ELIMINATOR
Barrel Tools

On target

to revolutionise
your throughput

INFINITE POSSIBILITIES.®

QUICKGRIND®
carbide tooling

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.®

At Quickgrind we do not limit ourselves to standard ranges, and we do not limit you to tools we happen to have in stock and want to sell you. Instead, our mission is to provide you with solution-based tooling, to give you the right tool, for the right job, at the right price.

Eliminator barrel tools 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.

End the compromise of standard tooling. 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

3. Choose your head spec

- Full selection process assistance • Diameter
- Tolerance • Flute radius/length
- Ballnose diameter • Conical, tangential, form F, lens, concave
- Number of flutes • Helix angle
- Radial/axial through-coolant
- MX, XRed or TX coating
- Chip breakers

That's it. No catalogues to trawl though, no complicated product codes, no lengthy tables, 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.®

Remember, just ask
we will make it for you

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.

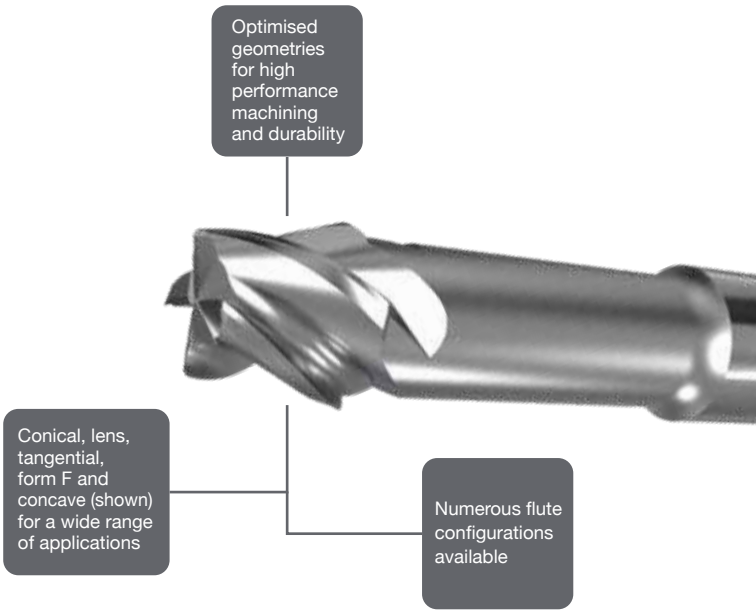
By implementing highly efficient machining processes we are able to realise substantial gains from effective cost reductions per part, by as much as 25% or more, to free-up valuable machine hours. Machine times are a costly element in all production processes and cycle time reductions of 25% are hard 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 ballnose 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 ballnose 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



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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 ballnose endmills and reducing cycle times by up to 90%.

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

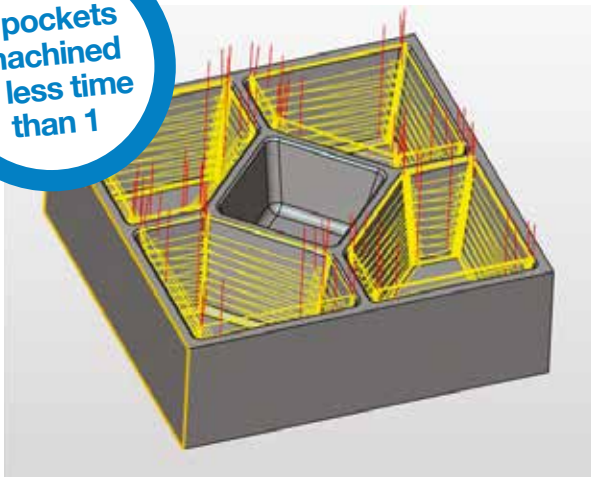
Increasing the step down would normally require a much larger diameter cutter which would not be practical – the Eliminator barrel tool does not have such limitations. The contact area is much greater because the flute radius is adapted from the segment of a much larger circle. If you wanted to increase the step down from 0.20mm to 5.00mm you would need a 250mm diameter ballnose. 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 conical, lens, tangential, form F and concave 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, gear cutting, blisks, vanes and moulds which would all normally require a ballnose.

The standard Eliminator range is available to you now, with custom-made tools on a short delivery.

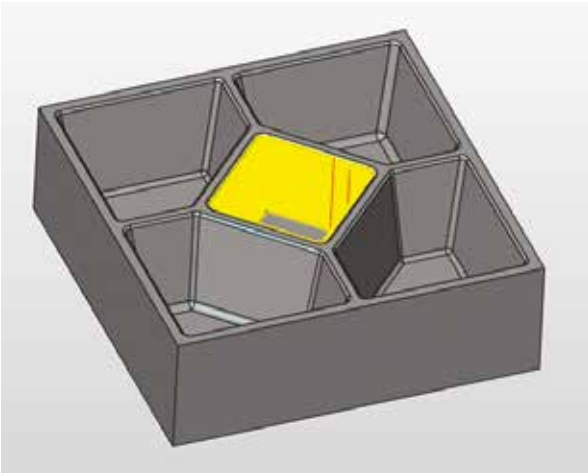
Start your cycle time
and finishing revolution today.
Call +44 (0) 1684 294090
or visit quickgrind.com

4 pockets machined in less time than 1



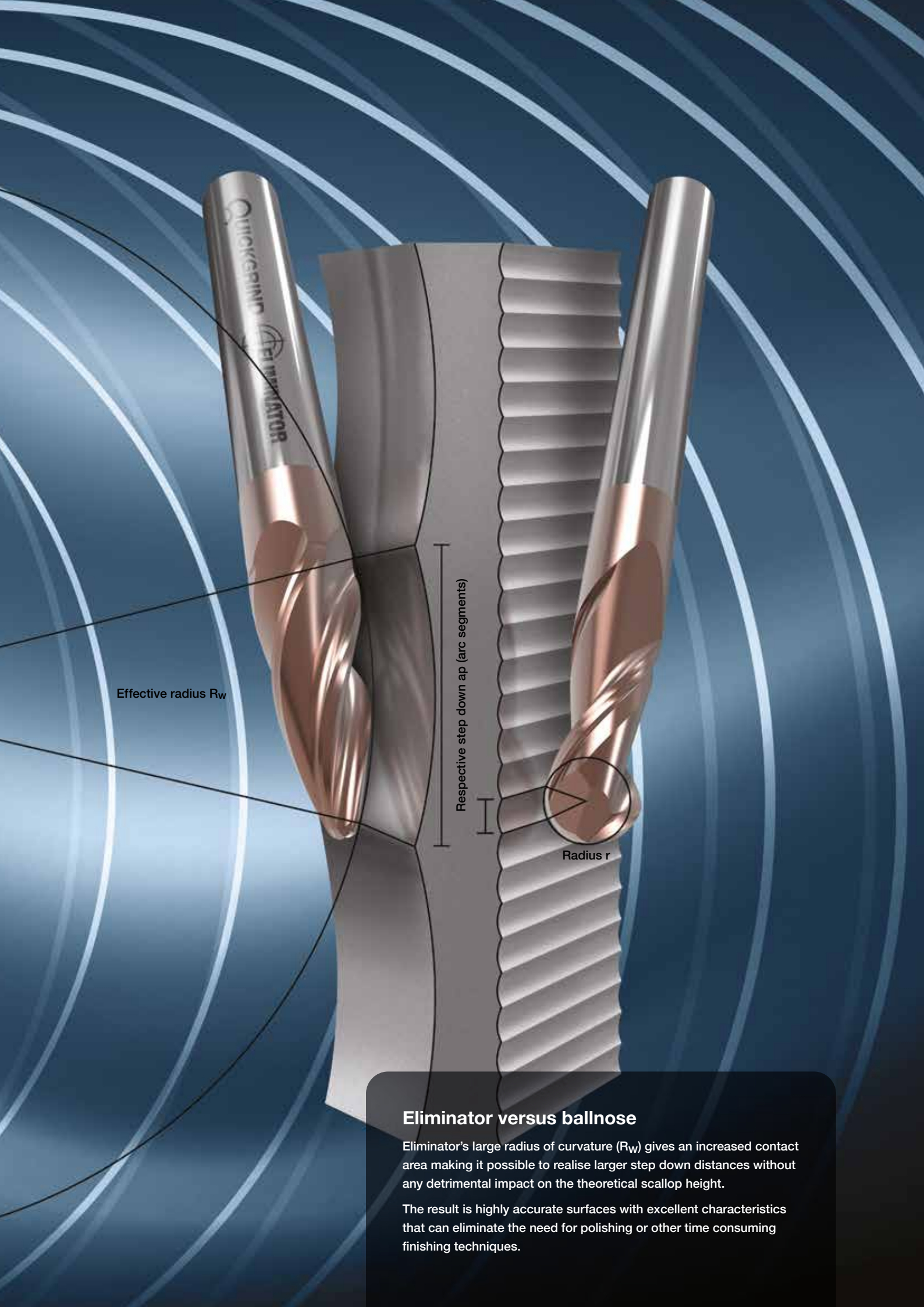
Eliminator

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



Ballnose

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



Eliminator versus ballnose

Eliminator's large radius of curvature (R_W) gives an increased contact area making it possible to realise larger step down distances without any detrimental impact on the theoretical scallop height.

The result is highly accurate surfaces with excellent characteristics that can eliminate the need for polishing or other time consuming finishing techniques.

QUICKCAM®
ultimate profitability

Finishing
in record time

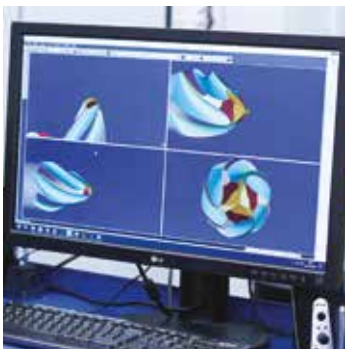
Benefits

- Reduce or eliminate 5-axis grinding
- Reduce or eliminate expensive and time-consuming processes such as in-process inspection, polishing and hand-finishing
- Reduce or eliminate re-work and scrapping
- Improve transitions and blends
- Eliminate end-user rejects
- Improve surface roughness by 30-80%

Use of Quickgrind's Eliminator barrel tools demands a suitable CAM solution that fully exploits the potential of their geometry. Combined with our QuickCam programming and machining strategies, your profitability and competitiveness will be transformed.

QuickCam promises performance enhancing strategies to suit the parts you make and the machines you use, initially via an on-site visit to help us better understand your requirements. The service offers the very latest cutting-edge carbide tools and by 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.

Having discussed with you the part or feature you want to make cycle time savings on we will make our proposals. This will generally require you to supply models with relevant information such as current cycle time, Ra requirement, tools in use now and cutting data. Once our application engineers have determined the most suitable tool design, we will submit our findings for further discussion. Depending on the complication of the feature this may incur charges – please ask us for information.



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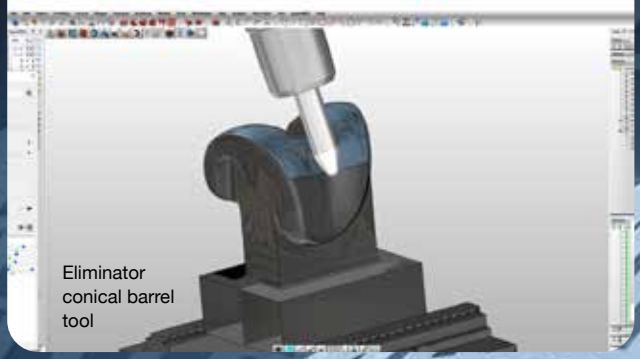
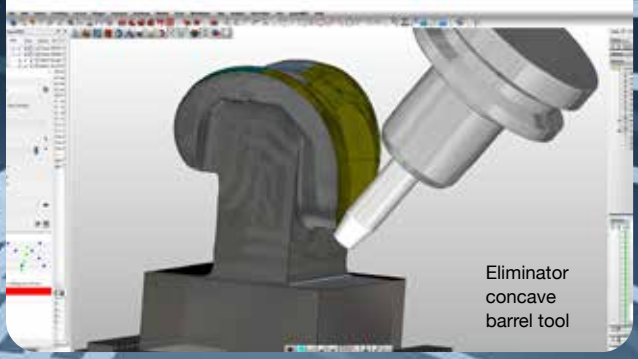


Eliminator conical barrel tool



Eliminator concave barrel tool

- **Reduce or eliminate 5 axis grinding, manual finishing and polishing times**
- **Reduce machining time by more than 30%**
- **Multi-axis machining strategies**

Improved Ra finish on Condyle surfaces

Medical grade cobalt-chrome alloy and titanium alloy

Tools produced to improve access to the condyle surfaces and box section

Improved periphery to condyle blend (transition between the condyle surface and patella track)

Improve surface roughness by 30-80% and eliminate the need for grinding

Cycle time down 60%

Comparative performance

Eliminator R80 4 flute barrel tool		R4 2 flute ballnose end mill
Vc	**103 m/min**	68 m/min
Step down	**0.58mm**	0.103mm
Cycle time	**19 mins**	47 mins

In partnership with 5X Technologies

Aluminium alloy

Vc 850 m/min

3mm step down*

80% cycle time reduction compared to ballnose

Cycle time down 80%

Key benefits

- Far better cutting conditions for the tool
- Cutting on the flank rather than the ball end
- Cutting speed maintained over feature
- Longer tool life

In partnership with 5X Technologies

**Step down is relevant to the Ra finish required and is assessed by our strategic technicians*

ELIMINATOR
Barrel Tools

Force-resistive submicrograin carbide

Quickgrind's substrate offers the perfect mix of durability, hardness and performance. Precision shanks ensure high concentricity for precision toolholders, whilst the structure provides a durable cutting edge.

Your choice of coatings (see over for more details)

Coatings are available for a wide range of materials and applications, for both wet and dry machining. Developed to provide high wear resistance and enhanced chip evacuation, our coatings' excellent adhesion deliver extended tool life and improved performance.
High mechanical and thermal resistance ensure outstanding reliability.

Type A | Uncoated

- **Non-ferrous N**
  - Aluminium 6061/6082
  - Die-cast aluminium 10% Si

Type D | MX coated

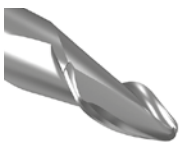
- **Steels P**
  - Low alloy 1000/1100/1300
  - Medium alloy 200/252/300
  - Tool steels H13/P20/D2
  - High strength 420/5120
- **Cast iron K**
  - Grey cast iron
  - SG iron
- **Hardened materials H**
  - Hardened steels 45-55 Hrc

Type S | Xred coated

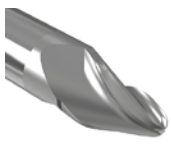
- **Stainless M**
  - Precipitation 13-8/15-5 17-4PH
  - Austenitic 303/304/316L
  - Martensitic 403/410/416
- **High temp alloys S**
  - Inconel Hastelloy Incoloy
  - Titanium alloys Ti6AL4V Ti5Al-5V-5Mo

Other geometries available – please ask

A selection of available geometries



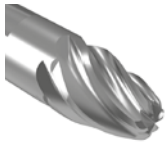
Conical 2 flute
For aluminium



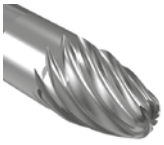
Conical 3 flute
For aluminium

Concave
For fine finishes on convex surfaces

Conical 5 flute
For steels & super alloys



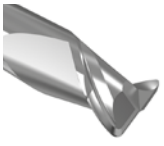
Conical 6 flute
For steels & super alloys



Conical 10 flute
For steels & super alloys

Tangential
For ease of access

Form F
For flat surfaces



Lens
For convex & concave surfaces

@quickgrind

MX

AlTiN Coating

The coating for **moderate cutting speeds**

MX AlTiN is designed to handle high levels of shear stress and impact fatigue. It can cope with cutting temperatures of up to 850°C.

Crystallite size and internal stress levels are controlled by a selected PVD Arc deposition process.

MX's optimum cutting performance is ensured by its unique composition modulation and stress gradient formula.

Performance is predictable across a wide range of materials including mild steels to tool steels with up to 50 HRC.

Cutting speeds range from 40 to 250 M/min depending on conditions and work piece material.

The coating can be applied to virtually any of our solid carbide tools and will be offered where applicable.

Technical data

Coating material	AlTiN
Coating thickness	2-4µm
Deposition process	PVD Arc
Hardness HV 0.05	3300
Oxidation temperature	850°C
Coefficient of friction	<0.6
Process temperature	450-500°C
Colour	Blue/black

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.

XRed
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.

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.

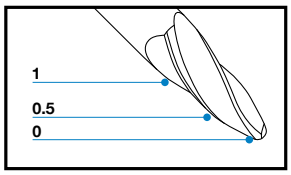
Workpiece materials key

Steels	P1	Low carbon	EN1A, EN8, 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213, 12L13, 1215, 133
	P2	Medium carbon, Alloy steels	1030, 1035, 1040, 1045, 1050, 1052, 1055, 1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4140, 4150, 4320, 4340, 4520, 5015, 5115, 5120, 5162, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1, O2, O6, S2, W1 to W310
	P3	Die/tool steels	O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13, H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A120, D2, D3, D4, D5, D7
Stainless steels	M1	Free machining	430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F
	M2	Austenitic, Martensitic, PH stainless	301, 302, High Tensile, 304, 304L, 305, 316, 420, 15-5PH, 17-4PH, 17-7PH
	M3	Cobalt chrome alloys, Duplex 22%, Super Duplex 25%	302B, 304B, 309, 310, 316b, 316L, 316Ti, 317, 317L, PH13-8Mo, Nitronics
Cast irons	K1	Grey cast iron (GG) <180HB	ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, Grades G1800, G3000, G3500, GG10, 15, 20, 25, 30, 35, 40
	K2	Ductile cast iron	-
	K3	Malleable cast iron (SG) 180>260HB	60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450
Non-ferrous	N1	Aluminium < 10% Si	Aluminium/Aluminium Alloys < 10% Si
	N2	Aluminium > 10% Si	Aluminium/Aluminium Alloys > 10% Si
	N3	Copper/copper alloys, Brass/bronze	Brass, Cu/Cu Alloys/Magnesium
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 data

			Feed recommendations				
Tool diameter (mm)			**6.00**	**8.00**	**10.00**	**12.00**	**16.00**
		Vc (M/min)	**Feed per tooth (mm)**				
Steels	P1	170-200	0.030-0.050	0.050-0.070	0.070-0.095	0.100-0.115	0.120-0.155
	P2	140-170	0.030-0.050	0.050-0.070	0.070-0.095	0.100-0.115	0.120-0.155
	P3	90-120	0.010-0.030	0.030-0.050	0.050-0.070	0.070-0.090	0.090-0.135
Stainless steels	M1	110-140	0.030-0.050	0.050-0.070	0.070-0.095	0.100-0.115	0.120-0.155
	M2	60-90	0.030-0.050	0.050-0.070	0.070-0.095	0.100-0.115	0.120-0.155
	M3	40-70	0.025-0.045	0.035-0.060	0.055-0.080	0.090-0.100	0.100-0.120
Cast irons	K1	130-150	0.030-0.050	0.050-0.070	0.070-0.085	0.100-0.115	0.120-0.155
	K2	110-135	0.030-0.050	0.050-0.070	0.070-0.085	0.100-0.115	0.120-0.155
	K3	70-120	0.010-0.030	0.030-0.050	0.050-0.070	0.070-0.090	0.090-0.135
Non-ferrous	N1	250-500	0.045-0.060	0.060-0.075	0.065-0.090	0.085-0.110	0.090-0.120
	N2	150-350	0.045-0.060	0.060-0.075	0.065-0.090	0.085-0.110	0.090-0.120
	N3	130-275	0.035-0.050	0.050-0.065	0.055-0.080	0.080-0.100	0.090-0.115
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).

QUICKEDGE®
tooling - good as new

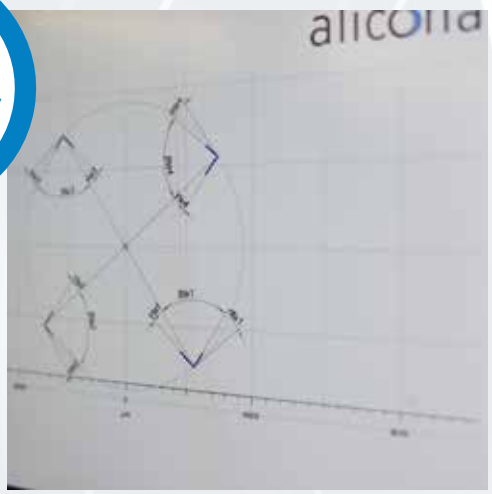
Adding value
to your tooling investment

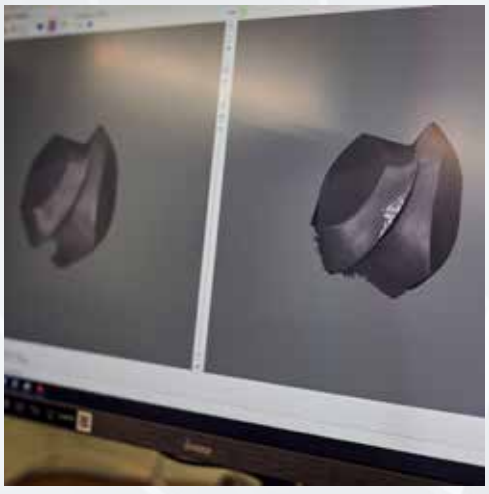
Eliminator barrel tools are suitable for remanufacture. Our unique QuickEdge process can give you up to nine times extra usage out of your tooling, and with material (and environmental) costs increasing, the benefits of remanufacture are clear.

- 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





@quickgrind

QUICKLAB®
tooling innovation

Best practice design
for the best performing tools

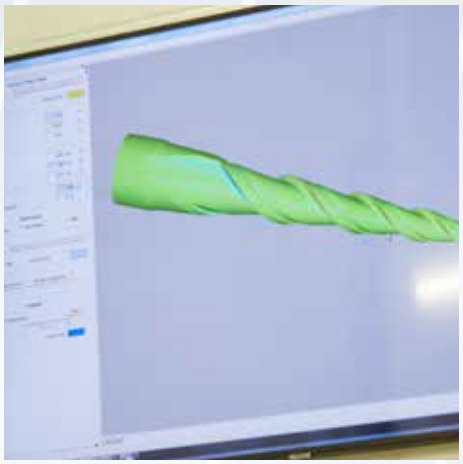
QuickLab allows you to quickly access custom tool designs. With more than 100 years of combined experience and knowledge Quickgrind utilises the best practices in tool design, with complete control over every characteristic of the tool.

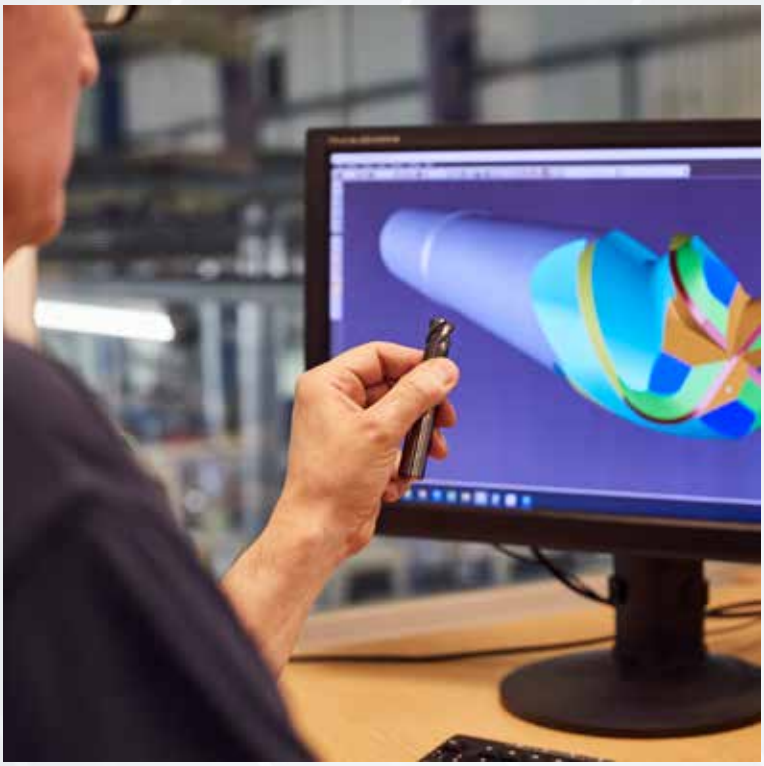
On the one hand a typical business might have to juggle with the limitations of off-the-shelf tooling or accepting long lead-times for bespoke tooling. Large minimum order quantities for 'specials' compounds the problem. The bottom line? Your tooling can be driving the application strategy instead of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





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QUICKVEND®
tooling on demand

24/7 control
of your tooling inventory

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 and 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

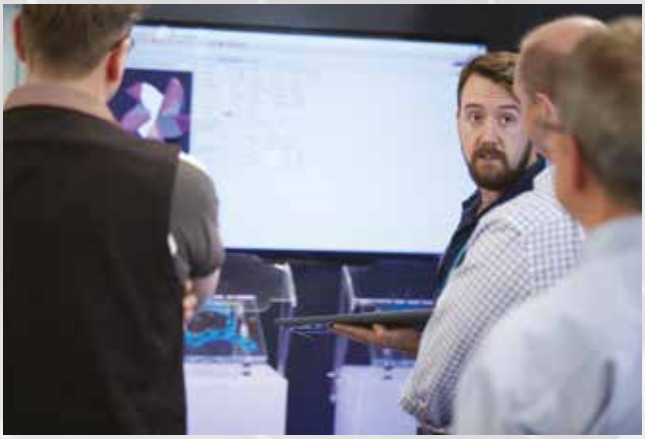
QUICKGRIND® Technical Centre

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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QUICKGRIND® carbide tooling