

Tools for COMPOSITES

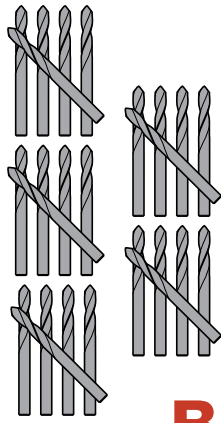


Composite Solutions

Scan this code to view:

- Videos on Drilling
- Videos on Trimming
- Tips and Tricks to Machine CFRP and Other Composites Made Easy!
- And More...

Use 135°/20° Single Shot Drills and Reams in one operation



Before

=



Wing Spars
Complete Ship Set

vs.



After

=



Wing Spars
Complete Ship Set



Single Shot PCD

NEW!

- No Delamination
- No Uncut Fibers
- No Fiber Pull Out
- Can be Resharpended



CPCD-203 – Best Trimming Tool for Composites



View the CPCD-203 in action on our web site!

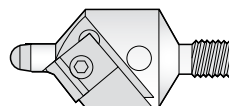
Features:

- Drill point for plunging into the part without blowing out the back side of the part
- Over 13,000 linear inches in Aircraft CFRP material

CSK



Countersink
Bodies and Inserts



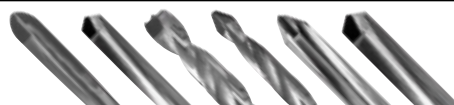
102

PCD-TIPPED Drills



PCD-Tipped
Diamond Drills

NEW SIZES!



104

P810 / F104 Drills

Diamond Coated Drills



106

P810



2 Flute
Drills and Reamers



107

CPCD / MCPCD 203 Routers

2 Flute PCD-Tipped Routers
118° Point



109

PCD 203 Routers

2 Flute PCD-Tipped Routers
Square End



109

PCD-BN 201 Routers

2 Flute PCD-Tipped Routers
Ball Nose



109

CR / MCR 402/602

4 and 6 Flute Compression Routers



110

CE / MCE 602/802

6 and 8 Flute Carbide Composite Routers



111

PM / MPM / PMD Routers

1 Flute Routers
Uncoated



112

GTS 201 Routers

2 Flute Routers
Uncoated



112

P820



4 and 6 Flute
Replaceable Tip End Mills



113

P38 End Mills



2 and 4 Flute
Lightning Series End Mills



114

MINIATURES

(See Miniatures Applications)



132

A1 / MA1 201

(See Aluminum Applications)



28

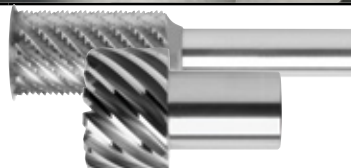
SAWS

(See Saws Applications)



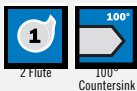
170

SPECIALS

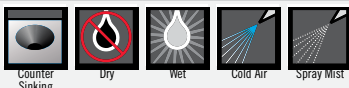


CSK Aircraft Countersinks

NEW!



Characteristics



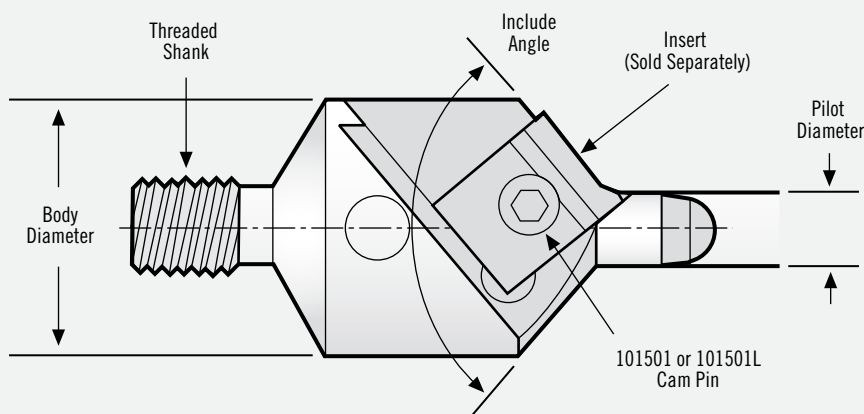
Applications



Materials



Coatings



10-20X

Tool Life
Over
Carbide!



SAVE UP TO 50%
Versus PCD

100° Countersink with Threaded Shank and Diamond Coated Insert

RobbJack is proud to introduce our latest diamond coated product to enhance your productivity. The aircraft style countersink is designed to be used in a micro-stop cage for producing 100° countersinks with a root radius or angle for aircraft rivets.

COUNTERSINK BODIES

Body Diameter	Thread Size	Pilot Diameter Range	Tool Number
5/8"	1/4 - 28	.0970-.2570	CSKB1T-6 XXXX 1-1
3/4"	3/8 - 24	.2570-.3190	CSKB1T-7 XXXX 1-1
7/8"	3/8 - 24	.3190-.3940	CSKB1T-8 XXXX 1-1
1	7/16 - 20	.3940-.5590	CSKB1T-9 XXXX 1-1

*For the tool holder body specify the pilot diameter **XXXX** (example .2515 is 2515).

COUNTERSINK INSERTS

Insert Style	Body Diameter	Tool Number Diamond Coated*
25° Double-Angle	5/8"	CSKIC-6IC025-1
0.020 Radius	5/8"	CSKIC-6IR020-1
0.035 Radius	3/4", 5/8", 1"	CSKIC-7IR035-1

NEW!

SINGLE SHOT PCD DIAMOND DRILLS FOR CARBON FIBER PCD-13520 SERIES

RobbJack is utilizing a new and revolutionary technology in the manufacture of PCD tools. This new technology improves tool quality, PCD adhesion to the tool body, and increases heat resistance during cutting. All of these improvements allow tool performance that was once impossible.

- New PCD diamond tip geometry
- Best holes in carbon fiber
- Drills and reams in one operation
- Minimal delamination or uncut fibers
- Extreme tool life
- New 135°/20° 8 faceted tip design
(Best drill for widest variety of carbon fiber)
- \$548,000 cost savings per year in wing spar case study

Get a quote for your custom PCD tools
QUOTES@ROBBJACK.COM



PCD PCD-Tipped Diamond Drills



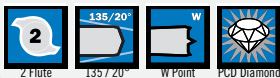
Single Shot
PCD



Any diameter available
from .0620" to .5000"

Replace the last four digits to
specify the drill diameter size.

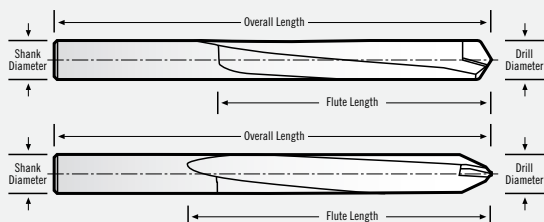
Characteristics



Applications



Materials



PCD-Tipped Drills Tolerances

Drill Dia. = $+0.0000/-0.0005$
 $+0.0000/-0.0013$ mm
 Shank Dia. = $-0.0001/-0.0002$
 $-0.002/-0.005$ mm
 Flute Length = $+0.030$
 $+0.762$ mm
 OAL = $+0.060$
 $+1.5$ mm

**Best Performing Drill
in most Composites**



**Single Shot Drills and
Reams in one operation**



PCD 135/20° PCD-Tipped Standard Length – 8 Facet

Tool Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
.0625	1/8"	0.5	1.5	PCD-13520-0625
.0980	1/8"	0.5	1.5	PCD-13520-0980
.1285	1/8"	0.5	1.5	PCD-13520-1285
.1655	3/16"	1.4	2.7	PCD-13520-1655
.1915	1/4"	1.4	2.7	PCD-13520-1915
.2210	1/4"	1.4	2.7	PCD-13520-2210
.2510	1/4"	1.4	2.7	PCD-13520-2510
.3125	5/16"	1.5	2.7	PCD-13520-3125
.3765	3/8"	1.5	2.7	PCD-13520-3765



NEW SIZES!

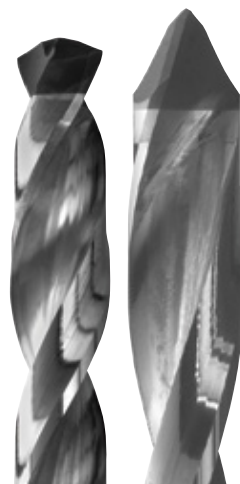


PCD W Point PCD-Tipped Standard Length

Tool Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
.0625	1/8"	0.5	1.5	PCD-11987-0625
.0980	1/8"	0.5	1.5	PCD-11987-0980
.1285	1/8"	0.5	1.5	PCD-11987-1285
.1655	3/16"	1.4	2.7	PCD-11987-1655
.1915	1/4"	1.4	2.7	PCD-11987-1915
.2210	1/4"	1.4	2.7	PCD-11987-2210
.2510	1/4"	1.4	2.7	PCD-11987-2510
.3125	5/16"	1.5	2.7	PCD-11987-3125
.3765	3/8"	1.5	2.7	PCD-11987-3765

Any diameter available from .0620" to .5000" - Replace the last four digits to specify the drill diameter size.

See RobbJack Videos at
robbjack.com/robbjack-tv



Get the advantage of geometries that used to be only available in carbide. Get the wear resistance of Diamond and the ability to re-sharpen PCD drills.

Solid PCD Tips Available per request.
Call or email for a quote.

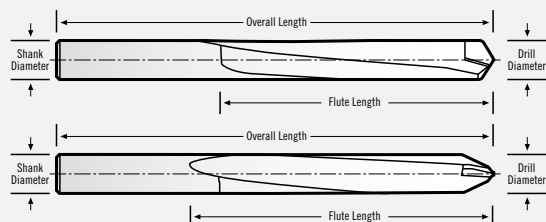
PCD-Tipped Diamond Drills **PCD**

Composites



10-20X

Tool Life
Over
Carbide!



PCD-Tipped Drills Tolerances

Drill Dia. = $+0.0000/-0.0005$
 $+0.0000/-0.0013$ mm
 Shank Dia. = $-0.0001/-0.0002$
 $-0.002/-0.005$ mm
 Flute Length = $+0.030$
 $+0.762$ mm
 OAL = $+0.060$
 $+1.5$ mm

Any diameter available
from .0620" to .5000"

Replace the last four digits to
specify the drill diameter size.



PCD 118° PCD-Tipped Standard Length – 4 Facet

Tool Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
.0625	1/8"	0.5	1.5	PCD-118-0625
.0980	1/8"	0.5	1.5	PCD-118-0980
.1285	1/8"	0.5	1.5	PCD-118-1285
.1655	3/16"	1.4	2.7	PCD-118-1655
.1915	1/4"	1.4	2.7	PCD-118-1915
.2210	1/4"	1.4	2.7	PCD-118-2210
.2510	1/4"	1.4	2.7	PCD-118-2510
.3125	5/16"	1.5	2.7	PCD-118-3125
.3765	3/8"	1.5	2.7	PCD-118-3765



PCD CTT Point 118/62° PCD-Tipped Std. Length – 8 Facet

Tool Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
.0625	1/8"	0.5	1.5	PCD-11862-0625
.0980	1/8"	0.5	1.5	PCD-11862-0980
.1285	1/8"	0.5	1.5	PCD-11862-1285
.1655	3/16"	1.4	2.7	PCD-11862-1655
.1915	1/4"	1.4	2.7	PCD-11862-1915
.2210	1/4"	1.4	2.7	PCD-11862-2210
.2510	1/4"	1.4	2.7	PCD-11862-2510
.3125	5/16"	1.5	2.7	PCD-11862-3125
.3765	3/8"	1.5	2.7	PCD-11862-3765

NEW SIZES!

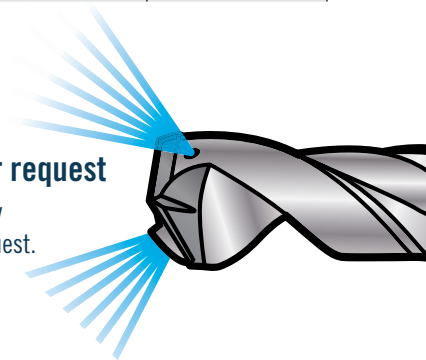
Composite Taper Tip

BIG SOLUTIONS IN PCD

- Fast & Responsive Deliveries
- Guaranteed Performance
- Easy to do business with
- In-House R&D Center

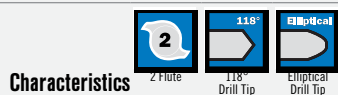
Thru Coolant holes available per request

PCD Saws, form tools, hole saws, and many more PCD custom tools available upon request.

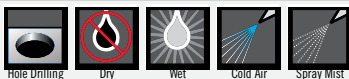


New sizes as small
as .062 diameter

P810/F104 Diamond Coated Aircraft Drills



Characteristics



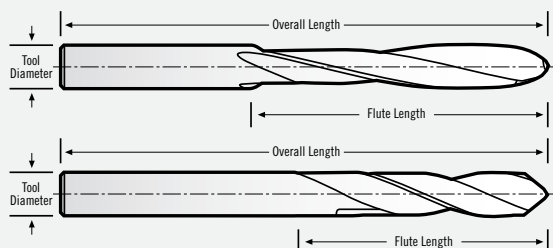
Applications



Materials



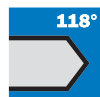
Coatings



P810/F104 Drills Tolerances

Drill Dia. = $+0.0000/-0.0005$
 $+0.000\text{mm}/-0.0127\text{mm}$
 Shank Dia. = $-0.0001/-0.0030$
 $+0.000\text{mm}/-0.076\text{mm}$
 Flute Length = $+0.030$
 $+0.762\text{mm}$
 OAL = $+/-0.060$
 $+/-1.5\text{mm}$

10-20X
 Tool Life
 Over
 Carbide!



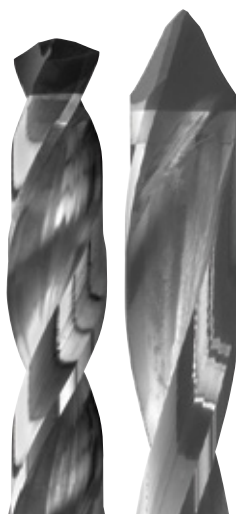
P810 118° Diamond Coated Standard Length Drills – 4 Facet

Tool Diameter	Flute Length	Overall Length	Tool Number Diamond Coated
0.0980	1.4	2.7	P810-100345-1
0.1285	1.4	2.7	P810-100344-1
0.1655	1.4	2.7	P810-100335-1
0.1915	1.4	2.7	P810-100336-1
0.1990	1.4	2.7	P810-100411-1
0.2210	1.4	2.7	P810-100346-1
0.2515	1.4	2.7	P810-100337-1
0.2812	1.4	2.7	P810-100410-1
0.3135	1.5	2.7	P810-100338-1
0.3765	1.5	2.7	P810-100341-1



F104 Elliptical Diamond Coated Standard Length Drills

Tool Diameter	Flute Length	Overall Length	Tool Number Diamond Coated
0.0980	1.4	2.7	F104-100001-1
0.1285	1.4	2.7	F104-100003-1
0.1655	1.4	2.7	F104-100007-1
0.1915	1.4	2.7	F104-100010-1
0.1990	1.4	2.7	F104-100011-1
0.2210	1.4	2.7	F104-100004-1
0.2515	1.4	2.7	F104-100002-1
0.2812	1.4	2.7	F104-100017-1
0.3135	1.5	2.7	F104-100018-1
0.3765	1.5	2.7	F104-100019-1



Get the advantage of geometries that used to be only available in carbide. Get the wear resistance of Diamond and the ability to re-sharpen PCD drills.

See Page 104

**Solid PCD Tips Available per request.
 Call or email for a quote.**

Diamond Coated Drill/Reamer **P810**

Composites

Characteristics



Applications



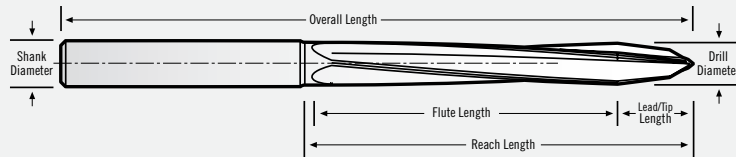
Materials



Coatings



NEW!



Drill/Reamer Tolerances

Drill Dia. = $+0.0002/-0.0000$ "
Shank Tolerance = h6
Flute Length = ± 0.060 "
OAL = ± 0.060 "



The low helix drill reamers are designed to drill and ream a precision hole in CFRP material in one step.

P810 4 Flute Diamond Coated Drill/Reamer

Drill Diameter	Tolerance from Nominal		Flute Length	Overall Length	Shank Diameter	Lead/Tip Length	Reach	Tool Number Diamond Coated
0.1280"	+0.0002"	-0.0000"	1"	3"	1/4"	0.325	1-3/4"	P810-100512-1
0.1620"	+0.0002"	-0.0000"	1"	3"	1/4"	0.3668	1-3/4"	P810-100513-1
0.1910"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.475	2"	P810-100486-1
0.2240"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.418	2"	P810-100495-1
0.2340"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.5232	2-1/8"	P810-100551-1
0.2510"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.4684		P810-100494-1
0.2640"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.59		P810-100510-1
0.2730"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.617		P810-100537-1
0.3140"	+0.0002"	-0.0000"	1-1/2"	3-1/2"	1/4"	0.7059		P810-100549-1

Recommended starting cutting speeds and feeds; 225 SFM and 10 IPM

SPECIALS

RobbJack can design and build a tool to your specifications.

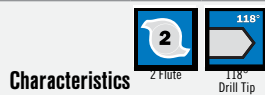
Customs and specials are a large part of RobbJack's business, so contact one of our engineers with your requirements.

Typical Requests

- Tighter tolerances
- Special corner radius
- Special angle
- Reduced shank
- Multistep tools



P810 Diamond Coated Standard Drills



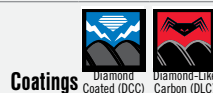
Characteristics



Applications



Materials



Coatings

Drill/Reamer Tolerances

Cutting Dia. = +0.0002/-0.0000"

Shank Tolerance = h6

Flute Length = ±0.060"

OAL = ±0.060"

10-20X

Tool Life
Over
Carbide!



Standard Diamond Coated Carbide Drills are 2 flute with a 118°, 4 facet drill point and come in jobbers lengths. The diamond coating extends a minimum of one diameter from the drill tip on the jobber drills and past the countersink on center drills.

Diamond Coated Carbide Drills are available as specials in sizes from 0.028" to 0.750". Metric sizes are available.



P810 2 Flute 118° Diamond Coated Jobber Drills (4 facet)

Cutting Diameter	Tolerance Minimum	Tolerance Maximum	Flute Length	Overall Length	Tool Number Diamond Coated
1/32"	-0.0003"	+0.0005"	5/16"	1-1/4"	P810-100180-1
1/16"	-0.0001"	+0.0006"	3/4"	1-1/2"	P810-100023-1
3/32"	-0.0001"	+0.0006"	1"	2"	P810-100016-1
1/8"	+0.0001"	+0.0010"	1-1/4"	2-1/4"	P810-100024-1
3/16"	+0.0003"	+0.0011"	1-5/8"	2-3/4"	P810-100027-1
1/4"	+0.0006"	+0.0016"	2"	3-1/4"	P810-100002-1

NEW!



P810 2 Flute Center Drills (only one end coated)

Size	Drill Diameter	Body Diameter	Countersink Angle	Overall Length	Tool Number Diamond Coated
#00	0.025"	1/8"	60°	1-1/2"	P810-100200-1
#0	1/32"	1/8"	60°	1-1/2"	P810-100071-1
#1	3/64"	1/8"	60°	1-1/2"	P810-100072-1
#2	5/64"	3/16"	60°	2"	P810-100073-1
#3	7/64"	1/4"	60°	2"	P810-100074-1
#4	1/8"	5/16"	60°	2-1/8"	P810-100075-1
#5	3/16"	7/16"	60°	2-3/4"	P810-100240-1

QUANTITY DISCOUNTS
Available at Qty 7, 13 and 20+

PCD-Tipped Router Bits

CPCD/MCPCD

Composites

Characteristics



Applications

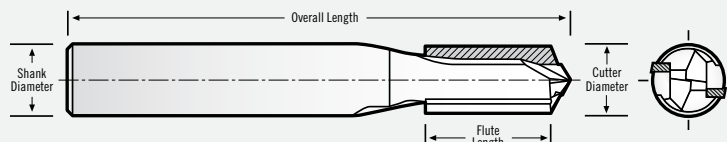
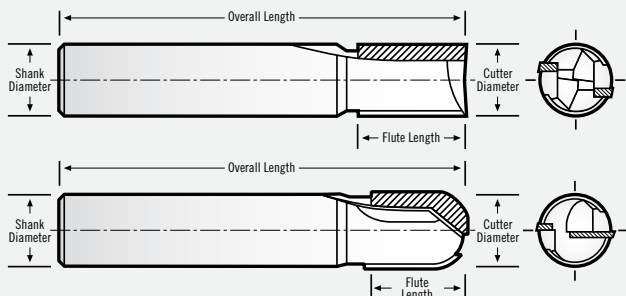


Materials



10-20X

Tool Life
Over
Carbide!



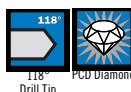
CPCD Tolerances

Cutting Dia. = ± 0.003
Shank Dia. = $-0.0001/-0.0002$
Flute Length = ± 0.030
OAL = ± 0.060

MCPCD Tolerances

Cutting Dia. = $\pm 0.076\text{mm}$
Shank Dia. = $-0.003/-0.005\text{mm}$
Flute Length = $\pm 0.76\text{mm}$
OAL = $\pm 1.5\text{mm}$

New
PCD Grade
& Geometries
specifically
designed for
CFRP
Materials



CPCD-203 2 Flute Drill Point Composite Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Drill Point	Overall Length	Tool Number
1/8"	1/8"	5/16"	118°	1-1/2"	CPCD-203-04
3/16"	3/16"	7/16"	118°	2"	CPCD-203-06
1/4"	1/4"	9/16"	118°	2"	CPCD-203-08
3/8"	3/8"	5/8"	118°	2-1/2"	CPCD-203-12
1/2"	1/2"	7/8"	118°	3"	CPCD-203-16
5/8"	5/8"	7/8"	118°	3-1/2"	CPCD-203-20
3/4"	3/4"	7/8"	118°	4"	CPCD-203-24



MCPCD-203 2 Flute Square End Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/8"	3/8"	1-1/2"	PCD-203-04-CF
3/16"	3/16"	1/2"	2"	PCD-203-06-CF
1/4"	1/4"	5/8"	2"	PCD-203-08-CF
3/8"	3/8"	3/4"	2-1/2"	PCD-203-12-CF
1/2"	1/2"	1"	3"	PCD-203-16-CF
5/8"	5/8"	1"	3-1/2"	PCD-203-20-CF
3/4"	3/4"	1"	4"	PCD-203-24-CF



MCPCD-203 METRIC 2 Flute Drill Point Composite Std. Lgth.

Cutting Diameter	Shank Diameter	Flute Length	Drill Point	Overall Length	Tool Number
3mm	3mm	8mm	118°	38mm	MCPCD-203-03-118
6mm	6mm	14mm	118°	50mm	MCPCD-203-06-118
10mm	10mm	16mm	118°	63mm	MCPCD-203-10-118
12mm	12mm	22mm	118°	76mm	MCPCD-203-12-118



MCPCD-203 METRIC 2 Flute Square End Composite Std. Lgth.

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Corner Radius	Overall Length	Tool Number
3mm	3mm	2	8mm	Sq. End	38mm	MCPCD-203-03
6mm	6mm	2	14mm	Sq. End	50mm	MCPCD-203-06
10mm	10mm	2	16mm	Sq. End	63mm	MCPCD-203-10
12mm	12mm	2	22mm	Sq. End	76mm	MCPCD-203-12



PCD-201BN 2 Flute Ball End Stub Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/8"	1/4"	1-1/2"	PCD-201-04BN
3/16"	3/16"	5/16"	2"	PCD-201-06BN
1/4"	1/4"	3/8"	2"	PCD-201-08BN
3/8"	3/8"	1/2"	2-1/2"	PCD-201-12BN
1/2"	1/2"	5/8"	3"	PCD-201-16BN
5/8"	5/8"	7/8"	3-1/2"	PCD-201-20BN
3/4"	3/4"	1"	4"	PCD-201-24BN



PCD-203 2 Flute Square End Standard Length

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/8"	3/8"	1-1/2"	PCD-203-04
3/16"	3/16"	1/2"	2"	PCD-203-06
1/4"	1/4"	5/8"	2"	PCD-203-08
3/8"	3/8"	3/4"	2-1/2"	PCD-203-12
1/2"	1/2"	1"	3"	PCD-203-16
5/8"	5/8"	1"	3-1/2"	PCD-203-20
3/4"	3/4"	1"	4"	PCD-203-24

CR/MCR Compression Router

Characteristics



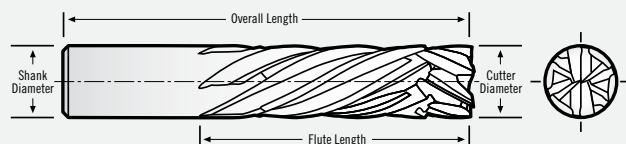
Applications



Materials



Coatings



CR Tolerances

Cutting Dia. = $-.001/-0.003$
 Shank Dia. = $-.0001/-0.0002$
 Flute Length (<0.3125) = $+0.020/+0.030$
 (>0.3125) = $+0.030/+0.060$
 OAL = ± 0.060

MCR Tolerances

Cutting Dia. = $-0.025/-0.075$ mm
 Shank Dia. = $-0.002/-0.005$ mm
 Flute Length = $+0.500/+1.500$ mm
 OAL = ± 10 mm



UNCOATED



CR Compression Router – 4/6 Flute Uncoated

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number Uncoated
1/4"	1/4"	4	3/16"	3/4"	2-1/2"	CR-402-08
3/8"	3/8"	6	1/4"	1"	2-1/2"	CR-602-12
1/2"	1/2"	6	1/4"	1-1/8"	3"	CR-602-16



MCR Compression Router – 4/6 Flute Uncoated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number Uncoated
6mm	6mm	4	5mm	20mm	63mm	MCR-402-06
10mm	10mm	6	6mm	25mm	63mm	MCR-602-10
12mm	12mm	6	6mm	28mm	76mm	MCR-602-12



DLC COATED



CR Compression Router – 4/6 Flute Black Widow DLC Coated

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number DLC Coated
1/4"	1/4"	4	3/16"	3/4"	2-1/2"	CR-402-08-DLC
3/8"	3/8"	6	1/4"	1"	2-1/2"	CR-602-12-DLC
1/2"	1/2"	6	1/4"	1-1/8"	3"	CR-602-16-DLC



MCR Compression Router – 4/6 Flute Black Widow DLC Coated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number DLC Coated
6mm	6mm	4	5mm	20mm	63mm	MCR-402-06-DLC
10mm	10mm	6	6mm	25mm	63mm	MCR-602-10-DLC
12mm	12mm	6	6mm	28mm	76mm	MCR-602-12-DLC



DIAMOND COATED



CR Compression Router – 4/6 Flute Diamond Coated

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number Diamond Coated
1/4"	1/4"	4	3/16"	3/4"	2-1/2"	CR-402-08-D
3/8"	3/8"	6	1/4"	1"	2-1/2"	CR-602-12-D
1/2"	1/2"	6	1/4"	1-1/8"	3"	CR-602-16-D



MCR Compression Router – 4/6 Flute Diamond Coated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Upshear Length	Flute Length	Overall Length	Tool Number Diamond Coated
6mm	6mm	4	5mm	20mm	63mm	MCR-402-06-D
10mm	10mm	6	6mm	25mm	63mm	MCR-602-10-D
12mm	12mm	6	6mm	28mm	76mm	MCR-602-12-D

Carbide Composite Router **CE/MCE**

Characteristics



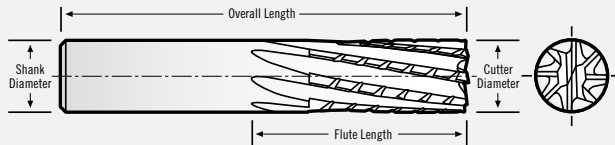
Applications



Materials



Coatings



CE Tolerances

Cutting Dia. = $-0.001/-0.003$
 Shank Dia. = $-0.0001/-0.0002$
 Flute Length (<0.3125) = $+0.020/+0.030$
 (>0.3125) = $+0.030/+0.060$
 OAL = ± 0.060

MCE Tolerances

Cutting Dia. = $-0.025/-0.075\text{mm}$
 Shank Dia. = $-0.002/-0.005\text{mm}$
 Flute Length = $+0.500/+1.500\text{mm}$
 OAL = $\pm 10\text{mm}$



UNCOATED



CE Carbide Composite Router – 6/8 Flute Uncoated

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number Uncoated
1/4"	1/4"	6	3/4"	2-1/2"	CE-602-08
3/8"	3/8"	8	1"	2-1/2"	CE-802-12
1/2"	1/2"	8	1-1/8"	3"	CE-802-16



MCE Carbide Composite Router – 6/8 Flute Uncoated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number Uncoated
6mm	6mm	6	20mm	63mm	MCE-602-06
10mm	10mm	8	25mm	63mm	MCE-802-10
12mm	12mm	8	28mm	76mm	MCE-802-12



DLC COATED



CE Carbide Composite Router – 6/8 Flute Black Widow DLC Coated

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number DLC Coated
1/4"	1/4"	6	3/4"	2-1/2"	CE-602-08-DLC
3/8"	3/8"	8	1"	2-1/2"	CE-802-12-DLC
1/2"	1/2"	8	1-1/8"	3"	CE-802-16-DLC



MCE Carbide Composite Router – 6/8 Flute Black Widow DLC Coated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number DLC Coated
6mm	6mm	6	20mm	63mm	MCE-602-06-DLC
10mm	10mm	8	25mm	63mm	MCE-802-10-DLC
12mm	12mm	8	28mm	76mm	MCE-802-12-DLC



DIAMOND COATED



CE Carbide Composite Router – 6/8 Flute Diamond Coated

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number Diamond Coated
1/4"	1/4"	6	3/4"	2-1/2"	CE-602-08-D
3/8"	3/8"	8	1"	2-1/2"	CE-802-12-D
1/2"	1/2"	8	1-1/8"	3"	CE-802-16-D



MCE Carbide Composite Router – 6/8 Flute Diamond Coated **METRIC**

Cutting Diameter	Shank Diameter	Number of Flutes	Flute Length	Overall Length	Tool Number Diamond Coated
6mm	6mm	6	20mm	63mm	MCE-602-06-D
10mm	10mm	8	25mm	63mm	MCE-802-10-D
12mm	12mm	8	28mm	76mm	MCE-802-12-D

PM/MPM/MPD/GTS Tuffy Grade Carbide Router Bits

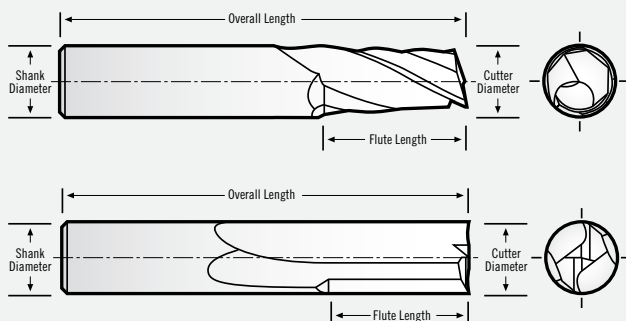
Characteristics



Applications



Materials



PM/PMD Series Tolerances

Cutting Dia. = $+0.000/-0.002$
 Shank Dia. = $-0.0001/-0.0002$
 Flute Length = $+0.060/-0.000$
 OAL = ± 0.060

MPM Tolerances

Cutting Dia. = $+0.000/-0.075\text{mm}$
 Shank Dia. = $-0.002/-0.005\text{mm}$
 Flute Length = $+0.500/+1.500\text{mm}$
 OAL = $\pm 10\text{mm}$

GTS Series Tolerances

Cutting Dia. = $+0.000/-0.002$
 Shank Dia. = $-0.0001/-0.0002$
 Flute Length = $+0.060/-0.000$
 OAL = ± 0.060

Polished

Best Tool for Plastics
 Eliminates Material
 Sticking to Tool and
 Melting in the Cut



PM Upshear 1 Flute Tuffy Grade

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/8"	1/2"	2"	PM-104-04
1/8"	1/4"	1/2"	2"	PM-108-04
3/16"	3/16"	5/8"	2"	PM-106-06
3/16"	1/4"	5/8"	2"	PM-108-06
3/16"	1/4"	1-1/4"	3"	PM-108-06L
1/4"	1/4"	3/4"	2"	PM-108-08
1/4"	1/4"	1-1/2"	3"	PM-108-08L
3/8"	3/8"	1-1/4"	3"	PM-112-12
1/2"	1/2"	1-1/2"	4"	PM-116-16



PMD Downshear 1 Flute Tuffy Grade

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/4"	1/2"	2"	PMD-108-04
3/16"	1/4"	5/8"	2"	PMD-108-06
1/4"	1/4"	3/4"	2"	PMD-108-08



GTS 2 Flute Tuffy Grade Straight Flute

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
1/8"	1/4"	1/2"	2"	GTS-201-04
1/4"	1/4"	3/4"	2-1/2"	GTS-201-08
3/8"	3/8"	7/8"	2-1/2"	GTS-201-12
1/2"	1/2"	1"	3"	GTS-201-16



MPM Upshear 1 Flute Tuffy Grade **METRIC**

Cutting Diameter	Shank Diameter	Flute Length	Overall Length	Tool Number
4mm	3mm	12mm	50mm	MPM-104-04
6mm	4mm	12mm	50mm	MPM-106-04
6mm	6mm	14mm	50mm	MPM-106-05
6mm	6mm	14mm	57mm	MPM-106-06
8mm	8mm	22mm	63mm	MPM-108-08
10mm	10mm	25mm	72mm	MPM-110-10
12mm	12mm	25mm	83mm	MPM-112-12

Replaceable Tip End Mills **P820**

Composites

Characteristics






Applications











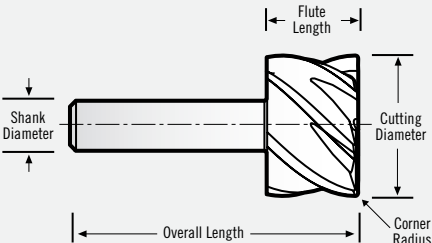

Materials




Coatings







Standard Tolerances

Cutting Dia. = $+0.001/-0.001$ "

Shank Tolerance h6

Flute Length = ± 0.060 "

OAL = ± 0.060 "

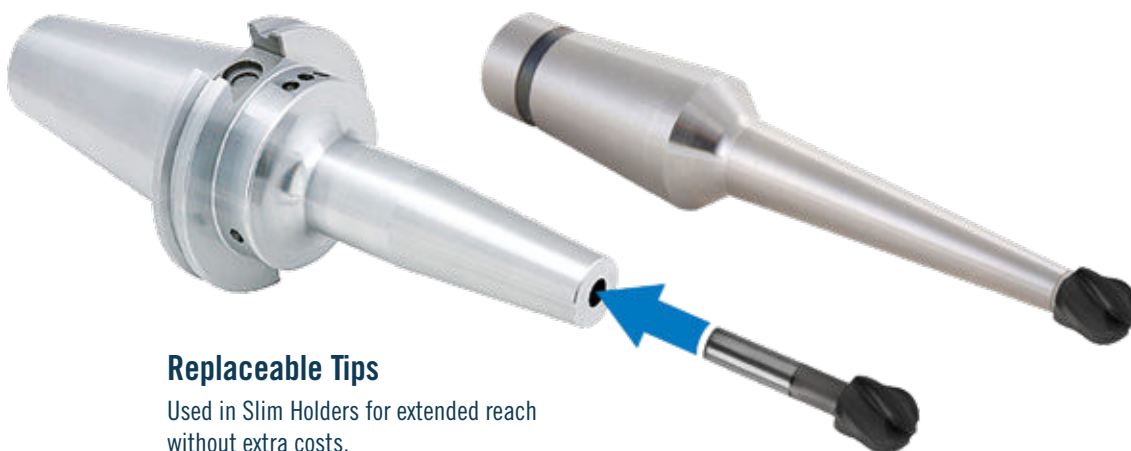
RobbJack is proud to introduce our latest diamond coated product to enhance your productivity: The 0.500" Replaceable Tip End Mill.

This tool is intended to be held in a heat shrink holder and give you 4 and 6 flute productivity as compared to the 2 flutes available from insert end mills this size. Depending on your application several configurations are currently available from stock.



P820 4 & 6 Flute 1/2" Replaceable Tip End Mill (with 1/4" h6 shank)

Cutting Diameter	Shank Diameter	Flute Length	Flute Number	Corner Radius	Overall Length	Tool Number Diamond Coated
1/2"	1/4"	1/2"	6	Sq. End	1-1/2"	P820-201143-1
1/2"	1/4"	1/2"	4	Sq. End	1-1/2"	P820-201142-1
1/2"	1/4"	1/2"	4	.030"	1-1/2"	P820-201206-1
1/2"	1/4"	1/2"	4	Ball End	1-1/2"	P820-201145-1



Replaceable Tips

Used in Slim Holders for extended reach without extra costs.

P38 Lightning Diamond Coated Series End Mills



Characteristics



Applications



Materials

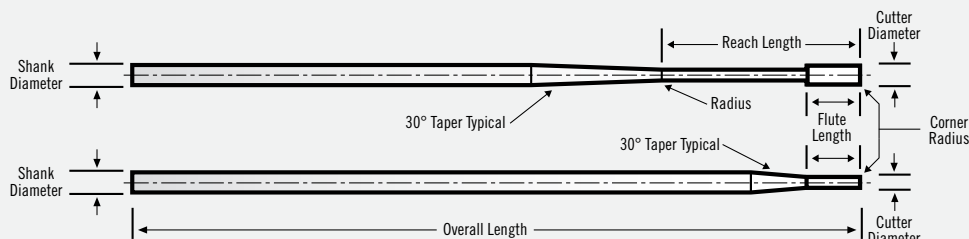


Coatings



Standard Tolerances

Cutting Dia. = $+0.001/-0.001$ "
Shank Tolerance h6
Flute Length = ± 0.060 "
OAL = ± 0.060 "



P38 2 Flute Lightning Diamond Coated End Mills

Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length	Overall Length	Tool Number Diamond Coated
1/64"	1/8"	3/64"	Ball End		3"	P38-005101-1
1/64"	1/8"	3/64"	Sq. End		3"	P38-005102-1
1/64"	1/8"	3/64"	Ball End	1/4"	3"	P38-005103-1
1/64"	1/8"	3/64"	Sq. End	1/4"	3"	P38-005104-1
1/64"	1/8"	3/64"	Ball End	1/2"	3"	P38-005105-1
1/64"	1/8"	3/64"	Sq. End	1/2"	3"	P38-005106-1

NEW!

P38 4 Flute Lightning Diamond Coated End Mills

Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length	Overall Length	Tool Number Diamond Coated
1/32"	1/8"	3/32"	Sq. End	—	1-1/2"	P38-200219-1
1/32"	1/8"	3/32"	Sq. End	—	3"	P38-005108-1
1/32"	1/8"	3/32"	.005"	—	3"	P38-005109-1
1/32"	1/8"	3/32"	Ball End	—	1-1/2"	P38-200202-1
1/32"	1/8"	3/32"	Ball End	—	3"	P38-005107-1
1/32"	1/8"	3/32"	Sq. End	13/32"	3"	P38-005111-1
1/32"	1/8"	3/32"	.005"	13/32"	3"	P38-005112-1
1/32"	1/8"	3/32"	Ball End	13/32"	3"	P38-005110-1
1/32"	1/8"	3/32"	Sq. End	5/8"	3"	P38-005114-1
1/32"	1/8"	3/32"	.005"	5/8"	3"	P38-005115-1
1/32"	1/8"	3/32"	Ball End	5/8"	3"	P38-005113-1
1/32"	1/8"	3/32"	Sq. End	29/32"	3"	P38-005117-1
1/32"	1/8"	3/32"	.005"	29/32"	3"	P38-005118-1
1/32"	1/8"	3/32"	Ball End	29/32"	3"	P38-005116-1
3/64"	1/8"	9/64"	Sq. End	—	3"	P38-005120-1
3/64"	1/8"	9/64"	.010"	—	3"	P38-005121-1
3/64"	1/8"	9/64"	Ball End	—	3"	P38-005119-1
3/64"	1/8"	9/64"	Sq. End	9/16"	3"	P38-005123-1
3/64"	1/8"	9/64"	.010"	9/16"	3"	P38-005124-1
3/64"	1/8"	9/64"	Ball End	9/16"	3"	P38-005122-1
3/64"	1/8"	9/64"	Sq. End	3/4"	3"	P38-005126-1
3/64"	1/8"	9/64"	.010"	3/4"	3"	P38-005127-1
3/64"	1/8"	9/64"	Ball End	3/4"	3"	P38-005125-1
1/16"	1/16"	1/16"	Sq. End	5/16"	3"	P38-005156-1
1/16"	1/16"	1/16"	Ball End	5/16"	3"	P38-005155-1
1/16"	1/8"	3/16"	Sq. End	—	1-1/2"	P38-200477-1
1/16"	1/8"	3/16"	Sq. End	—	3"	P38-005129-1
1/16"	1/8"	3/16"	.010"	—	3"	P38-005130-1



**DIAMOND
COATED**



P38 4 Flute Lightning Diamond Coated End Mills

Cutting Diameter	Shank Diameter	Flute Length	Corner Radius	Reach Length	Overall Length	Tool Number Diamond Coated
1/16"	1/8"	3/16"	Ball End	—	1-1/2"	P38-200175-1
1/16"	1/8"	3/16"	Ball End	—	3"	P38-005128-1
1/16"	1/8"	3/16"	Sq. End	3/4"	3"	P38-005132-1
1/16"	1/8"	3/16"	.010"	3/4"	3"	P38-005133-1
1/16"	1/8"	3/16"	Ball End	3/4"	3"	P38-005131-1
1/16"	1/8"	3/16"	Sq. End	1"	3"	P38-005135-1
1/16"	1/8"	3/16"	.010"	1"	3"	P38-005136-1
1/16"	1/8"	3/16"	Ball End	1"	3"	P38-005134-1
3/32"	3/32"	3/32"	Sq. End	11/32"	3"	P38-005158-1
3/32"	3/32"	3/32"	Ball End	11/32"	3"	P38-005157-1
3/32"	1/8"	9/32"	Sq. End	—	3"	P38-005138-1
3/32"	1/8"	9/32"	.010"	—	3"	P38-005139-1
3/32"	1/8"	9/32"	Ball End	—	3"	P38-005137-1
3/32"	1/8"	9/32"	Sq. End	1"	3"	P38-005141-1
3/32"	1/8"	9/32"	.010"	1"	3"	P38-005142-1
3/32"	1/8"	9/32"	Ball End	1"	3"	P38-005140-1
3/32"	1/8"	9/32"	Sq. End	1-1/2"	3"	P38-005144-1
3/32"	1/8"	9/32"	.010"	1-1/2"	3"	P38-005145-1
3/32"	1/8"	9/32"	Ball End	1-1/2"	3"	P38-005143-1
3/32"	1/8"	3/8"	Sq. End	—	1-1/2"	P38-200002-1
3/32"	1/8"	3/8"	Ball End	—	1-1/2"	P38-200004-1
1/8"	1/8"	1/8"	Sq. End	5/8"	3"	P38-005160-1
1/8"	1/8"	1/8"	.015"	5/8"	3"	P38-005161-1
1/8"	1/8"	1/8"	.031"	5/8"	3"	P38-005162-1
1/8"	1/8"	1/8"	Ball End	5/8"	3"	P38-005159-1
1/8"	1/8"	3/8"	Sq. End	—	3"	P38-005147-1
1/8"	1/8"	3/8"	.010"	—	3"	P38-005148-1
1/8"	1/8"	3/8"	Ball End	—	3"	P38-005146-1
1/8"	1/8"	3/8"	Sq. End	1"	3"	P38-005150-1
1/8"	1/8"	3/8"	.010"	1"	3"	P38-005151-1
1/8"	1/8"	3/8"	Ball End	1"	3"	P38-005149-1
1/8"	1/8"	3/8"	Sq. End	2"	3"	P38-005153-1
1/8"	1/8"	3/8"	.010"	2"	3"	P38-005154-1
1/8"	1/8"	3/8"	Ball End	2"	3"	P38-005152-1
1/8"	1/8"	1/2"	Sq. End	—	1-1/2"	P38-200006-1
1/8"	1/8"	1/2"	Ball End	—	1-1/2"	P38-200008-1
1/8"	1/8"	1"	Sq. End	—	3"	P38-200010-1
1/8"	1/8"	1"	Ball End	—	3"	P38-200012-1
3/16"	3/16"	3/16"	Sq. End	0.688"	3"	P38-005164-1
3/16"	3/16"	3/16"	.062"	0.688"	3"	P38-005165-1
3/16"	3/16"	3/16"	Ball End	0.688"	3"	P38-005163-1
3/16"	3/16"	5/8"	Sq. End	—	2"	P38-200014-1
3/16"	3/16"	5/8"	Ball End	—	2"	P38-200016-1
1/4"	1/4"	1/4"	Sq. End	3/4"	4"	P38-005167-1
1/4"	1/4"	1/4"	.015"	3/4"	4"	P38-005168-1
1/4"	1/4"	1/4"	.030"	3/4"	4"	P38-005169-1
1/4"	1/4"	1/4"	.062"	3/4"	4"	P38-005170-1
1/4"	1/4"	1/4"	Ball End	3/4"	4"	P38-005166-1
1/4"	1/4"	3/4"	Sq. End	—	2-1/2"	P38-200022-1
1/4"	1/4"	3/4"	Ball End	—	2-1/2"	P38-200024-1
1/4"	1/4"	1-1/4"	Sq. End	—	3"	P38-200026-1
1/4"	1/4"	1-1/4"	Ball End	—	3"	P38-200028-1
3/8"	3/8"	7/8"	Sq. End	—	2-1/2"	P38-200038-1
3/8"	3/8"	7/8"	Ball End	—	2-1/2"	P38-200040-1
1/2"	1/2"	1"	Sq. End	—	3"	P38-200054-1
1/2"	1/2"	1"	Ball End	—	3"	P38-200056-1
1/2"	1/2"	2"	Sq. End	—	4"	P38-200058-1
1/2"	1/2"	2"	Ball End	—	4"	P38-200060-1

The Lightning series of tools offer a cost-effective solution for the machining of graphite electrodes. By reducing the coating thickness the edge sharpness is increased and cost is reduced. These tools offer a cost-effective solution.

NEW!

P38/P820 Graphite Machining

Speeds and Feeds for Graphite

CUTTING FEEDS

Tool Diameter	Soft Graphite Chipload Per Tooth (CLPT)		Medium Graphite Chipload Per Tooth (CLPT)		Hard Graphite Chipload Per Tooth (CLPT)	
	Roughing (clpt)	Finishing (clpt)	Roughing (clpt)	Finishing (clpt)	Roughing (clpt)	Finishing (clpt)
1/32"	0.0006–0.0008	0.0005–0.0006	0.0005–0.0006	0.0004–0.0005	0.0004–0.0005	0.0003–0.0004
1/16"	0.0013–0.0015	0.0010–0.0013	0.0010–0.0013	0.0008–0.0010	0.0008–0.0010	0.0005–0.0008
3/32"	0.0019–0.0023	0.0015–0.0019	0.0015–0.0019	0.0011–0.0015	0.0011–0.0015	0.0008–0.0011
1/8"	0.0025–0.0030	0.0020–0.0025	0.0020–0.0025	0.0015–0.0020	0.0015–0.0020	0.0010–0.0015
3/16"	0.0038–0.0045	0.0030–0.0038	0.0030–0.0038	0.0023–0.0030	0.0023–0.0030	0.0015–0.0023
1/4"	0.0050–0.0060	0.0040–0.0050	0.0040–0.0050	0.0030–0.0040	0.0030–0.0040	0.0020–0.0030
5/16"	0.0063–0.0075	0.0050–0.0063	0.0050–0.0063	0.0038–0.0050	0.0038–0.0050	0.0025–0.0038
3/8"	0.0075–0.0090	0.0060–0.0075	0.0060–0.0075	0.0045–0.0060	0.0045–0.0060	0.0030–0.0045
7/16"	0.0088–0.0105	0.0070–0.0088	0.0070–0.0088	0.0053–0.0070	0.0053–0.0070	0.0035–0.0053
1/2"	0.0100–0.0120	0.0080–0.0100	0.0080–0.0100	0.0060–0.0080	0.0060–0.0080	0.0040–0.0060

Speeds and Feeds are only general starting points and may vary depending on specific applications.

CUTTING SPEEDS

Graphite Hardness	Cutting Speed
	Surface Feet Per Minute
Soft Graphite	1000–2000 sfm
Medium Graphite	750–1500 sfm
Hard Graphite	500–1250 sfm



FROM ROBBJACK:

2 Great Problem Solving Tools Made to Order

Sound Reduction Perforation Tools

Designed for Airplane Engine Nacelles

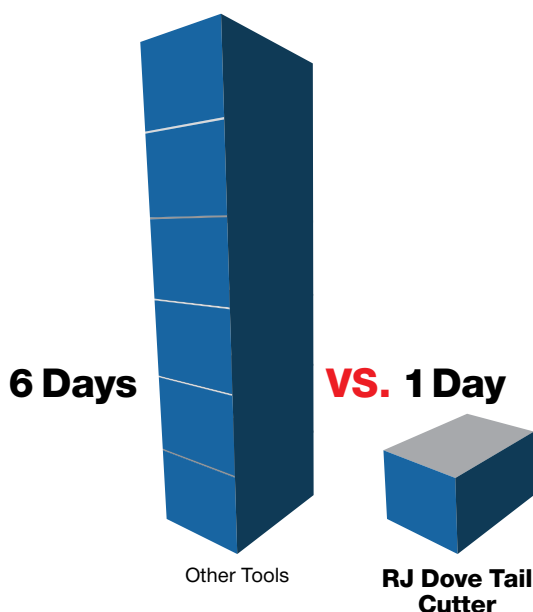
Up to 80,000 Holes
in Fiberglass
Up to 40,000 Holes
in Carbon Fiber

- No Uncut Fiber
- No Delamination
- No Fiber Pullout
- Best Finishes

 Produces the
Cleanest Holes



Dove Tail Cutters – Cut 40 Hours Off Operation!



- Reduce Cycle Time by 1 Week
- Cut the Dove Tail and Trim the Part at the Same Time
- Available with Diamond Coating



Special dove tail cutters for carbon fiber that eliminate the operation of trimming the part to match the CAD file. Used in composite aircraft ribs and spars or where any dovetail cuts are needed.

Composites Tools in Other Sections

MINIATURES

(See Miniatures Applications)



132

A1 / MA1 201

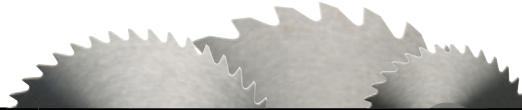
(See Aluminum Applications)



28

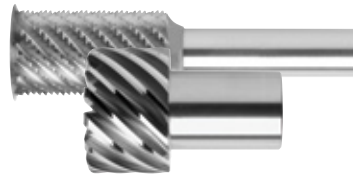
SAWS

(See Saws Applications)



170

SPECIALS



Made to Order

Eliminate the problem of TIR and tool length associated with brazed threads. Can be diamond coated.

