Hardened materials range brochure

Solid carbide tooling, modular tooling and drills

Hard materials **sharp results**

INFINITE POSSIBILITIES.®

QUICKGRIND® carbide tooling

Contents

● Primary ◐ Secondary ○ Unsuitable

Icons key

Standard – available ex-stock

Customisable – Infinite Possibilities®

ModX® compatible – modular heads and shanks

Remanufacture compatible – regrind, recoat, reuse

Centre cutting

Helix angle

VHM

Coating type

Variable helix

Variable index

Number of teeth

Coated barrel tool

Coated ball nose

Coated corner radius

Orbis 270°

Chip breaker

Through-coolant

3D milling

Chamfer milling

Helical milling

Pocket milling

Profile milling

Ramping

Side finishing

Side roughing

Slot milling

Trochoidal milling

Chamfer drilling

Drilling

Hard, fast, **high quality**

Unleash the power of precision with Quickgrind's premium solid carbide tools for hardened materials. Our cutting-edge range guarantees unparalleled performance, longevity and impeccable surface finishes.

In this brochure you will find a selection of standard tools which are available ex-stock, all designed to meet your needs for a wide range of day-to-day and specialist applications. Look for the 'S' icon to identify the tools in this part of the range…

Our standard tools are available ex-stock

For non-standard tooling there is our Infinite Possibilities® programme. See the next couple of pages to find out more about the future of tool purchasing today…

Look out for this icon to see which of our tools are Infinite Possibilities® compatible

Of course, our standard tools can also be tailored to suit your particular requirements, so if you don't see what you need please ask – we will be able to make it for you.

We even have our ModX® range of flexible, modular tooling with a choice of interchangeable shanks and heads. Wherever you see this symbol, that tool is available in modular design…

This icon tells you which of our tools are ModX® compatible

Operating in 37 countries we have an international reputation for solid carbide cutting tools for every industry sector and our 'total solutions engineering' approach is so successful it has been expanded to include a range of compatible services including CAM strategies, remanufacture and tool vending. Our state-of-the-art Technical Centre is a purpose-built space for you to discover all of these services, to meet and talk to our specialists and to test our tools on your components – see pages 34 to 40 to find out more.

Welcome to Quickgrind. We look forward to partnering with you and helping you to transform your efficiency, productivity and bottom line.

Call +44 (0) 1684 294090
or visit quickgrind.com

INFINITE POSSIBILITIES.®

What if you could have the optimum tool, with the marginal cost increase more than covered by improved production throughput and efficiency? With Quickgrind, you can. Welcome to a world of Infinite Possibilities.®

Our mission is to provide you with solution-based tooling, to give you the right tool, for the right job, at the right price.

Our hardened materials cutters can be designed specifically for your application and are available in virtually any size, diameter, radius, neck relief, coating or reach. Through-coolant and other options are also available.

Contact our team today to discuss your applications, aims and requirements.

There are no limits, only Infinite Possibilities®

Call +44 (0) 1684 294090
or visit quickgrind.com

Ordering is as easy as **one, two, three**

1. Choose your shank spec

- Length • Diameter • Tolerance
- DIN or other shank standards

2. Choose your neck spec

- Length • Diameter • Relief

3. Choose your head spec

- Length • Diameter
- Tolerance • Number of flutes
- Helix angle • Anti-vibration
- Radius • Chamfer
- Radial/axial through-coolant
- Ball nose • Coating
- Chip breakers

Just tell us what you need for your job and we will make it for you. Even specials can be designed, proved and delivered in days, at a cost you could recoup on your first job.

That's Infinite Possibilities.®

t +44 (0) 1684 294090 | **e** contact@quickgrind.com | **w** quickgrind.com

Because one size **doesn't always fit all**

Ask engineers what the name Quickgrind means to them and they will invariably say 'bespoke tooling'. And whilst we do have a standard tooling range – some 400+ go-to cutters – our non-standard service is still central to what we do.

To help you identify which of our tools are suitable for the Infinite Possibilities® process simply look for the infinity icon in the list of tooling features. It looks like this…

Look out for this icon to see which of our tools is Infinite Possibilities® compatible

Shown here are examples of just some of the bespoke hardened materials tools we have designed and made for our clients.

Why not ask us what we can do for you?

Quality and inspection

Our Quality Management System defines the strategic organisational objectives, policies and procedures associated with all quality-related activities.

We have established, documented, implemented and maintain a Quality Management System that is designed to comply with the requirements of ISO 9001:2015. Quickgrind is committed to both satisfying all applicable requirements and to continually improving their effectiveness.

Our inspection processes form a key part of the Quality Management System with all tools, both new and remanufactured, undergoing stringent pre- and post-production calibration and measurement checks using the very latest equipment and technology, including Bruker Alicona optical metrology machines and Walter Helicheck measuring machines.

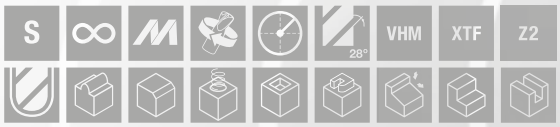
NEW WARRIOR

High Performance Ball Nose End Mills

Winning in **hardened steels**

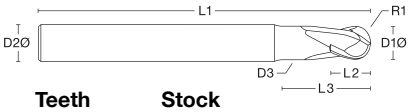
Reduced cycle times

Our new Warrior 2 flute ball nose has been honed through experience by our R&D experts. The recipe of submicrograin solid carbide substrate and specially developed coating deliver excellent tool life in hardened tool steels and Inconels.



Tooling and workpiece images are for illustrative purposes only and are not actual size

NEW Warrior 2 flute ball nose end mill for hardened steels



D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R mm	Teeth Z	Stock code
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2.00	4.00	1.90	40.00	2.00	4.00	1.00	2	210021
2.00	6.00	1.90	60.00	2.00	4.00	1.00	2	210022
2.00	6.00	1.90	80.00	2.00	20.00	1.00	2	210023
2.00	6.00	1.90	80.00	2.00	35.00	1.00	2	210024
2.50	6.00	2.40	60.00	2.50	5.00	1.25	2	210025
3.00	3.00	-	50.00	3.00	-	1.50	2	210030
3.00	4.00	2.80	40.00	3.00	6.00	1.50	2	210031
3.00	6.00	2.80	60.00	3.00	6.00	1.50	2	210032
3.00	6.00	2.80	80.00	3.00	20.00	1.50	2	210033
3.00	6.00	2.80	80.00	3.00	40.00	1.50	2	210034
3.50	6.00	3.20	65.00	3.50	7.00	1.75	2	210035
4.00	4.00	-	40.00	4.00	-	2.00	2	210040
4.00	4.00	-	60.00	4.00	-	2.00	2	210041
4.00	6.00	3.70	65.00	4.00	8.00	2.00	2	210042
4.00	6.00	3.70	80.00	4.00	20.00	2.00	2	210043
4.00	6.00	3.70	80.00	4.00	52.00	2.00	2	210044
5.00	5.00	-	60.00	5.00	-	2.50	2	210050
5.00	6.00	4.60	50.00	5.00	10.00	2.50	2	210051
5.00	6.00	4.60	65.00	5.00	10.00	2.50	2	210052
5.00	6.00	4.60	100.00	5.00	50.00	2.50	2	210053
5.00	8.00	4.60	100.00	5.00	56.00	2.50	2	210054
6.00	6.00	-	50.00	6.00	-	3.00	2	210060
6.00	6.00	-	75.00	6.00	-	3.00	2	210061
6.00	6.00	-	100.00	6.00	-	3.00	2	210062
6.00	8.00	5.60	75.00	6.00	12.00	3.00	2	210063
6.00	8.00	5.60	100.00	6.00	56.00	3.00	2	210064
6.00	10.00	5.60	125.00	6.00	62.00	3.00	2	210065
8.00	8.00	-	65.00	8.00	-	4.00	2	210080
8.00	8.00	-	110.00	8.00	-	4.00	2	210081
8.00	8.00	7.40	75.00	8.00	16.00	4.00	2	210082
8.00	10.00	7.40	125.00	8.00	62.00	4.00	2	210083
8.00	12.00	7.40	150.00	8.00	67.00	4.00	2	210084
10.00	10.00	-	65.00	10.00	-	5.00	2	210100
10.00	10.00	-	125.00	10.00	-	5.00	2	210101
10.00	10.00	9.40	80.00	10.00	20.00	5.00	2	210102
10.00	12.00	9.40	125.00	10.00	61.00	5.00	2	210103
10.00	12.00	9.40	150.00	10.00	79.00	5.00	2	210104
12.00	12.00	-	125.00	12.00	-	6.00	2	210120
12.00	12.00	11.40	90.00	12.00	24.00	6.00	2	210121

See page 32 for cutting data

NEW SAMURAI

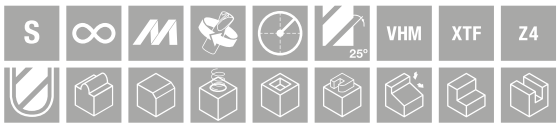
High Performance Ball Nose End Mills

Killer performance

When the application demands four flutes, our exciting new Samurai is more than a match for those demanding situations. Superior submicrograin solid carbide and newly developed coating results in excellent tool life in the most complex components.

Superior submicrograin solid carbide

Multiflute options available

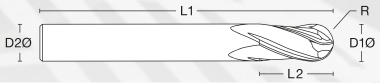


New multi-layer XTF coating

ModX® Samurai head and holder - see page 16

 Tooling and workpiece images are for illustrative purposes only and are not actual size

NEW Samurai 4 flute ball nose end mill for hardened steels



D1 Ø mm	D2 Ø mm	L1 mm	L2 mm	R mm	Teeth mm	Stock code
1.00	6.00	50.00	3.00	0.50	4	320010
1.00	6.00	58.00	3.00	0.50	4	310010
2.00	6.00	58.00	6.00	1.00	4	320020
2.00	6.00	60.00	6.00	1.00	4	310020
3.00	6.00	58.00	8.00	1.50	4	320030
3.00	6.00	70.00	8.00	1.50	4	310030
4.00	6.00	58.00	8.00	2.00	4	320040
4.00	6.00	70.00	8.00	2.00	4	310040
5.00	6.00	58.00	12.00	2.50	4	320050
5.00	6.00	80.00	12.00	2.50	4	310050
6.00	6.00	58.00	12.00	3.00	4	320060
6.00	6.00	80.00	12.00	3.00	4	310060
8.00	8.00	64.00	14.00	4.00	4	320080
8.00	8.00	90.00	14.00	4.00	4	310080
10.00	10.00	73.00	18.00	5.00	4	320100
10.00	10.00	100.00	18.00	5.00	4	310100
12.00	12.00	84.00	22.00	6.00	4	320120
12.00	12.00	110.00	22.00	6.00	4	310120

See page 33 for cutting data

MIRAGE
High Performance End Mills

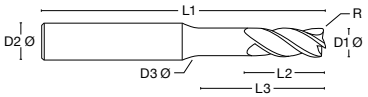
A cut above
the rest

Tool shown 195615

Designed for multiple applications in a wide range of materials especially hardened steels, titanium and super alloys, our Mirage 4 flute end mill provides unrivalled high performance.

Suitable for trochoidal milling, Mirage allows for full flute engagement with step overs (a_e) of anything from ≥ 5% to ≤15% in super alloys depending on the CAM software and machine parameters.

Contact our technical team for assistance – please call +44 (0) 1684 294090 or email contact@quickgrind.com



Tool shown 195609

Tool shown 195614

Tooling images are for illustrative purposes only and are not actual size

Mirage 4 flute variable end mill for super alloys, titanium and hardened steels

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R mm	Teeth Z	Stock code
3.00	6.00	2.80	58.00	10.00	20.00	-	4	195605
3.00	6.00	2.80	58.00	10.00	20.00	0.25	4	195606
4.00	6.00	3.80	58.00	11.00	20.00	-	4	195608
4.00	6.00	3.80	58.00	11.00	20.00	0.25	4	195609
5.00	6.00	4.80	58.00	14.00	22.00	-	4	195611
5.00	6.00	4.80	58.00	14.00	22.00	0.25	4	195612
6.00	6.00	-	58.00	13.00	-	-	4	195614
6.00	6.00	-	58.00	13.00	-	0.25	4	195615
6.00	6.00	-	58.00	13.00	-	1.00	4	195618
8.00	8.00	-	64.00	18.00	-	-	4	195621
8.00	8.00	-	64.00	18.00	-	0.50	4	195622
8.00	8.00	-	64.00	18.00	-	1.00	4	195624
10.00	10.00	-	73.00	22.00	-	-	4	195628
10.00	10.00	-	73.00	22.00	-	0.50	4	195629
10.00	10.00	-	73.00	22.00	-	1.00	4	195631
12.00	12.00	-	84.00	26.00	-	-	4	195635
12.00	12.00	-	84.00	26.00	-	0.50	4	195636
12.00	12.00	-	84.00	26.00	-	1.00	4	195638
12.00	12.00	-	84.00	26.00	-	2.00	4	195640
12.00	12.00	-	84.00	26.00	-	3.00	4	195641
16.00	16.00	-	93.00	32.00	-	-	4	195644
16.00	16.00	-	93.00	32.00	-	0.50	4	195645
16.00	16.00	-	93.00	32.00	-	1.00	4	195647
16.00	16.00	-	93.00	32.00	-	1.50	4	195648
16.00	16.00	-	93.00	32.00	-	2.00	4	195649
16.00	16.00	-	93.00	32.00	-	3.00	4	195650
20.00	20.00	-	105.00	38.00	-	-	4	195652
20.00	20.00	-	105.00	38.00	-	1.00	4	195655

See page 30 for cutting data

Tool shown 195652

MIRAGE SUPER
High Performance End Mills

Super
by design

Introducing the Mirage Super, for when your applications demand something out of the ordinary.

At Quickgrind we never stand still, we're always looking to offer more to our clients. Through clever design, experience and by using the latest grade of carbide and coating this tool takes our Mirage to new heights of performance, helping you to achieve your aims for critical parts in super alloys.

With our Mirage Super we have used the toughest substrate with a high wear resistant coating and polished flutes, together with a balancing option.

Don't forget, as part of our Infinite Possibilities® programme we will work with you to develop the right tools for your applications.

Tooling images are for illustrative purposes only and are not actual size

ELIMINATOR
Barrel Tools

Innovating
for unlimited potential

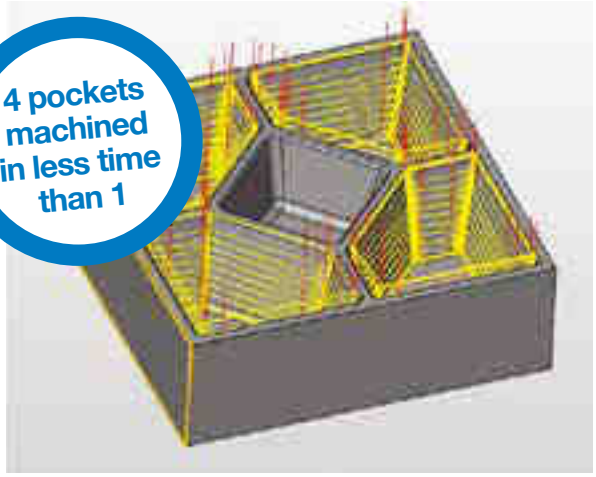
Eliminator is an exciting range of barrel tools that takes the arc segment of a circle to form the radius of the flute, enabling improved step down strategies when compared to ball nose endmills and reducing cycle times by up to 90%.

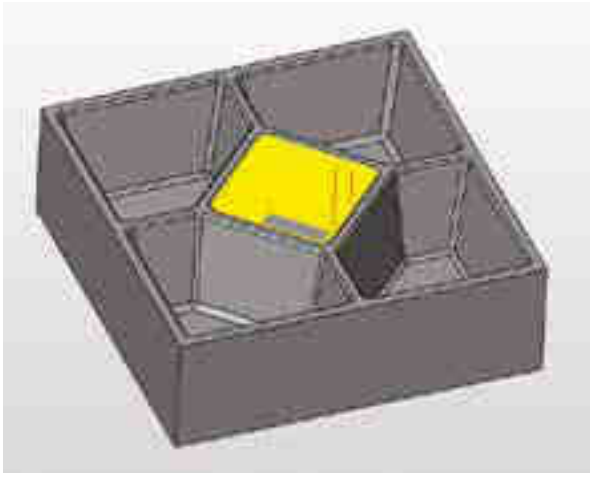
Until now the conventional way to produce a required finish was to use a ball nose. This limits the step down, generally calculated as ap = 0.02 x D1. For example, a 10.00mm diameter ball nose can achieve an ap of 0.20mm.

Increasing the step down would normally require a much larger diameter cutter which would not be practical – the Eliminator barrel tool does not have such limitations. The contact area is much greater because the flute radius is adapted from the segment of a much larger circle. If you wanted to increase the step down from 0.20mm to 5.00mm you would need a 250mm diameter ball nose. However, by taking a segment of a 250mm diameter circle to form the flute of your tool, and applying this to any diameter tool, you can achieve a 5.00mm step down.

Available in (pictured left to right above) concave, lens type, tangential, form F and conical versions with geometries, number of flutes and dimensions to suit your individual applications, Eliminator significantly reduces finishing cycle times on deep pockets, shallow pockets with small radii, hard to reach faces, radial and tangential faces, blisks, vanes and moulds which would all normally require a ball nose.

Start your cycle time
and finishing revolution today.
Call +44 (0) 1684 294090
or visit quickgrind.com





Eliminator
12mm Ø R3 conical barrel tool with 250mm flute radius
Spindle speed – 7,958 rpm
Feedrate – 2,984 mm/min
2 minutes 11 seconds for each pocket
4 pockets machined in 8 minutes 46 seconds

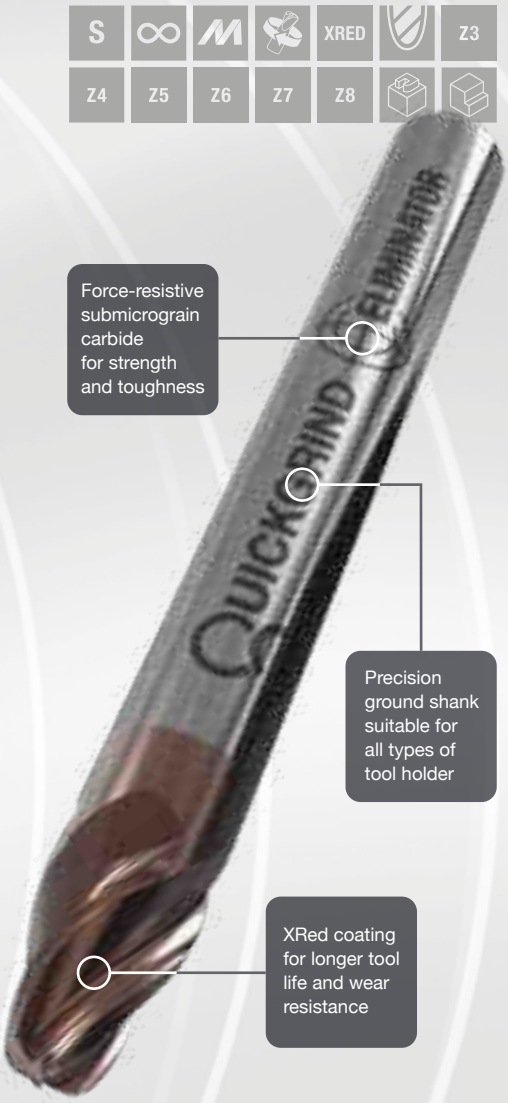
Ball nose
6mm Ø ball nose
Spindle speed – 10,610 rpm
Feedrate – 2,122 mm/min
1 x middle pocket only
1 pocket machined in 9 minutes 24 seconds

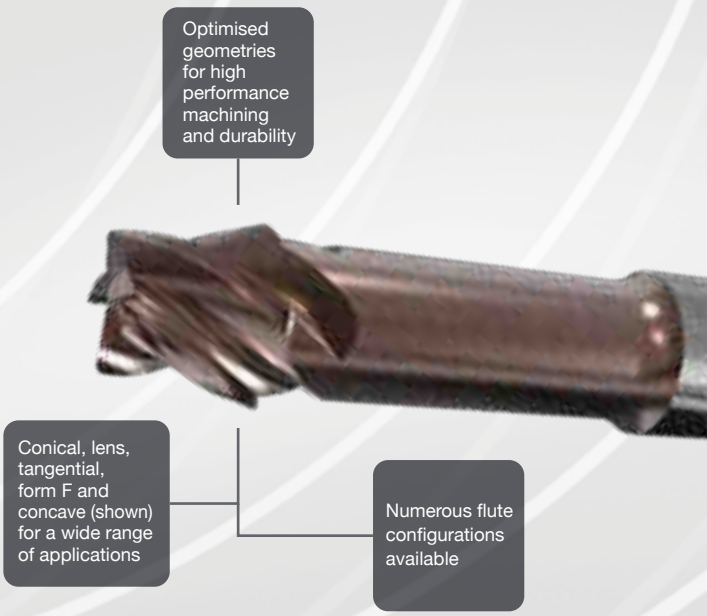
ELIMINATOR
Barrel Tools

Transforming
finishing and semi-finishing strategies

Quickgrind's Eliminator barrel tools are revolutionising finishing and semi-finishing strategies on a wide range of components in motor racing to mould and die, and aerospace to medical, including turbine blades and blisks.

By implementing highly efficient machining processes we are able to realise substantial gains from effective cost reductions per part, by as much as 25% or more, to free-up valuable machine hours. Machine times are a costly element in all production processes and cycle time reductions of 25% are hard to achieve and limited to the machine's capabilities. By using our Eliminator range to greatly reduce finishing process times these savings become a reality.





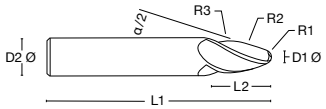
Applications

- Replaces scanning with ball nose and corner radius endmills
- Highly efficient finishing and semi-finishing
- Profiling, flanks and steep walls
- Mill faces and blends with one tool
- Machining steep or flat planes
- Faces with minimal curvature

Benefits

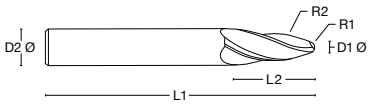
- Up to 90% cycle time reduction achievable
- Increased ap (step down) – greatly reduced machining time
- Smaller cusp (scallop) height
- Tool path distance greatly reduced – better for your machine
- Two-in-one tool – side cutting and ball nose cutting
- Low Ra finish
- Reduced effects of thermal deformation (heat transfer)
- Long tool life
- Suitable for sharpening and recoating multiple times with our QuickEdge programme

Eliminator conical barrel tool



D1 Ø mm	D2 Ø mm	L1 mm	L2 mm	R1 mm	R2 mm	R3 mm	Teeth Z	α/2	Type	Stock code
2.00	6.00	58.00	8.50	1.00	250	2.00	3	20.00	S	872503
3.00	8.00	64.00	10.50	1.50	250	4.00	3	20.00	S	307202
3.00	8.00	64.00	14.50	1.50	1000	4.00	3	12.50	S	997202
4.00	10.00	73.00	12.50	2.00	250	5.00	3	20.00	S	307203
4.00	10.00	73.00	16.50	2.00	1000	5.00	3	12.50	S	997203
6.00	12.00	84.00	13.50	3.00	250	6.00	3	20.00	S	307204
6.00	12.00	84.00	19.50	3.00	1000	6.00	3	12.50	S	997204
8.00	16.00	93.00	18.50	4.00	500	8.00	3	20.00	S	307205
8.00	16.00	93.00	18.50	4.00	1500	8.00	3	20.00	S	307208

Eliminator tangential barrel tool



D1 Ø mm	D2 Ø mm	L1 mm	L2 mm	R1 mm	R2 mm	Teeth Z	Geometry	Stock code
1.00	6.00	58.00	22.00	0.50	95	3	S	230060
1.00	8.00	64.00	25.00	0.50	90	3	S	230080
2.00	10.00	73.00	26.00	1.00	85	3	S	230010
2.00	12.00	84.00	28.00	1.00	80	3	S	230012
3.00	16.00	93.00	31.00	1.50	75	3	S	230016
4.00	10.00	73.00	26.00	2.00	85	6	S	260010
4.00	12.00	84.00	28.00	2.00	80	6	S	260012
6.00	16.00	93.00	31.00	3.00	75	6	S	260016

See page 31 for cutting data

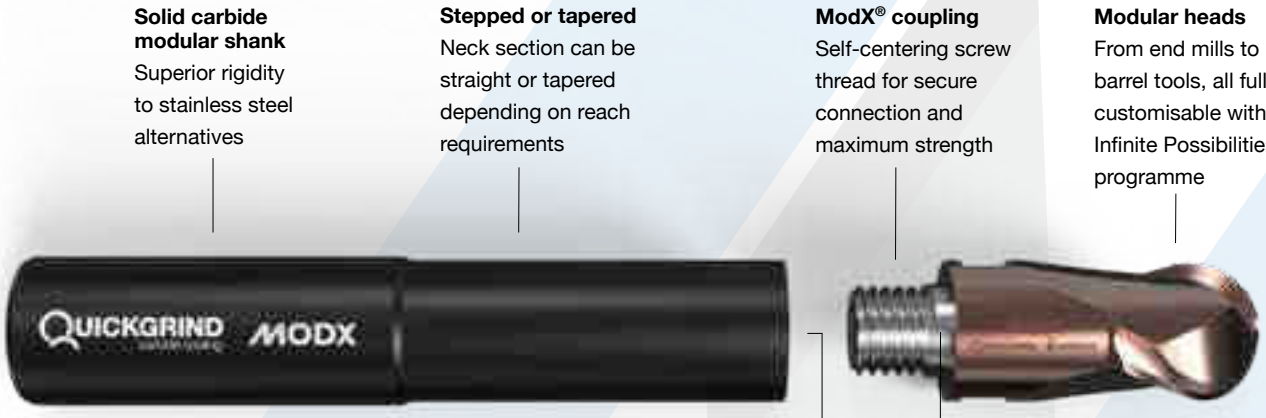
MODX®
MODULAR SHANKS | EXCHANGEABLE HEADS

Two (three, four, five) heads
are better than one

Combining the performance and durability of solid carbide with the modularity of inserts the new ModX® range from Quickgrind gives you the best of both worlds, but without the compromise of either.

Features and benefits

- Carbide shank with 2µm tolerance for accurate, reliable machining
- Unique ModX® locking mechanism for maximum coupling stability between shank and head
- Modular shank system and interchangeable heads means reduced costs
- Infinite Possibilities® compatible – full customisation including shank length, head length, diameter, coatings and more
- QuickCam® compatible – we will work with you to produce the optimum machining strategies for your operations
- QuickEdge® compatible – heads can be remanufactured to as-new for up to 9x extra usage
- Cost-effective shipping – less weight equals reduced costs
- Environmentally friendly – reduces the need for virgin carbide, a finite natural resource



Solid carbide modular shank
Superior rigidity to stainless steel alternatives

Stepped or tapered
Neck section can be straight or tapered depending on reach requirements

ModX® coupling
Self-centering screw thread for secure connection and maximum strength

Modular heads
From end mills to barrel tools, all fully customisable with our Infinite Possibilities® programme

ModX® thread
Unique locking mechanism ensures maximum coupling stability

Wrench point
Simple but effective tightening of the head into the shank – a physical stop indicates when the head is correctly tightened

End mills
A collection of 4 to 7 flute square and corner rounded variable end mills with XRed coating and geometries for hardened steels and special alloys in a wide range operations.

Ball nose end mills
A choice of 2 and 4 flute ball nose end mills with flute lengths to suit your applications, and coated to aid chip flow and resist wear.

Barrel tools
Revolutionising finishing and semi-finishing strategies and slashing cycle times by up to 90%, our barrel tools come in a wide range of geometries including conical, convex, tangential, lens and type-F.

High feed end mills
The precision ground end geometry of our high feed ranges allows for highly efficient chip removal at high feed rates. The tools lend themselves to roughing and semi-finishing operations in deep and shallow pockets.

Lollipop tools
Lollipop tools are often only used for undercuts and de-burring however Orbis is setting new standards of unrivalled high performance and surface finish in applications and component features that have previously caused many issues.

Multiflute tools
Designed for super-fine finishing applications in steels, hardened steels and exotics, Demon's higher speeds and feeds rates deliver increased productivity and high material removal rates.

Working with you to transform your operations

The modular heads you see here are just a selection of the tools we can offer. Talk to us about your machining operations and we will work with you to find the perfect combination of tool and cutting strategy to achieve the optimum results.

ORBIS
High Technology Lollipop Cutters

A new standard
for complex components

> Orbis lollipops work extremely well and Quickgrind's service is second to none. The fact that they will make the tools to any design is a great help when programming parts. The flexibility in Quickgrind's manufacture process enabled us to create the exact lollipop cutter for our medical application.
>
> *Mihail Seckie, Takumi Precision Engineering*

TAKUMI PRECISION ENGINEERING

Quickgrind's Orbis high technology lollipop cutters are designed for multiple applications in virtually all materials from aluminium to peek, stainless steel to titanium and others.

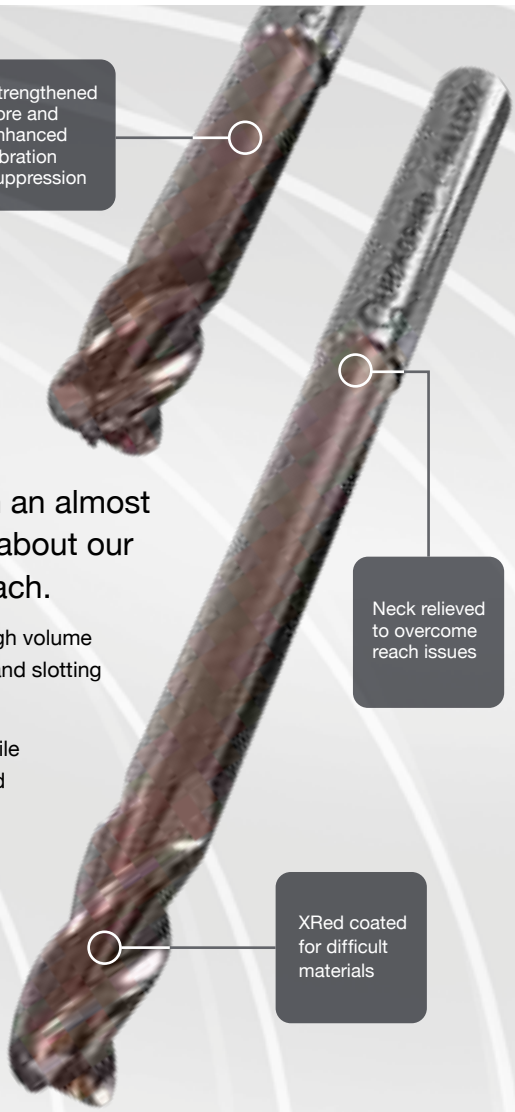
Lollipop tools are often only used for undercuts and de-burring. Orbis is setting new standards of unrivalled high performance and surface finish in applications and component features that have previously caused many issues.

Applications and benefits

- Spherical cutting in all directions
- Sphere angle only limited by neck diameter
- Huge options of neck reach and diameter
- Multiple flute numbers
- Uncoated and coated
- High speed cutting HSC
- Machine manifolds and ports
- Helical interpolation
- Milling of complex thin walled components
- Machining contour shapes

BULLDOG
High Feed End Mills

The very best of **British**



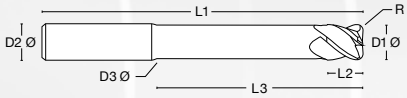
The superior mould and die tool, Bulldog is available in an almost infinite choice of size, diameter, radius and reach. Ask about our Long Series variant for operations that require extra reach.

Specially designed to reduce vibration under heavy cutting conditions and with high volume metal removal (HV-MRR), Bulldog is ideal for operations such as deep pocketing and slotting in difficult to machine materials without push-off.

Higher speeds and feeds are possible, increasing your productivity still further, while suppressed vibration and harmonics reduce machining forces leading to increased tool life. You can expect exceptional results, significant productivity increases and reduced costs with this tool.

Other features include enhanced radii geometry to ensure high stability, unequal helix and variable flute design and a strengthened core.

Bulldog is ideal for roughing applications in mould and die steels and is suitable for tool steels such as H11, H13, D2 and P20 and hardened alloys up to 62Hrc.



Bulldog 4 flute high feed end mill for mould and die steels/hardened steels

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R mm	Teeth Z	Stock code
6.00	6.00	5.50	58.00	8.00	20.00	0.50	4	6HX
6.00	6.00	5.50	66.00	8.00	30.00	0.50	4	6HXL
8.00	8.00	7.50	64.00	10.00	35.00	1.00	4	8HX
8.00	8.00	7.50	90.00	10.00	50.00	1.00	4	8HXL
8.00	8.00	7.50	110.00	10.00	70.00	1.00	4	8HXLLL
10.00	10.00	9.30	73.00	10.00	35.00	2.00	4	10HX
10.00	10.00	9.30	90.00	10.00	50.00	2.00	4	10HXL
10.00	10.00	9.30	100.00	10.00	60.00	2.00	4	10HXLL
12.00	12.00	11.00	84.00	15.00	50.00	3.00	4	12HX
12.00	12.00	11.00	100.00	15.00	60.00	3.00	4	12HXL
12.00	12.00	11.00	125.00	15.00	80.00	3.00	4	12HXLL
16.00	16.00	15.00	100.00	15.00	60.00	3.50	4	16HX
16.00	16.00	15.00	125.00	15.00	80.00	3.50	4	16HXL
16.00	16.00	15.00	145.00	15.00	100.00	3.50	4	16HXLL

See page 30 for cutting data

SPECTRE
High Feed End Mills

High feed, **high ROI**

Tool shown 196206

Neck relieved to overcome reach issues

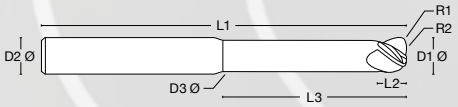
XRed coating to aid chip flow and resist wear

This solid carbide coated high feed tool was initially developed with 3 flutes to machine deep pockets for a UK-based Formula 1 team.

As with all our high feed tools the large radii enables excellent stability when roughing at high feed rates. The combination of our unique geometry, small depth of cut and high feed means clients realise a very good return on investment.

In addition, cycle times are reduced resulting in greatly improved production throughput.

Tool shown 196201



Spectre 3 flute high feed end mill

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R1/R2 mm	Teeth Z	Stock code
3.00	6.00	2.75	58.00	1.20	32.00	0.25/2.00	3	196201
6.00	6.00	5.20	58.00	4.00	26.00	0.50/4.00	3	196202
6.00	6.00	5.20	80.00	4.00	34.00	0.50/4.00	3	196203
8.00	8.00	7.00	80.00	6.00	40.00	0.67/5.33	3	196204
8.00	8.00	7.00	64.00	6.00	30.00	0.67/5.33	3	196234
10.00	10.00	9.00	80.00	6.00	40.00	1.25/6.75	3	196205
12.00	12.00	10.40	84.00	8.50	30.00	1.50/8.00	3	196216
12.00	12.00	10.40	100.00	8.50	50.00	1.50/8.00	3	196206

See page 30 for cutting data

Tooling images are for illustrative purposes only and are not actual size

REAPER

High Performance High Feed End Mills

Tool shown 510120

High feed
for hardened steels

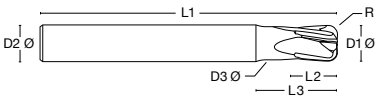
Special geometry for high speeds and feeds

Available in sizes from 6.00 to 12.00mm this tool performs extremely well in hardened steels such as H13 and D2 ≥45Hrc.

A highly efficient roughing tool for producing pockets and cavities up to 1"/25mm deep, Reaper's 4 flutes and specially designed end geometry make it suitable for running at high speed and feed, taking shallow depths of cut.

The corner radii enable excellent chip thinning with rapid chip removal and long tool life. Reaper's end design also makes it suitable for flat bottom finishing.

S XRED Z4



Reaper 4 flute high feed end mill for steel/hardened steel

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R mm	Teeth Z	Stock code
6.00	6.00	5.40	58.00	6.00	12.00	1.50	4	510060
8.00	8.00	7.50	64.00	8.00	16.00	2.00	4	510080
10.00	10.00	9.50	73.00	10.00	20.00	2.00	4	510100
12.00	12.00	11.05	84.00	12.00	24.00	3.00	4	510120

See page 30 for cutting data

Tool shown 510060

REAPER-LS
High Performance High Feed End Mills

Tool shown 530120

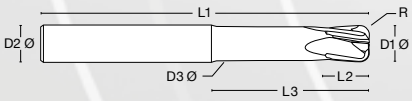
Longer reach
for improved access

The same specification as the standard length version, Reaper-LS (Long Series) is available from 66mm to 100mm overall.

Tool shown 530060

End design for flat bottom finishing

S ∞ XRED Z4



Reaper-LS 4 flute high feed end mill for steel/hardened steel

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R mm	Teeth Z	Stock code
6.00	6.00	5.40	66.00	6.00	24.00	1.50	4	530060
8.00	8.00	7.50	70.00	8.00	32.00	2.00	4	530080
10.00	10.00	9.50	85.00	10.00	40.00	2.00	4	530100
12.00	12.00	11.05	100.00	12.00	48.00	3.00	4	530120

See page 30 for cutting data

Tooling images are for illustrative purposes only and are not actual size

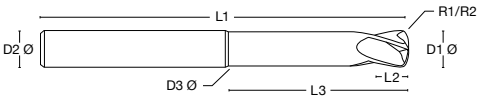
PHANTOM
High Feed End Mills

Four flutes, **extended life**

Phantom is a 4 flute that performs like a 16 flute. A development of our Spectre the Phantom is a lens type tool that has been designed to be remanufactured many times using our QuickEdge process.

Phantoms achieve 5-6x tool life over normal end mills in roughing operations and have become firm favourites in motorsport and aerospace, where they are used to machine titanium and stainless steel.

A relatively small depth of cut at high feed delivers great advantages to engineers and programmers.



Phantom 4 flute high feed lens tool

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	R1/R2 mm	Teeth Z	Stock code
6.00	6.00	5.75	58.00	6.00	24.00	1.20/9.00	4	196360
8.00	8.00	7.50	64.00	8.00	26.00	1.60/12.00	4	196380
10.00	10.00	9.50	73.00	10.00	30.00	2.00/15.00	4	196301
12.00	12.00	11.00	84.00	6.00	50.00	2.00/20.00	4	196312
16.00	16.00	15.00	93.00	8.00	50.00	2.50/25.00	4	196306
20.00	20.00	19.00	105.00	20.00	50.00	3.00/32.00	4	196320

See page 30 for cutting data

Tool shown 196312

DEMON

High Performance End Mills

The strong **finisher**

Tool shown 9286D16

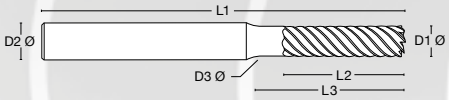
The Demon multiflute end mill will provide you with unrivalled high performance.

Designed for super-fine finishing applications in a wide range of components and materials, our unique geometry is the precise recipe to ensure highly accurate machining of any surface requiring a superb finish.

Ideal for profile milling in steels, hardened steels and exotics, Demon's higher speeds and feeds rates deliver increased productivity and high material removal rates.

Tool shown 9286D5

S | ∞ | M | 50° | XRED | Z6/8



Long reach option available

Demon 8 flute end mill for finishing operations

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	Square corner	Teeth Z	Stock code
3.00	6.00	2.95	58.00	5.00	10.00	Yes	6	9286D3
4.00	6.00	3.95	58.00	8.00	13.50	Yes	6	9286D4
5.00	6.00	4.95	58.00	10.00	15.00	Yes	6	9286D5
6.00	6.00	-	58.00	12.00	-	Yes	6	9286D6
8.00	8.00	-	64.00	20.00	-	Yes	8	9286D8
10.00	10.00	-	73.00	25.00	-	Yes	8	9286D10
12.00	12.00	-	84.00	30.00	-	Yes	8	9286D12
16.00	16.00	-	93.00	40.00	-	Yes	8	9286D16

See page 30 for cutting data

 Tooling images are for illustrative purposes only and are not actual size

Accuracy up
cycle times down

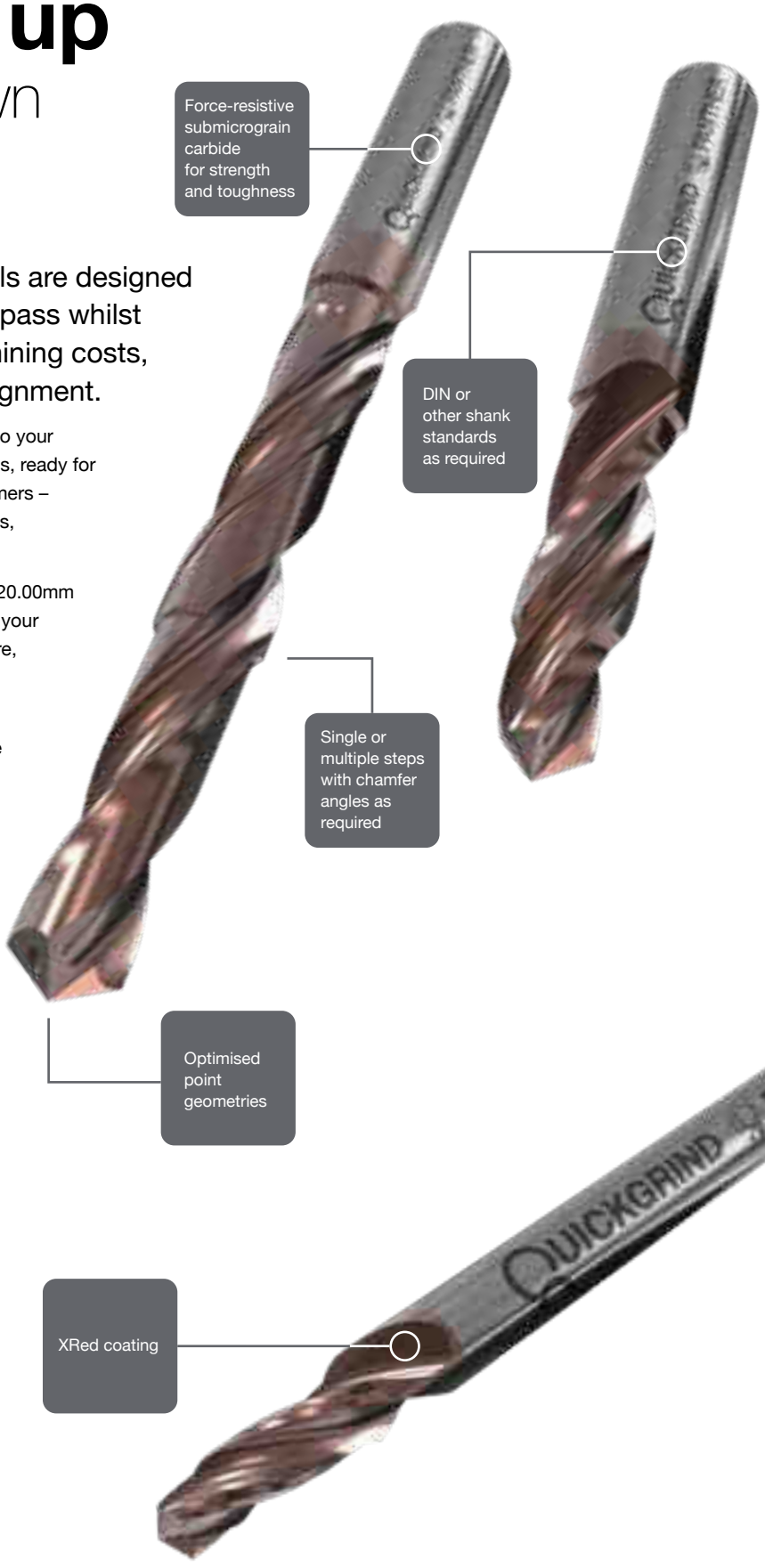
Our Panther multi-diameter drills are designed to create multiple bores in one pass whilst reducing cycle times and machining costs, all with highly accurate bore alignment.

These application-specific drills are designed to your requirements and are used for pre-drilling bores, ready for follow-on tools such as machine taps and reamers – for example prior to threading in hydraulic ports, whether two, three or more diameters.

Available in various diameters from 3.00mm to 20.00mm and with flute and overall combinations to suit your feature, such as top chamfer, front counter-bore, single or multiple steps, with a taper, shoulder or radius.

Panther drills are suitable for machining a wide variety of materials. We design the tools with relevant geometries, with or without coatings, to suit your specifications.

Highly accurate bores in one pass



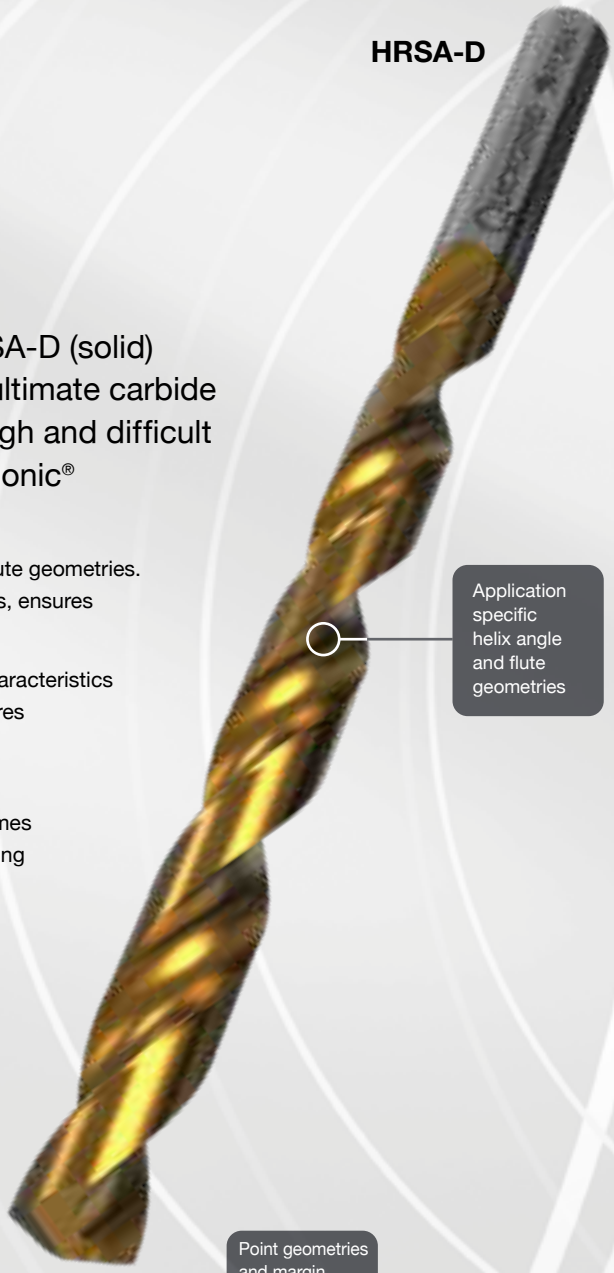
A tough drill
for tough materials

The Puma HRSA-TC (through-coolant) and HRSA-D (solid) are the result of extensive work to develop the ultimate carbide drills for the economic and secure drilling of tough and difficult materials such as titanium, stainless steels, Nimonic® and other super alloys.

Puma drills can be designed with application-specific helix angle and flute geometries. The flute form geometry, designed especially for long-chipping materials, ensures optimal chip generation characteristics even at low cutting speeds.

The through-coolant version ensures perfect penetration and cutting characteristics when machining long-chipping materials. Cutting forces and temperatures are considerably reduced.

These types of materials can result in work-hardening, chip elongation, low thermal conductivity and welding on the tool, but the Puma overcomes these problems. Clever flute design produces optimal chip shape resulting in smooth chip evacuation.



 Tooling images are for illustrative purposes only and are not actual size

XRed/XRedSL

TiSiN Coating

The coating for **challenging conditions**

XRed TiSiN is engineered to withstand temperatures of up to 1100°C at the cutting edge, making it perfect for the machining of hard materials at high speeds and with low or no lubrication.

Its multi-layer coating, with crystalline TiN matrix/Si_3N_4 nano crystallite outer layer, is designed to protect the cutting edge from excess wear, oxidation and heat transfer.

XRed is ideal for machining titanium, stainless steels, super alloys and steels up to 60 Hrc. It is very capable in applications such as roughing, trochoidal milling, semi-finishing and finishing where there are high temperatures at the cutting edge.

Quickgrind's high quality grinding and expertise allows for excellent chip formation and evacuation at high speed and feed without fear of damage to the tool or the component.

Our XRedSL coating is the higher-performing version of the standard XRed. Please contact our Technical Support team for advice.

Technical data

Coating material	TiSiN
Coating thickness	2-4µm
Deposition process	PVD Arc
Hardness HV 0.05	3500
Oxidation temperature	1100°C
Coefficient of friction	<0.4
Process temperature	450-550°C
Colour	Copper

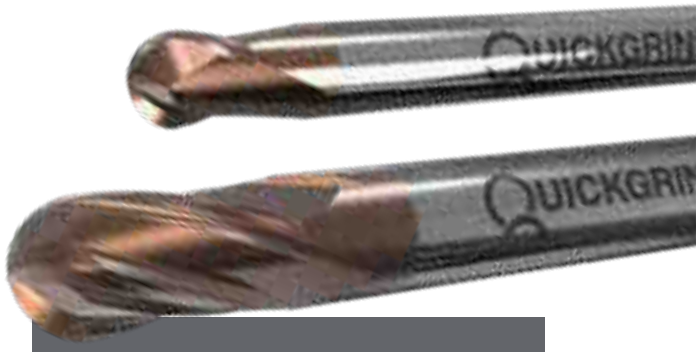
Cutting speed M/min	40	60	80	100	120	140	160	180	200	220	250	300
Steels up to 700 N/mm²												
Steels 800-1000 N/mm²									■	■	■	
Steels >1400 N/mm²							■	■	■			
Tool steels >45-55 Hrc										■	■	
Tool steels >55-60 Hrc					■	■	■	■	■			
Cast iron							■	■	■	■	■	■
Martensitic stainless steels							■	■	■			
Austenitic stainless steels							■	■	■			
Titanium up to 900 N/mm²			■	■	■	■	■	■	■			
Titanium alloys >900 N/mm²			■	■	■	■	■	■				
Nickel alloys up to 900 N/mm²					■	■	■					
Nickel alloys >1200 N/mm²				■	■	■						

Cutting data is subject to application and machining parameters.
Please contact our Technical Support team for advice.

XTF

AlTiN/TiSiXN Coating

A dual-layer coating for **hardened materials**



Mould-making, aerospace and 3C (computers, communications and consumer electronics) operations push tooling to the limit when machining titanium, nickel-based alloys, stainless steel and hardened steel.

Quickgrind's new dual-layer XTF coating provides outstanding oxidation resistance, high thermal stability and excellent wear resistance and is the perfect solution for machining these demanding materials.

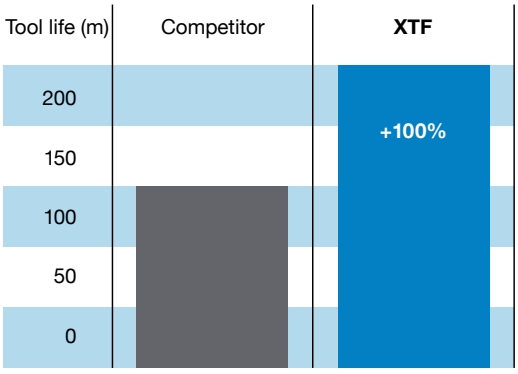
The AlTiN based layer offers high degree of ductility while the TiSiXN hardened layer resists oxidation and wear.

Other benefits include reduced crack formation and improved resistance to chipping, maintenance of high temperatures at the cutting edge and significant reductions in adhesive wear resulting in extended tool life.

Technical data

Coating material	AlTiN/TiSiXN
Coating hardness HIT	38 +/-5 GPa
Deposition process	Arc
Intrinsic stress	-5 +/-1 GPa
Max service temperature	1100°C
Process temperature	<600°C
Colour	Bronze

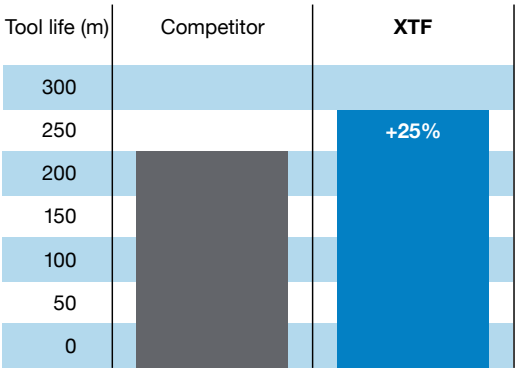
Nickel alloy



16mm Ø end mill / Nickel alloy 2.4650, NiCo20Cr20MoT (UNS N07263, Nimonic® C-263) / V_C 45m/min / f_t 0.09 mm/tooth / a_p 0.50mm a_e variable

Cutting data is subject to application and machining parameters. Please contact our Technical Support team for advice.

Hardened steel



10mm Ø end mill / Steel 1.2344, X40CrMoV5-1 (AISI H13, JIS SKD61) 45Hrc / V_C 220m/min / f_t 0.10 mm/tooth / a_p 10.00mm / a_e 0.50mm Wet

Cutting data is subject to application and machining parameters. Please contact our Technical Support team for advice.

Technical data

Milling formula

Cutting speed (Vc)	Spindle speed (n)	Feed per tooth (Fz)	Table feed (Vf)
$\frac{d \times \pi \times n \text{ (M/min)}}{1000}$	$\frac{Vc \times 1000 \text{ (rpm)}}{\pi \times d}$	$\frac{Vf \text{ (mm)}}{z \times n}$	Fz x z x n (mm/min)

Vc = cutting speed (m/min); z = number of flutes; Fz = feed per tooth (mm); n = spindle speed (rpm); d = tool diameter (mm); π = 3.142
a_p = depth of cut (mm); a_e = width of cut

Calculation of average chip thickness

$$hm = Fz \sqrt{\frac{a_e}{d}} \qquad Fz = hm \sqrt{\frac{d}{a_e}}$$

a_e max = maximum lateral infeed depending on the material to be machined (mm); Fz = feed per tooth (mm); hm = average chip thickness (mm); d = tool diameter (mm)

Workpiece materials key

Special alloys	S1	High temp alloys	Nimonics, Inconel 625, 718, 925, Monel, Hastelloy
	S2	Titanium alloys	6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11cR-3Al
Hardened steels	H	Hardened steels (44-55 HRC)	H10, H11, H12, H13, H19, H21, L3, L6, L7,P2, P20, D2, D3, D4, D5, D7

Cutting speeds by material group

			Feed recommendations				
Tool diameter (mm)			**3.00**	**4.00**	**5.00**	**6.00**	**8.00**
		Vc (M/min)			**Feed per tooth (mm)**		
Special alloys	S1	35-55	0.003-0.005	0.003-0.006	0.005-0.008	0.006-0.009	0.008-0.015
	S2	50-70	0.008-0.010	0.008-0.010	0.010-0.015	0.015-0.020	0.020-0.030
Hardened steels	H	40-50	0.008-0.013	0.008-0.013	0.010-0.015	0.015-0.020	0.020-0.030

Tool diameter (mm)			**10.00**	**12.00**	**16.00**	**20.00**	**-**
		Vc (M/min)			**Feed per tooth (mm)**		
Special alloys	S1	35-55	0.015-0.030	0.020-0.030	0.030-0.040	0.045-0.050	-
	S2	50-70	0.025-0.035	0.030-0.040	0.040-0.045	0.045-0.050	-
Hardened steels	H	40-50	0.025-0.035	0.030-0.040	0.035-0.045	0.040-0.050	-

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.

Cutting data – trochoidal milling

			Feed recommendations					
Tool diameter (mm)			**6.00**	**6.00**	**8.00**	**8.00**	**10.00**	**10.00**
			a_e	**a_e**	**a_e**	**a_e**	**a_e**	**a_e**
a_p		**≤ 0.9 x L2**	**0.05 x D**	**0.1 x D**	**0.05 x D**	**0.1 x D**	**0.05 x D**	**0.1 x D**
Special alloys	S1	Vc	50-60	50-60	50-60	50-60	50-60	50-60
		Fz	0.040	0.030	0.050	0.040	0.070	0.050
	S2	Vc	80-110	80-110	80-110	80-110	80-110	80-110
		Fz	0.040	0.030	0.050	0.040	0.070	0.050
Hardened steels	H	Vc	60-90	60-90	60-90	60-90	60-90	60-90
		Fz	0.050	0.040	0.060	0.050	0.090	0.070

Tool diameter (mm)			**12.00**	**12.00**	**16.00**	**16.00**	**20.00**	**20.00**
			a_e	**a_e**	**a_e**	**a_e**	**a_e**	**a_e**
a_p		**≤ 0.9 x L2**	**0.05 x D**	**0.1 x D**	**0.05 x D**	**0.1 x D**	**0.05 x D**	**0.1 x D**
Special alloys	S1	Vc	50-60	50-60	50-60	50-60	50-60	50-60
		Fz	0.080	0.060	0.117	0.083	0.160	0.120
	S2	Vc	80-110	80-110	80-110	80-110	80-110	80-110
		Fz	0.080	0.060	0.117	0.083	0.160	0.120
Hardened steels	H	Vc	60-90	60-90	60-90	60-90	60-90	60-90
		Fz	0.100	0.080	0.120	0.100	0.160	0.140

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.

Cutting data – Bulldog, Spectre, Reaper and Phantom high feed end mills

			Radial cut a_e 60-75% x D				
Spectre a_p			**0.150-0.250**	**0.200-0.300**	**0.250-0.400**	**0.300-0.450**	**0.400-0.600**
Phantom a_p			**-**	**-**	**-**	**0.400-0.600**	**0.500-0.700**
Tool diameter (mm)			**3.00**	**4.00**	**5.00**	**6.00**	**8.00**
		Vc (M/min)			**Feed per tooth (mm)**		
Special alloys	S1	25-40	0.060	0.070	0.090	0.100	0.120
	S2	50-90	0.040	0.055	0.060	0.070	0.080
Hardened steels	H	80-140	0.040	0.055	0.060	0.070	0.080

			Radial cut a_e 60-75% x D				
Spectre a_p			**0.500-0.700**	**0.600-0.800**	**0.700-1.000**	**-**	**-**
Phantom a_p			**0.600-0.800**	**0.700-1.000**	**0.750-1.100**	**0.800-1.250**	**-**
Tool diameter (mm)			**10.00**	**12.00**	**16.00**	**20.00**	**-**
		Vc (M/min)			**Feed per tooth (mm)**		
Special alloys	S1	25-40	0.140	0.190	0.220	0.280	-
	S2	50-90	0.090	0.120	0.140	0.180	-
Hardened steels	H	80-140	0.090	0.120	0.140	0.180	-

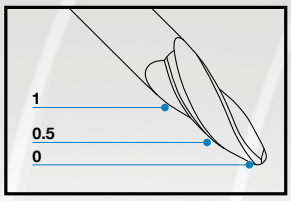
			Radial cut a_e 60-75% x D				
Reaper a_p			**0.200-0.350**	**0.300-0.400**	**0.350-0.500**	**0.400-0.650**	**-**
Tool diameter (mm)			**6.00**	**8.00**	**10.00**	**12.00**	**-**
		Vc (M/min)			**Feed per tooth[3] (mm)**		
Hardened steels	H	80-140	0.100	0.140	0.180	0.220	-

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.
Subject to material group – use lower values for harder materials. Reaper-LS: Reduce Fz -20%

Cutting data – Eliminator barrel tools

			Feed recommendations				
Tool diameter (mm)			**6.00**	**8.00**	**10.00**	**12.00**	**16.00**
		Vc (M/min)	**Feed per tooth (mm)**				
Special alloys	S1	25-40	0.020-0.030	0.030-0.050	0.050-0.070	0.070-0.100	0.100-0.120
	S2	55-80	0.020-0.030	0.030-0.050	0.050-0.070	0.070-0.100	0.100-0.120
Hardened steels	H	60-90	0.025-0.035	0.035-0.055	0.055-0.075	0.080-0.110	0.120-0.150

Notes: Lower Vc needs to be chosen for the small end diameter and higher Vc on the larger diameters. Data shown is based on the shank diameter.



Barrel tool contact area options

Your CAM system will provide options as to where the barrel tool engages with the workpiece, thereby the effective diameter will change. Some CAM providers call this the 'contact point' and will have in-built functions to enable the cutting data at this point to be compensated for.

There are three possible engagement points (effective diameters) as shown, represented at 1 (largest diameter), 0.5 (middle diameter) and 0 (smallest diameter).

Cutting data – ball nose end mills

					Feed recommendations				
Tool diameter (mm)					**3.00**	**4.00**	**5.00**	**6.00**	**8.00**
		a_p	**a_e**	**Vc (M/min)**	**Feed per tooth (mm)**				
Special alloys	S1	0.1 x D	0.3 x D	25-40	0.030	0.030	0.030	0.036	0.050
	S2	0.1 x D	0.3 x D	50-90	0.016	0.016	0.016	0.019	0.026
Hardened steels	H	0.1 x D	0.5 x D	80-140	0.027	0.027	0.027	0.033	0.045

Tool diameter (mm)					**10.00**	**12.00**	**16.00**	**20.00**	**-**
		a_p	**a_e**	**Vc (M/min)**	**Feed per tooth (mm)**				
Special alloys	S1	0.1 x D	0.3 x D	25-40	0.061	0.070	0.087	0.101	-
	S2	0.1 x D	0.3 x D	50-90	0.032	0.037	0.046	0.054	-
Hardened steels	H	0.1 x D	0.5 x D	80-140	0.054	0.062	0.077	0.088	-

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.

Cutting data – Warrior 2 flute ball nose end mills

Hardened steels 50-55Hrc		H						
Diameter (mm)	**Radius (mm)**	**Vc (M/min)**	**n (rpm)**	**Fz (mm)**	**F (mm/min)**	**a_p (mm)**	**a_e (mm)**	**Teeth**
2.00	1.00	180-205	30000	0.040	2400	0.15 - 0.25	0.25	2
3.00	1.50	170-195	19800	0.050	1980	0.20 - 0.35	0.38	2
4.00	2.00	170-185	14500	0.060	1740	0.25 - 0.40	0.50	2
5.00	2.50	175-185	12000	0.080	1920	0.28 - 0.45	0.63	2
6.00	3.00	165-185	9800	0.100	1960	0.35 - 0.50	0.75	2
8.00	4.00	165-180	7500	0.120	1800	0.40 - 0.57	1.00	2
10.00	5.00	160- 175	5700	0.140	1596	0.50 - 0.63	1.25	2
12.00	6.00	150-170	5400	0.160	1728	0.60 - 0.75	1.50	2

Hardened steels 55-65Hrc		H						
Diameter (mm)	**Radius (mm)**	**Vc (M/min)**	**n (rpm)**	**Fz (mm)**	**F (mm/min)**	**a_p (mm)**	**a_e (mm)**	**Teeth**
2.00	1.00	145-155	24000	0.058	2800	0.08	0.25	2
3.00	1.50	145-155	16000	0.088	2800	0.10	0.38	2
4.00	2.00	145-155	12000	0.111	2660	0.15	0.45	2
5.00	2.50	145-155	9600	0.133	2550	0.19	0.68	2
6.00	3.00	145-155	8000	0.153	2440	0.24	0.80	2
8.00	4.00	145-155	6000	0.140	1680	0.60	1.00	2
10.00	5.00	145-155	4800	0.171	1640	0.75	1.25	2
12.00	6.00	145-155	4000	0.186	1490	0.90	1.50	2

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.

Cutting data – Samurai 4 flute ball nose end mills

Hardened steels 50-55Hrc		H						
Diameter (mm)	**Radius (mm)**	**Vc (M/min)**	**n (rpm)**	**Fz (mm)**	**F (mm/min)**	**a_p (mm)**	**a_e (mm)**	**Teeth**
1.00	0.50	130-140	41375	0.020	3310	0.06	0.13	4
2.00	1.00	130-140	20687	0.030	2482	0.10	0.25	4
3.00	1.50	130-140	13792	0.040	2207	0.13	0.38	4
4.00	2.00	130-140	10344	0.050	2069	0.15	0.50	4
5.00	2.50	130-140	8275	0.060	1820	0.20	0.63	4
6.00	3.00	130-140	6896	0.080	2069	0.25	0.75	4
8.00	4.00	130-140	5172	0.100	2069	0.30	1.00	4
10.00	5.00	130-140	4137	0.140	2317	0.50	1.25	4
12.00	6.00	130-140	3448	0.160	2207	0.60	1.50	4

Hardened steels 55-65Hrc		H						
Diameter (mm)	**Radius (mm)**	**Vc (M/min)**	**n (rpm)**	**Fz (mm)**	**F (mm/min)**	**a_p (mm)**	**a_e (mm)**	**Teeth**
1.00	0.50	100-110	31827	0.020	2546	0.06	0.12	4
2.00	1.00	100-110	15913	0.032	2037	0.08	0.25	4
3.00	1.50	100-110	10609	0.048	2037	0.10	0.38	4
4.00	2.00	100-110	7957	0.058	1846	0.15	0.45	4
5.00	2.50	100-110	6365	0.070	1782	0.19	0.68	4
6.00	3.00	100-110	5304	0.080	1697	0.24	0.80	4
8.00	4.00	100-110	3978	0.151	2400	0.60	1.00	4
10.00	5.00	100-110	3183	0.189	2400	0.75	1.25	4
12.00	6.00	100-110	2652	0.207	2200	0.90	1.50	4

Note: Cutting data recommendations are guidelines only and are based on ideal cutting conditions.

QUICKCAM®
ultimate profitability

Reducing cycle times
and increasing profits

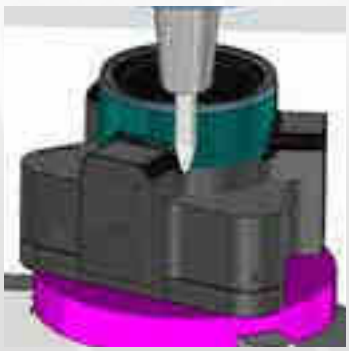
Do you have a component that is taking too long to manufacture? Are you struggling to find the time and resources to investigate advanced machining and cutting tool strategies that could easily double your output? Yes? Then you need to put QuickCam to the test.

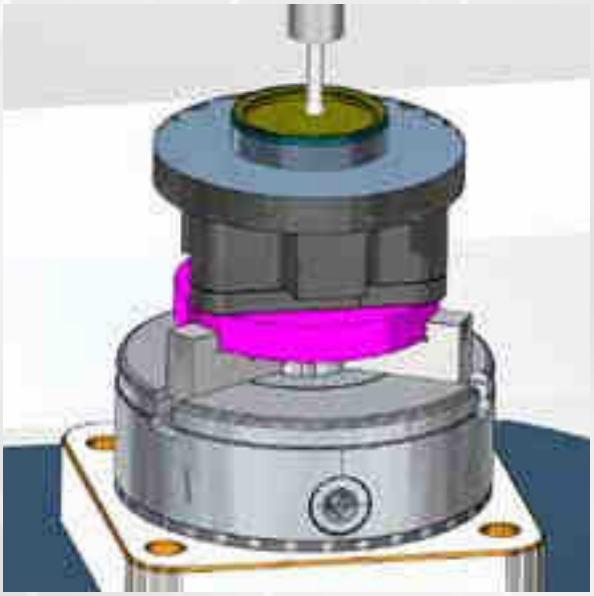
QuickCam is the advanced service from Quickgrind designed to support you with the machining of complex parts in difficult materials.

Implementing QuickCam in your business will give you reduced cycle times, leading to reduced tooling costs, increased output and improved capacity.

The bottom line? Improved throughput, more satisfied customers and increased profitability.

CAM programming is essential for maximizing your tooling investment and improving production efficiency. Proper production engineering can eliminate up to 80% of manufacturing waste and unlock the full potential of your cutting tools.





Benefits

- Reduced cycle time costs
- Reduced tooling costs
- Increased output
- Improved capacity
- Increased profits

Tight timescales
No need to programme, organise standard tooling, or free-up valuable machine time

We do the whole package
In-house tool design – no more outsourcing

In-house technology design centre
No more waiting to get on the machines

End-to-end service
Programming and tooling knowledge all under one roof

Your business may not have the in-house expertise and resources to programme their tooling effectively, leading to suboptimal toolpaths and cutting parameters. Leveraging production-programming expertise is the smart solution to address these challenges and optimise production while addressing application issues.

In manufacturing solutions, it's vital to distinguish between two key components: application strategies and production programming. Application strategies optimise machining and create ideal tool paths for each part, while production programming considers the machine, post-processing verification, and precise binary codes for accurate part cutting. Both application and CAM experts play a significant role in achieving optimised results by refining the tool path and ensuring precise execution by the equipment.

Thanks to CAM simulations, the outdated practice of test cuts for various cutting tool paths is largely obsolete. Modern CAM software incorporates simulation capabilities, eliminating the need to run equipment or waste materials during testing. Application experts use dedicated simulators to achieve the highest precision in perfecting the tool path. Using *hyper*MILL® MAXX machining cycles (our in-house CAM), we can offer a very competitive and professional service by ensuring that we always use the most up-to-date machining tool paths. We are an application partner with OPEN MIND and work with many other CAM providers including EdgeCAM, SolidCAM and Siemens NX.

Finding a trusted source of expertise for these procedures can be challenging, as engineering companies may overlook critical factors like machine behaviour and workholding challenges when creating CAM files. Quickgrind provides a comprehensive solution, offering expertise in optimisation, increased productivity, reduced cycle times and on-site support for verification and simulation procedures. Our team possesses intimate knowledge of tool behaviour within the manufacturing context, enabling us to apply best practices and deliver real value and enhanced productivity.

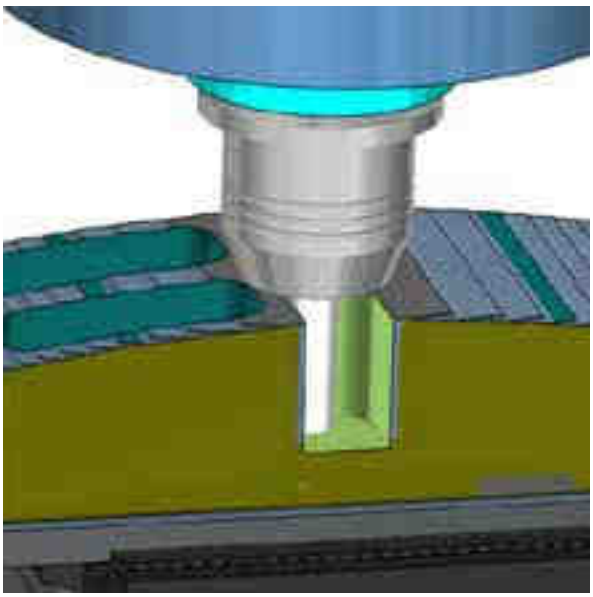
By optimising the processing data through features in CAM software a tool path can be improved by up to 50%. Our programming experts can guide you towards production and tool-cost savings, cycle-time reductions and improved product quality by considering customer perspectives and all factors influencing production efficiency.

Quickgrind's expertise extends beyond cutting tools to optimise every step of your production process, helping you to produce outstanding parts. We offer a holistic view, understanding each step involved, and addressing your unique tooling needs and job requirements for optimal success.

Contact us today to arrange
your free initial CAM assessment.

t +44 (0) 1684 294090

e quickcam@quickgrind.com



QUICKEDGE®
tooling - good as new

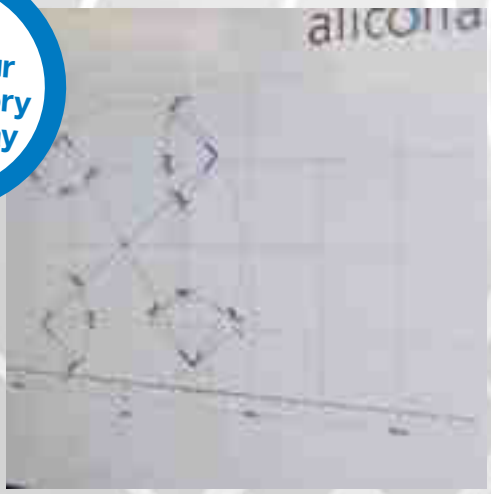
Adding value
to your tooling investment

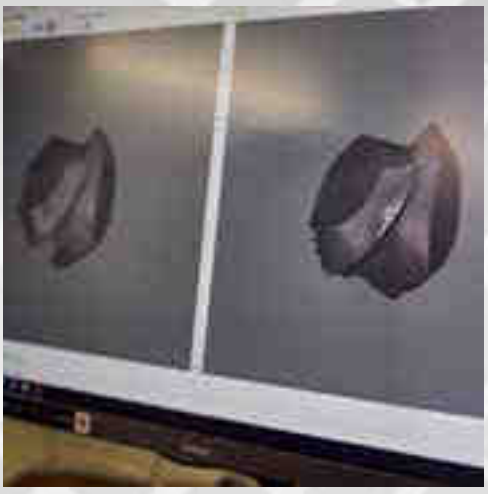
Many of our cutters are suitable for remanufacture. Our unique QuickEdge process can give you up to nine times extra usage out of your tooling, and with material (and environmental) costs increasing, the benefits of remanufacture are clear.

- Tools controlled by size, number of reissues and remanufactures
- Extremely attractive price and performance over the life of the tool
- Reduces the need for virgin raw material, a limited resource

Remanufacture doesn't mean compromising on quality. It has always been our policy to produce tools of such high quality that they can be used more than once. Which means that even after nine remanufactures you will continue to enjoy new tool performance, and a clear conscience.

Ask about our introductory offer today





Quality and speed
Remanufactured to an as-new state and can be quicker than ordering new tooling

Cost and investment
Reduces overall tooling spend and maximises your investment

Consolidate your purchasing
Combine multiple vendor tools into one remanufacturing programme

Environmental, social and corporate governance
Reduce your carbon footprint, enhancing your environmental and corporate credentials

Our service is a far superior form of the regrinding process to an as-new state. Because we have access to our proprietary programmes your remanufactured tool will perform as new, every time, with no compromise. We have seen tools in use for over a decade and many that have been through over 9x remanufacturing cycles.

Properly remanufacturing carbide tools, as opposed to standard regrinds, can greatly enhance the value of your tooling investment. It is crucial that certain techniques for remanufacturing be used to maximize the tool's life and productivity, and a remanufacturing schedule should be developed based on tool life to avoid excessive downtime or catastrophic tool failure.

Of equal importance is the need to recycle and renew. By using our remanufacturing services we can help reduce your carbon footprint enhancing your environmental as well as corporate credentials.

High-performance cutting tools will provide increased efficiency and productivity but they can also be a drain on tooling budgets. Cost-justifying these tools often requires remanufacturing them when they are worn or damaged. A successful reconditioning programme reduces tooling costs by extending life as long as possible.

We can consolidate your requirements, remanufacturing both ours and non-Quickgrind tools, removing the need for you to work with multiple companies. We also remove the hassle out of selecting tools that can and cannot be remanufactured. And you set the parameters on the remanufacturing specifications and we ensure these are maintained – no more having a slightly undersize tool causing a catastrophic issue. The QuickEdge quality processes mean this doesn't happen.

We see a lot of tools every day and have built up a specialised knowledge on wear and tear. Leveraging our Alicona Optima machine we can see in-depth where tools may be deteriorating faster than they should be, if they're failing or, ultimately, if they could be improved to overcome any design limitations.

Finally, because we have been operating internationally for many years, an overseas service is available on quick lead times. With our government AEO accreditations we can expedite shipments both into and out of the UK, therefore reducing the overall lead time.

Don't forget, we happily accept solid carbide cutting tools made by other manufacturers and apply the same expertise to remanufacturing them.

Call us today for more information – +44 (0) 1684 294090.

QUICKLAB®
tooling innovation

Best practice design
for the best performing tools

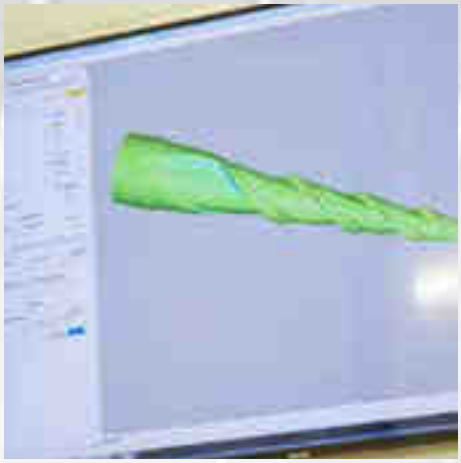
QuickLab allows you to quickly access custom tool designs. With more than 100 years of combined experience and knowledge Quickgrind utilises the best practices in tool design, with complete control over every characteristic of the tool.

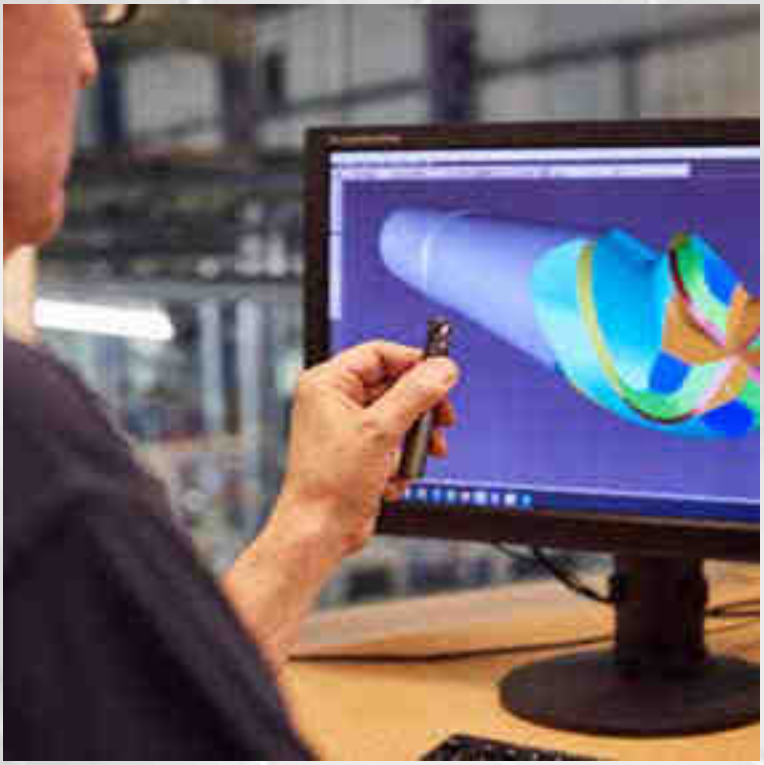
On the one hand a typical business might have to juggle with the limitations of off-the-shelf tooling or accepting long lead-times for bespoke tooling. Large minimum order quantities for 'specials' compounds the problem. The bottom line? Your tooling can be driving the application strategy instead of increasing your efficiency and profitability.

With QuickLab you get rapid turnaround of bespoke tools, often in hours and days not weeks and months.

Adopting the best practices in tool design and with access to the latest advancements in R&D tool design we have control over every aspect of the tool from the ground up.

Finally, enjoy low minimum order requirements. Gone are the days of having to commit to hundreds of tools you don't need.





QUICKVEND®
tooling on demand

24/7 control
of your tooling inventory

Compact table top vending machine with 24 locations equipped with a range of our solid carbide tools

Call today
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Is your tooling inventory reduced to a minimum? Is it secure?
Are your re-stocking orders generated automatically and on time?
Do you want to reduce your tool purchase administration costs?

Quickgrind's robust, proven tool vending solutions are the answer to all these issues and more. Once we have audited your tooling requirements and consumption levels, we will supply you with a fully stocked machine (our machines can hold from 528 to 1,680+ individual tools). Usage and stock levels are then automatically monitored and replacement tools sent before your stock runs out.

And because your tooling inventory and usage levels are pre-determined, you regain complete control of your purchase administration time, and costs – to as little as one purchase order and one invoice per month.

Save time, save money. Take control of your tooling with a vending solution from Quickgrind.

Benefits

- 24/7 secure access
- Allows minimum stock holding
- Automatic re-ordering
- User-friendly operation
- Tailor access to specific users and times
- Easy access to stock information and statistics
- Audit your tooling stock at the push of a button
- Suitable for new and remanufactured tools
- Stocks a wide range of tools types and sizes, and for high or low stock turnover
- Reduces purchase administration costs

QUICKGRIND® Technical Centre

Improving
your machining performance

Quickgrind's state-of-the-art Technical Centre offers a comfortable and technologically advanced environment to discuss all of your cutting tool requirements, challenges and ambitions.

Our experts will work with you to conduct trials whilst generating and running tool paths and machining strategies. Our investment in the centre enables us to demonstrate what is possible with our ground-breaking tooling and tool management solutions.

The centre is fully equipped with a seminar theatre and training room, meeting rooms and machining centres. Visitors can take a guided tour of our production facility, undergo technical training and discuss their specific requirements.

Call us today to arrange your visit

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