VORTEX
TOOL COMPANY INC.

VORTEXTOOL.COM

XTREME
PERFORMANCE

OVER 25 YEARS

WOOD
PLASTIC
COMPOSITE
ALUMINUM

American
Owned & Operated

Dear Friends,

When we opened our doors in 1992, we realized our success would be based on our ability to provide the best products and service possible to our customers. Since that time, we have worked very hard to meet and exceed the needs of our customers. After more than 25 years in operation, we are proud to say that Vortex Tool is the largest "American Owned and Operated" producer of solid carbide router bits.

As our business grew, we listened to our customers, and spent time and resources in developing new products and services. In 2004, Vortex Tool reached a milestone. We were awarded our industry's highest honor, The Challengers Award. This prestigious award, known throughout the world as the woodworking industry's highest honor, recognizes companies who have distinguished themselves by developing innovative technology in products, services, or manufacturing techniques. To us, it represents the acknowledgment of hard working, dedicated employees, who have a steadfast commitment to customer service.

In 2015, Vortex Tool was awarded the AWFS Visionary Award for Innovation/Productivity in Tooling for our new Tool Selection Guide App that makes tool selection easier. Users input the type of material being cut, the horsepower of the CNC machine, the tool diameter, the thickness of material and the type of cut desired, and the Tool Selection Guide App will recommend the best tool for your application.

Now that we have ventured beyond the norm, you may be rest assured that we haven't lost sight of our most important goal, which is to provide our customers with the best products and services possible.

We hope you enjoy working with the new Vortex catalog, and we look forward to hearing from you soon.

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NEW IN THIS CATALOG:

This catalog features sections on Wood Tooling, Plastic Tooling, Composites/Aluminum Tooling, Insert Tooling and Machine Tool Accessories to make finding what you need even easier.

Please Note:
Overall tool length may become longer
as a result of automated manufacturing technology.

Over the past two decades, Vortex Tool has built a reputation as an innovator, manufacturing high performance router and insert cutting tools for the woodworking and plastics industries. From our facility in Schofield, Wisconsin, Vortex produces tools with cutting edges in various grades of carbide, stellite, and polycrystalline diamond.

Vortex stands alone as an industry leader with many industry firsts. Our high quality tools, which provide higher operating speeds, significantly longer tool life than other manufacturers and long-term value, have built our customer base of over 5,000 companies.

Our newest development has been our line of “XP” Xtreme Performance cutting tools. These tools were extensively tested on our in-house router and by many woodworking customers. Users have experienced 3-5 times more tool life with our XP Series as compared to standard tool geometry. These tools were originally designed for cutting high pressure laminates or melamine. Our customers have found that this series of tools also provides excellent results in particle board and MDF materials. They are available in two and three flute compression style geometries, as well as downcut geometry.

Custom Tooling

Many customers do not realize that Vortex Tool is more than solid carbide router bits — MUCH MORE!! A large part of our business is the design and manufacturing of insert tooling. Manufactured by Vortex Tool at our facility in Schofield, Wisconsin, both tool bodies and replacement inserts are produced on CNC machinery. Each tool is custom designed using AutoCAD or SOLIDWORKS allowing for easy exchange of information between customers and Vortex.

Custom Tooling (continued)

Insert designs vary depending on application. We not only manufacture router tooling, but bore type tooling as well. We always try to provide you with tool designs and insert types that are widely available so you aren't "tied" to one source for replacement items. Inserts are profile ground on state-of-the-art CNC grinders then "lap" faced producing the sharpest edge quality possible. Bodies and inserts are fully engineered in-house which assures future replacements to be accurate and exact.

Tool balance is a very important and often overlooked factor of cutting tool performance. There are many factors of cutting performance which can be directly linked to tool balance, including work piece finish, tool life, spindle temperature and life, horsepower consumption, and feed rate limitations. Even overall machine wear and tear can be reduced with properly balanced cutting tools. All tools are precision balanced to G2.5 or better ensuring optimum performance.

All tools are checked for accuracy on an optical comparator against the drawing created by our engineering department to ensure all angles and profiles are accurate prior to shipping. A permanent record in the form of an "overlay" is kept ensuring repeat accuracy on all future orders. Average manufacturing time is 3 weeks for insert bodies and 1-2 weeks for replacement inserts, which will be accurately defined at time of quotation. Vortex can provide pricing based on AutoCAD drawings, wood samples, and many other forms of electronic data.

Solid Carbide Custom Tooling

In addition to our standard line of tooling, Vortex Tool also manufactures custom solid carbide tooling with special cutting edge lengths, profiles, etc. If you are unable to find a standard tool for your application, please call our sales department for a quotation. Manufacturing time on custom solid carbide tools is 7-10 working days or less and will be accurately defined at time of quotation.

Sharpening Services

When Vortex began its business in 1992, we did not manufacture solid carbide tooling, but were a service facility for sharpening and retipping services of solid carbide and carbide-tipped tooling. We had several customers tell us that their tools performed better after we had sharpened them than they did when they were new, and a few would have us sharpen their new tools with this special “Razor Edge” Technology.

Today, Vortex Tool continues to sharpen all types of solid carbide bits as well as carbide-tipped tooling for the woodworking and plastics industries. We can sharpen any manufacturer's brand. Our standard turnaround time for router bit sharpening is two days or less. The new tool diameter will be marked on the tool so you can easily adjust your tool offset. We can accommodate requests for matching tools in sets, maintaining tool diameters by cutting off and re-pointing the dull portion of the tool (popular in downcut tools), grinding to a specific diameter, etc.

Tools should be sent to:

Vortex Tool Company Inc.
5605 E. Jelinek Avenue
Schofield WI 54476

Tools should be packaged tightly to prevent damage during shipping! Please include a business card or paperwork indicating your company name, address and phone number.

In addition to sharpening solid carbide and carbide-tipped tooling, Vortex Tool will properly service your carbide-tipped saw blades. The staff at Vortex Tool have been trained to hammer and straighten saw blades, add tension to blades, and whatever else is needed to bring them to a “like new” condition. Prior to sharpening, all blades are cleaned and inspected for serviceability. Proper service of your tooling and saw blades can determine your profit.

Left Hand Tools

All tools listed in this catalog are available in left hand (counterclockwise) rotation. To order left hand rotation tooling, signify by placing an “L” behind the part number. More popular tools are currently listed in this catalog.

Flush Trim Bits with Bearings

Most standard tools, 1/2” diameter and larger, can be manufactured with bearing guides on the cutting end of the tool. When ordering, add a “B” behind the part number and add $75 to the tool cost. Vortex does have stock on a few flush trim bearing bits (Series 1200), and others would need to be manufactured with a 7-10 working day lead time.

General Policy for Returns/Exchanges

If you have items you need to return for credit, please contact our sales department for an RMA (Return Materials Authorization) form. This form must be included inside the box when returning tools to ensure proper credit.

When returning product, we strongly recommend the use of a carrier that can track packages. You are responsible for insuring the package for any possible shipping loss or damage. All items must be returned in their original unused condition and packaging and include any accessories that accompanied the original purchase. The shipping fee is nonrefundable. Buyer is responsible for return shipping costs and insurance. Please allow 2-7 days for processing of your return. Please note that not all items are covered under our return policy.

We cannot accept returns of certain items for a refund, including:

- Any item that is returned more than 90 days after receipt.
- Any perishable tooling that has been used for production or test cutting.
- Any perishable tooling that has been chucked or mounted in a machine.
- Any item that is not in its original condition, is physically damaged, or modified from its original manufactured specs.
- Any perishable tooling that has been reconditioned or serviced in any way.
- Any custom made perishable tooling manufactured to customer's specs.

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Why Use Solid Carbide Spiral Tooling?

Because of some unique cutting tool properties, solid carbide spiral tools produce the best edge qualities of any cutting tool design available. Additionally, solid carbide router bits are able to produce these cuts at the fastest feed rates possible as compared to any other type of routing tool.

Upcut Spirals

- The upcut spiral is a right-hand spiral with a right-hand rotation of cut. An upcut spiral will cause the chips to be "augered" upwards during cutting. This can be particularly useful in slotting cuts or where chip removal is a problem. Upcut spiral bits have a tendency to "lift" the part in some cases. Additional holding power or stepped cutting may be required.

- Upcut spiral bits will leave a smooth cut on the bottom of a thru cut and tend to leave some fuzzing on the top edge in certain materials.

- Upcut spirals straight plunge/drill and have good end cutting geometry.

Downcut Spirals

- A downcut spiral (right-hand cut, left-hand spiral) causes the chip flow to be directed downward. It also helps hold down the part being cut. The edge quality on the part is smooth on the top, but tends to be fuzzy on the bottom in certain materials.

- The downward chip flow can sometimes cause clogging problems particularly in a blind slotting situation. Downcut bits tend to preload the routing system and can substantially improve part hold down in a marginal routing setup.

- Downcut tools CANNOT be used to plunge straight into wood and should be ramped into the part.

Compression Spirals

- A compression spiral is designed with both upcut and downcut flutes. The upcut and downcut flutes compress the material being cut, preventing chipping or fuzzing on the top and bottom of the cut.

- Compression spirals are used extensively for cutting double-sided laminates, and can be used on natural woods where edge fuzzing is a problem.

The information given should only be used as a guideline or starting point for feed rate selection. Your actual feeds and speeds will vary widely as a result of "contributing factors" such as machine rigidity, horsepower, collet condition, spindle integrity, part clamping, hold down, and many other factors. Generally speaking, solid carbide tooling will perform better (i.e., longer life, less tool breakage) at faster feed rates. We recommend a "starting point" feed rate and increasing that feed rate until part finish becomes undesirable or other limiting factors become evident.

Chip Load

The chip load is a measurement of the thickness of material removed by each cutting edge during a cut. This is a valuable piece of information which can then be used to calculate new set-ups.

Calculations are as follows: Chip Load = Feed Rate (inches per minute) / (RPM x number of flutes)

Example: Chip Load = 500 inches per minute / (15,000 RPM x 2 flutes) Chip Load = .017”

Chip loads are based on material thickness of average size for cutting edge length of tool. These recommendations do not apply to thicker materials or tools with long cutting edge lengths. These chiploads are only a recommended starting point and may not accommodate all circumstances. Therefore, tooling damage may still occur and use of this chart does not warranty against tool breakage.

We would strongly encourage you to consult us directly on new tool applications. Our staff would be more than happy to discuss any technical questions by phone or email.

Chip Load Chart

TOOL DIAMETER	HARD WOOD	SOFTWOOD/ PLYWOOD	MDF/PARTICLE BOARD	HIGH PRESSURE LAMINATE	PHENOLIC/ PAPERSTONE
1/8”	.003”-.005”	.004”-.006”	.004”-.007”	.003”-.005”	
1/4”	.009”-.011”	.009”-.013”	.013”-.016”	.009”-.012”	.004”-.006”
3/8”	.015”-.018”	.017”-.020”	.020”-.023”	.015”-.018”	.006”-.008”
1/2” & up	.019”-.021”	.021”-.023”	.025”-.027”	.023”-.025”	.010”-.012”

TOOL DIAMETER	HARD PLASTIC	SOFT PLASTIC	SOLID SURFACE	ACRYLIC	ALUMINUM
1/8”	.002”-.004”	.003”-.006”	.002”-.004”	.003”-.005”	.003”-.004”
1/4”	.006”-.009”	.007”-.010”	.006”-.009”	.008”-.010”	.005”-.007”
3/8”	.008”-.010”	.010”-.012”	.008”-.010”	.010”-.012”	.006”-.008”
1/2” & up	.010”-.012”	.012”-.016”	.010”-.012”	.012”-.015”	.008”-.010”

Other Valuable Formulas:

Feed Rate = RPM x number of flutes x chip load
RPM = Feed Rate / (number of flutes x chipload)
Metric Conversion: Divide inches per minute by 39.374
(ex. 300 inches per minute divided by 39.374 = 7.62 meters per minute)

RPM Selection

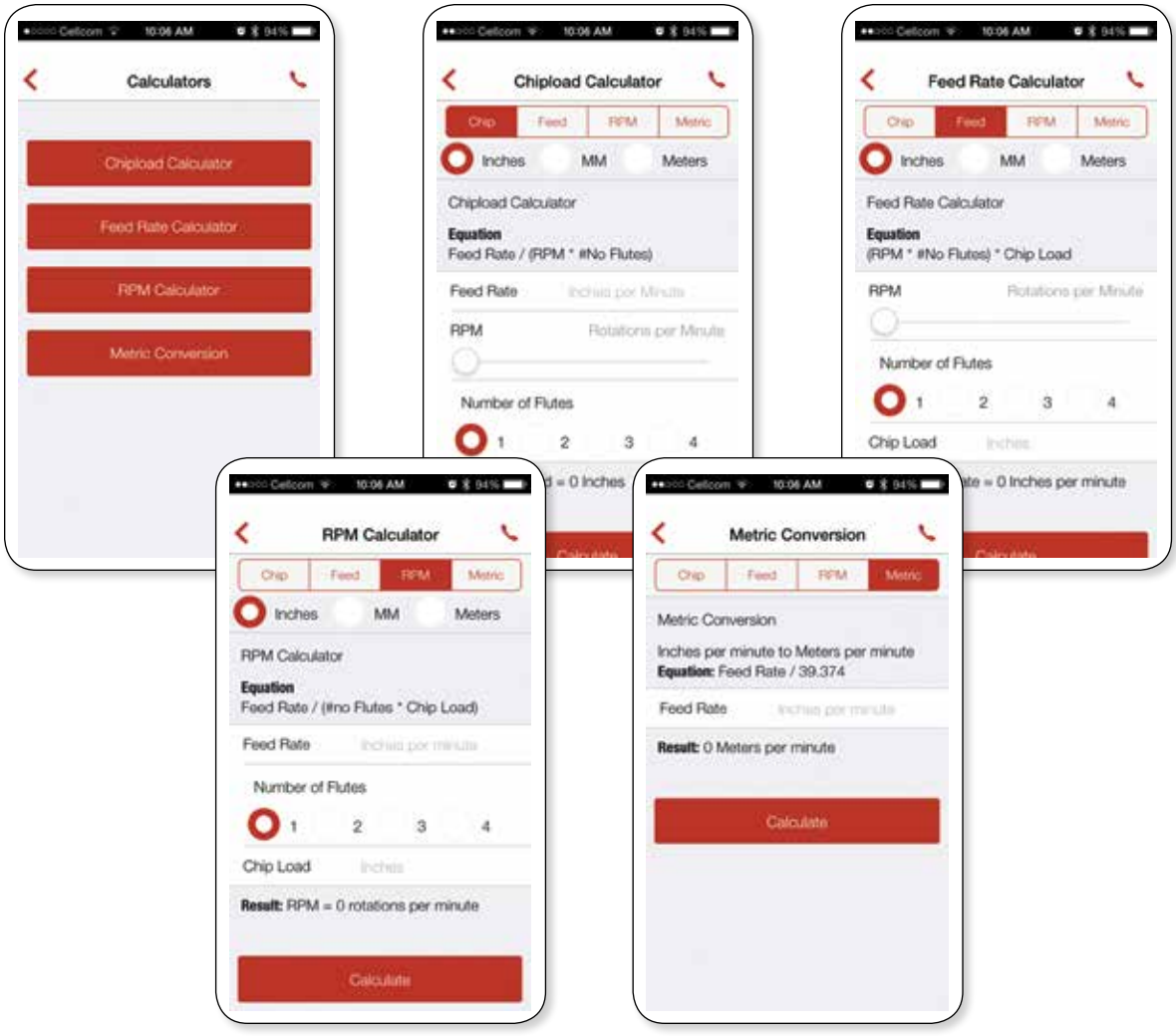
The general operating RPM for tooling contained in this catalog is between 10,000 and 20,000 revolutions per minute. Usually the higher the RPM, the better surface finish becomes. However, the higher the RPM, the more friction is generated between the tool and the work piece. This friction is what creates the mechanical wear on the cutting edge. Your goal is to select the lowest RPM possible for each application.

Vortex Tool Selection Guide App

To make tool selection even easier, Vortex Tool Company's Tool Selection Guide App simplifies tool selection based on your cutting needs. Input the type of material being cut, the horsepower of the CNC machine, the tool diameter, the thickness of material and the type of cut desired, and the Tool Selection Guide App will recommend the best tool for your application. The App also includes calculators to determine chipload, feed rate, RPM and metric conversions. Convenient links are also provided to this catalog and online ordering. Winner of the 2015 AWFS Visionary Award for Innovation/Productivity in Tooling, the Vortex Tool Selection Guide App is available for iPhone, iPad, Android Phone, or Android Tablet. For a free download, go to www.apple.com or play.google.com and select the Vortex Tool Selection Guide.

AWFS Visionary Awards Winner —

Innovation/Productivity in Tooling



IWF Challenger's Award

Vortex Tool Company was the recipient of the 2004 IWF Challenger's Award, known throughout the world for recognizing outstanding companies that have exhibited excellence in developing innovative products, services, or manufacturing techniques that advance the industry.

The Challengers Award Winner 2004

WOOD TOOLING

TOOLS FOR CUTTING:

- Hardwood
- Softwood/Plywood
- MDF/Particle Board
- High Pressure Laminate

American Owned & Operated

Series 800 & 900

SINGLE FLUTE FINISHING SPIRALS

Single-edge tools are used when slower feed rates (100-300 inches per minute) are mandated by the application. The open flute geometry is excellent for chip evacuation and helps reduce heat build-up. Designed to cut wood or wood composites.

Upcut - Series 800

Downcut - Series 900

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
830	930	1/4	7/8	1/4	2 1/2
835	935	5/16	7/8	3/8	3
840	940	3/8	1 1/4	3/8	3
850	950	1/2	1 1/4	1/2	3

Series 1000 & 1100

TWO FLUTE ROUGHING SPIRALS

Roughing tools are designed for high feed rates on CNC routers. These tools are used when surface finish is not important in dense materials such as hardwoods and plywoods. Roughing tools are very successful in CNC applications where this bit makes the first cut, followed by a second cut using a profile type tool. This tool will produce a “rippled” edge cut and is extremely quiet and smooth cutting, even in heavy cuts and high feed rates.

Upcut - Series 1000

Downcut - Series 1100

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
1040	1140	3/8	1 1/4	3/8	3
1040L	- -	3/8	1 1/4	3/8	3
1050	1150	1/2	1 1/4	1/2	3 1/2
1050L	- -	1/2	1 1/4	1/2	3 1/2
1055	1155	1/2	1 1/2	1/2	3 1/2
1055L	- -	1/2	1 1/2	1/2	3 1/2
1060	1160	1/2	1 3/4	1/2	3 1/2
- -	1160L	1/2	1 3/4	1/2	3 1/2
1065	1165	1/2	2 1/8	1/2	4
1065L	- -	1/2	2 1/8	1/2	4
1070	1170	5/8	2 1/8	5/8	4
1070L	- -	5/8	2 1/8	5/8	4
1080	1180	3/4	2 1/2	3/4	5

L=Left Hand Rotation

Series 1200

TWO FLUTE UPCUT FINISHING SPIRALS

Two flute finishing tools are used when a smooth edge cut is required and is a popular tool design for most routing applications. The helical cutting edge reduces material contact while in the cut. These tools are used for cutting materials where no special considerations are needed. The upcut spiral will provide a smooth bottom finish, while “augering” the chips upward.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
1204	- -	1/16	1/4	1/8	1 1/2
1203	- -	3mm	12mm	6mm	64mm
1205	- -	4mm	16mm	6mm	64mm
1206	- -	5mm	20mm	6mm	64mm
1207	- -	3/32	3/8	1/4	2
1208	- -	6mm	25mm	6mm	64mm
1210	1210L	1/8	1/2	1/4	2
1212*	- -	1/8	7/8	1/4	2 1/2
1215	- -	5/32	9/16	1/4	2
1220	1220L	3/16	5/8	1/4	2
1225*	- -	3/16	7/8	1/4	2 1/2
1222	- -	8mm	25mm	8mm	64mm
1228	- -	7/32	3/4	1/4	2 1/2
1230	1230L	1/4	7/8	1/4	2 1/2
1232*	1232L*	1/4	1 1/4	1/4	3
1234	- -	9/32	1	5/16	2 1/2
1235	- -	5/16	1 1/8	5/16	3
1238	- -	3/8	1	3/8	3
1240	1240L	3/8	1 1/4	3/8	3
1245	1245L	3/8	1 1/4	1/2	3 1/2
1246	- -	10mm	30mm	10mm	76mm
1249	1249L	7/16	1	1/2	3
1250	1250L	1/2	1 1/4	1/2	3 1/2
1251	- -	1/2	7/8	1/2	3
1253	- -	12mm	35mm	12mm	88mm
1255	- -	1/2	1 1/2	1/2	3 1/2
1255B	- -	1/2	1 1/2	1/2	3 1/2
1260	- -	1/2	1 3/4	1/2	3 1/2
1260B	- -	1/2	1 3/4	1/2	4
1265	1265L	1/2	2 1/8	1/2	4
1270	1270L	5/8	2 1/8	5/8	4
1275	- -	16mm	50mm	16mm	127mm
1280	- -	3/4	2 1/2	3/4	5
1282	- -	3/4	1 5/8	3/4	4
1285*	1285L	3/4	3 1/2	3/4	6
1290	- -	20mm	60mm	20mm	127mm

L=Left Hand Rotation, * = Not guaranteed against breakage due to extreme cutting edge length, B = Flush Trim Bearing Bit
CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter, OAL = Overall Length

Series 1300

TWO FLUTE DOWNCUT FINISHING SPIRALS

Downcut tools are used when the down shearing effect of the tool is preferred. This tool will produce a clean top edge of a dado type or groove type cut or simply a thru cut where the bottom edge quality is not important. These tools will direct chip flow downward while helping hold parts onto the table or pod. When nest cutting the tool path remains packed with chips which helps preserve maximum vacuum. Never plunge straight down with downcut tooling as this may cause fire or breakage.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
1303	- -	3mm	12mm	6mm	64mm
1305	- -	4mm	16mm	6mm	64mm
1306	- -	5mm	20mm	6mm	64mm
1307	- -	3/32	3/8	1/4	2
1308	- -	6mm	25mm	6mm	64mm
1310	1310L	1/8	1/2	1/4	2
1312*	- -	1/8	7/8	1/4	2 1/2
1315	- -	5/32	9/16	1/4	2
1320	1320L	3/16	5/8	1/4	2
1325*	- -	3/16	7/8	1/4	2 1/2
1322	- -	8mm	25mm	8mm	64mm
1328	- -	7/32	3/4	1/4	2 1/2
1330	1330L	1/4	7/8	1/4	2 1/2
1332*	- -	1/4	1 1/4	1/4	3
1334	- -	9/32 (7.1mm)	1	5/16	2 1/2
1335	- -	5/16	1 1/8	5/16	3
1338	- -	3/8	1	3/8	3
1340	1340L	3/8	1 1/4	3/8	3
1345	1345L	3/8	1 1/4	1/2	3 1/2
1346	- -	10mm	30mm	10mm	76mm
1349	- -	7/16	1	1/2	3
1350	1350L	1/2	1 1/4	1/2	3 1/2
1351	- -	1/2	7/8	1/2	3
1353	- -	12mm	35mm	12mm	88mm
1355	1355L	1/2	1 1/2	1/2	3 1/2
1360	1360L	1/2	1 3/4	1/2	3 1/2
1365	1365L	1/2	2 1/8	1/2	4
1368	- -	9/16	1	1/2	3
1370	1370L	5/8	2 1/8	5/8	4
1375	- -	16mm	50mm	16mm	127mm
1380	1380L	3/4	2 1/2	3/4	5
1382	- -	3/4	1 5/8	3/4	4
1385*	- -	3/4	3 1/2	3/4	6
1390	- -	20mm	60mm	20mm	127mm

L= Left Hand Rotation
* = Not guaranteed against breakage due to extreme cutting edge length
CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter, OAL = Overall Length

Series 1300XP

TWO FLUTE "XTREME PERFORMANCE" DOWNCUT FINISHING SPIRALS

Series 1300XP - Downcut "Xtreme Performance"

These tools have been specifically designed for difficult to cut materials where tool life is a problem. These tools will produce a clean top edge of a dado type or groove type cut or simply a thru cut where the bottom edge cut quality is not important.

PART #	CED	CEL	SHK DIA	OAL
1330XP	1/4	7/8	1/4	2 1/2
1340XP	3/8	7/8	3/8	3
1340LXP	3/8	7/8	3/8	3
1350XP	1/2	7/8	1/2	3

L= Left Hand Rotation

Series 1400 & 1500

TWO FLUTE CHIPBREAKER SPIRALS

Upcut - Series 1400

Downcut - Series 1500

Chipbreaker cutting edges "break" the chips into even smaller pieces reducing power consumption and vibration. Chipbreakers are staggered on each flute to produce a smooth cut, but may leave visual lines when used with router spindles in poor condition. Chipbreaker tools are recommended for hardwoods, plywoods, and dense materials where higher feed rates are required.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
1440	1540	3/8	1 1/4	3/8	3
- -	1540L	3/8	1 1/4	3/8	3
1450	1550	1/2	1 1/4	1/2	3 1/2
1455	1555	1/2	1 1/2	1/2	3 1/2
1460	1560	1/2	1 3/4	1/2	3 1/2
1465	1565	1/2	2 1/8	1/2	4
1470	1570	5/8	2 1/8	5/8	4
1470L	- -	5/8	2 1/8	5/8	4
1480	1580	3/4	2 1/2	3/4	5

L= Left Hand Rotation
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 1600 & 1700

THREE FLUTE ROUGHING SPIRALS

Upcut - Series 1600

Downcut - Series 1700

These three flute tools are designed for high feed rates on CNC routers and are used when surface finish is not important in dense materials such as hardwoods and plywoods. These tools are very successful in CNC applications where this bit makes the first cut, followed by a second cut using a profile type tool. This tool will produce a “rippled” edge cut and is extremely quiet and smooth cutting, even in heavy cuts and high feed rates.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
1638	- -	3/8	1	3/8	2 1/2
1640	1740	3/8	1 1/4	3/8	3
1650	1750	1/2	1 1/4	1/2	3 1/2
- -	1750L	1/2	1 1/4	1/2	3 1/2
1660	1760	1/2	1 3/4	1/2	3 1/2
1670	1770	5/8	2 1/8	5/8	4
1680	1780	3/4	2 1/2	3/4	5
1680L	- -	3/4	2 1/2	3/4	5
1685*	1785*	3/4	3 1/2	3/4	6

Castle “Face Frame Pocket Bit" - #1638

Series 1800 & 1900

THREE FLUTE FINISHING SPIRALS

Upcut - Series 1800

Downcut - Series 1900

Finishing tools are used when an extremely smooth edge cut is required. The three flute design provides a better finish than a two flute tool at the same feed rate. Three flute tools are used for cutting natural woods and man-made wood composites. Some users experience greater tool life with a three flute tool as compared to a two flute tool.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
1830	1930	1/4	7/8	1/4	2 1/2
- -	1930L	1/4	7/8	1/4	2 1/2
1840	1940	3/8	1 1/4	3/8	3
1840L	1940L	3/8	1 1/4	3/8	3
1850	1950	1/2	1 1/4	1/2	3 1/2
- -	1950L	1/2	1 1/4	1/2	3 1/2
1860	1960	1/2	1 3/4	1/2	3 1/2
1860L	1960L	1/2	1 3/4	1/2	3 1/2
1865	1965	1/2	2 1/8	1/2	4
1870	1970	5/8	2 1/8	5/8	4
- -	1970L	5/8	2 1/8	5/8	4
1880	1980	3/4	2 1/2	3/4	5
1880L	1980L	3/4	2 1/2	3/4	5
1882	1982	3/4	1 5/8	3/4	4
1885*	1985*	3/4	3 1/2	3/4	6
- -	1985L*	3/4	3 1/2	3/4	6

L= Left Hand Rotation * = Not guaranteed against breakage due to extreme cutting edge length

Series 2000 & 2100

THREE FLUTE CHIPBREAKER SPIRALS

Upcut - Series 2000

Downcut - Series 2100

Chipbreaker cutting edges “break” the chips into smaller pieces reducing power consumption and vibration. Chipbreakers are staggered on each flute to produce a smooth edge cut, but may leave visual lines when used with router spindles in poor condition. Chipbreaker tools are recommended for hardwoods, plywoods and dense materials.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
2040	2140	3/8	1 1/4	3/8	3
- -	2140L	3/8	1 1/4	3/8	3
2050	2150	1/2	1 1/4	1/2	3 1/2
2060	2160	1/2	1 3/4	1/2	3 1/2
2060L	- -	1/2	1 3/4	1/2	3 1/2
2065	2165	1/2	2 1/8	1/2	4
2070	2170	5/8	2 1/8	5/8	4
2070L	- -	5/8	2 1/8	5/8	4
2080	2180	3/4	2 1/2	3/4	5

L= Left Hand Rotation

Series 2200

TWO FLUTE UPCUT BALLNOSE SPIRALS

These bits have been geometrically designed to cut cleaner than other ballnose end mills and have point geometry specifically designed to cut wood or plastics. A series of tapered ballnose spirals have been designed for carving machines like Legacy. Used for 3D modeling and carving, fluting, or for routing slots with rounded bottoms or rounded inside corners.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
2203	- -	3mm	12mm	6mm	64mm
2204	- -	1/16	1/4	1/8	1 1/2
2208	- -	6mm	22mm	6mm	64mm
2210	- -	1/8	1/2	1/8	1 1/2
2222	- -	8mm	25mm	8mm	64mm
2230	2230L	1/4	7/8	1/4	2 1/2
2235*	- -	1/4	1 1/2	1/4	4
2240	- -	3/8	1 1/4	3/8	3
2243*	- -	3/8	1 1/2	3/8	4
2246	- -	10mm	29mm	10mm	76mm
2250	2250L	1/2	1 1/4	1/2	3 1/2
2253	- -	12mm	29mm	12mm	76mm
2255	- -	1/2	1 1/2	1/2	3 1/2
2258	- -	1/2	1 1/2	1/2	5
2265	- -	1/2	2 1/8	1/2	4
2270	- -	5/8	2 1/8	5/8	4
2280	- -	3/4	2 1/2	3/4	5
2282	- -	3/4	1 1/2	3/4	4
2285*	- -	3/4	3 1/2	3/4	6

L= Left Hand Rotation * = Not guaranteed against breakage due to extreme cutting edge length

Series 2200

TAPERED BALLNOSE SPIRALS

A series of tapered ballnose spirals have been designed for carving machines like Legacy. Used for 3D modeling and carving, fluting, or for routing slots with rounded bottoms or rounded inside corners. These tools offer added strength with the ability to still produce fine detailed carving.

PART #	CED	CEL	SHK DIA	OAL
2205	1/4 to 1/16	1 1/2	1/4	3
2215	1/4 to 1/8	1 1/2	1/4	3
2245	1/2 to 1/4	1 1/2	1/2	3 1/2
2260	1/2 to 3/8	1 1/2	1/2	3 1/2

Series 2300

PASS-BY/DEEP POCKET MORTISE UPCUT

Pass-by router bits have a long overall length and a reduced diameter between the end of the cutting edge and the shank of the bit. This bit design is well suited for deep pocket mortise cuts and step cutting through thick materials. Available in two or three flutes in roughing or finishing geometries.

Two Flute Finishing Pass-by

Three Flute Finishing Pass-by

Three Flute Roughing Pass-by

PART #	CED	CEL	SHK DIA	OAL	DEPTH OF CUT	#/FLUTES GEOMETRY
2305	1/8	1/2	1/4	3	1	2 Finish
2308	1/4	3/4	1/4	3.25	2.125	2 Finish
2310	3/8	1	3/8	4	2.625	2 Finish
2320	1/2	1 1/4	1/2	5	3.5	2 Finish
2325	1/2	1 1/2	1/2	6	4.5	2 Finish
2340	5/8	1 1/2	5/8	6	4.5	2 Finish
2345	3/4	1 1/2	3/4	5	3.5	2 Finish
2350	3/4	1 1/2	3/4	6	4.5	2 Finish
2360	3/8	1	3/8	4	2.625	3 Finish
2365	1/2	1 1/4	1/2	5	3.5	3 Finish
2370	1/2	1 1/2	1/2	6	4.5	3 Finish
2375	5/8	1 1/2	5/8	6	4.5	3 Finish
2380	3/4	1 1/2	3/4	5	3.5	3 Finish
2385	3/4	1 1/2	3/4	6	4.5	3 Finish
2373R	1/2	1 1/2	1/2	6	4.5	3 Rough
2377R	5/8	2	5/8	6	4.5	3 Rough
2387R	3/4	2	3/4	6	4.5	3 Rough

CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter
OAL = Overall Length

Series 2400 & 2500

FOUR FLUTE "TORNADO" SPIRALS

This award winning tool design combines a roughing and finishing tool into one tool. It achieves never before attained feed rates. The flute geometry features a larger flute preceding the roughing edges which allows it to take a bigger bite! Following close behind are finishing edges which produce a clean cut. Not recommended to operate under 600 inches per minute.

Upcut - Series 2400

Downcut - Series 2500

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
2442	2542	3/8	1 1/4	3/8	3
2442L	2542L	3/8	1 1/4	3/8	3
2450	2550	1/2	1 1/4	1/2	3
2455	2555	1/2	1 1/2	1/2	3 1/2
2460	2560	1/2	1 3/4	1/2	3 1/2
2465	2565	1/2	2 1/8	1/2	4
2480	2580	3/4	2 1/2	3/4	5
2480L	- -	3/4	2 1/2	3/4	5

L= Left Hand

Series 2600

SOLID CARBIDE SPIRAL OMEC DOVETAIL BITS

Designed for Omec dovetail machines, these solid carbide dovetail bits are extremely quiet and smooth cutting. They are manufactured with upshear or downshear geometry, designed with a 10 degree cutting angle, and are available in right or left hand rotations. The newest addition to this dovetail line is a single flute upcut dovetail bit designed for Omec machines with Eccentric spindles.

Upcut - Series 2600

Eccentric Spindles #2680

UPCUT PART #	DOWNCUT PART #	CED	DEPTH OF CUT	SHK DIA	OAL
2620	- -	14mm	.354" (9mm)	14mm w/flat	60mm
2620L	- -	14mm	.354" (9mm)	14mm w/flat	60mm
2630	2660	14mm	.394" (10mm)	14mm w/flat	60mm
2630L	2660L	14mm	.394" (10mm)	14mm w/flat	60mm
2640	2670	14mm	.622"	14mm w/flat	60mm
2640L	2670L	14mm	.622"	14mm w/flat	60mm
2680*	- -	15mm	.354" (9mm)	12mm	60mm

L= Left Hand Rotation
* = Designed for Machines with Eccentric Spindles

Series 2900

TWO FLUTE ROUGHING COMPRESSION SPIRAL

This style of compression bit is manufactured exclusively for hard to cut materials. This tool is used in hogging applications where the compression geometry of the bit helps break up the cut and neutralizes the force of the bit with both upshear and downshear rotation. Can be used in solid woods, wood composites and any difficult to cut materials. This tool will produce a rippled edge cut.

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
2930	3/8	1 1/8	3/8	3	0.500
2985(m)	3/8	7/8	3/8	3	0.250
2935	1/2	1	1/2	3	0.550
2989 (m)	1/2	1	1/2	3	0.250
2952	1/2	1 3/8	1/2	3 1/2	0.650
2960	1/2	1 3/4	1/2	3 1/2	0.800
2980	3/4	2	3/4	4	1.000
2980L	3/4	2	3/4	4	1.000

L= Left Hand Rotation (m) = 1/4" upcut for mortise cuts or thin materials

Series 3000

SINGLE EDGE COMPRESSION SPIRAL

Compression spirals are used extensively for cutting double sided laminates. These tools can also be used on natural woods where edge fuzzing is a problem with standard spiral tools. The single edge design allows for feed rates up to 450 inches per minute. This tool will leave a clean top and bottom edge cut.

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3010	1/4	7/8	1/4	2 1/2	0.380
3010L	1/4	7/8	1/4	2 1/2	0.380
3030	3/8	1 1/8	3/8	3	0.500
3030L	3/8	1 1/8	3/8	3	0.500
3035	1/2	1	1/2	3	0.550
3052	1/2	1 3/8	1/2	3 1/2	0.640
3052L	1/2	1 3/8	1/2	3 1/2	0.640
3060	1/2	1 3/8	1/2	3 1/2	0.800
3070	5/8	2	5/8	4	0.900
3080	3/4	2	3/4	4	1.000

L= Left Hand Rotation
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 3100 *"The Viper"*

TWO FLUTE COMPRESSION SPIRAL

Compression means the upcut and downcut spiral flutes compress the material being cut preventing chipping or fuzzing on the top and bottom of the cut. Our unique flute geometry allows the "Viper" to cut faster and longer than other compression spirals on the market today. It also allows for extended sharpening life with excellent performance throughout the tool's useful life. Compression spirals are used extensively for cutting double-sided laminates (melamine, vinyl, high pressure laminates, painted board, etc.). This series of compression spirals is not recommended for cutting materials thinner than 5/8".

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3108	- -	6mm	25mm	6mm	64mm	0.354
3122	- -	8mm	28mm	8mm	64mm	0.433
3145	- -	10mm	35mm	10mm	76mm	0.500
3155	- -	12mm	35mm	12mm	76mm	0.650
3110	3110L	1/4	7/8	1/4	3	0.250
3130	3130L	3/8	1 1/8	3/8	3	0.500
3135	3135L	1/2	1	1/2	3	0.550
3152	3152L	1/2	1 3/8	1/2	3 1/2	0.650
3160	3160L	1/2	1 3/4	1/2	3 1/2	0.800
3162	3162L	1/2	2	1/2	4	0.800
3170	3170L	5/8	2	5/8	4	0.900
3179	- -	3/4	1 5/8	3/4	4	0.750
3180	3180L	3/4	2	3/4	4	1.000
3183	3183L	3/4	2 1/2	3/4	5	1.250

Series 3100M *"The Viper"*

TWO FLUTE MORTISE COMPRESSION SPIRAL

This series of compression spirals is designed for doing mortise cuts or cutting material 5/8" thick or less. Designed with a 1/4" upcut or less preventing chipping and fuzzing on top and bottom of the material being cut. "Mortise cuts" are grooves cut in the material usually at a depth equal to or slightly less than the diameter of the tool.

Indicates 3/16" upcut for 1/4" groove cuts or 1/4" material thicknesses. (m) = upcut length 3/16". (m) = upcut length 1/4"

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3105 (m*)	- -	6mm	22mm	6mm	64mm	0.1875
3112*	- -	1/4	7/8	1/4	3	0.1875
3115*	3115L	1/4	5/8	1/4	2 1/2	0.1875
3120	- -	8mm	25mm	8mm	64mm	0.250
3140 (m)	- -	10mm	30mm	10mm	76mm	0.250
3154 (m)	- -	12mm	25mm	12mm	76mm	0.250
3184*	- -	3/8	7/8	3/8	3	0.1875
3185	3185L	3/8	7/8	3/8	3	0.250
3187*	- -	1/2	1	1/2	3	0.1875
3189	3189L	1/2	1	1/2	3	0.250
3188	- -	1/2	1 1/4	1/2	3 1/2	0.250
3190	3190L	1/2	1 5/8	1/2	3 1/2	0.250
3168	3168L	9/16	1	1/2	3	0.250
3193	- -	5/8	2	5/8	4	0.250
3198	- -	3/4	1 1/2	3/4	4	0.250

Series 3100XP

TWO FLUTE "XTREME PERFORMANCE" COMPRESSION SPIRALS

"XP" — which stands for "Xtreme Performance" — are specifically manufactured to provide maximum tool life in melamine, high pressure laminated particle board and MDF materials. Users can expect 3-5 times more tool life as compared to standard compression spiral geometry. The compression geometry will provide a chip free edge on both sides of the material being cut.

Standard Upcut Length

Mortise Upcut Length (m)

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3130XP	3130LXP	3/8	1 1/8	3/8	3	0.500
3184XP (m*)	- -	3/8	7/8	3/8	3	0.1875
3185XP (m)	3185LXP (m)	3/8	7/8	3/8	3	0.250
3135XP	- -	1/2	1	1/2	3	0.550
3187XP (m*)	- -	1/2	1	1/2	3	0.1875
3189XP (m)	- -	1/2	1	1/2	3	0.250
3150XP (m)	- -	1/2	1 3/8	1/2	3 1/2	0.250
3152XP	- -	1/2	1 3/8	1/2	3 1/2	0.650
3158XP	3158LXP	1/2	1 5/8	1/2	3 1/2	0.650
3179XP	- -	3/4	1 5/8	3/4	4	0.750
3180XP	- -	3/4	2	3/4	4	1.000

(m*) = 3/16" upcut length for 1/4" material or dado cuts
(m) = 1/4" upcut for mortise cuts or thin materials

Series 3200XP

THREE FLUTE "XTREME PERFORMANCE" COMPRESSION SPIRALS

Our three flute "Xtreme Performance" series will provide the same tool life as our two flute XP series, however, the three flute design allows for faster feed rates. This series of tools will provide a chip free edge on both sides of the material being cut. Designed for today's high speed routers.

Mortise Upcut Length (m)

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3284XP (m*)	3/8	7/8	3/8	3	0.1875
3285XP (m)	3/8	7/8	3/8	3	0.250
3289XP (m)	1/2	1	1/2	3	0.250
3252XP	1/2	1 3/8	1/2	3 1/2	0.650

(m*) = 3/16" upcut length for 1/4" material or dado cuts
(m) = 1/4" upcut for mortise cuts or thin materials

Series 3200

THREE FLUTE COMPRESSION SPIRALS

One of our more popular tool designs. The three flute compression spiral allows for faster feed rates and excellent finishes on both sides of the material being cut. Designed for today's high speed routers.

Standard Upcut Length

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3230	- -	3/8	1 1/8	3/8	3	0.500
3284 (m*)	- -	3/8	7/8	3/8	3	0.1875
3285 (m)	3285L (m)	3/8	7/8	3/8	3	0.250
3235	3235L	1/2	1	1/2	3	0.550
3287 (m*)	- -	1/2	1	1/2	3	0.1875
3289 (m)	3289L (m)	1/2	1	1/2	3	0.250
3252	3252L	1/2	1 3/8	1/2	3 1/2	0.650
3290 (m)	- -	1/2	1 5/8	1/2	3 1/2	0.250
3260	- -	1/2	1 3/4	1/2	3 1/2	0.800
3270	- -	5/8	2	5/8	4	0.900
3280	3280L	3/4	2	3/4	4	1.000

(m*) = 3/16" upcut length for 1/4" material or dado cuts
(m) = 1/4" upcut for mortise cuts or thin materials

Series 3200C

THREE FLUTE COMPRESSION SPIRAL WITH CHIPBREAKERS

Three flute compression design with the addition of chipbreakers which reduce fuzzing and scaling on plywoods and hardwoods while allowing for higher feed rates.

Standard Upcut Length

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3230C	3/8	1 1/8	3/8	3	0.500
3285C (m)	3/8	7/8	3/8	3	0.250
3235C	1/2	1	1/2	3	0.550
3289C (m)	1/2	1	1/2	3	0.250
3252C	1/2	1 3/8	1/2	3 1/2	0.650
3280C	3/4	2	3/4	4	1.000

(m) = 1/4" upcut for mortise cuts or thin materials
Please note: Tools with an (m) have chipbreakers ground in downcut flutes only
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 3300

FOUR FLUTE COMPRESSION SPIRAL

Four flutes up and four flutes down! These tools were manufactured for users who want to run at extremely high feed rates. Compression spirals are used extensively for cutting double sided laminates (melamine, vinyl, high pressure laminate, painted board, etc).

Standard Upcut Length

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3335	1/2	1	1/2	3	0.550
3389 (m)	1/2	1	1/2	3	0.250
3352	1/2	1 3/8	1/2	3 1/2	0.650
3390 (m)	1/2	1 5/8	1/2	3 1/2	0.250
3360	1/2	1 3/4	1/2	3 1/2	0.800
3380	3/4	2	3/4	4	1.000

(m) = 1/4" upcut for mortise cuts or thin materials

Series 3400

TWO FLUTE COMPRESSION SPIRAL WITH CHIPBREAKERS

The "Viper Plus" incorporates the compression spiral design with chipbreakers ground in the cutting edge. The chipbreakers are staggered to produce a clean edge cut. Recommended for hardwoods and plywoods (such as baltic birch) where edge fuzzing or scaling is a problem.

Standard Upcut Length

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3422	- -	8mm	27mm	8mm	64mm	0.433
3430	- -	3/8	1 1/8	3/8	3	0.500
3485 (m)	- -	3/8	7/8	3/8	3	0.250
3445	- -	10mm	30mm	10mm	76mm	0.500
3455	- -	12mm	35mm	12mm	88mm	0.625
3435	- -	1/2	1	1/2	3	0.550
3489 (m)	- -	1/2	1	1/2	3	0.250
3452	- -	1/2	1 3/8	1/2	3 1/2	0.650
3460	- -	1/2	1 3/4	1/2	3 1/2	0.800
3470	- -	5/8	2	5/8	4	0.900
3480	3480L	3/4	2	3/4	4	1.000
3483	3483L	3/4	2 1/2	3/4	5	1.250

(m) = 1/4" upcut for mortise cuts or thin materials
Please note: Tools with an (m) have chipbreakers ground in downcut flutes only
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 3400XP

TWO FLUTE “XTREME PERFORMANCE” COMPRESSION SPIRAL W/CHIPBREAKERS

“XP”— which stands for "Xtreme Performance" — are specifically designed to provide as much as 3-5 times more tool life than standard compression geometry. The chipbreaker design allows for free cutting action in solid wood and plywood materials.

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3430XP	3/8	1 1/8	3/8	3	0.500
3485XP (m)	3/8	7/8	3/8	3	0.250
3435XP	1/2	1	1/2	3	0.550
3487XP (m*)	1/2	1	1/2	3	0.1875
3489XP (m)	1/2	1	1/2	3	0.250
3452XP	1/2	1 3/8	1/2	3 1/2	0.650

(m*) = 3/16” upcut for 1/4” material or dado cuts
(m) = 1/4” upcut for mortise cuts or thin materials
Please note: Tools with an (m) or (m*) have chipbreakers ground in downcut flutes only

Series 3500

FOUR FLUTE “TORNADO” COMPRESSION

Another Industry First!! The Vortex “Tornado” roughing/finishing tool is the fastest cutting router bit in the world. If you have the machine to do it, we’ve got the tool. With increased feed speeds (as much as 3500 IPM), this tool will provide a clean cut on double-sided materials such as melamine and formica laminated particle board. Not recommended to operate under 600 inches per minute.

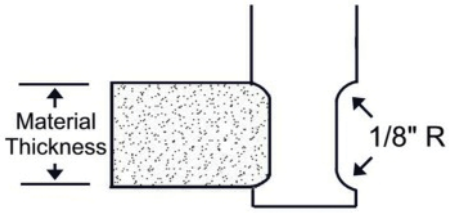
RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH
3535	- -	1/2	1	1/2	3	0.550
3589 (m)	- -	1/2	1	1/2	3	0.250
3552	3552L	1/2	1 3/8	1/2	3 1/2	0.650
3560	- -	1/2	1 3/4	1/2	3 1/2	0.800
3570	- -	5/8	2	5/8	4	0.900
3580	3580L	3/4	2	3/4	4	1.000
3583	- -	3/4	2 1/2	3/4	5	1.250

(m) = 1/4” upcut for mortise cuts or thin materials
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 3600

TWO FLUTE EASED EDGE PROFILE SPIRAL

This solid carbide two flute upcut double eased edge profile bit will provide extremely clean finishes in shallow profiles with a maximum depth of 1/8". Specially manufactured and designed for the furniture industry. Can be used on all types of wood materials.



PART #	SM DIA	SHK DIA	OAL	RADIUS	OPENING	MATERIAL THICKNESS
3640	1/2	3/4	4	1/8	0.531	1/2
3650	1/2	3/4	4	1/8	0.656	5/8
3660	1/2	3/4	4	1/8	0.781	3/4
3670	1/2	3/4	4	1/8	1.045	1
3680	1/2	3/4	4	1/8	1.156	1 1/8

Series 3700

SOLID CARBIDE VEINING BITS

Solid carbide veining bits are designed to make decorative cuts in a wide variety of materials. Tools are end cutting so they can plunge and be used to groove material while rounding the top edges of the slot.

Solid Carbide Veining Bits
3710 - 3730

PART #	SMALL DIA	RADIUS	SHK DIA	OAL
3710	.094	.125	1/4	2
3720	.094	.187	1/4	2
3730	.125	.250	3/8	3

SOLID CARBIDE ENGRAVING BITS

These half round engraving tools offer a wide range of tip sizes and angles to accommodate many engraving styles.

Solid Carbide Engraving Bits
3731 - 3745

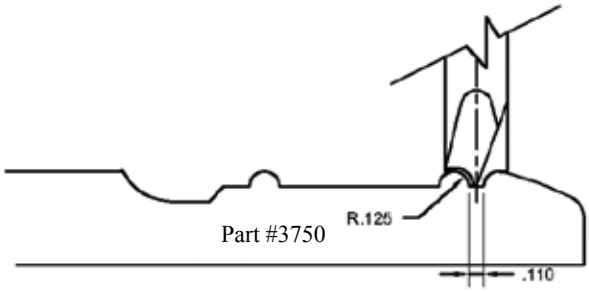
PART #	TIP DIAMETER	ANGLE	SHK DIA	OAL
3731	.020	30˚	1/4	2
3733	.040	30˚	1/4	2
3735	.060	30˚	1/4	2
3740	.020	60˚	1/4	2
3743	.040	60˚	1/4	2
3745	.060	60˚	1/4	2

Series 3700

SOLID CARBIDE BEADING BITS

Beading bits are designed to cut decorative beads in a wide variety of materials.

PART #	SMALL DIA	RADIUS	SHK DIA	OAL
3750	.110	.125	1/2	3
3760	.110	.187	1/2	3
3770	.110	.250	1/2	3

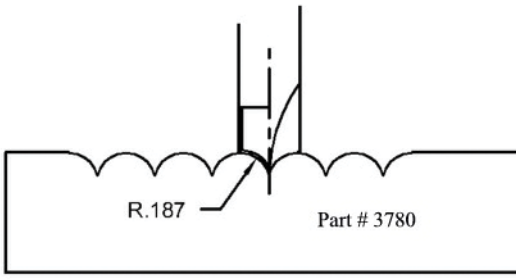


Solid Carbide Point Cutting

ROUND OVERS

Point cutting round over bits are used for decorative trimming and lettering.

PART #	RADIUS	SHK DIA	OAL
3775	.125	3/8	3
3780	.187	3/8	3
3785	.250	1/2	3



Series 3800

SOLID CARBIDE V-POINT BITS

90˚ Angle Shown

These tools are designed for v-grooving or beveling of natural wood, wood composites, laminated and veneered materials, plastics or solid surface. They are available in 60 and 90 degree angles and are manufactured with slight shear angle for chip removal.

PART #	DIAMETER	ANGLE	CEL	SHK DIA	OAL
3830	1/4	60˚	1/2	1/4	3
3835	1/4	90˚	1/2	1/4	3
3840	3/8	60˚	5/8	3/8	3
3845	3/8	90˚	5/8	3/8	3
3850	1/2	60˚	5/8	1/2	3
3855	1/2	90˚	5/8	1/2	3
3860	6mm	60˚	12mm	6mm	64mm
3865	6mm	90˚	12mm	6mm	64mm
3870	12mm	60˚	16mm	12mm	76mm
3875	12mm	90˚	16mm	12mm	76mm

SOLID CARBIDE V-POINT BITS WITH FLAT

Designed for cutting aluminum/plastic sandwich materials like Alucobond, Dibond, etc. with a 90 degree angle and flat bottom.

PART #	LARGE DIAMETER	SMALL DIAMETER	ANGLE	DEPTH OF CUT	SHK DIA	OAL
3880	1/2	.090	90˚	13/64	1/2	3

Series 3900

SOLID CARBIDE COMPRESSION DOOR BIT

This door bit is favored by customers cutting lock set and light openings on wood veneered and wood core doors using a CNC, point to point, or KVAL machine. This tool is designed to cleanly cut the top and bottom edge on all common wood door cores: particle core, stave core, LVL core and even mineral core doors. Not for use in Steel Doors.

PART #	CED	CEL	SHK DIA	OAL
3950	1/2	2 1/2	1/2	5 1/2

Upcut length 1.250”

Series 4000

DOUBLE EDGE STRAIGHT "Z" FLUTE

Straight flute tools combine the rigidity of solid carbide tooling with traditional straight flute geometry. A popular tool design for general purpose routing. Used when you don't want the axial force or thrust of an upcut or downcut spiral.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
4005	- -	4mm	16mm	6mm	64mm
4006	- -	5mm	20mm	6mm	64mm
4008	- -	6mm	25mm	6mm	64mm
4010	- -	1/8	1/2	1/4	2
4020	4020L	3/16	3/4	1/4	2
4022	- -	8mm	25mm	8mm	76mm
4030	- -	1/4	7/8	1/4	2 1/2
4033	4033L	1/4	1 1/8	1/4	3
4037	- -	3/8	1	3/8	3
4040	4040L	3/8	1 1/4	3/8	3
4046	- -	10mm	35mm	10mm	76mm
4047	- -	1/2	1	1/2	3
4050	- -	1/2	1 1/4	1/2	3
4053	- -	12mm	35mm	12mm	88mm
4070	- -	5/8	2 1/8	5/8	4
4080	- -	3/4	2 1/8	3/4	4

Series 4200 & 4300

TWO FLUTE LOW HELIX FINISHERS

Our double edge low helix spirals are recommended for cutting hard plastics, such as acrylics and phenolics. The lower helix angle produces less “lifting” and “fluttering” on plastic materials. Tools are extremely sharp, producing very clean edges that require little secondary work. These bits also provide great finishes in hardwoods and are recommended for “open cell” foam applications.

Upcut - Series 4200

Downcut - Series 4300

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
4208	4308	6mm	20mm	6mm	64mm
4220	4320	3/16	5/8	1/4	2 1/2
4230	4330	1/4	3/8	1/4	3
4230L	- -	1/4	3/8	1/4	3
4233	4333	1/4	3/4	1/4	3
4235	4335	5/16	1	5/16	3
4240	4340	3/8	1	3/8	3
4245	4345	1/2	1	1/2	3 & 3 1/2
4246	4346	10mm	25mm	10mm	76mm
4250	4350	1/2	1 1/4	1/2	3 1/2
4253	4353	12mm	35mm	12mm	88mm
- -	4350L	1/2	1 1/4	1/2	3 1/2
4260	4360	1/2	1 3/4	1/2	4
4260L	- -	1/2	1 3/4	1/2	4
4280	4380	3/4	2 1/2	3/4	5 & 6

L = Left Hand Rotation

Series 4400 & 4500

THREE FLUTE LOW HELIX FINISHERS

The combination of the low helix angle and flute geometry makes these tools razor sharp. They are recommended as a super finishing tool for acrylic, phenolic, UHMW, solid surface and dense hardwoods. The three flute geometry provides faster feed rate capabilities, while producing ultra smooth finishes.

Upcut - Series 4400

Downcut - Series 4500

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
4430	4530	1/4	3/8	1/4	3
4433	4533	1/4	3/4	1/4	3
4435	4535	5/16	1	5/16	3
4438	4538	3/8	5/8	3/8	3
4440	4540	3/8	1	3/8	3
4445	4545	1/2	1	1/2	3 & 3 1/2
4450	4550	1/2	1 1/4	1/2	3 1/2
4460	4560	1/2	1 3/4	1/2	4
4460L	4560L	1/2	1 3/4	1/2	4
4480	4580	3/4	2 1/2	3/4	5 & 6

L = Left Hand Rotation

Series 5000 & 5100

TWO FLUTE "LOW HELIX" ROUGHERS

Upcut - Series 5000

Roughing tools are designed for high feed rates on CNC routers and are used when surface finish is not important in dense materials such as hardwoods, particle board, plywood and plastic. The low helix design of these tools is a less aggressive version of Series 1000/1100 and 1600/1700. They will produce less "lifting and fluttering" of the material. These tools will produce a rippled edge cut and are extremely quiet and smooth cutting even in heavy cuts and high feed rates.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
5050	5150	1/2	1 1/4	1/2	3 1/2
5060	5160	1/2	1 3/4	1/2	4
5080	5180	3/4	2 1/2	3/4	5 & 6

Series 5200 & 5300

THREE FLUTE "LOW HELIX" ROUGHERS

Upcut - Series 5200

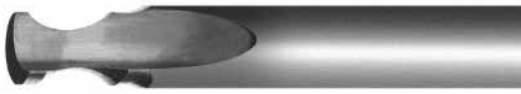
UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
5240	5340	3/8	1	3/8	3
5250	5350	1/2	1 1/4	1/2	3 1/2
5260	5360	1/2	1 3/4	1/2	3 1/2 & 4
5280	5380	3/4	2 1/2	3/4	5 & 6

CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 6000

EDGE ROUNDING BITS

These solid carbide tools were designed for rounding the edge of a variety of materials. The double edge low helix design provides ultra smooth cuts while allowing for upward or downward chip removal.



Single Edge 6010 - 6020

Upcut - 6030-6045

Downcut - 6050 - 6065

PART #	SM DIA	SHANK DIA	OAL	OPENING	RADIUS	#FLUTES	TYPE	MATERIAL THICKNESS
6010	.194	1/4	2 1/2	5/32	1/8	1	STRAIGHT	1/8
6015	.162	1/4	2 1/2	7/32	3/16	1	STRAIGHT	3/16
6020	.163	1/4	2 1/2	9/32	1/4	1	STRAIGHT	1/4
6030	.320	3/8	2 1/2	5/32	1/8	2	UPCUT	1/8
6035	.305	3/8	2 1/2	7/32	3/16	2	UPCUT	3/16
6040	.288	3/8	2 1/2	9/32	1/4	2	UPCUT	1/4
6045	.379	1/2	3	13/32	3/8	2	UPCUT	3/8
6050	.320	3/8	2 1/2	5/32	1/8	2	DOWNCUT	1/8
6055	.305	3/8	2 1/2	7/32	3/16	2	DOWNCUT	3/16
6060	.288	3/8	2 1/2	9/32	1/4	2	DOWNCUT	1/4
6065	.379	1/2	3	13/32	3/8	2	DOWNCUT	3/8

Series 6600

THREE WING SLOTTING CUTTERS

Three wing slotting cutters are constructed from a precision machined one piece alloy steel body and brazed carbide tipped. Suitable for flush trimming and horizontal slots in materials up to 3/4" deep. Designed to cut wood, wood composites and plastic.

PART #	DIAMETER	KERF	SHK DIA	DEPTH OF CUT
6600	2	.075	1/2	3/4
6605	2	.093	1/2	3/4
6610	2	.125	1/2	3/4
6615	2	.187	1/2	3/4
6620	2	.250	1/2	3/4

Series 6800

SOLID CARBIDE UPCUT BOTTOM SURFACING CUTTER SERIES

Two flute router bit designed for pocketing applications where the bottom of the pocket must be smooth.

PART #	CED	CORNER RADIUS	CEL	SHK DIA	OAL
6810	1/8	0.010	3/8	1/4	2
6825	1/4	0.010	3/8	1/4	2 1/2
6830	1/4	0.030	3/8	1/4	2 1/2
6835	3/8	0.010	5/8	3/8	2 1/2
6840	3/8	0.030	5/8	3/8	2 1/2
6845	1/2	0.010	7/8	1/2	3
6850	1/2	0.030	7/8	1/2	3
6855	1/2	0.060	7/8	1/2	3
6880	3/4	0.030	1 1/8	3/4	4
6885	3/4	0.060	1 1/8	3/4	4

Series 8534

TAPERED UPCUT SPIRAL FOR WOOD DOORS

This tool is designed with a 3.5 degree taper (per side) for tapering the edge of entry way doors or for vacuum mold production. The spiral geometry provides an extremely smooth cut and faster feed rates as compared to carbide tipped or insert tooling.

PART #	SMALL DIA	CEL	SHK DIA	OAL
8534	.442	2 1/2	3/4	5

Series 9000 & 9100

THREE FLUTE LOW HELIX ROUGHER

Three flute roughing tools are designed for high-feed rates on CNC routers and are used when surface finish is not important in dense materials such as hardwoods and plywoods. Our 9000 Series tools are a new rougher design that run quieter and leave less of a “rippled” edge.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
9040	9140	3/8	1	3/8	3
9050	9150	1/2	1 1/4	1/2	3 1/2
9080	9180	3/4	2	3/4	4

Series 9200 & 9300

TWO FLUTE CHIPBREAKER SPIRAL

Chipbreaker tools “break” the chip into even smaller chips reducing power consumption and vibration. Chipbreakers are staggered on each flute to produce a smooth cut, but may leave a visual line in some situations. These tools are recommended for hardwoods and plywoods and dense materials where higher feed rates are required. Our 9000 Series tools have a new chipbreaker design that runs quieter and has a better edge life.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
9240	9340	3/8	1 1/4	3/8	3
9255	9355	1/2	1 1/2	1/2	3 1/2
9280	9380	3/4	2 1/8	3/4	5

Series 9400 & 9500

THREE FLUTE LOW HELIX CHIPBREAKERS

The combination of the low helix and new-style chipbreakers, these tools run quieter and last longer as they break the chips up even smaller. Chipbreakers are staggered on each flute to produce a smooth cut, but may leave visual lines in some situations. Chipbreaker tools are recommended for hardwoods, plywoods and dense materials where higher feed rates are required.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
9440	9540	3/8	7/8	3/8	3
9455	9555	1/2	1 1/4	1/2	3

Series 9600 & 9700

COMPRESSION TOOLING

This new series of compression tooling is a great choice for dense plywood and combination core materials. Utilizing an improved chipbreaker pattern these tools shorten the length of the chip helping to reduce the pulling of the plys and yielding the cleanest cut possible. We offer this new tool design in both two flute, three flute and mortise configurations to fit all of your routing applications.

2 FLUTE	3 FLUTE	CED	CEL	SHK DIA	OAL
9685 (M)	9785 (M)	3/8	7/8	3/8	3
9630	9730	3/8	1 1/8	3/8	3
9689 (M)	9789 (M)	1/2	1	1/2	3
9652	9752	1/2	1 3/8	1/2	3 1/2

Brad Point Dowel Drills

CARBIDE TIPPED AND SOLID CARBIDE

Brad point dowel drills are used for drilling blind holes in solid wood, wood composites, or plastic laminated materials. Brad point drills will provide a clean entrance cut, but may cause some blow-out on the backside of the material on thru cuts. These bits have a 10mm shank and are designed to run in your drill bank, but can also be used in your CNC spindle.

57mm Length - CT Brad Point Drill

RIGHT HAND	LEFT HAND	DIAMETER
104047	104048	4mm
105047	105048	5mm
106047	106048	6mm
106447	106448	1/4
107047	107048	7mm
108047	108048	8mm
110047	110048	10mm
111047	111048	11mm
115047	115048	15mm

70mm Length - CT Brad Point Drill

RIGHT HAND	LEFT HAND	DIAMETER
104057	104058	4mm
104757	104758	3/16
105057	105058	5mm
105557	105558	7/32
106057	106058	6mm
106457	106458	1/4
107057	107058	7mm
108057	108058	8mm
108257	108258	8.2mm
109057	109058	9mm
109557	109558	3/8
110057	110058	10mm
111057	111058	11mm
111157	111158	7/16
112057	112058	12mm
112757	112758	1/2
115057	115058	15mm
116057	116058	16mm

77mm Length - CT Brad Point Drill

RIGHT HAND	LEFT HAND	DIAMETER
105067	105068	5mm
108067	108068	8mm
109567	109568	3/8

**Other sizes available upon request

57mm Length - SC Brad Point Drill

RIGHT HAND	LEFT HAND	DIAMETER
102047SC	102048SC	2mm
103047SC	103048SC	3mm
104047SC	104048SC	4mm
105047SC	105048SC	5mm
106047SC	106048SC	6mm
108047SC	108048SC	8mm

70mm Length - SC Brad Point Drill

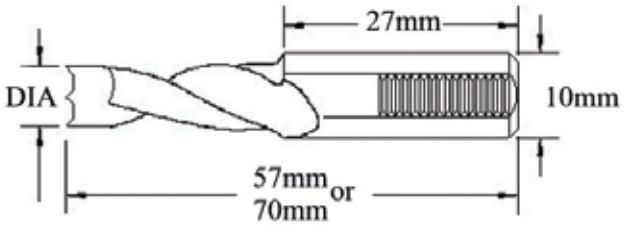
RIGHT HAND	LEFT HAND	DIAMETER
102057SC	102058SC	2mm
103057SC	103058SC	3mm
104057SC	104058SC	4mm
105057SC	105058SC	5mm
106057SC	106058SC	6mm
108057SC	108058SC	8mm
164057SC	164058SC	1/4

57mm Length - CT Hinge Bits

RIGHT HAND	LEFT HAND	DIAMETER
315047	315048	15mm
320047	320048	20mm
323057		23mm
325047	325048	25mm
335047	335048	35mm

70mm Length - CT Hinge Bits

RIGHT HAND	LEFT HAND	DIAMETER
315057	315058	15mm
320057	320058	20mm
322057	322058	22mm
325057	325058	25mm
335057	335058	35mm



Thru-Hole Drills

CARBIDE TIPPED AND SOLID CARBIDE

Thru-hole drills are used for drilling thru-holes in solid wood, wood composites, plastic laminated and plastic materials. Thru-hole drills will leave a clean exit hole, but may cause some chipping on the entrance cut. These drills have a 10mm shank and are designed to run in your drill bank, but can also be used in your CNC spindle.

57mm Length - CT Thru-Hole Drill

RIGHT HAND	LEFT HAND	DIAMETER
204047	204048	4mm
205047	205048	5mm
206047	206048	6mm
206447	206448	1/4
207047	207048	7mm
208047	208048	8mm
210047	210048	10mm
211047	211048	11mm

57mm Length - S/Carbide Thru-Hole

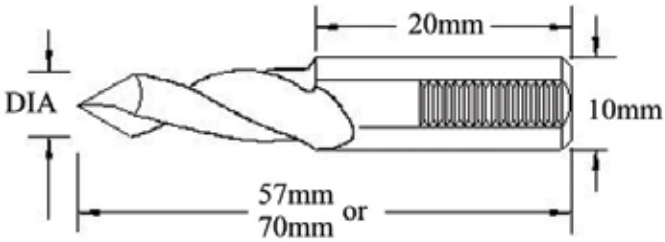
RIGHT HAND	LEFT HAND	DIAMETER
203047SC	203048SC	3mm
204047SC	204048SC	4mm
205047SC	205048SC	5mm
206047SC	206048SC	6mm
208047SC	208048SC	8mm

70mm Length - CT Thru-Hole Drill

RIGHT HAND	LEFT HAND	DIAMETER
204057	204058	4mm
205057	205058	5mm
205557	205558	7/32
206057	206058	6mm
206457	206458	1/4
207057	207058	7mm
208057	208058	8mm
209057	209058	9mm
209557	209558	3/8
210057	210058	10mm
211057	211058	11mm
212757	212758	1/2

70mm Length - S/Carbide Thru-Hole

RIGHT HAND	LEFT HAND	DIAMETER
203057SC	203058SC	3mm
204057SC	204058SC	4mm
205057SC	205058SC	5mm
206057SC	206058SC	6mm
208057SC	208058SC	8mm



77mm Length - CT Thru-Hole Drill

RIGHT HAND	LEFT HAND	DIAMETER
205067	205068	5mm

**Other sizes available upon request

Solid Carbide Twist Drills

V-POINT OR BRAD POINT GEOMETRY

Used on boring machines alone or with adaptor bushings for drilling blind holes in solid wood, wood composites, or plastic laminated materials. Available with v-point geometry for thru cuts or for drilling into plastic or brad point geometry for clean entrance holes.

V-Point (Thru Hole) Geometry

RIGHT HAND	LEFT HAND	DIA	CEL
SSP020R	SSP020L	2mm	20mm
SSP025R	SSP025L	2.5mm	35mm
SSP030R	SSP030L	3mm	35mm
SSP032R	SSP032L	3.2mm	35mm
SSP035R	SSP035L	3.5mm	35mm
SSP040R	SSP040L	4mm	35mm
SSP050R	SSP050L	5mm	35mm

Brad Point Geometry

RIGHT HAND	LEFT HAND	DIA	CEL
SBP025R	SBP025L	2.5mm	30mm
SBP030R	SBP030L	3mm	30mm
SBP032R	SBP032L	3.2mm	30mm
SBP035R	SBP035L	3.5mm	30mm
SBP040R	SBP040L	4mm	30mm
SBP050R	SBP050L	5mm	30mm

Adaptors for Twist Drills

PART NUMBER	DRILL BIT DIAMETER
ADP020	2mm
ADP025	2.5mm
ADP030	3mm
ADP032	3.2mm
ADP035	3.5mm
ADP040	4mm
ADP050	5mm

3pk Boeshield Kit

Kit includes 4oz. Rust Free (rust and stain remover), 4 oz. Aerosol T-9 (rust and corrosion protection), and 4 oz. Blade & Bit (resin, gum, and pitch remover).

PART NUMBER
BOESHIELD

PLASTIC TOOLING

TOOLS FOR CUTTING:

- Hard Plastic
- Soft Plastic
- Solid Surface
- Acrylic
- HDPE

American Owned & Operated

Series 1200

TWO FLUTE UPCUT FINISHING SPIRALS

Two flute finishing tools are used when a smooth edge cut is required and is a popular tool design for most routing applications. The helical cutting edge reduces material contact while in the cut. These tools are used for cutting materials where no special considerations are needed. The upcut spiral will provide a smooth bottom finish, while "augering" the chips upward.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
1204	- -	1/16	1/4	1/8	1 1/2
1203	- -	3mm	12mm	6mm	64mm
1205	- -	4mm	16mm	6mm	64mm
1206	- -	5mm	20mm	6mm	64mm
1207	- -	3/32	3/8	1/4	2
1208	- -	6mm	25mm	6mm	64mm
1210	1210L	1/8	1/2	1/4	2
1212*	- -	1/8	7/8	1/4	2 1/2
1215	- -	5/32	9/16	1/4	2
1220	1220L	3/16	5/8	1/4	2
1225*	- -	3/16	7/8	1/4	2 1/2
1222	- -	8mm	25mm	8mm	64mm
1228	- -	7/32	3/4	1/4	2 1/2
1230	1230L	1/4	7/8	1/4	2 1/2
1232*	1232L*	1/4	1 1/4	1/4	3
1234	- -	9/32	1	5/16	2 1/2
1235	- -	5/16	1 1/8	5/16	3
1238	- -	3/8	1	3/8	3
1240	1240L	3/8	1 1/4	3/8	3
1245	1245L	3/8	1 1/4	1/2	3 1/2
1246	- -	10mm	30mm	10mm	76mm
1249	1249L	7/16	1	1/2	3
1250	1250L	1/2	1 1/4	1/2	3 1/2
1251	- -	1/2	7/8	1/2	3
1253	- -	12mm	35mm	12mm	88mm
1255	- -	1/2	1 1/2	1/2	3 1/2
1255B	- -	1/2	1 1/2	1/2	3 1/2
1260	- -	1/2	1 3/4	1/2	3 1/2
1260B	- -	1/2	1 3/4	1/2	4
1265	1265L	1/2	2 1/8	1/2	4
1270	1270L	5/8	2 1/8	5/8	4
1275	- -	16mm	50mm	16mm	127mm
1280	- -	3/4	2 1/2	3/4	5
1282	- -	3/4	1 5/8	3/4	4
1285*	1285L	3/4	3 1/2	3/4	6
1290	- -	20mm	60mm	20mm	127mm

L=Left Hand Rotation, * = Not guaranteed against breakage due to extreme cutting edge length, B = Flush Trim Bearing Bit
CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter, OAL = Overall Length

Series 2200

TWO FLUTE UPCUT BALLNOSE SPIRALS

These bits have been geometrically designed to cut cleaner than other ballnose end mills and have point geometry specifically designed to cut wood or plastics. A series of tapered ballnose spirals have been designed for carving machines like Legacy. Used for 3D modeling and carving, fluting, or for routing slots with rounded bottoms or rounded inside corners.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
2203	- -	3mm	12mm	6mm	64mm
2204	- -	1/16	1/4	1/8	1 1/2
2208	- -	6mm	22mm	6mm	64mm
2210	- -	1/8	1/2	1/8	1 1/2
2222	- -	8mm	25mm	8mm	64mm
2230	2230L	1/4	7/8	1/4	2 1/2
2235*	- -	1/4	1 1/2	1/4	4
2240	- -	3/8	1 1/4	3/8	3
2243*	- -	3/8	1 1/2	3/8	4
2246	- -	10mm	29mm	10mm	76mm
2250	2250L	1/2	1 1/4	1/2	3 1/2
2253	- -	12mm	29mm	12mm	76mm
2255	- -	1/2	1 1/2	1/2	3 1/2
2258	- -	1/2	1 1/2	1/2	5
2265	- -	1/2	2 1/8	1/2	4
2270	- -	5/8	2 1/8	5/8	4
2280	- -	3/4	2 1/2	3/4	5
2282	- -	3/4	1 1/2	3/4	4
2285*	- -	3/4	3 1/2	3/4	6

L= Left Hand Rotation * = Not guaranteed against breakage due to extreme cutting edge length

Series 2200

TAPERED BALLNOSE SPIRALS

A series of tapered ballnose spirals have been designed for carving machines like Legacy. Used for 3D modeling and carving, fluting, or for routing slots with rounded bottoms or rounded inside corners. These tools offer added strength with the ability to still produce fine detailed carving.

PART #	CED	CEL	SHK DIA	OAL
2205	1/4 to 1/16	1 1/2	1/4	3
2215	1/4 to 1/8	1 1/2	1/4	3
2245	1/2 to 1/4	1 1/2	1/2	3 1/2
2260	1/2 to 3/8	1 1/2	1/2	3 1/2

Series 2300

PASS-BY/DEEP POCKET MORTISE UPCUT

Pass-by router bits have a long overall length and a reduced diameter between the end of the cutting edge and the shank of the bit. This bit design is well suited for deep pocket mortise cuts and step cutting through thick materials. Available in two or three flutes in roughing or finishing geometries.

Two Flute Finishing Pass-by

Three Flute Finishing Pass-by

Three Flute Roughing Pass-by

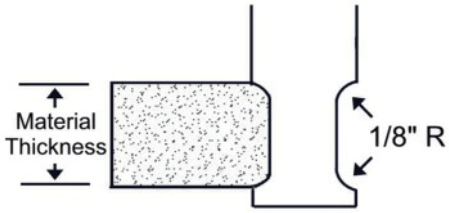
PART #	CED	CEL	SHK DIA	OAL	DEPTH OF CUT	#/FLUTES GEOMETRY
2305	1/8	1/2	1/4	3	1	2 Finish
2308	1/4	3/4	1/4	3.25	2.125	2 Finish
2310	3/8	1	3/8	4	2.625	2 Finish
2320	1/2	1 1/4	1/2	5	3.5	2 Finish
2325	1/2	1 1/2	1/2	6	4.5	2 Finish
2340	5/8	1 1/2	5/8	6	4.5	2 Finish
2345	3/4	1 1/2	3/4	5	3.5	2 Finish
2350	3/4	1 1/2	3/4	6	4.5	2 Finish
2360	3/8	1	3/8	4	2.625	3 Finish
2365	1/2	1 1/4	1/2	5	3.5	3 Finish
2370	1/2	1 1/2	1/2	6	4.5	3 Finish
2375	5/8	1 1/2	5/8	6	4.5	3 Finish
2380	3/4	1 1/2	3/4	5	3.5	3 Finish
2385	3/4	1 1/2	3/4	6	4.5	3 Finish
2373R	1/2	1 1/2	1/2	6	4.5	3 Rough
2377R	5/8	2	5/8	6	4.5	3 Rough
2387R	3/4	2	3/4	6	4.5	3 Rough

CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter
OAL = Overall Length

Series 3600

TWO FLUTE EASED EDGE PROFILE SPIRAL

This solid carbide two flute upcut double eased edge profile bit will provide extremely clean finishes in shallow profiles with a maximum depth of 1/8". Specially manufactured and designed for the furniture industry. Can be used on all types of wood and plastic materials.



PART #	SM DIA	SHK DIA	OAL	RADIUS	OPENING	MATERIAL THICKNESS
3640	1/2	3/4	4	1/8	0.531	1/2
3650	1/2	3/4	4	1/8	0.656	5/8
3660	1/2	3/4	4	1/8	0.781	3/4
3670	1/2	3/4	4	1/8	1.045	1
3680	1/2	3/4	4	1/8	1.156	1 1/8

Series 3700

SOLID CARBIDE VEINING BITS

Solid carbide veining bits are designed to make decorative cuts in a wide variety of materials. Tools are end cutting so they can plunge and be used to groove material while rounding the top edges of the slot.

Solid Carbide Veining Bits
3710 - 3730

PART #	SMALL DIA	RADIUS	SHK DIA	OAL
3710	.094	.125	1/4	2
3720	.094	.187	1/4	2
3730	.125	.250	3/8	3

SOLID CARBIDE ENGRAVING BITS

These half round engraving tools offer a wide range of tip sizes and angles to accommodate many engraving styles.

Solid Carbide Engraving Bits
3731 - 3745

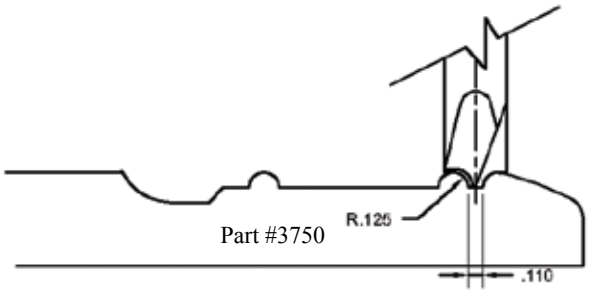
PART #	TIP DIAMETER	ANGLE	SHK DIA	OAL
3731	.020	30˚	1/4	2
3733	.040	30˚	1/4	2
3735	.060	30˚	1/4	2
3740	.020	60˚	1/4	2
3743	.040	60˚	1/4	2
3745	.060	60˚	1/4	2

Series 3700

SOLID CARBIDE BEADING BITS

Beading bits are designed to cut decorative beads in a wide variety of materials.

PART #	SMALL DIA	RADIUS	SHK DIA	OAL
3750	.110	.125	1/2	3
3760	.110	.187	1/2	3
3770	.110	.250	1/2	3

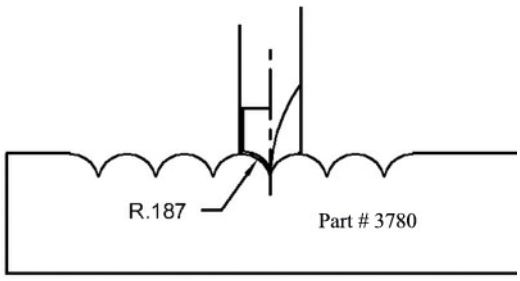


Solid Carbide Point Cutting

ROUND OVERS

Point cutting round over bits are used for decorative trimming and lettering.

PART #	RADIUS	SHK DIA	OAL
3775	.125	3/8	3
3780	.187	3/8	3
3785	.250	1/2	3



Series 3800

SOLID CARBIDE V-POINT BITS

90˚ Angle Shown

These tools are designed for v-grooving or beveling of natural wood, wood composites, laminated and veneered materials, plastics or solid surface. They are available in 60 and 90 degree angles and are manufactured with slight shear angle for chip removal.

PART #	DIAMETER	ANGLE	CEL	SHK DIA	OAL
3830	1/4	60˚	1/2	1/4	3
3835	1/4	90˚	1/2	1/4	3
3840	3/8	60˚	5/8	3/8	3
3845	3/8	90˚	5/8	3/8	3
3850	1/2	60˚	5/8	1/2	3
3855	1/2	90˚	5/8	1/2	3
3860	6mm	60˚	12mm	6mm	64mm
3865	6mm	90˚	12mm	6mm	64mm
3870	12mm	60˚	16mm	12mm	76mm
3875	12mm	90˚	16mm	12mm	76mm

SOLID CARBIDE V-POINT BITS WITH FLAT

Designed for cutting aluminum/plastic sandwich materials like Alucobond, Dibond, etc. with a 90 degree angle and flat bottom.

PART #	LARGE DIAMETER	SMALL DIAMETER	ANGLE	DEPTH OF CUT	SHK DIA	OAL
3880	1/2	.090	90˚	13/64	1/2	3

Series 4000

DOUBLE EDGE "Z" FLUTE STRAIGHT

Straight flute tools combine the rigidity of solid carbide tooling with traditional straight flute geometry. A popular tool design for general purpose routing. Used when you don't want the axial force or thrust of an upcut or downcut spiral.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
4005	- -	4mm	16mm	6mm	64mm
4006	- -	5mm	20mm	6mm	64mm
4008	- -	6mm	25mm	6mm	64mm
4010	- -	1/8	1/2	1/4	2
4020	4020L	3/16	3/4	1/4	2
4022	- -	8mm	25mm	8mm	76mm
4030	- -	1/4	7/8	1/4	2 1/2
4033	4033L	1/4	1 1/8	1/4	3
4037	- -	3/8	1	3/8	3
4040	4040L	3/8	1 1/4	3/8	3
4046	- -	10mm	35mm	10mm	76mm
4047	- -	1/2	1	1/2	3
4050	- -	1/2	1 1/4	1/2	3
4053	- -	12mm	35mm	12mm	88mm
4070	- -	5/8	2 1/8	5/8	4
4080	- -	3/4	2 1/8	3/4	4

Series 4100

SOLID CARBIDE HIGH HELIX FOAM BITS

These tools have been specifically designed for cutting low density foam materials at high feed rates. This series of tools is recommended for "closed cell" foam applications. These tools have an open flute geometry and high helix angle that "augers out" material. Other sizes available upon request.

PART #	CED	CEL	SHK DIA	OAL
4135*	1/4	2	1/4	4
4140	3/8	1 1/2	3/8	3
4160	1/2	1 3/4	1/2	3 1/2
4165	1/2	2 1/4	1/2	4
4185*	3/4	3 1/4	3/4	6

* = Not guaranteed against breakage due to extreme cutting edge length
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 4200 & 4300

TWO FLUTE LOW HELIX FINISHERS

Our double edge low helix spirals are recommended for cutting hard plastics, such as acrylics and phenolics. The lower helix angle produces less “lifting” and “fluttering” on plastic materials. Tools are extremely sharp, producing very clean edges that require little secondary work. These bits also provide great finishes in hardwoods and are recommended for “open cell” foam applications.

Upcut - Series 4200

Downcut - Series 4300

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
4208	4308	6mm	20mm	6mm	64mm
4220	4320	3/16	5/8	1/4	2 1/2
4230	4330	1/4	3/8	1/4	3
4230L	- -	1/4	3/8	1/4	3
4233	4333	1/4	3/4	1/4	3
4235	4335	5/16	1	5/16	3
4240	4340	3/8	1	3/8	3
4245	4345	1/2	1	1/2	3 & 3 1/2
4246	4346	10mm	25mm	10mm	76mm
4250	4350	1/2	1 1/4	1/2	3 1/2
4253	4353	12mm	35mm	12mm	88mm
- -	4350L	1/2	1 1/4	1/2	3 1/2
4260	4360	1/2	1 3/4	1/2	4
4260L	- -	1/2	1 3/4	1/2	4
4280	4380	3/4	2 1/2	3/4	5 & 6

L = Left Hand Rotation

Series 4400 & 4500

THREE FLUTE LOW HELIX FINISHERS

The combination of the low helix angle and flute geometry makes these tools razor sharp. They are recommended as a super finishing tool for acrylic, phenolic, UHMW, solid surface and dense hardwoods. The three flute geometry provides faster feed rate capabilities, while producing ultra smooth finishes.

Upcut - Series 4400

Downcut - Series 4500

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
4430	4530	1/4	3/8	1/4	3
4433	4533	1/4	3/4	1/4	3
4435	4535	5/16	1	5/16	3
4438	4538	3/8	5/8	3/8	3
4440	4540	3/8	1	3/8	3
4445	4545	1/2	1	1/2	3 & 3 1/2
4450	4550	1/2	1 1/4	1/2	3 1/2
4460	4560	1/2	1 3/4	1/2	4
4460L	4560L	1/2	1 3/4	1/2	4
4480	4580	3/4	2 1/2	3/4	5 & 6

L = Left Hand Rotation

Series 4600 & 4700

SINGLE EDGE LOW HELIX SPIRALS

The single edge low helix spiral is well suited for cutting softer grades of plastic. This tool combines the aggressive action of single flute geometry with the advantages of low helix geometry to provide a fast, clean cutting tool. Use where chip rewelding is a problem.

Upcut - Series 4600

Downcut - Series 4700

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
4630	4730	1/4	3/8	1/4	3
4633	4733	1/4	3/4	1/4	3
4640	4740	3/8	1	3/8	3

Series 5000 & 5100

TWO FLUTE "LOW HELIX" ROUGHERS

Roughing tools are designed for high feed rates on CNC routers and are used when surface finish is not important in dense materials such as hardwoods, particle board, plywood and plastic. The low helix design of these tools is a less aggressive version of Series 1000/1100 and 1600/1700. They will produce less "lifting and fluttering" of the material. These tools will produce a rippled edge cut and are extremely quiet and smooth cutting even in heavy cuts and high feed rates.

Upcut - Series 5000

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
5050	5150	1/2	1 1/4	1/2	3 1/2
5060	5160	1/2	1 3/4	1/2	3 1/2 & 4
5080	5180	3/4	2 1/2	3/4	5 & 6

Series 5200 & 5300

THREE FLUTE "LOW HELIX" ROUGHERS

Upcut - Series 5200

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
5240	5340	3/8	1	3/8	3
5250	5350	1/2	1 1/4	1/2	3 1/2
5260	5360	1/2	1 3/4	1/2	3 1/2 & 4
5280	5380	3/4	2 1/2	3/4	5 & 6

CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 5400

SINGLE EDGE "O" FLUTE STRAIGHT

"O" flute tools create the perfect curled chip that allows softer plastic to be cut without chip rewelding. Ideally suited for plastic materials that form curled chips as opposed to fractured chips. The straight flute design does not import "up" or "down" forces into the part being routed, making it ideal for irregularly shaped parts not capable of being thoroughly held in place by vacuum or fixturing.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
5404	- -	1/16	1/4	1/8	1 1/2
5409	- -	1/8	1/4	1/4	2
5410	5410L	1/8	1/2	1/4	2
5412*	- -	1/8	5/8	1/4	4
5415	5415L	5/32	5/8	1/4	2
5418	- -	3/16	3/8	1/4	2
5420	5420L	3/16	5/8	1/4	2
5422*	5422L*	3/16	1	1/4	4
5430	- -	1/4	3/8	1/4	2 1/2
5433	5433L	1/4	3/4	1/4	2 1/2
5434	- -	1/4	1	1/4	2 1/2
5435	- -	1/4	3/4	1/4	3 1/4
5437	- -	1/4	1 1/4	1/4	3 1/4
5440	- -	1/4	1	1/4	4
5443	- -	3/8	1 1/4	3/8	3
5453	5453L	1/2	1 1/4	1/2	3
5454	5454L	1/2	1 3/4	1/2	4
5460	5460L	3mm	8mm	6mm	64mm
5470	5470L	4mm	16mm	6mm	64mm
5475	5475L	5mm	20mm	6mm	64mm
5480	5480L	6mm	25mm	6mm	64mm
5485	- -	8mm	25mm	8mm	64mm
5490	- -	10mm	30mm	10mm	76mm

L = Left Hand
* = Not guaranteed against breakage due to extreme cutting edge length
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 5500

DOUBLE EDGE "O" FLUTE STRAIGHT

The double edge "O" flute offers the same cutting characteristics as the single edge "O" flute design, but can provide additional tool life in some materials. Two cutting edges reduce chip loads and produce a stronger cross section. Generally performs better in slightly harder plastics.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
5509	- -	1/8	1/4	1/4	2
5510	5510L	1/8	1/2	1/4	2
5512*	- -	1/8	5/8	1/4	4
5518	- -	3/16	3/8	1/4	2
5520	- -	3/16	5/8	1/4	2
5522*	- -	3/16	1	1/4	4
5530	- -	1/4	3/8	1/4	2 1/2
5533	5533L	1/4	3/4	1/4	2 1/2
5534	5534L	1/4	1	1/4	2 1/2
5535	- -	1/4	3/4	1/4	3 1/4
5537	5537L	1/4	1 1/4	1/4	3 1/4
5540	5540L	1/4	1	1/4	4
5543	- -	3/8	1 1/4	3/8	3
5553	- -	1/2	1 1/4	1/2	3
5554	5554L	1/2	1 3/4	1/2	4
5570	- -	4mm	16mm	6mm	64mm
5575	- -	5mm	20mm	6mm	64mm
5580	- -	6mm	25mm	6mm	64mm
5585	- -	8mm	25mm	8mm	64mm
5590	- -	10mm	30mm	10mm	76mm

L = Left Hand
* = Not guaranteed against breakage due to extreme cutting edge length
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 5600

SINGLE EDGE "O" FLUTE UPCUT SPIRAL

These tools provide clean cuts in hard plastics while allowing the choice of upward chip removal which can enhance surface finish. These tools have been manufactured with a polished flute that allows the chips to curl/form better, reduces heat, and adds lubricity without the use of coatings. Tools that have an "S" behind the part number have been manufactured with specific geometry for softer plastics.

RIGHT HAND PART #	LEFT HAND PART #	CED	CEL	SHK DIA	OAL
5609	- -	1/8	1/4	1/4	2
5610	5610L	1/8	1/2	1/4	2
5618	- -	3/16	3/8	1/4	2
5620	- -	3/16	5/8	1/4	2
5621	- -	7/32	3/4	1/4	2 1/2
5625H	- -	1/4	3/8	1/4	2 1/2
5630H	- -	1/4	3/4	1/4	2 1/2
5630S	- -	1/4	3/4	1/4	2 1/2
5632H	5632HL	1/4	1 1/4	1/4	3 1/4
5632S	- -	1/4	1 1/4	1/4	3 1/4
5640	5640L	3/8	1 1/4	3/8	3
5650	- -	1/2	1 1/4	1/2	3 1/2
5655	- -	2mm	8mm	6mm	64mm
5660	- -	3mm	8mm	6mm	64mm
5663	- -	3mm	12mm	6mm	64mm
5668	- -	4mm	8mm	6mm	64mm
5670	- -	4mm	16mm	6mm	64mm
5672	- -	5mm	8mm	6mm	64mm
5675	- -	5mm	16mm	6mm	64mm
5677	- -	6mm	10mm	6mm	64mm
5678	- -	6mm	16mm	6mm	64mm
5680	- -	6mm	25mm	6mm	64mm
5685	- -	8mm	25mm	8mm	64mm
5690	- -	10mm	30mm	10mm	76mm

L= Left Hand Rotation
S = Specifically manufactured for cutting softer plastics
H = Specifically manufactured for cutting harder plastics
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 5700

SINGLE EDGE "O" FLUTE DOWNCUT SPIRAL

These tools provide clean cuts in hard plastics while allowing the choice of downward chip removal which can enhance part hold down. These tools are manufactured with a polished flute that allows the chip to curl/form better, reduces heat, and adds lubricity without the use of coatings. Tools which have an "S" behind the part number are manufactured with specific geometry for softer plastic.

PART #	CED	CEL	SHK DIA	OAL
5709	1/8	1/4	1/4	2
5710	1/8	1/2	1/4	2
5710L	1/8	1/2	1/4	2
5718	3/16	3/8	1/4	2
5720	3/16	5/8	1/4	2
5721	7/32	3/4	1/4	2 1/2
5725H	1/4	3/8	1/4	2 1/2
5730H	1/4	3/4	1/4	2 1/2
5730S	1/4	3/4	1/4	2 1/2
5732H	1/4	1 1/4	1/4	3 1/4
5732S	1/4	1 1/4	1/4	3 1/4
5740	3/8	1 1/4	3/8	3
5750	1/2	1 1/4	1/2	3 1/2
5755	2mm	8mm	6mm	64mm
5760	3mm	8mm	6mm	64mm
5763	3mm	12mm	6mm	64mm
5768	4mm	8mm	6mm	64mm
5770	4mm	16mm	6mm	64mm
5772	5mm	8mm	6mm	64mm
5775	5mm	16mm	6mm	64mm
5777	6mm	10mm	6mm	64mm
5778	6mm	16mm	6mm	64mm
5780	6mm	25mm	6mm	64mm
5785	8mm	25mm	8mm	64mm
5790	10mm	30mm	10mm	76mm

L= Left Hand Rotation
H = Specific geometry for cutting harder plastics
S = Specific geometry for cutting softer plastics
CED = Cutting Edge Diameter
CEL = Cutting Edge Length
SHK DIA = Shank Diameter
OAL = Overall Length

Series 5800 & 5900

DOUBLE EDGE "O" FLUTE SPIRALS

Developed for cutting harder plastics, such as acrylic and phenolics, at faster feed rates with a smooth finish. Ideal for CNC applications. Manufactured with a polished flute to reduce friction inside the cutting edge, run cooler and adding lubricity without the use of coatings. Choose upcut for upward chip removal or downcut for better part hold down.

Upcut - Series 5800

Downcut - Series 5900

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
5830	5930	1/4	3/8	1/4	2 1/2
5833	5933	1/4	3/4	1/4	2 1/2
- -	5933L	1/4	3/4	1/4	2 1/2
5835	- -	5/16	1/2	3/8	3
5840	5940	3/8	3/4	3/8	3
5843	5943	3/8	1 1/4	3/8	3
5853	5953	1/2	1 1/4	1/2	3 1/2
5880	5980	6mm	25mm	6mm	64mm
5885	5985	8mm	25mm	8mm	64mm

L= Left Hand Rotation

Series 6000

EDGE ROUNDING BITS

These solid carbide tools were designed for rounding the edge of a variety of materials. The double edge low helix design provides ultra smooth cuts while allowing for upward or downward chip removal.

Single Edge 6010 - 6020

Upcut - 6030-6045

Downcut - 6050 - 6065

PART #	SM DIA	SHANK DIA	OAL	OPENING	RADIUS	#FLUTES	TYPE	MATERIAL THICKNESS
6010	.194	1/4	2 1/2	5/32	1/8	1	STRAIGHT	1/8
6015	.162	1/4	2 1/2	7/32	3/16	1	STRAIGHT	3/16
6020	.163	1/4	2 1/2	9/32	1/4	1	STRAIGHT	1/4
6030	.320	3/8	2 1/2	5/32	1/8	2	UPCUT	1/8
6035	.305	3/8	2 1/2	7/32	3/16	2	UPCUT	3/16
6040	.288	3/8	2 1/2	9/32	1/4	2	UPCUT	1/4
6045	.379	1/2	3	13/32	3/8	2	UPCUT	3/8
6050	.320	3/8	2 1/2	5/32	1/8	2	DOWNCUT	1/8
6055	.305	3/8	2 1/2	7/32	3/16	2	DOWNCUT	3/16
6060	.288	3/8	2 1/2	9/32	1/4	2	DOWNCUT	1/4
6065	.379	1/2	3	13/32	3/8	2	DOWNCUT	3/8

Series 6600

THREE WING SLOTTING CUTTERS

Three wing slotting cutters are constructed from a precision machined one piece alloy steel body and brazed carbide tipped. Suitable for flush trimming and horizontal slots in materials up to 3/4" deep. Designed to cut wood, wood composites and plastic.

PART #	DIAMETER	KERF	SHK DIA	DEPTH OF CUT
6600	2	.075	1/2	3/4
6605	2	.093	1/2	3/4
6610	2	.125	1/2	3/4
6615	2	.187	1/2	3/4
6620	2	.250	1/2	3/4

Series 6800

SOLID CARBIDE UPCUT BOTTOM SURFACING CUTTER SERIES

Two flute low helix router bit specially designed for plastics.

PART #	CED	CORNER RADIUS	CEL	SHK DIA	OAL
6820	1/4	0.010	3/8	1/4	3
6826	1/4	0.010	3/4	1/4	3
6833	3/8	0.010	1	3/8	3
6837	3/8	0.030	1	3/8	3
6842	1/2	0.010	1 1/4	1/2	3 1/2
6846	1/2	0.030	1 1/4	1/2	3 1/2
6848	1/2	0.060	1 1/4	1/2	3 1/2
6870	3/4	0.030	1 1/4	3/4	4
6875	3/4	0.060	1 1/4	3/4	4

CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter, OAL = Overall Length

Series 9000 & 9100

THREE-FLUTE LOW HELIX ROUGHER

Three-flute roughing tools are designed for high-feed rates on CNC routers and are used when surface finish is not important in dense materials. Our 9000 Series tools are a new rougher design that run quieter and leave less of a “rippled” edge.

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
9040	9140	3/8	1	3/8	3
9050	9150	1/2	1 1/4	1/2	3 1/2
9080	9180	3/4	2	3/4	4

Series 9900

NEW

DOUBLE EDGE "O" FLUTE UPCUT SPIRAL

This series has improved geometry for increased finishes on softer plastics such as HDPE, ABS, UHMW, Solid Surface, Polycarbonate and similar materials. With a slightly higher helix, this tool will have better chip evaluation in thicker materials and a polished flute will reduce drag allowing for a deeper depth per pass.

UPCUT PART #	CED	CEL	SHK DIA	OAL
9930	1/4	7/8	1/4	3
9933	1/4	1-1/4	1/4	3
9940	3/8	1	3/8	3
9943	3/8	1-1/2	3/8	4
9950	1/2	1-1/4	1/2	3-1/2
9960	1/2	1-3/4	1/2	4
9965	1/2	2-1/8	1/2	4

Plexi-Point Drills

HIGH SPEED STEEL

Drills are specially pointed to reduce chipping when drilling through Plexiglass or other hard plastics. Available in fractional, number, metric and letter sizes.

PART #	DRILL SIZE	DEC. EQUIV	FLUTE LENGTH	OAL
14400062	1/16	.0625	7/8	1 7/8
14400078	5/64	.0781	1	2
14400093	3/32	.0938	1 1/4	2 1/4
14400109	7/64	.1094	1 1/2	2 5/8
14400125	1/8	.1250	1 5/8	2 3/4
14400156	5/32	.1562	2	3 1/8
14400187	3/16	.1875	2 5/16	3 1/2
14400218	7/32	.2188	2 1/2	3 3/4
14400250	1/4	.2500	2 3/4	4
14400281	9/32	.2812	2 15/16	4 1/4
14400312	5/16	.3125	3 3/16	4 1/2
14400375	3/8	.3750	3 5/8	5
14400437	7/16	.4375	4 1/16	5 1/2
14400500	1/2	.5000	4 1/2	6
144000787	2mm	.0787	15/16	1 15/16
144000984	2.5mm	.0984	1 3/16	2 1/4
14400118	3mm	.1181	1 5/16	2 13/32
14400137	3.5mm	.1378	1 3/4	2 7/8
144001575	4mm	.1575	1 11/16	2 15/16
14400177	4.5mm	.1772	2 3/16	3 3/8
144001968	5mm	.1968	2 1/16	3 3/8
14400216	5.5mm	.2165	2 1/4	3 21/32
14400236	6mm	.2362	2 1/4	3 21/32
14400255	6.5mm	.2559	2 7/8	4 1/8
14400275	7mm	.2756	2 23/32	4 9/32
14400315	8mm	.3150	2 15/16	4 19/32
14400354	9mm	.3543	3 3/16	4 29/32
14400374	9.5mm	.3740	3 3/16	4 29/32
14400393	10mm	.3937	3 7/16	5 1/4
14400433	11mm	.4331	3 11/16	5 19/32
14400472	12mm	.4724	3 31/32	5 15/16
14400511	13mm	.5118	3 31/32	5 15/16

**Other sizes available upon request. Letter and Number sizes also available

COMPOSITES/ ALUMINUM TOOLING

TOOLS FOR CUTTING:

- Composites
- Fiberglass
- Aluminum
- Phenolic/Paperstone

American Owned & Operated

Series 5600A - Aluminum

SINGLE EDGE "O" FLUTE UPCUT SPIRAL

This series of tools have specific geometry for optimal finish and chip evacuation for machining most sheet, block and extrusion grades of aluminum. These tools are designed to give you maximum feed rates in all CNC applications that involve cutting aluminum.

PART #	CED	CEL	SHK DIA	OAL
5609A	1/8	1/4	1/4	2
5610A	1/8	1/2	1/4	2
5618A	3/16	3/8	1/4	2
5620A	3/16	5/8	1/4	2
5625A	1/4	3/8	1/4	2 1/2
5630A	1/4	3/4	1/4	2 1/2
5640A	3/8	7/8	3/8	3
5650A	1/2	1	1/2	3
5660A	3mm	8mm	6mm	64mm
5668A	4mm	8mm	6mm	64mm
5675A	5mm	16mm	6mm	64mm
5680A	6mm	16mm	6mm	64mm
5685A	8mm	20mm	8mm	64mm
5690A	10mm	22mm	10mm	76mm

Series 5800TSA

DOUBLE EDGE DESIGN FOR AEROSPACE ALUMINUM SHEET MATERIAL

This series of aluminum cutting bits are designed specifically for Aerospace aluminum sheet material. A wide variety of grades in various states of hardness were provided by an internationally renowned aircraft manufacturer. After extensive testing on our in-house CNC, we developed the specific TSA geometry to perform well in all grades and hardnesses of Aerospace grade aluminum.

PART #	CED	CEL	SHK DIA	OAL
5825TSA	1/4	1/4	1/4	2 1/2
5830TSA	1/4	3/8	1/4	2 1/2
5840TSA	3/8	3/8	3/8	2 1/2

Series 6100 & 6200

THREE FLUTE PHENOLIC/ COMPOSITE SPIRALS

Three flute "O" flute geometry provides excellent finishes and extra life when cutting phenolic and composite materials at high feed rates. The free cutting action of these tools provide for better finishes and significantly lower noise levels.

Upcut - Series 6100

Downcut - Series 6200

6152C

UPCUT PART #	DOWNCUT PART #	CED	CEL	SHK DIA	OAL
6140	6240	3/8	7/8	3/8	3
6143C	6243C	3/8	1	3/8	3
6150	6250	1/2	7/8	1/2	3
6152C	6252C	1/2	1	1/2	3 1/2
6155	6255	1/2	1 1/4	1/2	3 1/2
6165	6265	1/2	2 1/8	1/2	4

Series 6300

MEDIUM BURR W/PLUNGE POINT - NO FLUTES

Vortex has developed several series of tools specifically designed for cutting fiberglass materials. Choose between no flutes, straight, up cut or compression flute design to help with directional chip flow. Material must be made of all one type and not contain wood or aluminum.

PART #	CED	CEL	SHK DIA	OAL	PATTERN	COATING
6330	1/4	3/4	1/4	2 1/2	Medium	- -
6340	3/8	7/8	3/8	2 1/2	Medium	- -
6350	1/2	1	1/2	3	Medium	- -
6352	1/2	1-5/8	1/2	4	Medium	Al TiN

Series 6400

MEDIUM BURR W/PLUNGE POINT - TWO FLUTES

PART #	CED	CEL	SHK DIA	OAL	PATTERN	FLUTING	COATING
6430	1/4	3/4	1/4	2 1/2	Medium	Straight	- -
6440	3/8	7/8	3/8	2 1/2	Medium	Straight	- -
6450	1/2	1	1/2	3	Medium	Straight	- -
6452	1/2	1-5/8	1/2	4	Medium	Straight	Al TiN
6460	1/2	1-5/8	1/2	4	Medium	Up Cut	Al TiN

Series 6500

MEDIUM BURR COMPRESSION - TWO FLUTES

PART #	CED	CEL	SHK DIA	OAL
6530	1/4	3/4	1/4	2 1/2
6540	3/8	1	3/8	3
6550	1/2	1	1/2	3

Series 6700

POLYCRYSTALLINE DIAMOND ROUTER BITS
2+2 STRAIGHT GEOMETRY

This series of PCD (polycrystalline diamond) router bits have been designed with a solid carbide body which provides more strength and rigidity in the cut. Used for cutting abrasive, difficult to cut materials such as carbon fiber, phenolics or composite materials where tool life is an issue.

PART #	CED	CEL	SHK DIA	OAL
6725	1/4	1/4	3/8	3
6730	1/4	1/2	3/8	3
6735	3/8	1/2	1/2	3
6740	3/8	7/8	1/2	3

CED = Cutting Edge Diameter, CEL = Cutting Edge Length, SHK DIA = Shank Diameter, OAL = Overall Length

Series 9800

NEW

TORNADO COMPRESSION FOR COMPOSITES

9852

9852CVD

This series of compression router bits has been engineered to excel in laminated composite materials. The unique roughing and finishing flute design yields clean finished edge quality while eliminating delamination of the material. These tools are offered with or without CVD diamond coating to increase tool life in highly abrasive substrates.

PART #	CED	CEL	SHK DIA	OAL	UPCUT LENGTH	NUMBER OF FLUTES	CVD COATING
9812	1/4	7/8	1/4	3	.350	4	NO
9812CVD	1/4	7/8	1/4	3	.350	4	YES
9885	3/8	1	3/8	3	.350	6	NO
9885CVD	3/8	1	3/8	3	.350	6	YES
9889	1/2	1	1/2	3	.350	8	NO
9889CVD	1/2	1	1/2	3	.350	8	YES
9852	1/2	1-1/2	1/2	3 1/2	.450	8	NO
9852CVD	1/2	1-1/2	1/2	3 1/2	.450	8	YES

INSERT TOOLING

Vortex Tool's extensive line of insert tooling for CNC routers is manufactured in-house using state-of-the-art turning and machining centers. Insert tool bodies are designed with precision seat pockets that allow for easy insert installation and provide unmatched repeatability.

Inserts are also manufactured in-house using the latest multi-axis grinding machines and a micro-face lapping process gives inserts extremely sharp cutting edges. Assembled tools are then balanced to maximum RPM ratings based on tool diameter and weight.

American Owned & Operated

Series 7000

INSERT V-GROOVE CUTTERS 45˚ ANGLE (90˚ INCLUDED ANGLE)

A series of insert router bits ideal for v-groove operations where the material is to be folded! The angle of the insert is constant and accurate right down to the point of the tool. The 45˚ angle inserts are indexable. Tool body comes complete and ready to use with insert, screws, and wrench.

PART #	DIAMETER	DEPTH OF CUT	SHK DIA	INSERT #
7050	1.50	.730	1/2	IVB-30
7055	2.25	1.00	1/2	IVB-40
7060	2.25	1.00	3/4	IVB-40
7065	3.00	1.25	3/4	IVB-50

REPLACEMENT PARTS
67115 - Screws
7000W - Wrench

22.5˚ Angle (45˚ Included Angle)
30˚ Angle (60˚ Included Angle)
60˚ Angle (120˚ Included Angle)

PART #	DIAMETER	DEPTH OF CUT	SHK DIA	ANGLE	INSERT #
7075	2.00	.625	1/2	22.5˚	IVB-10
7080	2.00	1.00	1/2	22.5˚	IVB-20
7085	2.00	.966	1/2	30˚	IVB-20
7090	3.437	.911	3/4	60˚	IVB-50

REPLACEMENT PARTS
67115 - Screws
7000W - Wrench

Series 7000

INSERT SPOILBOARD CUTTERS

Used for surfacing MDF, particle board, and balsa core. The straight-face design provides a fast and clean cut. The body has been designed so that the insert remains in place and does not “pivot” on the cutter. Available in two or three wing geometries and 1/2” or 3/4” shank diameters.

PART #	DIAMETER	DEPTH OF CUT	SHK DIA	# WINGS
7025	2 1/2	1/2	1/2	2
7030	3	1/2	3/4	3
7040	4	1/2	3/4	3

REPLACEMENT PARTS
67116 - Screws
13273 - Inserts (sold in boxes of 10)
7001W - Wrench

Series 8000

HSK63F INTEGRATED SPOILBOARD CUTTERS

Vortex is now offering our spoilboard cutters with our newly developed “integrated” tool design. This series is a solid, one piece unit with the HSK63F taper “built in” to the tool. The one piece design affords superior performance and years of worry-free use, which will greatly reduce wear and tear on your machine spindle over time.

PART #	DIAMETER	DEPTH OF CUT	TAPER	FLANGE LENGTH	# WINGS
8030	3	1/2	HSK63F	85mm	3
8040	4	1/2	HSK63F	85mm	3
8045	4	1/2	HSK63F	115mm	3

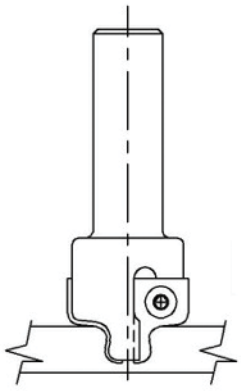
R REPLACEMENT PARTS
67116 - Screws
13273 - Inserts (sold in boxes of 10)
7001W - Wrench

Flat Table Dovetail Drawer System

Now you have the ability to use your flat table router to make Dovetail Drawer Boxes. This “tooling system” will allow users to quickly and easily make dovetail drawer components with a nested base format. Available in two dovetail designs: the traditional square edge and the new rounded edge. The body is manufactured to accept both styles of insert and has a 3/4" shank diameter. Sold separately or as a kit.

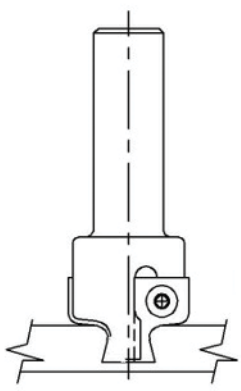
KIT #7500 - Round Edge

Includes:
Insert Body 9101
4 - INS-9101 Inserts
2 - 3115 (1/4" compression spirals)



KIT #7600 - Square Edge

Includes:
Insert Body 9101
4 - INS-9282 Inserts
2 - 3115 (1/4" compression spirals)

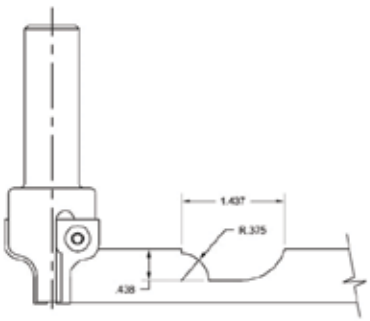


**Also available in 5/8" and 1/2" shank diameters upon request

Series 7900

FOUR PIECE INSERT MDF DOOR SET

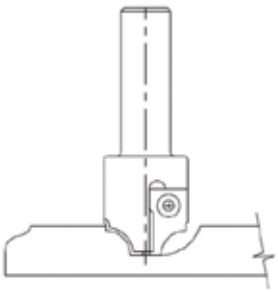
By using tools in combination, you can create solid doors with the appearance of five-piece construction. By selecting a few different patterns, you can mix and match profiles to make hundreds of different door designs. This set comes complete with four insert bodies and the inserts shown below. All tools have a 3/4" shank diameter. Also sold separately, see pages 72-75.



MDF Raise Outside Door Edge

Body Part #7962
Insert Part #INS-7962

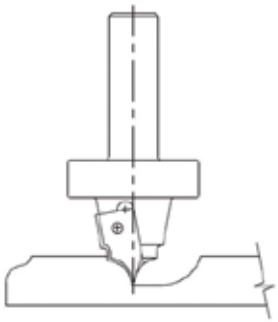
(Five other Outside Door Edge profiles available, see page 72)



MDF Raise Inside Rough

Body Part #7964
Insert Part #INS-7964

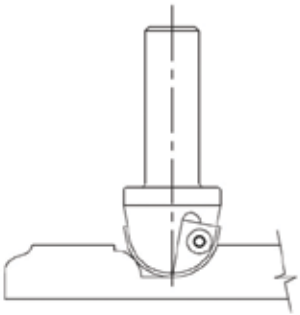
(1/4" radius Inside Rough profile also available, see page 73)



MDF Raise Inside Corner Cleaner

Body Part #7965
Insert Part #INS-7965

(1/4" radius Corner Cleaner profile also available, see page 73)



MDF Raise Raised Panel

Body Part #7963
Insert Part #INS-7963

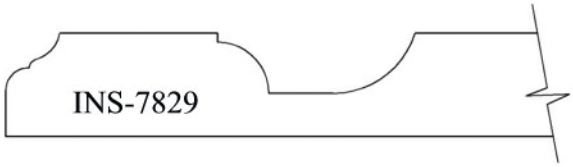
(See page 74)

MDF Outside Door Edges

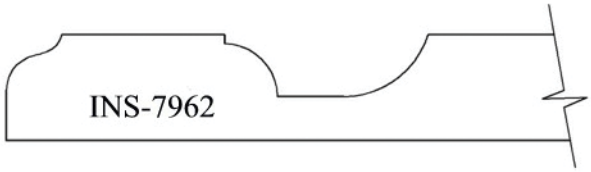
BODY PART #7962

Designed so that one body accepts all outside door edge profiles! Our outside edge router bit separates and profiles at the same time. We have utilized our unique capture groove system to maintain a small cutting diameter while providing two cutting edges. This tool has a 3/4" shank diameter with a 1/2" small diameter and is designed to cut through .010" on 3/4" thick material.

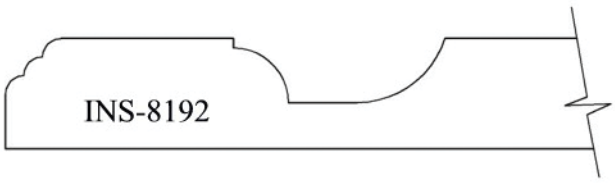
INSERT PART #
INS-7829



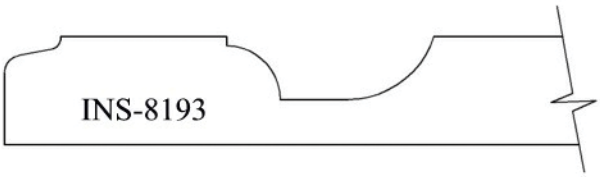
INSERT PART #
INS-7962



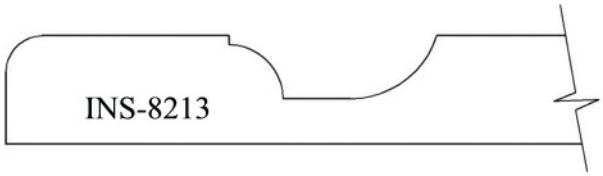
INSERT PART #
INS-8192



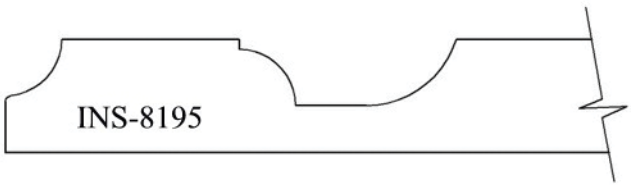
INSERT PART #
INS-8193



INSERT PART #
INS-8213



INSERT PART #
INS-8195

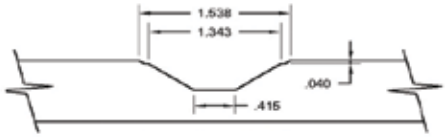


MDF Inside Door Profiles

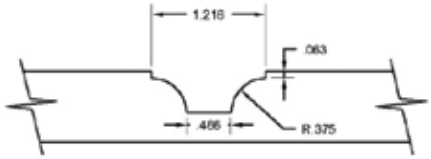
INSIDE ROUGHING PROFILE

These “multiple” pass cutter sets can be used in combination to rough out and corner clean to provide the appearance of a square inside corner. Combine with a raised panel cutter to complete the look of a five-piece assembled door. Bead profile (7964) will accept both a small bead (1/4" radius) or a large bead (3/8" radius) insert so one tool can do both profiles.

BODY PART #	INSERT PART #	SHANK DIAMETER	INSIDE PROFILE
7960	INS-7960	3/4	Bevel
7964	INS-7964	3/4	Large Bead (3/8"R)
7964	INS-9358	3/4	Small Bead (1/4"R)



7960 - Inside Bevel Profile



7964 - Inside Large Bead

7964 - Inside Small Bead

Inside Corner Cleaning Profiles

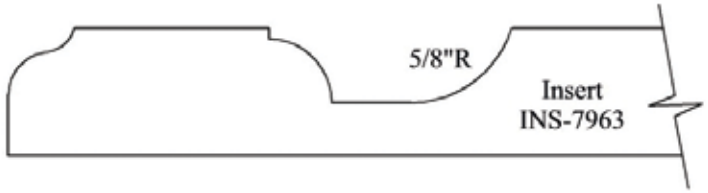
Used to clean the inside corners after the above tool has “roughed out” the material. This tool will create the look of a five-piece assembled door.

BODY PART #	INSERT PART #	SHANK DIAMETER	INSIDE PROFILE
7961	INS-7961	3/4	Bevel
7965	INS-7965	3/4	Large Bead (3/8"R)
7965	INS-9357	3/4	Small Bead (1/4"R)

MDF Panel Raise Profiles

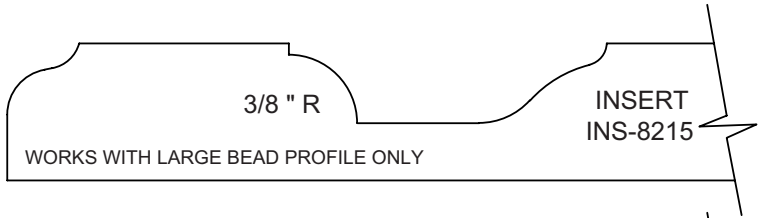
Complete your MDF door and add even more detail by selecting from one of the following panel raise patterns. All cutters are balanced to a G2.5 or better rating. These cutters are designed to be used in conjunction with the “multiple pass” inside profiles found on page 73.

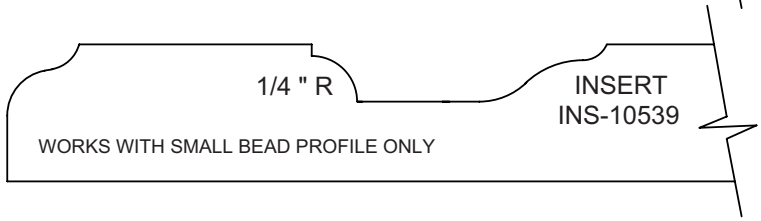
BODY PART #	INSERT PART #	SHANK DIAMETER
7963	INS-7963	3/4



BODY PART #	INSERT PART #	SHANK DIAMETER
7966	INS-7966	3/4

BODY PART #	INSERT PART #	SHANK DIAMETER
8215	INS-8215	3/4
8215	INS-10539	3/4

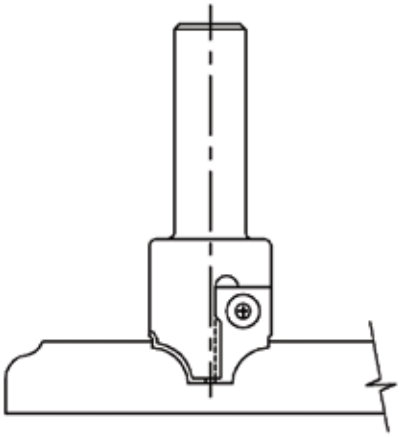




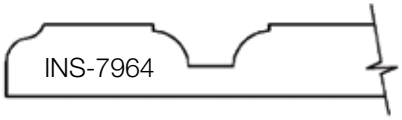
One Pass MDF Door Profiles

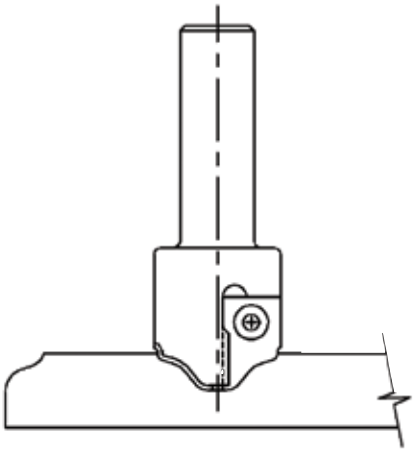
BODY PART #7964

This two flute insert MDF door cutter can be run in a single pass to create the appearance of a raised panel door. Designed so one body accepts all profiles. Tool is manufactured with a 3/4" shank diameter. Please verify which profile insert should be included in body at time of purchase.

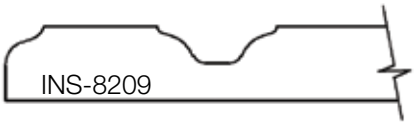


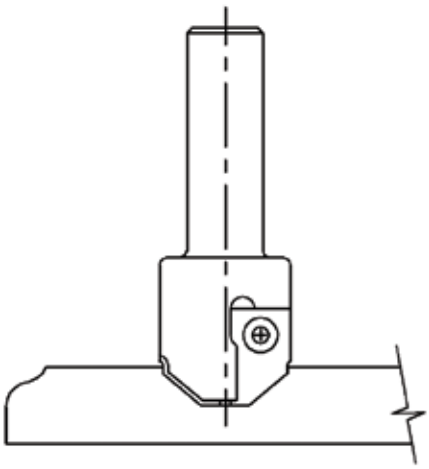
INSERT PART #
INS-7964



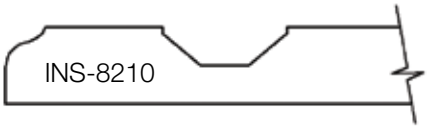


INSERT PART #
INS-8209





INSERT PART #
INS-8210



Series 8200

INSERT ROUND OVER

These tools have been designed to round over the top edge of your material. Our unique capture groove allows this series of tools to maintain small cutting diameters, yet provides two cutting edges. These bodies are designed so that they will accept all five inserts! Specify which set of inserts is to be included with the original body purchase.

PART #	DESCRIPTION	SMALL DIAMETER	RADIUS	SHANK DIAMETER
8200	Insert Body	1/2		1/2
8205	Insert Body	1/2		3/4
INS-8200	Replacement Insert		1/8	
INS-8201	Replacement Insert		3/16	
INS-8202	Replacement Insert		1/4	
INS-8203	Replacement Insert		5/16	
INS-8204	Replacement Insert		3/8	

**1/16" radius inserts available upon request - body modification is required

REPLACEMENT PARTS

67114 - Screws

7000W - Wrench

INSERT ROUND & ROUT

Unique “capture” groove allows this series of insert tools to maintain small cutting diameters, while still providing two cutting edges. Designed to cut .010" through on 3/4" material and top edge round. It is recommended that you ramp in or start off the part when using this tool. Tool is designed so that one body accepts all five inserts! Specify which set of inserts is to be included with the original body purchase.

PART #	DESCRIPTION	SMALL DIAMETER	RADIUS	SHANK DIAMETER
8210	Insert Body	1/2		1/2
8211	Insert Body	1/2		3/4
INS-8211	Replacement Insert		1/8	
INS-8212	Replacement Insert		3/16	
INS-8213	Replacement Insert		1/4	
INS-7830	Replacement Insert		5/16	
INS-8214	Replacement Insert		3/8	

**1/16” radius inserts available upon request - body modification is required

REPLACEMENT PARTS

67114 - Screws

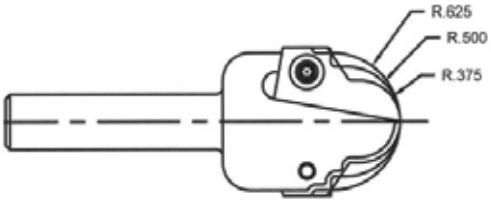
7000W - Wrench

Series 8200

MULTIPROFILE BALLNOSE INSERT BODY

This “multiprofile” insert tool body has been designed so that one body will accept three different sized radii. For use when larger diameter fluting is required or as cove profiles are needed. Precision insert design provides superior cut quality (particularly at the point) and greatly improved cutter life.

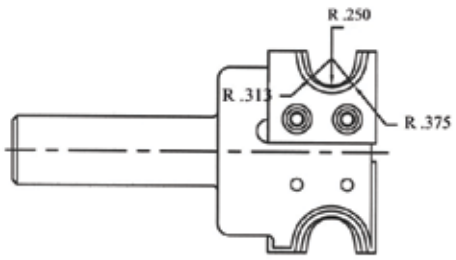
PART #	DESCRIPTION	COVE DIA	SHANK DIA	RADIUS
8220	Insert Body		1/2	
INS-8220	Insert	3/4		3/8
INS-8221	Insert	1		1/2
INS-8222	Insert	1 1/4		5/8



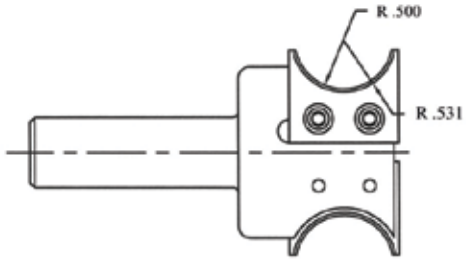
MULTIPROFILE BULL NOSE INSERT BODY

These insert cutters are designed to perfectly bull nose the material sizes shown, providing superior cut quality only precision insert tooling can provide. Two multiprofile tool bodies are available from stock and will accept multiple different radii inserts to fit your needs.

PART #	DESCRIPTION	SHANK DIA	MATERIAL THICKNESS
8230	Insert Body	3/4	1/2" thru 3/4"
8240	Insert Body	3/4	1" thru 1 1/16"
INS-8230	1/4" Radius Insert - Body 8230		1/2"
INS-8231	5/16" Radius Insert - Body 8230		5/8"
INS-8232	3/8" Radius Insert - Body 8230		3/4"
INS-8240	1/2" Radius Insert - Body 8240		1"
INS-8241	17/32" Radius Insert - Body 8240		1 1/16"



Body 8230 for material thickness of 1/2" to 3/4"



Body 8240 for material thickness of 1" to 1 1/16"

Series 8300

INSERT SHAKER DOOR CUTTER

Two wing insert design with upshear angle can be used to quickly “rough out” the center panel area of a Shaker Style MDF Door. The user would then use a series of smaller diameter tooling to “square up” the inside corners of the recessed panel area. Insert cutter sold separately or as a kit with the tools shown below.

PART #	BODY DIA	DEPTH OF CUT	SHK DIA	# WINGS	OAL
8300	1 1/4	1/2	1/2	2	3.189

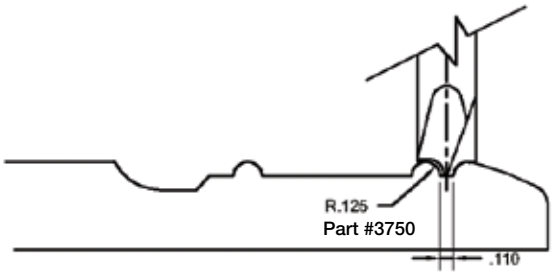
REPLACEMENT PARTS
13276 - Inserts (sold in boxes of 10)
67116 - Screws
7001W - Wrench

KIT #8310

Includes:
Insert Body - 8300
Box of 10 Replacement Inserts - 13276
1 - 3850 - 1/2” 60° V-Groove Bit
1 - 3189 - 1/2” Mortise Compression
2 - 1310 - 1/8” Downcut

SOLID CARBIDE BEADING PROFILES

This tool series can be used to create various sized “raised beads” by taking one pass on each side of the radius. The small diameter of the tool makes it very desirable for MDF doors.



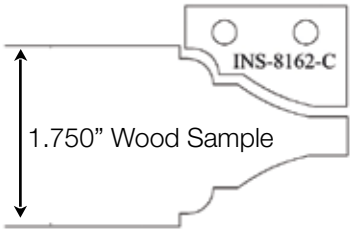
PART #	SMALL DIA	RADIUS	SHK DIA	OAL
3750	.110	.125	1/2	3
3760	.110	.187	1/2	3
3770	.110	.250	1/2	3

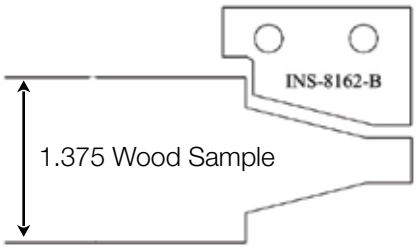
Series 8500

ONE SIDED INSERT RAISED PANEL DOOR CUTTER

This raised panel design will create a raised profile on one side of your entry door and is manufactured to accept two different insert profiles. This profile tool is also available with an integrated HSK63F taper. This tool design results in less weight, better balance, less run out, and never having to change collets again.

BODY #	BEVEL INSERT #	COPE INSERT #	SHANK DIA
8550	INS-8162	INS-8163	3/4"
8560	INS-8162	INS-8163	HSK63F Taper





Series 8500

MULTIPROFILE INSERT ENTRY WAY DOOR CUTTERS - GLASS PROFILE

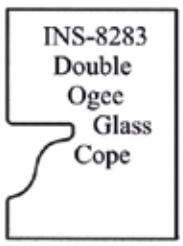
These multiprofile insert tools are designed to take a full pass and have .005" fit tolerance between cope and stick patterns. Door profiles are available on page 81. Insert bodies are balanced to a G2.5 or better rating and can be used on conventional CNC routers. One set of inserts is included with the purchase of the body. These cutters are available in either a 3/4" straight shank or an integrated HSK63F taper.

"MULTIPROFILE" COPE GLASS

PART #	DESCRIPTION
8510	3/4" Shank Body
8520	HSK 63F Integrated Body
INS-8283	Dbl Ogee Glass Cope Insert
INS-8284	Bevel Glass Cope Insert
INS-8285	Bead Glass Cope Insert

"MULTIPROFILE" STICK GLASS

PART #	DESCRIPTION
8515	3/4" Shank Body
8525	HSK 63F Integrated Body
INS-8282	Dbl Ogee Glass Stick Insert
INS-8286	Bevel Glass Stick Insert
INS-8287	Bead Glass Stick Insert



Series 8500

MULTIPROFILE INSERT ENTRY WAY DOOR CUTTERS - DOOR PROFILES

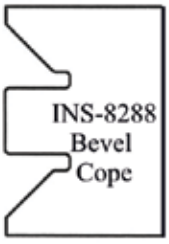
These multiprofile insert tools are designed to take a full pass and have .005" fit tolerance between cope and stick patterns. Glass profiles also available on page 80. Insert bodies are balanced to a G2.5 rating or better and can be used on conventional CNC routers. One set of inserts is included with the purchase of the body. These cutters are available in a 3/4" straight shank or an integrated HSK63F taper.

"MULTIPROFILE" COPE DOOR

PART #	DESCRIPTION
8530	3/4" Shank Body
8540	HSK 63F Integrated Body
INS-8280	Dbl Ogee Cope Door Insert
INS-8288	Bevel Cope Door Insert
INS-8289	Bead Cope Door Insert

"MULTIPROFILE" STICK DOOR

PART #	DESCRIPTION
8535	3/4" Shank Body
8545	HSK 63F Integrated Body
INS-8281	Dbl Ogee Stick Door Insert
INS-8290	Bevel Stick Door Insert
INS-8291	Bevel Stick Door Insert



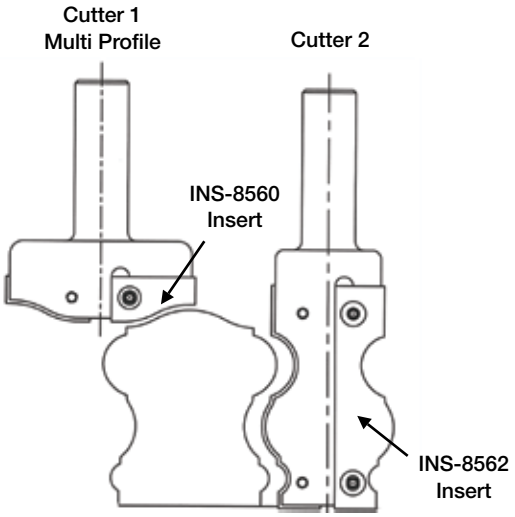
Series 8500

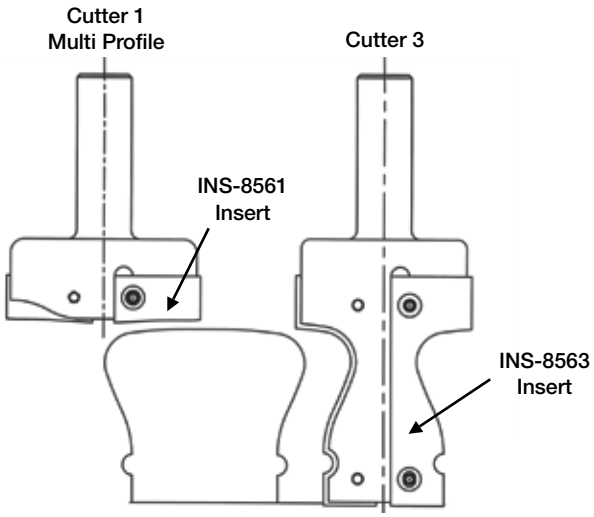
INSERT HAND RAIL CUTTER SETS

A set of three cutters will produce the two different hand rails shown. These sets are available with either a straight 3/4" shank or an integrated HSK 63F taper. Cutters are supplied with a complete set of inserts to do both profiles at the time of purchase.

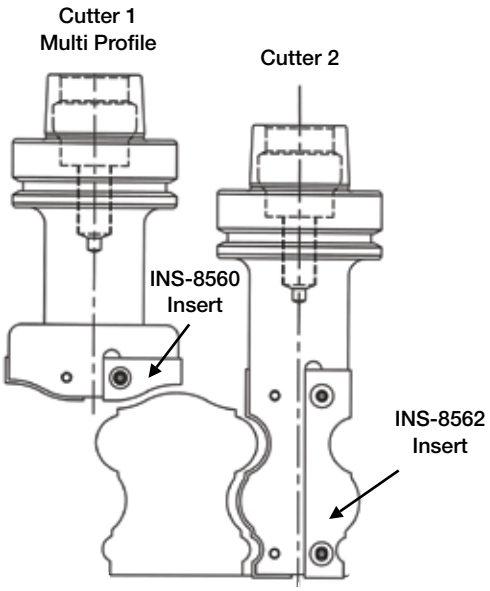
PART #	DESCRIPTION	SHANK
8565	3 Piece Hand Rail Set - Shank Style	3/4
8570	3 Piece Hand Rail Set - Integrated Style	HSK 63F Taper
INS-8560	Replacement Insert for Cutter #1 - Profile	
INS-8561	Replacement Insert for Cutter #1 - Straight	
INS-8562	Replacement Insert for Cutter #2	
INS-8563	Replacement Insert for Cutter #3	

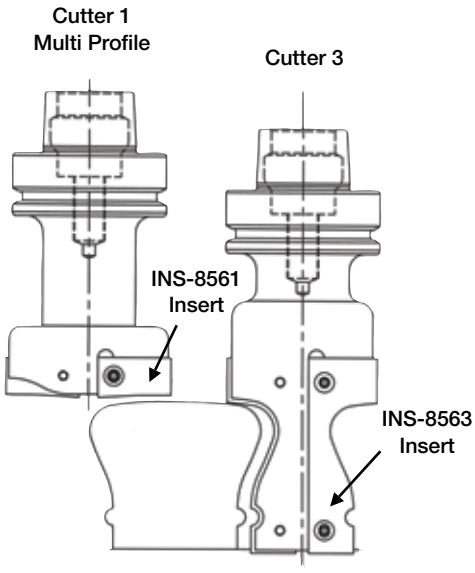
Part #8565 - 3pc Insert Handrail Set - 3/4" Shank Diameter

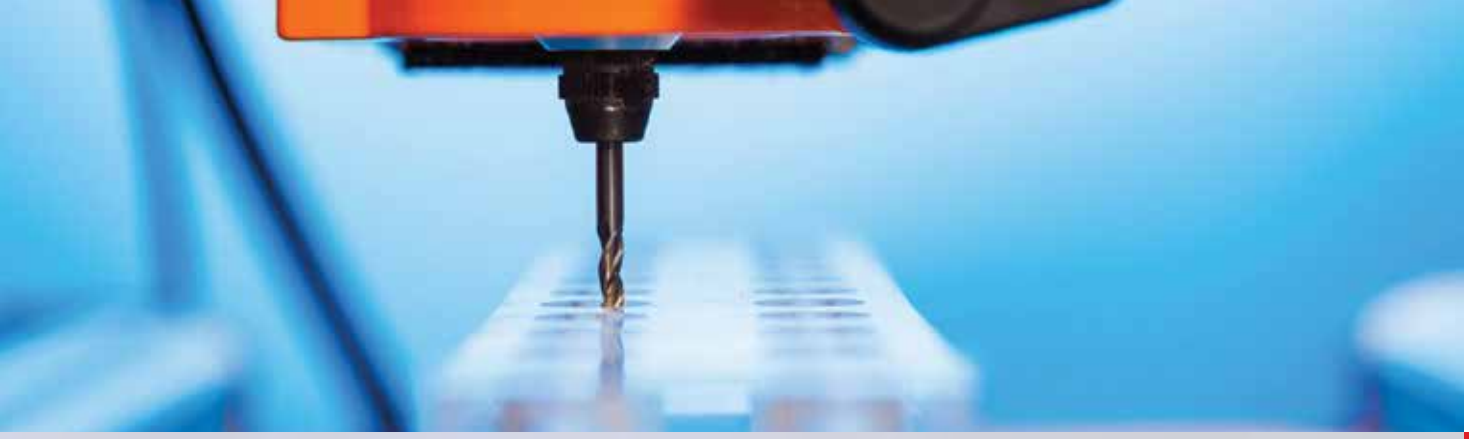




Part #8570 - 3pc Insert Handrail Set - Integrated w/HSK 63F Taper







VORTEX TOOL COMPANY INC.

MACHINE TOOL ACCESSORIES

Vortex Tool's precision-manufactured tooling accessories help make sure your machines run at optimum levels.

We supply affordable, perfect-fit tool holders and pullstuds for CNC routers, along with arbors, collets, nuts and more.

American Owned & Operated

MACHINE TOOL ACCESSORIES

Start-Up Packages for new CNC Router Owners

Nested Base Tooling Package - Kit #5000

1 - 7040 - 4” Spoilboard Cutter
1 - 13273 - 10 pack Replacement Inserts for Spoilboard Cutter
3 - 1330 - 1/4” Downcut Spirals
2 - 1340 - 3/8” Downcut Spirals
2 - 3185XP - 3/8” Mortise Compression Spirals
2 - 3189XP - 1/2” Mortise Compression Spirals
1 - 3435XP - 1/2” Compression Spiral for Plywoods
5 - DDB05070RB - 5mm x 70mm RH Brad Point Drill
5 - DDB05070LO - 5mm x 70mm LH Brad Point Drill
1 - DDS0370RB - 3mm x 70mm RH Brad Point Drill
1 - DDS0370LO - 3mm x 70mm LH Brad Point Drill
1 - DHB35070RB - 35mm x 70mm RH Hinge Bit
1 - DHB35070LO - 35mm x 70mm LH Hinge Bit

Plastic/Sign Making Tooling Package - Kit #6000

1 - 7025 - 2 1/2” Spoilboard Cutter
1 - 13273 - 10 pack Replacement Inserts for Spoilboard Cutter
2 - 2230 - 1/4” Ballnose Spiral
1 - 2240 - 3/8” Ballnose Spiral
2 - 2215 - 1/8” Tapered Ballnose Spiral
2 - 3731 - .020” Engraving Bit
2 - 1/8” "O" Flute Upcut Spiral* (5610/5710)
2 - 3/16” "O" Flute Upcut Spiral* (5620/5720)
2 - 1/4” "O" Flute Upcut Spiral* (5630H/5730H)
2 - 5510 - 1/8” Double Edge "O" Flute Straight

**Your choice between upcut (Series 5600) and downcut (Series 5700) rotation*

Toolholder Packages for CNC Router Users

Toolholder Package - Kit #3000

10 - HSK 63F ER40 or SYOZ 25
Style Toolholders
2 - 1/4” Collets
3 - 3/8” Collets
3 - 1/2” Collets
2 - 3/4” Collets
1 - 200TH Torque Wrench
1 - Collet Key

Use Part #3000 for ER40 style holders and 3000-25 for SYOZ25 style holders

Albrecht Milling Chuck - Toolholder Package Kit #4000

10 - Albrecht Milling Chucks
2 - 1/4” Collets
3 - 3/8” Collets
3 - 1/2” Collets
2 - 3/4” Collets
1 - Tightening Wrench

Toolholder Measuring Guide

Make and Model of CNC Router _____

Pull Stud Dimensions

P = _____

A = _____

L = _____

R = _____

Toolholder Dimensions

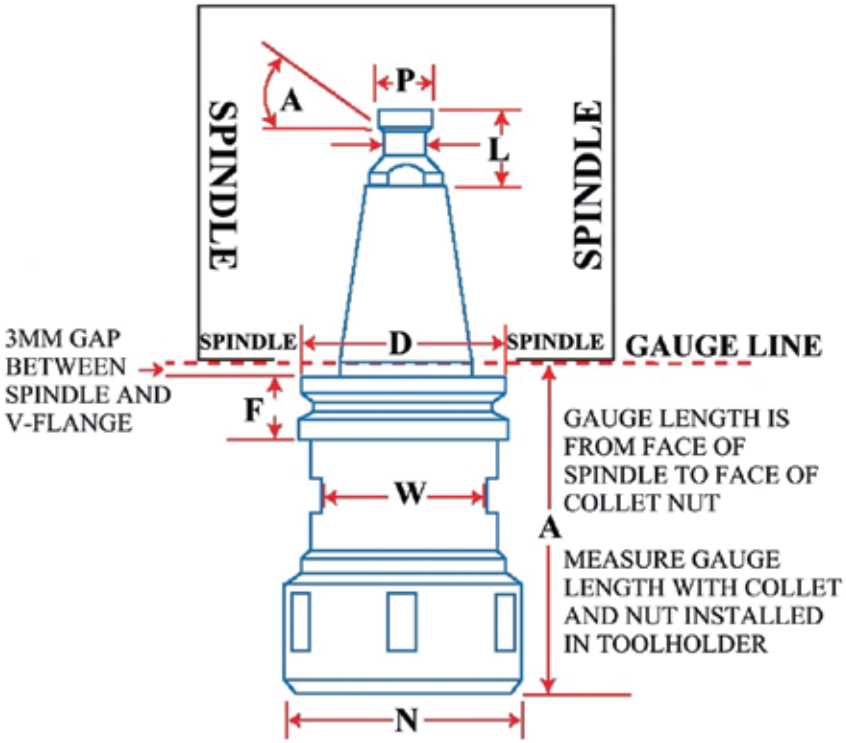
D = _____

F = _____

W = _____

A = _____

N = _____



Make and Model of HSK spindle CNC Router _____

Toolholder Dimensions

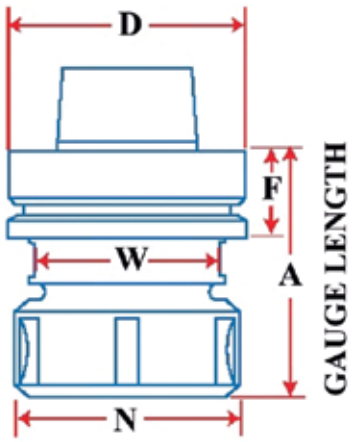
D = _____

F = _____

W = _____

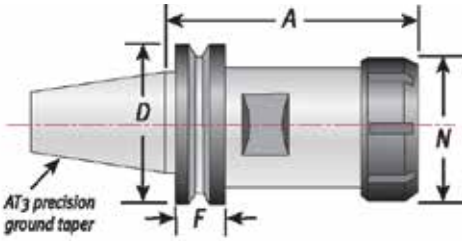
A = _____

N = _____



ISO & SK Toolholders

- Balanced to 25,000 RPM @ G2.5
- Inspection report included for accuracy and balance
- Includes Collet Nut

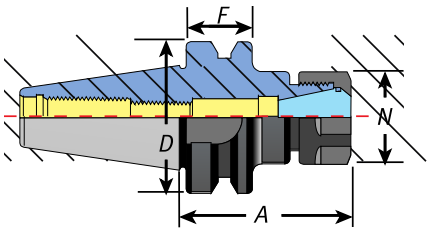


Measure the "A" dimension with the collet in the nut. Dimensions in millimeters.

PART #	DESCRIPTION	D	A	N	NUT	WRENCH	FLATS
12000-CMS	ISO 30 x ER 32 - CMS	46	58	50	46132	04616	36
CMS-RR-32	CMS w/turret nut x ER32	57.9	- -	69.8	46132	04616	55
12040-CMS	ISO 30 x ER 40 - CMS w/o nut	46	66	63	46140	04617	42
12213-W-50	ISO 30 x ER 32 - 50	50	50	50	46132	04616	47
12213-W-63	ISO 30 x ER 32 - 63	50	63	50	46132	04616	36
12213-W-90	ISO 30 x ER 32 - 90	50	90	50	46132	04616	36
NT-54300130	SK30 x SYOZ 25 - 70 (Weeke)	50	70	60	83632	03691	38
W507TH	ISO30 x ER 32 (Thermwood)	57.1	55	50	included	04616	- -

BT30 & BT35 Toolholders

- Balanced to 25,000 RPM @ G2.5
- Inspection report included for accuracy and balance
- Includes Collet Nut



Measure the "A" dimension with the collet in the nut. Dimensions in millimeters.

PART #	DESCRIPTION	D	A	N	NUT	WRENCH
06108-2.5	BT 30 x ER20 - 2.5" (Laguna)	46	63.5	34	41120	04610
16106-W	BT 30 x ER20 - 70 w/o slots (Laguna)	46	70	35	41120	04610
06112	BT 30 x ER32 - 60 with slots	46	60	50	46132	04616
06113	BT 30 x ER32 - 70 with slots	46	70	50	46132	04616
06113-W-60	BT 30 x ER32 - 60, 41mm flats (Komo)	46	60	50	46132	04616
06113-W-90	BT 30 x ER32 - 90, 38mm flats (Komo)	46	90	50	46132	04616
06001-W	BT 30 x SYOZ 25 - 70, 38mm flats (Komo)	46	70	60	83632	03691
06010	BT 35 x SYOZ 25 - 76 (Heian)	53	76	60	83632	03691
061BT353276	BT 35 x ER32 - 76	53	76	50	46132	4616

Retention Knobs

FOR CNC ROUTERS

Retention knobs make the important connection between the spindle and the tool holder.

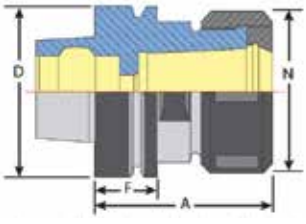
PART #	TYPE	D	d1	d2	d3	L	l1	l2	O
750-19	Komo ISO/BT30-A 12.5	17	13	9	12.5	44	23.4	18.2	15˚
13001	DAT 30-A	17	13	9	13	44	24	19	15˚
13001-45	Colombo ISO 30 - Ball	17	12.8	9	13	44	24	19	45˚
13019	HSD ISO 30	17	12	8	13	44	23.9	- -	radius
07801	BT 30 - 45˚ (P30T-1)	16.5	11	7	12.5	43	23	- -	45˚
07806	BT 30 - 60˚ (P30T-2)	16.5	11	7	12.5	43	23	- -	60˚
4403502	BT 35 Heian	20	13	8.5	12.5	43	28	22.5	- -

750-19 - KOMO Router for BT30 Toolholder
13001 - Colombo Spindles (Billet spindle)
13001-45 - Colombo Spindle clamping by balls (RS Spindle)
13019 - HSD Spindles

HSK 63F Toolholders

- Balanced to 24,000 RPM at G2.5
- Inspection report included for accuracy and balance
- Includes Collet Nut

PART #	DESCRIPTION	D	A	N	NUT	WRENCH	FLATS
30000	HSK 63F x ER32 - 70	63	70	50	46132	04616	36
30001	HSK 63F x ER40 - 75	63	75	63	46140	04617	46
30002	HSK 63F x ER40 - 90	63	90	63	46140	04617	46
30005	HSK 63F x ER40 - 125	63	125	63	46140	04617	46
41025	HSK 63F x SYOZ25 - 80	63	80	60	83632	03691	38
H63ER32	HSK 63F x ER32 - 70	63	70	50	E32NUT	E32SPAN	46
H63ER40	HSK 63F x ER40 - 76	63	76	63	E40NUT	E40SPAN	46
H63SYOZ	HSK 63F x SYOZ25 -80	63	80	63	S25NUT	S25HOOK	46



Measure the “A” dimension with the collet in the nut. Dimensions in millimeters.

H63SYOZ Model

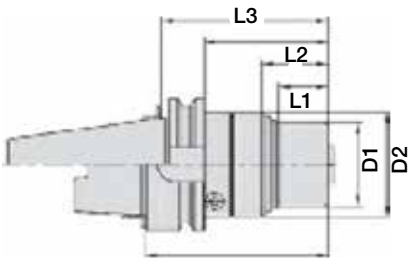
Albrecht Milling Chuck

- Also known as the Uberchuck this holder is guaranteed to run within 0.0001" TIR or better at 2.5 x diameter.
- Dynamically balanced to G2.5 @ 24,000.
- Carefully optimized expansion tolerances and unique vibration dampening capabilities provide smoother part finishes and up to a 60% increase in tool life.

PART #	TAPER	CAPACITY	GAGE LENGTH	D2	D1	L1	L2	L3
74329	BT30	1/8 - 3/4	3.23	1.97	1.57	0.79	1.12	2.36
74221	HSK 63F	1/8 - 3/4	3.62	1.97	1.57	0.79	1.12	2.60

APC Tightening Tool
Economy Model
#74402

APC Tightening Tool Deluxe
Model #74399



Collets for Albrecht

MILLING CHUCKS

- The shallow included angle of this collet creates a locking tapered fit with the holder.
- A special surface coating increases wear-resistance and reduces friction, resulting in high gripping torque.
- A deep throat and long, ground gripping surface produces superior accuracy and rigidity.

PART #	COLLET SIZE	MAX THROAT DEPTH
74357	1/8"	1.10"
74362	1/4"	1.42"
74364	5/16"	1.42"
74366	3/8"	1.57"
74370	1/2"	1.77"
74374	5/8"	1.89"
74378	3/4"	1.97"
74387	6mm	1.42"
74388	8mm	1.42"
74389	10mm	1.57"

**Other sizes available upon request

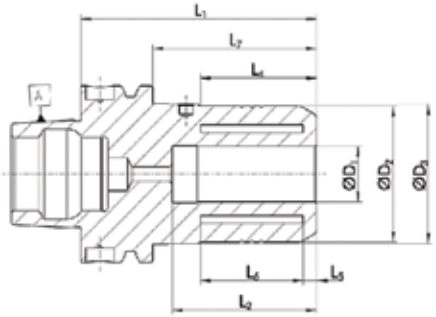
HSK 63F Sino-R Toolholders

The Sino-R toolholder is a clamping system with a run out accuracy of <.005mm. The toolholder is hand-tightened with a C'Spanner type wrench. Purchase intermediate sleeves shown below to run smaller diameter tools.

PART #	D1	D2	D3	L1	L2	L4	L7
209662	1/2"	39mm	44.9mm	80mm	47mm	34mm	54mm
209664	3/4"	48mm	50.15mm	85mm	52mm	42mm	59mm

SINO C'Spanner Wrench
Part #208877

SINO Sleeve Extractor
Part #208840



Intermediate Sleeves

FOR SINO-R TOOLHOLDERS

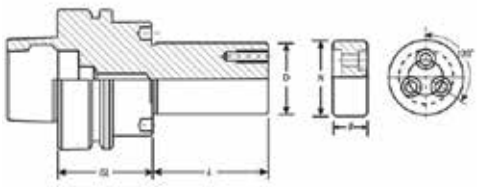
Achieve several clamping diameters with one toolholder with the use of intermediate sleeves. Available in both a sealed and slotted design. The sealed sleeve offers a "dust cover" like seal and results in less maintenance/cleaning of the toolholder/sleeve. The slotted design allows for more efficient cooling and chip evacuation of the cutting area and can be used with coolant systems.

SEALED PART #	SLOTTED PART #	CHUCK DIAMETER	TOOL DIAMETER
224376	217376	1/2"	1/8"
224378	217378	1/2"	1/4"
224379	217379	1/2"	5/16"
224380	217380	1/2"	3/8"
224386	217960	3/4"	1/8"
224388	217962	3/4"	1/4"
224389	217963	3/4"	5/16"
224390	217964	3/4"	3/8"
224392	217966	3/4"	1/2"
224394	217968	3/4"	5/8"

**Other sizes available upon request

HSK 63F Arbors

- Special 3 screw design improves safety
- Precision ground taper provides high accuracy
- Balanced to 25,000 RPM @ G2.5



PART #	DESCRIPTION	L	GL	D	B	N
41060	HSK 63F x 1 1/4" x 55	55	45	1 1/4"	20	42
41080-3H	HSK 63F x 1 1/4" x 80	80	45	1 1/4"	20	42
41085	HSK 63F x 1 1/4" x 100	100	45	1 1/4"	20	42
41087	HSK 63F x 1 1/4" x 112	112	45	1 1/4"	20	42

Dimensions in millimeters unless otherwise indicated

HSK 63F Drill Chucks

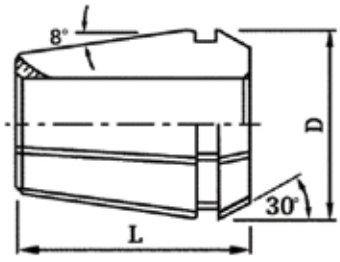
- Run non-standard shank diameters without having to buy special collets
- Balanced to 24,000 RPM
- Adjustable up to 5/8” capacity

PART #	DESCRIPTION	CAPACITY
H63CHUCK-500	HSK 63F Drill Chuck	1mm - 13mm (1/2")
H63CHUCK-625	HSK 63F Drill Chuck	3mm - 16mm (5/8")

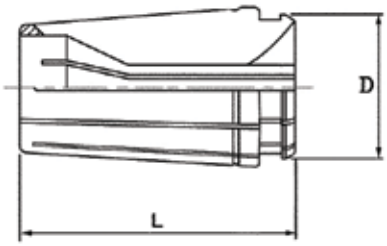
Collet Measuring Guide

All collets have a distinct length and diameter so easiest way to determine the type of collet your machine has is to measure the length and diameter and refer to the chart below to determine the collet series you require.

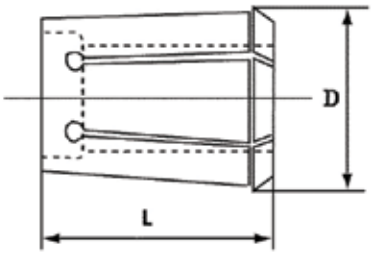
COLLET SERIES	LENGTH	DIAMETER
ER11	18mm (.708")	11.5mm (.45")
ER16	27.5mm (1.08")	17mm (.67")
ER20	31.5mm (1.24")	21mm (.83")
ER25	34mm (1.34")	26mm (1.02")
ER32	40mm (1.57")	33mm (1.3")
ER40	46mm (1.81")	41mm (1.61")
SYOZ 20	34mm (1.34")	20mm (.78")
SYOZ 25	52mm (2.06")	35mm (1.38")
TG75	47mm (1.85")	27mm (1.06")
TG100	60mm (2.36")	35mm (1.38")



ER Series Collet



TG Series Collet



SYOZ 25 Series Collet

ER Series Collets

PRECISION INCH COLLETS

- Runout (T.I.R.) only .0002”
- Collapse Range 0.039”

Made from high-carbon bearing steel that is heat-treated for improved flexibility and longer life. Each collet is precisely ground and honed using a Swiss technique, then individually inspected and tested for accuracy. Compatible with DR, RD, ESX, AR & BR series collets. For best rigidity and cutter life use Power Coated Nuts (page 96).

COLLET ID	ER11 PART #	ER16 PART #	ER20 PART #	ER25 PART #	ER32 PART #	ER40 PART #
1/16"	04211-1/16	04216-1/16				
3/32"	04211-3/32	04216-3/32	04220-3/32	04225-3/32	04232-3/32	
1/8"	04211-1/8	04216-1/8	04220-1/8	04225-1/8	04232-1/8	04240-1/8
5/32"	04211-5/32	04216-5/32	04220-5/32	04225-5/32	04232-5/32	04240-5/32
3/16"	04211-3/16	04216-3/16	04220-3/16	04225-3/16	04232-3/16	04240-3/16
7/32"	04211-7/32	04216-7/32	04220-7/32	04225-7/32	04232-7/32	04240-7/32
1/4"	04211-1/4	04216-1/4	04220-1/4	04225-1/4	04232-1/4	04240-1/4
9/32"		04216-9/32	04220-9/32	04225-9/32	04232-9/32	04240-9/32
5/16"		04216-5/16	04220-5/16	04225-5/16	04232-5/16	04240-5/16
11/32"		04216-11/32	04220-11/32	04225-11/32	04232-11/32	04240-11/32
3/8"		04216-3/8	04220-3/8	04225-3/8	04232-3/8	04240-3/8
13/32"		04216-13/32	04220-13/32	04225-13/32	04232-13/32	04240-13/32
7/16"			04220-7/16	04225-7/16	04232-7/16	04240-7/16
15/32"			04220-15/32	04225-15/32	04232-15/32	04240-15/32
1/2"			04220-1/2	04225-1/2	04232-1/2	04240-1/2
17/32"				04225-17/32	04232-17/32	04240-17/32
9/16"				04225-9/16	04232-9/16	04240-9/16
19/32"				04225-19/32	04232-19/32	04240-19/32
5/8"				04225-5/8	04232-5/8	04240-5/8
21/32"					04232-21/32	04240-21/32
11/16"					04232-11/16	04240-11/16
23/32"					04232-23/32	04240-23/32
3/4"					04232-3/4	04240-3/4
7/8"						04240-7/8
1"						04240-1

**To determine your collet type see page 92

ER Series Collets

PRECISION METRIC COLLETS

- Runout (T.I.R.) only .0002”
- Collapse Range 0.039”

Made from high-carbon bearing steel that is heat-treated for improved flexibility and longer life. Each collet is precisely ground and honed using a Swiss technique, then individually inspected and tested for accuracy. Compatible with DR, RD, ESX, AR & BR series collets. For best rigidity and cutter life use Power Coated Nuts (page 96).

COLLET ID	ER16 PART #	ER20 PART #	ER25 PART #	ER32 PART #	ER40 PART #	RANGE
0.5-1	04216-01					.019 - .039"
1-2	04216-02	04220-02	04225-02			.039 - .079"
2-3	04216-03	04220-03	04225-03	04232-03		.079 - .118"
3-4	04216-04	04220-04	04225-04	04232-04	04240-04	.118 - .157"
4-5	04216-05	04220-05	04225-05	04232-05	04240-05	.157 - .197"
5-6	04216-06	04220-06	04225-06	04232-06	04240-06	.197 - .236"
6-7	04216-07	04220-07	04225-07	04232-07	04240-07	.236 - .276"
7-8	04216-08	04220-08	04225-08	04232-08	04240-08	.276 - .315"
8-9	04216-09	04220-09	04225-09	04232-09	04240-09	.315 - .354"
9-10	04216-10	04220-10	04225-10	04232-10	04240-10	.354 - .394"
10-11		04220-11	04225-11	04232-11	04240-11	.394 - .433"
11-12		04220-12	04225-12	04232-12	04240-12	.433 - .472"
12-13		04220-13	04225-13	04232-13	04240-13	.472 - .512"
13-14			04225-14	04232-14	04240-14	.512 - .551"
14-15			04225-15	04232-15	04240-15	.551 - .591"
15-16			04225-16	04232-16	04240-16	.591 - .630"
16-17				04232-17	04240-17	.630 - .669"
17-18				04232-18	04240-18	.669 - .709"
18-19				04232-19	04240-19	.709 - .748"
19-20				04232-20	04240-20	.748 - .787"
20-21					04240-21	.787 - .827"
21-22					04240-22	.827 - .866"
22-23					04240-23	.866 - .906"
23-24					04240-24	.906 - .945"
24-25					04240-25	.945 - .984"
25-26					04240-26	.984 - 1.024"

**To determine your collet type see page 92

TG Series Collets

PRECISION INCH COLLETS

- Runout (T.I.R.) .0004”
- Collapse Range 1/64”

COLLET ID	TG75 PART NUMBER	TG100 PART NUMBER
1/8"	04008-1/8	04010-1/8
3/16"	04008-3/16	04010-3/16
1/4"	04008-1/4	04010-1/4
5/16"	04008-5/16	04010-5/16
3/8"	04008-3/8	04010-3/8
1/2"	04008-1/2	04010-1/2
9/16"	04008-9/16	04010-9/16
5/8"	04008-5/8	04010-5/8
3/4"	04008-3/4	04010-3/4
7/8"		04010-7/8
1"		04010-1

**Other sizes available upon request. To determine your collet type see page 92

Perske Series Collets

PRECISION COLLETS

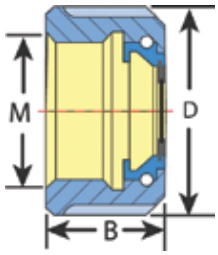
- Manufactured to DIN 6388 Standards
- Runout (T.I.R.) .0004”
- Collapse Range 1/64”

COLLET ID	SYOZ 20 PART NUMBER	SYOZ 25 PART NUMBER
1/8"	03520-1/8	03868-1/8
3/16"	03520-3/16	03868-3/16
1/4"	03520-1/4	03868-1/4
5/16"	03520-5/16	03868-5/16
3/8"	03520-3/8	03868-3/8
1/2"	03520-1/2	03868-1/2
5/8"		03868-5/8
3/4"		03868-3/4
1"		03868-1
10mm	03520-10	03868-10

**Other sizes available upon request. To determine your collet type see page 92

ER Collet Nuts

- Power Coated to provide 40% more holding power than standard bearing nuts
- Safer: cutting tool is less likely to break free

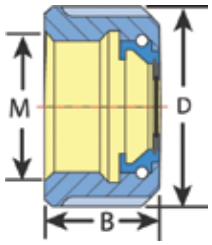


PART #	DESCRIPTION	D	B	M	WRENCH	*MAX TORQUE
46111	ER11 RH Collet Nut	19	11.8	M14 x .75	04608	20 ft/lbs
46116	ER16 RH Collet Nut	32	18.0	M22 x 1.5	04613	50 ft/lbs
46120	ER20 RH Collet Nut	35	19.5	M25 x 1.5	04614	75 ft/lbs
46125	ER25 RH Collet Nut	42	20.5	M32 x 1.5	04615	95 ft/lbs
46132	ER32 RH Collet Nut	50	23.0	M40 x 1.5	04616	125 ft/lbs
46140	ER40 RH Collet Nut	63	26.0	M50 x 1.5	04617	140 ft/lbs
E32NUT*	ER32 RH Collet Nut	50	23.0	M40 x 1.5	E32SPAN	130 ft/lbs
E40NUT*	ER40 RH Collet Nut	63	25.0	M50 x 1.5	E40SPAN	150 ft/lbs

*Bearing style nut

ER Mini-Nuts

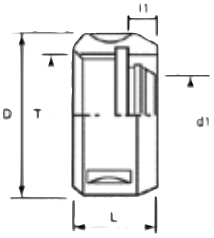
- Use High Speed Mini-Nuts for applications where speed exceeds 10,000 RPMs



PART #	DESCRIPTION	D	B	M	WRENCH	*MAX TORQUE
23108	ER8 Mini Nut	12	11	M10 x .75	04620	7 ft/lbs
23111	ER11 Mini Nut	16	12	M13 x .75	04621	14 ft/lbs
23116	ER16 Mini Nut	22	18	M19 x 1.0	04622	22 ft/lbs
23120	ER20 Mini Nut	28	19.5	M24 x 1.0	04623	25 ft/lbs
23125	ER25 Mini Nut	35	21	M24 x 1.0	04624	29 ft/lbs

TG Collet Nuts

- ▼ Balanced to 20,000 RPM
- ▼ "Power Coated" - No bearings to seize and fail

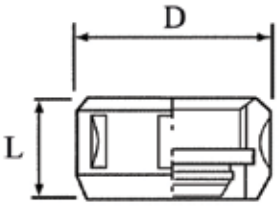


PART #	DESCRIPTION	D	d1	T	l1	L	WRENCH	*TORQUE
27500	TG75Collet Nut	1.88"	- -	1 1/2 - 12"	.32"	.94"	04018	100 ft/lbs
28110	TG100 Collet Nut	2.35"	1.12"	1 7/8 - 12"	.44"	1.18"	03691	100 ft/lbs

*Recommended torque is 80-90% of max value

Perske Collet Nuts

- ▼ Conform to DIN 6388 Standards



PART #	DESCRIPTION	D	L	WRENCH
03520	SYOZ 20 Collet Nut	35mm	20mm	22220
03638	SYOZ 25 Collet Nut	60mm	30mm	03691
S25NUT*	SYOZ 25 Collet Nut	60mm	30mm	S25HOOK

*Bearing style nut

Preset Torque Wrench

Proper torque on the screws is critical for safety and for the performance of the tool. Over tightening of the screw can cause it to "strip out" or cause an insert to crack. Under tightening can allow the insert to shift in the body and cause poor cut quality or even an unbalanced situation. To ensure proper tightening of the screws that hold inserts in place, a torque wrench is necessary. We offer this torque wrench in both Torx sizes to cover all of your needs when used with our insert tool bodies.

PART #	FOR USE:
T15TH	for use with 67115 screw
T20TH	for use with 67116 screw

Torque Wrench

Proper torque on the collet nut reduces collet wear, keeping tools securely in the toolholder, while saving you time and money. Benefits include: safety (proper torque reduces the possibility of tools pulling out of the holder); cost savings (proper torque extends the life of collets, tools and holders); and quality (proper torque assures maximum cutting accuracy).

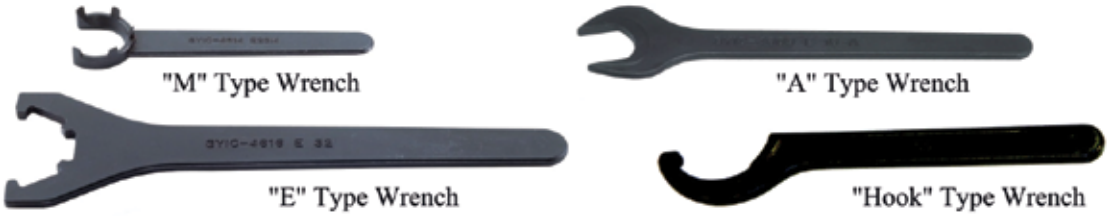
PART #	TORQUE RANGE	LENGTH	WEIGHT	SPIGOT
60TH	5-45 ft/lbs	12"	1 lb	16mm round
200TH	30-150 ft/lbs	16.5"	1.75 lbs	16mm round
300TH	45-228 ft/lbs	21.5"	2.5 lbs	16mm round

Collet Keys

Recommended torque is 80-90% of given value

PART #	COLLET NUT SIZE	WRENCH TYPE	MAX TORQUE
04580-16	ER16	Slotted	50 ft/lbs
04601-16	ER16 Hex	Hex	50 ft/lbs
04580-20	ER20	Slotted	75 ft/lbs
04602-20	ER20 Hex	Hex	75 ft/lbs
04603-25	ER25 Spanner	Slotted	95 ft/lbs
04587	ER25 Mini	Castle	29 ft/lbs
04604-32	ER32 Spanner	Slotted	125 ft/lbs
04605-40	ER40 Spanner	Slotted	140 ft/lbs
03690-25	SYOZ25/TG100	Hook	100 ft/lbs

Hand Wrenches



PART #	DESCRIPTION	NUT TYPE	LENGTH	WIDTH
04608	ER11 - A Wrench	A (Hex)	120mm	40mm
04609	ER16 - A Wrench	A (Hex)	140mm	53mm
04610	ER20 - A Wrench	A (Hex)	160mm	60mm
04613	ER16 - E Wrench	Slotted	160mm	55mm
04614	ER20 - E Wrench	Slotted	180mm	60mm
04615	ER25 - E Wrench	Slotted	206mm	65mm
04616	ER32 - E Wrench	Slotted	253mm	75mm
04617	ER40 - E Wrench	Slotted	289mm	90mm
04618	ER50 - E Wrench	Slotted	351mm	110mm
04620	ER8 - M Wrench	ER Mini	75mm	13mm
04621	ER11 -M Wrench	ER Mini	95mm	17mm
04622	ER16 - M Wrench	ER Mini	117mm	22.5mm
04623	ER20 - M Wrench	ER Mini	129mm	28.5mm
04624	ER25 - M Wrench	ER Mini	142.5mm	35.5mm
04018	TG75 - Wrench	Hook	253mm	46mm
03691	TG100/SYOZ25 Wrench	Hook	260mm	46mm
22220	SYOZ 20 Wrench	Hook	- -	34mm
E32SPAN	ER32 - E Wrench	Slotted	253mm	75mm
E40SPAN	ER40 - E Wrench	Slotted	289mm	90mm
S25HOOK	SYOZ 25 Wrench	Hook	260mm	46mm

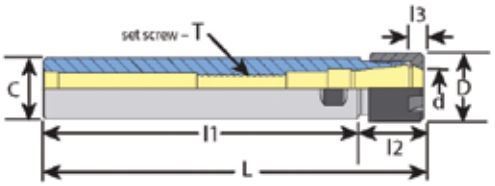
Spindle Wipers

- Keeps spindles and toolholders clean
- Removes contaminates to improve T.I.R.

PART #	TAPER	TOTAL LENGTH	TAPER LENGTH
07703	30	170mm	60mm
07704	40	188mm	78mm
07705	50	240mm	120mm
07711	HSK 63F	165mm	31mm

Straight Shank Extensions

- Works with any toolholder
- Precision ground pocket
- Includes ER mini nut
- Maximum 10,000 RPM

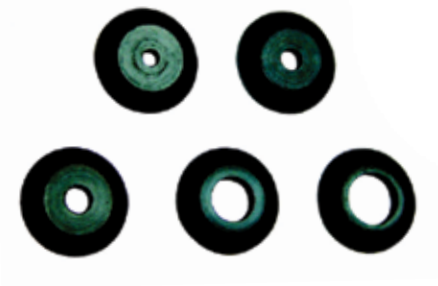


PART #	C	d	l1	L	l2	l3	D	WRENCH
04889	3/8"	ER 8M	100	124	24	6	12	04620
04891	1/2"	ER 11M	140	166.5	26.5	6.6	16	04621
04893	5/8"	ER 11M	140	158.5	18.5	6.6	16	04621
04895	1/2"	ER 16M	140	177	37	10.6	22	04622
04896	3/4"	ER 16M	140	165	25	10.6	22	04622
04894	3/4"	ER 20M	140	180	40	11.5	28	04623
04897	1"	ER 20M	140	168	28	11.5	28	04623
04898	3/4"	ER 25M	100	140	40	12	35	04624
04888	1"	ER 25M	140	190	50	12	35	04624

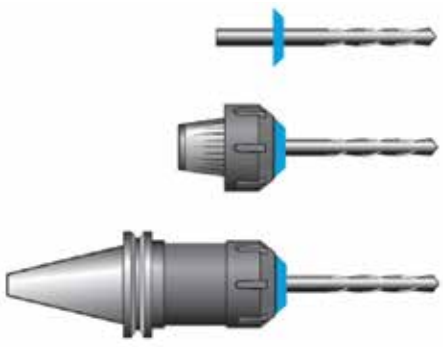
*Dimensions in millimeters unless otherwise noted

Dust Covers

- Eliminates cleaning collets
- Extends life of your collets
- Extends tool life by maintaining T.I.R.



PART #	DESCRIPTION	TOOL SHANK DIAMETER
DC32-1/4-5	5pc Dust Cover Set	1/4"
DC32-5/16-5	5pc Dust Cover Set	5/16"
DC32-3/8-5	5pc Dust Cover Set	3/8"
DC32-1/2-5	5pc Dust Cover Set	1/2"
DC32-5/8-5	5pc Dust Cover Set	5/8"
DC32-3/4-5	5pc Dust Cover Set	3/4"



Installation:

1 - Place dust cover on tool shank
2 - Insert tool into collet/nut assembly
3 - Tighten assembly into toolholder using proper torque

NOTE: Do not slide dust cover over cutting edge of tool as you may damage it.

Tightening Stands

- For HSK, ISO and BT Spindles
- Change Retention Knobs from underneath
- Bolts right onto workbench

PART #	DESCRIPTION	USED WITH TOOLHOLDER #
NTS-ISO30-36	ISO 30 Taper - 36mm flats	12213-W-63, 12213-W-90
NTS-ISO30-38	ISO 30 Taper - 38mm flats	NT-54300130
NTS-ISO30-47	ISO 30 Taper - 47mm flats	12213-W-50
NTS-BT30-41	BT 30 Taper - 41mm flats	06113-W-60
NTS-HSK63F-36	HSK 63F - 36mm flats	30000
NTS-HSK63F-38	HSK 63F - 38mm flats	41025
NTS-HSK63F-46	HSK 63F - 46mm flats	30001
VE330	Universal ISO-30	Used for any ISO-30 Taper
VE340	Universal HSK 63F	Used for any HSK 63F Taper

VE340 Model Stand

NTS Model Stand

Benchtop Toolsetter

This toolsetter allows you to measure tools off-line. You can measure tools in seconds and be ready for the next job while the machine is still in production. The toolsetter eliminates expensive downtime and costly machine damage which can occur while setting tools.

Instead of extensive bending and stretching of the operator starting and stopping the CNC machine, the operator pre-sets tools at their workbench.

PART #	DESCRIPTION	SIZE
727-Taper	Benchtop Toolsetter	16" H x 10" W x 6" D

Mono Aggregate Heads

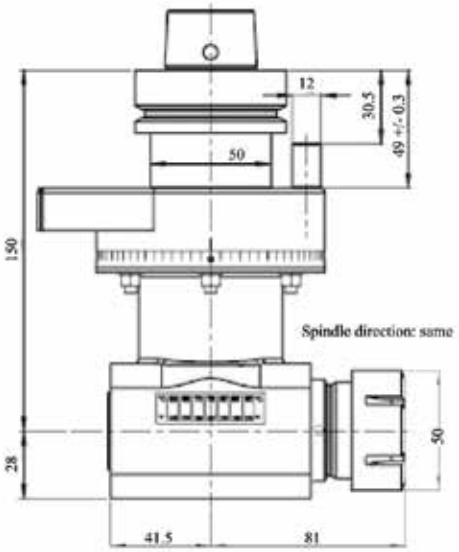
ONE SPINDLE OUTPUT

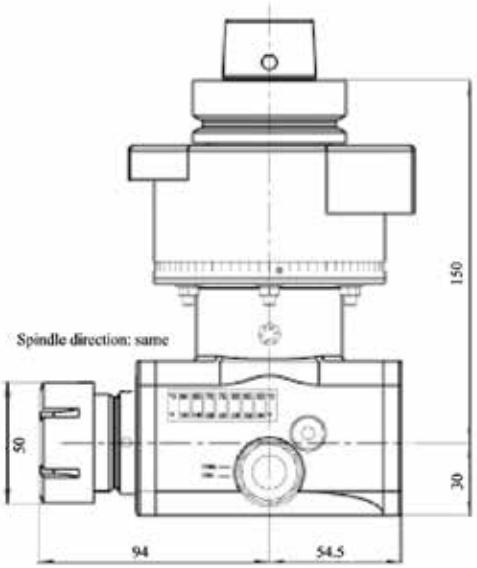
Mono output aggregates are an affordable way to add 4th axis capability to your CNC router. Perform routing, boring, mortising and sawing operations faster to increase profits. Choose from a wide variety of spindle outputs.

HSK 63F center spindle shown. Please specify your machine spindle and application.

	FUNCTION LINE GREASE LUBRICATED	ULTRA LINE OIL BATH LUBRICATED
Spindle Speed Max	10,000 RPM	10,000 RPM
Tool Speed Max	15,000 RPM	15,000 RPM
Rotation	Aggregate can be rotated 360˚	Aggregate can be rotated 360˚
Gear Ratio	1:1.48	1:1.48
Maximum Torque	15 ft/lbs	17 ft/lbs
Spindle Direction	Same as machine spindle	Same as machine spindle
Maximum Temperature	185˚ F	185˚ F
Spindle Outputs *	M5, R6, S1, S2, Modular	M5, R6, S1, S2, P1, P2, P3, P4, 05

*See Pages 106-107 for spindle output specifications





Duo Aggregate Heads

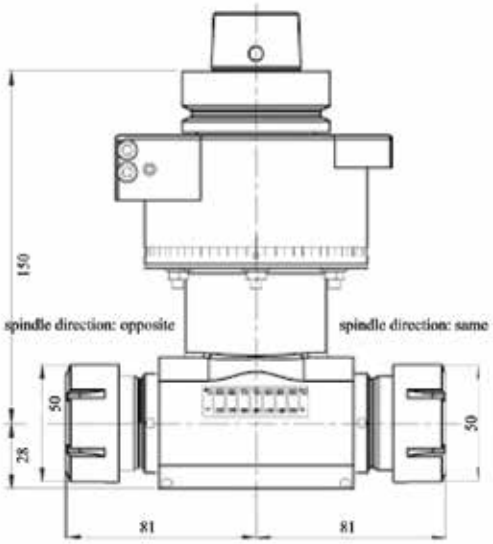
TWO SPINDLE OUTPUTS

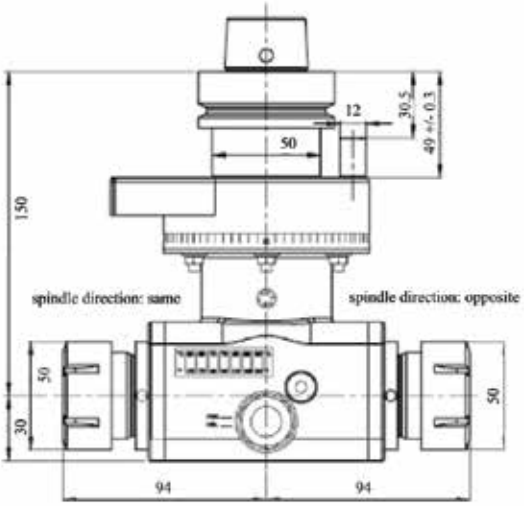
Use Duo aggregates for faster manufacturing when more than one tool is required. Choose from a wide variety of spindle outputs. Possibilities include routing, boring, mortising, and sawing operations.

HSK 63F center spindle shown. Please specify your machine spindle and application.

	FUNCTION LINE GREASE LUBRICATED	ULTRA LINE OIL BATH LUBRICATED
Spindle Speed Max	10,000 RPM	10,000 RPM
Tool Speed Max	15,000 RPM	15,000 RPM
Rotation	Aggregate can be rotated 360˚	Aggregate can be rotated 360˚
Gear Ratio	1:1.48	1:1.48
Maximum Torque	15 ft/lbs	17 ft/lbs
Spindle Direction	#1 clockwise, #2 opposite	#1 clockwise, #2 opposite
Maximum Temperature	185˚ F	185˚ F
Spindle Outputs *	M5, R6, S1, S2, Modular	M5, R6, S1, S2, P1, P2, P3, P4, 05

*See Pages 106-107 for spindle output specifications





Quattro Aggregate Heads

FOUR SPINDLE OUTPUTS

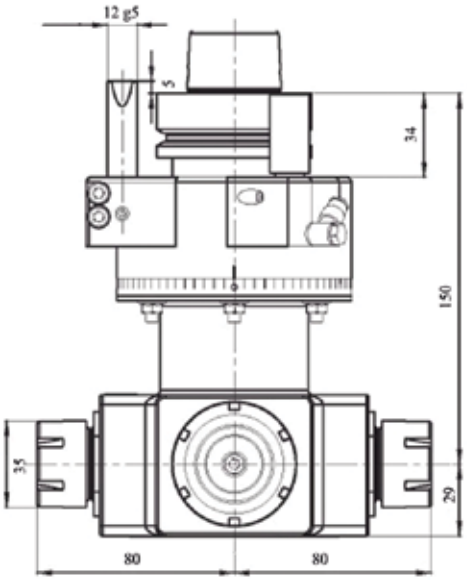
Quattro aggregate heads provide four tool spindles for more flexibility to combine operations. Choose from a wide variety of spindle outputs.

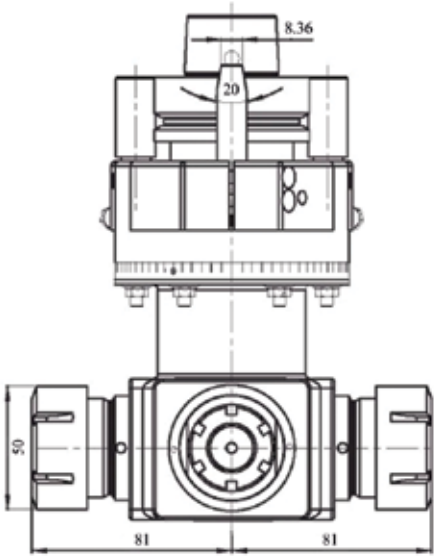
- Add 4th axis capability to your CNC
- Reduce the number of tool changes needed
- Features 2 - ER25 spindles for boring, and 2 - ER32 spindles for custom applications

HSK 63F center spindle shown. Please specify your machine spindle and application.

FUNCTION LINE (GREASE LUBRICATED)	
Spindle Speed Max	10,000 RPM
Tool Speed Max	15,000 RPM
Rotation	Aggregate can be rotated 360˚
Gear Ratio	1:1.48
Maximum Torque	15 ft/lbs
Maximum Temperature	185˚ F
Spindle Outputs *	M5, R6, Modular

*See Pages 106-107 for spindle output specifications





Vario Aggregate Heads

VARIABLE-ANGLE

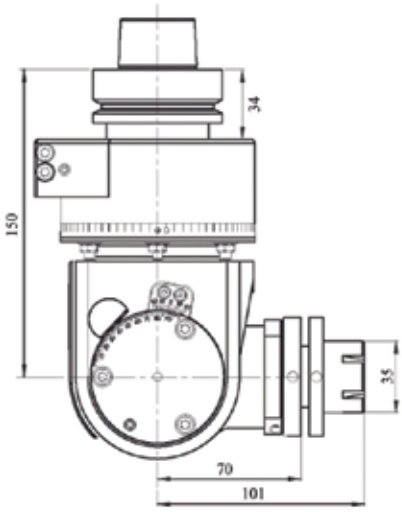
The Vario can operate at any angle within its range to perform “impossible” cuts, right on your CNC.

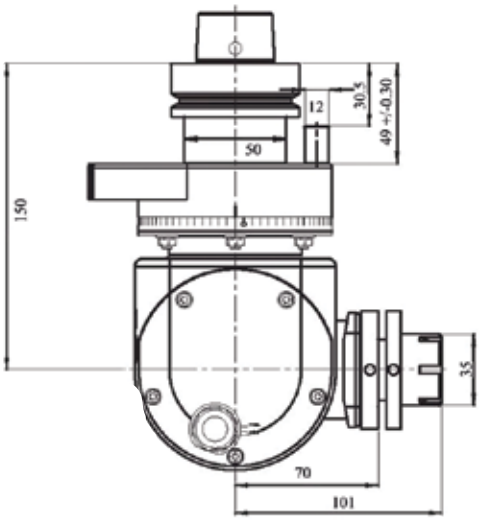
- Function Line Vario operates at any angle from 0˚ to 100˚ (100˚ adjustable)
- Ultra Line Vario operates at any angle from -100˚ to 100˚ (200˚ adjustable)

HSK 63F center spindle shown. Please specify your machine spindle and application.

	FUNCTION LINE GREASE LUBRICATED	ULTRA LINE OIL BATH LUBRICATED
Spindle Speed Max	10,000 RPM	10,000 RPM
Tool Speed Max	15,000 RPM	15,000 RPM
Rotation	Aggregate can be rotated 360˚	Aggregate can be rotated 360˚
Gear Ratio	1:1.48	1:1.48
Maximum Torque	15 ft/lbs	17 ft/lbs
Spindle Direction	Same as machine spindle	Same as machine spindle
Maximum Temperature	185˚ F	185˚ F
Spindle Outputs *	M5, R6, S1, S2, Modular	M5, R6, S1, S2, P1, P2, P3, P4, 05

*See Pages 106-107 for spindle output specifications



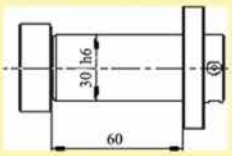


Spindle outputs are designed to hold specific tools to perform a variety of tasks. Some spindle outputs cannot be used with certain aggregates. Please contact us for help in selecting your outputs.

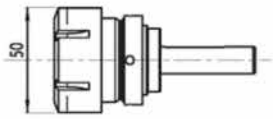
Modular spindle outputs (highlighted in yellow boxes) are all interchangeable on the aggregates that support the modular output system.

S1
Modular Saw Spindle

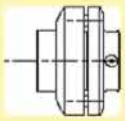
08
Modular Arbor



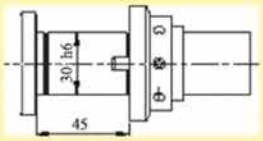
R6
ER32 collet and nut
Range: 3mm - 20mm



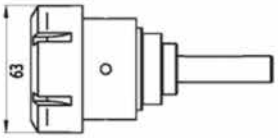
P1
Modular Saw Arbor
Range 1.5mm - 4mm tool shank



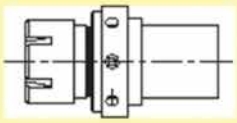
09
Modular Arbor



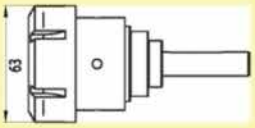
R7
ER 40 - for Soft Touch
Range: 4mm - 26mm



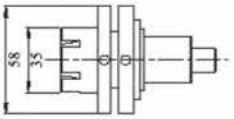
M5
Modular ER25



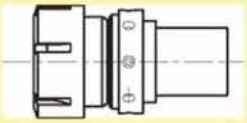
R7
Modular ER 40



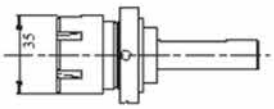
K1
ER25 collet and nut



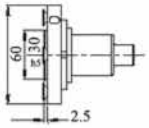
R6
Modular ER32



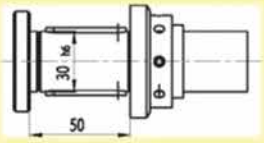
M5
ER 25 collet and nut
Range: 1mm - 16mm



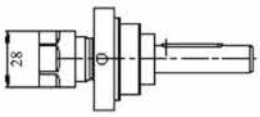
K2
Combi spindle, 45mm and
52mm bolt circle



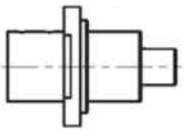
07
Modular Arbor



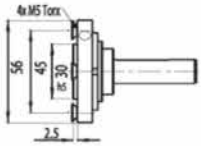
R3
ER 16 collet and nut
Range: 0.5mm - 10mm



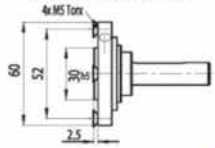
W3
Weldon
DIN 1835 BØ10H6



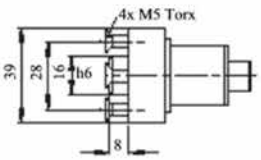
S1
Saw Spindle
45mm bolt circle



S2
Saw Spindle
52mm bolt circle

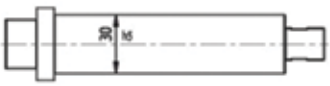


01
Saw Spindle

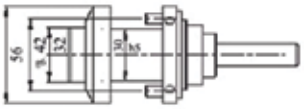


Additional Spindle Output Options

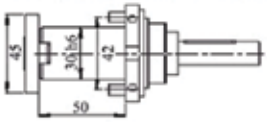
UHM12030
Spindle for Moulder Head



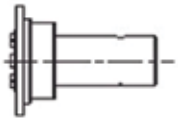
P4
Prolock Spindle
Range: 28mm - 32mm



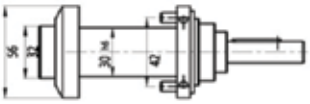
10
Special Spindle Ø30
2x Ø 6H7, 2x M5 -
bolt circle 42mm M10 centrical



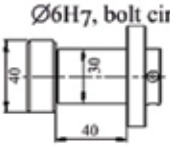
I3
ER16 collet inside
Range: 1mm - 10mm



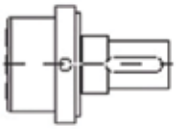
P5
Prolock Spindle
Range: 58mm - 62mm



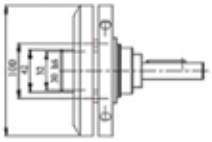
12
Special spindle Ø30 h5
2x M5 - bolt circle 45mm;
Ø6H7, bolt circle 42mm
M10 centrical



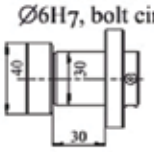
I5
ER25 collet inside
Range: 1mm - 16mm



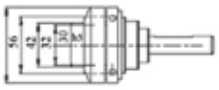
P6
Prolock Spindle
Range: 1.5mm - 6mm



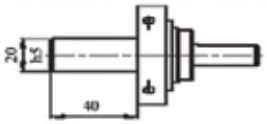
13
Special spindle Ø30 h5
2x M5 - bolt circle 45mm;
Ø6H7, bolt circle 42mm
M10 centrical



P1
Prolock Spindle
Range: 1.5MM - 6mm tool shank

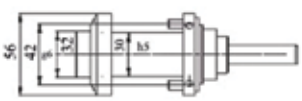


03
Special Spindle Ø20h5
2x Ø 6H7, 2x M6 -
bolt circle 32mm M10 centrical

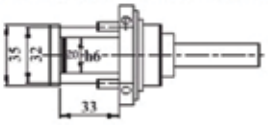


N1
Notch Whistle
DIN 1835 EØ6H7

P2
Prolock Spindle
Range: 48mm - 52mm tool shank

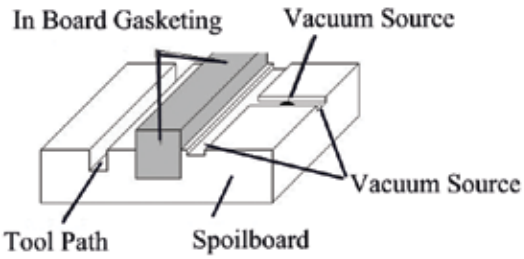


05
Special Spindle Ø20h6
2x Ø 5H7, 2x M5 -
bolt circle 32mm M10 centrical



In-Board Gasketing

If you are looking to make a dedicated spoilboard for long-term repetitive use, In-Board gasketing is the product that makes the most sense. In-Board gasketing, while requiring a bit more programming and set-up time to produce, offers customers a more consistent, longer lasting fixture.



These foam sealants are coated with a pressure sensitive adhesive on one side. The product has been created for those high volume applications which require the creation of a permanent or “dedicated” fixture. The demand to produce great quantities of a part on your CNC router behooves taking additional steps to construct your spoilboard.

Cutting a Channel for the Gasketing

A dedicated fixture requires a second channel to be programmed for the foam sealant. This gasketing channel is positioned parallel to the tool path, but offset to the interior side. Tip: the depth of the channel should be 3/4 the thickness of the sealant used, and cut this channel twice.

Fill the Channel with the Gasketing

Place the foam into the channel you have created. Don’t worry about the foam “rolling over” or “popping out” of the channel as the adhesive will hold the In-Board gasketing where it belongs.

Create Vacuum Holes

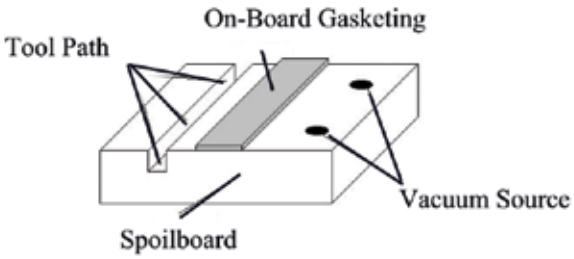
Drill one or more vacuum holes within each of the gasketed zones of your fixture. Tip: Create one or more vacuum channel(s) or a “pocket” to disperse the vacuum to the perimeter of the zone and make sure that each hole is over a channel in your CNC table or pods.

Ready to Rout

After you place the substrate onto the fixture, the sealant will compress slightly. When the vacuum system is engaged, the In-Board gasket recesses into its channel while maintaining a perfect vacuum seal.
Tip: closed cell foam creates the seal, while the density of the foam reduces the vibration.

PART #	THICKNESS	WIDTH	LENGTH	DENSITY
CRS 2512	1/4"	1/8"	39'	Low-Medium
CRS 2525	1/4"	1/4"	39'	Low-Medium
CRS 2538	1/4"	3/8"	39'	Low-Medium
CRS 2550	1/4"	1/2"	39'	Low-Medium

On-Board Gasketing



When you want to create a spoilboard for a short-run application, On-Board gasketing is the product that makes the most sense. Operators apply the adhesive-backed product directly to the surface of an MDF spoilboard. It is positioned inside the tool path that will be used to rout the particular part.

Start by adhering the foam gasket onto the surface of your fixture, position it parallel and fairly close to the interior side of the previously cut tool path channel. Next, create adequate vacuum holes inside this sealed border; when the vacuum system is engaged, the spoilboard will maintain a vacuum chamber using 1) the walls of the compressed sealant, 2) the underside of your substrate and 3) the top surface of your spoilboard.

Two rules for On-Board sealants: thinner is better than thicker and higher density is better than lower density.

PART #	THICKNESS	WIDTH	LENGTH	DENSITY
CR 06100	1/16"	1"	150'	Medium
CR 0625	1/16"	1/4"	150'	Medium
CR 0638	1/16"	3/8"	150'	Medium
CR 0650	1/16"	1/2"	150'	Medium

All-A-Board Gasketing

To be used either on or in your spoilboard. It has an adhesive on one side and works in many applications. All-A-Board indicates that it is thick enough to be used as an In-Board product in a shallow channel (usually about 3/32” deep) of a dedicated spoilboard. It is also thin enough to be used on the surface of a fixture as an On-Board gasket when working with extremely warped or uneven surfaced materials.

PART #	THICKNESS	WIDTH	LENGTH	DENSITY
CRS 1212	1/8"	1/8"	82'	Low-Medium
CRS 1225	1/8"	1/4"	82'	Low-Medium
CRS 1238	1/8"	3/8"	82'	Low-Medium
CRS 1250	1/8"	1/2"	82'	Low-Medium

Grid & Pod Gasketing

Grid and pod gasketing are products that do not have an adhesive. The proper size grid/pod gasket is determined by the channel size of the router. Try to fit the width of the channel snug, width-wise, then stick above the surface of the channel by roughing 1/16". It is time to replace the gasket when it starts to wear down and becomes flush with the channel depth.

PART #	THICKNESS	WIDTH	LENGTH	DENSITY
UXR 25 312	1/4"	5/16"	50'	Firm
UMG 25 312	1/4"	5/16"	75'	Medium
UMG 25 500	1/4"	1/2"	75'	Medium
XM 2550	1/4"	round	250'	Medium
XM 3150	5/16" (8mm)	round	100'	Medium

ZGRABber Gasketing

ZGRABber is a very firm type of on-board gasketing that has a rubber surface to help "grip" the part and prevent movement.

PART #	THICKNESS	WIDTH	LENGTH
GRAB-0338	1/32"	3/8"	54'

Spoilboard Covers

Are you having trouble holding down small parts? Are you forced to use skin cuts or membrane cutting techniques for your narrow parts? Are you spending far too much time routing and filling channels for gasketing for those parts which require custom fixtures? Then try something new: the Spoilboard Cover concept of cutting. This product uses a .062" thick low-density foam and is coated with a high shear acrylic pressure-sensitive coating. This product is available in rolls over 48" wide and over 10 feet in length; more than enough gasketing to utilize the entire surface of your CNC router. You will be cutting finished parts in minutes instead of hours.

The procedure is as follows:

1) Cover the cutting area of your spoilboard with a sheet of adhesive-coated gasketing and place the spoilboard onto your router.
2) Cut your pre-programmed tool path.
3) Next, run a secondary, offset program just to the inside of the tool path. You are now using the router to create a custom fitted spoilboard for your small parts application.
4) Now remove the foam from your weeded or "pocketed" areas.
5) Finally, drill vacuum holes in those locations where you have weeded or removed the SBC gasketing. This procedure will maximize the vacuum surface area for the smallest of parts. You can now run your router at higher feed rates and it will cut cleaner with fewer problems than ever before.

PART #	THICKNESS	WIDTH	LENGTH	DENSITY
SBC CE 0648	1/16"	48"	11'	Low
SBC CE 1224	1/8"	24"	12'	Low
SBC CR 0324	1/32"	24"	24'	Medium
SBC CR 0656	1/16"	56"	11'	Medium

All of us here at Vortex Tool Company Inc. sincerely hope you enjoy working with our latest catalog. Vortex Tool manufactures a full range of cutting tools and also distributes major cutting tool brands such as Amana, CMT USA, Forest City Tool, Freud, Morris Wood Tool, Nordic Saw & Tool, Popular Saw, RKO Saw, T-Tool, Techniks, Whiteside Tool, Wisconsin Knife Works, WL Fuller to name a few. If you are unable to locate the tool you require, please contact us and we can help you find what you are looking for.

If you'd like to be kept informed of the latest product news and updates, like us on Facebook at www.facebook.com/vortextool.

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Fax: 715-355-7353

Email: info@vortextool.com
Website: www.vortextool.com

Order History

DATE	PART NUMBER	APPLICATION

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