPRESSION

D	h	hUP	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm	mm				1/min.		
8	22	5	70	8	±30	MG10	2+2	30000	SCH2XFN310R	F03FR03732
8	32	10	70	8	±30	MG10	2+2	30000	SCH2XFN410R	F03FR03741
10	26	5	70	10	±30	H05MG	2+2	30000	SCH2XFN340R	F03FR03735
10	32	5	80	10	±30	H05MG	2+2	30000	SCH2XFN350R	F03FR03736
10	29	10	80	10	±30	H05MG	2+2	30000	SCH2XFN420R	F03FR03743
12	32	5	90	12	±30	H05MG	2+2	30000	SCH2XFN360R	F03FR03737
12	42	5	100	12	±30	H05MG	2+2	30000	SCH2XFN370R	F03FR03738
12	32	12	80	12	±30	H05MG	2+2	30000	SCH2XFN425R	F03FR03744
12	42	12	100	12	±30	H05MG	2+2	30000	SCH2XFN430R	F03FR03745
16	35	14	90	16	±30	H05MG	2+2	25000	SCH2XFN444R	F03FR04012
18	55	24	110	18	±30	H05MG	2+2	25000	SCH2XFN450R	F03FR03749
20	55	30	120	20	±30	H05MG	2+2	25000	SCH2XFN455R	F03FR03750

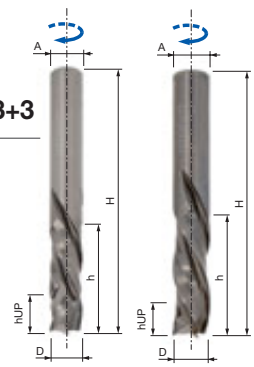
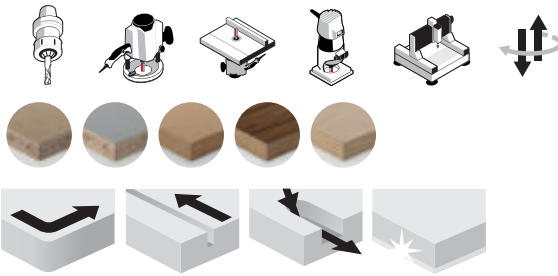
D	h	hUP	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch	inch				1/min.		
3/8	1	3/16	3	3/8	±30	H05MG	2+2	30000	SCH2XFN320R	F03FR03733
3/8	1-1/8	3/8	3	3/8	±30	H05MG	2+2	30000	SCH2XFN415R	F03FR03742
3/8	1-1/4	3/16	3	3/8	±30	H05MG	2+2	30000	SCH2XFN330R	F03FR03734
1/2	1	3/16	3	1/2	±30	H05MG	2+2	30000	SCH2XFN380R	F03FR03739
1/2	1-1/2	3/16	3-1/2	1/2	±30	H05MG	2+2	30000	SCH2XFN390R	F03FR03740
1/2	1	9/16	3	1/2	±30	H05MG	2+2	30000	SCH2XFN435R	F03FR03746
1/2	1-1/2	9/16	3-1/2	1/2	±30	H05MG	2+2	30000	SCH2XFN440R	F03FR03747

Working parameters for MDF/Chipboard



SCH3XFN

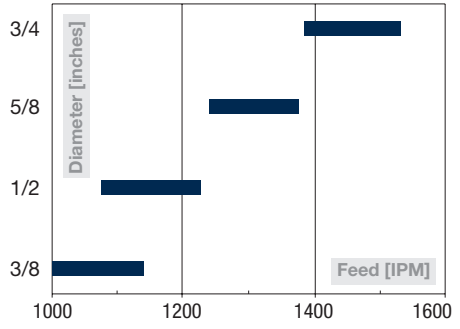
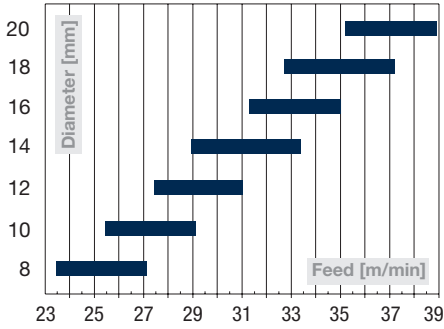
Finishing router cutter compression with right-hand Z3+3



D	h	hUP	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm	mm				1/min.		
8	22	5	70	8	±30	MG10	3+3	30000	SCH3XFN310R	F03FR03856
8	32	10	70	8	±30	MG10	3+3	30000	SCH3XFN410R	F03FR03866
10	26	5	70	10	±30	H05MG	3+3	30000	SCH3XFN340R	F03FR04013
10	32	10	80	10	±30	H05MG	3+3	30000	SCH3XFN350R	F03FR03860
10	29	5	80	10	±30	H05MG	3+3	30000	SCH3XFN420R	F03FR04014
10	42	13	90	10	±30	H05MG	3+3	30000	SCH3XFN422R	F03FR03869
12	22	5	80	12	±30	H05MG	3+3	30000	SCH3XFN355R	F03FR03861
12	32	5	90	12	±30	H05MG	3+3	30000	SCH3XFN360R	F03FR03862
12	42	5	100	12	±30	H05MG	3+3	30000	SCH3XFN370R	F03FR03863
12	32	12	80	12	±30	H05MG	3+3	30000	SCH3XFN425R	F03FR03870
12	42	14	100	12	±30	H05MG	3+3	30000	SCH3XFN430R	F03FR03871
12	52	16	100	12	±30	H05MG	3+3	30000	SCH3XFN432R	F03FR03872

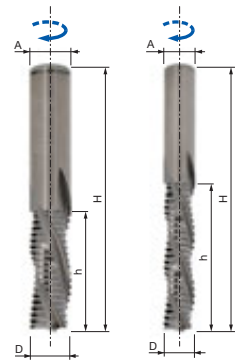
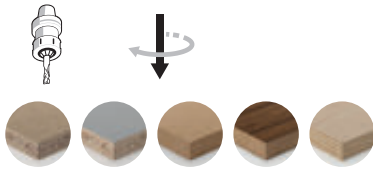
D	h	hUP	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch	inch				1/min.		
3/8	1	3/16	3	3/8	±30	H05MG	3+3	30000	SCH3XFN320R	F03FR03857
3/8	1-1/4	3/8	3	3/8	±30	H05MG	3+3	30000	SCH3XFN330R	F03FR03858
3/8	1-1/8	3/16	3	3/8	±30	H05MG	3+3	30000	SCH3XFN415R	F03FR03867
1/2	1	3/16	3	1/2	±30	H05MG	3+3	30000	SCH3XFN380R	F03FR03864
1/2	1-1/2	1/2	3-1/2	1/2	±30	H05MG	3+3	30000	SCH3XFN390R	F03FR03865
1/2	1-1/8	3/16	3	1/2	±30	H05MG	3+3	30000	SCH3XFN436R	F03FR03873
1/2	1-5/8	3/4	3-1/2	1/2	±30	H05MG	3+3	30000	SCH3XFN438R	F03FR03874
1/2	2-1/4	3/4	4	1/2	±30	H05MG	3+3	30000	SCH3XFN442R	F03FR03875

Working parameters for MDF/Chipboard



SCH3DRN

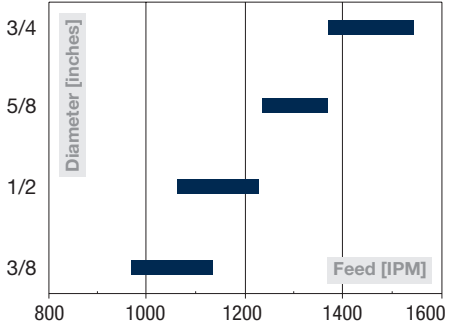
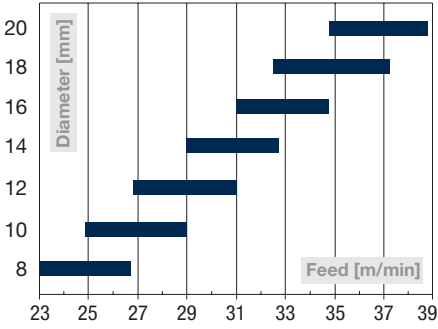
Roughing router cutter downcut with right-hand Z3



D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
8	22	70	8	-30	MG10	3	30000	SCH3DRN504R	F03FR03778
8	32	80	8	-30	MG10	3	30000	SCH3DRN506R	F03FR03779
8	42	90	8	-30	MG10	3	30000	SCH3DRN508R	F03FR03780
10	32	80	10	-30	H05MG	3	30000	SCH3DRN512R	F03FR03782
10	42	90	10	-30	H05MG	3	30000	SCH3DRN514R	F03FR03783
10	52	100	10	-30	H05MG	3	30000	SCH3DRN516R	F03FR03784
12	32	80	12	-30	H05MG	3	30000	SCH3DRN518R	F03FR03785
12	42	90	12	-30	H05MG	3	30000	SCH3DRN520R	F03FR03786
12	52	100	12	-30	H05MG	3	30000	SCH3DRN522R	F03FR03787
14	42	90	14	-30	H05MG	3	25000	SCH3DRN528R	F03FR03790
14	52	100	14	-30	H05MG	3	25000	SCH3DRN530R	F03FR03791
16	42	100	16	-30	H05MG	3	25000	SCH3DRN534R	F03FR03793
16	52	110	16	-30	H05MG	3	25000	SCH3DRN536R	F03FR03794
16	62	120	16	-30	H05MG	3	25000	SCH3DRN538R	F03FR03795
18	52	110	18	-30	H05MG	3	25000	SCH3DRN540R	F03FR03796
18	72	130	18	-30	H05MG	3	25000	SCH3DRN542R	F03FR03797
20	52	120	20	-30	H05MG	3	25000	SCH3DRN546R	F03FR03799
20	72	140	20	-30	H05MG	3	25000	SCH3DRN548R	F03FR03800
20	85	150	20	-30	H05MG	3	25000	SCH3DRN550R	F03FR03801
20	102	170	20	-30	H05MG	3	25000	SCH3DRN552R	F03FR03802

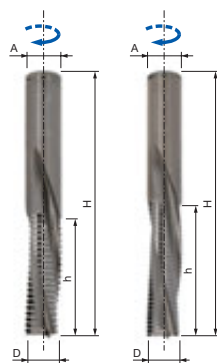
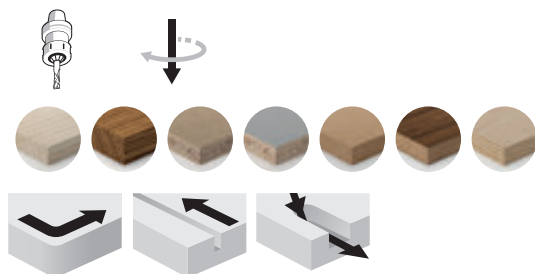
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
3/8	1-1/8	3-1/2	3/8	-30	H05MG	3	30000	SCH3DRN510R	F03FR03781
1/2	1-1/8	3-1/2	1/2	-30	H05MG	3	30000	SCH3DRN524R	F03FR03788
1/2	1-5/8	4	1/2	-30	H05MG	3	30000	SCH3DRN526R	F03FR03789
5/8	2-1/8	5	5/8	-30	H05MG	3	25000	SCH3DRN532R	F03FR03792
3/4	2-1/8	5	3/4	-30	H05MG	3	25000	SCH3DRN544R	F03FR03798

Working parameters for MDF/Chipboard



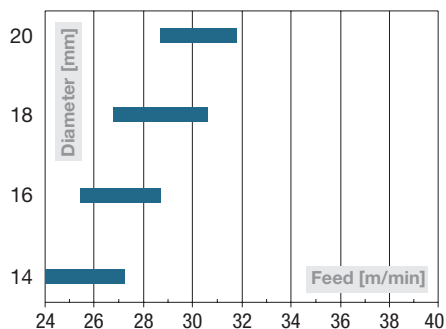
SCH3DRN

Roughing router cutter downcut with right-hand Z3

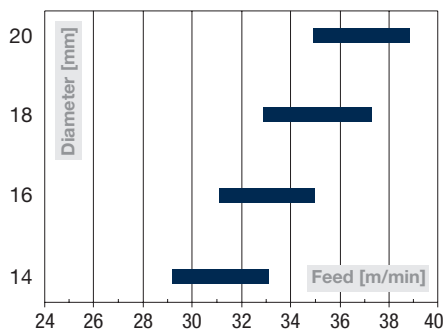


D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
14	42	14	100	-15	MG10	3	25000	SCH3DRN928R	F03FR04418
16	52	16	120	-15	MG10	3	25000	SCH3DRN936R	F03FR04419
16	62	16	130	-15	MG10	3	25000	SCH3DRN938R	F03FR04420
18	52	18	130	-15	MG10	3	25000	SCH3DRN940R	F03FR04421
20	52	20	140	-15	MG10	3	25000	SCH3DRN946R	F03FR04422
20	72	20	150	-15	MG10	3	25000	SCH3DRN948R	F03FR04423

Working parameters for Hardwood

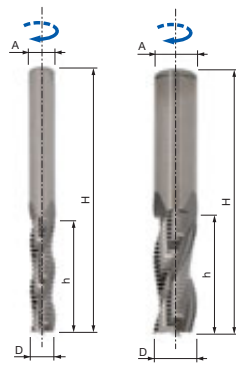
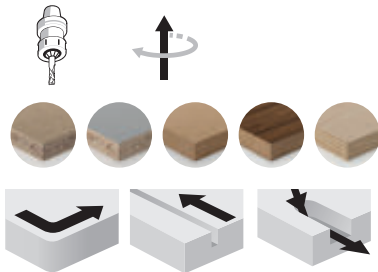


Working parameters for MDF/Chipboard



SCH3URN

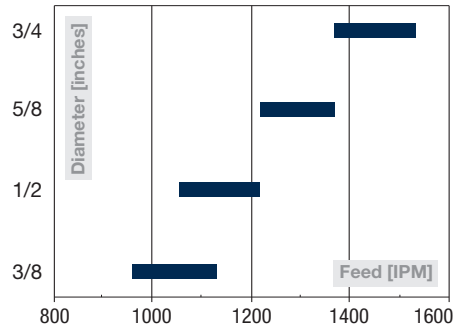
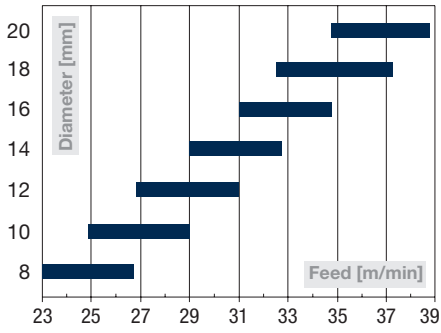
Roughing router cutter upcut with right-hand Z3



D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
8	22	70	8	30	MG10	3	30000	SCH3URN504R	F03FR03830
8	32	80	8	30	MG10	3	30000	SCH3URN506R	F03FR03831
8	42	90	8	30	MG10	3	30000	SCH3URN508R	F03FR03832
10	32	80	10	30	H05MG	3	30000	SCH3URN512R	F03FR03834
10	42	90	10	30	H05MG	3	30000	SCH3URN514R	F03FR03835
10	52	100	10	30	H05MG	3	30000	SCH3URN516R	F03FR03836
12	32	80	12	30	H05MG	3	30000	SCH3URN518R	F03FR03837
12	42	90	12	30	H05MG	3	30000	SCH3URN520R	F03FR03838
12	52	100	12	30	H05MG	3	30000	SCH3URN522R	F03FR03839
14	42	90	14	30	H05MG	3	25000	SCH3URN528R	F03FR03842
14	52	100	14	30	H05MG	3	25000	SCH3URN530R	F03FR03843
14	60	130	14	30	H05MG	3	25000	SCH3URN531R	F03FR03844
16	42	100	16	30	H05MG	3	25000	SCH3URN534R	F03FR03846
16	52	110	16	30	H05MG	3	25000	SCH3URN536R	F03FR03847
16	62	120	16	30	H05MG	3	25000	SCH3URN538R	F03FR03848
18	52	110	18	30	H05MG	3	25000	SCH3URN540R	F03FR03849
18	72	130	18	30	H05MG	3	25000	SCH3URN542R	F03FR03850
20	52	120	20	30	H05MG	3	25000	SCH3URN546R	F03FR03852
20	72	140	20	30	H05MG	3	25000	SCH3URN548R	F03FR03853
20	85	150	20	30	H05MG	3	25000	SCH3URN550R	F03FR03854
20	102	170	20	30	H05MG	3	25000	SCH3URN552R	F03FR03855

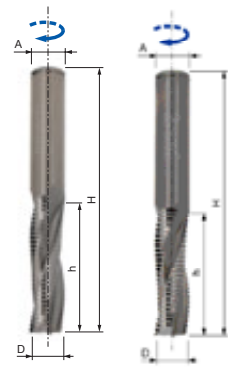
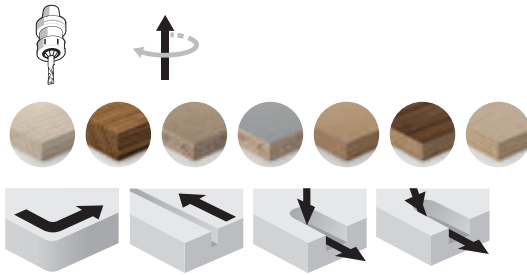
D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch						
3/8	1-1/8	3-1/2	3/8	30	H05MG	3	30000	SCH3URN510R	F03FR03833
1/2	1-1/8	3-1/2	1/2	30	H05MG	3	30000	SCH3URN524R	F03FR03840
1/2	1-5/8	4	1/2	30	H05MG	3	30000	SCH3URN526R	F03FR03841
5/8	2-1/8	5	5/8	30	H05MG	3	25000	SCH3URN532R	F03FR03845
3/4	2-1/8	5	3/4	30	H05MG	3	25000	SCH3URN544R	F03FR03851

Working parameters for MDF/Chipboard



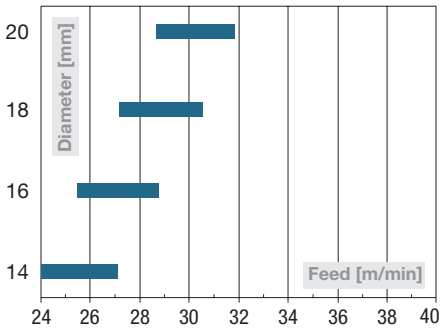
SCH3URN

Roughing router cutter upcut with right-hand Z3

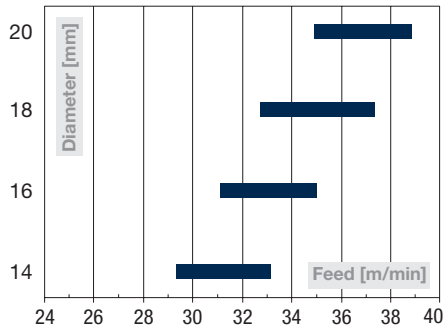


D	h	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm						
14	42	14	100	20	MG10	3	25000	SCH3URN928R	F03FR04424
16	52	16	120	20	MG10	3	25000	SCH3URN936R	F03FR04425
16	62	16	130	20	MG10	3	25000	SCH3URN938R	F03FR04426
18	52	18	130	20	MG10	3	25000	SCH3URN940R	F03FR04427
20	52	20	140	20	MG10	3	25000	SCH3URN946R	F03FR04428
20	72	20	150	20	MG10	3	25000	SCH3URN948R	F03FR04429

Working parameters for Hardwood



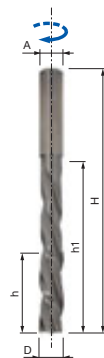
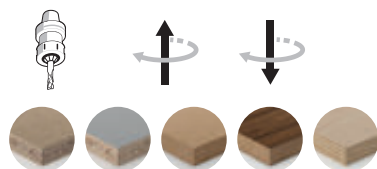
Working parameters for MDF/Chipboard



GROOVING

SCH3

Finishing hardware slot router cutter - right-hand Z3

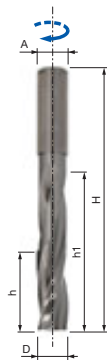
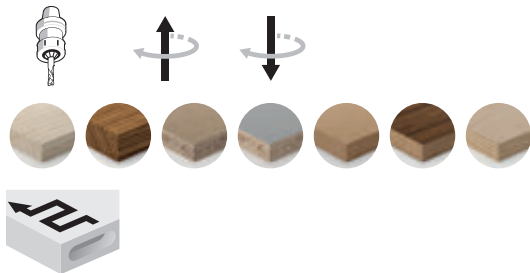


↕	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
	mm	mm	mm	mm	mm				1/min.		
	14	45	95	150	14	-30	H05MG	3	25000	SCH3DFN102R	F03FR03751
	16	45	95	150	16	-30	H05MG	3	25000	SCH3DFN104R	F03FR03752
	18	45	95	150	18	-30	H05MG	3	25000	SCH3DFN106R	F03FR03753

↕	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
	mm	mm	mm	mm	mm				1/min.		
	14	45	95	150	14	30	H05MG	3	25000	SCH3UFN102R	F03FR03803
	16	45	95	150	16	30	H05MG	3	25000	SCH3UFN104R	F03FR03804
	18	45	95	150	18	30	H05MG	3	25000	SCH3UFN106R	F03FR03805

SCH3

Finishing hardware slot router cutter - right-hand Z3

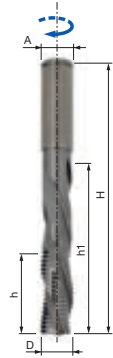
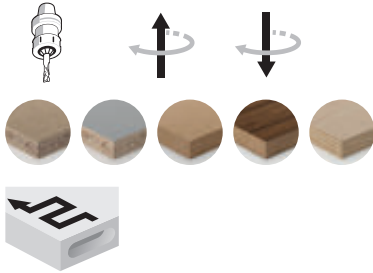


↑	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
	mm	mm	mm	mm	mm				1/min.		
	14	45	95	150	14	-15	MG10	3	25000	SCH3DFN702R	F03FR04439
	16	45	95	150	16	-15	MG10	3	25000	SCH3DFN704R	F03FR04440
	18	45	95	150	18	-15	MG10	3	25000	SCH3DFN706R	F03FR04441

↓	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
	mm	mm	mm	mm	mm				1/min.		
	14	45	95	150	14	20	MG10	3	25000	SCH3UFN702R	F03FR04436
	16	45	95	150	16	20	MG10	3	25000	SCH3UFN704R	F03FR04437
	18	45	95	150	18	20	MG10	3	25000	SCH3UFN706R	F03FR04438

SCH3

Roughing hardware slot router cutter - right-hand Z3



D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm	mm				1/min.		
14	45	95	150	14	-30	H05MG	3	25000	SCH3DMN102R	F03FR03775
16	45	95	150	16	-30	H05MG	3	25000	SCH3DMN104R	F03FR03776
18	45	95	150	18	-30	H05MG	3	25000	SCH3DMN106R	F03FR03777

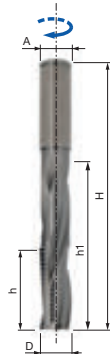
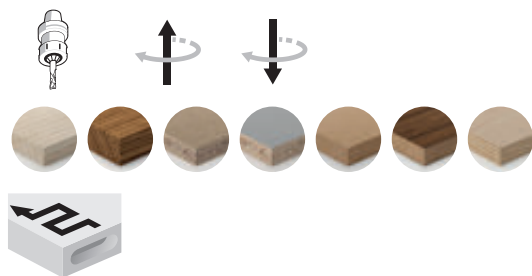


D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm	mm				1/min.		
14	45	95	150	14	30	H05MG	3	25000	SCH3UMN102R	F03FR03827
16	45	95	150	16	30	H05MG	3	25000	SCH3UMN104R	F03FR03828
18	45	95	150	18	30	H05MG	3	25000	SCH3UMN106R	F03FR03829

ROUGHING HARDWARE SLOT

SCH3

Roughing hardware slot router cutter - right-hand Z3



	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
↑	14	45	95	150	14	-15	MG10	3	25000	SCH3DMN702R	F03FR04430
	16	45	95	150	16	-15	MG10	3	25000	SCH3DMN704R	F03FR04431
	18	45	95	150	18	-15	MG10	3	25000	SCH3DMN706R	F03FR04432

	D	h	h1	H	A	Helix Angle	Quality of HW	Z	Max RPM	Freud Code	Art. No.
↓	14	45	95	150	14	20	MG10	3	25000	SCH3UMN702R	F03FR04433
	16	45	95	150	16	20	MG10	3	25000	SCH3UMN704R	F03FR04434
	18	45	95	150	18	20	MG10	3	25000	SCH3UMN706R	F03FR04435



FREUD RANGE FOR CNC MACHINES

To complete the offer for CNC routers and sizing machines of different sizes and main brands, Freud provides a range of accessories. This includes spoilboard surfacing cutters, Nickel coated chucks and high precision collets.



Spoilboard surfacing cutters

Freud NC12 Spoilboard Surfacing Cutters delivers impeccable results and superior finishing, leveraging the shear angle positioning of the knives.

Thanks to the tight body mechanical tolerances, tool dynamic balancing and extremely precise knives, the NC12 range ensures the highest cutting performance and vibration free cuts.



High precision chucks

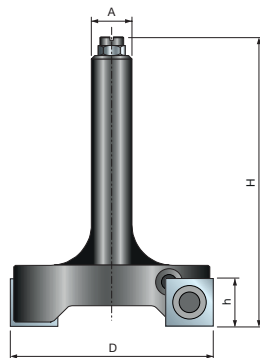
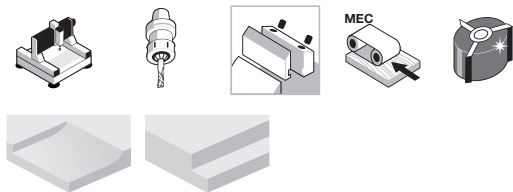
Freud new comprehensive range of chucks guarantees an extremely accurate balancing at maximum speed (G2.5 ISO 1940-1). This ensures durable clamping of the tools in the most demanding CNC routing applications.



High precision collets

Freud's offer includes high precision collets that contribute to the greatest performance of the CNC cutting tools. It is therefore important to regularly check and maintain them to guarantee maximum efficiency.

NC12M Spoilboard surfacing cutters



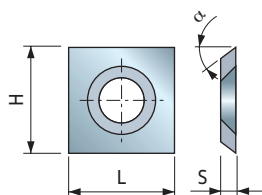
D	h	H	A	Z	Max RPM	Freud Code	Art. No.
mm	mm	mm	mm		1/min.		
60	13	80	12	2	-	NC12M60	F03FR03949
80	13	80	20	3	-	NC12M80	F03FR03884
100	13	80	20	3	-	NC12M100	F03FR03886
60	13	80	12	2	-	NC12M60N	F03FR03950
80	13	80	20	3	-	NC12M80N	F03FR03885
100	13	80	20	3	-	NC12M100N	F03FR03887

D	h	H	A	Quality of HW	Z	Max RPM	Freud Code	Art. No.
inch	inch	inch	inch			1/min.		
2-1/2	1/2	3	1/2		2	-	NC12M61	F03FR03951
4	1/2	3	3/4		3	-	NC12M101	F03FR03888
2-1/2	1/2	3	1/2		2	-	NC12M61N	F03FR03952
4	1/2	3	3/4		3	-	NC12M101N	F03FR03889

Spare parts		Dimensions	Freud Code	Art. No.
mm		mm		
	Spur	14 x 14 x 2	RG01MAI310	F03FH03791
	Screw	M5 x 8	VT05M AA9	F03FA04444
	Hex nut	M4	2606M CE9	F03FA07360
	Slotted cheese head screw	M4 x 10	2611M DB9	F03FA07386
	Torx key	T20	CB03M CC9	F03FA00167

Optional square disposable spur

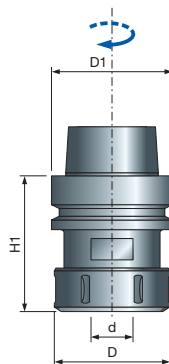
D	B	b	Type	Quality of HW	α	Freud Code	Art. No.
mm	mm	mm					
14	14	2	1	H00XA	31°	NC12M101N	F03FR03889



MP08M High precision chucks - HSK 63 E

Chucks for CNC overhead CNC machines with **HSK 63E** shank.

- G2,5 balancing for high speed applications.
- **ER32 RH** locking ring for item **MP08MDC AA9**.
- **ER40 RH** for **MP08MDC BA9**.
- Collet not included.

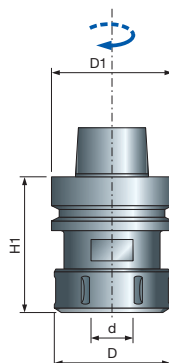


H1	D	d	D1	Freud Code	Art. No.
mm	mm	mm	mm		
73	50	4-20	63	MP08MDC AA9	F03FA19217
78	63	6-25	63	MP08MDC BA9	F03FA19218

MP10M High precision chucks - HSK 63 F

Chucks for CNC overhead CNC machines with **HSK 63F** shank.

- G2,5 balancing for high speed applications.
- **ER32 RH** locking ring for item **MP10MDC AA9**.
- **ER40 RH** for **MP10MDC BA9**.
- Collet not included.

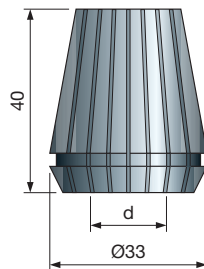


H1	D	d	D1	Freud Code	Art. No.
mm	mm	mm	mm		
73	50	4-20	63	MP10MDC AA9	F03FA19227
78	63	6-25	63	MP10MDC BA9	F03FA19228

MP06M

High precision collet for ER32 locking rings

Collet for router bits with cylindrical shank.
Suitable for **MP06MD**, **MP08MDC AA9** and **MP10MDC AA9** chucks.

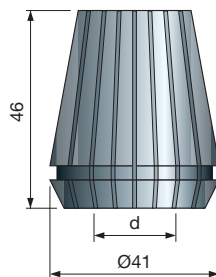


d	H	Clamping range	Freud Code	Art. No.
mm	mm			
6	46	6÷5	MP16M 069	F03FA01666
8	46	8÷7	MP16M 089	F03FA01667
10	46	10÷9	MP16M 109	F03FA01668
12	46	12÷11	MP16M 129	F03FA01669
14	46	14÷13	MP16M 149	F03FA01670
16	46	16÷15	MP16M 169	F03FA01671
18	46	18÷17	MP16M 189	F03FA01672
20	46	20÷19	MP16M 209	F03FA01673
25	46	25÷24	MP16M 259	F03FA01675

MP16M

High precision collet for ER40 locking rings

Collets for router bits with cylindrical shank.
Suitable for **MP08MDC BA9** and **MP10MDC BA9** chucks.

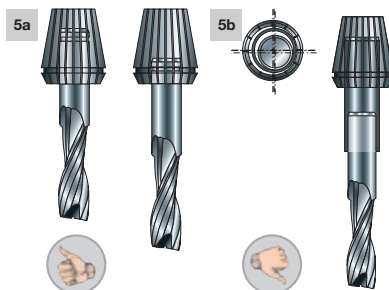
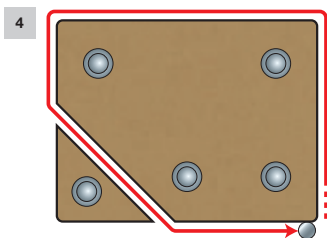
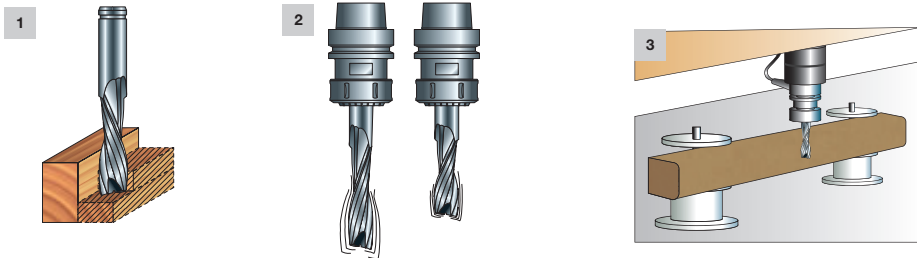


d	H	Clamping range	Freud Code	Art. No.
mm	mm			
4	40	4÷3	MP06M 049	F03FA01550
6	40	6÷5	MP06M 069	F03FA01551
8	40	8÷7	MP06M 089	F03FA01553
10	40	10÷9	MP06M 109	F03FA01554
12	40	12÷11	MP06M 129	F03FA01555
14	40	14÷13	MP06M 149	F03FA01557
16	40	16÷15	MP06M 169	F03FA01558
18	40	18÷17	MP06M 189	F03FA01559
20	40	20÷19	MP06M 209	F03FA01560

CORRECT USE AND SAFETY RULES

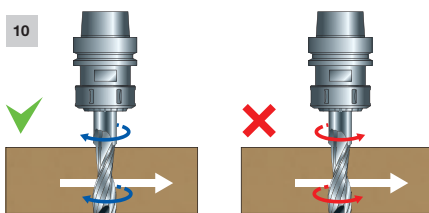
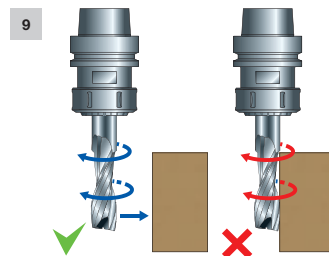
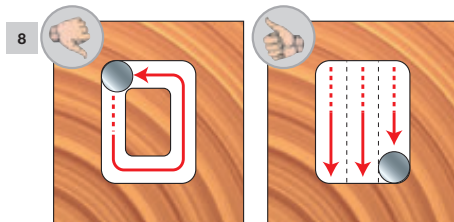
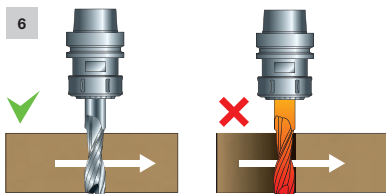
To reduce vibrations from the router bit, which can compromise the finish and cause damages to both the tool and the workpiece, it is necessary to respect the following conditions:

- For large removals, carry out more passes or proceed with a feedrate and RPM rate in proportion to the depth of cut (Fig. 1).
- A router bit with a shorter cutting height vibrates less than a router bit with the same diameter but with a longer cutting height (Fig. 2).
- Control your machine regularly (especially guides and ball bearings), making sure that there are no eccentricity problems, so as to avoid the arbor from vibrating hazardously.
- Accurately block the workpiece to the work table surface (Fig. 3).
- Make sure that the workpiece is properly fixed to a support with appropriate dimensions. Place the locking devices (as suckers) sufficiently far from the tool path (Fig. 4).
- Respect the minimum fixing length of the shank with a preference to short chucks, with the aim of reducing eccentricity errors (Fig. 5a). For the same reason the use of extensions are generally avoided (Fig. 5b).
- To identify eccentricity issues in a router bit or a chuck: make a milling on the workpiece, rotate the tool 90° on the chuck and repeat the operation. If the marks left on the wood are unvaried between the 2 processes then the tool is defective, if there's a difference the issue is probably on the chuck/collet.



CORRECT USE AND SAFETY RULES

- Do not exceed the maximum RPM limit marked on the tool. Higher RPM, extreme feedrate as well as an excessive cutting depth can cause the tool breakage (Fig. 6).
- To avoid damaging router bits, we suggest controlling if the fixing surface of the chuck and the router bit are clean and that there are no imperfections (Fig. 7).
- Always choose router bits with the appropriate dimensions for the kind of work to carry out.
- To avoid dangerous kick backs, we suggest fixing a spare piece of material and milling small parts of waste which have accumulated during the working process, by carrying out more passes (Fig. 8).
- Never start the router with the bit in contact with wood (Fig. 9).
- Always feed your work or router in the proper direction against the bit rotation (Fig. 10).



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