

RobbJack's got the Solution

for Your Next Machining Project

Maximum Removal Rates in Aluminum?	A1 Series 	12
Routing Aluminum Skins?	PM and WU1/WD1 Series 	11
Deep Pockets in Aluminum?	FM Series 	16
Machining High-Temperature Alloys?	XG and XF Series 	35
Routing Composites?	PCD and New CPCD CR Compression and CE Routers  NEW!	57
Drilling Holes in Composites?	New RJ PCD Drills Diamond-Coated Carbide Drills  NEW!	57
Cutting Hardened Die Steels?	RobbJack's DM, TM, and HM Tool Series  NEW Tools	67
Micro Machining?	A Complete Line of Micro Machining Tools  NEW Coatings Available!	77
Tools for Other Applications?	Quality Tools for Every Imaginable Material and Application 	87
Slotting?	A Complete Line of Saws & Accessories 	108

Catalog Sections at a Glance

ALUMINUM APPLICATIONS 11

A1-201 2 Flute Stub Length	12
MA1-201 Metric 2 Flute Stub Length	12
A1-303 3 Flute Standard Length	14
MA1-303 Metric 3 Flute Standard Length	14
FM 2 Flute (Short to Long Reach)	16
FM 3 Flute (Short to Long Reach)	20
MFM 2 Flute Metric (Short to Long Reach)	24
S1-201 2 Flute C-2 Grade Stub Length	27
MS1-201 Metric 2 Flute C-2 Grade Stub Length	27
S1-301 3 Flute C-2 Grade Stub Length	28
S1-401 4 Flute C-2 Grade Stub Length	28
C1-201 2 Flute C-2 Grade Standard Length	29
MC1-201 Metric 2 Flute C-2 Grade Standard Length	29
C1-301 Metric 3 Flute C-2 Grade Standard Length	30
MC1-301 Metric 3 Flute C-2 Grade Standard Length	30
C1-401 4 Flute C-2 Grade Standard Length	30
WU1-310 Up Shear 3 Flute Standard Length (10° Helix)	31
WD1-310 Down Shear 3 Flute Standard Length (10° Helix)	31

TITANIUM, STEELS & HIGH-TEMP ALLOYS 35

XG-400 4 Flute Stub Length	36
XG-402 4 Flute Standard Length	36
MXG-402 Metric 4 Flute Standard Length	36
XG-500 5 Flute Stub Length	37
XG-502 5 Flute Standard Length	37
XG-402BN 4 Flute Ball End Standard Length	38
MXG-402BN Metric 4 Flute Ball End Standard Length	38
XF-602/802 6/8 Flute Standard Length	39
ST-341 3 Flute Super Tuffly Carbide Stub Length	42
MST-341 Metric 3 Flute Super Tuffly Carbide Stub Length	42
ST-343 3 Flute Super Tuffly Carbide Standard Length	43
STR-301 3 Flute Super Tuffly Carbide Ruffer Stub Length	44
MSTR-301 Metric 3 Flute Super Tuffly Carbide Ruffer Stub Length	44
STR-303 3 Flute Super Tuffly Carbide Ruffer Standard Length	45
MSTR-303 Metric 3 Flute Super Tuffly Carbide Ruffer Standard Length	45
STR-401 4 Flute Super Tuffly Carbide Ruffer Stub Length	46
MSTR-401 Metric 4 Flute Super Tuffly Carbide Ruffer Stub Length	46
STR-404 4 Flute Super Tuffly Carbide Ruffer Standard Length	47
MSTR-404 Metric 4 Flute Super Tuffly Carbide Ruffer Standard Length	47
B-300 3 Flute Tuffly Ball End Stub Length	48
B-330 3 Flute Tuffly Ball End Standard Length	48
B-440 4 Flute Tuffly Ball End Standard Length 40° Helix	49
MB-440 Metric 4 Flute Tuffly Ball End Standard Length 40° Helix	49
ST-360 3 Flute Super Tuffly Carbide Standard Length	50
MST-360 Metric 3 Flute Super Tuffly Carbide Standard Length	50
ST-646 6 Flute Super Tuffly Carbide Standard Length	51
MST-646 Metric 6 Flute Super Tuffly Carbide Standard Length	51
ST-630 6 Flute Super Tuffly Carbide Standard Length	51
ST-430 4 Flute Super Tuffly Carbide Standard Length	52
MST-430 Metric 4 Flute Super Tuffly Carbide Standard Length	52
ST-434 4 Flute Super Tuffly Carbide Standard Length	53
MST-434 Metric 4 Flute Super Tuffly Carbide Standard Length	53

COMPOSITES & PLASTICS 57

PCD 118° PCD-Tipped Standard Length – 4 Facet	58
PCD 118/20° PCD-Tipped Standard Length – 8 Facet	58
PCD 135/20° PCD-Tipped Standard Length – 8 Facet	58
PCD Elliptical PCD-Tipped Standard Length	58
CPCD-203 Composite 2 Flute Standard Length	59
PCD-203 2 Flute Standard Length	59
PCD-201BN 2 Flute Ball End Stub Length	59
CR Compression Router – 4/6 Flute	60
CE Carbide Composite Router – 6/8 Flute	61
P810 Diamond Coated Standard Length Drills	62
PM Up Shear 1 Flute Tuffly Grade	63
PMD Down Shear 1 Flute Tuffly Grade	63
GTS 2 Flute Tuffly Grade Straight Flute	63

DIE/MOLD & HARDENED MATERIALS 67

DM-201 2 Flute Grade Ball End Extended Length	68
MDM-201 Metric 2 Flute Tuffly Ball End Extended Length	69
TM-201 2 Flute Tuffly Grade Toroid End Mill	71

MTM-201 Metrics 2 Flute Tuffly Grade Toroid End Mill	72
HM Multi-Flute Tuffly Grade	73
MHM Metric Multi-Flute Tuffly Grade	73

MINIATURES APPLICATIONS 77

SS-2 2 Flute Tuffly Grade Stub Length	78
MSS-2 Metric 2 Flute Miniature Stub Length	79
SR-2 2 Flute Tuffly Grade Standard Length	80
MSR-2 Metric 2 Flute Standard Length	81
SS-2BN 2 Flute Ball End Stub Length	82
MSS-2BN Metric 2 Flute Stub Length	82
SR-2BN 2 Flute Ball End Tuffly Grade Standard Length	83
MSR-2BN Metric 2 Flute Ball End Tuffly Grade Standard Length	83
SS-4 4 Flute Tuffly Grade Stub Length	84
MSS-4 Metric 4 Flute Tuffly Grade Stub Length	84
SR-4 4 Flute Tuffly Grade Standard Length	85
MSR-4 Metric 4 Flute Standard Length	85
ACH Accuhold – End Mill Extension Holder	85
MAH Accuhold – Metric End Mill Extension Holder	85

MULTIPLE APPLICATIONS 87

TL-303 3 Flute Tuffly Grade Extra Length	88
MTL-303 Metric 3 Flute Tuffly Grade Extra Length	88
T6-200 2 Flute Tuffly Grade Stub Length	89
T6-202 2 Flute Tuffly Grade Standard Length	89
T6-400 4 Flute Tuffly Grade Stub Length	90
T6-402 4 Flute Tuffly Grade Standard Length	90
T12-201 2 Flute Tuffly Grade Stub Length	91
T12-203 2 Flute Tuffly Grade Standard Length	91
T12-403 4 Flute Tuffly Grade Stub Length	92
T12-405 4 Flute Tuffly Grade Standard Length	92
C8-201 2 Flute C-2 Grade Stub Length	93
C8-301 3 Flute C-2 Grade Stub Length	93
C8-203 2 Flute C-2 Grade Standard Length	93
C8-303 3 Flute C-2 Grade Standard Length	93
TS-201 2 Flute Tuffly Grade Stub Length	94
TS-301 3 Flute Tuffly Grade Stub Length	94
TS-401 4 Flute Tuffly Grade Stub Length	95
MTS-401 Metric 4 Flute Tuffly Grade Stub Length	95
TR-303 3 Flute Tuffly Grade Standard Length	96
TR-404 4 Flute Tuffly Grade Standard Length	97
TR-606 6 Flute Tuffly Grade Standard Length	97
SB-201 2 Flute Tuffly Ball End Stub Length	98
MSB-201 Metric 2 Flute Tuffly Ball End Mill Stub	98
B-203 2 Flute Tuffly Ball End Standard Length	99
MB-203 Metric 2 Flute Tuffly Ball End Standard Length	99
SB-301 3 Flute Tuffly Ball End Stub Length	100
MSB-301 Metric 3 Flute Tuffly Ball End Stub Length	100
B-333 3 Flute Tuffly Ball End Standard Length	101
MB-333 Metric 3 Flute Tuffly Ball End Standard Length	101
NR-204 2 Flute C-2 Grade Standard Length	102
MNR-204 Metric 2 Flute C-2 Grade Standard Length	103
NR-303 3 Flute C-2 Grade Standard Length	103
MNR-303 Metric 3 Flute C-2 Grade Standard Length	103
NR-404 4 Flute C-2 Grade Standard Length	104
EX-204 2 Flute Tuffly Grade Extra Length	105
EX-206 2 Flute Tuffly Grade Extra Length Extended Reach	105
ET1 Double Lip Engraving Tool for Tougher Materials	106
ET3 Ball Tip Engraving Tool	106
ET2 Plunge Tip Engraving Tool for Drill & Engrave	106
ET4 Standard Engraving Tool for Most Applications	106
ACH Accuhold – End Mill Extension Holder	107
MAH Accuhold – Metric End Mill Extension Holder	107

SAWS APPLICATIONS 109

Saw Formulas/Guidelines	109
Saw Speed & Feeds	110
Saw Modifications (T-Process, Alt. Tooth Chamfer, Hub, Keyway)	111
SAWS Inch	112
SAWS Metric	119
AB, MSA and NAB Arbors for Saws	123
Flanges (Any diameter between 2–4")	124
Caps Extended & Replacement	124

Speed & Feeds/Formulas

Material	SFM Surface Feet/Minute	SMM Surface Meters/Minute	Chip Load per Tooth
Aluminum / Non-Ferrous			
Ferrous			
2024	Max RPM	Max RPM	tool diameter x .0256
6061 (T1-T3)	Max RPM	Max RPM	tool diameter x .0128
6061 (T4-T6)	Max RPM	Max RPM	tool diameter x .0256
7075	Max RPM	Max RPM	tool diameter x .0256
Non-Ferrous			
Brass	750	230	tool diameter x .0128
Copper	600	190	tool diameter x .0128
Magnesium	Max RPM	Max RPM	tool diameter x .0256
Titanium, Steel and High-Temp Alloys			
Titanium			
Commercially Pure	350	100	tool diameter x .0048
6AL-4V	230	55	tool diameter x .0048
6AL-6V	180	35	tool diameter x .004
Steel			
1018-1020	350	110	tool diameter x .0064
4130	260	80	tool diameter x .0032
4140	220	70	tool diameter x .0032
4340	280	90	tool diameter x .0032
Tool Steel Annealed			
A2	350	110	tool diameter x .0032
D2	260	80	tool diameter x .0032
H13	230	70	tool diameter x .0032
P20	350	110	tool diameter x .00496
Stainless Steel			
303	500	150	tool diameter x .0048
304	225	70	tool diameter x .0032
316	240	75	tool diameter x .0032
15-5/17-4 PH	200	60	tool diameter x .0032
440C	200	60	tool diameter x .0032
Inconel			
625 / 718	100	30	tool diameter x .0036
Composites & Plastics			
G10 Fiberglass/Polyester	1000	300	tool diameter x .0136
Graphite	1000	300	tool diameter x .0256
Graphite Fiber/Epoxy	800	250	tool diameter x .008
Plastics	1300	400	tool diameter x .0256
Die/Mold			
<i>See Die/Mold section</i>			
Other Material Applications			
Cast Iron			
Ductile Iron	350	110	tool diameter x .0096
Gray Cast Iron	500	150	tool diameter x .0128

INCH SIZES		
Surface Feet per Minute	=	RPM × .262 × Tool Diameter
RPM	=	$\frac{\text{Surface Feet per Minute} \times 3.82}{\text{Tool Diameter}}$
Feedrate (in/min.)	=	RPM × Chip Load per Tooth × Number of Flutes
in ³ /min	=	Width × Depth × Inches per Minute
Horsepower	=	1.341 × kW
kW	=	.7457 × Horsepower
METRIC SIZES		
Surface Meters per Minute	=	RPM × .00314 × Tool Diameter
RPM	=	$\frac{\text{Surface Meters per Minute} \times 318.057}{\text{Tool Diameter}}$
Feedrate (mm/min.)	=	RPM × Chip Load per Tooth × Number of Flutes
cm ³ /min	=	$\frac{\text{Width (mm)} \times \text{Depth (mm)} \times \text{Feedrate (mm/min)}}{1000}$
Horsepower	=	1.341 × kW
kW	=	.7457 × Horsepower

See RobbJack Videos at
www.youtube.com/RobbJackCorp
 or
www.robbjack.com/videos



Visit RobbJack's New Website!

www.robbjack.com

Visit Our New Website With **Dynamic** Tool Search

TOOL SEARCH

1

Click Here for Tool Search!

Click on the **Red Search Tab** and Find the **Exact Tool** You're Looking For!



Click on an Icon or Enter Your Specifications.

Make Your Selections Here!

Find a Tool by:
Tool Type
Your Specifications
Tool Characteristics
Materials
Application



2

3

See Search Results Here!

Make changes in your search criteria, see new results here immediately!

4

Click on a Tool Number



5

Complete Tool Description

Prices, available coatings, specifications, tolerances, features, speed and feeds, videos and much more!

Now Online!

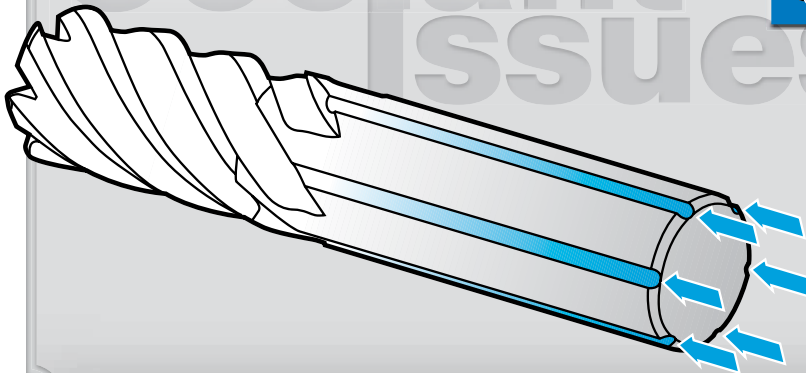
Speed & Feed Calculations now online at www.robbjack.com/speedfeed

- ▶ Quick, easy calculations, both metric and standard
- ▶ End mill speeds and feeds
- ▶ Slitting saw speeds and feeds
- ▶ Troubleshooting
- ▶ Printable results
- ▶ Simultaneous tool recommendations



End Mill Modifications

Coolant Grooves



Coolant Grooves allow coolant to flow around the outside of the tool for through-spindle coolant applications. It is a lower-cost option to through-the-tool coolant holes.

To order a RobbJack tool with a **Coolant Grooves**, use the existing *Part Number*, and add **-CG**.

Example:

An A1-201-12 with coolant grooves is Part Number:

▶ **A1-201-12-CG**
See price sheet for pricing

Mirror Edge™

Our edge preparation dampens vibration to help eliminate chatter.



Mirror Edge



Non-Mirror Edge

Applications

- Deep pocket and thin wall aluminum
- Long reaches more than 3:1 length-to-diameter ratio
- Plunging corners in titanium, steels, stainless, aluminum, etc.
- High end valves used with Feather Blend and T-Process

Must Use Coolant



Our patented Mirror Edge geometry helps to eliminate chatter. This geometry can be used in any application where chatter is a problem, usually for thin walls, valves, deep pockets or where the tool sticks out more than 3:1 length to diameter ratio.

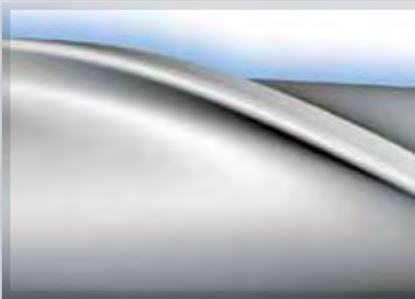
To order RobbJack tools with **Mirror Edge**, use the existing *Part Number*, and add **-ME**.

Example:

An A1-201-12 with Mirror Edge is Part Number:

▶ **A1-201-12-ME**
See price sheet for pricing

T-Process



T-Process is a honed edge we put on an end mill to help eliminate chipping.

Pros: T-Process strengthens the edge, helps eliminate chipping and gives a smooth edge.

Cons: T-Process will bring up a burr in certain materials, and it is not for materials that like a sharp edge, such as aluminum and plastics.

To order a RobbJack tool with a **T-Process**, use the existing *Part Number*, and add **-TP**.

Example:

An XG-402-16 with a T-Process is Part Number:

▶ **XG-402-16-TP**
See price sheet for pricing



End Mill Modifications



Feather Blend™

A smooth transition from the cutting diameter to the neck diameter.



Feather Blend



Standard Neck

Applications

- Any necked tool
- Eliminates swirl lines during plunging
- Eliminates stress risers in parts



Reach

Modify any standard tool with a neck to get the job done quickly.

A neck will increase rigidity, reduce tool deflection and last longer than a long length of cut tool. Necking can be added to most standard tools in 1–2 days.

To order a RobbJack tool with a **Reach**, use the existing *Part Number*, and add *-N* and the desired length from the end of the tool.

Example:

An A1-201-12 necked with 1.0" Reach is Part Number:

▶ **A1-201-12-N 1.0"**

See price sheet for pricing

A tool necked with Feather Blend is a reduction in the tool diameter after the cutting length so the tool can cut deeper than its cutting length. It features a smooth transition from the cutting diameter to the neck diameter. Feather Blend reduces staircase marks and stress risers in parts and helps to maintain the strongest tool possible.

Wiper Flats



A Wiper Flat is a small flat on the end of the tool where there is no concavity. It is used to minimize swirl marks on the floor of parts.



Pros: A Wiper Flat gives better floor finishes.

Cons: Wiper Flats will increase surface contact, not for use on thin floors.

To order a RobbJack tool with a **Wiper Flats**, use the existing *Part Number*, and add *-WF*.

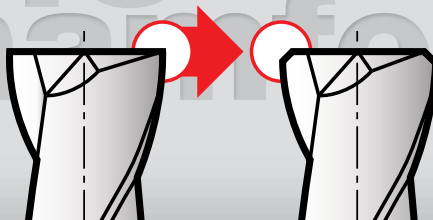
Example:

An A1-201-12 with wiper flats is Part Number:

▶ **A1-201-12-WF**

See price sheet for pricing

45° Chamfer



To order a RobbJack tool with a **45° Chamfer**, use the existing *Part Number*, add *-CH* and amount of *Chamfer*.

Example:

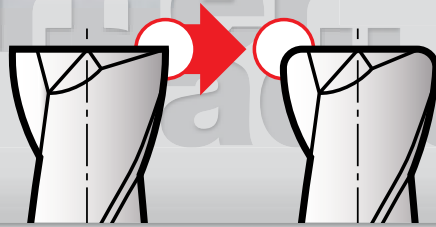
A1-201-12 with a .040" 45° chamfer is Part Number:

▶ **A1-201-12-CH .040"**

See price sheet for pricing

End Mill Modifications

Corner Radius



To order a RobbJack tool with a **Corner Radius**, use the existing *Part Number*, add **-CR** and desired *Radius Size*.

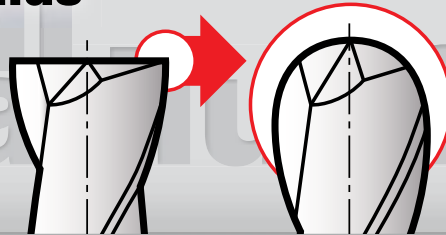
Example:

An A1-201-12 with a .005 corner radius is Part Number:

▶ **A1-201-12-CR .005**

See price sheet for pricing

Full Radius



To order a RobbJack tool with a **Full Radius** (or Ball End), use the existing *Part Number*, and add **-BN**.

Example:

An A1-201-12 with a Full Radius (Ball End) is Part Number:

▶ **A1-201-12-BN**

See price sheet for pricing

Weldon Flats



To order RobbJack tools with **Weldon Flats**, use the existing *Part Number*, and add **-FL**.

Example:

An A1-201-12 with a Weldon Flat is Part Number:

▶ **A1-201-12-FL**

No Charge

Regrinding

Let RobbJack recondition your used cutting tools and get RobbJack quality grinds and specifications on tools with any brand name!

Wouldn't it be nice if resharpened tools performed as well as new? Let us regrind yours the way we do ours and it can happen. We will add our grinds and finishes to any tools, regardless of manufacturer. Our prices are competitive, our delivery is usually the best in the industry, and we do our own, in-house PVD coatings and re-coatings.

GO GREEN

Try RobbJack's in-house carbide recycling program.

Many times the tools we receive for regrinding are too badly damaged to justify reconditioning. For all tools that we determine fall into this category, **we will either:**

▶ **Return the tools to you marked "No Work Done" (NWD)**

OR...

▶ **Put the tools, as scrap, into our recycling program and send you a certificate for a 10% discount on your next regrinding order.**

We will offer you this choice every time we receive tools that we determine are NWD. We recycle scrap tools to carbide re-manufacturers, who crush the tools and use the recycled shards and powder to make shredders or non-critical carbide grades.

YOUR OWN COATING

Get state-of-the art coating technology without delivery hassles.

RobbJack owns and operates their PVD coating facility in Lincoln, CA under the tenets of ISO9000 certification. Our factory-trained technicians take the same special care with your tools as with ours, assuring you of the best PVD coatings available. We do this as part of our process, reducing or eliminating delays in delivery.

Download our Regrinding Order Form

at www.robbjack.com/reservice/feedback_form.html to get started. Or email or call us!

Phone: (916) 645-6045 sales@robbjack.com
Toll-Free: (800) 527-8883 sherry@robbjack.com
Fax: (916) 645-0146

Custom End Mills

DON'T SEE WHAT YOU NEED?

RobbJack manufactures a wide variety of end mills in addition to those listed in our catalog. We can make tools for your specific needs by modifying standard tools or through custom manufacture. We can work directly from your prints to design and build the exact tool for your requirements. Contact us if you need:

- **Special Cutting and/or Shank Diameters**
- **Special Cutting Length and/or Overall Lengths**
- **Corner Radii, Full Ball or Corner Chamfer Configurations**
- **Chip Breakers or Roughing Cutters**
- **Special Tolerances**
- **Tapered End Mills, Constant Helix or Constant Lead.**
- **Special Coatings Available.**

To get a quote or more information about a custom tool, fax or call us with your specifications and any other pertinent information (photocopy the form below). If you are not sure of the best configuration for your application, we will be glad to help you.

Remember, to obtain the best performance in all end mill applications:

- Use the largest diameter possible.
- Use the shortest flute length possible.
- Use the correct number of flutes for your application.
- Use recommended speed and feed rates.

Copy this form and fax it to us at (916) 645-0146 or (916) 645-1668 or email: quotes@robbjack.com

RobbJack Custom End Mill Request for Quote/Information

Description of Application:

Order Quantity:

Cutting Diameter:

Tolerance:

Cutting Length:

Shank Diameter:

Overall Length:

Number of Flutes:

Special Configurations (Radii, Chamfers, Set Screw Flats, Chip Breakers, Coatings, etc.):

For Tapered Tools:

Major Diameter:

Tip Diameter:

Per Side/Included Angle:

Tolerance:

End Configuration (Full Ball, Corner Radii, Square End):

(Note: RobbJack recommends 3 flutes for all tapered applications)



Questions?

Call us:
at (916) 645-6045
or (800) 527-8883

Fax us:
at (916) 645-0146
or (916) 645-1668



Visit us:
at www.robbjack.com

Email us:
quotes@robbjack.com

Custom Carbide Saws

SPECIAL SAWS TO MEET YOUR SPECIFIC NEEDS

In addition to the broad line of standard saws listed in this catalog, RobbJack is capable of manufacturing a wide variety of special saws. If our standard offerings do not meet your needs, call or fax your specifications to us for quotation. Contact us if you need:



- **Special Cutting Diameters**
- **Special Thicknesses**
- **Special Arbor Hole Sizes and Keyways**
- **Special Chamfers, Angles or Radii**
- **Special Tooth Configurations and Pitches**
- **Special Coatings Available.**
- **Gang Saws** – If your requirements call for the use of more than one saw at a time, contact us for a complete, ready-to-use package, including saws, arbors and spacers. We are experts in ganging saws, which generally requires flat and parallel hubs, made to our exacting specifications.

**Copy this form and fax it to us at
(916) 645-0146 or (916) 645-1668
or email: quotes@robbjack.com**

We are frequently able to combine saws and spacers into an integral saw with offset hub, which reduces tolerances buildup by one-half.

Many of these features can be achieved by modifying standard saws. Others require that we start from scratch. We will work directly from your prints or help you design

the saws you need from the following information. Simply photocopy the bottom of this page, fill it out and fax it to us along with any other pertinent data. And remember, to obtain the best performance in all saw applications:

- Use the smallest diameter and the greatest thickness possible.
- Choose the number of teeth (tooth count) to meet your specific application (if you are not sure of the best configuration for your application, call us and we'll advise you).
- Ask for feed and speed recommendations to get started right.

RobbJack Custom Saw Request for Quote/Information

Outside Diameter: _____

Saw Thickness: _____

Inside Diameter: _____

Number of Teeth: _____

Keyway on I.D.: _____

For Gang Use: _____

Special Configurations (such as
Chamfers, Angles, Radii or Forms): _____

Order Quantity: _____



Questions?



Call us:
at (916) 645-6045
or (800) 527-8883

Fax us:
at (916) 645-0146
or (916) 645-1668

Visit us: at www.robbjack.com

Email us: quotes@robbjack.com

Terms & Conditions

Terms

1% Ten Days, Net 30 Days. Minimum Invoice, \$25.00.

Shipping

F.O.B. Lincoln, California. All shipments via **2nd Day Air**, unless otherwise specified.

Claims

Goods are considered sold and our responsibility ceases when delivery is made to the transportation company. In the event of goods being lost in transit, we will make every effort on behalf of customers to have lost goods found or to have the transportation company make proper restitution for loss.

Damage claims must be made against carrier.

Specials

Orders for special tools, non-catalog or modified tools are accepted on a no-cancellation basis and tools are not returnable. A confirming purchase order is required before any work begins on special tools.

A 10% over or under shipment on a special is acceptable based on industry practices unless no overshipment is stated at time of quoting.

Return Policy

No merchandise may be returned without prior authorization from the factory. Credit will not be issued for merchandise returned without a return authorization number.

All merchandise returned for credit will be subject to a 15% restocking charge.

Errors

RobbJack Corporation can not be held responsible for incorrect parts made with our products due to mislabeling or defect. We assume all tools used by our customers are inspected before use and that first part inspections in customer's plant is the rule. We will replace or credit tools in those situations.

Prices

Prices subject to change without notice.



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Lincoln, CA 95648
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