

# Diamond Tooling



**NAPGLADU**

Delivering Productivity

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## PCD Diamond Cutting Tools

Plycrystalline Diamond (PCD) cutting tools from NAP Gladu offer the woodworker enormous advantages when cutting a variety of man-made materials. If your operation involves the cutting or profiling of materials such as MDF, particle board, plywood, OSB, plastics, fiberglass, Corian, or any other composites, then the investment in diamond cutting tools can have a positive affect on your bottom line. We offer a complete line of both standard and custom diamond tools engineered for your specific application.

### Applications

- Diamond tooling can be used on a wide variety of machines such as double end tenoners, panel saws, CNC routers etc.
- Diamond tooling is recommended for those applications where dense man-made material such as MDF and particle board are encountered.
- Recommended for those applications where the type of material rarely changes and run times are long and continuous.

### Advantages

- Reduced down time required for tool changes means more production.
- Reduces your overall tooling costs.
- Increased production with superior finishes.
- 50-100 times the life of carbide tooling.
- Maximizes your automated equipment.

### Technical Information

- Diamond tooling's abrasion resistance is 15-100 times greater than that of carbide.
- Diamond tooling can last 50-100 times longer than carbide.
- Maintains a sharper cutting edge which produces superior finishes and less waste.
- Diamond tooling is available in saw blades, router bits, profiled router bits, "T" slot cutters, profile cutters and groovers.

## Serr-A-Cut

### Problem:

Customers manufacturing cabinet doors or drawer fronts of various mixed hardwoods that experience pulling of the grain along the bottom flat surface of the profile.

### Solution:

The Serr-A-Cut, a new design by NAP Gladu, is proving effective in eliminating the grain pull on both "with grain" and "cross grain" cutting applications.

### How Serr-A-Cut Works:

The new Serr-A-Cut is a pre-cut diamond tool used on double spindle machines to eliminate the need for a profiled jump-cope. This will reduce the setup and allow the customer to make a clean cut without having the worry of a mismatched profile.

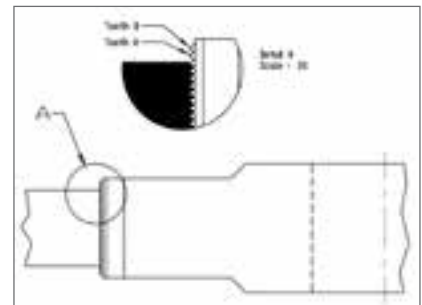
### Who uses Serr-A-Cut:

Cabinet manufacturers looking to reduce their scrap on solid wood doors and drawer fronts due to excessive grain pull on the flat portion of the profile.

The small serrations allow the profile head to remove the remaining wood without the issue of grain pull on the flat area.



Note: This is a custom tool designed for your specific cutting application and needs to be quoted like any NAP Gladu manufactured diamond tool. The drawing is just a sample; your individual tooling may vary.



# Custom Diamond Saw Blades

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## Customizable Blade Specifications

<b>No. of Teeth Available</b>	6, 8, 10, 12, 18, 20, 24, 30, 32, 36, 40, 42, 48, 50, 54, 56, 60, 66, 72, 78, 80, 84, 90, 96, 100, 110, 120
<b>Kerf Thickness</b>	0.118" (3.0mm), 0.129" (3.3mm), 0.141" (3.6mm), 0.157" (4.0mm), 0.169" (4.3mm), 0.181" (4.6mm), 0.204" (5.2mm)
<b>Teeth Styles Available</b>	Flat Tooth Alternate Tooth Bevel Triple Chip Grind Triple Chip/Flat Tooth
<b>Hook Angles</b>	5°, 10°, 15°, 20°, 25°, 30°
<b>Maximum Diameter</b>	19.7" (500mm)
<b>Standard Tooth Length</b>	0.197" (5mm)

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## Ordering Information

### Tooth Style

(Flat, ATB, TCG...etc)

Specify right hand or left hand relative to top tooth face coming. If the high point is on the right side with the saw blade held in the top tooth face coming position, we call this a right hand saw blade.

### Bore Size

All standard saw numbers beginning with SC: Open boring is limited to 2" (50.8 mm) above listed bore size  
Spline bores available by special order only.

### Kerf

(Light, Medium, Heavy)

You must make a special note if the kerf must be held to a specific size. Make this note in the kerf section of the new tool order form.

### Plate Thickness

If plate thickness is below or above specified range on the chart, they must be special quoted.

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## Mounting Holes

Need to know the quantity, size, and the bolt circle that they are located on. If there is more than one mounting hole, you need to make a note of their position relative to each other (i.e. 4 mounting holes 90 degrees apart). If the holes are countersunk, you must specify which side of the saw body they are located on relative to top tooth face coming position.

## Size and Number of Keyways

Make special note if keyways are to be staggered. Note the position of one relative to the other if more than one keyway is to be used (i.e. 180 degrees apart). Maximum 2 keyways per blade.

## Collar Size

You must give the collar size diameter that the tool is going to run on. This is very important.

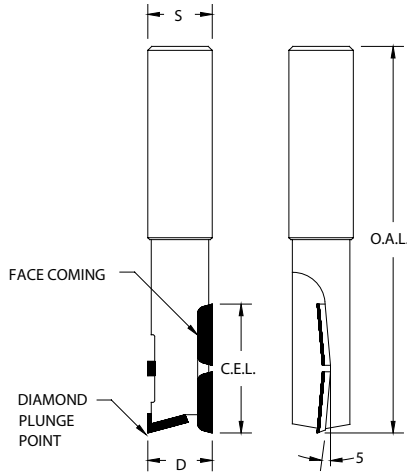
## R.P.M.

You must give the RPM.

## Material

Specify the type of material being cut.

# Diamond Router Bits – PCD Diamond



## Applications

- Designed for use on CNC routers
- Use on clean man-made material such as particle board and Corian MDF is an excellent material for diamond use
- Use in applications where the router bit is left on the machine for extended periods of time, justifying a decrease in tool changes
- Diamond router bits require rigid fixturing
- Hand routing operations are not recommended

## Advantages

- An opportunity to increase your production efficiency and reducing overall tooling costs
- Typically, diamond tools can run 50-100 times longer than conventional carbide tools
- With reasonable care, NAP Gladu's diamond router bits can be sharpened 1-3 times
- The diamond plunge point produces superior performance over carbide plunge point

## Technical Information

- Combination up/down shear design eliminates chipping and splintering on laminated material
- A diamond boring point is used for extended plunge/route performance
- All tools are right-hand (RH) bits unless specified otherwise Left-hand router bits are available upon request

Part No.	Cutting Diameter	Cutting Edge Length	Shank Size	Overall Length	No. Of Flutes
RN111	1/2"	1"	1/2"	3"	1
RN114	1/2"	1-1/4"	1/2"	3-1/4"	1
RN117	5/8"	1"	5/8"	3"	1
RN119	3/4"	1"	3/4"	3"	1
RN123	3/4"	1-1/4"	3/4"	3-1/4"	1
RN124	3/4"	1-1/4"	3/4"	3-1/4"	2
RN126	3/4"	1-5/8"	3/4"	3-1/2"	1

# Diamond Router Bits – Helical Compression Series



## Applications

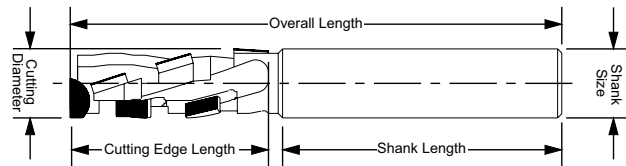
- For use on CNC and conventional routing machines, for machining natural or man-made laminated substrate material such as MDF, particle board, Formica®, melamine, paper, vinyl, etc
- Also good for non-laminated material that require minimum chipping and tear-out on both the top and bottom surfaces

## Advantages

- The helical design facilitates single contact cutting for reduced cutting pressures and less required horsepower than conventional router bits
- Combined up/down shear cutting action generates the cutting forces towards the center of the material, for reduced chipping and splintering
- Increased feed rates result in increased productivity with reduced overall costs

## Technical Information

- Made from Polycrystalline Diamond, specifically for man-made material and can be sharpened
- The plunge point is carbide tipped for short or nominal plunge rout applications
- All tools are right-hand (RH) bits unless specified otherwise Left-hand router bits are available upon request



Part No.	Cutting Diameter	Cutting Edge Length	Shank Size	Overall Length	No. Of Flutes
RN261	1/2"	1-1/8"	1/2"	3.38"	1+1
RN262LH	1/2"	1-1/8"	1/2"	3.38"	1+1
RN265	1/2"	1-3/8"	1/2"	3.63"	1+1
RN271	5/8"	1-1/8"	1/2"	3.25"	1+1
RN275	5/8"	1-3/8"	3/4"	4.00"	1+1
RN281	3/4"	1-1/8"	3/4"	3.25"	1+1
RN285	3/4"	1-3/8"	3/4"	4.00"	1+1
RN291	3/4"	1-3/4"	3/4"	4.38"	1+1
RN211	1/2"	1"	1/2"	3.30"	1+1
RN214	1/2"	1-1/4"	1/2"	3.30"	1+1
RN217	5/8"	1"	5/8"	3.37"	1+1
RN218	5/8"	1-1/4"	5/8"	3.37"	1+1
RN219	3/4"	1"	3/4"	3.55"	1+1
RN223	3/4"	1-1/4"	3/4"	3.55"	1+1
RN226	3/4"	1-5/8"	3/4"	3.92"	1+1
RN232	5/8"	1"	5/8"	3.37"	2+2
RN237	5/8"	1-1/4"	5/8"	3.37"	2+2
RN242	3/4"	1"	3/4"	3.55"	2+2
RN224	3/4"	1-1/4"	3/4"	3.55"	2+2
RN247	3/4"	1-5/8"	3/4"	3.55"	2+2

# Diamond (PCD) Nesting CNC Routers

## Nesting

The term nesting is used here to describe the optimal layout of workpieces on the initial material. The workpiece contours are positioned in such a way as to minimize the amount of waste material. The area of application is for series and one-off production of parts on CNC machining centers.

Boards made of MDF, chipboard or plywood are divided up into rectangles or any required shape, and where possible, finish machined in a single setup.

Place the workpiece on a vacuum table and clamp using a spoil board. Cut into this spoilboard to a depth of .010 to .025. The workpieces are "nested" in such a way that a yield up to 2.5 times higher than on a panel sizing machine can be achieved, with less waste and machining the desired contour shape.

## Application Guidelines

Choose the cutting length of the tool to suit the board thickness. Choose the more rigid tool, i.e. as short as possible and diameter as large as possible.

Panel clamping must suit the tool, i.e. small tool diameter with small parts which may move.

With high feed rates and thick boards choose tool diameter  $D=16/18$  mm.

## Requirements for nesting:

- *Machining in the optimal chip load range*
- *Sufficient shank rigidity*
- *Effective chip removal*
- *Low cutting and feed forces*

## Diamond (PCD):

- *Robust seats for the diamond tips*
- *Sturdy body*
- *Fine cutting edge finish*
- *Smooth running*
- *Optimum gullet area design*

## Selection Criteria:

- *Workpiece material (type and thickness)*
- *Tool diameter*
- *Cutting material (PCD)*



# Diamond (PCD) Nesting CNC Routers

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## Four Cut Surfacing Cutter

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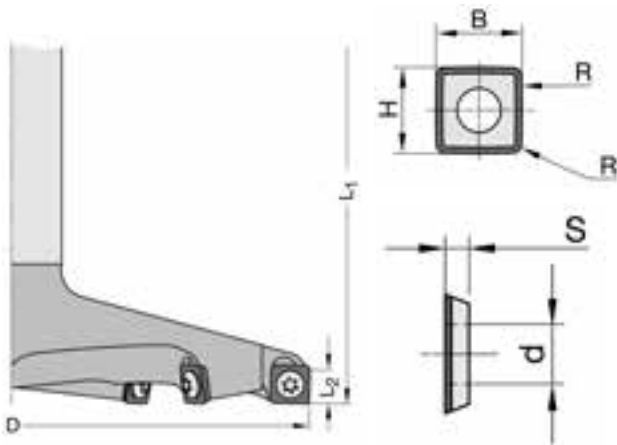
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### Applications

- Surfacing of spoil boards and MDF

### Advantages

- High surface quality
- More economic compared to brazed tools
- PCD tips can be exchanged by carbide tips

### Technical Information

- RPM: 18,000-35,000
- Feed rate: 590-1375 in/min
- 4-sided Diamond (PCD) reversible tips with special design to minimize risk of breakage and higher tool life

## Diamond (PCD) Surfacing Cutter 6 wing

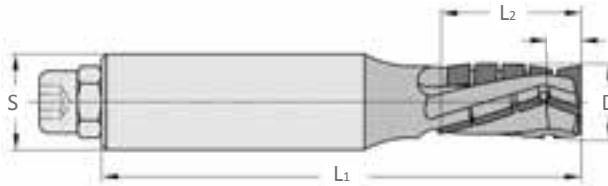
Part No.	D	L2	L1	S
RN340	150	8	90	25x55

## Replacement Diamond Inserts

Part No.	Dimensions
RN345	9.8 x 9.8 x 2 mm

# Diamond (PCD) Nesting CNC Routers

## Diamond PCD Compression 3 Wing



### Applications

- Grooving, jointing, rebating, sizing of raw or coated chipboard and MDF material

### Advantages

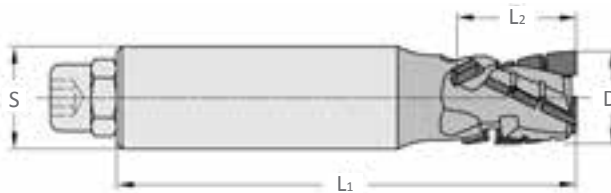
- Less waste of material
- Low cutting force
- Good edge quality on top and bottom

### Technical Information

- RPM: 18,000-35,000
- Feed rate: 590-1375 in/min (depending on material type and thickness)

Part No.	D	L2	L1	S	Material Thickness
RN300	12	22	75	12x45	.394"-.750"
RN301	12.7 (.500)	28	85	12x45	.512"-.866"
RN302	12.7 (.500)	28	85	12.7 (.500)x45	.512"-.866"
RN303	16	21	95	20x55	.512"-.748"
RN304	16	29	100	20x55	.748"-.984"
RN305	18	52	130	20x55	1.102"-1.89"

## Diamond PCD Up Spiral 3 Wing



### Applications

- Grooving, jointing, rebating, sizing of raw or coated chipboard and MDF material

### Advantages

- Continuous chip removal upwards
- Large capacity of chipping area
- Sturdy tool body

### Technical Information

- Maximum material thickness: 750

Part No.	D	L2	L1	S
RN310	18	23	90	20x55



# Diamond (PCD) Nesting CNC Routers

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## Diamond PCD Compression 2 Wing

### Applications

- Grooving, jointing, rebating, sizing of plywood

B



### Advantages

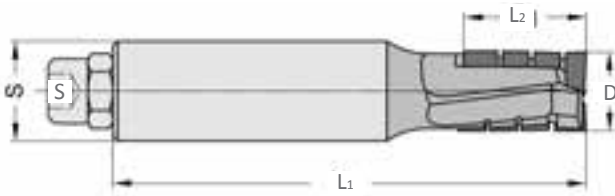
- Large gullet areas
- High rigidity

C

D

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### Technical Information

- RPM: 18,000-35,000
- Feed rate: 590-1375 in/min (depending on material type and thickness)
- Up spiral length 255
- Maximum material thickness: 905

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Part No.	D	L2	L1	S
RN320	16	25	95	20x55

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## Full Diamond PCD 2 Wing

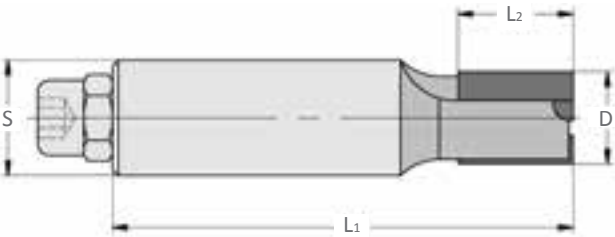
### Applications

- Grooving, jointing, rebating, sizing of plywood, composites, plastics, and HPL



### Advantages

- Smooth surface without lines
- Continuous cutting edges
- Alternate shear angle



### Technical Information

- Suitable material thickness: 197 – 750

#### Plywood:

- RPM: 18,000-24,000
- Feed rate: 235-355 in/min

#### Composites:

- RPM: 15,000-18,000
- Feed rate: 40-195 in/min

Part No.	D	L2	L1	S
RN330	12	20	75	12x45
RN331	16	20	80	20x50

