



# PRECISION CNC TOOLING





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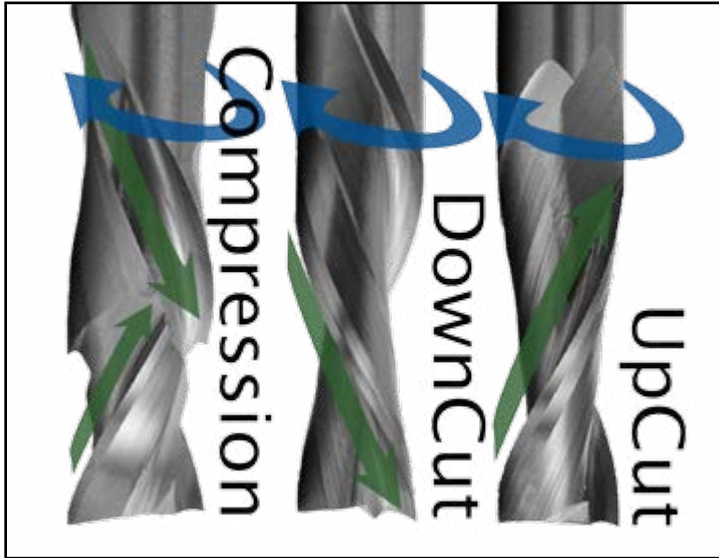
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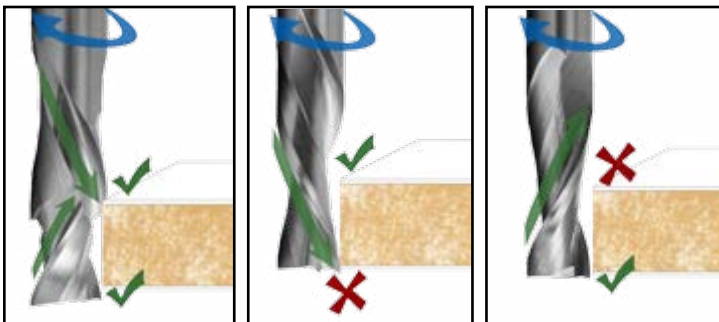
# Technical Information

## Chip flow Explanation

UpCut, DownCut, Compression. What are the pros and cons of each of these chip flow styles? See below for highlights of some of the key considerations that should be taken into account.



When selecting what style tool is best two factors must be considered. First, is chipping on the edge of the material a concern? If you are machining brittle laminate that needs to have a chip free edge the below illustrations must be followed. Second, are moving parts an issue while machining? Upcut tooling provides superior chip removal, which means longer life and faster feed rates; however, it will have the tendency to pull the parts towards the spindle when cutting which this can cause smaller or inadequately held parts to shift.



## Material Selection

What tool works well on what material? We know that selecting tools can be a daunting task. Our material selection system is designed to make this task less daunting.

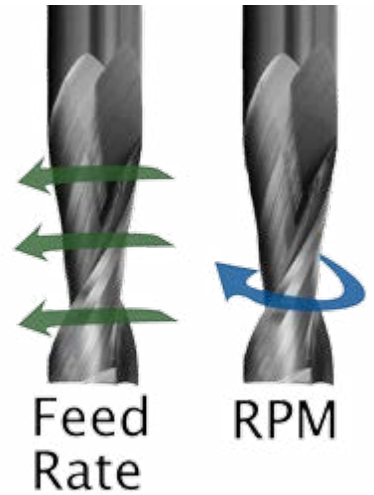
	Best	Good	Acceptable
Hardwoods	Hw	Hw	Hw
Softwoods	Sw	Sw	Sw
Particle Board	Pb	Pb	Pb
Fiberboard	Fb	Fb	Fb
Plywood	Pl	Pl	Pl
Hard Plastic	Hp	Hp	Hp
Soft Plastic	Sp	Sp	Sp
Fibre Re-enforced Plastic Composites	Rp	Rp	Rp
Aluminium	Al	Al	Al
Material with Laminate	Lm	Lm	Lm

# Chipload Chart

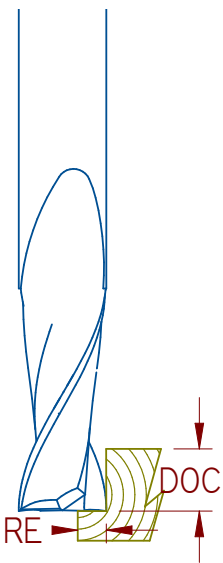
From a tool life standpoint you want to have as high of a feed rate as possible in relation to your RPM. In other words you want to produce as large of a chip load as possible. Having a larger chip will draw more heat away from the tool cutting edge which will provide longer tool life. Many factors exist that will limit your feed rate such as:

- Insufficient work holding (parts will start to move)
- Unsatisfactory finish quality or finish quality starts to deteriorate
- Tool breakage (tool cannot withstand the chipload)
- Machine horsepower or feed rate limitations
- Rigidity of tool holder, machine or part being cut

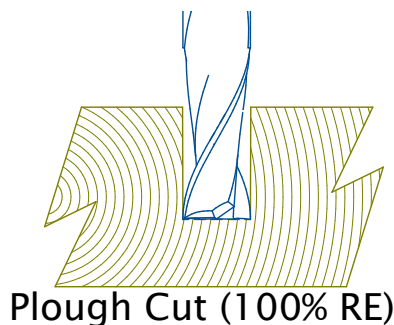
The chart below gives some conservative starting ranges of chiploads. Use the lower values for tools with simple geometry such as straight carbide tipped tools, down cut tools or profiled tools with a flat cutting face. The higher end of the range can be used for tools that cut more freely such as O-flutes or roughing tools with serrated cutting edges. The optimum feed rate is found by slowly increasing the feed rate until parts move, cut quality depreciates or tools break. Then, reduce the feed rate by about 10% from that point.



Diameter	Hard Wood	Soft Wood	Hard Plastic	Soft Plastic	Fiber-Board (MDF)	Particle Board	Plywood	Aluminum	Fiber reinforced plastics
1/16" (2mm)	.001"-.003"	.002"-.004"	.002"-.004"	.002"-.004"	.003"-.005"	.003"-.005"	.002"-.004"	.002"-.004"	
1/8" (3mm)	.001"-.005"	.003"-.007"	.002"-.004"	.003"-.005"	.004"-.007"	.004"-.007"	.003"-.005"	.002"-.004"	.002"-.004"
3/16" (5mm)	.002"-.006"	.003"-.009"	.004"-.007"	.005"-.008"	.004"-.009"	.005"-.010"	.005"-.008"	.002"-.004"	.004"-.007"
1/4" (6mm)	.004"-.008"	.005"-.011"	.004"-.008"	.005"-.008"	.006"-.012"	.006"-.012"	.005"-.008"	.003"-.006"	.004"-.008"
3/8" (9mm)	.005"-.012"	.007"-.014"	.005"-.010"	.006"-.010"	.008"-.016"	.010"-.020"	.006"-.010"	.006"-.008"	.005"-.010"
1/2" (13mm)	.007"-.014"	.009"-.016"	.007"-.012"	.008"-.012"	.010"-.018"	.014"-.024"	.008"-.012"	.007"-.012"	.005"-.012"
9/16" (14mm)	.007"-.014"	.009"-.018"	.007"-.012"	.008"-.012"	.010"-.018"	.014"-.024"	.008"-.012"	.007"-.012"	.006"-.012"
5/8" (16mm)	.008"-.018"	.010"-.020"	.008"-.015"	.010"-.015"	.012"-.020"	.016"-.028"	.010"-.015"	.010"-.016"	.006"-.015"
3/4" (19mm)	.010"-.020"	.012"-.022"	.012"-.016"	.012"-.016"	.012"-.022"	.016"-.028"	.012"-.016"	.010"-.016"	.008"-.016"
7/8" (22mm)	.012"-.022"	.014"-.024"	.012"-.016"	.012"-.016"	.014"-.024"	.016"-.028"	.012"-.016"	.012"-.020"	.008"-.016"
1" (25mm)	.012"-.022"	.014"-.024"	.012"-.016"	.012"-.016"	.014"-.024"	.016"-.028"	.012"-.016"	.012"-.020"	.008"-.016"



**NOTE:** The above values are for a depth of cut (DOC) that does not exceed the tool diameter, and a radial engagement (RE) of 100%. If the DOC is 2 times the diameter, reduce chipload by 25%. Full coolant or a coolant mist is recommended when routing aluminum.



## Calculations

$$\text{RPM} = (3.82 \times \text{SFM}) / \text{diameter(in)}$$

$$\text{SFM} = 3.14 \times \text{diameter(in)} \times (\text{RPM} / 12)$$

$$\text{feed rate (IPM)} = \text{chipload(in)} \times \# \text{ wings} \times \text{RPM}$$

$$\text{chipload (in)} = \text{feed rate (IPM)} / (\text{RPM} \times \# \text{ wings})$$

$$\text{feed rate (mm/Min)} = \text{chip-load(mm)} \times \# \text{ wings} \times \text{RPM}$$

$$\text{chipload (mm/min)} = \text{feed rate(mm/m)} / (\text{RPM} \times \# \text{ wings})$$

## High Speed Dor-Bits



Drill designed to machine guide holes for hardware in metal clad door manufacturing.

PART#	TiN Coated	DIA	CE	SHK	OAL
ON1557	ON1557-T	1/2	2-1/2	1/2	5-1/2
ON1560	ON1560-T	1/2	2-1/2	1/2	5-1/2



**Hw Sw Fb Pl Hp Sp**

See Material Guide p4

Good for carving and/or engraving in most materials.

## 1 Flute Veining Bit

PART #	DIA	CEL	SHK	OAL
R16-52710	1/16	1/4	1/4	1-1/2
<i>R16-52711</i>	3/32	1/4	1/4	1-1/2
R16-52712	1/8	1/4	1/4	1-1/2



**Hw Sw Fb Pl Hp Sp**

See Material Guide p4

Good for carving and/or engraving in most materials.

## 2 Flute Straight Flute "V" Bottom

PART #	DIA	CEL	SHK	OAL
R37-51301	3/16	5/8	1/4	2
R37-51302	1/4	3/4	1/4	2
R37-51303	3/8	3/4	3/8	2-1/2



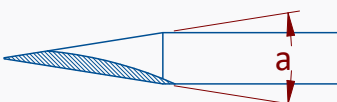
**Hw Sw Fb Pl Hp Sp**

See Material Guide p4

Good for carving and/or engraving in most materials.

## 1 Flute Angle Bit

PART #	DIA	CEL	SHK	a	OAL
R76-10026	1/4	3/4	1/4	18°	2-1/2
R76-10034	1/2	.925"	1/2	30°	3
R76-10048	1/2	.600"	1/2	45°	3



## 2 Flute Ballnose Slow Helix

PART #	DIA	CEL	SHK	OAL
R38-51351	1/8	3/8	1/4	2
<i>R38-51352</i>	3/16	5/8	1/4	2
R38-51353	1/4	3/4	1/4	2
R38-51354	3/8	3/4	3/8	2-1/4



**Hw Sw Fb PI Hp Sp**

See Material Guide p4

Good for carving, and or engraving in most materials.

## 2 Flute Upcut (Aluminum & Hard Plastics)

PART #	DIA	CEL	SHK	OAL
R52-02401	1/8	1/2	1/4	2
<i>R52-02402</i>	5/32	9/16	1/4	2
R52-02403	3/16	5/8	1/4	2
<i>R52-02404*</i>	3/16	5/8	1/4	2
<i>R52-02405</i>	7/32	5/8	1/4	2-1/2
R52-02406	1/4	3/4	1/4	2-1/2
R52-02407*	1/4	3/4	1/4	2-1/2
<i>R52-02408</i>	9/32	3/4	3/8	2-1/2
R52-12409	5/16	13/16	3/8	2-1/2
R52-12410	3/8	7/8	3/8	2-1/2
<i>R52-12411</i>	7/16	1	1/2	3
R52-12412	1/2	1	1/2	3



**Hp Al Fb Sp**

See Material Guide p4

Excellent for routing in hard plastics and aluminum.

\* Left hand rotation



## 2 Flute Upcut Spiral



General purpose router for solid wood, wood composites and some plastics. Upcut spiral gives good chip evacuation.

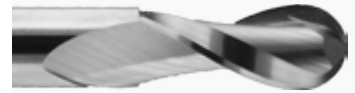


Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.

PART #	Ultimax #	DIA	CEL	SHK	OAL
R52-22800		1/8	3/4	1/4	2
R52-22801		1/8	1/2	1/4	2
<i>R52-22802*</i>		1/8	1/2	1/4	2
<i>R52-22803</i>		5/32	1/2	1/4	2-1/2
R52-22804		5/32	5/8	1/4	2
R52-22893		3/16	3/4	3/16	2
R52-22843		3/16	3/4	1/4	2
<i>R52-22806*</i>		3/16	3/4	1/4	2
R52-22807		3/16	3/4	1/4	2-1/2
<i>R52-22808</i>		7/32	3/4	1/4	2-1/2
<i>R52-22809</i>		7/32	1	1/4	2-1/2
R52-22810		1/4	7/8	1/4	2-1/2
R52-22812		1/4	1	1/4	2-1/2
R52-22813*		1/4	1	1/4	2-1/2
R52-22814		1/4	1-1/8	1/4	3
<i>R52-22815</i>		9/32	1	5/16	2-1/2
<i>R52-32816</i>		5/16	1-1/8	5/16	3
<i>R52-32817</i>		5/16	1-1/4	5/16	3
R52-32818		5/16	1-1/8	1/2	3
R52-32819*		5/16	1-1/8	1/2	3
R52-32820	R52-32820UM	3/8	1	3/8	3
R52-32821		3/8	1-1/8	3/8	3
R52-32823	R52-32823UM	3/8	1-1/4	3/8	3
<i>R52-32824*</i>		3/8	1-1/4	3/8	3
<i>R52-32826</i>		7/16	1	1/2	3
R52-32827		1/2	1-1/8	1/2	3
R52-32829	R52-32829UM	1/2	1-1/4	1/2	3-1/2
R52-32830		1/2	1-5/8	1/2	3-1/2
R52-32831*		1/2	1-5/8	1/2	3-1/2
R52-32832	R52-32832UM	1/2	2-1/2	1/2	5
R52-32833		1/2	2-1/8	1/2	4
<i>R52-32834</i>		17/32	1-1/8	1/2	3
<i>R52-32835</i>		5/8	1-5/8	5/8	3-1/2
R52-32836		5/8	2-1/8	5/8	4
<i>R52-32837*</i>		5/8	2-1/8	5/8	4
R52-32838		3/4	1-5/8	3/4	4
R52-32839		3/4	2-1/8	3/4	4
<i>R52-32840*</i>		3/4	2-1/8	3/4	4
<i>R52-32841</i>		1	3	1	5

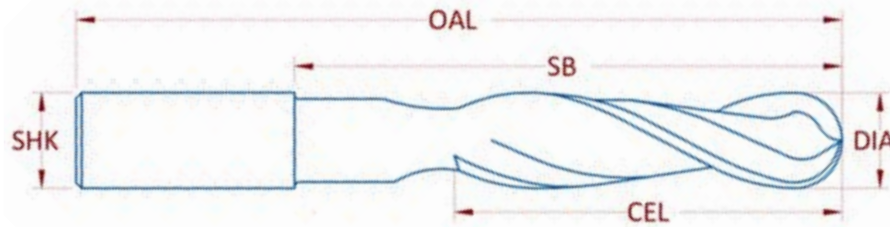
\* Left hand rotation

# 2 Flute Upcut Ballnose



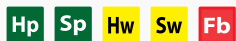
General purpose for solid wood and wood composites. Upcut spiral gives good chip evacuation. Ball nose design for carving applications.

PART #	DIA	CEL	SHK	SB	OAL
R52-23401	1/8	3/4	1/4	N/A	2-1/2
R52-23400	1/8	1/2	1/4	1-5/8	3
<i>R52-23402</i>	1/8	1/2	1/4	N/A	2-1/2
R52-23403	3/16	3/4	1/4	N/A	2-1/2
R52-23404	3/16	3/4	1/4	N/A	3
R52-23405	1/4	7/8	1/4	N/A	2-1/2
R52-23406	1/4	1	1/4	N/A	4
R52-33407	3/8	1-1/8	3/8	N/A	3
R52-33408	3/8	1-1/4	3/8	N/A	4
R52-33409	1/2	1-1/8	1/2	N/A	4
R52-33411	1/2	1-1/2	1/2	N/A	5
R52-33413	5/8	2-1/2	5/8	N/A	5
R52-33417	3/4	3-1/2	3/4	4-1/4	6





## 2 Flute "O" Flute Upcut Spiral



See Material Guide p4

Excellent for routing both soft and hard plastics.

PART #	Ultimax #	DIA	CEL	SHK	OAL
R52-62601		1/4	3/8	1/4	2-1/2
R52-62602		1/4	3/4	1/4	2-1/2
R52-62606		1/4	1-1/4	1/4	3
R52-62603		3/8	1	3/8	3
R52-62609		3/8	1-5/8	3/8	3-1/2
R52-62604		1/2	1-1/8	1/2	3-1/2
R52-62605	R52-62605UM	1/2	1-3/4	1/2	4
R52-62612		1/2	2-1/8	1/2	4-1/2
R52-62616		5/8	2-5/8	5/8	5



## 2 Flute Low Helix Upcut (Pocketing)



See Material Guide p4

For routing plastics and composites as well as finish passes on solid wood. Excellent for pocketing applications in MDF door manufacturing. Radius corners provide smooth bottom finish.

PART#	DIA	CEL	SHK	OAL	Radius
R52-74004	1/8	1/4	1/4	2	.010
R52-74008	1/8	1/2	1/4	2	.010
R52-74012	1/4	3/8	1/4	2	.010
R52-74020	1/4	7/8	1/4	2-1/2	.010
R52-74024	3/8	5/8	3/8	2-1/2	.020
R52-74028	3/8	1-1/8	3/8	3	.020
R52-74032	1/2	7/8	1/2	2-1/2	.030
R52-74036	1/2	1-1/8	1/2	3	.030
R52-74040	5/8	1-1/8	5/8	4	.040
R52-74044	3/4	1-1/8	3/4	4	.040



## 2 Flute Upcut High Impact



See Material Guide p4

General purpose router for solid wood, wood composites and some plastics. Upcut spiral gives good chip evacuation. Smaller flutes and thicker core create a stronger tool. Special endpoint for smooth bottom finish.

PART#	DIA	CEL	SHK	OAL
R52-92901	1/4	7/8	1/4	2-1/2
R52-92902	3/8	1-1/8	3/8	3
R52-92903	3/8	1-1/4	3/8	3
R52-92904	1/2	1-1/4	1/2	3

## 4 Flute Downcut Spiral



**Hp Rp Lm**

See Material Guide p4

Downcut spiral for hard plastics. 4 wings for smoother finish than conventional tools.

PART#	DIA	CEL	SHK	OAL
<i>R54-01101</i>	1/8	1/2	1/4	2
<i>R54-01102</i>	5/32	9/16	1/4	2
<i>R54-01103</i>	3/16	5/8	1/4	2
<b>R54-01104</b>	1/4	3/4	1/4	2-1/2

## 4 Flute Upcut Fiberglass Router



**Rp Hp**

See Material Guide p4

4 wing upcut router good for routing fiberglass.

PART #	DIA	CEL	SHK	OAL
<i>R55-31351</i>	3/8	5/8	3/8	3
<b>R55-31352</b>	3/8	1-1/8	3/8	3
<i>R55-31353</i>	1/2	5/8	1/2	3-1/2
<b>R55-31354</b>	1/2	1-1/8	1/2	3-1/2

## 2 Flute Straight General Purpose



**Hw Sw Fb Pl Hp**

See Material Guide p4

Suitable for routing solid wood, MDF and some plastics.

PART #	DIA	CEL	SHK	OAL
<b>R56-01801</b>	1/8	1/4	1/4	2
<b>R56-01802</b>	3/16	3/8	1/4	2
<i>R56-01803</i>	3/16	5/8	1/4	2
<i>R56-01804*</i>	3/16	5/8	1/4	2
<b>R56-01805</b>	3/16	5/8	1/4	4
<i>R56-01806</i>	1/4	3/8	1/4	2-1/2
<i>R56-01807</i>	1/4	3/4	1/4	2-1/2
<b>R56-01808*</b>	1/4	3/4	1/4	2-1/2
<b>R56-01809</b>	1/4	1-1/4	1/4	4
<i>R56-11810</i>	3/8	5/8	3/8	2-1/2
<i>R56-11811</i>	3/8	7/8	3/8	2-1/2
<i>R56-11812*</i>	3/8	7/8	3/8	2-1/2
<b>R56-11813</b>	3/8	1-5/8	3/8	6
<b>R56-11814</b>	1/2	1	1/2	3
<i>R56-11815*</i>	1/2	1	1/2	3
<i>R56-11816</i>	1/2	2-1/8	1/2	6

\* Indicates left hand rotation

## 2 Flute Straight Wood & Plastic



**Hw** **Hp** **Pl** **Fb**

See Material Guide p4

General purpose, good for routing solid wood and hard plastic.

PART #	DIA	CEL	SHK	OAL
R56-21101	1/8	1/2	1/4	2
R56-21102	5/32	5/8	1/4	2
R56-21103	3/16	3/4	1/4	2
R56-21104	7/32	3/4	1/4	2-1/2
R56-21105	1/4	7/8	1/4	2-1/2
<i>R56-21106</i>	1/4	7/8	1/4	2-1/2
R56-21107	1/4	1	1/4	2-1/2
R56-21108	1/4	1-1/8	1/4	3
<i>R56-21109</i>	9/32	1	5/16	2-1/2
<i>R56-31110</i>	5/16	1-1/8	5/16	3
R56-31111	5/16	1-1/8	1/2	3
R56-31112	3/8	1-1/8	3/8	3
<i>R56-31114</i>	3/8	1-1/4	3/8	3
R56-31115	3/8	1-1/4	1/2	3
R56-31116	7/16	1	1/2	3
<i>R56-31117</i>	1/2	1-1/8	1/2	3
R56-31119	1/2	1-1/4	1/2	3-1/2
<i>R56-31120</i>	1/2	1-5/8	1/2	3-1/2
<i>R56-31122</i>	17/32	1-1/8	1/2	3
R56-31123	5/8	2-1/8	5/8	4
<i>R56-31124</i>	3/4	1-5/8	3/4	4



## 2 Flute "O" Style Straight Cut



**Sp Hp Hw Sw**

See Material Guide p4

Double wing O Flute designed for routing soft plastics.

PART #	DIA	CEL	SHK	OAL
<i>R56-61401</i>	1/8	5/16	1/4	2
<b>R56-61402</b>	1/8	1/2	1/4	2
<b>R56-61403</b>	1/8	5/8	1/4	4
<i>R56-61404</i>	3/16	3/8	1/4	2
<i>R56-61405</i>	3/16	5/8	1/4	2
<b>R56-61406</b>	3/16	1	1/4	4
<i>R56-61407</i>	1/4	3/8	1/4	2-1/2
<b>R56-61408</b>	1/4	1	1/4	2-1/2
<i>R56-61409*</i>	1/4	1	1/4	3-1/4
<i>R56-61410</i>	1/4	1	1/4	3-1/4
<b>R56-61411</b>	1/4	1-1/4	1/4	4
<i>R56-61412</i>	3/8	7/8	3/8	2-1/2
<b>R56-61413</b>	3/8	1	3/8	4
<i>R56-61414</i>	1/2	1	1/2	3
<b>R56-61415</b>	1/2	1	1/2	4
<i>R56-61416</i>	1/2	1-3/4	1/2	4
<i>R56-61417</i>	1/2	2-1/8	1/2	6

\* Indicates left hand rotation

## 2 Flute Downcut Hard Plastic & Aluminum



**Hp Al Lm**

See Material Guide p4

Good for routing hard plastics and aluminum. End mill finish for improved bottom finish in pocketing.

PART #	DIA	CEL	SHK	OAL
<b>R57-02401</b>	1/8	1/2	1/4	2
<b>R57-02402</b>	5/32	9/16	1/4	2
<b>R57-02403</b>	3/16	5/8	1/4	2
<i>R57-02404</i>	7/32	5/8	1/4	2-1/2
<b>R57-02405</b>	1/4	3/4	1/4	2-1/2
<i>R57-02406</i>	9/32	3/4	3/8	2-1/2
<i>R57-12407</i>	5/16	13/16	3/8	2-1/2
<i>R57-12408</i>	3/8	7/8	3/8	2-1/2
<i>R57-12409</i>	7/16	1	1/2	3
<i>R57-12410</i>	1/2	1	1/2	3

## 2 Flute Downcut Spiral



General purpose router for solid wood, wood composites and some plastics. Downcut design gives a clean edge when cutting a dado on laminated material.



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.

PART #	Ultimax #	DIA	CEL	SHK	OAL
R57-22003		1/16	1/4	1/8	2
R57-22201		1/8	1/2	1/4	2
R57-22202*		1/8	1/2	1/4	2
R57-22200		1/8	3/4	1/4	2-1/2
R57-22204		5/32	1/2	1/4	2-1/2
R57-22244		5/32	5/8	1/4	2
R57-22206		3/16	3/4	3/16	2
R57-22207		3/16	3/4	1/4	2
<i>R57-22208*</i>		3/16	3/4	1/4	2
R57-22209		3/16	3/4	1/4	2-1/2
<i>R57-22210</i>		7/32	3/4	1/4	2-1/2
R57-22211		7/32	1	1/4	2-1/2
R57-22212		1/4	13/16	1/4	2-1/2
R57-22214		1/4	1	1/4	2-1/2
R57-22215*		1/4	1	1/4	2-1/2
R57-22216		1/4	1-1/8	1/4	3
<i>R57-22217</i>		9/32	1	5/16	2-1/2
R57-32218		5/16	1-1/8	5/16	3
<i>R57-32219</i>		5/16	1-1/4	5/16	3
R57-32220		5/16	1-1/8	1/2	3
<i>R57-32221*</i>		5/16	1-1/8	1/2	3
R57-32222	R57-32222UM	3/8	1	3/8	3
R57-32223		3/8	1-1/8	3/8	3
R57-32225	R57-32225UM	3/8	1-1/4	3/8	3
R57-32226*		3/8	1-1/4	3/8	3
R57-32227		3/8	1-1/4	1/2	3
<i>R57-32228</i>		7/16	1	1/2	3
R57-32229	R57-32229UM	1/2	1-1/8	1/2	3
R57-32231		1/2	1-1/4	1/2	3-1/2
R57-32232	R57-32232UM	1/2	1-5/8	1/2	3-1/2
R57-32233*		1/2	1-5/8	1/2	3-1/2
R57-32235		1/2	2-1/8	1/2	4
R57-32236		17/32	1-1/8	1/2	3
R57-32237		5/8	1-5/8	5/8	3-1/2
<i>R57-32238</i>		5/8	2-1/8	5/8	4
<i>R57-32239*</i>		5/8	2-1/8	5/8	4
R57-32240		3/4	1-5/8	3/4	4
R57-32241		3/4	2-1/8	3/4	5
<i>R57-32242*</i>		3/4	2-1/8	3/4	4
R57-32243		1	3	1	6

\* Indicates left hand tool

## 2 Flute "O" Style Downcut Slow Spiral

PART #	DIA	CEL	SHK	OAL
R57-62301	1/4	3/8	1/4	2-1/2
R57-62302	1/4	3/4	1/4	2-1/2
R57-62303	3/8	1	3/8	3
R57-62304	1/2	1-1/8	1/2	3-1/2



Hp Sp Hw Sw Fb

See Material Guide p4

Excellent for routing both soft and hard plastics.

## 2 Flute Downcut High Impact

PART #	DIA	CEL	SHK	OAL
R57-92501	1/4	7/8	1/4	2-1/2
R57-92502	3/8	7/8	3/8	3
R57-92503	3/8	1-1/8	3/8	3
R57-92504	3/8	1-1/4	3/8	3
R57-92505	1/2	1-1/4	1/2	3



Pb Sw Hw Fb Lm PI  
Al Hp Sp

See Material Guide p4

General purpose router for solid wood, wood composites and some plastics. Downcut design gives a clean edge when cutting a dado on laminated material. Shallower flutes and thicker core make it more resilient to breaking.

## 3 Flute Upcut Spiral Mill End

PART #	DIA	CEL	SHK	OAL
R58-01201	1/8	1/2	1/4	2
R58-01202	3/16	5/8	1/4	2
R58-01203	1/4	3/4	1/4	2-1/2
R58-01204	3/8	1-1/4	3/8	3



Hp Hw Fb

See Material Guide p4

Good for routing hard plastics and finish passes on solid woods.

## 3 Flute Downcut Spiral

PART #	DIA	CEL	SHK	OAL
R59-01001	1/8	1/2	1/4	2
R59-01002	3/16	5/8	1/4	2
R59-01003	1/4	3/4	1/4	2-1/2
R59-01006	1/2	1-1/2	1/2	3-1/2



Hp Hw Fb Lm

See Material Guide p4

Good for routing hard plastics and finish passes on solid woods.



**Hw Sw PI**

See Material Guide p4

Serrated tooth design to eliminate tear out in difficult wood grains. Tooth design greatly reduces horsepower required to cut. Downcut to assist material hold down.



**Hw Sw PI Fb**

See Material Guide p4

Serrated tooth design to eliminate tear out in difficult wood grains. Tooth design greatly reduces horsepower required to cut. Downcut to assist material hold down.



**Hw Sw PI Fb**

See Material Guide p4

Serrated tooth design to eliminate tear out in difficult wood grains. Tooth design greatly reduces horsepower required to cut. Upcut to assist with chip evacuation.

## 3 Flute Downcut Low Helix Ripper

PART #	DIA	CEL	SHK	OAL
R60-01401	3/8	1-1/8	3/8	3-1/2
R60-01402	1/2	1-1/8	1/2	3-1/2
R60-01404	1/2	1-5/8	1/2	4
<i>R60-01405</i>	5/8	1-5/8	5/8	4
R60-01406	5/8	2-1/8	5/8	5
<i>R60-01407</i>	3/4	1-5/8	3/4	4
R60-01408	3/4	2-1/8	3/4	5

## 3 Flute Downcut High Helix Ripper

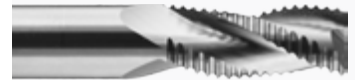
PART #	DIA	CEL	SHK	OAL
R60-01501	3/8	1-1/8	3/8	3-1/2
R60-01503	1/2	1-1/8	1/2	3-1/2
R60-01504	1/2	1-5/8	1/2	4
<i>R60-01505</i>	5/8	1-5/8	5/8	4
R60-01506	5/8	2-1/8	5/8	5
<i>R60-01509</i>	3/4	1-5/8	3/4	4
<i>R60-01510</i>	3/4	2-1/8	3/4	5

## 3 Flute Upcut Low Helix Ripper

PART #	DIA	CEL	SHK	OAL
R60-01601	3/8	1-1/8	3/8	3-1/2
R60-01602	1/2	1-1/8	1/2	3-1/2
R60-01603	1/2	1-5/8	1/2	4
<i>R60-01604</i>	5/8	1-5/8	5/8	4
R60-01605	5/8	2-1/8	5/8	5
<i>R60-01606</i>	3/4	1-5/8	3/4	4
R60-01607	3/4	2-1/8	3/4	5

# 3 Flute Upcut High Helix Ripper

PART #	DIA	CEL	SHK	OAL
R60-01701	3/8	1-1/8	3/8	3-1/2
R60-01703	1/2	1-1/8	1/2	3-1/2
R60-01704	1/2	1-5/8	1/2	4
R60-01711	1/2	2	1/2	4
<i>R60-01705</i>	5/8	1-5/8	5/8	4
R60-01706	5/8	2-1/2	5/8	5
<i>R60-01709</i>	3/4	1-5/8	3/4	4
<i>R60-01710</i>	3/4	2-1/8	3/4	5



Hw Sw PI Fb

See Material Guide p4

Serrated tooth design to eliminate tear out in difficult wood grains. Tooth design greatly reduces horsepower required to cut. Upcut to assist with chip evacuation.

# 3 Flute Upcut Lock Mortise Tool

PART #	DIA	CEL	b1	b2	SHK	OAL
R60-01732	3/8	1-1/8	1	3	3/8	4
R60-01742	1/2	1-1/2	1-1/2	4-1/2	1/2	6
R60-01751	5/8	2	2	5	5/8	7
R60-01751.LH	5/8	2	2	5	5/8	7
R60-01753*	16mm	50mm	55mm	115mm	16mm	170mm
R60-01758	3/4	2	1-1/2	5-1/2	3/4	7

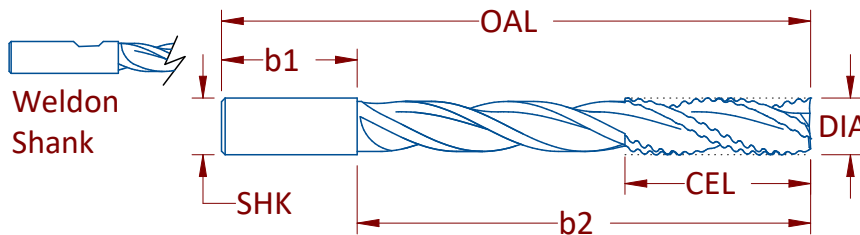


Hw Sw PI Fb

See Material Guide p4

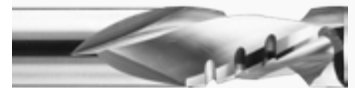
Designed for mortising side of doors to hold lock sets. Serrated tooth design to minimize horsepower required to cut. Spinback on tool allows relief to cut deep mortises.

LH = left hand rotation \*Weldon Shank



# 2 Flute Compression Chipbreaker

PART #	DIA	CEL	UPCUT	SHK	OAL
R60-11000	3/8	7/8	.188"	3/8	3
R60-11001	3/8	7/8	.385"	3/8	3
R60-11002	3/8	1-1/8	.495"	3/8	3
R60-11011	1/2	7/8	.200"	1/2	3
R60-11014	1/2	7/8	.400"	1/2	3
R60-11003	1/2	1-1/8	.440"	1/2	3
R60-11004	1/2	1-1/8	.495"	1/2	3
R60-11005	1/2	1-3/8	.605"	1/2	3-1/2
R60-11006	1/2	1-5/8	.715"	1/2	4
R60-11016	1/2	2-1/2	.188"	1/2	5
R60-11007	5/8	2-1/4	.990"	5/8	5
R60-11008	3/4	1-7/8	.825"	3/4	4



Pb Fb Lm PI Hw Sw

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates. Chipbreakers help to prevent furring or tearout of core on plywood.



# 1 Flute Compression



Pb Fb Lm **PI** Hw Sw

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates.

PART #	DIA	CEL	UPCUT	SHK	OAL
R60-11201	1/8	3/8	.187"	1/4	2-1/2
R60-11202	3/16	5/8	.375"	1/4	2-1/2
R60-11203	1/4	7/8	.500"	1/4	2-1/4
R60-11204	3/8	1-1/8	.500"	3/8	3
R60-11207	1/2	1	.400"	1/2	3
<i>R60-11209</i>	1/2	1-1/8	.400"	1/2	3
<i>R60-11211</i>	1/2	1-3/8	.625"	1/2	3-1/2
<i>R60-11212</i>	1/2	1-5/8	.750"	1/2	3-1/2
<i>R60-11213*</i>	1/2	1-5/8	.750"	1/2	3-1/2
<i>R60-11215</i>	3/4	2	1	3/4	4

\* Indicates left hand rotation

# 2 Flute Compression



Pb Fb Lm **PI** Hw Sw

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates.

PART #	Ultimax #	DIA	CEL	UPCUT	SHK	OAL
R60-11409		1/4	7/8	.500"	1/4	2-1/2
R60-11409.LH		1/4	7/8	.500"	1/4	2-1/2
R60-11401	R60-11401UM	3/8	7/8	.500"	3/8	3
R60-11415		3/8	1-1/4	.400"	3/8	3
R60-11402	R60-11402UM	1/2	7/8	.500"	1/2	3
R60-11403	R60-11403UM	1/2	1-1/8	.400"	1/2	3
R60-11404	R60-11404UM	1/2	1-3/8	.625"	1/2	3-1/2
R60-11405	R60-11405UM	1/2	1-5/8	.750"	1/2	4
R60-11413		1/2	1-3/4	.750"	1/2	4
R60-11410		1/2	2-1/2	1.125"	1/2	5
R60-11410.LH		1/2	2-1/2	1.125"	1/2	5
R60-11416		5/8	1-7/8	.500"	5/8	4
R60-11406		5/8	2-1/4	1.125"	5/8	5
R60-11407		3/4	1-7/8	.750"	3/4	4
R60-11408		3/4	2-1/2	1-1/4	3/4	5
<i>R60-11408.LH</i>		3/4	2-1/2	1-1/4	3/4	5
R60-11419		3/4	3	.890	3/4	6

LH = Indicates left hand rotation



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.

# 1 Flute Mortise Compression

PART #	DIA	CEL	UPCUT	SHK	OAL
R60-11901	1/4	7/8	.175"	1/4	2-1/2
R60-11902	3/8	7/8	.188"	3/8	3
<i>R60-11903</i>	1/2	7/8	.200"	1/2	3
R60-11904*	1/2	7/8	.200"	1/2	3
<i>R60-11905</i>	1/2	1-5/8	.200"	1/2	3-1/2

\* Indicates left hand rotation



Pb Fb Lm PI Hw Sw

See Material Guide p4

Laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates. Short upcut allows for chip free dado to be routed.

# 2 Flute Mortise Compression

PART #	Ultimax #	DIA	CEL	UPCUT	SHK	OAL
R60-12001	R60-12001UM	1/4	7/8	.200"	1/4	2-1/2
R60-12002		3/8	7/8	.210"	3/8	3
R60-12012	R60-12012UM	3/8	1-1/8	.188"	3/8	3
R60-12003	R60-12003UM	1/2	7/8	.230"	1/2	3
R60-12007	R60-12007UM	1/2	7/8	.230"	1/2	2-1/2
R60-12004	R60-12004UM	1/2	1-1/8	.230"	1/2	3
R60-12006		1/2	1-1/8	.320"	1/2	3
R60-12004-3.5	R60-12004-3.5UM	1/2	1-3/8	.250"	1/2	3-1/2



Pb Fb Lm PI Hw Sw

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates. Short upcut allows chip free dado to be routed.

## Metric Sizes

PART #	DIA	CEL	UPCUT	SHK	OAL
R60-12064*	5mm	7/8	.220"	1/4	3

5mm diameter tool for grain matching nested applications



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.



## 3 Flute Compression

### Imperial Sizes

PART#	Ultimax #	DIA	CEL	UPCUT	SHK	OAL
R60-12101	R60-12101UM	3/8	7/8	.215"	3/8	3
R60-01621	R60-01621UM	3/8	7/8	.375"	3/8	3
R60-11501	R60-11501UM	3/8	1-1/8	.375"	3/8	3
R60-12102	R60-12102UM	1/2	7/8	.380"	1/2	3
R60-12105		1/2	1-1/8	.220"	1/2	3
R60-11502	R60-11502UM	1/2	1-1/8	.375"	1/2	3
R60-12103		1/2	1-3/8	.290"	1/2	3-1/2
R60-11704		1/2	1-3/8	.630"	1/2	3-1/2
R60-11503		1/2	1-5/8	.380"	1/2	3-1/2

### Metric Sizes

PART#	DIA	CEL	UPCUT	SHK	OAL
R60-11602	12mm	1-1/8	.270"	1/2	3

**ULTIMAX**  
COATING



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.



Pb Fb Lm Pl Hw Sw

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates. Short upcut allows chip free dado to be routed.



Pl Hw Sw Sp Fb

See Material Guide p4

For routing laminated or veneered plywoods when top and bottom finish is critical. Upward and downward shearing action prevents chipping of laminates. Unique tool geometry minimizes core furring or pull in in plywood.

## 2 Flute Plywood Compression

PART #	Ultimax #	DIA	CEL	UPCUT	SHK	OAL
R60-15002	R60-15002UM	3/8	7/8	.200"	3/8	3
R60-15004	R60-15004UM	1/2	1-1/8	.220"	1/2	3-1/2

**ULTIMAX**  
COATING



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.

## 3 Flute Downcut Low Helix Finisher

PART #	DIA	CEL	SHK	OAL
R60-22301	1/4	3/8	1/4	3
R60-22302	1/4	7/8	1/4	3
<i>R60-22303</i>	3/8	5/8	3/8	3
R60-22310	3/8	1-1/8	3/8	3
R60-22305	1/2	7/8	1/2	3
R60-22307	1/2	2-1/8	1/2	4-1/2
R60-22311	1/2	1-1/8	1/2	3-1/2
R60-22312	1/2	1-5/8	1/2	4
R60-22313	3/4	1-5/8	3/4	4
R60-22309	3/4	2-1/8	3/4	5



Hw Hp Sw Sp Rp

See Material Guide p4

For routing plastics and composites, as well as finish passes on solid wood.

## 3 Flute Upcut Low Helix Finisher

PART #	DIA	CEL	SHK	OAL
R60-22501	1/4	3/8	1/4	3
R60-22502	1/4	7/8	1/4	3
<i>R60-22503</i>	3/8	5/8	3/8	3
R60-22504	3/8	1-1/8	3/8	3
R60-22507	1/2	1-1/8	1/2	3-1/2
R60-22509	1/2	1-5/8	1/2	4
R60-22510	1/2	2-1/8	1/2	4
R60-22511	3/4	1-5/8	3/4	4
R60-22512	3/4	2-1/8	3/4	5



Hw Hp Sw Sp Rp

See Material Guide p4

For routing plastics and composites as well as finish passes on solid wood.

## 2 Flute Downcut Chipbreaker Finisher

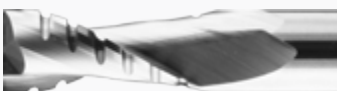


Hw Sw PI Pb Fb

See Material Guide p4

General purpose for solid wood and wood composites. Downcut design to give a clean edge when cutting a dado on laminated material. Chip breakers help with furring and tear out.

PART #	DIA	CEL	SHK	OAL
R60-31001	3/8	1-1/8	3/8	3
R60-31002	1/2	1-1/8	1/2	3
R60-31003	1/2	1-5/8	1/2	3-1/2
R60-31004	1/2	1-7/8	1/2	4
R60-31005	1/2	2-1/8	1/2	4
<i>R60-31006</i>	5/8	2-1/8	5/8	4
<i>R60-31007</i>	3/4	2-1/8	3/4	4
R60-31008	3/4	3-1/8	3/4	6



Hw Sw PI Pb Fb

See Material Guide p4

General purpose for solid wood and wood composites. Upcut spiral gives good chip evacuation. Chip breakers help with furring and tear out.

## 2 Flute Upcut Chipbreaker Finisher

PART #	DIA	CEL	SHK	OAL
R60-31201	3/8	1-1/8	3/8	3
R60-31202	1/2	1-1/8	1/2	3
R60-31203	1/2	1-5/8	1/2	3-1/2
R60-31205	1/2	1-7/8	1/2	3-1/2
R60-31204	1/2	2-1/8	1/2	4
R60-31206	5/8	2-1/8	5/8	4-1/2
R60-31207	3/4	2-1/8	3/4	4-1/2
R60-31208	3/4	3-1/8	3/4	6



## 3 Flute Downcut Chipbreaker Finisher

PART #	DIA	CEL	SHK	OAL
R60-32001	3/8	1-1/8	3/8	3
<i>R60-32002</i>	1/2	1-1/8	1/2	3
R60-32003	1/2	1-3/8	1/2	3-1/2
R60-32004	1/2	1-5/8	1/2	3-1/2
<i>R60-32005</i>	5/8	1-5/8	5/8	4
<i>R60-32006</i>	3/4	1-5/8	3/4	4
R60-32007	3/4	2-1/4	3/4	5
R60-32008	3/4	3-1/8	3/4	6



See Material Guide p4

General purpose for solid wood and wood composites. Downcut design to give a clean edge when cutting a dado on laminated material. Chip breakers help with furring and tear out.

## 3 Flute Upcut Chipbreaker Finisher

PART #	DIA	CEL	SHK	OAL
R60-32101	3/8	1-1/8	3/8	3
R60-32102	1/2	1-1/8	1/2	3
R60-32103	1/2	1-3/8	1/2	3-1/2
R60-32104	1/2	1-5/8	1/2	3-1/2
R60-32105	5/8	1-5/8	5/8	4
<i>R60-32106</i>	3/4	1-5/8	3/4	5
R60-32107	3/4	2-1/4	3/4	4
R60-32108	3/4	3-1/8	3/4	6



See Material Guide p4

General purpose for solid wood and wood composites. Upcut spiral gives good chip evacuation. Chip breakers help with furring and tear out.



## 4 Flute Compression

**Pb Lm Fb PI Hw Sw**

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical.

PART#	DIA	CEL	UPCUT	SHK	OAL
R60-51701	1/2	1	.400"	1/2	3
R60-51702	1/2	1-1/8	.400"	1/2	3
R60-51703	1/2	1-3/8	.625"	1/2	3-1/2
R60-51704	1/2	1-5/8	.750"	1/2	4
R60-51705	5/8	2-1/4	1	5/8	5
R60-51706	3/4	1-7/8	1	3/4	4
R60-51707	3/4	2-1/2	1	3/4	5



## 4 Flute Mortise Compression

**Pb Lm Fb PI Hw Sw**

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Short upcut allows a chip free dado to be routed.

PART#	DIA	CEL	UPCUT	SHK	OAL
R60-52201	1/2	7/8	.200"	1/2	3
R60-52202	1/2	1-3/8	.200"	1/2	3-1/2



## 4 Flute Combination Compression

**Pb Lm Fb PI Hw Sw**

See Material Guide p4

For routing laminated or veneered wood and wood composites when top and bottom finish is critical. Unique rougher/finisher design minimizes tearout.

PART#	DIA	CEL	UPCUT	SHK	OAL
R60-61801	1/2	1	.400"	1/2	3
R60-61802	1/2	1-1/8	.400"	1/2	3
R60-61803	1/2	1-3/8	.625"	1/2	3-1/2
R60-61811	1/2	1-3/4	.669"	1/2	3-1/2
R60-61804	1/2	1-5/8	.750"	1/2	4
R60-61814	5/8	1-7/8	.866"	5/8	4
R60-61805	5/8	2-1/4	1	5/8	5
R60-61807	3/4	2-1/2	1	3/4	5
R60-61823	3/4	2-1/2	1-1/4	3/4	5



## 4 Flute Combination Upcut

**Pb Fb Hw PI Sw**

See Material Guide p4

For routing laminated or veneered wood and wood composites when bottom finish is critical. Unique rougher/finisher in one allows faster feed rates.

PART #	DIA	CEL	SHK	OAL
R60-71001	1/2	1-1/8	1/2	3-1/2
R60-71002	1/2	1-5/8	1/2	4
R60-71003	1/2	2-1/8	1/2	4-1/2
R60-71004	5/8	2-1/8	5/8	5
R60-71005	3/4	2-1/8	3/4	5

# 4 Flute Combination Downcut



**Pb Fb Hw PI Sw Lm**

See Material Guide p4

For routing laminated or veneered wood and wood composites when top finish is critical. Unique rougher finisher in one allows faster feed rates.

PART #	DIA	CEL	SHK	OAL
<i>R60-71101</i>	1/2	1-1/8	1/2	3-1/2
<b>R60-71102</b>	1/2	1-5/8	1/2	4
<i>R60-71103</i>	1/2	2-1/8	1/2	4
<i>R60-71104</i>	5/8	2-1/8	5/8	5
<i>R60-71105</i>	3/4	2-1/8	3/4	5

# 1 Flute "O" Style General Plastics



**Hp Sp Hw**

See Material Guide p4

Generic router bit for both hard and soft plastics. Free cutting "O" flute design enables easy cutting.

PART #	DIA	CEL	SHK	OAL
<i>R61-01001</i>	1/8	5/16	1/4	2
<b>R61-01002</b>	1/8	1/2	1/4	2
<i>R61-01003*</i>	1/8	1/2	1/4	2
<i>R61-01004</i>	1/8	5/8	1/4	4
<i>R61-01005</i>	1/8	1/2	1/8	2
<b>R61-01006</b>	1/8	5/8	1/8	3
<i>R61-01009</i>	5/32	9/16	1/4	2
<b>R61-01014</b>	7/32	5/8	1/4	2-1/2
<i>R61-01010</i>	3/16	3/8	1/4	2
<b>R61-01011</b>	3/16	5/8	1/4	2
<i>R61-01012*</i>	3/16	5/8	1/4	2
<b>R61-01013</b>	3/16	1	1/4	4
<b>R61-01007</b>	3/16	5/8	3/16	2-1/2
<b>R61-01015</b>	1/4	3/8	1/4	2-1/2
<b>R61-01016</b>	1/4	3/4	1/4	2-1/2
<b>R61-01017*</b>	1/4	3/4	1/4	3-1/2
<i>R61-01018</i>	1/4	3/4	1/4	3-1/2
<i>R61-01019*</i>	1/4	3/4	1/4	3-1/2
<b>R61-01020</b>	1/4	1	1/4	3-1/4
<b>R61-01008</b>	1/4	1-1/4	1/4	4
<i>R61-11022</i>	3/8	5/8	3/8	2-1/2
<i>R61-11023</i>	3/8	7/8	3/8	2-1/2
<i>R61-11024</i>	3/8	1-5/8	3/8	6

\* Indicates Left Hand Rotation

## 1 Flute “V” Style Flute



Hw Hp Sw Fb

See Material Guide p4

General purpose “V” flute good for engraving and carving on solid wood and hard plastics.

PART #	DIA	CEL	SHK	OAL
R61-21001	1/8	1/2	1/4	2
R61-21002	3/16	3/4	1/4	2
R61-21003	1/4	7/8	1/4	2-1/2
<i>R61-21004</i>	1/4	1	1/4	2-1/2

## 1 Flute Downcut Hard Plastic & Aluminum



Hp Al Hw Fb Lm

See Material Guide p4

Single flute downcut tools for cutting hard plastic and aluminum. Downcut design to assist with material hold down on nested routers.

PART #	DIA	CEL	SHK	OAL
R62-01801	1/8	1/2	1/4	2
R62-01802	1/4	3/4	1/4	2-1/2
<i>R62-11803</i>	5/16	13/16	3/8	2-1/2
R62-11804	3/8	7/8	3/8	2-1/2

## 1 Flute Downcut



Pl Hw Sw Fb Hp Sp

Lm

See Material Guide p4

Single flute downcut for general purpose cutting of most wood based materials and some plastics. Downcut design to assist with material hold down on nested routers.

PART #	DIA	CEL	SHK	OAL
R62-21901	1/8	1/2	1/4	2
<i>R62-21902</i>	3/16	3/4	1/4	2
R62-21903	1/4	7/8	1/4	2-1/2
R62-21904	1/4	1	1/4	2-1/2

## 1 Flute Downcut “O” Style Aluminum



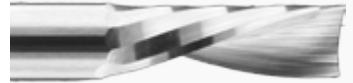
Al Hp

See Material Guide p4

Designed for routing aluminum sheet and solid material on CNC machines. Downcut design to assist material hold down.

PART #	DIA	CEL	SHK	OAL
R62-60002	1/16	1/4	1/8	1-1/2
R62-60006	1/8	1/4	1/4	2
R62-60010	1/8	1/2	1/4	2
R62-60014	3/16	3/8	1/4	2
R62-60020	1/4	1-1/8	1/4	2-1/2
R62-60022	1/4	3/4	1/4	2-1/2
R62-60024	1/4	1-1/4	1/4	3
<i>R62-60025</i>	3/8	3/4	3/8	3
<i>R62-60031</i>	1/2	1-1/8	1/2	3-1/2

# 1 Flute Downcut "O" Style Hard Plastic



**Hp Al Hw Sw**

See Material Guide p4

Designed for routing hard plastics. Downcut design to assist material hold down.

PART #	DIA	CEL	SHK	OAL
R62-71408	1/8	1/2	1/8	2
R62-71401	1/8	1/2	1/4	2
<i>R62-71409</i>	3/16	5/8	3/16	2
R62-71403	3/16	5/8	1/4	2
R62-71405	1/4	3/4	1/4	2-1/2
R62-71406	1/4	1-1/4	1/4	3
R62-71407	3/8	1-1/8	3/8	3

# 1 Flute Downcut "O" Style Soft Plastic



**Sp Hp Hw Sw Al**

See Material Guide p4

Designed for routing soft plastics. Downcut design to assist material hold down.

PART #	DIA	CEL	SHK	OAL
R62-71501	1/8	1/2	1/8	2
R62-71502	1/8	1/2	1/4	2
<i>R62-71503</i>	3/16	5/8	3/16	2
R62-71504	3/16	5/8	1/4	2
R62-71505	1/4	3/4	1/4	2-1/2
R62-71506	1/4	1-1/4	1/4	3
<i>R62-71507</i>	3/8	1-1/8	3/8	3

# 1 Flute Upcut Spiral Hard Plastic & Aluminum



**Hp Al Hw Fb**

See Material Guide p4

Single flute Upcut tool good for routing hard plastic and aluminum.

PART #	DIA	CEL	SHK	OAL
R63-02001	1/8	1/2	1/4	2
<i>R63-02002</i>	5/32	9/16	1/4	2
<i>R63-02003</i>	3/16	5/8	1/4	2
<i>R63-02004</i>	7/32	5/8	1/4	2-1/2
R63-02005	1/4	3/4	1/4	2-1/2
<i>R63-02006</i>	9/32	3/4	3/8	2-1/2
<i>R63-12007</i>	5/16	13/16	3/8	2-1/2
<i>R63-12008</i>	3/8	7/8	3/8	2-1/2
<i>R63-12009</i>	7/16	1	1/2	3
R63-12010	1/2	1	1/2	3

# 1 Flute Upcut Soft Plastics



**Sp Hp Fb Hw Sw**

See Material Guide p4

Designed for routing soft plastic

PART #	DIA	CEL	SHK	OAL
R63-22101	1/8	1/2	1/4	2
R63-22102	3/16	3/4	1/4	2
R63-22103	1/4	7/8	1/4	2-1/2
R63-22104	1/4	1	1/4	2-1/2
R63-32105	5/16	1-1/8	5/16	3
R63-32106	3/8	1-1/8	3/8	3
R63-32107	1/2	1-1/8	1/2	3

# 1 Flute Upcut "O" Style Aluminum



**Al Hp**

See Material Guide p4

Designed for routing aluminum sheet and solid material on CNC machines. Upcut design gives good chip removal.

PART #	DIA	CEL	SHK	OAL
R63-60002	1/16	1/4	1/8	2
R63-60006	1/8	1/4	1/4	2
R63-60010	1/8	1/2	1/4	2
R63-60014	3/16	3/8	1/4	2
R63-60018	3/16	5/8	1/4	2
R63-60020	1/4	3/8	1/4	2
R63-60022	1/4	3/4	1/4	2-1/2
R63-60024	1/4	1-1/4	1/4	3
R63-60025	3/8	3/4	3/8	3
R63-60026	3/8	1-1/8	3/8	3
R63-60031	1/2	1-1/8	1/2	3-1/2
R63-60032	1/2	1-3/8	1/2	3-1/2

# 1 Flute Upcut "O" Style Hard Plastic



**Hp Al Hw Sw**

See Material Guide p4

Designed for routing hard plastics. Upcut design gives good chip removal.

PART #	DIA	CEL	SHK	OAL
R63-71609	1/16	1/4	1/8	2
R63-71601	1/16	1/4	1/4	2
R63-71610	1/8	1/4	1/8	2
R63-71602	1/8	1/4	1/4	2
R63-71611	1/8	1/2	1/8	2
R63-71603	1/8	1/2	1/4	2
R63-71604	3/16	3/8	1/4	2
R63-71605	3/16	5/8	1/4	2
R63-71613	3/16	5/8	3/16	2
R63-71614	1/4	3/8	1/4	2
R63-71606	1/4	7/8	1/4	2-1/2
R63-71607	1/4	1-1/4	1/4	3
R63-71608	3/8	1-1/8	3/8	3

# 1 Flute Upcut "O" Style Soft Plastic



Sp Hp Hw Sw Al

See Material Guide p4

Designed for routing soft plastics. Upcut design gives good chip removal.

PART #	DIA	CEL	SHK	OAL
R63-71701	1/16	1/4	1/8	2
R63-71702	1/16	1/4	1/4	2
R63-71703	1/8	1/4	1/8	2
R63-71704	1/8	1/4	1/4	2
R63-71705	1/8	1/2	1/8	2
R63-71706	1/8	1/2	1/4	2
<i>R63-71708</i>	3/16	3/8	3/16	2
R63-71709	3/16	3/8	1/4	2
R63-71710	3/16	5/8	1/4	2
R63-71719	3/16	1-1/4	1/4	3
R63-71715	1/4	3/8	1/4	2
R63-71712	1/4	7/8	1/4	2-1/2
R63-71713	1/4	1-1/4	1/4	3
R63-71716	1/4	1-1/2	1/2	3
R63-71714	3/8	1-1/8	3/8	3

# 1 Flute Straight "O" Style Edge Rounding

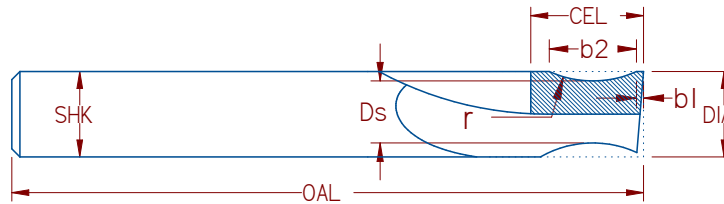


Sp Hp Hw Sw Al

See Material Guide p4

Designed for the POP display industry, made to apply a radius on the edge of plastics. Straight "O" flute design good for plastics.

PART #	DIA	CEL	SHK	OAL	r	Ds	b1	b2
R66-02001	1/4	3/8	1/4	2-1/2	1/8	.195"	1/16	5/32
R66-02002	1/4	3/8	1/4	2-1/2	3/16	.180"	1/16	7/32
R66-02003	1/4	3/8	1/4	2-1/2	9/32	.163"	1/16	9/32



# 1 Flute Spiral "O" Style Edge Rounding

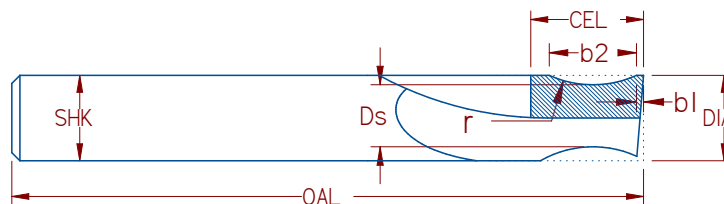


Sp Hp Hw Sw Al

See Material Guide p4

Designed for the POP display industry, made to apply a radius on the edge of plastics. Spiral "O" flute design good for plastics.

PART #	DIA	CEL	SHK	OAL	r	Ds	b1	b2
<i>R66-02101</i>	1/4	3/8	1/4	2-1/2	1/8	.195"	1/16	5/32
<i>R66-02102</i>	1/4	3/8	1/4	2-1/2	3/16	.180"	1/16	7/32
<i>R66-02103</i>	1/4	3/8	1/4	2-1/2	9/32	.163"	1/16	9/32



## 2 Flute Straight Style Edge Rounding

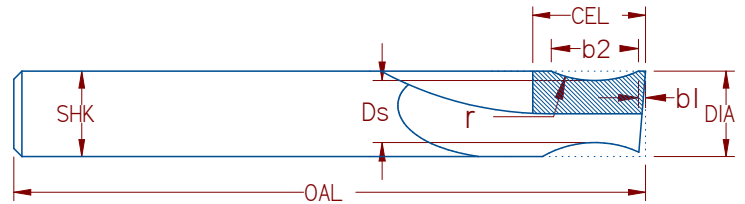


Hp Sp Hw Sw AI

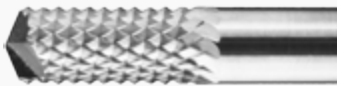
See Material Guide p4

Designed for the POP display industry, made to apply a radius on the edge of plastics. Straight standard flute design for a more resilient cutting edge.

PART #	DIA	CEL	SHK	OAL	r	Ds	b1	b2
R66-02201	1/4	3/8	1/4	2-1/2	1/8	.195"	1/16	5/32
R66-02202	1/4	3/8	1/4	2-1/2	3/16	.180"	1/16	7/32
R66-02203	1/4	3/8	1/4	2-1/2	9/32	.163"	1/16	9/32



## Fiberglass Burr Tools



Rp

See Material Guide p4

Burr style router bit for routing fiberglass and other reinforced plastic material.

PART #	DIA	CEL	SHK	OAL
R67-02601B	1/4	3/4	1/4	2-1/2
R67-02604B	1/4	1	1/4	3
R67-12605B	3/8	7/8	3/8	2-1/2
R67-12608B	1/2	1	1/2	3

## Fiberglass Rougher Finisher Burr



Rp

See Material Guide p4

Burr style router bit for routing fiberglass and other reinforced plastic material. Fluted burr style tool enables higher feed rates and more freely cutting.

PART #	DIA	CEL	SHK	OAL
R67-02602	1/4	3/4	1/4	2-1/2
R67-12606	3/8	7/8	3/8	2-1/2
R67-12609	1/2	1	1/2	3

## Composite Router Tool



Rp

See Material Guide p4

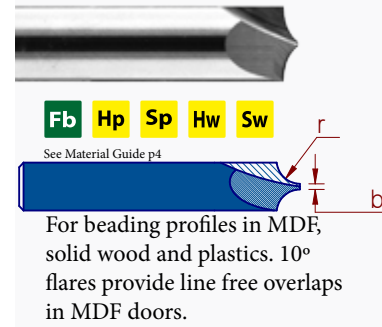
Unique flute geometry specifically designed for routing reinforced plastic material. Fluted tool enables higher feed rates and more free cutting.

PART #	DIA	CEL	SHK	OAL	Point
R67-58610EM	1/4	3/4	1/4	2-1/2	endmill
R67-58618EM	3/8	1-1/8	3/8	3	endmill
R67-58630EM	1/2	7/8	1/2	3	endmill



## 2 Flute Beading Tools

PART #	DIA	r	b	SHK	OAL
R68-02001	3/8	1/16	1mm (.039")	3/8	2-1/2
R68-02002	3/8	1/8	1mm (.039")	3/8	2-1/2
R68-02003	1/2	3/16	1.5mm (.059")	1/2	3
R68-02004	1/2	1/4	1.5mm (.059")	1/2	3



## 3 Flute Downcut Phenolic Spiral

PART #	Ultimax #	DIA	CEL	SHK	OAL
R72-20004	R72-20004UM	3/8	7/8	3/8	3
R72-20007	R72-20007UM	1/2	1-1/4	1/2	3-1/2
R72-20010	R72-20010UM	1/2	2-1/8	1/2	5



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.



Designed for routing phenolic and other fiber reinforced plastics, unique style chip-breakers help eliminate harmonics in routing.

## 3 Flute Upcut Phenolic Spiral

PART #	Ultimax #	DIA	CEL	SHK	OAL
R72-10004	R72-10004UM	3/8	7/8	3/8	3
R72-10007	R72-10007UM	1/2	1-1/4	1/2	3
R72-10010	R72-10010UM	1/2	2-1/8	1/2	4



Unique coating was selected after extensive testing on multiple coatings. Minimizes friction, increases edge hardness, and has excellent adhesion. Provides exceptional tool life specifically on nested routing applications.



Designed for routing phenolic and other fiber reinforced plastics, unique style chip-breakers help eliminate harmonics in routing.

# Radius Edge Spiral Tool



Hw Sw Pl Fb Hp

See Material Guide p4

Spiral tool for applying top and bottom radii to material while sizing. Spiral geometry provides better cut than conventional profile tools.

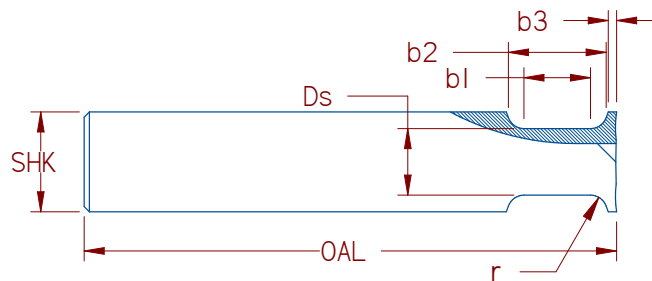


Hw Pl Fb

See Material Guide p4

Specifically designed for use on OMEC® dovetail machines. Tools work well for routing solid wood and wood composites.

PART # RH	Ds	SHK	OAL	b1	b2	b3	r
R74-21008	1/2	3/4	4	1/2	3/4	1/16	1/8
R74-21014	1/2	3/4	4	3/4	1	1/16	1/8

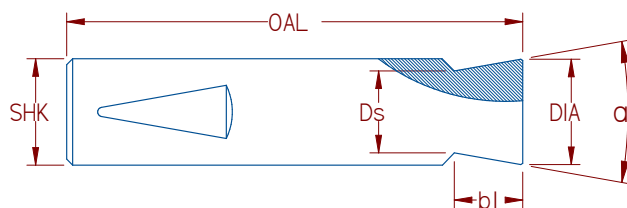


# Spiral Dovetail bits OMEC®

PART # RH	PART # LH	DIA	SHK	OAL	b1	Ds	a
R90-90100	R90-90100L	14mm	14mm + flat	60mm	9mm	10.8mm	20°
R90-90110U	R90-90110UL	14mm	14mm + flat	60mm	10mm	10.8mm	20°
R90-90110D		14mm	14mm + flat	60mm	10mm	10.4mm	20°
R90-90116U		14mm	14mm + flat	60mm	15.8mm	8.4mm	20°

U=Upcut

D=DownCut



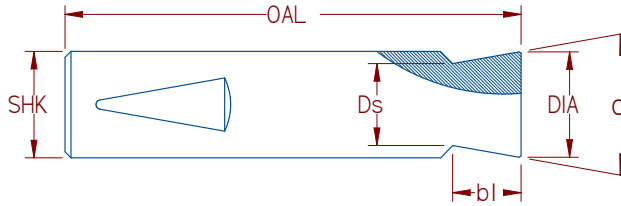
# Combination Dovetail bits OMEC®



See Material Guide p4

PART # RH	PART # LH	DIA	SHK	OAL	b1	Ds	a
R90-91110D		14mm	14mm + flat	60mm	10mm	10.4mm	20°

D=DownCut



Specifically designed for use on OMEC® dovetail machines. Tools work well for routing solid wood and wood composites. Unique rougher/finisher design minimizes tearout on plywood and solid wood.

## CNC Tooling Startup Package



See Material Guide p4

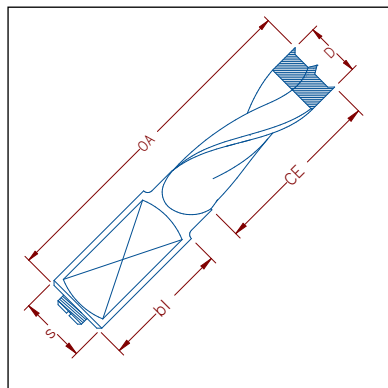
CNC starter package for Cnc routers. Package contains common tools to get up and running on your CNC router.

PART#	Description
CNC-PKG-1	CNC starter package for panel processing

### Package 1 Includes

PART#	Description
563S.100.14-753S	4" diameter Insert surfacing tool
592-1414	Replacement knives for surfacing tool
R60-12004	1/2" diameter compression for particle board
R60-12012	3/8" diameter compression for particle board
R52-32829	1/2" upcut spiral
R57-22214	1/4" downcut spiral
R57-32225	3/8" downcut spiral
R52-33411	1/2" diameter ballnose tool
D180.350R	35mm right hand hinge drill
D105.050R	5mm right hand brad point drill
D105.050L	5mm left hand brad point drill
D105.080R	8mm right hand brad point drill
D105.080L	8mm left hand brad point drill

# Proline Carbide Dowel Drills



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Proline dowel drills provide quality at a great price. Dowel drill style for drilling blind holes in particle board, MDF, and solid wood. Carbide tipped for long life. Screw in the end for height adjustment, 10mm shank with flat for set screws.

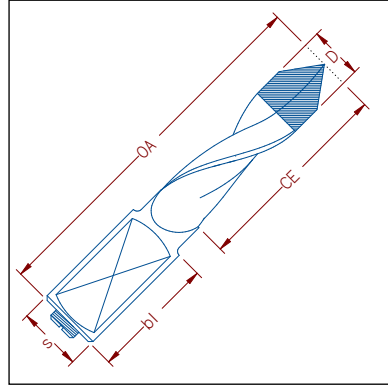
PD100 = 10mm x 20mm shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
PD100.040R	PD100.040L	4	34	20	10	57
PD100.050R	PD100.050L	5	34	20	10	57
PD100.051R	PD100.051L	5.1	34	20	10	57
PD100.060R	PD100.060L	6	34	20	10	57
PD100.070R	PD100.070L	7	34	20	10	57
PD100.080R	PD100.080L	8	34	20	10	57
PD100.082R	PD100.082L	8.2	34	20	10	57
PD100.095R	PD100.095L	3/8"	34	20	10	57
PD100.100R	PD100.100L	10	34	20	10	57
PD100.110R	PD100.110L	11	34	20	10	57
PD100.150R	PD100.150L	15	34	20	10	57
PD100.158R	PD100.158L	5/8"	34	20	10	57

PD105 = 10mm x 20mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
PD105.040R	PD105.040L	4	41	20	10	70
PD105.045R	PD105.045L	4.5	41	20	10	70
PD105.050R	PD105.050L	5	41	20	10	70
PD105.055R	PD105.055L	5.5	41	20	10	70
PD105.060R	PD105.060L	6	41	20	10	70
PD105.064R	PD105.064L	1/4"	41	20	10	70
PD105.070R	PD105.070L	7	41	20	10	70
PD105.080R	PD105.080L	8	41	20	10	70
PD105.082R	PD105.082L	8.2	41	20	10	70
PD105.090R	PD105.090L	9	41	20	10	70
PD105.095R	PD105.095L	3/8"	41	20	10	70
PD105.100R	PD105.100L	10	41	20	10	70
PD105.110R	PD105.110L	11	41	20	10	70
PD105.120R	PD105.120L	12	41	20	10	70
PD105.127R	PD105.127L	1/2"	41	20	10	70
PD105.130R	PD105.130L	13	41	20	10	70
PD105.140R	PD105.140L	14	41	20	10	70
PD105.150R	PD105.150L	15	41	20	10	70
PD105.160R		16	41	20	10	70

# Proline Carbide Thru-hole Drills



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Pro line thru-hole drills provide good quality at a great price. Carbide tipped for long life. Screw in the end for height adjustment, 10mm shank with flat for set screws.

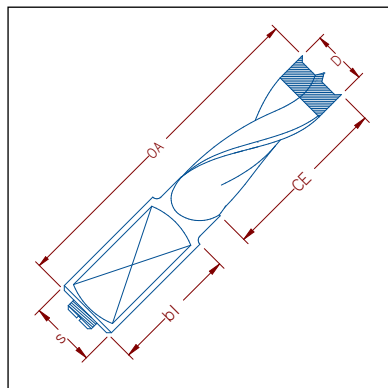
PD145 = 10mm x 20mm Shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
PD145.040R	PD145.040L	4	27	20	10	57
PD145.050R	PD145.050L	5	27	20	10	57
<i>PD145.060R</i>	<i>PD145.060L</i>	6	27	20	10	57
<i>PD145.070R</i>	<i>PD145.070L</i>	7	27	20	10	57
PD145.080R	PD145.080L	8	27	20	10	57
<i>PD145.090R</i>	<i>PD145.090L</i>	9	27	20	10	57
<i>PD145.100R</i>	<b>PD145.100L</b>	10	27	20	10	57
<i>PD145.110R</i>	<i>PD145.110L</i>	11	27	20	10	57
<i>PD145.120R</i>	<i>PD145.120L</i>	12	27	20	10	57
<i>PD145.140R</i>	<i>PD145.140L</i>	14	27	20	10	57
<i>PD145.150R</i>	<i>PD145.150L</i>	15	27	20	10	57
<i>PD145.160R</i>	<i>PD145.160L</i>	16	27	20	10	57

PD150 = 10mm x 20mm Shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
PD150.040R	PD150.040L	4	35	20	10	70
PD150.050R	PD150.050L	5	35	20	10	70
PD150.060R	PD150.060L	6	35	20	10	70
PD150.070R	PD150.070L	7	35	20	10	70
PD150.080R	PD150.080L	8	35	20	10	70
PD150.090R	PD150.090L	9	35	20	10	70
PD150.100R	PD150.100L	10	35	20	10	70
PD150.110R	<i>PD150.110L</i>	11	35	20	10	70
PD150.120R	PD150.120L	12	35	20	10	70
PD150.127R	<i>PD150.127L</i>	1/2"	35	20	10	70
<i>PD150.130R</i>	<i>PD150.130L</i>	13	35	20	10	70
PD150.140R	PD150.140L	14	35	20	10	70
PD150.150R	PD150.150L	15	35	20	10	70
<i>PD150.160R</i>	<i>PD150.160L</i>	16	35	20	10	70

# Industrial Quality Carbide Dowel Drills



Lm Pb PI Fb Hw Sw

See Material Guide p4

For use on CNC drill banks, and portable machines. Industrial quality dowel drills have larger carbide tip and improved geometry for longer life. Dowel drill style for drilling blind holes in particle board, MDF, and solid wood. Carbide tipped for long life. Screw in the end for height adjustment, 10mm shank with flat for set screws.

D100 = 10mm x 20mm shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D100.030R	D100.030L	3	27	20	10	57
D100.040R	D100.040L	4	30	20	10	57
D100.045R	D100.045L	4.5	30	20	10	57
D100.050R	D100.050L	5	30	20	10	57
D100.052R	<i>D100.052L</i>	5.2	30	20	10	57
D100.055R	D100.055L	5.5	30	20	10	57
D100.060R	D100.060L	6	30	20	10	57
D100.064R	D100.064L	1/4"	30	20	10	57
D100.070R	D100.070L	7	30	20	10	57
D100.080R	D100.080L	8	30	20	10	57
D100.082R	D100.082L	8.2	30	20	10	57
D100.090R	D100.090L	9	30	20	10	57
D100.095R	D100.095L	3/8"	30	20	10	57
D100.100R	D100.100L	10	30	20	10	57
<i>D100.110R</i>	<i>D100.110L</i>	11	30	20	10	57
D100.120R	D100.120L	12	30	20	10	57
D100.127R	<i>D100.127L</i>	1/2"	30	20	10	57
D100.130R	D100.130L	13	30	20	10	57
D100.140R	D100.140L	14	30	20	10	57
D100.150R	D100.150L	15	30	20	10	57
<i>D100.158R</i>	<i>D100.158L</i>	5/8"	30	20	10	57
<i>D100.160R</i>	<i>D100.160L</i>	16	30	20	10	57

D105 = 10mm x 20mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D105.030R	D105.030L	3	43	20	10	70
D105.040R	D105.040L	4	43	20	10	70
D105.047R	D105.047L	3/16"	43	20	10	70
D105.050R	D105.050L	5	43	20	10	70
D105.052R	<i>D105.052L</i>	5.2	43	20	10	70
D105.055R	<i>D105.055L</i>	5.5	43	20	10	70
D105.060R	D105.060L	6	43	20	10	70
D105.064R	D105.064L	1/4"	43	20	10	70
D105.070R	D105.070L	7	43	20	10	70
D105.075R	D105.075L	7.5	43	20	10	70
D105.080R	D105.080L	8	43	20	10	70
D105.090R	D105.090L	9	43	20	10	70
D105.095R	D105.095L	3/8"	43	20	10	70
D105.100R	D105.100L	10	43	20	10	70
D105.110R	D105.110L	11	43	20	10	70
<i>D105.111R</i>	<i>D105.111L</i>	7/16"	43	20	10	70
D105.120R	D105.120L	12	43	20	10	70
D105.127R	D105.127L	1/2"	43	20	10	70
D105.130R	D105.130L	13	43	20	10	70
D105.140R	D105.140L	14	43	20	10	70
D105.150R	D105.150L	15	43	20	10	70
D105.158R	<i>D105.158L</i>	5/8"	43	20	10	70
D105.160R	D105.160L	16	43	20	10	70

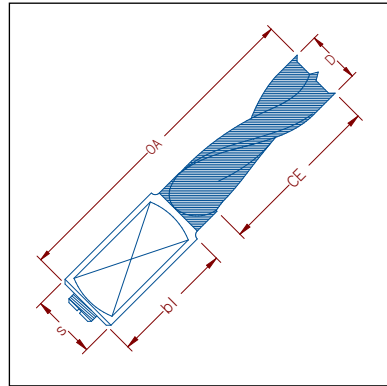
D125 = 10mm x 30mm shank - 77mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D125.050R	D125.050L	5	44	30	10	77
<i>D125.060R</i>	<i>D125.060L</i>	6	44	30	10	77
D125.080R	D125.080L	8	44	30	10	77
<i>D125.100R</i>	<i>D125.100L</i>	10	44	30	10	77
<i>D125.120R</i>	<i>D125.120L</i>	12	44	30	10	77

D130 = 10mm x 27mm shank - 85mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<i>D130.050R</i>	<i>D130.050L</i>	5	50	27	10	85
<i>D130.060R</i>	<i>D130.060L</i>	6	50	27	10	85
D130.080R	D130.080L	8	50	27	10	85
<i>D130.100R</i>	<i>D130.100L</i>	10	50	27	10	85
D130.120R	<i>D130.120L</i>	12	50	27	10	85

# Solid Carbide Dowel Drills



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Solid carbide design provides maximum wear resistance and strength. Dowel drill style for drilling blind holes in particle board, MDF, and solid wood. Screw in the end for height adjustment.

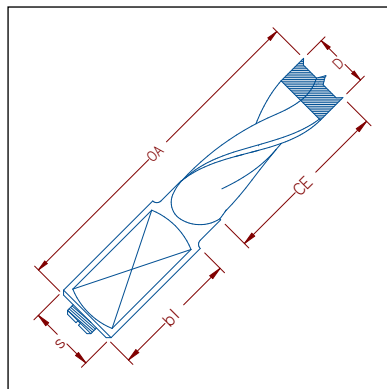
D107 = 10mm x 20mm shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<i>D107.030R</i>		3	37	20	10	57
<b>D107.050R</b>	<b>D107.050L</b>	5	37	20	10	57
<i>D107.060R</i>	<i>D107.060L</i>	6	37	20	10	57
<b>D107.080R</b>	<i>D107.080L</i>	8	37	20	10	57

PD108 = 10mm x 27mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<i>D108.030R</i>	<i>D108.030L</i>	3	43	27	10	70
<b>D108.050R</b>	<b>D108.050L</b>	5	43	27	10	70
<i>D108.060R</i>		6	43	27	10	70
<b>D108.080R</b>	<b>D108.080L</b>	8	43	27	10	70

# Industrial Quality Carbide Dowel Drills (8mm Shank)



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Industrial quality dowel drills have larger carbide tip and improved geometry for longer life. Dowel drill style for drilling blind holes in particle board, MDF, and solid wood. Carbide tipped for long life. Screw in the end for height adjustment.

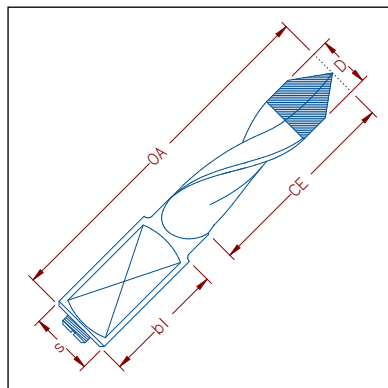
D135 = 8mm x 20mm shank - 55mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<b>D135.050R</b>	<i>D135.050L</i>	5	30	20	8	55
<b>D135.060R</b>	<i>D135.060L</i>	6	30	20	8	55
<i>D135.064R</i>		1/4"	30	20	8	55
<i>D135.070R</i>	<i>D135.070L</i>	7	30	20	8	55
<b>D135.080R</b>	<i>D135.080L</i>	8	30	20	8	55
<i>D135.090R</i>	<i>D135.090L</i>	9	30	20	8	55
<b>D135.100R</b>	<b>D135.100L</b>	10	30	20	8	55
<i>D135.120R</i>	<i>D135.120L</i>	12	30	20	8	55

D140 = 8mm x 20mm shank - 67mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<i>D140.040R</i>		4	40	20	8	67
<i>D140.050R</i>	<i>D140.050L</i>	5	40	20	8	67
<i>D140.060R</i>	<i>D140.060L</i>	6	40	20	8	67
<i>D140.064R</i>		1/4"	40	20	8	67
<b>D140.070R</b>	<i>D140.070L</i>	7	40	20	8	67
<i>D140.080R</i>	<i>D140.080L</i>	8	40	20	8	67
<i>D140.090R</i>		9	40	20	8	67
<i>D140.095R</i>		3/8"	40	20	8	67
<i>D140.100R</i>		10	40	20	8	67
<i>D140.120R</i>		12	40	20	8	67

# Industrial Quality Thru-hole Drills



Lm Pb PI Fb Hw Sw

See Material Guide p4

For use on CNC drill banks and portable machines. Industrial quality dowel drills have larger carbide tip and improved geometry for longer life. Thru-hole drill minimizes chipping on exit hole on laminates, particle board, MDF and solid wood. Carbide tipped for long life. Screw in the end for height adjustment.

D145 = 10mm x 20mm shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D145.040R	D145.040L	5/32"	27	20	10	57
D145.050R	D145.050L	5	27	20	10	57
D145.060R	<i>D145.060L</i>	6	27	20	10	57
D145.070R	D145.070L	7	27	20	10	57
D145.080R	D145.080L	8	27	20	10	57
D145.090R	D145.090L	9	27	20	10	57
D145.100R	D145.100L	10	27	20	10	57
<i>D145.110R</i>	<i>D145.110L</i>	11	27	20	10	57
D145.120R	<i>D145.120L</i>	12	27	20	10	57
<i>D145.130R</i>	<i>D145.130L</i>	13	27	20	10	57
<i>D145.150R</i>	<i>D145.150L</i>	15	27	20	10	57

D150 = 10mm x 20mm shank - 70mm over all length

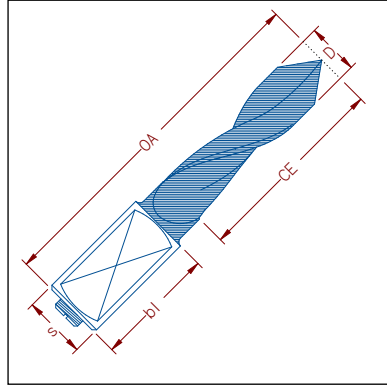
PART# RH	PART# LH	D	CE	b1	s	OA
D150.040R	D150.040L	5/32"	40	20	10	70
D150.047R	D150.047L	3/16"	40	20	10	70
D150.050R	D150.050L	5	40	20	10	70
D150.055R	D150.055L	7/32"	40	20	10	70
D150.060R	D150.060L	6	40	20	10	70
D150.064R	D150.064L	1/4"	40	20	10	70
D150.070R	D150.070L	7	40	20	10	70
D150.080R	D150.080L	8	40	20	10	70
D150.090R	D150.090L	9	40	20	10	70
D150.095R	D150.095L	3/8"	40	20	10	70
D150.100R	D150.100L	10	40	20	10	70
D150.110R	<i>D150.110L</i>	11	40	20	10	70
<i>D150.111R</i>	<i>D150.111L</i>	7/16"	40	20	10	70
D150.120R	D150.120L	12	40	20	10	70
D150.127R	D150.127L	1/2"	40	20	10	70
D150.140R	D150.140L	14	40	20	10	70
D150.150R	D150.150L	15	40	20	10	70
<i>D150.160R</i>	<i>D150.160L</i>	16	40	20	10	70

D155 = 10mm x 26mm shank - 77mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D155.040R		4	45	26	10	77
D155.050R	D155.050L	5	45	26	10	77
<i>D155.060R</i>	<i>D155.060L</i>	6	45	26	10	77
<i>D155.070R</i>		7	45	26	10	77
<i>D155.080R</i>	<i>D155.080L</i>	8	45	26	10	77
<i>D155.100R</i>	<i>D155.100L</i>	10	45	26	10	77



# Solid Carbide Thru-hole Drills



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Solid carbide design provides maximum wear resistance and strength. Thru-hole drill minimizes chipping on exit hole on laminates, particle board, MDF and solid wood. Screw in the end for height adjustment.

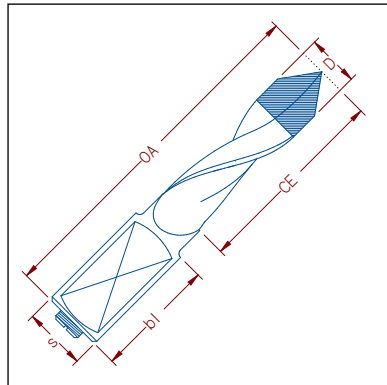
D157 = 10mm x 20mm shank - 57mm over all Length

PART# RH	PART# LH	D	CE	b1	s	OA
D157.030R	D157.030L	3	30	20	10	57
<i>D157.040R</i>	<i>D157.040L</i>	5/32"	30	20	10	57
D157.050R	D157.050L	5	30	20	10	57
D157.080R	D157.080L	8	30	20	10	57

D158 = 10mm x 27mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D158.030R	D158.030L	3	35	27	10	70
<i>D158.050R</i>	<i>D158.050L</i>	5	35	27	10	70
<i>D158.060R</i>	<i>D158.060L</i>	6	35	27	10	70
D158.070R	D158.070L	7	35	27	10	70
<i>D158.080R</i>	<i>D158.080L</i>	5/16"	35	27	10	70

# Industrial Quality Carbide Thru-hole (8mm Shank)



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use on CNC drill banks and portable machines. Industrial quality dowel drills have larger carbide tip and improved geometry for longer life. Thru-hole drill minimizes chipping on exit hole on laminates, particle board, MDF and solid wood. Carbide tipped for long life. Screw in the end for height adjustment.

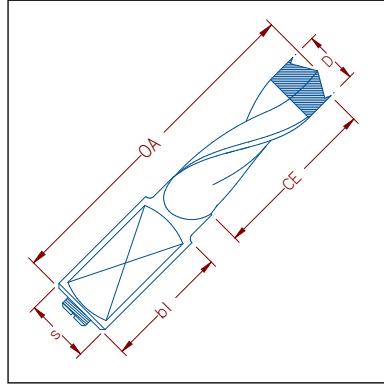
D160 = 8mm x 20mm shank - 55mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D160.050R	D160.050L	5	30	20	8	55
<i>D160.080R</i>	<i>D160.080L</i>	5/16"	30	20	8	55

D165 = 8mm x 25mm shank - 67mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
<i>D165.050R</i>		5	40	25	8	67
<i>D165.060R</i>	<i>D165.060L</i>	6	40	25	8	67
<i>D165.080R</i>	<i>D165.080L</i>	5/16"	40	25	8	67

# Industrial Quality “Durox” Dowel Drills



Lm Pb PI Fb Hw Sw

See Material Guide p4

For use on CNC drill banks and portable machines. Durox style dowel drills have superior geometry over industrial and proline drills to prevent chipping on brittle delicate laminates. Dowel drill style for drilling blind holes in particle board, MDF and solid wood. Carbide tipped for long life. Screw in the end for height adjustment.

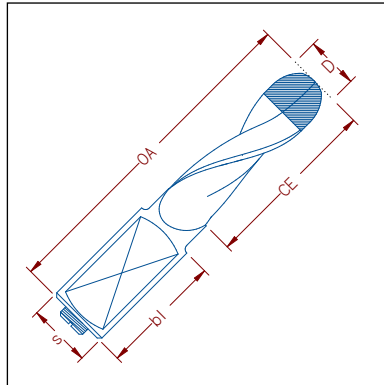
D146 = 10mm x 30mm shank - 58mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D146.050R	D146.050L	5	27	30	10	58
D146.080R	D146.080L	5/16"	27	30	10	58

D151 = 10mm x 24mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D151.050R	D151.050L	5	35	24	10	70
D151.080R	D151.080L	5/16"	35	24	10	70

# Industrial Quality “Durox” Thru-hole Drills



Lm Pb PI Fb Hw Sw

See Material Guide p4

For use on CNC drill banks and portable machines. Durox style thru hole drills have superior geometry over industrial and proline drills to prevent chipping on brittle delicate laminates. Thru-hole drill minimizes chipping on exit hole on laminates, particle board, MDF and solid wood. Carbide tipped for long life. Screw in the end for height adjustment, 10mm shank with flat for set screws.

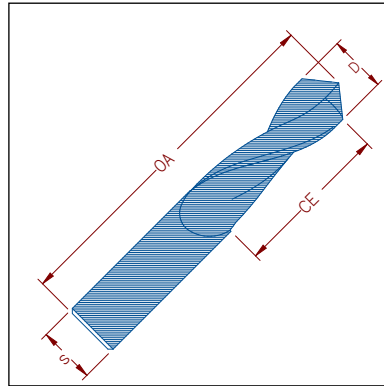
D147 = 10mm x 24mm shank - 57mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D147.050R	D147.050L	5	27	24	10	57
D147.080R	D147.080L	5/16"	27	24	10	57

D152 = 10mm x 24mm shank - 70mm over all length

PART# RH	PART# LH	D	CE	b1	s	OA
D152.050R	D152.050L	5	35	24	10	70
D152.080R	D152.080L	5/16"	35	24	10	70

# Solid Carbide Centre Drill



**Lm Pb PI Fb Hw Sw**

See Material Guide p4

For use with D270 & D275 series adapters. Solid carbide center drill provides excellent wear resistance. Good for drilling in wood products as well as hard plastics.

PART# RH	PART# LH	D	CE	OA
D167.020R	D167.020L	2	18	49
D167.025R	D167.025L	2.5	22	55
D167.030R	D167.030L	3	22	55
D167.032R	D167.032L	1/8"	22	55
D167.035R	D167.035L	3.5	25	55

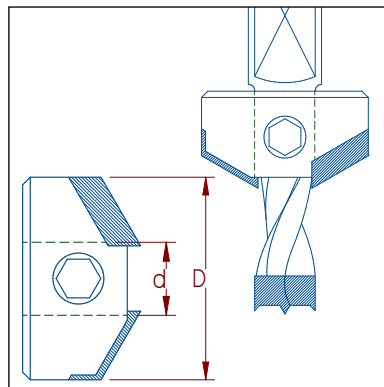
PART# RH	PART# LH	D	CE	OA
D167.040R	D167.040L	5/32"	25	55
D167.050R	D167.050L	5	25	55

Brad Point

PART#	D	CE	OA
D167.030R-BP*	3	22	55
D167.035L-BP*	3.5	25	55

\* Available while quantity last. To be discontinued

# Carbide Tipped Shell Countersink



**Lm Pb PI Fb Hw Sw**

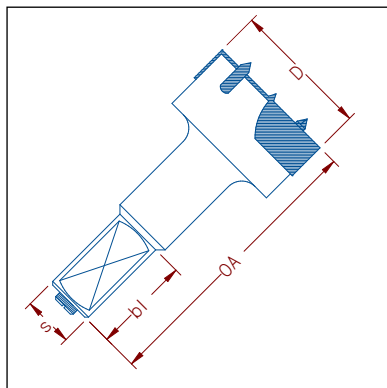
See Material Guide p4

For use with D100 - D155 metric drills. Countersink fastens onto twist of drill with set screw. Countersinks for a 90° screw head.

PART# RH	PART# LH	d	D
D175.040R	D175.040L	5/32"	15.5
D175.050R	D175.050L	5	15.5
D175.060R	D175.060L	6	15.5
D175.070R	D175.070L	7	18

PART# RH	PART# LH	d	D
D175.080R	D175.080L	5/16"	18
D175.090R	D175.090L	9	18
D175.100R	D175.100L	10	20
D175.110R		11	20
D175.120R	D175.120L	12	20

# Industrial 2+2 Wing Hinge Boring Drills



Lm Pb PI Fb Hw Sw

See Material Guide p4

For use on CNC drill banks and portable machines. Hinge style bits for drilling larger diameter holes. For drilling blind holes in particle board, MDF, and solid wood. Carbide tipped for long life. Screw in the end for height adjustment.

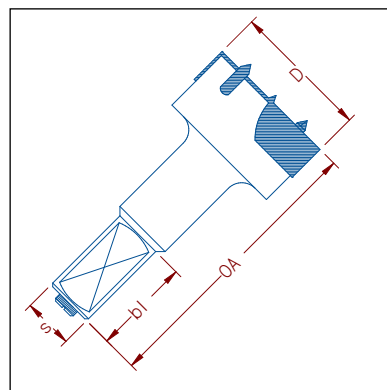
D180 = 10mm x 26mm shank - 57mm over all length

PART# RH	PART# LH	D	b1	s	OA
D180.150R	D180.150L	15	26	10	57
D180.160R	<i>D180.160L</i>	16	26	10	57
<i>D180.170R</i>		17	26	10	57
D180.180R	D180.180L	18	26	10	57
D180.190R		19	26	10	57
D180.200R	D180.200L	20	26	10	57
D180.220R	D180.220L	22	26	10	57
D180.250R	D180.250L	25	26	10	57
D180.260R	<i>D180.260L</i>	26	26	10	57
D180.300R	<i>D180.300L</i>	30	26	10	57
D180.310R	D180.310L	31	26	10	57
D180.320R	D180.320L	32	26	10	57
D180.350R	D180.350L	35	26	10	57
<i>D180.380R</i>	<i>D180.380L</i>	38	26	10	57
D180.400R	<i>D180.400L</i>	40	26	10	57

D185 = 10mm x 26mm shank - 70mm over all length

PART# RH	PART# LH	D	b1	s	OA
D185.150R	D185.150L	15	26	10	70
<i>D185.160R</i>		16	26	10	70
D185.180R	<i>D185.180L</i>	18	26	10	70
D185.200R	D185.200L	20	26	10	70
D185.220R	<i>D185.220L</i>	22	26	10	70
<i>D185.225R</i>	<i>D185.225L</i>	22.5	26	10	70
D185.250R	D185.250L	25	26	10	70
D185.260R	<i>D185.260L</i>	26	26	10	70
D185.300R	<i>D185.300L</i>	30	26	10	70
D185.350R	<i>D185.350L</i>	35	26	10	70
D185.380R	D185.380L	38	26	10	70
<i>D185.400R</i>	<i>D185.400L</i>	40	26	10	70

# Industrial 3+3 Wing Hinge Boring Drills



Pb PI Fb Hw Sw

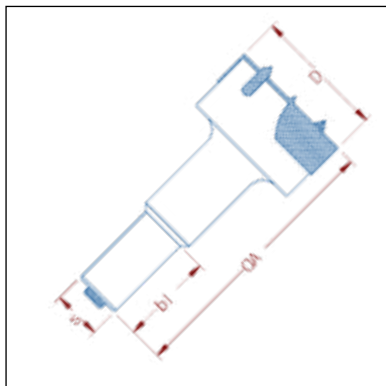
See Material Guide p4

For use on CNC drill banks and portable machines. Hinge style bits for drilling larger diameter holes. For drilling blind holes in particle board, MDF and solid wood. Carbide tipped for long life. Tool has 3 wings to help eliminate chipping in brittle laminates. Screw in the end for height adjustment.

PART# RH	PART# LH	D	b1	s	OA
<i>D195.250R</i>	<i>D195.250L</i>	25	30	10	57
<i>D195.260R</i>	<i>D195.260L</i>	26	30	10	57
<i>D195.300R</i>	<i>D195.300L</i>	30	30	10	57

PART# RH	PART# LH	D	b1	s	OA
D195.350R	D195.350L	35	30	10	57
<i>D195.400R</i>	<i>D195.400L</i>	40	30	10	57

# Carbide Tipped Boring Bits



Lm Pb Pl Fb Hw Sw

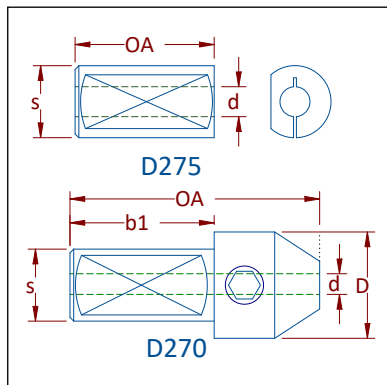
See Material Guide p4

Designed with double flute with center point, two plunge wings and two spurs for drilling holes in wood, veneer, laminate and particle board. Designed for drill press machines. Available in right hand rotation only.

PART# RH	D	b1	s	OA
D260.14R	14	30	10	90
D260.15R	15	30	10	90
D260.16R	16	30	10	90
D260.17R	17	30	10	90
D260.18R	18	30	10	90
D260.19R	19	30	10	90
D260.20R	20	30	10	90
D260.22R	22	30	10	90
D260.23R	23	30	10	90
D260.24R	24	30	10	90
D260.25R	25	30	10	90
D260.26R	26	30	10	90
D260.27R	27	30	10	90

PART# RH	D	b1	s	OA
D260.28R	28	30	10	90
D260.29R	29	30	10	90
D260.30R	30	30	10	90
D260.32R	32	30	10	90
D260.35R	35	30	10	90
D260.38R	38	30	10	90
D260.40R	40	30	10	90
D260.45R	45	30	10	90
D260.50R	50	30	10	90
D260.55R	55	30	10	90
D260.58R	58	30	10	90
D260.60R	60	30	10	90

# Drill Adapters & Bushings



**Pb** **PI** **Fb** **Hw** **Sw**

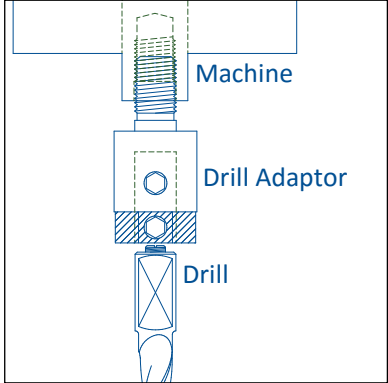
See Material Guide p4

Drill adapters used to allow standard metric shank drills to be used in CNC drill bank or boring machine that requires a 10mm shank with a flat. D275 unit fastens to drill using a set screw. D270 unit uses the clamping pressure on the adapter to tighten the drill.

PART#	d	D	b1	s	OA
D270.20	2	15	20	10	38
D270.25	2.5	15	20	10	38
D270.30	3	15	20	10	38
D270.32	3.2	15	20	10	38
D270.35	3.5	15	20	10	38
<i>D270.40</i>	4	15	20	10	38
<i>D270.45</i>	4.5	15	20	10	38
<i>D270.50</i>	5	15	20	10	38
<i>D270.60</i>	6	15	20	10	38

PART#	d	D	OA
<i>D275.20</i>	2	10	23
<i>D275.25</i>	2.5	10	23
<i>D275.30</i>	3	10	23
<i>D275.32</i>	3.2	10	23
<i>D275.35</i>	3.5	10	23
<i>D275.40</i>	4	10	23
<i>D275.45</i>	4.5	10	23
<i>D275.50</i>	5	10	23

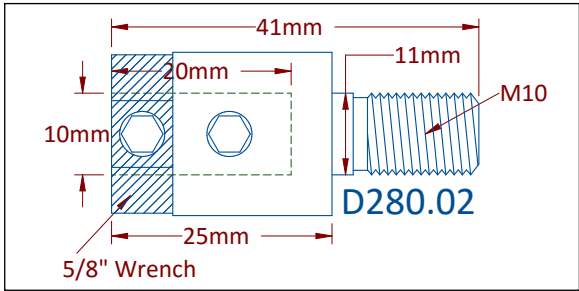
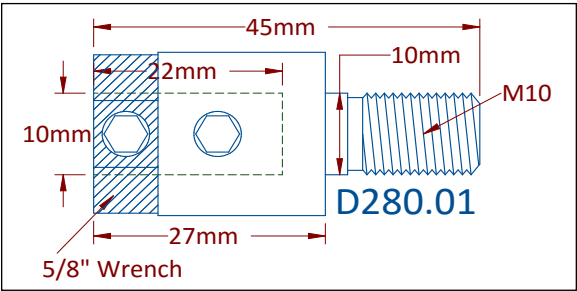
# Threaded Drill Adapters



**Pb PI Fb Hw Sw**

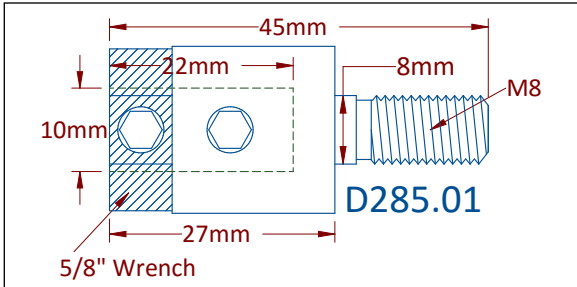
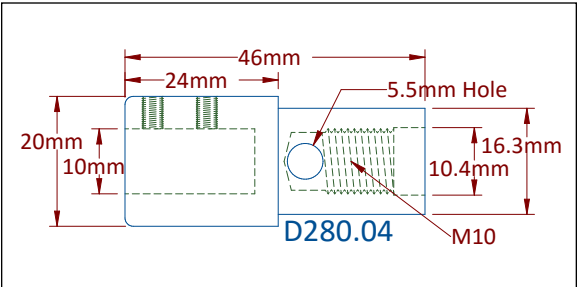
See Material Guide p4

Various drill adapters. All adapters have the ability to take a 10mm drill shank with flat and have 2 set screws to fasten the drill in. Various thread sizes and tapers are used in different machines. D290.N adapter fits in all of the D290 items listed below.



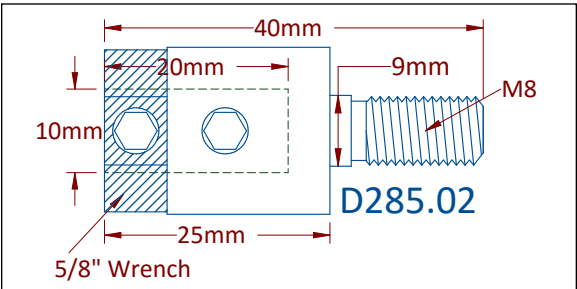
PART#	Thread	Machine Make
D280.01R	Right hand	Holzma, Ayen, Mayer, Torwegge, Knoevenagel
D280.01L	Left hand	

PART#	Thread	Machine Make
D280.02R	Right hand	Morbidelli, Biesse, Masterwood, Torwegge, Vitap, Weeke
D280.02L	Left hand	



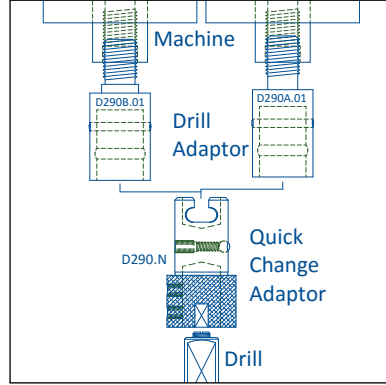
PART#	Thread	Machine Make
D280.04R	Right hand	Scheer
D280.04L	Left hand	

PART#	Thread	Machine Make
D285.01R	Right hand	Nottmeyer
D285.01L	Left hand	



PART#	Thread	Machine Make
D285.02R	Right hand	Morbidelli, Nottmeyer, Masterwood
D285.02L	Left hand	

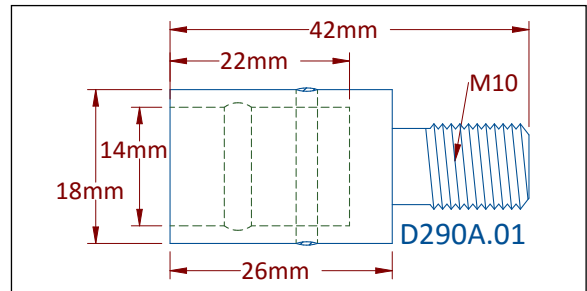
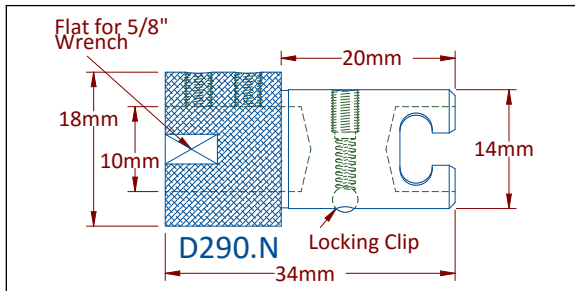
# Quick Change Drill Adapters Set



**Pb PI Fb Hw Sw**

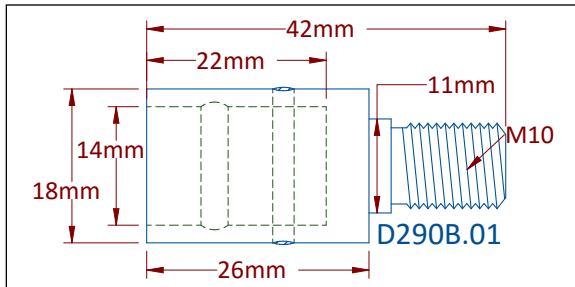
See Material Guide p4

Quick change adapter allows you to change your drills without loosening set screws. Universal holder has the ability to take a 10mm drill shank with flat and has 2 set screws to fasten the drill in. Various thread sizes and tapers are used in different machines.



PART#	Description
D290.N	Universal quick change unit for 10mm shank drills

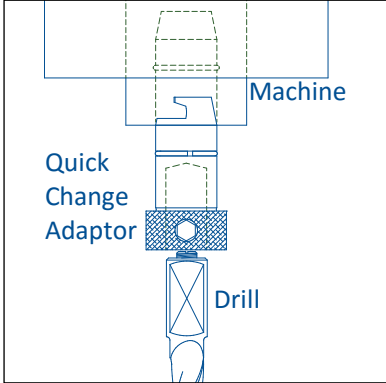
PART#	Thread	Machine Make
D290A.01R	Right hand	Holzma, Ayen, Mayer Torwegge, Knoevenagel
D290A.01L	Left hand	



PART#	Thread	Machine Make
D290B.01R	Right hand	Morbidelli, Biesse, Masterwood, Torwegge, Vitap, Weeke
D280B.01L	Left hand	



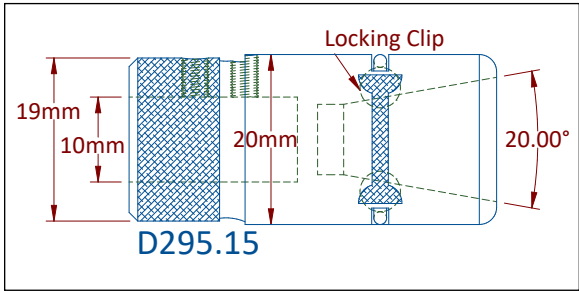
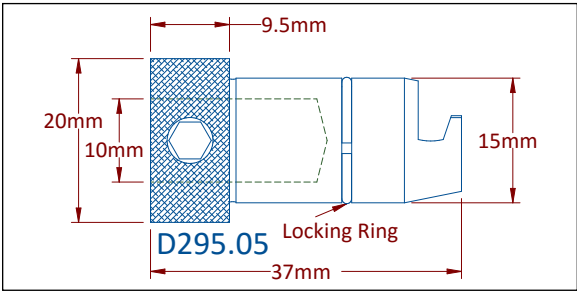
# Quick Change Drill Adapters for Existing Systems



**Pb PI Fb Hw Sw**

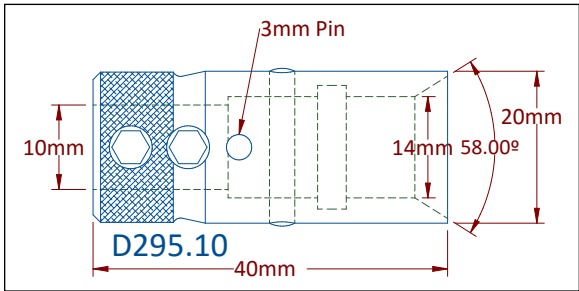
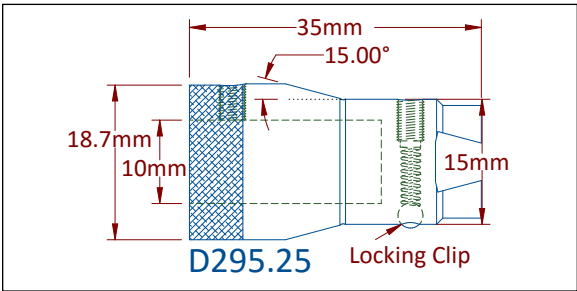
See Material Guide p4

Quick change adapter allows you to change your drills without loosening set screws. These quick change fittings accept a 10mm drill shank with flat on one end and on the other end have unique quick change systems for different machines.



PART#	Machine Make
D295.05R	Biesse

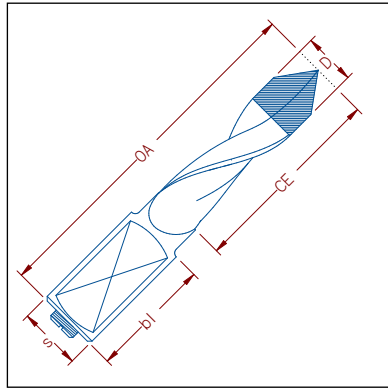
PART#	Thread	Machine Make
D295.15R	Right Hand	Morbidelli



PART#	Machine Make
D295.25R	Busellato

PART#	Machine Make
D295.10R	Nottmeyer

# PCD Diamond Dowel Drills



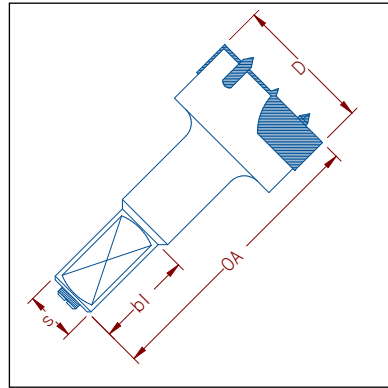
Lm PI Fb Hw Sw Pb

See Material Guide p4

For use on CNC drill banks. Industrial quality PCD diamond dowel drills will outlast conventional drills 50 to 100 times when used in proper applications. Dowel drill style for drilling blind holes in MDF and solid wood. Screw in the end for height adjustment, 10mm shank with flat for set screws.

PART# RH	PART# LH	D	b1	s	OA
<i>D100.050R.PCD</i>	<i>D100.050L.PCD</i>	5	27	10	57
<i>D100.080R.PCD</i>	<i>D100.080L.PCD</i>	8	27	10	57

# PCD Diamond Hinge Hole Drills



**Lm** **PI** **Fb** **Hw** **Sw** **Pb**

See Material Guide p4

For use on CNC drill banks. Industrial quality PCD diamond dowel drills will outlast conventional drills 50 to 100 times when used in proper applications. Hinge style bits for drilling larger diameter blind holes in MDF and solid wood. Screw in the end for height adjustment.

D180 = 10mm x 26mm shank - 57mm over all length

PART # RH	PART # LH	D	b1	s	OA
<i>D180.200R.PCD</i>		20	26	10	57
<i>D180.350R.PCD</i>		35	26	10	57

D185 = 10mm x 28mm shank - 70mm over all length

PART# RH	PART # LH	D	b1	s	OA
<i>D185.150R.PCD</i>		15	26	10	70
<i>D185.350R.PCD</i>		35	26	10	70

## 2 Flute PCD Straight



Rp Fb Hw

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Solid carbide body unless indicated. Radius corners to provide improved bottom finish in pocketing applications.

PART #	DIA	CEL	SHK	OAL
R100-002	1/4	1/2	1/4	2
R100-003	1/4	3/4	1/4	2-1/2
R100-004	1/4	3/4	1/4	3
R100-006	3/8	7/8	3/8	3
R100-007	3/8	1-1/8	3/8	3
R100-008	1/2	5/8	1/2	2-1/2
R100-009	1/2	1	1/2	3
<i>R100-009.L</i>	1/2	1	1/2	3
R100-010	1/2	1-3/8	1/2	3-1/2
R100-013 •	5/8	1-5/8	5/8	4
R100-019	3/4	3/4	3/4	3-1/2

- Steel Body,  
L = Left Hand

## 2 Flute PCD Serrated Tooth



Rp Hw Fb

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Serrated cutting edge cuts more freely and reduces de-lamination. Solid carbide body unless indicated.

PART #	DIA	CEL	SHK	OAL
R101-004	1/4	3/4	1/4	3
<i>R101-007</i>	3/8	1-1/8	3/8	3
R101-010	1/2	1-3/8	1/2	3-1/2
<i>R101-013 •</i>	5/8	1-5/8	5/8	4

- Steel Body

## 3 Flute PCD Reinforced Plastic



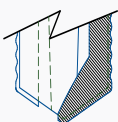
Rp Fb Hp Hw

See Material Guide p4

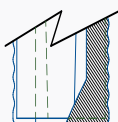
Serrated tooth design helps cleanly shear glass or carbon fibers in composites. Solid carbide body unless indicated.

PART #	DIA	CEL	SHK	OAL	END
<i>R103-004</i>	3/8	1-1/8	3/8	3	Drill Point
<i>R103-005</i>	7/16	1-1/8	1/2	3-1/2	Drill Point
<i>R103-007</i>	1/2	1-1/8	1/2	3	Drill Point
R103-008	1/2	1-3/8	1/2	3-7/8	Drill Point
<i>R103-010</i>	1/2	1-5/8	1/2	3-1/2	Drill Point
<i>R103-013 •</i>	5/8	1-7/8	5/8	4	Drill Point
<i>R103-004EM</i>	3/8	1-1/8	3/8	3	End Mill
<i>R103-007EM</i>	1/2	1-1/8	1/2	3	End Mill
<i>R103-008EM</i>	1/2	1-1/2	1/2	3-7/8	End Mill
<i>R103-010EM</i>	1/2	1-5/8	1/2	3-1/2	End Mill
<i>R103-013EM •</i>	5/8	1-7/8	5/8	4	End Mill

- Steel Body



Drill Point



End Mill

## 3 Flute PCD Rougher Finisher

PART #	DIA	CEL	SHK	OAL
R104-004	3/8	5/8	3/8	3
<i>R104-007</i>	3/8	7/8	3/8	3
<i>R104-010</i>	1/2	5/8	1/2	3
R104-011	1/2	7/8	1/2	3
R104-013	1/2	1-1/4	1/2	3-1/2
<i>R104-016</i> •	3/4	1-3/8	3/4	4

• Steel body



Rp Fb Hw

See Material Guide p4

Serrated tooth design helps cleanly shear glass or carbon fibers in composites. Finishing wing provides smooth finish. Solid carbide body unless indicated.

## 3 Flute Slow Upcut

PART #	DIA	CEL	SHK	OAL
R106-009	1/2	1-1/8	1/2	3



Rp Fb Hw

See Material Guide p4

Excellent wear resistance in abrasive materials. Solid carbide body for increased rigidity. 2° Upshear works great on Composites or sizing MDF doors. Continuous knife for line free cut.

## 2 Flute PCD Ballnose

PART #	DIA	CEL	SHK	OAL
R109-004	1/4	3/8	1/4	3
R109-007	3/8	1/2	3/8	3
R109-010	1/2	5/8	1/2	3
R109-013 •	5/8	7/8	5/8	3
<i>R109-017</i> •	3/4	1	3/4	4

• Steel body



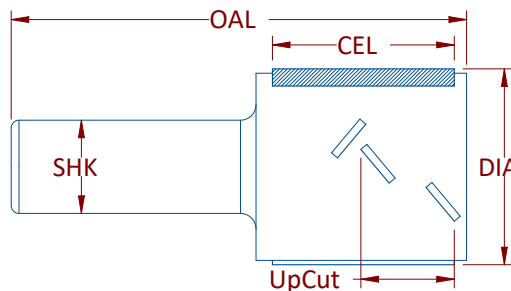
Rp Fb Hw

See Material Guide p4

For adding structural rads in pocketing applications. PCD edge provides excellent wear resistance in abrasive material. Solid carbide body unless indicated.

## “HI SHEAR” Router Tool

PART #	DIA	CEL	SHK	OAL	UpCut	Wings
R120-025	1	1-1/2	25mm	100mm	.380"	2+2
R120-030	1	2-1/2	3/4"	5	1-1/4	2+2
R120-040	40mm	38mm	3/4"	93mm	21mm	2+2



Hw Sw Fb Lm

See Material Guide p4

“HI SHEAR” router bit provides excellent perimeter cut quality. Tool geometry allows for minimal corner tearout. PCD edge provides excellent wear resistance in abrasive material.



Fb Sw Hw

See Material Guide p4

Designed for mortising side of doors to hold lock sets. PCD cutting edge for long life in engineered materials. Solid carbide body.

## 3 Flute PCD Lock Mortise

PART #	DIA	CEL	LOF	SHK	OAL
R230-007	3/4	7/8	4-7/8	3/4	7



Fb Pl Lm Pb Rp Hw

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Compression style wings help eliminate chipping and delamination.

## 1 + 1 Wing PCD "ECODIA" Style

PART #	DIA	CEL	UPCUT	SHK	OAL
ECODIA-00*	3/8	7/8	.250"	3/8	2-3/4
ECODIA-01	1/2	1-1/16	.433"	1/2	2-3/4
ECODIA-01.S	1/2	1	.433"	1/2	2-3/4
ECODIA-01.SM	1/2	15/16	.200"	1/2	2-3/4
ECODIA-01L	1/2	1-1/16	.433"	1/2	2-3/4
ECODIA-02	1/2	1-3/8	.433"	1/2	3-3/4
ECODIA-02L	1/2	1-3/8	.433"	1/2	3-3/4
ECODIA-03	5/8	1-1/16	.433"	5/8	2-3/4
ECODIA-04	5/8	1-3/8	.433"	3/4	4
ECODIA-05	3/4	1-1/16	.433"	3/4	3-5/8
ECODIA-06	3/4	1-3/8	.433"	3/4	4
ECODIA-07	3/4	1-3/4	.433"	3/4	4-3/8
ECODIA-08	3/4	1-7/8	.433"	3/4	4-1/2
ECODIA-08L	3/4	1-7/8	.433"	3/4	4-1/2

\* Indicates no guarantee against breakage due to small diameter  
L = left hand rotation



Fb Pl Lm Pb Rp Hw

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Compression style wings help eliminate chipping and delamination.

## 2+2 PCD "ECO-SPARK" Style

PART #	DIA	CEL	UPCUT	SHK	OAL
ECO-SPARK-00	3/8	23mm	.290"	3/8	2-3/4
ECO-SPARK-01	1/2	28mm	.290"	1/2	75mm
ECO-SPARK-03	5/8	1-1/8	.290"	5/8	3-3/4
ECO-SPARK-04	5/8	1-3/8	.290"	5/8	4
ECO-SPARK-05	3/4	1	.290"	3/4	3-1/2
ECO-SPARK-06	3/4	1-3/8	.290"	3/4	4
ECO-SPARK-07	3/4	1-3/4	.290"	3/4	4-3/8

## 3 Flute PCD “HIFEED” Style

PART #	DIA	CEL	UPCUT	SHK	OAL
DIA-M12.28.3	12mm	28mm	7mm	1/2	3
DIA-HIFEED.01	1/2	1	.290"	1/2	3
DIA-HIFEED.02	1/2	32mm	7mm	1/2	3-1/4
DIA-HIFEED.03	5/8	1	.290"	3/4	4
DIA-HIFEED.05	3/4	1-1/8	.290"	3/4	3-3/4
DIA-HIFEED.06	3/4	1-3/8	.290"	3/4	4-3/8
DIA-HIFEED.07	3/4	1-7/8	.290"	3/4	4-3/8
DIA-HIFEED.11	1	1-7/8	.290"	1	4-3/8



Rp Fb Lm Pb Hw

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Compression style wings help eliminate chipping and delamination. Complex geometry closely matches 3 wings spiral tools.

## 3 Flute “HOGGING” PCD Routers

PART #	DIA	CEL	SHK	OAL
DIA-HIFEED.06RO	3/4	1-3/8	3/4	4
<i>DIA-HIFEED.08RO</i>	3/4	2-1/4	3/4	4-1/4



Fb Hw Rp

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Rougher style suited for hogging solid wood and MDF.

## PCD Diamond Downshear

PART#	DIA	CEL	SHK	Z	OAL
DIA-RTR.DS12	1/2	1/2	1/2	2+1	2-3/4
DIA-RTR.DS18	5/8	1/2	1/2	2+1	2-3/4

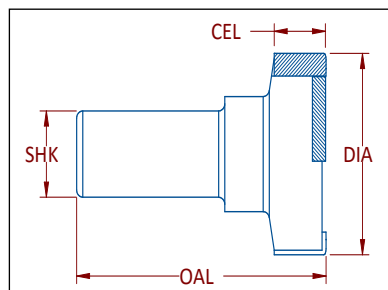
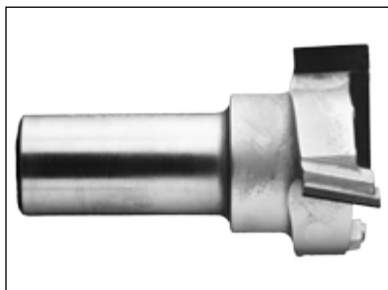


Rp Fb Hw

See Material Guide p4

PCD cutting tool provides excellent wear resistance in abrasive materials. Equipped with plunge top to allow straight plunging.

## PCD Diamond Pocketing Tool (with plunge)



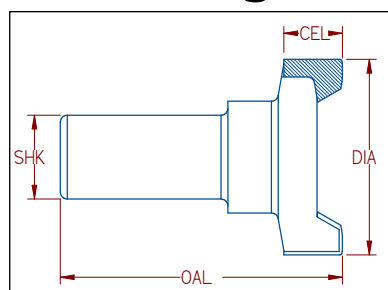
**Fb Hp Hw Rp**

See Material Guide p4

Excellent for pocketing centre panel on MDF doors. Unique “LA” grind generates extremely smooth bottom finish to reduce sanding required before finishing doors. Can also be used to surface or pocket in solid woods and plastics. Centre cutting tip allows plunging.

PART#	DIA	CEL	SHK	Z	OAL
DIA-RTR.1003	3/4	16mm	3/4	2	3-1/4
DIA-RTR.1006	1	16mm	3/4	2+1	3-1/4
DIA-RTR.1008	1-1/4	.470"	3/4	3+1	2-3/4
DIA-RTR.1508	1-1/2	1/2	3/4	3+1	2-1/2
DIA-RTR.2008	1-3/4	1/2	3/4	3+1	2-1/2
DIA-RTR.4002	2	5/8	3/4	3+1	2-5/8

## PCD Diamond Pocketing Tool (ramp in)



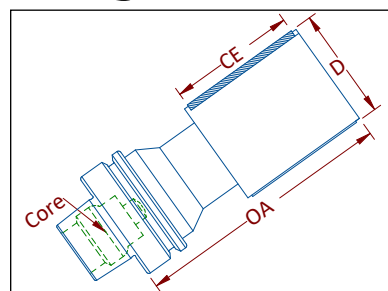
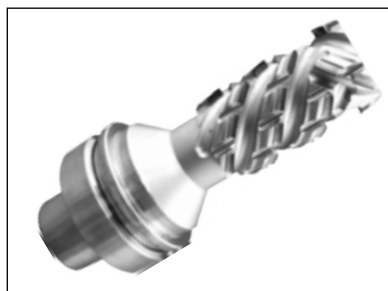
**Fb Hp Hw Rp**

See Material Guide p4

Excellent for pocketing center panel on MDF doors. Unique “LA” grind generates extremely smooth bottom finish to reduce sanding required before finishing doors. Can also be used to surface or pocket in solid woods and plastics. Tool does not have plunge and must be ramped into material.

PART#	DIA	CEL	SHK	Z	OAL
DIA-RTR.2009	1-3/4	1/2	3/4	3	2-1/2
DIA-RTR.4003	2	5/8	3/4	3	2-5/8

## PCD Diamond Integrated “HI SHEAR” Tool



**Hw Sw Fb Lm**

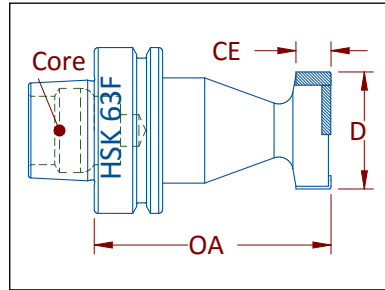
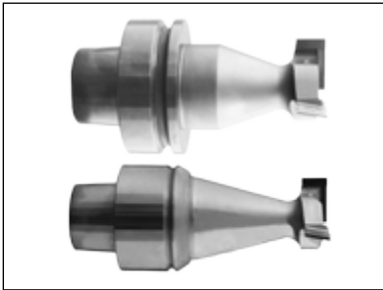
See Material Guide p4

“HI SHEAR” router tool provides excellent perimeter cut quality. Tool geometry allows for minimal corner tearout. PCD edge provides excellent wear resistance in abrasive material. Integrated tool design for maximum tool stability and reduced run out.

PART#	D	CE	Core	Z	OA
R120-062.63F	60mm	73mm	HSK63F	3+3	140mm
R120-040.63F	50mm	40mm	HSK63F	3+3	120mm



# PCD Diamond Integrated Pocketing Tool (with plunge)



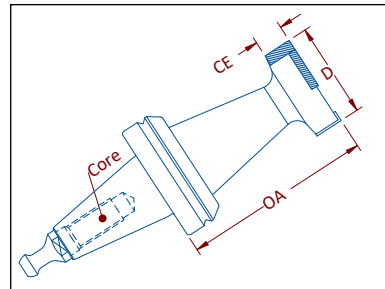
**Fb Hp Hw Rp**

See Material Guide p4

Excellent for pocketing centre panel on MDF doors. Unique “LA” grind generates extremely smooth bottom finish to reduce sanding required before finishing doors. Can also be used to surface or pocket in solid woods and plastics. Centre cutting tip allows plunging. Integrated tool design for maximum tool stability and reduced run out.

PART#	D	CE	Core	Z	OA
DIA-RTR.2008.63F	1-3/4	1/2	HSK 63F	3+1	90mm
DIA-RTR.2008.63FL	1-3/4	1/2	HSK 63F	3+1	110mm
DIA-RTR.4002.63FL	2	14mm	HSK 63F	3+1	110mm
DIA-RTR.2008.63TH	1-3/4	1/2	HSK 63 Thermwood	3+1	4-1/4

# PCD Diamond Integrated Pocketing<sup>Rp</sup> Tool (with plunge)



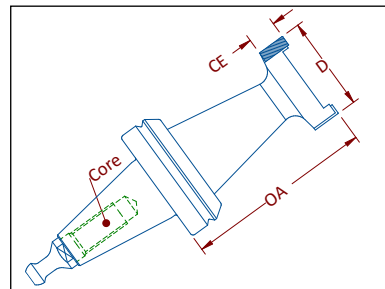
**Fb Hp Hw**

See Material Guide p4

Excellent for pocketing centre panel on MDF doors. Unique “LA” grind generates extremely smooth bottom finish to reduce sanding required before finishing doors. Can also be used to surface or pocket in solid woods and plastics. Centre cutting tip allows plunging. Integrated tool design for maximum tool stability and reduced run out.

PART#	D	CE	Core	Z	OA
DIA-RTR.2008.TH30	1-3/4	1/2	Thermwood 30	3+1	3-1/2

# PCD Diamond Integrated Pocketing Tool (ramp in)



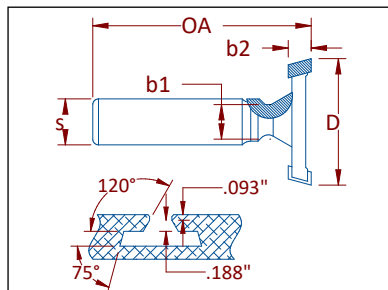
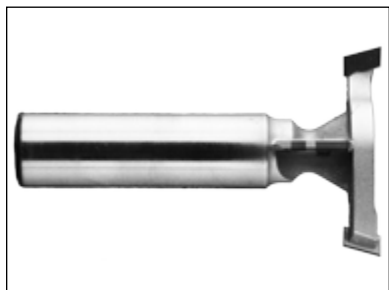
**Fb Hp Hw Rp**

See Material Guide p4

Excellent for pocketing centre panel on MDF doors. Unique “LA” grind generates extremely smooth bottom finish to reduce sanding required before finishing doors. Can also be used to surface or pocket in solid woods and plastics. Tool does not have plunge and must be ramped into material. Integrated tool design for maximum tool stability and reduced run out.

PART#	D	CE	Core	Z	OA
DIA-RTR.2009.TH30	1-3/4	1/2	Thermwood 30	3	3-1/2

## PCD Diamond "T" Slot Router Bit



**Fb**

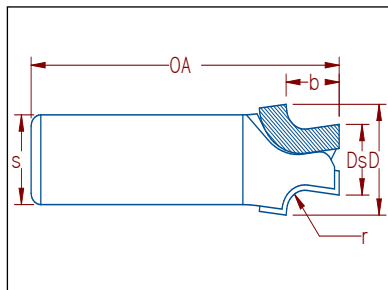
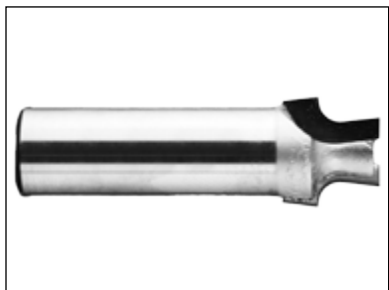
See Material Guide p4

For machining T-slots in MDF. Built to accept standard hanger brackets. Not designed to accept aluminum insert.

PART# RH	PART# LH	D	b1	b2	s	Z	OA
DIA-RTR.1447	DIA-RTR.1447L	1-3/8	3/8	1/4	1/2	2+1	2-3/8

L = left hand rotation

## PCD Diamond CNC Dovetail Tool



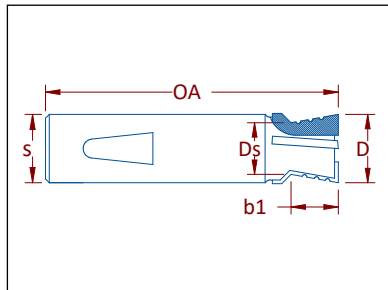
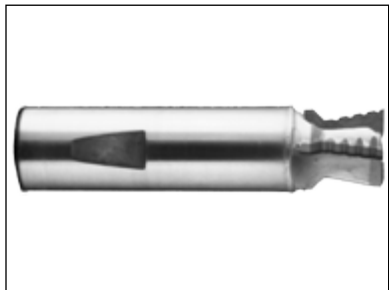
**Fb PI Hw Hp**

See Material Guide p4

Dovetail tool allows for use on CNC machines. For use with material thicknesses of 3/8" to 1/2". Mating dovetail joint is cut with 1/4" straight spiral.

PART#	D	Ds	b	r	s	OA
DIA-RTR.DT10	15mm	10mm	8.99mm	.125"	1/2	2

## PCD Diamond OMEC® Dovetail Tool



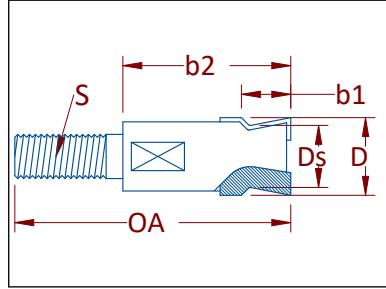
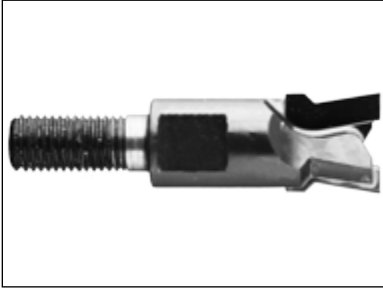
**Fb PI Hw Hp**

See Material Guide p4

Dovetail tool for use on Dodds dovetail machines. PCD cutting edge provides superior life over carbide. 3 wing chipbreaker helps eliminate tearing and furring in plywood and solid wood.

PART#	D	Ds	b1	s	OA
DIA-RTR.DT12	14mm	11.3mm	7.7mm	14mm	60mm
DIA-RTR.DT13	14mm	10.6mm	9.8mm	14mm	60mm

## PCD Diamond Dodds® Dovetail Tool



**Fb PI Hw Hp**

See Material Guide p4

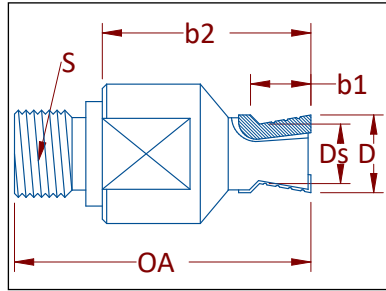
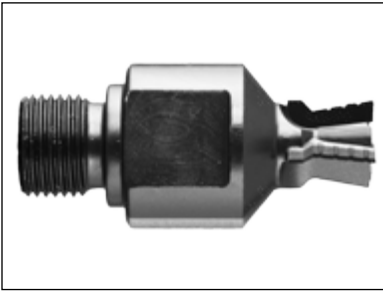
Dovetail tool for use on Dodds dovetail machines. Diamond cutting edge provides 50-100 times the life in MDF, plywood, and most hardwoods.

PART# RH	PART# LH	D	Ds	b1	b2	s	OA
DIA-RTR.DTD.312R	DIA-RTR.DTD.312L	14mm	11mm	.349"	1.157"	5/16"-24	2
DIA-RTR.DTD.375R	DIA-RTR.DTD.375L	14mm	11mm	.418"	1-1/4	5/16"-24	2

R = right hand rotation

L = left hand rotation

## PCD Diamond MJ Dovetail Tool



**Fb PI Hw Hp**

See Material Guide p4

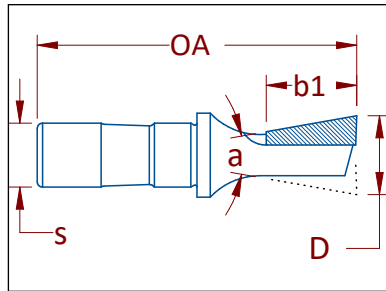
Dovetail tool for use on Merreen Johnson dovetail machines. Diamond cutting edge provides 50-100 times the life in MDF, plywood and most hardwoods. Unique chipbreaker design helps reduce tearing in plywoods.

PART# RH	PART# LH	D	Ds	b1	b2	s	OA
DIA-RTR.DTD.4213R	DIA-RTR.DTD.4213L	.557"	.427"	11mm	38mm	5/8"-18	2-1/8

R = right hand rotation

L = left hand rotation

## PCD Diamond Cantek® Dovetail Tool



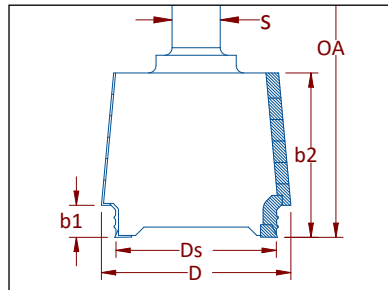
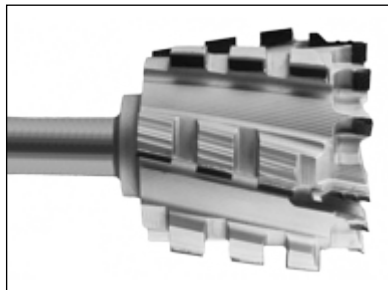
**Fb PI Hw Hp**

See Material Guide p4

Dovetail tool for use on Cantek dovetail machines. Diamond cutting edge provides 50-100 times the life in MDF, plywood, and most hardwoods.

PART#	D	a	b1	s	OA
DIA-RTR.DTD.6691R	14.8mm	20°	17mm	12mm	60mm

# PCD Diamond Tenon Tool



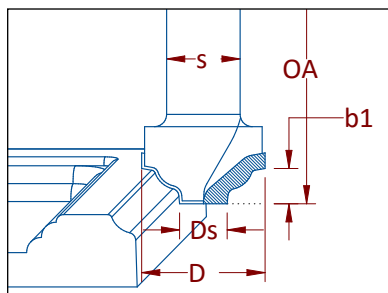
**Fb Hw Hp Rp**

See Material Guide p4

Tenon tool for cabinet door mitre applications. PCD cutting tool provides excellent wear resistance in abrasive materials.

PART#	D	Ds	b1	b2	s	Z	OA
DIA-RTR.MD8	75mm	2-1/2	1/2	65mm	3/4	3+9	125mm

# PCD Diamond "16C" MDF Door Bit



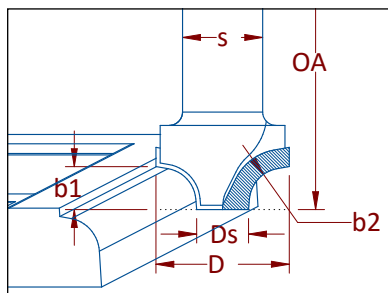
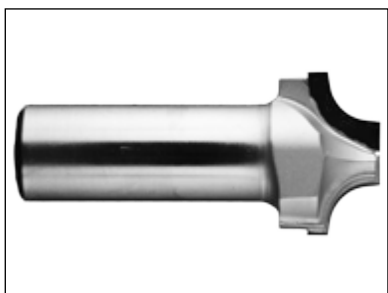
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative edge to MDF Doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	s	Z	OA
DIA-RTR.016C	1.260"	1/2	.355"	3/4	2	2-3/4

# PCD Diamond "16D" MDF Door Bit



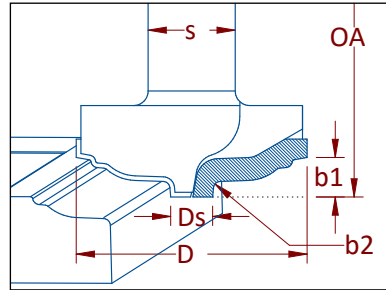
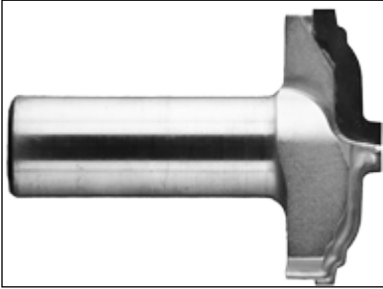
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative edge to MDF Doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	b2	s	Z	OA
DIA-RTR.016D	1.248"	1/2	.402"	.315"	3/4	2	2-3/4

## PCD Diamond “16E” MDF Door Bit



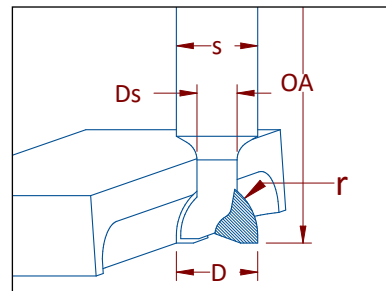
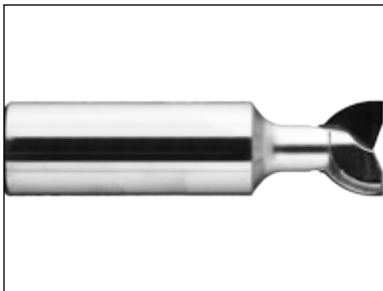
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative edge to MDF Doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	b2	s	Z	OA
DIA-RTR.016E	1.988"	.375"	.320"	.059"	3/4	2	2-3/4

## PCD Diamond “16F” MDF Door Bit



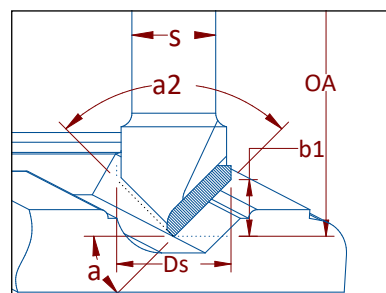
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for routing finger pull groove in cabinet doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	r	s	Z	OA
DIA-RTR.016F	3/4	.370"	.531"	3/4	2	3

## PCD Diamond “26A” MDF Door Bit



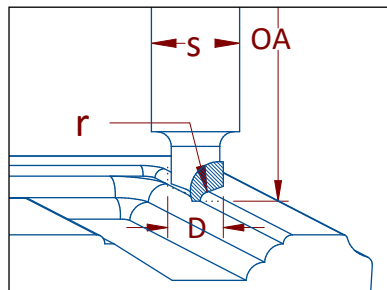
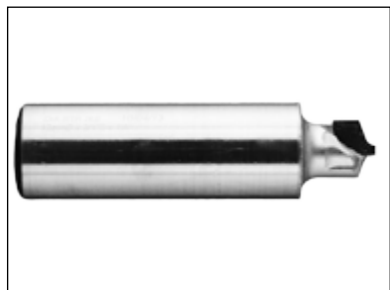
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	Ds	b1	a	a2	s	Z	OA
DIA-RTR.26A	26mm	13mm	45°	90°	3/4	1	2-3/4
DIA-RTR.26G	68mm	33mm	44.75°	90.50°	3/4	1	3-3/4

## PCD Diamond “26B” MDF Door Bit



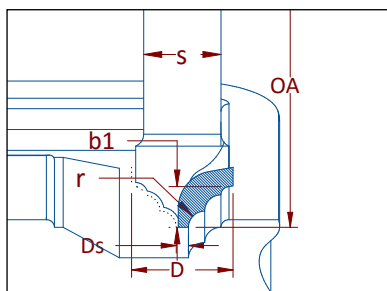
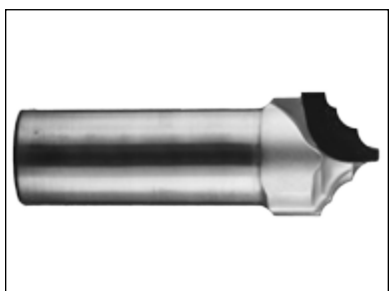
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	r	s	Z	OA
DIA-RTR.26B	12mm	2mm	3/4	1	2-3/4

## PCD Diamond “26C” MDF Door Bit



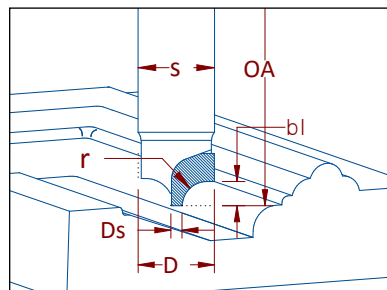
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	r	s	Z	OA
DIA-RTR.26C	25mm	3mm	10mm	4mm	3/4	1	2-3/4

## PCD Diamond “26D” MDF Door Bit



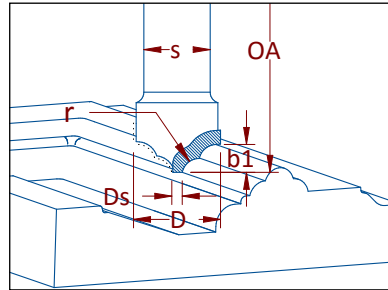
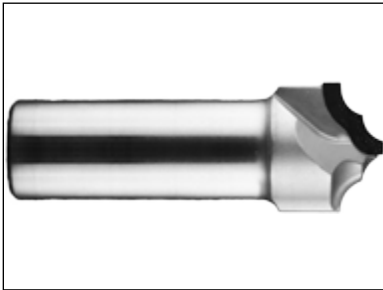
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	r	s	Z	OA
DIA-RTR.26D	19mm	3mm	6mm	6.1mm	3/4	1	2-5/8

## PCD Diamond “26E” MDF Door Bit



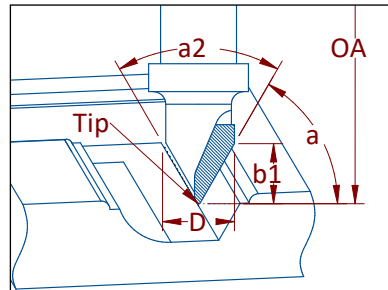
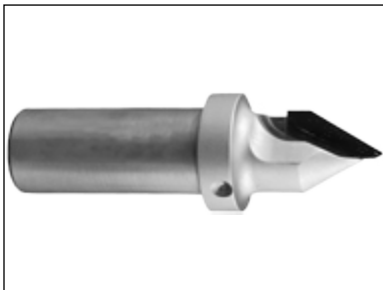
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	r	s	Z	OA
DIA-RTR.26E	25mm	3mm	8mm	5mm	3/4	1	2-3/4

## PCD Diamond “26F-I” MDF Door Bit



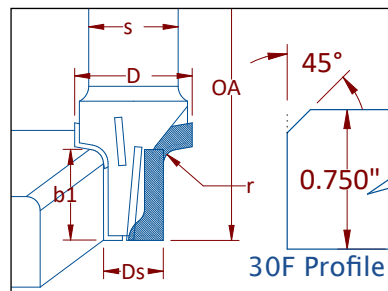
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	b1	a	a2	s	Z	OA	Tip
DIA-RTR.26F	18mm	15mm	60°	60°	3/4	1	3	0.5mm Rad
DIA-RTR.26H	20mm	.855"	67.5°	45°	3/4	1	3	2.0mm Flat
DIA-RTR.26I	15mm	.955"	75°	30°	3/4	1	3-3/8	2.0mm Flat

## PCD Diamond “30” MDF Door Bit



**Fb Hw Hp Rp**

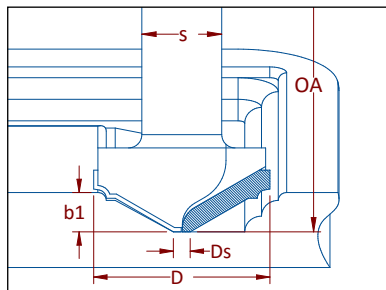
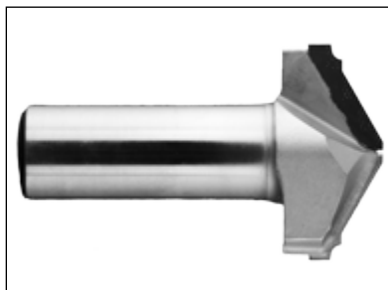
See Material Guide p4

PCD Diamond router bit for applying a decorative edge profiles on MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken. Tool has upshear to provide optimum edge quality MDF. Tools Cut .013" (0.33mm) into the spoilboard.

PART#	D	Ds	b1	s	r	Z	OA
DIA-RTR.30A	25mm	.500"	3/4	3/4	3mm	2+2	3-1/8
DIA-RTR.30B	25mm	.500"	3/4	3/4	2mm	2+2	3-1/8
DIA-RTR.30E	25mm	.500"	7/8	3/4	3mm	2+2	3-1/4
DIA-RTR.30F*	25mm	.500"	3/4	3/4	45°	2+2	3-1/8
DIA-RTR.30G	28mm	.500"	3/4	3/4	1/4	2	3-1/8
DIA-RTR.30H	35mm	.500"	3/4	3/4	3/8	2	3-1/8

\*1/8 Chamfer

## PCD Diamond “40A” MDF Door Bit



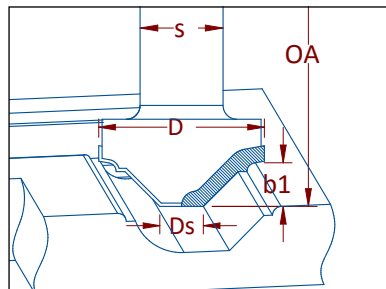
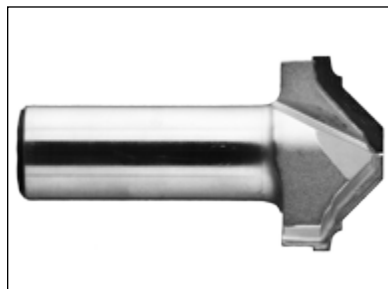
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	s	Z	OA
DIA-RTR.40A	42mm	4mm	10mm	3/4	2	2-3/4

## PCD Diamond “40B” MDF Door Bit



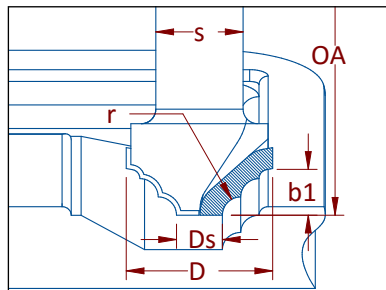
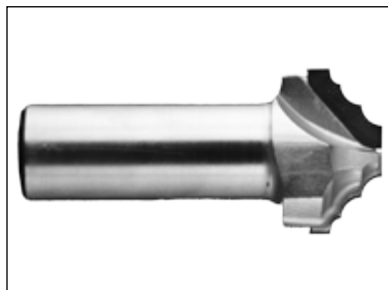
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	s	Z	OA
DIA-RTR.40B	38mm	.369”	10mm	3/4	2	2-3/4

## PCD Diamond “40C” MDF Door Bit



**Fb Hw Hp Rp**

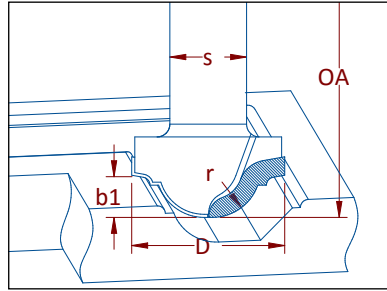
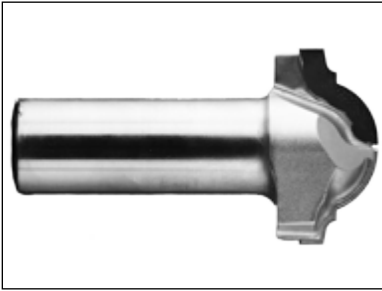
See Material Guide p4

PCD Diamond router bit for applying a decorative inside profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	Ds	b1	r	s	Z	OA
DIA-RTR.40C	32mm	10mm	10mm	4mm	3/4	2	2-3/4



## PCD Diamond “40D” MDF Door Bit



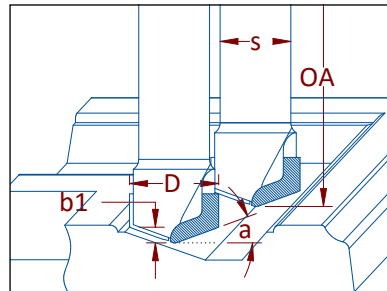
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	b1	r	s	Z	OA
DIA-RTR.40D	38mm	10mm	12mm	3/4	2	2-3/4

## PCD Diamond “40E” MDF Door Bit



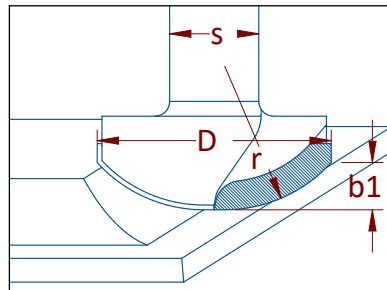
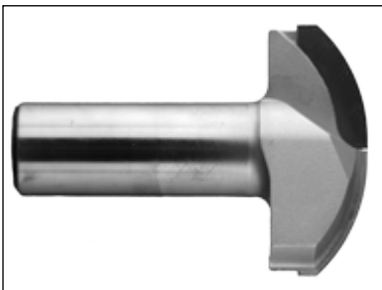
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	a	b1	s	Z	OA
DIA-RTR.40E	24mm	20°	4mm	3/4	2	2-3/4

## PCD Diamond “50A” MDF Door Bit



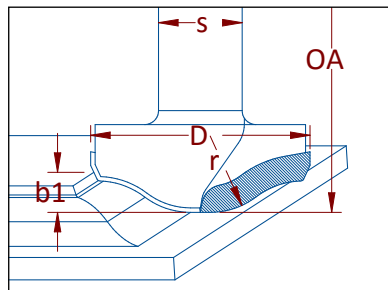
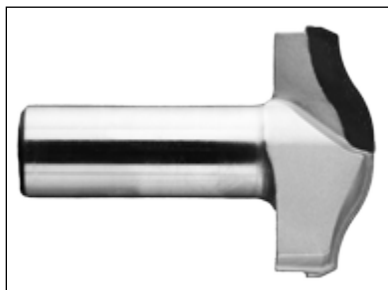
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	b1	r	s	Z	OA
DIA-RTR.50A	50mm	10mm	30.7mm	3/4	2	2-3/4

## PCD Diamond “50B” MDF Door Bit



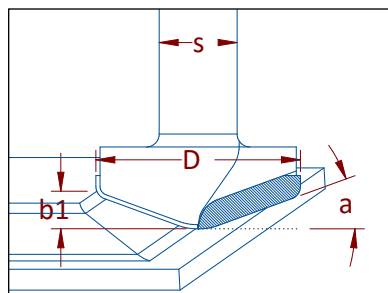
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	b1	r	s	Z	OA
DIA-RTR.50B	50mm	10mm	17.4mm	3/4	2	2-3/4

## PCD Diamond “50C” MDF Door Bit



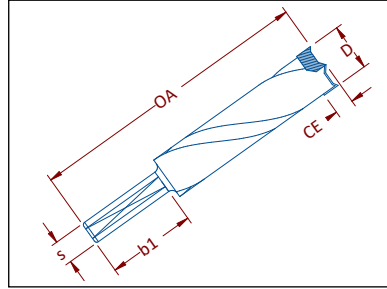
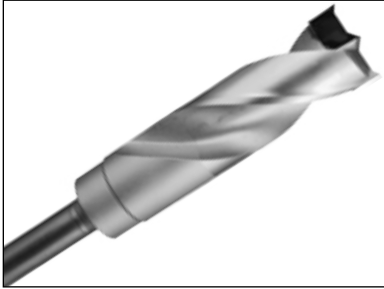
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for applying a decorative raised panel profile to MDF doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	b1	a	s	Z	OA
DIA-RTR.50C	50mm	10mm	20°	3/4	2	2-3/4

# PCD Diamond Tipped Drill



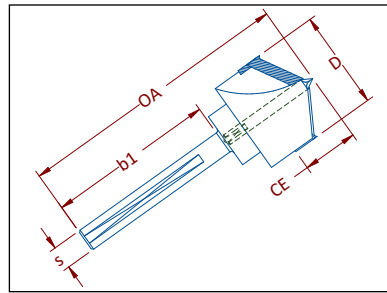
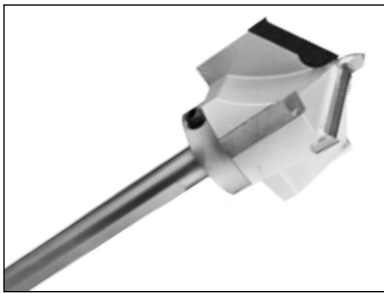
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for use on machines that route hinges on doors. PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	CE	b1	s	OA
FX20016-DIA	1	.400"	2	1/2	6-1/16

# PCD Diamond Tipped Boring Drill



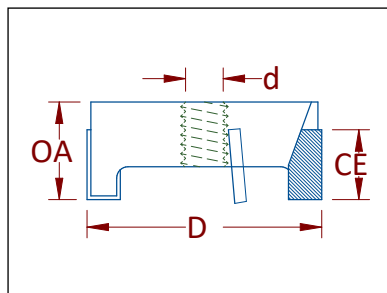
**Fb Hw Hp Rp**

See Material Guide p4

PCD Diamond router bit for use on machines that route hinges on doors. PCD Diamond router bit for . PCD will outlast carbide 50 to 100 times on MDF when care is taken.

PART#	D	CE	b1	s	OA
FX812C34-DIA	2-1/4	1.200"	3.615"	1/2	5.970"

# PCD Diamond Hinge bit for Door Machines



**Fb Hw Hp Rp**

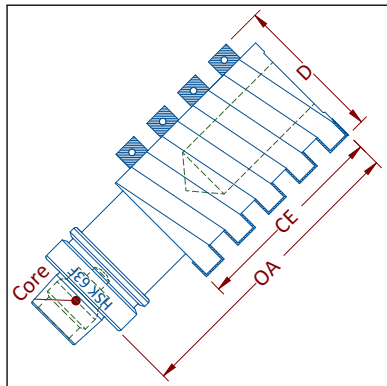
See Material Guide p4

PCD Diamond router bit for use on machines that route hinges on doors. PCD diamond will outlast conventional carbide tools 50 to 100 times when used on the correct material.

PART#	D	CE	OA	d
LR89003-PCD	1/2	10mm	23mm	1/4"-28 UNF
LR89003-PCD.L	1/2	10mm	23mm	1/4"-28 UNF
LR89008-PCD	3/4	10mm	23mm	1/4"-28 UNF
LR89010-PCD	1-1/4	9mm	13mm	1/4"-28 UNF
LR89011-PCD	1-1/4	9mm	13mm	5/16"-24 UNF

L = Left hand rotation

## Insert Hogging “510HI” Integrated Tool



**Hw Sw Fb Hp**

See Material Guide p4

Best suited for hogging solid wood on CNC routers. Inserts can be rotated when dull. Tool has spurs to allow rebating. Reduce cycle times by utilizing the high removal rates. Integrated tool design for maximum tool strength and reduced run out.

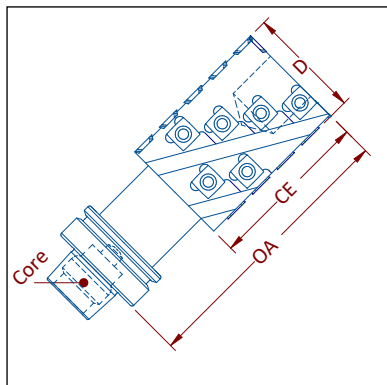
### Replacement Parts

PART#	Description
590-0150	insert knives
581-26800-12	gibs
580.HC-M5016	gib screws
592-1414	spur knives
580.CST-M4067.TX	spur screws

PART#	D	CE	Core	Z	OA
510HI-090.120.63F2	90mm	120mm	HSK63F	2+2+2	180mm

Weight: 10.9 lbs

## Insert Hogging “533FI” Integrated Tool



**Hw Sw Fb Hp**

See Material Guide p4

Best suited for hogging solid wood on CNC routers. Inserts can be rotated 4 times when dull. Tool has spurs to allow rebating. Reduce cycle times by utilizing the high removal rates. Integrated tool design for maximum tool strength and reduced run out. Lighter design than the 510HI tool above. Spiralex design allows smaller diameter.

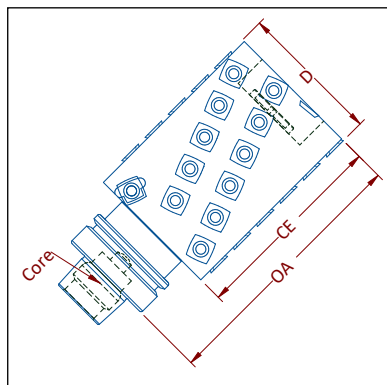
### Replacement Parts

PART#	Description
592-0007	insert knives
580.SHD-M5014-T20	knife screws
592-1414	spur knives
580.CST-M4067.TX	spur screws

PART#	D	CE	Core	Z	OA
533FI.070.100-63F2	70mm	100mm	HSK63F	2	170mm

Weight: 8.2 lbs

## Insert Hogging “533H” Lightweight Tool



**Hw Sw Fb Hp**

See Material Guide p4

Best suited for hogging solid wood on CNC routers. Inserts can be rotated 4 times when dull. Tool has spurs to allow rebating. Reduce cycle times by utilizing the high removal rates. Aluminum body for lightweight design.

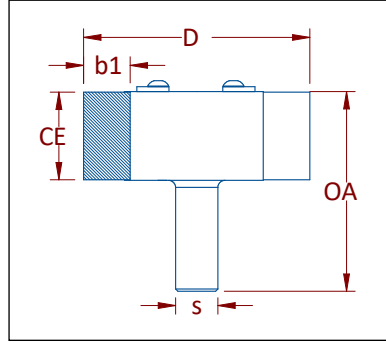
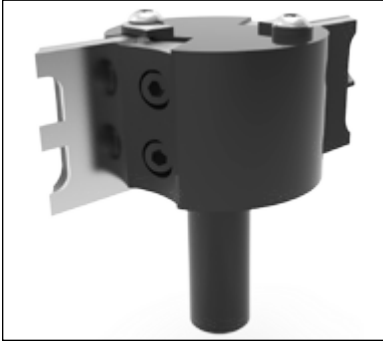
### Replacement Parts

PART#	Description
592-0007-R50	insert knives
580.CST-M6016.ELBE	knife screws

PART#	D	CE	Core	Z	OA
533H.090.120.63F2	90mm	129mm	HSK63F	2+2+2	170mm

Weight: 7.2 lbs

## Insert Multi Profile “555R” Router Bit



**Hw Sw Fb Hp**

See Material Guide p4

Multi profile router bit for use on CNC routers. Hard anodized steel backers and carbide knives can be profiled to suit an assortment of profiles. Backers and knives to be ordered with custom profiles thru your appropriate Royce Ayr sales representative.

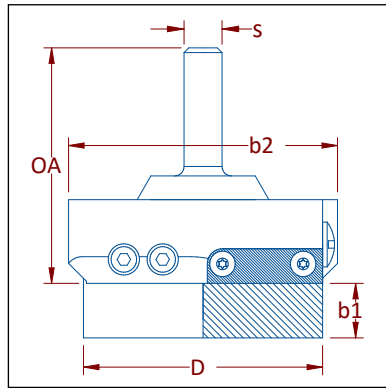
**Knives and backers sold separately**

Replacement Parts

PART#	Description
580HC-M5016	Gib Screw
581-41752-40	Gib
580-SW106	Stop Washer
580.RH-M5010.T25	Stop Washer Screw

PART#	D	b1	CE	s	OA
555R.040-2W	105mm	20mm	40mm	3/4	90mm
555R.060-2W	105mm	20mm	60mm	3/4	110mm

## Insert Multi Profile “560RT” Rosette Tool



**Fb Hw Sw**

See Material Guide p4

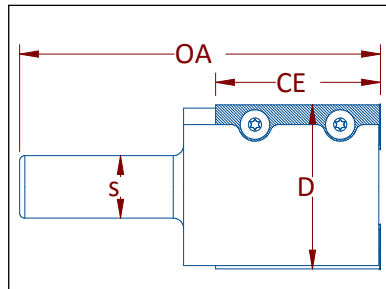
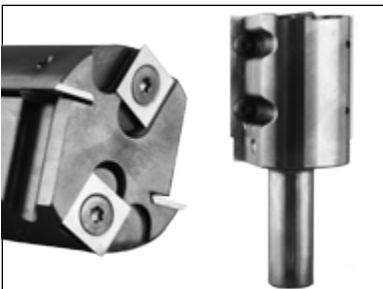
Replacement insert rosette tool. Solid carbide knives for extended life. Hard anodized backers for extra durability. Knives and backers can be profiled to any profile that fits within the area shown. If a new profile is required simply replace the backers and knives.

Replacement Parts

PART#	Description
580.RH-M3505.9A	knife screws
580.HC-M5010	backer screws
580-M5016.CAP	stop screws

PART#	D	b1	b2	s	Z	OA
560RT.080-02W	80mm	18mm	90mm	1/2	1	79mm

## Insert Rebate CNC Router Bit



**Hw Sw Fb Hp**

See Material Guide p4

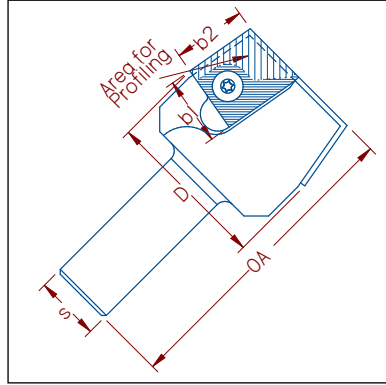
Turn over knife (TOK) insert router bit. Reversible knives have 2 cutting edges. Good for producing rebates in solid wood suitable for cutting MDF and some plastics. 2 spurs on the bottom of the tool for improved bottom cutting.

Replacement Parts

PART#	Description
590-0500	50mm main turn over knives
580.RH-M3505.9	screws for above 50mm knives
592-1414	14 x 14 bottom spurs
580.CST-M4067.TX	screws for above 14mm spurs

PART#	D	CE	s	Z	OA
561.050.050	50mm	50mm	3/4	2 + 2	110mm

# Insert Blank “Semi-Stock” Insert Bit “562B–564B”



**Fb Hw Hp Rp**

See Material Guide p4

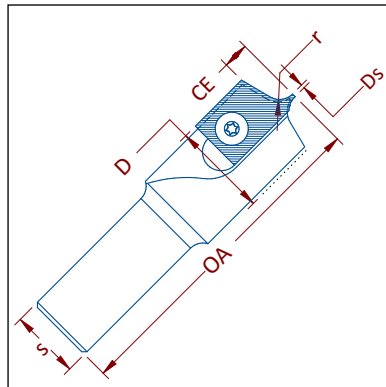
1 and 2 wing insert router bits that have a generic un-profiled body. Insert tool can be profiled to your specifications for quicker delivery.

Replacement Parts

PART#	Description
580.RH-M3505.9	knife screws

PART#	D	b1	b2	s	Z	OA
562B.026-1W	26mm	15mm	25mm	3/4	1	3-1/2
564B.040-2W	48mm	20mm	21mm	3/4	2	3-1/2
564B.050-2W	58mm	20mm	20mm	3/4	2	3-1/2

# Insert Radius Profile Router Bit “562R1”



**Fb Hw Hp Rp**

See Material Guide p4

Tool is used primarily when manufacturing MDF door profiles. Single steel body can hold multiple knives shown below. Tool body comes standard with “A” knives installed. Optional knives are shown below.

Replacement Parts

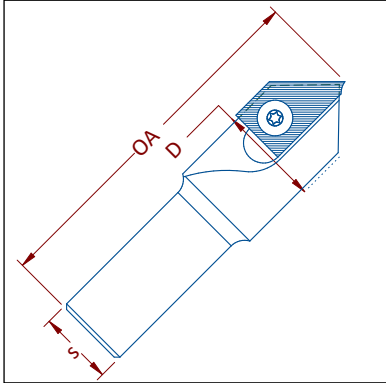
PART#	Description
580.RH-M3505.9	knife screws

PART#	D	Ds	CE	r	s	Z	OA
562R1.026-1W	26mm	1mm	7mm	5mm	3/4	1	2-3/4

Tool body comes installed with “A” knife

<p><b>A</b></p> <p>5mm</p>	<p><b>B</b></p> <p>4mm</p>	<p><b>C</b></p> <p>3mm</p>	<p><b>D</b></p> <p>2mm</p>	<p><b>E</b></p> <p>20°</p>
<p>PART#</p> <p>158-562R1.026-1W-A</p>	<p>PART#</p> <p>158-562R1.026-1W-B</p>	<p>PART#</p> <p>158-562R1.026-1W-C</p>	<p>PART#</p> <p>158-562R1.026-1W-D</p>	<p>PART#</p> <p>158-562R1.026-1W-E</p>

# Insert Corner Clean out Profile Router Bit "562SC"



**Fb Hw Hp Rp**

See Material Guide p4

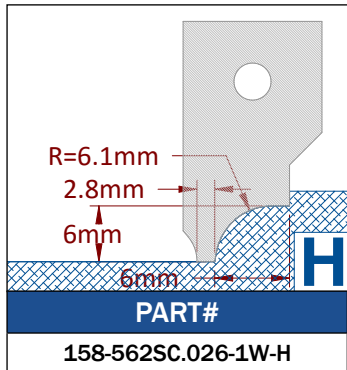
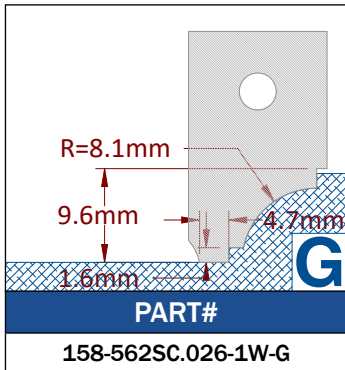
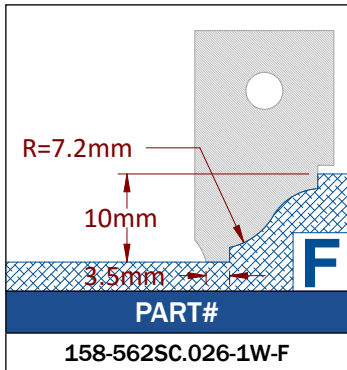
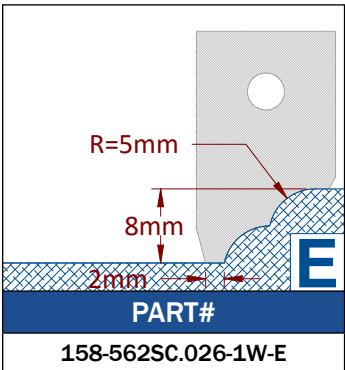
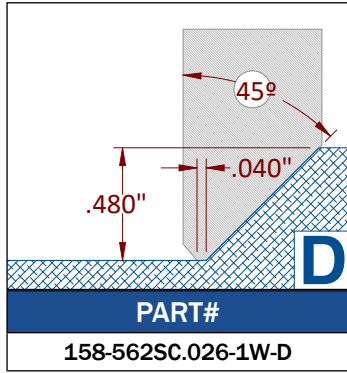
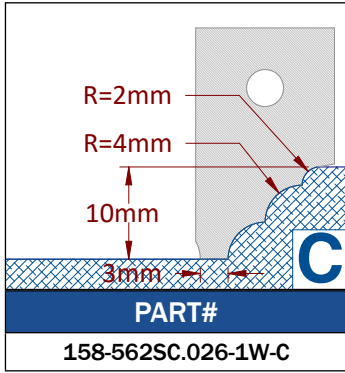
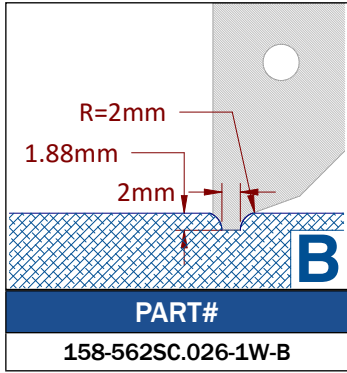
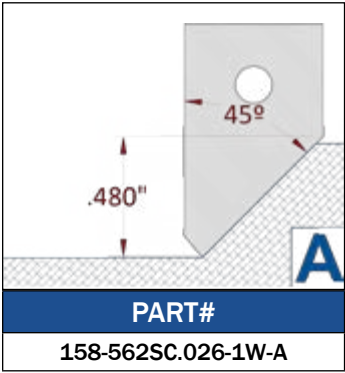
Tool is used primarily when manufacturing MDF door profiles. Single steel body can hold multiple knives shown below. Tool body comes standard with "A" knives installed. Optional knives are shown below.

Replacement Parts

PART#	D	s	Z	OA
562SC.026-1W	26mm	3/4	1	90mm

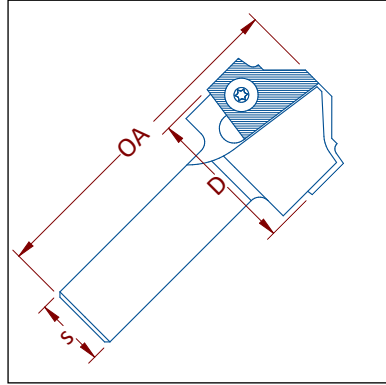
PART#	Description
580.RH-M3505.9	knife screws

Tool body comes installed with "A" knife





# Insert Inside Profile Router Bit “564IP”



**Fb Hw Hp Rp**

See Material Guide p4

Tool is used primarily when manufacturing MDF door profiles. Single steel body can hold multiple knives shown below. Tool body comes standard with “A” knives installed. Optional knives are shown below. New body design to provide better chip evacuation was introduced in 2016.

### Replacement Parts

PART#	D	s	Z	OA
564IP.041-2W	40mm	3/4	2	3-1/2
564IP.040-2W*	40mm	3/4	2	3-1/2

PART#	Description
580.RH-M3505.9	knife screws

\* Old body design 2016 and earlier

PART#
158-564IP.041-2W-A
158-564IP.040-2W-A*

PART#
158-564IP.041-2W-B
158-564IP.040-2W-B*

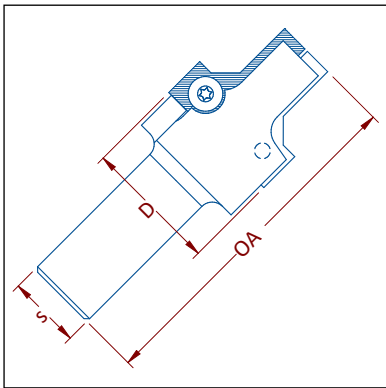
PART#
158-564IP.041-2W-C
158-564IP.040-2W-C*

PART#
158-564IP.041-2W-D
158-564IP.040-2W-D*

\* Insert knives for old body design 2016 and earlier numbered 564IP.040-2W



# Outside Edge Profile Router Bit "564OP"



**Fb Hw Hp Rp**

See Material Guide p4

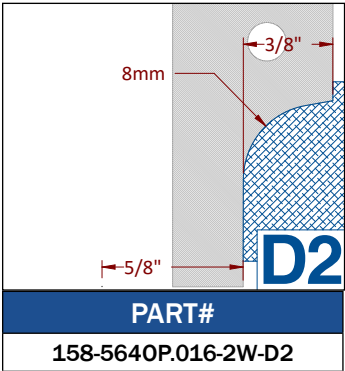
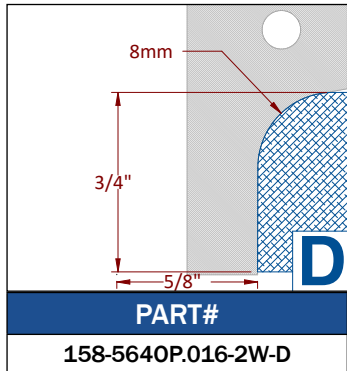
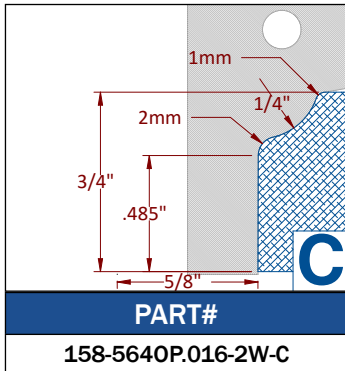
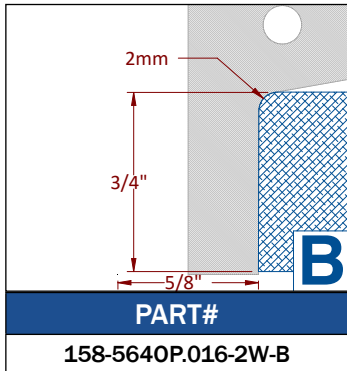
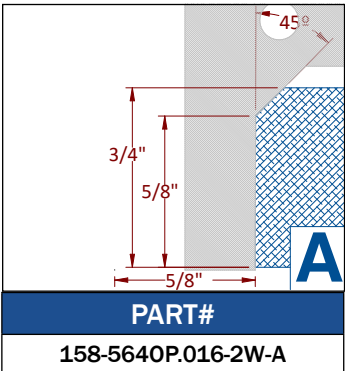
Tool is used primarily when manufacturing MDF door profiles. Single steel body can hold multiple knives shown below. Tool body comes standard with "A" knives installed. Optional knives are shown below.

Replacement Parts

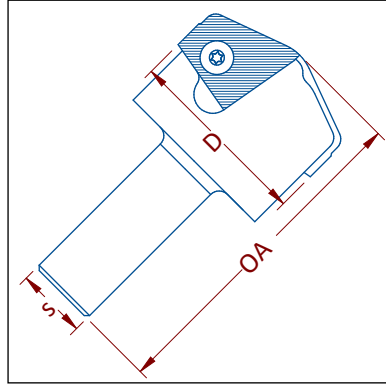
PART#	D	s	Z	OA
564OP.016-2W	35mm	3/4	2	3-1/2

PART#	Description
580.RH-M3505.9	knife screws

Tool body comes installed with "A" knife



# Insert Panel and Outside Router Bit "564RP"



**Fb Hw Hp Rp**

See Material Guide p4

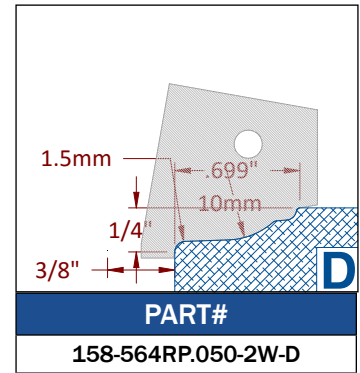
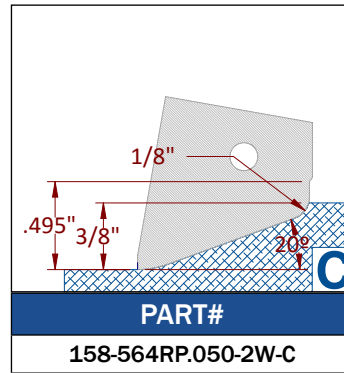
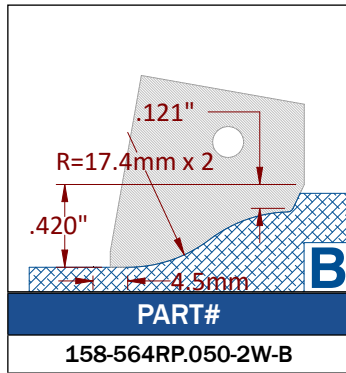
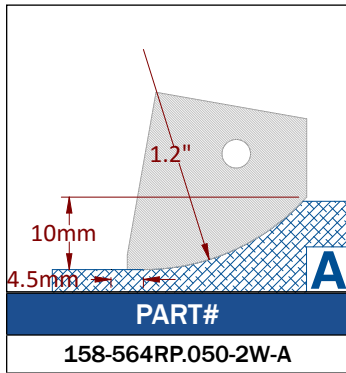
Tool is used primarily when manufacturing MDF door profiles. Single steel body can hold multiple knives shown below. Tool body standard with "A" knives installed. Optional knives are shown below.

### Replacement Parts

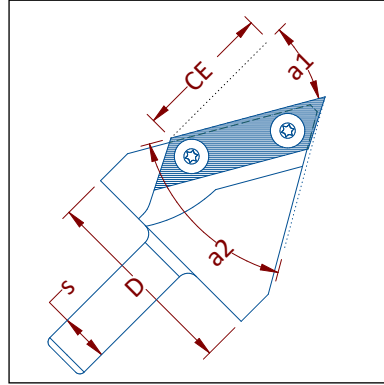
PART#	D	s	Z	OA
564RP.050-2W	50mm	3/4	2	3-1/2

PART#	Description
580.RH-M3505.9	knife screws

Tool body comes installed with "A" knife



## “V” Groove Router Bits “563V”



**Fb Hw Hp Rp**

See Material Guide p4

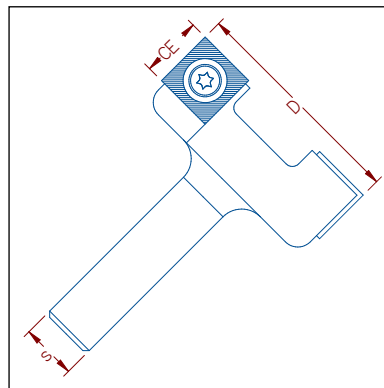
1 and 2 wing insert router with varying cutting angles. Great for doing folding applications on CNC routers in Solid Wood, MDF and Particle Board. 44.75° tool designed to produce 90° corner with a tight close on outside.

### Replacement Parts

PART#	Description
580.RH-M3505.9	knife screws

PART#	D	CE	a1	a2	s	Z	Knife#
563-V23.060	35mm	1.675"	22.50°	45.00°	1/2	1	595V-6012R-23
563-V30.050	52mm	1.420"	30.00°	60.00°	1/2	1	595V-5012R-30
563-V45.030	40mm	.800"	45.00°	90.00°	1/2	1	595V-3012R
563-V45.050	75mm	1.360"	45.00°	90.00°	3/4	1	595V-5012R
563-V46.030	40mm	.800"	45.25°	90.50°	1/2	1	595V-3012R
563-V46.050	75mm	1.350"	45.25°	90.50°	3/4	1	595V-5012R
563.V60.030	57mm	.560"	60.00°	120.00°	1/2	1	595V-3012R
563-V60.050	90mm	.960"	60.00°	120.00°	3/4	1	595V-5012R
<i>563-V65.050</i>	95mm	.810"	65.00°	130.00°	3/4	1	595V-5012R
563-V75.030	62mm	.305"	75.00°	150.00°	1/2	2	590-0300
<i>563-V75.050</i>	100mm	.500"	75.00°	150.00°	3/4	2	590-0500

## Spoil Board Insert Surfacing Router Bits “563S”



**Fb Hw Hp Rp**

See Material Guide p4

Insert surfacing router bits ideal for surfacing table boards and spoil boards on CNC nested based routers. Can be used for pocketing as well. Part numbers with “S” have 8° upshear.

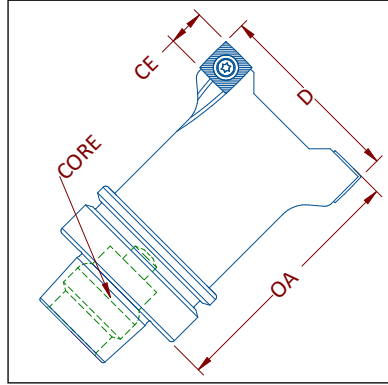
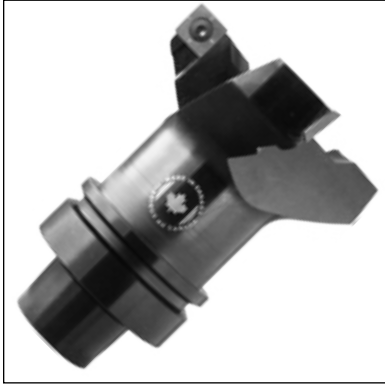
### Replacement Parts

PART#	Description
580.CST-M4067.TX	knife screws
592-1414	knives

PART#	D	CE	s	Z
563S.048.14-753S	1-7/8	.551"	3/4	3
563S.050.14-753	2	.551"	3/4	3
563S.050.14-502	2	.551"	1/2	2
563S.065.14-502S	2-1/2	.551"	1/2	2
563S.100.14-753	4	.551"	3/4	3
563S.100.14-753S	4	.551"	3/4	3

S = 8° upshear

# Insert Integrated Surfacing Tool “563SI”



**Fb Hw Hp Rp**

See Material Guide p4

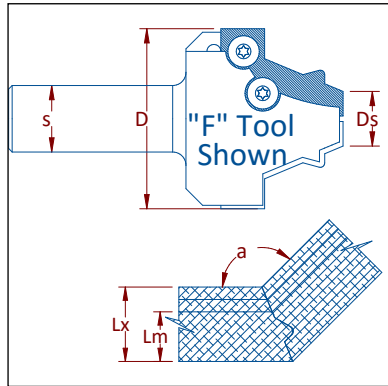
Insert router bit designed for surfacing and pocketing applications. “Integrated” tool design eliminates any run out and deflection generated by collet interface. Extremely rigid tool has radius inserts for improved bottom finish.

Replacement Parts

PART#	Description
580.CST-M4067.TX	knife screws
592-0007	knives

PART#	D	CE	CORE	OA	Z	Weight
563SI.075.14-63F3	3	.551”	HSK63F	100mm	3	4 lbs
563SI.100.14-63F3	4	.590”	HSK63F	100mm	3	4.5 lbs

# Insert Lock Mitre Router Tools “564LM”



**Fb Hw Hp Rp**

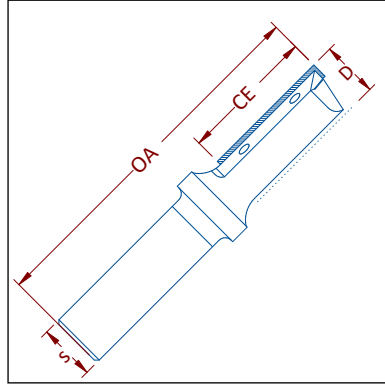
See Material Guide p4

Insert router bit designed for machining lock mitre. Great for range hoods or posts. 2 separate tools create joints that can be assembled together. Locking joint helps align edges and create a stronger joint.

Replacement Parts

PART#	Description
580.RH-M3505.9	knife screws

# Insert Small Diameter Router Bit “565”



**Hw Sw Fb Pb Hp Sp**

See Material Guide p4

Insert router bit with unique gib design to create a stronger tool at smaller diameters. Knives can be rotated once for a new cutting edge.

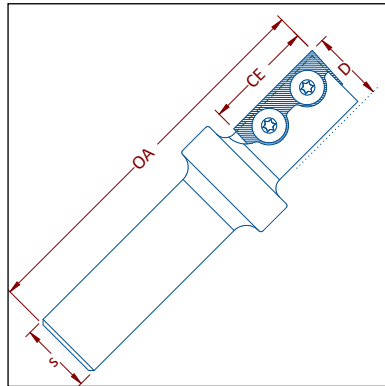
Replacement Parts

PART#	Description
580.RH-M3007	knife screws

PART#	D	CE	s	OA	Z	Knife
565.012.030L	1/2	30mm	1/2	3-1/8	1	594L-3055
565.012.030R	1/2	30mm	1/2	3-1/8	1	595L-3055

L = left hand rotation  
R = right hand rotation

# Insert Single Flute Router Bit “566”



**Hw Sw Fb Pb Hp Sp**

See Material Guide p4

Single flute insert router bit. Knives can be rotated once for a new cutting edge. Good general purpose tool. tool does not have to be measured after knife changes.

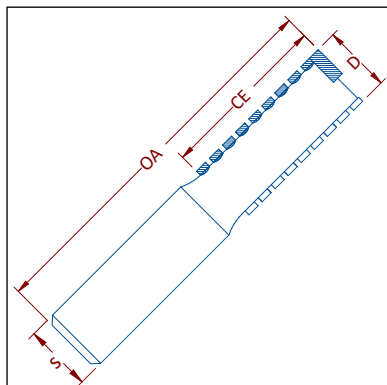
Replacement Parts

PART#	Description
580.RH-M3505.9	knife screws

PART#	D	CE	s	OA	Z	Knife
566-016.030	16mm	30mm	1/2	3-3/8	1	595-3090R
566-016.0502	16mm	50mm	5/8	4-1/2	1	595-5090R
566.019.030R	3/4	30mm	3/4	4	1	595-3012R
<i>566.019.050L</i>	3/4	50mm	3/4	4-3/4	1	595-5012L
<i>566.019.050R</i>	3/4	50mm	3/4	4-3/4	1	595-5012R

L = left hand rotation  
R = right hand rotation

# Insert Hogging Rougher Router Bit “567”



**Hw Sw Fb Pb**

See Material Guide p4

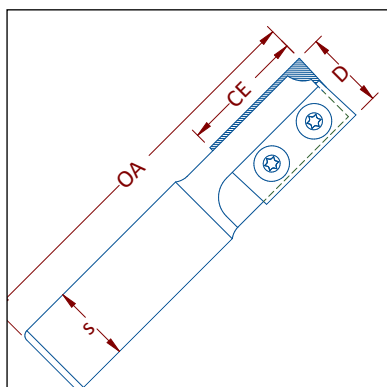
Hogging roughing tool for CNC routers. Cutting pins break up the cutting edge for lower amperage when cutting through dense hardwoods.

### Replacement Parts

PART#	D	CE	s	OA	Z
567.019.048	3/4	48mm	3/4	105mm	1+1+1
567.019.062	3/4	60mm	3/4	119mm	1+1+1

PART#	Description
580.CST-M3055.TX	knife screws
595C-10050-0	straight cutting inserts
595C-10050-R	plunge tip

# Insert Double Flute Router Bit “568”



**Hw Sw Fb Pb Hp Sp**

See Material Guide p4

Double flute insert router bit. Knives can be rotated once for a new cutting edge. Good general purpose tool. Tool does not have to be re measured after knife changes. Tools that are 5/8” diameter are held with screws from the back of the knife.

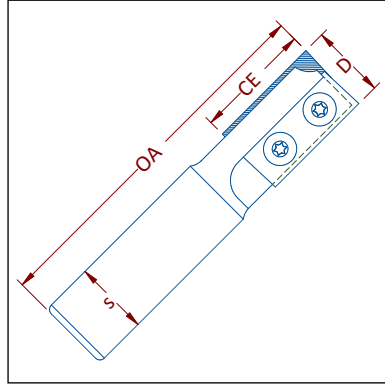
### Replacement Parts

PART#	D	CE	s	OA	Z	Knife
568.16.030*	5/8	30mm	5/8	3-1/2	2	595-3090R
568.19.030	3/4	30mm	3/4	3-5/8	2	595-3012R
568.19.030L	3/4	30mm	3/4	3-5/8	2	595-3012L
568.19.040	3/4	40mm	3/4	4	2	595-4012R
568.19.050	3/4	50mm	3/4	4-3/8	2	595-5012R
568.19.050-LH	3/4	50mm	3/4	4-3/8	2	595-5012L
568.019.060	3/4	60mm	3/4	4-3/4	2	595-6012R
568.25.030	1	30mm	3/4	3-1/2	2	595-3012R
568.25.050	1	50mm	3/4	4-3/8	2	595-5012R
568.25.050-LH	1	50mm	3/4	4-3/8	2	595-5012L

\* Uses knife screw # 580.RH-M3505.6

L & LH = Left hand rotation

# Insert Single Flute Router Bit “569”



**Hw Sw Fb Pb Hp Sp**

See Material Guide p4

Single flute insert router bit. Knives can be rotated once for a new cutting edge. Good general purpose tool, tool does not have to be measured after knife change. Tool has plunge point to allow straight plunging. 3/4” tools and under have knives held with screws on the back.

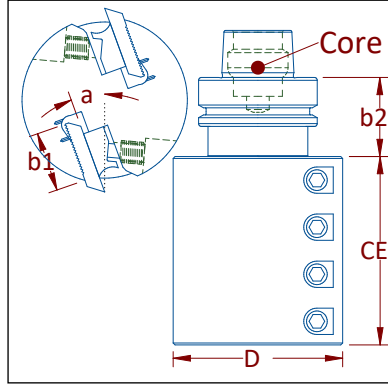
PART#	D	CE	s	OA	Z	Knife
569.16.030-1/2	5/8	30mm	1/2	3-1/2	1	591-3009
569.19.030	3/4	30mm	3/4	3-1/2	1	591-3012
569.19.030-LH	3/4	30mm	3/4	3-1/2	1	591-3012L
569.19.050	3/4	55mm	3/4	4-1/2	1+1	591-3012
569.25.050	1	55mm	3/4	4-3/4	1+1	591-3012

LH = Left hand

### Replacement Parts

PART#	Description
580.RH-M3505.9	knife screws
580.RH-M3506.3	plunge screws
590-0075	plunge knife

# Integrated Corrugated Router Tool “573R”



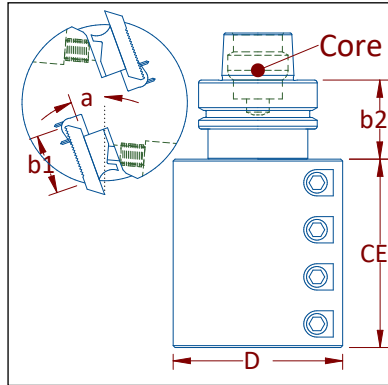
Sw Hw Fb Pb Pl

See Material Guide p4

Ideal for small jobs on 5-axis CNC routers. Standard 579 series corrugated knives can be run in head. Head can also support carbide Bak-Pak knives or carbide inlay knives. Knives are profiled per customer request. Ideal for profiling smaller jobs on CNC router.

PART#	D	CE	Core	b1	b2	a	Z	Weight
573R-090100R2-20	90mm	100mm	HSK63F	35mm	42mm	20°	2	10 lbs

# Lightweight Corrugated Router Tool “573RA”



Sw Hw Fb Pb Pl

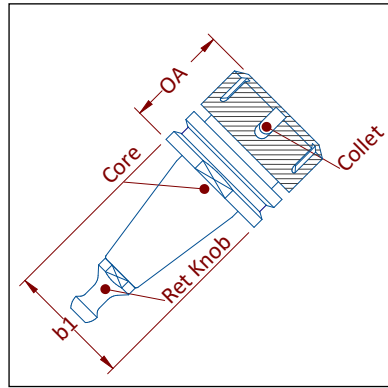
See Material Guide p4

Ideal for small jobs on 5-axis CNC routers. Standard 579 series corrugated knives can be run in head. Head can also support carbide Bak-Pak knives or carbide inlay knives. Knives are profiled per customer request. Ideal for profiling smaller jobs on CNC router. Aluminum body for reduced weight.

PART#	D	CE	Core	b1	b2	a	Z	Weight
573RA-090100R2-20	90mm	150mm	HSK63F	35mm	46mm	20°	2	10.5 lbs



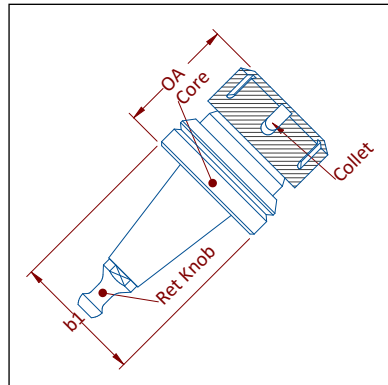
## Precision ISO30 Tool Holders for CNC Machines



High precision tool holders for a variety of different CNC machines. Tool holder includes nut but does not include collet. Fits most common CNC machines, including AXYZ, Biesse, MultiCam and more. Retention knob for HSD spindle comes included with holder.

PART#	b1	OA	Core	Collet	Ret Knob
PRC-225-50.R BIESSE	50mm	42mm	ISO 30	ER32	HSD Spindle

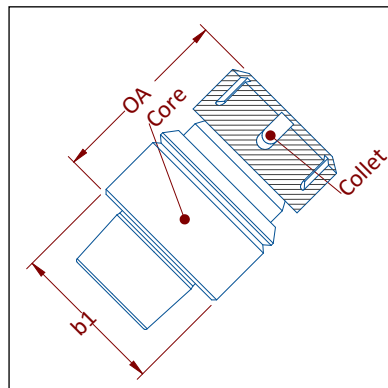
## Tool Holders for Thermwood 30 Taper Machines



High precision tool holders for Thermwood CNC machines with 30 taper. Tool holder includes nut but does not include collet. Retention knob for HSD spindle comes included with holder.

PART#	b1	OA	Core	Collet	Ret Knob
PRC-225-50.R THERMWD	2-1/4	2	Thermwood 30	ER32	HSD spindle

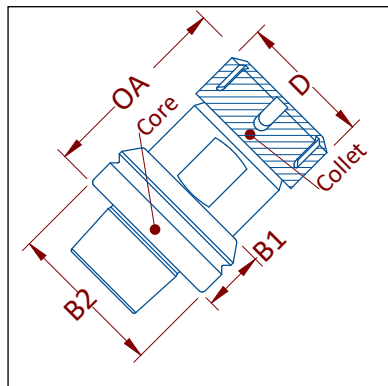
## Tool Holders for Thermwood HSK Machines



High precision tool holders designed to fit on Thermwood CNC machines with the HSK63 taper. Tool holders include nut. Collets are sold separately.

PART#	b1	OA	Collet	Core
PRC-HSK63TH-ER32	2-1/4	2-5/8	ER32	HSK-Thermwood
**PRC-HSK63TH15-ER32**	2-1/4	2-5/8	ER32	HSK-Thermwood

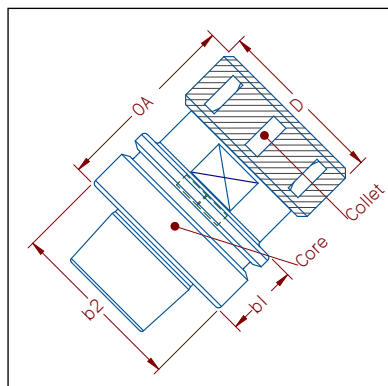
## Tool Holders for Thermwood HSK Machines



High precision tool holders designed to fit on Thermwood CNC machines with the HSK63 taper. Tool holders include nut. Collets are sold separately.

PART#	b1	OA	Collet	Core
PRC-HSK63TH15-ER32	2-1/4	2-5/8	ER32	HSK-Thermwood

## Precision HSK63F Tool Holders for CNC Machines

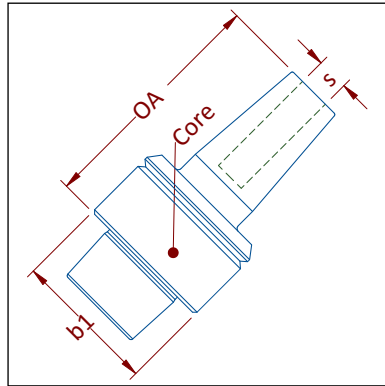


High precision tool holders for a variety of different CNC machines. Tool holders include nut but do not include collet.

PART#	D	OA	b1	b2	Core	Collet	Nut
PRC-HSK63F-16(ER32)	50mm	73mm	26mm	63mm	HSK63F	ER32	coated
<i>PRC-HSK63F-16(ER32)L</i>	50mm	73mm	26mm	63mm	HSK63F	ER32	coated
PRC-HSK63F-20(ER40)	63mm	77mm	26mm	63mm	HSK63F	ER40	coated
<i>PRC-HSK63F-20 LH</i>	63mm	77mm	26mm	63mm	HSK63F	ER40	coated
PRC-HSK63F-38 (ORT25)	58mm	73mm	26mm	63mm	HSK63F	ORT25 (SYOZ25)	bearing
PRC-HSK63F-38L (ORT25)	58mm	73mm	26mm	63mm	HSK63F	ORT25 (SYOZ25)	bearing

LH & L = Left hand rotation

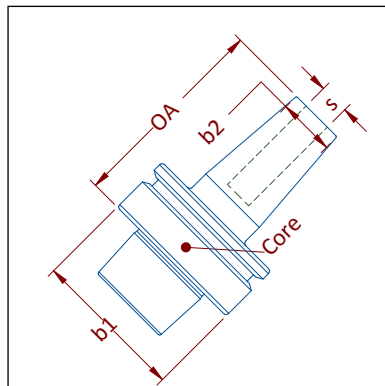
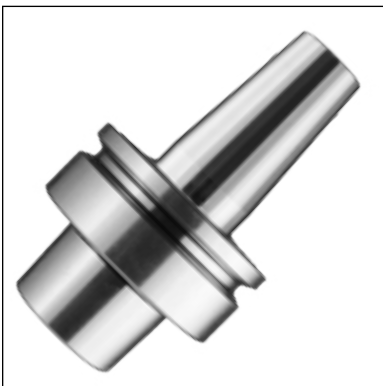
## Shrink Fit Holders with Thermwood 63 Taper



Shrink fit tool holders designed to fit on Thermwood CNC machines with the HSK63 taper. Shrink fit provides superior clamping pressure and minimizes tool run out and vibration. Tool must be installed and removed using special heat shrink equipment.

PART#	s	OA	b1	Core
<i>PRC-HSK-THERMWOOD-50</i>	1/2	3-3/4	2-1/4	63 Thermwood
<i>-THERMWOOD-75</i>	3/4	3-3/4	2-1/4	63 Thermwood

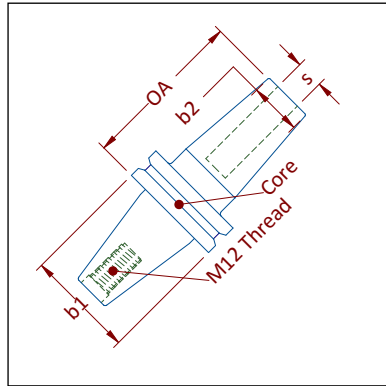
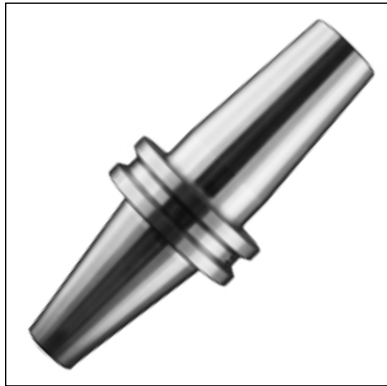
## Shrink Fit Tool Holders HSK63F for CNC Routers



Shrink fit tool holders designed to fit on a variety of CNC machines with the HSK63F taper. Shrink fit provides superior clamping pressure and minimizes tool run out and vibration. Tool must be installed and removed using special heat shrink equipment.

PART#	s	b1	b2	OA	Core
<i>PRC-SHRINK-HSK.1/4</i>	1/4	63mm	.710"	80mm	HSK63F
<i>PRC-SHRINK-HSK.3/8</i>	3/8	63mm	.940"	95mm	HSK63F
<i>PRC-SHRINK-HSK.1/2</i>	1/2	63mm	1.100"	95mm	HSK63F
<b>PRC-SHRINK-HSK.1/2-S</b>	1/2	63mm	1.100"	76mm	HSK63F
<i>PRC-SHRINK-HSK.5/8</i>	5/8	63mm	1.060"	95mm	HSK63F
<i>PRC-SHRINK-HSK.3/4</i>	3/4	63mm	1.260"	100mm	HSK63F
<b>PRC-SHRINK-HSK.3/4-S</b>	3/4	63mm	1.260"	76mm	HSK63F
<i>PRC-SHRINK-HSK.1</i>	1	63mm	1.420"	115mm	HSK63F

# Shrink Fit Tool Holders ISO30 for CNC Routers

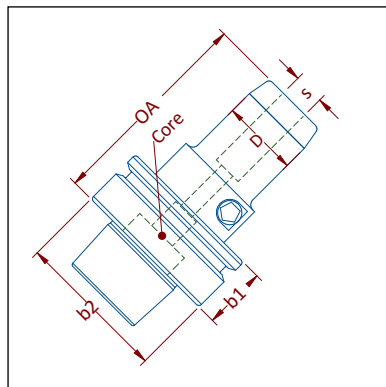


Shrink fit tool holders designed to fit on variety of CNC machines with the HSK63F taper. Shrink fit provides superior clamping pressure and minimizes tool run out and vibration. Tool must be installed and removed using special heat shrink equipment.

**RETENTION KNOB NOT INCLUDED**

PART#	s	b1	b2	OA	Core
PRC-SHRINK-ISO.1/4	1/4	50mm	18mm	80mm	ISO30
PRC-SHRINK-ISO.3/8	3/8	50mm	24mm	80mm	ISO30
PRC-SHRINK-ISO.1/2	1/2	50mm	28mm	80mm	ISO30
PRC-SHRINK-ISO.5/8	5/8	50mm	28mm	80mm	ISO30
PRC-SHRINK-ISO.3/4	3/4	50mm	41mm	80mm	ISO30

# Hydraulic Tool Holders for CNC Machines



High precision hydraulic tool holders for a variety of different CNC machines. Hydraulic tool holders provide more rigidity and improved accuracy over conventional collet. Can provide up to 25% increase in tool life in optimum applications.



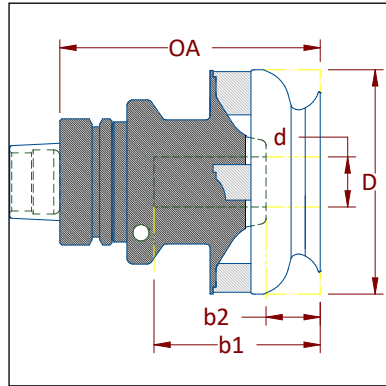
## Imperial Sizes

PART#	s	D	OA	b1	b2	Core
PRC-ETP.G2-3/8-HSK63F	3/8	32mm	87mm	26mm	63mm	HSK63F
PRC-ETP.G2-1/2-HSK63F	1/2	32mm	87mm	26mm	63mm	HSK63F
PRC-ETP.G2-5/8-HSK63F	5/8	38mm	87mm	26mm	63mm	HSK63F
PRC-ETP.G2-3/4-HSK63F	3/4	40mm	99mm	26mm	63mm	HSK63F
PRC-ETP.G2-1-HSK63F	1	45mm	103mm	26mm	63mm	HSK63F

## Metric Sizes

PART#	s	D	OA	b1	b2	Core
PRC-ETP.G2-12-HSK63F	12mm	32mm	87mm	26mm	63mm	HSK63F
PRC-ETP.G2-20-HSK63F	20mm	40mm	99mm	26mm	63mm	HSK63F
PRC-ETP.G2-25-HSK63F	25mm	45mm	103mm	26mm	63mm	HSK63F

# TurboTec Dust Extraction Unit



The TurboTec dust extraction unit can be run on a variety of CNC machines. Hydraulic core can accept multiple tools and provides increased rigidity and accuracy for longer tool life.

## TurboTec

PART#	D	d	b1	b2	OA
<i>PRC-TURBO080-1-3/8</i>	80mm	3/8	57mm	17mm	103.5mm
<i>PRC-TURBO080-1-1/2</i>	80mm	1/2	57mm	17mm	103.5mm
<i>PRC-TURBO112-1-3/8</i>	112mm	3/8	57mm	17mm	103.5mm
<b>PRC-TURBO112-1-1/2</b>	112mm	1/2	57mm	17mm	103.5mm
<i>PRC-TURBO112-1-3/4</i>	112mm	3/4	80mm	27.5mm	126mm
<i>PRC-TURBO112-1-1</i>	112mm	1	83mm	27.5mm	130mm

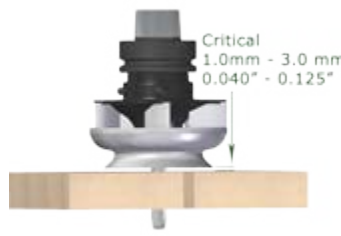
## Critical Considerations when Running TurboTec



Due to the large diameter of the unit care must be taken to avoid collisions in tool carousel.



Large amounts of air being moved by the TurboTec can create excess noise levels.



In order to maximize the amount of dust collected the TurboTec should be run 1-3mm above the material.



Small or inadequately held parts may be picked up by the TurboTec causing damage to the unit.

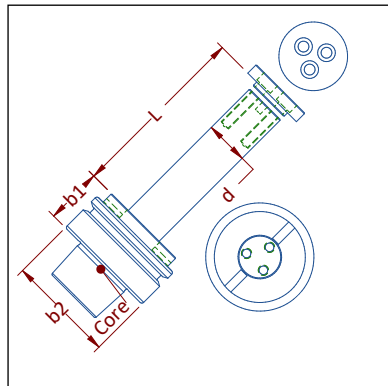


Tool Setting Guide Included

## Tool Length Selection Guide

		5/8" (16mm) shank and lower		3/4" (20mm) shank and higher	
Depth of Cut		Tool Overall Length		Tool Overall Length	
mm	Inch	Min	Max	Min	Max
6.35	1/4	2	2-1/2	2-3/8	3-1/2
9.50	3/8	2	2-5/8	2-1/2	3-1/2
12.70	1/2	2-1/8	2-3/4	2-5/8	3-3/4
15.88	5/8	2-3/8	3	2-3/4	3-7/8
19.05	3/4	2-1/2	3	2-7/8	4
22.23	7/8	2-1/2	3-1/8	3	4-1/8
25.40	1	2-5/8	3-1/4	3	4-1/4

# Precision HSK63F Arbors



Precision industrial arbors for CNC machines and shapers. Part includes cap. Cap is held in place with 3 screws. Balanced to run at high RPM for. Shafts are precision ground to h6 tolerances.

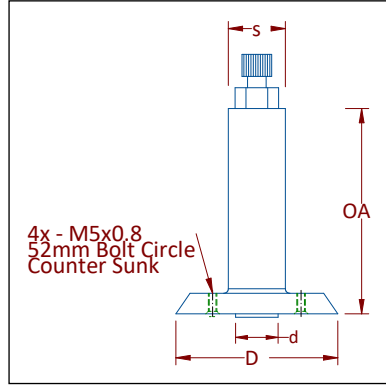
## Imperial Sizes

PART#	d	L	b1	b2	Core
<i>PRC-HSK63F-100100</i>	1	100mm	33mm	63mm	HSK63F
<b>PRC-HSK63F-100100-42</b>	1	100mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-100125</i>	1	125mm	33mm	63mm	HSK63F
<b>PRC-HSK63F-100055-42</b>	1	55mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-100080</i>	1	80mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-100080-42</i>	1	80mm	42mm	63mm	HSK63F
<b>PRC-HSK63F-125100</b>	1-1/4	100mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-125100-42</i>	1-1/4	100mm	42mm	63mm	HSK63F
<b>PRC-HSK63F-125150</b>	1-1/4	150mm	33mm	63mm	HSK63F
<b>PRC-HSK63F-12555</b>	1-1/4	55mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-12555-42</i>	1-1/4	55mm	42mm	63mm	HSK63F
<b>PRC-HSK63F-12580</b>	1-1/4	80mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-12580-42</i>	1-1/4	80mm	42mm	63mm	HSK63F

## Metric Sizes

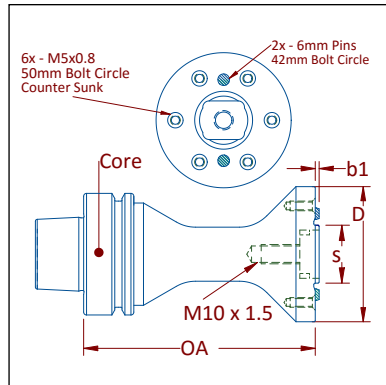
PART#	d	L	b1	b2	Core
<i>PRC-HSK63F-30103</i>	30mm	103mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-30120</i>	30mm	120mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-30125</i>	30mm	125mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-30130-42</i>	30mm	130mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-30203</i>	30mm	200mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-30203-42</i>	30mm	200mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-40080</i>	40mm	80mm	33mm	63mm	HSK63F
<i>PRC-HSK63F-40093-42</i>	40mm	93mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-40103-42</i>	40mm	103mm	42mm	63mm	HSK63F
<i>PRC-HSK63F-40203-42</i>	40mm	203mm	42mm	63mm	HSK63F

# CNC Sawblade Arbor



Sawblade Arbor for use on routers and machining centres with CNC Control. Designed for Sawblades 180mm (7") in diameter and smaller.

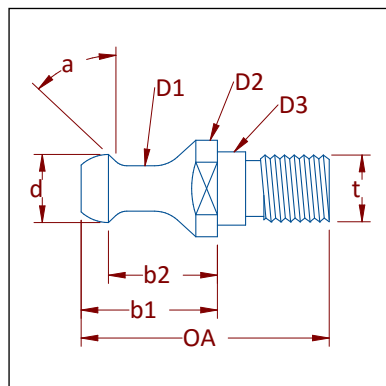
PART#	D	d	s	OA	Threads
PRC-190.20MM	71mm	20mm	20mm	90mm	4/M5/52mm BC
PRC-190.25MM	71mm	25mm	25mm	90mm	4/M5/52mm BC
PRC-190.0750	71mm	3/4"	3/4"	90mm	4/M5/52mm BC



Precision industrial saw arbor for CNC routers. Part includes cap and countersunk head mounting screws. Standard 30mm arbor and locking pins can be used to mount saw. If a flush mount is required 6 countersunk holes can be used with M5 screws for mounting. If flush mounting is required, saw needs to be modified with appropriate countersunk holes. If cap is used, selected 30mm bore RoyceAyr series S03 or S02 saws can be used.

PART#	D	s	b1	OA	Core
PRC-HSK63F-30120S	70mm	30mm	2mm	120mm	HSK63F

# Retention Knobs for Toolholders

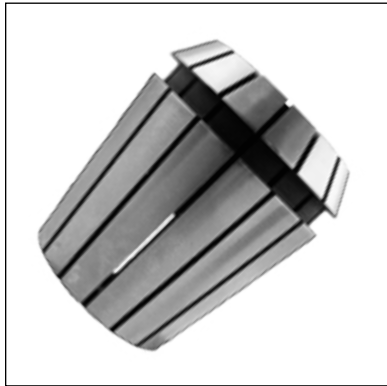


Retention knobs also known as pull studs. Each retention knob is unique to a specific make of spindle.

PART#	OA	t	d	a	b1	b2	D1	D2	D3
PRC-425.HSD	44mm	m12	12mm	Radius	23.9mm	20mm	8mm	17mm	13mm
PRC-425.COLUM	44mm	m12	13mm	15°	24mm	19mm	9mm	17mm	13mm



# Precision ER Collet



All collets conform to DIN 6388 standards. Collet should be snapped into the nut before screwing the nut onto the tool holder.

## Imperial Sizes

SIZE	ER11	ER16	ER20	ER25	ER32	ER40
1/32	<i>PRC-310.0031</i>					
1/16	<i>PRC-310.0063</i>	<b>PRC-320.0063</b>	<b>PRC-330.0063</b>	<i>PRC-340.0063</i>	<i>PRC-350.0063</i>	
1/8	<i>PRC-310.0125</i>	<b>PRC-320.0125</b>	<b>PRC-330.0125</b>	<b>PRC-340.0125</b>	<b>PRC-350.0125</b>	<b>PRC-375.0125</b>
3/16	<i>PRC-310.0188</i>	<b>PRC-320.0188</b>	<b>PRC-330.0188</b>	<b>PRC-340.0188</b>	<b>PRC-350.0188</b>	<b>PRC-375.0188</b>
1/4		<b>PRC-320.0250</b>	<b>PRC-330.0250</b>	<b>PRC-340.0250</b>	<b>PRC-350.0250</b>	<b>PRC-375.0250</b>
5/16		<i>PRC-320.0313</i>	<i>PRC-330.0313</i>	<b>PRC-340.0313</b>	<b>PRC-350.0313</b>	<b>PRC-375.0313</b>
3/8		<b>PRC-320.0375</b>	<b>PRC-330.0375</b>	<b>PRC-340.0375</b>	<b>PRC-350.0375</b>	<b>PRC-375.0375</b>
7/16			<i>PRC-330.0438</i>	<i>PRC-340.0438</i>	<b>PRC-350.0438</b>	<b>PRC-375.0438</b>
1/2			<b>PRC-330.0500</b>	<b>PRC-340.0500</b>	<b>PRC-350.0500</b>	<b>PRC-375.0500</b>
9/16				<i>PRC-340.0563</i>	<b>PRC-350.0563</b>	<b>PRC-375.0563</b>
5/8				<b>PRC-340.0625</b>	<b>PRC-350.0625</b>	<b>PRC-375.0625</b>
3/4					<b>PRC-350.0750</b>	<b>PRC-375.0750</b>
7/8						<b>PRC-375.0875</b>
1						<b>PRC-375.1000</b>

## Metric Sizes

SIZE	ER11	ER16	ER20	ER25	ER32	ER40
3mm	<i>PRC-310.M030</i>	<i>PRC-320.M030</i>	<i>PRC-330.M030</i>	<i>PRC-340.M030</i>	<b>PRC-350.M030</b>	
4mm	<i>PRC-310.M040</i>	<i>PRC-320.M040</i>	<i>PRC-330.M040</i>	<i>PRC-340.M040</i>	<b>PRC-350.M040</b>	<i>PRC-375.M040</i>
6mm	<i>PRC-310.M060</i>	<i>PRC-320.M060</i>	<i>PRC-330.M060</i>	<i>PRC-340.M060</i>	<b>PRC-350.M060</b>	<i>PRC-375.M060</i>
8mm		<i>PRC-320.M080</i>	<i>PRC-330.M080</i>	<i>PRC-340.M080</i>	<i>PRC-350.M080</i>	<i>PRC-375.M080</i>
9mm		<i>PRC-320.M090</i>	<i>PRC-330.M090</i>	<i>PRC-340.M090</i>	<b>PRC-350.M090</b>	<i>PRC-375.M090</i>
10mm		<i>PRC-320.M100</i>	<i>PRC-330.M100</i>	<i>PRC-340.M100</i>	<b>PRC-350.M100</b>	<i>PRC-375.M100</i>
12mm			<i>PRC-330.M120</i>	<i>PRC-340.M120</i>	<b>PRC-350.M120</b>	<i>PRC-375.M120</i>
13mm				<i>PRC-340.M130</i>	<b>PRC-350.M130</b>	<i>PRC-375.M130</i>
14mm				<i>PRC-340.M140</i>	<i>PRC-350.M140</i>	<i>PRC-375.M140</i>
16mm					<b>PRC-350.M160</b>	<i>PRC-375.M160</i>
19mm					<i>PRC-350.M190</i>	<i>PRC-375.M190</i>
20mm					<b>PRC-350.M200</b>	<b>PRC-375.M200</b>
25mm						<b>PRC-375.M250</b>



# Precision SYOZ Collet



All collets conform to DIN 6388 standards. Collet should be snapped into the nut before screwing the nut onto the tool holder.

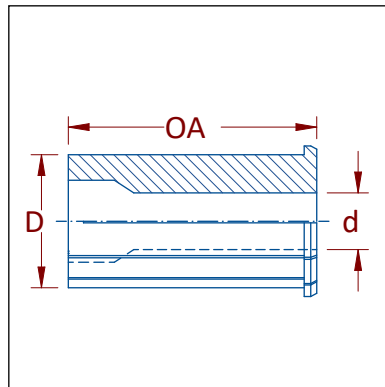
## Imperial

SIZE	SYOZ 20	SYOZ 25
1/8	PRC-410.0125	PRC-400.0125
3/16	<i>PRC-410.0188</i>	PRC-400.0188
1/4	PRC-410.0250	PRC-400.0250
5/16		PRC-400.0313
3/8	<i>PRC-410.0375</i>	PRC-400.0375
7/16		<i>PRC-400.0438</i>
1/2	PRC-410.0500	PRC-400.0500
9/16		<i>PRC-400.0563</i>
5/8		PRC-400.0625
3/4		PRC-400.0750
7/8		<i>PRC-400.0875</i>
1		PRC-400.1000

## Metric

SIZE	SYOZ 25
3mm	<i>PRC-400.M030</i>
4mm	<i>PRC-400.M040</i>
5mm	PRC-400.M050
6mm	PRC-400.M060
8mm	<i>PRC-400.M080</i>
9mm	<i>PRC-400.M090</i>
10mm	PRC-400.M100
12mm	PRC-400.M120
13mm	<i>PRC-400.M130</i>
14mm	<i>PRC-400.M140</i>
16mm	PRC-400.M160
19mm	<i>PRC-400.M190</i>
20mm	PRC-400.M200
25mm	PRC-400.M250

# Hydraulic Reduction Collets



Hydraulic reduction collets for use in hydraulic holders. Works to run smaller diameter shanks in larger hydraulic holders. Also works in Turbotec holder.

PART#	D	d	OA
PRC-460.050.0250	1/2	1/4	2-1/8
PRC-460.050.0375	1/2	3/8	2-1/8
PRC-460.075.0250	3/4	1/4	2-1/8

PART#	D	d	OA
PRC-460.075.0375	3/4	3/8	2-1/8
PRC-460.075.0500	3/4	1/2	2-1/8
PRC-460.075.0625	3/4	5/8	2-1/8

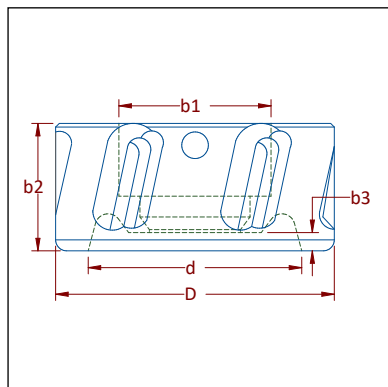
# Replacement Collet Nuts



Replacement collet nut for common toolholders. Most common type is a coated collet nut. Coated collet nuts reduce friction and allow for greater tightening forces. Bearing nuts have even less friction to allow for even higher tightening forces.

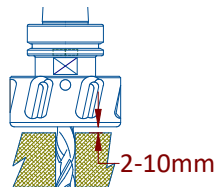
PART#	Collet	Type	Rotation
PRC-475.ER25.C	ER25	coated	right hand
PRC-475.ER32.B	ER32	bearing	right hand
PRC-475.ER32.C	ER32	coated	right hand
PRC-475.ER40.B	ER40	coated	right hand
PRC-475.ER40.C	ER40	coated	right hand
PRC-475.SYOZ25.C	SYOZ25 (ORT25)	coated	right hand
PRC-475.SYOZ25.B	SYOZ25 (ORT25)	bearing	right hand

# Tornado® Dust Extraction Nut



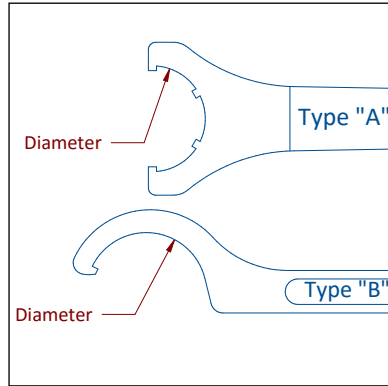
Dust extraction nut helps with removing dust on CNC routers. Replaces your conventional collet nut. not to be run above 20,000rpm. Care must be taken to ensure that the tool is set to the correct height so the unit runs 2-10mm above the material.

Wrenches sold seperately



PART#	D	d	b1	b2	b3	Rotation	Wrench
PRC-490.ER32	92mm	70mm	M40 x 1.5mm	42mm	6	RH	PRC-510.ER32T
PRC-490.ER40	92mm	70mm	M50 x 1.5mm	42mm	6	RH	PRC-510.ER40T

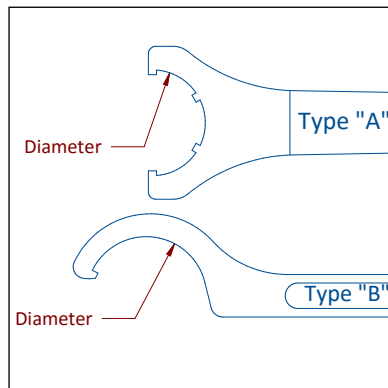
# Spanner Wrenches for Toolholders



Spanner wrenches for tightening various collets.

PART#	Collet	Overall	Diameter	Type
PRC-500.ER25	ER25	8-1/2	1-1/2	A
PRC-500.ER32	ER32	9-3/4	2	A
PRC-500.ER40	ER40	11	2-1/2	A
PRC-500.SYOZ25	SYOZ25 (ORT25)	9-1/2	2-3/8	B

# Spanner Wrenches for Toolholders (Torque)



Spanner wrenches for tightening various collets. Torque ensures precise values when tightening collet nut or toolholder.

PART#	Collet	Overall	Diameter	Type
PRC-510.ER32	ER32	15-3/4	2-1/4	A
PRC-510.ER32T	ER32	18-5/8	3	B
PRC-510.ER40	ER40	17-3/4	2-1/4	A
PRC-510.ER40T	ER40	18-3/4	3-1/4	B
PRC-510.ETP	5mm Allen	Torque Key for ETP-G2 Hydro Holers		
PRC-510.SYOZ25	SYOZ25 (ORT25)	17-3/4	2-1/4	B

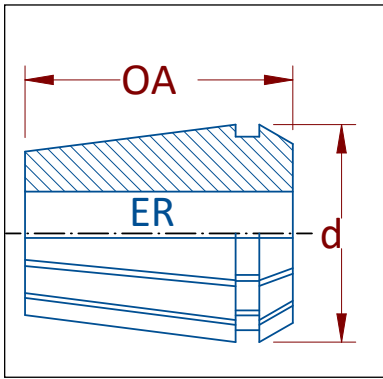
# Toolholder Clamp



Clamping device used to prevent toolholder from rotation when collet is being tightened or loosened. Clamp works on all toolholders with a 63mm external flange diameter.

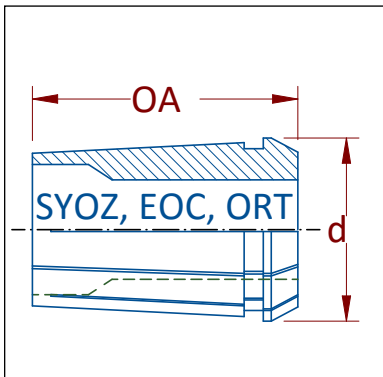
PART#	Description
PRC-805.63	Tool clamping device for toolholders with a 63mm flange diameter

# Guide for Identifying Collet



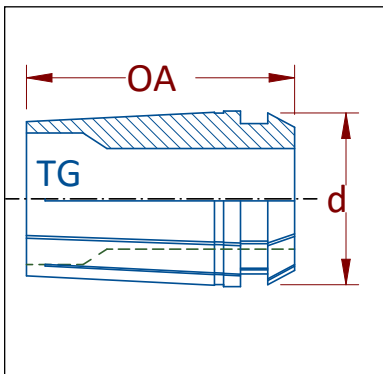
ER Collet

Type	OA	d
ER8	13mm (0.510")	8.5mm (0.33")
ER11	18mm (0.708")	11.5mm (0.45")
ER16	27.5mm (1.08")	17mm (0.67")
ER20	31.5mm (1.24")	21mm (0.83")
ER25	34mm (1.34")	26mm (1.02")
ER32	40mm (1.57")	33mm (1.30")
ER40	46mm (1.81")	41mm (1.61")
ER50	52mm (2.05")	52mm (2.05")



SYOZ (ORT), EOC

Type	OA	d
EOC8	26mm (1.026")	14.4mm (0.567")
SYOZ20 (ORT20)	34mm (1.34")	20mm (0.780")
SYOZ25 (ORT25)	52mm (1.57")	35mm (1.380")
EOC32	60mm (2.36")	43.7mm (1.720")



TG Collet

Type	OA	d
TG75	47mm (1.85")	8.5mm (0.33")
TG100	18mm (0.708")	11.5mm (0.45")
TG150	27.5mm (1.08")	17mm (0.67")

# Explanation of Toolholders

Every tool holder is made up of 3 main parts as outlined below. Depending on the machine interface, the retention knob may or may not be needed. Royce Ayr strives to carry and stay up to date with the most common holders. If what you need is not listed we may be able to order it in as a special.

## Retention Knob (Pull Stud)

This is the device that the spindle “fingers” will actually clamp down on to hold the taper tight in the spindle. These are not needed in HSK tapers.

## Machine Interface

Also dependant on the machine make examples include HSK63F, Thermwood 30, HSK63A, ISO30 and BT30.

## Tool Holder Interface

The tool holder interface is what fastens the tool into the tool holder. Many different interfaces exist; but the main ones are; integrated tool, shrink fit, hydraulic, and conventional spring collet listed in order from most to least rigid.

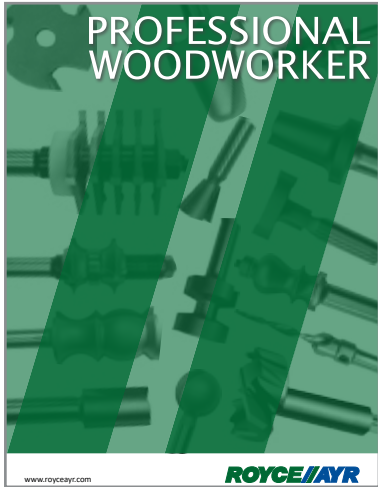
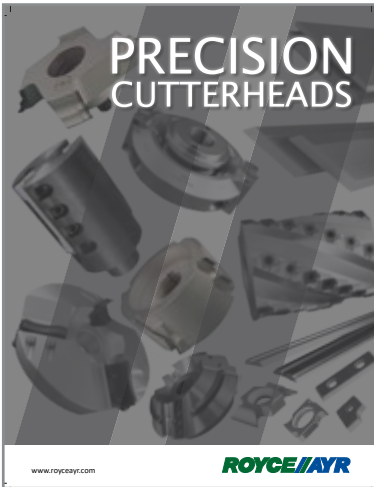
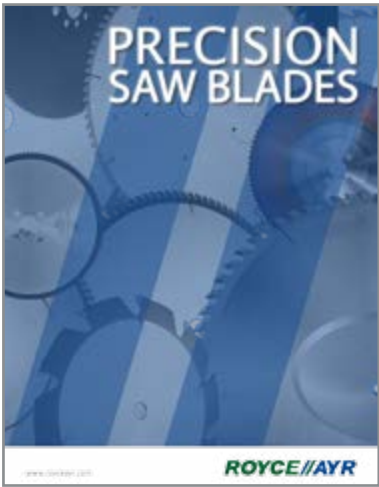


# Precision Sharpening Services

Royce Ayr is capable of sharpening cutting tools back to original factory performance levels to keep them cutting as good as new. Same advanced machinery used to manufacture the tooling is used for servicing the tools.



## Other Products Available





# Custom Tooling

Did not find what you are looking for? We can produce a custom tool to meet your needs. Over 30% of our products are custom tooling. A sales representative would be more than happy to discuss your needs and utilize our experienced technical application specialists. The process is simple regardless if you need a brazed carbide, insertable carbide or polycrystalline diamond (PCD).

- 1) Contact your Royce Ayr representative to discuss your need
- 2) A quotation will be sent as soon as possible for you to review
- 2) If the quotation is approved, provide any drawings or samples required for the order
- 3) A drawing will be sent within 2-5 business days depending on the complexity
- 4) Once the drawing is finalized and we have received your approval we will proceed with production





# Royce Ayr Conditions of Sale

## Limited Warranty

All items in the Royce Ayr catalogue, unless otherwise noted, are warranted for 90 days against defects in workmanship and materials. Normal wear or misuse of a tool is not covered by this warranty. Merchandise may be returned within the 90 day period to Royce Ayr for assessment and if a defect is found the tool will either be replaced, repaired or refunded at our discretion. In no way will Royce Ayr be responsible for any incidental or consequential damages resulting from use of our products. Stock items being returned free of defect must be within the 90 day period and may be subject to a 15% restocking fee.

## Special Items

Special items that are not shown in the catalog are covered by the limited warranty. Items free of defect may be returned at our discretion. A 15% restocking fee will apply if the items can be returned.

## Custom Tooling

Custom tools that are made to order are covered by the limited warranty. The customer is responsible to verify details shown on the drawing, such as but not limited to profile specifications, overall tool dimensions, arbor size, shank size, etc. These items are covered against defect in workmanship and material. Custom orders cannot be returned unless a defect in workmanship or materials existed at the time of delivery.

## No Sale is Final

Please call us if you have a problem with an order or with the ordering experience. We want you to be satisfied with our products and services and will do our best to make sure that happens.

## Deliveries

Partial orders will be shipped until the order is filled. Please specify if you would like an order to ship complete. Lead times and deliveries are provided as a best estimate and every effort will be made by Royce Ayr to meet these deadlines. Royce Ayr is not liable for any incurred expenses resulting from late delivery.



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