

ABOUT DIMAR CANADA



Dimar Canada features the most extensive line of cutting tools for the woodworking, plastics and aluminum industries. Dimar tools are distributed worldwide where they have become a byword for Premium Quality and Reliability. DIMAR features a wide-ranging line of products aimed to exceed your expectations whether you are an Industrial user or a Do-It-Yourselfer.

Dimar Canada has been recognized by the Business Advisory Services Branch of the Government of Ontario to being a committed Corporation to "Thinking Green" and seizing green-based opportunities for growth. We understand that, in today's world, to grow your economy you must green your company.

We invite you, to join us in our quest for a better world.

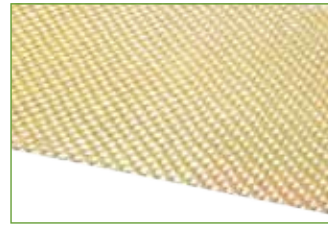
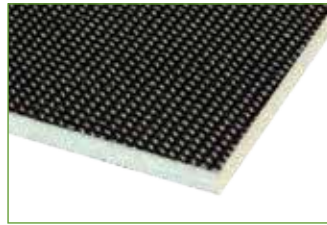
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COMPOSITE MATERIALS

Composite materials are made from reinforcing fibers and a polymer matrix, which serves to bind the two materials together. When combined these two individual materials form a single material that has many desirable characteristics including very high specific strength, corrosion resistance, impact resistance, and excellent durability.



FRP FIBER REINFORCED PLASTIC

Today's most popular composites use reinforcing fibers such as fiberglass, carbon, and aramid and are held together by a matrix of plastic resin that can be thermoset or thermoplastic.

DIFFICULTIES IN MACHINING COMPOSITES

TOOL LIFE

While these fibers offer great strength and durability to composite components they are also extremely abrasive and therefore negatively impact tool life.

MACHINING HEAT GENERATION

Not all plastic matrix materials can withstand the heat generated during the machining of parts made from composites. Excessive heat generated during machining can melt the polymer matrix and damage the composite if care is not exercised.

COMPOSITE DELAMINATION

Components made from composite materials can be very susceptible to delamination caused by machining. The damage may not be apparent to the naked eye but under magnification separation of the layers caused by the tool can be seen. This damage can be caused by excessive tool wear and improper tool selection.



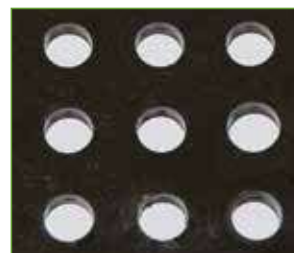
Damaged composites - incorrect tool choice



Damaged



Clean cut using correct tooling

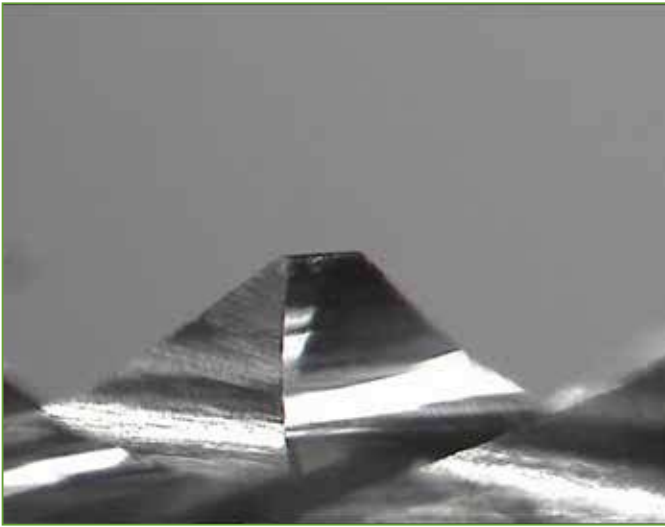


Clean

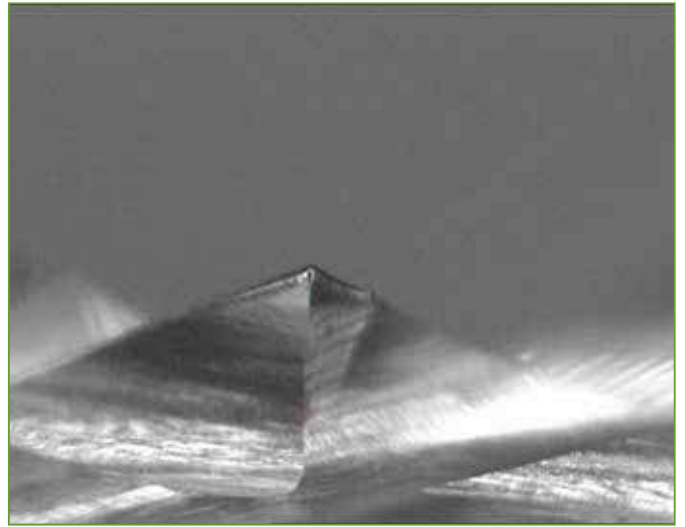
DIMAR HAS RECOGNIZED THE CHALLENGES OF MACHINING COMPOSITE MATERIALS AND HAVE DEVELOPED A GROUP OF TOOLS THAT OFFER SOLUTIONS TO THESE DEMANDS.

THE DIFFERENCE - DIMAR TOOLS

With over 50 years' experience in developing and manufacturing cutting tools for diverse applications and industries, Dimar has used this experience to create cutting tools that can offer greater benefits over competition and meet the challenges faced by users machining modern composite materials.



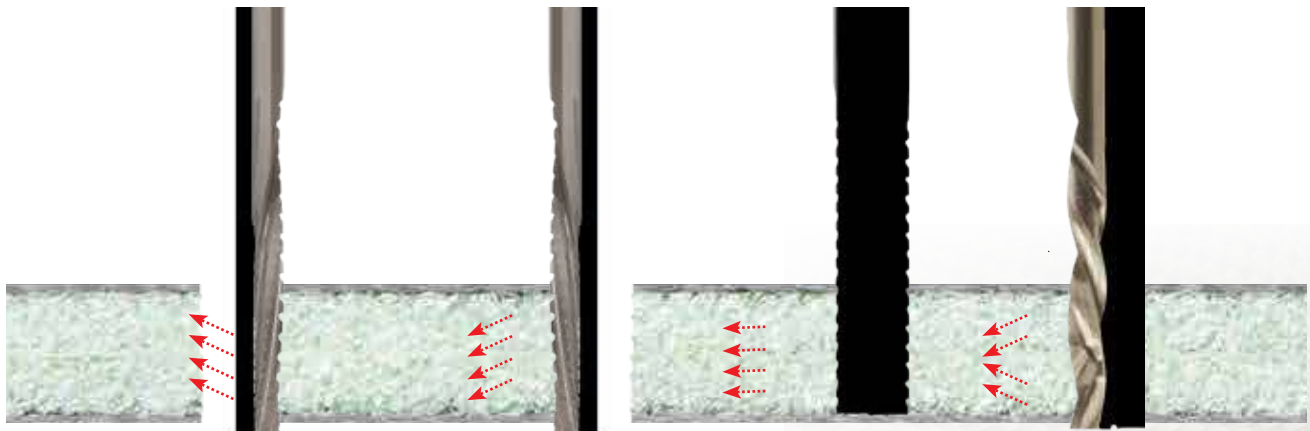
Dimar Burr tool - After 100 passes on CFRP



Competitor's Burr tool - After 100 passes on CFRP

CHIP DIRECTION

The Dimar tool range allows the user to select the chip direction based on part geometry and composition. By choosing the correct helix angle the user can optimize the cutting quality and minimize chipping. Selections include right hand helix (up shear), left hand helix (down shear), straight helix and a combination of up shear and down shear on the same tools. Your Dimar representative will help you with the proper selection.

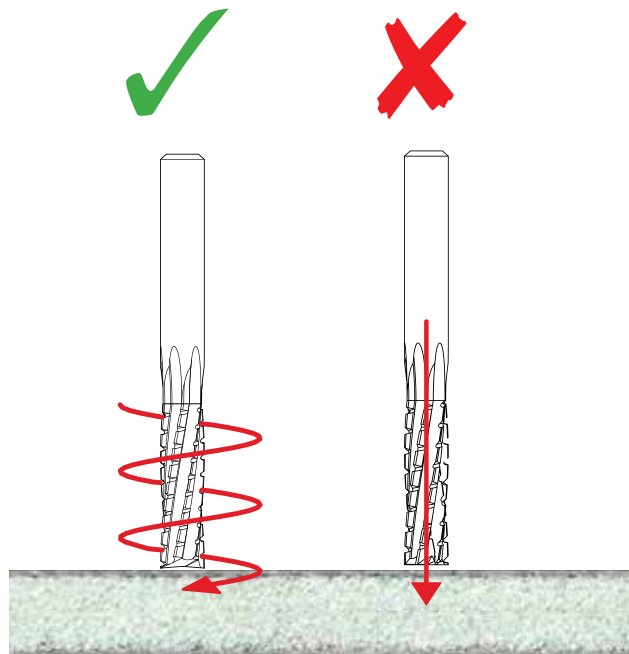


MULTI-FLUTE TOOLS

Tools that are designed to machine composite materials will have more flutes than the tools for wood, aluminum or steel. With more cutting surfaces engaged in the part, the load on each cutting edge is reduced. As a result, tool life and finished part quality is significantly increased. Dimar Multi flute tools are highly recommended for machining of thin composite materials since delamination risks are reduced.

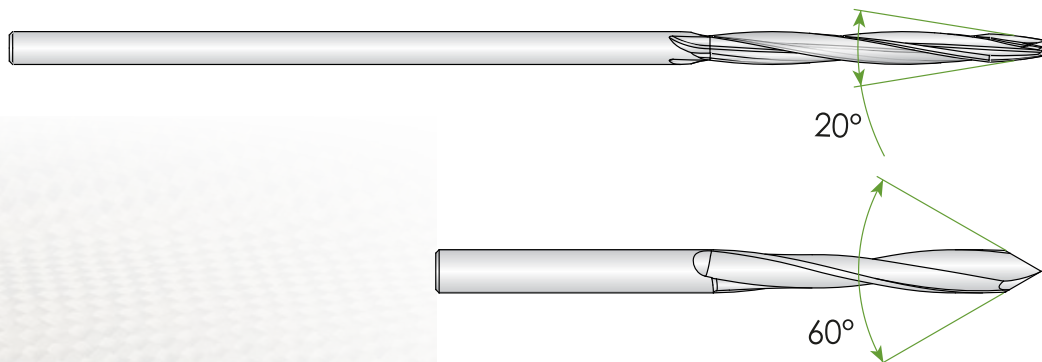
PART PENETRATION

Dimar's geometry at the tool end provides the ability to penetrate the part the moment the tool starts working. The large number of tool flutes limits the chip out flow during initial penetration. For this reason it is recommended that a spiral motion is used.



THROUGH HOLES

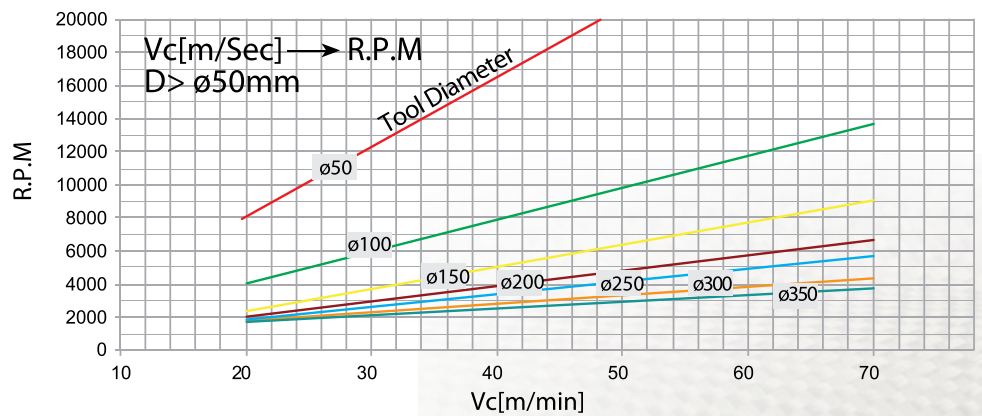
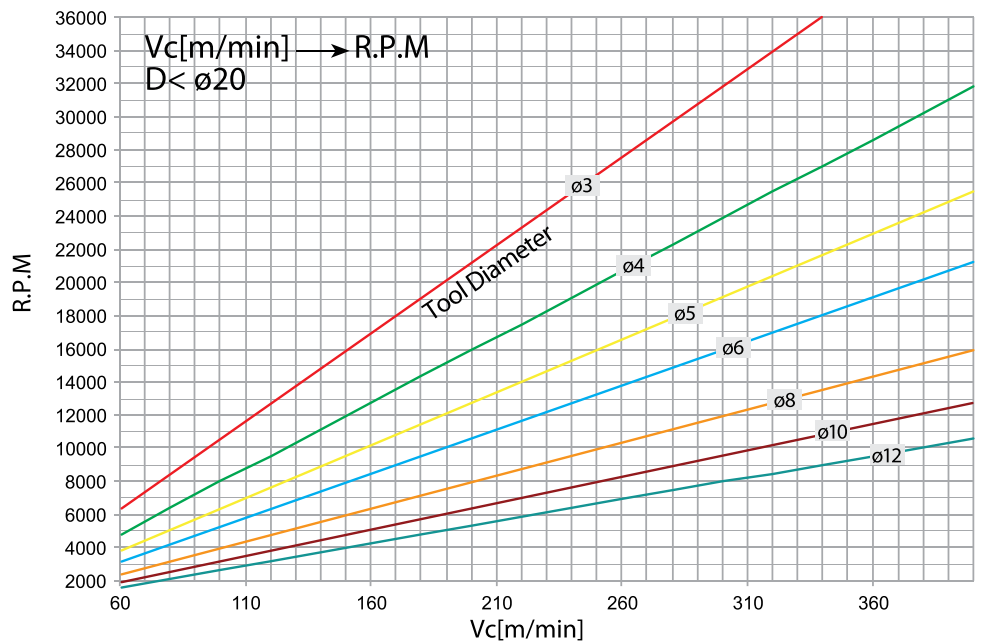
For through-holes in composite parts, Dimar recommends that a head of between 20°-30° be used when manual drilling is used. This geometry will provide the highest quality edge finish overall. For controlled feed drilling it is suggested that a tool with "up shear" helix be used.



















CVD (DIAMOND) TOOLS

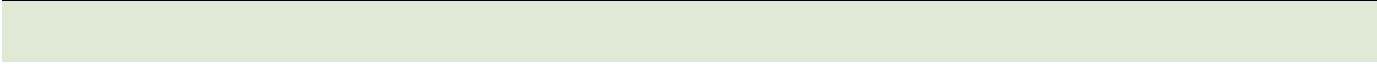
Some composite machining applications will require the use of high end tools referred to as CVD tools. Dimar's CVD (chemical vapor deposition) tools are comprised of 100% pure diamond permanently embedded on to tungsten carbide. The diamond coating can be applied at a thickness of 3-30 micron depending on the specific application.

Dimar's CVD tool range offers advantages and benefits when compared to traditional steel tools. Diamond, with its renowned reputation for hardness, offers significantly enhanced wear resistance in addition to a lower coefficient of friction and better heat dissipation. CVD tools have been known to last up to 10 times longer than regular tools. In certain applications using a CVD tool may require higher tool speeds (100 - 200% faster than non-CVD tools) as well as higher feed rates (70-150% faster).



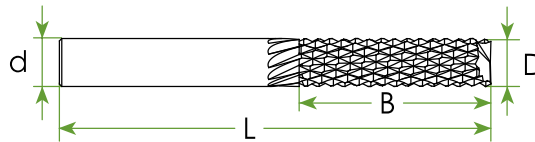
TOOLS FOR COMPOSITES MATERIALS

| Tool type | | Tools | Page |
|-----------|---|--|-------|
| Milling | Burrs |  | 10 |
| | Multi Flutes |  | 11 |
| | Up & Down Compression Endmill |  | 14 |
| | Armid Endmill |  | 15 |
| | Electro Plated Endmill |  | 16 |
| | Hogger Endmill |  | 17 |
| Drilling | Manual Feed - through hole drills |  | 19 |
| | Controlled Feed - through hole drills |  | 20 |
| | Manual through hole step drills |  | 21 |
| | Blind holes drills with scorer |  | 22 |
| | Blind holes drills chamfer corners |  | 23 |
| | Countersink |  | 24 |
| | Countersink with integral pilot for microstop |  | 25 |
| | Counterbore with exchangeable pilot for microstop |  | 26 |
| | Counterbore with exchangeable pilot |  | 27 |
| Saws | Electro plating diamond saws |  | 29-30 |



| Composite material Type | | | | | |
|-------------------------|--|---|---|-------------------------------|------------|
| | GFRP Glass Fiber Reinforced Plastic | CFRP Carbon Fiber Reinforced Plastic | AFRP Aramid Fiber Reinforced Plastic | MMC Metal Matrix Composite | Honey Comb |
| | ✓ | ✓ | | | |
| | ✓ | ✓ | | ✓ | |
| | ✓ | ✓ | | ✓ | |
| | | | ✓ | | |
| | ✓ | ✓ | ✓ | ✓ | |
| | | | | | ✓ |
| | ✓ | ✓ | ✓ | | ✓ |
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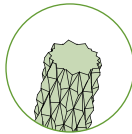
BURRS TOOLS



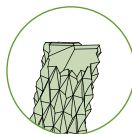
Metric

| D | B | L | d | Plane End | "Fish Tail" End | "Multi flutes" End+CA |
|----|----|-----|----|-----------|-----------------|-----------------------|
| 3 | 9 | 50 | 6 | 73001013 | 73001093 | CA73001173 |
| 4 | 12 | 50 | 6 | 73001023 | 73001103 | CA73001183 |
| 5 | 15 | 50 | 6 | 73001033 | 73001113 | CA73001193 |
| 6 | 25 | 75 | 6 | 73001043 | 73001123 | CA73001203 |
| 8 | 32 | 76 | 8 | 73001055 | 73001135 | CA73001215 |
| 10 | 28 | 80 | 10 | 73001067 | 73001147 | CA73001227 |
| 10 | 40 | 90 | 10 | 73001077 | 73001157 | CA73001237 |
| 12 | 50 | 100 | 12 | 73001089 | 73001169 | CA73001249 |

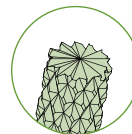
Plaine End



Fish Tail End



Multi Flutes End



Imperial

| D | B | L | d | Plane End | "Fish Tail" End | "Multi flutes" End+CA |
|-------|--------|--------|-------|-----------|-----------------|-----------------------|
| 1/8" | 3/8" | 2" | 1/4" | 73001254 | 73001334 | CA73001414 |
| 3/16" | 5/8" | 2" | 1/4" | 73001264 | 73001344 | CA73001424 |
| 1/4" | 3/4" | 2" | 1/4" | 73001274 | 73001354 | CA73001434 |
| 1/4" | 1" | 2 1/2" | 1/4" | 73001284 | 73001364 | CA73001444 |
| 5/16" | 1 1/4" | 3" | 5/16" | 7300129Z | 7300137Z | CA7300145Z |
| 3/8" | 1 1/4" | 3 1/4" | 3/8" | 73001306 | 73001386 | CA73001466 |
| 3/8" | 1 1/2" | 3 1/4" | 3/8" | 73001316 | 73001396 | CA73001476 |
| 1/2" | 2" | 4" | 1/2" | 73001328 | 73001408 | CA73001488 |

MACHINING CONDITIONS RECOMMENDATION

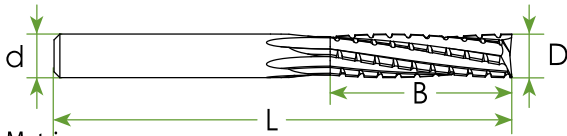
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.1-0.4 | 200-350 | 0.2-0.6 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.1-0.4 | 200-400 | 0.2-0.6 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | - | - | - | - |

MILLING - STRAIGHT ENDMILLS

MULTI FLUTES ENDMILL - UP SHEAR

APPLICATION

Solid tungsten carbide endmill suitable for sizing ,pockets and milling holes, fine-finish. Upcut spiral for optimum chip flow and improved finish on the bottom of the FRP parts.For use on routers and machining centers with or without CNC systems.



Metric

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|----|----|-----|----|---------------|----------|------------|
| 6 | 25 | 60 | 6 | 6 | 73003013 | CA73003013 |
| 8 | 32 | 76 | 8 | 8 | 73003025 | CA73003025 |
| 10 | 40 | 90 | 10 | 10 | 73003037 | CA73003037 |
| 12 | 35 | 100 | 12 | 12 | 73003049 | CA73003049 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|-------|--------|--------|-------|---------------|----------|------------|
| 1/4" | 1" | 2 1/2" | 1/4" | 6 | 73003054 | CA73003054 |
| 5/16" | 1 1/4" | 3" | 5/16" | 9 | 7300306Z | CA7300306Z |
| 3/8" | 1 1/2" | 3 1/4" | 3/8" | 10 | 73003076 | CA73003076 |
| 1/2" | 2" | 4" | 1/2" | 12 | 73003088 | CA73003088 |



MACHINING CONDITIONS RECOMMENDATION

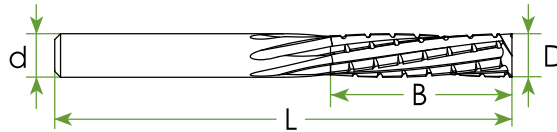
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|------------------|---------------|------------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.08-0.25 | 200-350 | 0.15-0.4 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.08-0.25 | 200-400 | 0.15-0.4 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | 60-80 | 0.005-0.007 | - | - |

MULTI FLUTES ENDMILL - DOWN SHEAR



APPLICATION

Solid tungsten carbide endmill suitable for sizing ,pockets and milling holes, fine finish. Upcut spiral for optimum chip flow and improved finish on the bottom of the FRP parts.For use on routers and machining centers with or without CNC systems.



Metric

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|----|----|-----|----|---------------|----------|------------|
| 6 | 25 | 60 | 6 | 6 | 73005013 | CA73005013 |
| 8 | 32 | 76 | 8 | 8 | 73005025 | CA73005025 |
| 10 | 40 | 90 | 10 | 10 | 73005037 | CA73005037 |
| 12 | 35 | 100 | 12 | 12 | 73005049 | CA7300549 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|-------|--------|--------|-------|---------------|----------|------------|
| 1/4" | 1" | 2 1/2" | 1/4" | 6 | 73005054 | CA73005054 |
| 5/16" | 1 1/4" | 3" | 5/16" | 8 | 7300506Z | CA7300506Z |
| 3/8" | 1 1/2" | 3 1/4" | 3/8" | 10 | 73005076 | CA73005076 |
| 1/2" | 2" | 4" | 1/2" | 12 | 73005088 | CA73005088 |

MACHINING CONDITIONS RECOMMENDATION

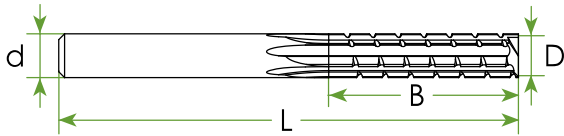
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.08-0.25 | 200-350 | 0.15-0.4 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.08-0.25 | 200-400 | 0.15-0.4 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | 30-600 | 0.005-0.007 | - | - |

MILLING - STRAIGHT ENDMILLS

MULTI FLUTES ENDMILL- STRAIGHT SHEAR

APPLICATION

Solid tungsten carbide endmill suitable for sizing ,pockets and milling holes. For use on routers and machining centers with or without CNC systems.

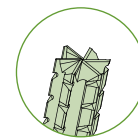


Metric

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|----|----|-----|----|---------------|----------|------------|
| 6 | 25 | 60 | 6 | 6 | 73007013 | CA73007013 |
| 8 | 32 | 76 | 8 | 8 | 73007025 | CA73007025 |
| 10 | 40 | 90 | 10 | 10 | 73007037 | CA73007037 |
| 12 | 35 | 100 | 12 | 12 | 73007049 | CA73007049 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|-------|--------|--------|-------|---------------|----------|------------|
| 1/4" | 1" | 2 1/2" | 1/4" | 6 | 73007054 | CA73007054 |
| 5/16" | 1 1/4" | 3" | 5/16" | 8 | 7300706Z | CA7300706Z |
| 3/8" | 1 1/2" | 3 1/4" | 3/8" | 10 | 73007076 | CA73007076 |
| 1/2" | 2" | 4" | 1/2" | 12 | 73007088 | CA73007088 |



MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.08-0.25 | 200-350 | 0.15-0.4 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.08-0.25 | 200-400 | 0.15-0.4 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | 60-80 | 0.005-0.007 | - | - |

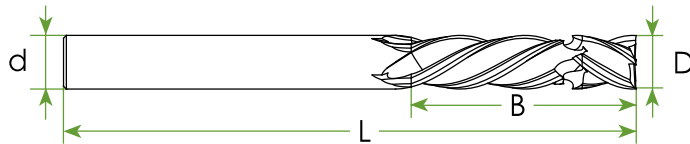
MILLING - STRAIGHT ENDMILLS

UP & DOWN COMPRESSION ENDMILL



APPLICATION

Solid tungsten carbide endmill suitable for sizing ,pockets and milling holes, fine-finish, with high feed rate on FRP parts. carbide for maximum durability on abrasive materials. Upcut spiral combined with downcut spiral for improved finish and prevents delamination on top and bottom. For use on routers and machining centers with or without CNC systems.



Metric

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|----|----|-----|----|---------------|----------|------------|
| 6 | 20 | 60 | 6 | 4+4 | 73009013 | CA73009013 |
| 8 | 32 | 76 | 8 | 4+4 | 73009025 | CA73009025 |
| 10 | 40 | 90 | 10 | 4+4 | 73009037 | CA73009037 |
| 12 | 50 | 100 | 12 | 6+6 | 73009049 | CA73009049 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated | CA coating |
|-------|--------|--------|-------|---------------|----------|------------|
| 1/4" | 1" | 2 1/2" | 1/4" | 4+4 | 73009054 | CA73009054 |
| 5/16" | 1.1/4" | 3" | 5/16" | 4+4 | 7300906Z | CA7300906Z |
| 3/8" | 1 1/2" | 3 1/2" | 3/8" | 4+4 | 73009076 | CA73009076 |
| 1/2" | 1 3/8" | 4" | 1/2" | 6+6 | 73009088 | CA73009088 |

MACHINING CONDITIONS RECOMMENDATION

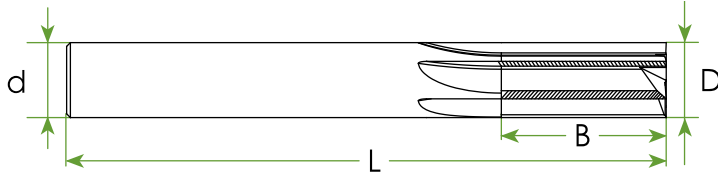
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.03-0.07 | 200-350 | 0.05-0.13 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.03-0.07 | 200-400 | 0.05-0.13 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | 30-600 | 0.005-0.007 | 30-600 | 0.005-0.007 |

MILLING - STRAIGHT ENDMILLS

ARAMID ENDMILL

APPLICATION

Solid tungsten carbide endmill suitable for sizing ,pockets and milling holes in AFRP parts with resine, fine finish. Carbide for maximum durability. For use on routers and machining centers with or without CNC systems.

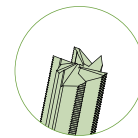


Metric

| D | B | L | d | No. of Flutes | Uncoated |
|----|----|----|----|---------------|----------|
| 6 | 16 | 60 | 6 | 2+2 | 73011013 |
| 10 | 22 | 80 | 10 | 2+2+2 | 73011027 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated |
|-------|------|--------|-------|---------------|----------|
| 1/4" | 5/8" | 2 1/2" | 1/4" | 2+2 | 73011034 |
| 3/16" | 5/8" | 2 1/2" | 3/16" | 2+2 | 7301105z |
| 3/8" | 7/8" | 3 1/4" | 3/8" | 2+2+2 | 73011046 |



MACHINING CONDITIONS RECOMMENDATION

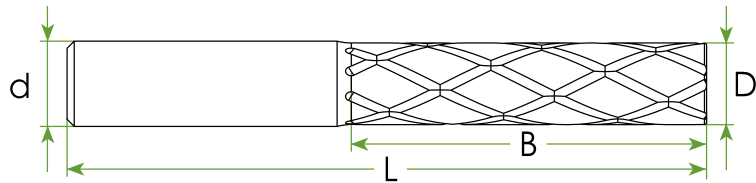
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | 80-100 | 0.1-0.2 | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | - | - | - | - |

ELECTRO PLATED ENDMILL



APPLICATION

Alloy steel endmill coated with diamonds suitable for sizing and pockets milling on FRP or metal matrix parts, fine-finish. For use on routers and machining centers with or without CNC systems.



Metric

| D | B | L | d | Diamond Coated | |
|----|----|----|----|----------------|------------|
| | | | | Fine | Rough |
| 3 | 9 | 45 | 6 | Ca73013013 | Ca73014013 |
| 4 | 12 | 50 | 6 | Ca73013023 | Ca73014023 |
| 5 | 15 | 55 | 6 | Ca73013033 | Ca73014033 |
| 6 | 25 | 60 | 6 | Ca73013043 | Ca73014043 |
| 8 | 30 | 65 | 8 | Ca73013055 | Ca73014055 |
| 10 | 40 | 80 | 10 | Ca73013067 | Ca73014067 |
| 12 | 50 | 90 | 12 | Ca73013079 | Ca73014079 |

Imperial

| D | B | L | d | Diamond Coated | |
|-------|--------|--------|-------|----------------|------------|
| | | | | Fine | Rough |
| 1/8" | 3/8" | 1 3/4" | 1/4" | Ca73013084 | Ca73014084 |
| 5/32" | 1/2" | 2" | 1/4" | Ca73013094 | Ca73014094 |
| 3/16" | 5/8" | 2 1/4" | 1/4" | Ca73013104 | Ca73014104 |
| 1/4" | 1" | 2 1/2" | 1/4" | Ca73013114 | Ca73014114 |
| 5/16" | 1 1/4" | 2 1/2" | 5/16" | Ca7301312Z | Ca7301412Z |
| 3/8" | 1 5/8" | 3 1/4" | 3/8" | Ca73013136 | Ca73014136 |
| 1/2" | 2" | 4 1/2" | 1/2" | Ca73013148 | Ca73014148 |

MACHINING CONDITIONS RECOMMENDATION

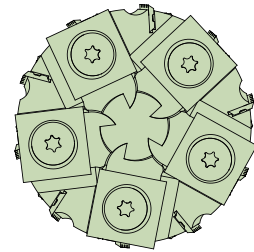
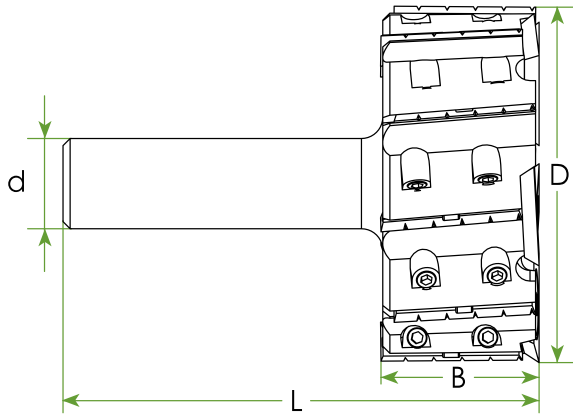
| Type of composite materials | Without Coating | | Electro plated | |
|--|-----------------|---------------|----------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Sec) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | - | - | 40-70 | 0.005-0.1 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | - | - | 40-70 | 0.005-0.1 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | 40-70 | 0.005-0.1 |
| HONEY COMB | - | - | | |
| MMC Metal Matrix Composite | - | - | 40-70 | 0.005-0.008 |

MILLING

HOGGER ENDMILL

APPLICATION







Alloy steel body with disposable tungsten carbide knives suitable for sizing and flatness of honey comb parts. Disposable tungsten carbide inserts for maximum durability.



Metric

| D | B | L | d | No. of Flutes | Uncoated |
|----|----|----|----|---------------|----------|
| 50 | 22 | 67 | 12 | 10 | 73015018 |

SPARE PARTS

|  |  |  |  |  |  |
|---|---|---|---|--|---|
| T.C. Blade | T.C. Blade | Torx screw | Allen screw | Torx key | Allen key |
| # 320 838 7 | # 300 850 3 | #193 370 0 | #193 035 0 | #194 106 0 | #194 008 0 |
| 20x5.5x11 | 14x14x2 | M5x6.1 | M3x4 | T20 | S1.5 |

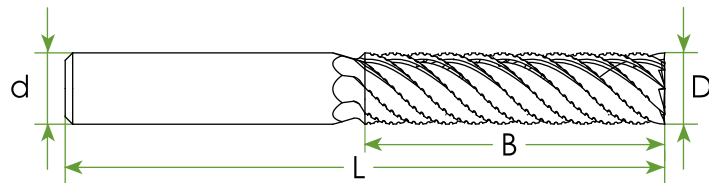
MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | 40-100 | 0.3-1 | - | - |
| MMC Metal Matrix Composite | - | - | - | - |



APPLICATION

Solid tungsten carbide endmill, suitable for sizing and flatness of honey comb parts. Carbide will offer maximum durability. For use on routers and machining centers with or without CNC systems.



Metric

| D | B | L | d | No. of Flutes | Uncoated |
|----|----|----|----|---------------|----------|
| 10 | 40 | 80 | 10 | 8 | 73017017 |

Imperial

| D | B | L | d | No. of Flutes | Uncoated |
|------|------|----|------|---------------|----------|
| 3/8" | 7/8" | 3" | 3/8" | 8 | 73017026 |

MACHINING CONDITIONS RECOMMENDATION

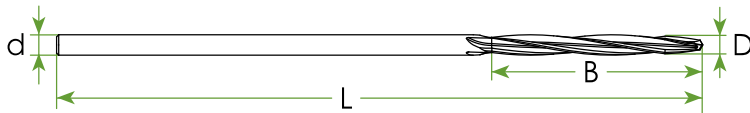
| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | 40-100 | 0.3-1 | - | - |
| MMC Metal Matrix Composite | - | - | - | - |

DRILLING - SOLID CARBIDE DRILLS

MANUEL FEED THROUGH HOLE DRILLS

APPLICATION

Solid tungsten carbide drill, suitable for making clean through holes by manual feed. Carbide will offer maximum durability.



Imperial

| D | B | L | d | Uncoated |
|---------|----|----|---------|----------|
| 0.1285" | 2" | 6" | 0.1285" | 7302301Z |
| 0.190" | 2" | 6" | 0.190" | 7302302Z |
| 0.204" | 2" | 6" | 0.204" | 7302303Z |
| 0.2244" | 2" | 6" | 0.2244" | 7302304Z |
| 0.250" | 2" | 6" | 0.250" | 73023054 |
| 0.257" | 2" | 6" | 0.257" | 7302306Z |
| 0.269" | 2" | 6" | 0.269" | 7302307Z |
| 0.3125" | 2" | 6" | 0.3125" | 7302308Z |



MACHINING CONDITIONS RECOMMENDATION

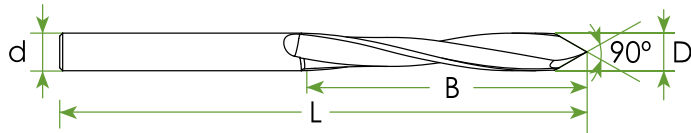
| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | Max 6000 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | Max 6000 |
| MMC Metal Matrix Composite | - |

CONTROLLED FEED THROUGH HOLE DRILLS



APPLICATION

Solid tungsten carbide drill, suitable for making clean through holes by controlled feed.



Metric / Imperial

| D | B | L | d | Mirror finish | CA coating |
|-------|----------|------|-------|---------------|------------|
| 2.5 | 20 | 55 | 3 | 7302513z | CA7302513z |
| 2.5 | 13 | 50 | 3 | 7302518z | CA7302518z |
| 3 | 15 | 50 | 3 | 7302519z | CA7302519z |
| 3.1 | 15 | 50 | 3 | 7302520z | CA7302520z |
| 3.1 | 20 | 55 | 3 | 7302517z | CA7302517z |
| 3.25 | 20 | 55 | 4 | 7302514z | CA7302514z |
| 4.1 | 40 | 76 | 6 | 73025013 | CA73025013 |
| 4.2 | 20 | 55 | 5 | 7302515z | CA7302515z |
| 5.04 | 36 | 76 | 6 | 73025033 | CA73025033 |
| 6 | 36 | 76 | 6 | 73025043 | CA73025043 |
| 6 | 40 | 76 | 6 | 73025053 | CA73025053 |
| 6.7 | 35 | 100 | 8 | 7302516z | CA7302516z |
| 10 | 2 1/2" | 102 | 10 | 73025107 | CA73025107 |
| 1/2" | 3" | 4" | 1/2" | 73025128 | CA73025128 |
| 1/4" | 1 27/64" | 3" | 1/4" | 73025064 | CA73025064 |
| 1/4" | 2" | 3.5" | 1/4" | 73025074 | CA73025074 |
| 3/16" | 40 | 3" | 6 | 73025023 | CA73025023 |
| 3/8" | 63 | 4" | 3/8" | 73025096 | CA73025096 |
| 5/16" | 50 | 89 | 5/16" | 7302508z | CA7302508z |
| 7/16" | 3" | 4" | 7/16" | 7302511z | CA7302511z |

MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CVD coating | |
|--|-----------------|---------------|-------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.01-0.05 | 200-350 | 0.01-0.05 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.01-0.05 | 200-400 | 0.01-0.05 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | 70-100 | 0.01-0.03 | 150-300 | 0.01-0.05 |
| HONEY COMB | 100-120 | 0.01-0.05 | 200-400 | 0.01-0.05 |
| MMC Metal Matrix Composite | | | | |

MANUAL THROUGH HOLE STEP DRILLS

APPLICATION

Solid tungsten carbide through hole step drill, suitable for making clean through holes in metal matrix composite.



Imperial

| D | B | d | L | Uncoated |
|---------|----|---------|----|----------|
| 0.1285" | 2" | 0.1285" | 6" | 7302701Z |
| 0.190" | 2" | 0.190" | 6" | 7302702Z |
| 0.204 | 2" | 0.204 | 6" | 7302703Z |
| 0.2244" | 2" | 0.2244" | 6" | 7302704Z |
| 0.250" | 2" | 0.250" | 6" | 73027054 |
| 0.257" | 2" | 0.257" | 6" | 7302706Z |
| 0.269" | 2" | 0.269" | 6" | 7302707Z |
| 0.3125" | 2" | 0.3125" | 6" | 7302708Z |



MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | Max 6000 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | |
| MMC Metal Matrix Composite | Max 6000 |

BLIND HOLES DRILLS WITH SCORERS



APPLICATION

Solid tungsten carbide drill, suitable for making clean blind holes without chipping on the surface.



Metric

| D | B | L | d | Mirror finish |
|---|----|----|---|---------------|
| 6 | 22 | 76 | 6 | 73029033 |
| 8 | 32 | 76 | 8 | 73029045 |

Imperial

| D | B | L | d | Mirror finish |
|-------|--------|----|-------|---------------|
| 1/4" | 1" | 3" | 1/4 | 73029014 |
| 5/16" | 1 1/4" | 3" | 5/16" | 7302902Z |

MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.01-0.05 | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.01-0.05 | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | 80-100 | 0.01-0.05 | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | - | - | - | - |

DRILLING - SOLID CARBIDE DRILLS

BLIND HOLES DRILLS WITH CHAMFERING CORNER

APPLICATION

Solid tungsten carbide drill, suitable for making clean blind holes.



Metric

| D | B | L | d | Mirror finish | CVD coating |
|---|----|----|---|---------------|-------------|
| 6 | 22 | 76 | 6 | 73031033 | Ca73031033 |
| 8 | 32 | 76 | 8 | 73031045 | Ca73031045 |

Imperial

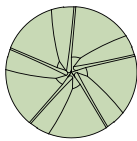
| D | B | L | d | Mirror finish | CVD coating |
|-------|--------|----|-------|---------------|-------------|
| 1/4" | 1" | 3" | 1/4" | 73031014 | Ca73031014 |
| 5/16" | 1 1/4" | 3" | 5/16" | 7303102Z | Ca7303102Z |



MACHINING CONDITIONS RECOMMENDATION

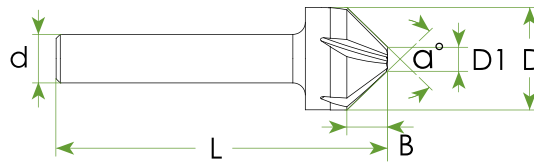
| Type of composite materials | Without Coating | | CVD coating | |
|--|-----------------|---------------|-------------|---------------|
| | Vc (m/Min) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 90-130 | 0.01-0.05 | 200-350 | 0.01-0.05 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 100-120 | 0.01-0.05 | 200-400 | 0.01-0.05 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | - | - | - | - |
| HONEY COMB | - | - | - | - |
| MMC Metal Matrix Composite | - | - | - | - |

COUNTERSINK



APPLICATION

Solid Tungsten carbide head suitable for making countersink of 90° or 100°, carbide offers maximum durability.



Metric

| D | B | L | d | No. of Flutes | a° | D1 | Uncoated |
|------|---|----|-----|---------------|------|----|----------|
| 12 | 4 | 40 | 6 | 5 | 100° | 3 | 73018023 |
| 12.7 | 5 | 40 | 6 | 5 | 90° | 3 | 73018013 |
| 16 | 5 | 40 | 8 | 5 | 100° | 4 | 73018045 |
| 16 | 6 | 40 | 8 | 5 | 90° | 4 | 73018035 |
| 1/2" | 5 | 40 | 1/4 | 5 | 90° | 3 | 73018014 |
| 5/8" | 6 | 50 | 1/2 | 5 | 90° | 4 | 73018038 |

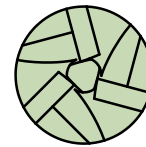
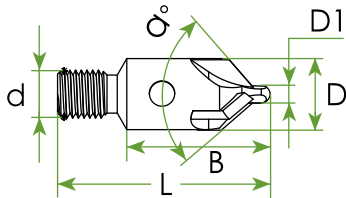
MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | Max 6000 |
| MMC Metal Matrix Composite | Max 6000 |

COUNTERSINK WITH INTEGRAL PILOT FOR MICROSTOP

APPLICATION

Countersink of 100° to be used with microstop 1/4"-28 thread.



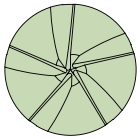
Imperial

| D | B | L | d | No. of Flutes | a° | D1 | Uncoated |
|------|--------|--------|---------|---------------|------|--------|----------|
| 3/8" | 3/4" | 1 1/8" | 1/4"-28 | 3 | 100° | 3/32" | 7302001z |
| 3/8" | 3/4" | 1 1/8" | 1/4"-28 | 3 | 100° | 11/64" | 7302004z |
| 3/8" | 3/4" | 1 1/8" | 1/4"-28 | 3 | 100° | 5/32" | 7302005z |
| 1/2" | 11/16" | 1 1/8" | 1/4"-28 | 3 | 100° | 3/32" | 7302002z |
| 1/2" | 11/16" | 1 1/8" | 1/4"-28 | 3 | 100° | 5/16" | 7302006z |
| 1/2" | 11/16" | 1 1/8" | 1/4"-28 | 3 | 100° | 11/64" | 7302007z |
| 1/2" | 11/16" | 1 1/8" | 1/4"-28 | 3 | 100° | 5/32" | 7302008z |
| 1/2" | 11/16" | 1 1/8" | 1/4"-28 | 3 | 100° | 7/32" | 7302009z |
| 5/8" | 53/64" | 1 1/4" | 1/4"-28 | 3 | 100° | 1/8" | 7302003z |

MACHINING CONDITIONS RECOMMENDATION

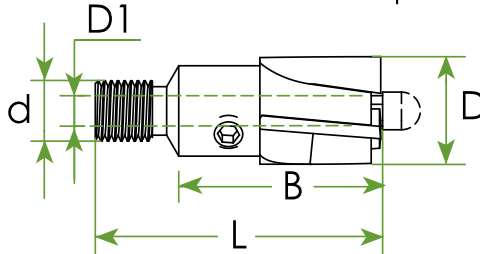
| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | Max 6000 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | Max 6000 |
| MMC Metal Matrix Composite | Max 6000 |

COUNTERBORE WITH BORE FOR EXCHANGABLE PILOT FOR MICROSTOP



APPLICATION

Counterbore to be used with microstop.



Metric / Imperial

| D | B | L | d | No. of Flutes | D1 Bore diameter D1 Lochdurchmesser | Uncoated |
|------|----|----|----------|---------------|--|----------|
| 11.4 | 20 | 30 | 1/4"-28 | 3 | 1/8" | 7302101Z |
| 14.2 | 20 | 30 | 1/4"-28 | 3 | 1/8" | 7302102Z |
| 17.4 | 30 | 40 | 7/16"-28 | 3 | 3/16" | 7302103Z |

Pilot Table at Page 28 (not included)

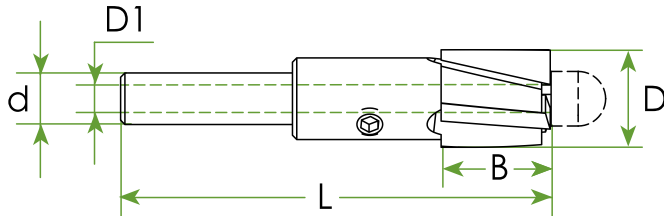
MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | Max 6000 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | Max 6000 |
| MMC Metal Matrix Composite | |

COUNTERBORE WITH BORE FOR EXCHANGABLE PILOT

APPLICATION

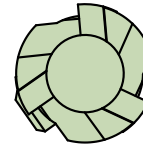
Counterbore.



Metric / Imperial

| D | B | L | d | No. of Flutes | D1 | Uncoated |
|------|------|----|---|---------------|-------|----------|
| 11.4 | 12.7 | 50 | 6 | 3 | 1/8" | 73022013 |
| 14.2 | 12.7 | 50 | 6 | 3 | 1/8" | 73022023 |
| 17.4 | 12.7 | 50 | 8 | 3 | 3/16" | 73022035 |

Pilot Table at Page 28 (not included)



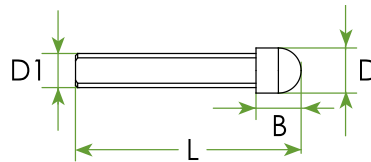
MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Max. R.P.M. |
|--|-------------|
| GFRP Glass Fiber Reinforced Thermosetting Plastics | Max 6000 |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | Max 6000 |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | Max 6000 |
| HONEY COMB | Max 6000 |
| MMC Metal Matrix Composite | Max 6000 |

EXCHANGABLE PILOT

APPLICATION

Exchangable pilot tools ,for use with product codes: 730200 & 7300022.



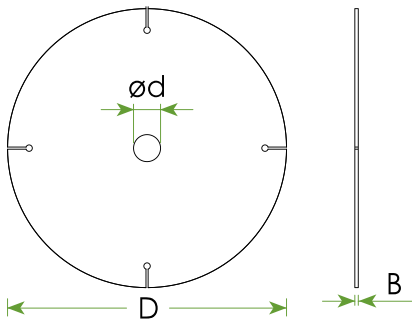
Imperial

| D | B | L | D1 | Uncoated |
|-------|-------|----------|-------|----------|
| 5/32" | 5/32" | 1 5/32" | 1/8" | 7301901Z |
| 3/16" | 3/16" | 1 6/32" | 1/8" | 7301902Z |
| 7/32" | 7/32" | 1 7/32" | 1/8" | 7301903Z |
| 1/4" | 1/4" | 1 8/32" | 1/8" | 7301904Z |
| 9/32" | 9/32" | 1 9/32" | 1/8" | 7301905Z |
| 5/16" | 5/16" | 1 10/32" | 1/8" | 7301906Z |
| 1/4" | 1/4" | 1 1/4" | 3/16" | 7301907Z |
| 3/8" | 3/8" | 1 3/8" | 3/16" | 7301908Z |
| 1/2" | 1/2" | 1 1/2" | 3/16" | 7301909Z |
| 5/8" | 5/8" | 1 5/8" | 3/16" | 7301910Z |

ELECTRO PLATED DIAMOND DISK

APPLICATION

Electro plated diamond disk suitable for straight fast cutting of variable height, can be used on table saw, hand saw and angle grinder.



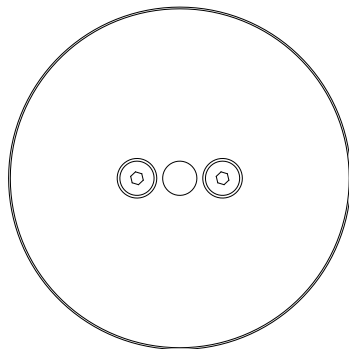
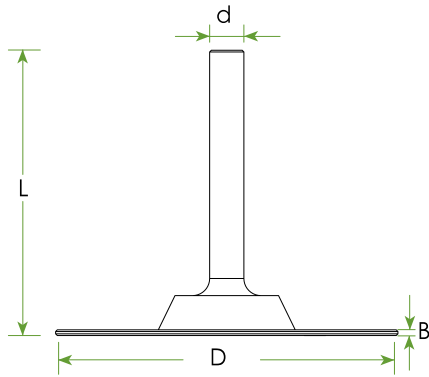
Metric

| D | B | d | Electro plated coating |
|-----|-----|----|------------------------|
| 60 | 1.4 | 6 | 7303304Z |
| 100 | 1.8 | 22 | 73033034 |
| 125 | 1.8 | 22 | 73033064 |
| 180 | 1.8 | 16 | 7303305Z |
| 250 | 2.8 | 30 | 73033026 |
| 300 | 2.8 | 30 | 73033016 |

MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CVD coating | |
|--|-----------------|---------------|-------------|---------------|
| | Vc (m/Sec) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 40-70 | - | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 90-70 | - | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | 40-70 | - | - | - |
| HONEY COMB | 40-70 | - | - | - |
| MMC Metal Matrix Composite | 30-50 | - | - | - |

ELECTRO PLATED DIAMOND DISK



73033043

APPLICATION

Electro plated diamond disk suitable for trimming, sanding and cutting of variable height, can be used with pneumatic hand tools. The mini slotter can be replaced.

Metric

| D | B | L | d | Electro plated coating Set |
|----|-----|-----|------|----------------------------|
| 60 | 1.4 | 50 | 6 | 73033053 |
| 60 | 1.4 | 50 | 6.35 | 73033054 |
| 60 | 1.4 | 100 | 12.7 | 73033058 |

SPARE PARTS

| | | | |
|--------------------|---------------------|-----------------|---------------|
| | | | |
| 73033043 60x1.4 | 1900263 d = 6 | 1930401 M3x5 | 1940200 S2 |
| | 1900264 d = 6.35 | | |
| | 1900268 d = 12.7 | | |

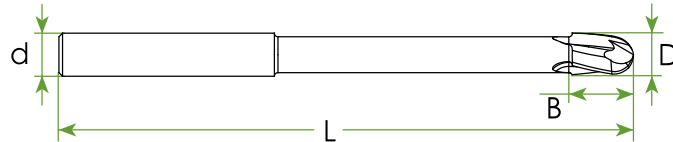
MACHINING CONDITIONS RECOMMENDATION

| Type of composite materials | Without Coating | | CA coating | |
|--|-----------------|---------------|------------|---------------|
| | Vc (m/Sec) | Feed (mm/REV) | Vc (m/Min) | Feed (mm/REV) |
| GFRP Glass Fiber Reinforced Thermosetting Plastics | 40-70 | - | - | - |
| CFRP Carbon Fiber Reinforced Thermosetting Plastics | 90-70 | - | - | - |
| AFRP Aramid Fiber Reinforced Thermosetting Plastics | 40-70 | - | - | - |
| HONEY COMB | 40-70 | - | - | - |
| MMC Metal Matrix Composite | 30-50 | - | - | - |

BALL NOSE ENDMILL

APPLICATION

Solid tungsten carbide router, suitable for round corner, edges, pockets and 3D curving. For use in all types of materials such as MDF, plastics and aluminium. All tools made with neck clearance for deep cuts.



Metric

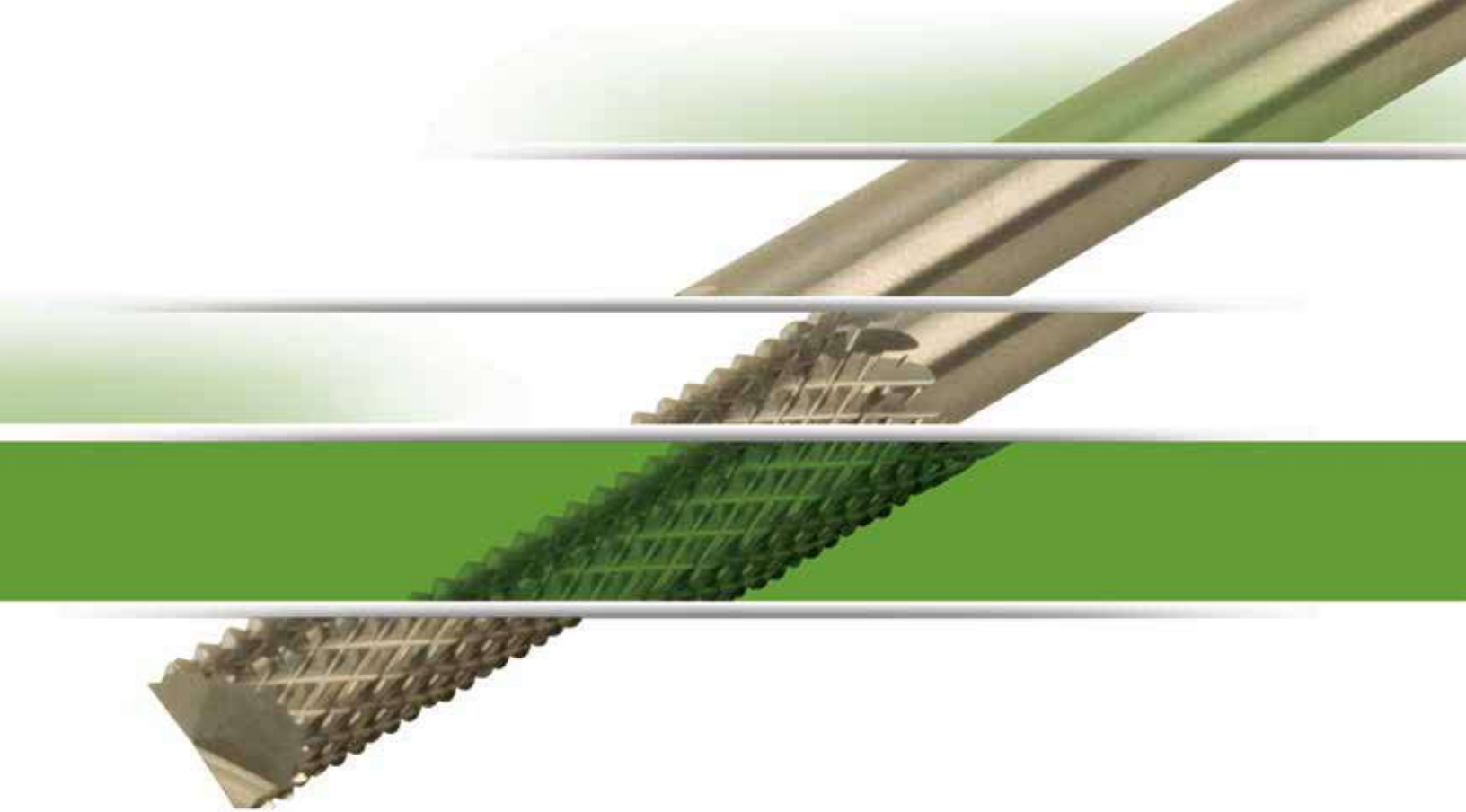
| D | B | L | d | No. of Flutes | Uncoated |
|----|----|-----|----|---------------|----------|
| 6 | 9 | 80 | 6 | 3 | 73034013 |
| 8 | 12 | 85 | 8 | 3 | 73034025 |
| 10 | 15 | 100 | 10 | 3 | 73034037 |
| 12 | 16 | 100 | 12 | 3 | 73034049 |
| 16 | 25 | 150 | 16 | 4 | 7303405E |



Imperial

| D | B | L | d | No. of Flutes | Uncoated |
|-------|------|--------|-------|---------------|----------|
| 1/4" | 3/8" | 3" | 1/4" | 3 | 73034064 |
| 5/16" | 1/2" | 3 1/2" | 5/16" | 3 | 7303407Z |
| 3/8" | 5/8" | 4" | 3/8" | 3 | 73034086 |
| 1/2" | 3/4" | 5" | 1/2" | 3 | 73034098 |
| 5/8" | 1" | 6 1/2" | 5/8" | 4 | 7303410Z |





 **DIMAR** composites **INDUSTRIAL PRODUCTS**

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