Aluminium and non-ferrous range brochure

Solid carbide tooling, modular tooling and drills

Elevate your **aluminium machining**

INFINITE POSSIBILITIES.®

QUICKGRIND® carbide tooling

Contents

Main features (see icons key)

Icons key


Customisable – Infinite Possibilities®

Standard – available ex-stock


ModX® compatible – modular heads and shanks


Remanufacture compatible – regrind, recoat, reuse


Centre cutting

Helix angle

End angle

Coating type

Variable index

Variable helix

Number of teeth


Ball nose


Coated ball nose


Coated chamfer


Coated corner radius


Chip breaker


Step down

Orbis 270°


Through-coolant


Chamfer milling


Slot milling


Side finishing


Side roughing


Profile milling


Ramping


Trochoidal milling


Plunge milling


Pocket milling


Helical milling


3D milling

The power **of precision**

Unleash the power of precision with Quickgrind's premium solid carbide tools for aluminum machining. 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 28 to 32 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 aluminium 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

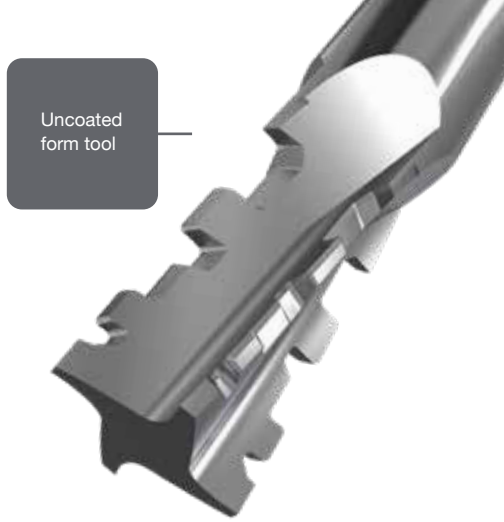
- Length • Diameter • Relief

3. Choose your head spec

- Length • Diameter
- Tolerance • Number of flutes
- Helix angle • Anti-vibration
- Radius • Chamfer
- Radial/axial through-coolant
- Ballnose • 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.®



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 aluminium tools we have designed and made for our clients.

Why not ask us what we can do for you?

Dovetail undercut with TX-R coating

Caiman 5 flute chip breaker

Panther step drill with TX-R coating

Uncoated Orbis lollipop

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.

ELIMINATOR
Barrel Tools

Innovating
for unlimited potential

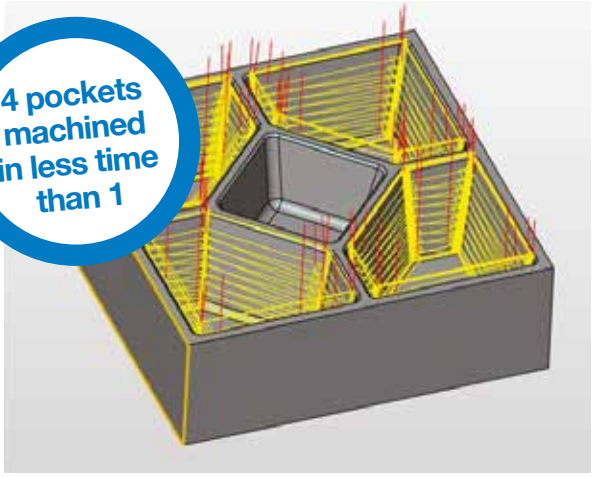
Eliminator is an exciting range of barrel tools that takes the arc segment of a circle to form the radius of the flute, enabling improved step down strategies when compared to ballnose endmills and reducing cycle times by up to 90%.

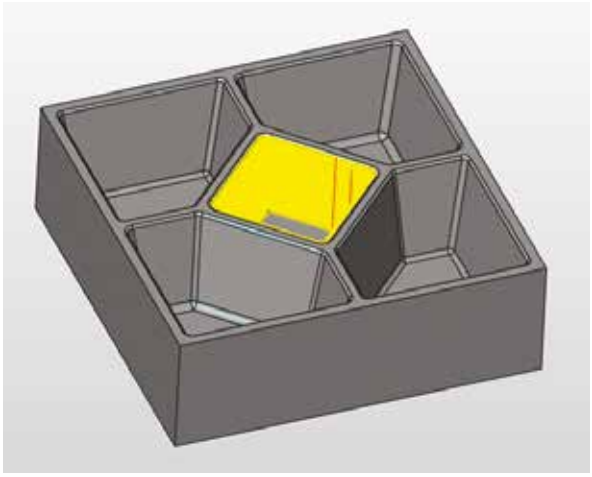
Until now the conventional way to produce a required finish was to use a ballnose. This limits the step down, generally calculated as ap = 0.02 x D1. For example, a 10.00mm diameter ballnose can achieve an ap of 0.20mm.

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 (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 ballnose.

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

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

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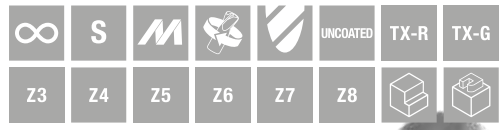
ELIMINATOR
Barrel Tools

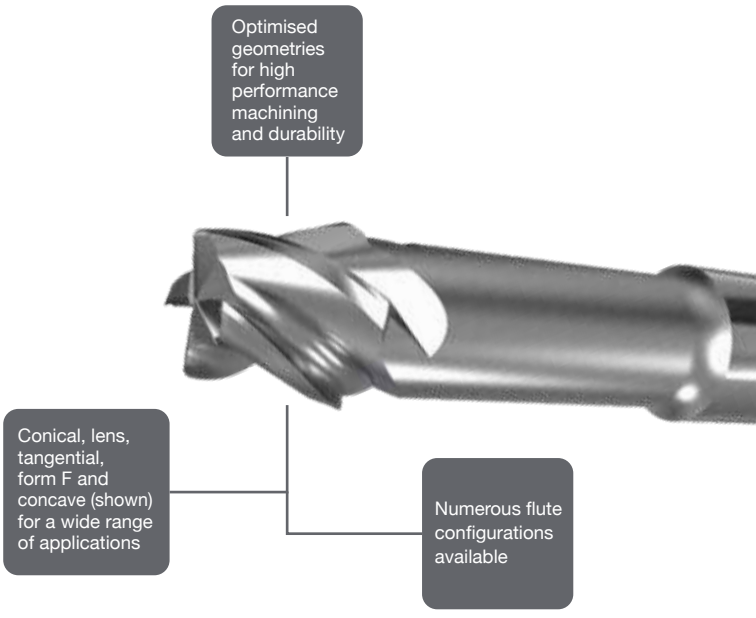
Transforming

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

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 materials from aluminium to peek.

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.

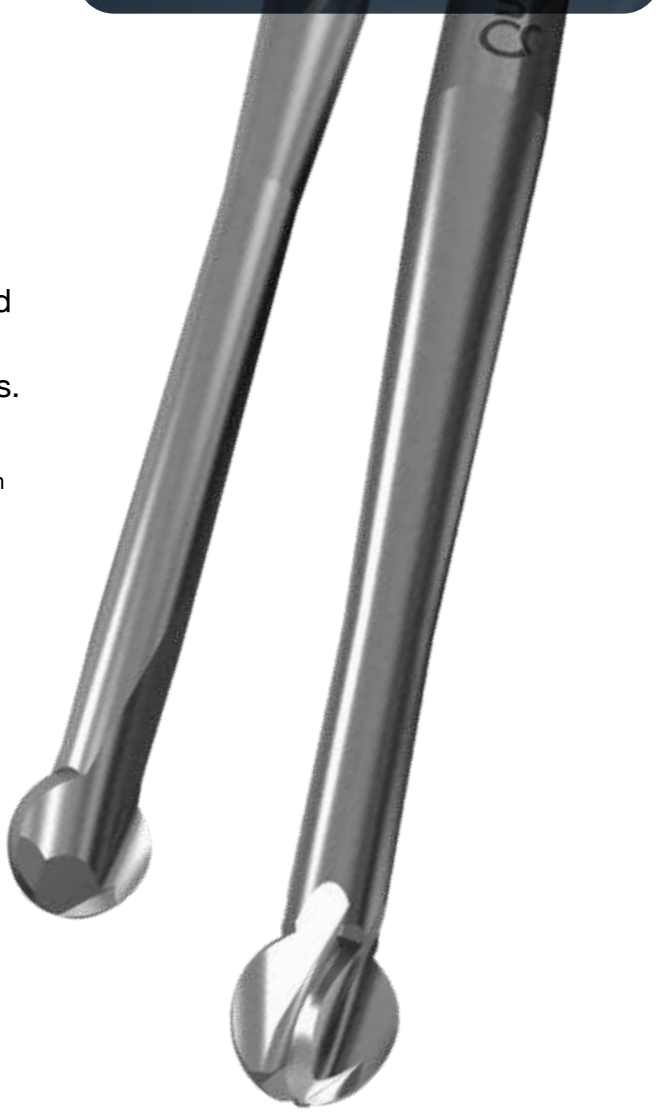
Applications and benefits

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

ORBIS
High Technology Lollipop Cutters

Innovation
with precision

> The quality of Quickgrind's tools and their speed of delivery is truly world class. We specify tolerances such as +/– 10µm on diameter and form and other suppliers are not able to compete. We are able to spend less time chasing tooling suppliers and worrying about accuracy issues, and more time focussing on what we do best.



Available with any number of flutes to suit your application and in a choice of diameter, reach and overall length, Orbis lollipop cutters are ideal for 5-axis tube milling and machining contour shapes.

The tools featured here have been designed with a reduced neck to give full access. They are suitable for fine finishing of irregular, uneven surfaces and can be specified with material-specific geometries and coatings for aluminium.

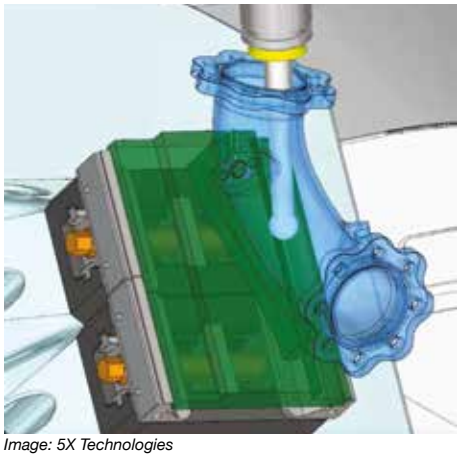


Image: 5X Technologies

Scan the QR code to see how we achieved an 80% cycle time saving on this part

Automotive manifold

Component information

- Material: T6511 tempered aluminium alloy
- Tool: 16mm 3 flute Orbis lollipop cutter
- Speed: 12,870rpm
- Feed rate: 4,280mm/min
- Depth of cut: 3.00mm
- Total cycle time: 2 hours 13 minutes for complete part

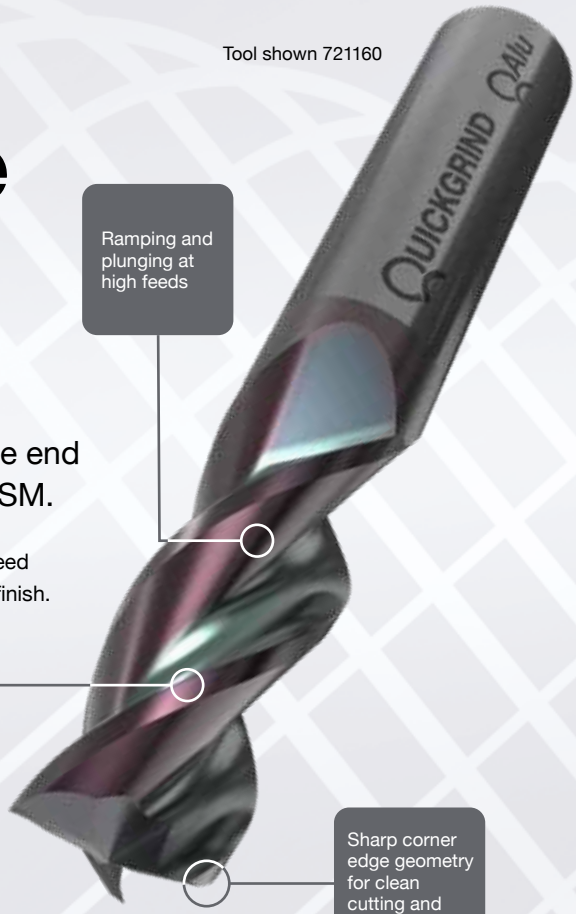
Key benefits

- One operation machining from both sides
- Simplify machining of complex, hard to reach features
- Unlock pioneering tube milling strategies
- Dramatically reduce cycle times

QAlu
High Performance End Mills

Balanced 3 flute
for high speed milling

Tool shown 721160



Ramping and plunging at high feeds

Sharp corner edge geometry for clean cutting and finishing

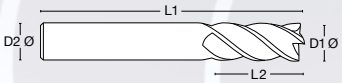
The QAlu is a high performance 3 flute solid carbide end mill designed with 3 teeth to centre for balanced HSM.

Open gullets within the geometry allow for ramping and plunging at higher feed rates while the TX-R coating and polished flutes enhance performance and finish. QAlu is excellent for roughing and finishing.

Designed with sharp corner geometry QAlu is ideal for machining square corners in manufactured parts.

- TX-R is a ta-C PVD Arc coating with a thickness of <0.5µm
- Hardness HV 0.02 >5000
- Oxidation temperature 500°C
- Coefficient of friction <0.1
- Process temperature below 180°C
- Very good, typically class 1 adhesion

Tool shown 721030



QAlu 3 flute end mill for aluminium alloys and non-ferrous materials

D1 Ø mm	D2 Ø mm	L1 mm	L2 mm	Teeth Z	Stock code
3.00	3.00	50.00	12.00	3	721030
4.00	4.00	51.00	16.00	3	721040
5.00	5.00	51.00	20.00	3	721050
6.00	6.00	58.00	24.00	3	721060
8.00	8.00	64.00	25.00	3	721080
10.00	10.00	73.00	27.00	3	721100
12.00	12.00	84.00	32.00	3	721120
16.00	16.00	93.00	39.00	3	721160
20.00	20.00	105.00	42.00	3	721200

See pages 26/27 for cutting data

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QAlu-R
High Performance Roughing End Mills

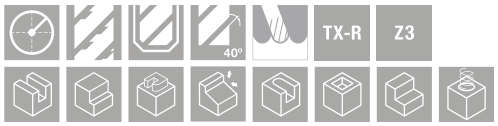
Trochoidal roughing
of aluminium

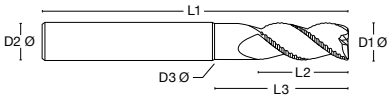
Tool shown 942120

QAlu-R is a high performance aluminium cutter with flat-crested-style geometry for enhanced performance in roughing applications.

QAlu-R can be used in conventional and trochoidal machining strategies with lower power requirements. It has variable index and helix and comes with TX-R coating.

Tool shown 942060





QAlu-R 3 flute roughing end mill for aluminium alloys and non-ferrous materials

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	Chamfer x 45°	Teeth Z	Stock code
6.00	6.00	5.70	58.00	13.00	23.00	0.10	3	942060
8.00	8.00	7.70	64.00	18.00	28.00	0.20	3	942080
10.00	10.00	9.50	73.00	21.00	31.00	0.25	3	942100
12.00	12.00	11.50	84.00	25.00	35.00	0.30	3	942120
16.00	16.00	15.30	93.00	32.00	50.00	0.45	3	942160
20.00	20.00	19.30	105.00	40.00	60.00	0.50	3	942200

See pages 26/27 for cutting data

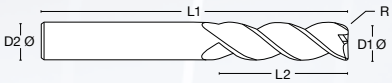
A coated 3 flute
for excellent surface finishes

Tool shown 124121

Force-resistive submicrograin carbide for strength and toughness

Special 3 flute geometry with TX-R coating

QAlu-CR is a high performance 3 flute solid carbide end mill with corner radii for machining aluminium and non-ferrous materials. The special 3 flute geometry and TX-R coating enhances tool life and achieves excellent surface finishes.



Tool shown 124204

Corner radii for machining aluminium and non-ferrous

Tool shown 124030

TX-R coating for extended tool life

QAlu-CR 3 flute roughing end mill for aluminium alloys and non-ferrous materials

D1 Ø mm	D2 Ø mm	L1 mm	L2 mm	R mm	Teeth Z	Stock code
3.00	3.00	50.00	12.00	0.25	3	124030
3.00	3.00	50.00	12.00	0.50	3	124031
3.00	3.00	50.00	12.00	0.75	3	124032
4.00	4.00	51.00	16.00	0.25	3	124040
4.00	4.00	51.00	16.00	0.50	3	124041
4.00	4.00	51.00	16.00	0.75	3	124042
5.00	5.00	51.00	20.00	0.25	3	124050
5.00	5.00	51.00	20.00	0.50	3	124051
5.00	5.00	51.00	20.00	0.75	3	124052
6.00	6.00	58.00	24.00	0.50	3	124060
6.00	6.00	58.00	24.00	1.00	3	124061
6.00	6.00	58.00	24.00	1.50	3	124062
6.00	6.00	58.00	24.00	2.00	3	124063
8.00	8.00	64.00	25.00	0.50	3	124080
8.00	8.00	64.00	25.00	1.00	3	124081
8.00	8.00	64.00	25.00	1.50	3	124082
8.00	8.00	64.00	25.00	2.00	3	124083
8.00	8.00	64.00	25.00	3.00	3	124084
10.00	10.00	73.00	27.00	0.50	3	124100
10.00	10.00	73.00	27.00	1.00	3	124101
10.00	10.00	73.00	27.00	1.50	3	124102
10.00	10.00	73.00	27.00	2.00	3	124103
10.00	10.00	73.00	27.00	3.00	3	124104
12.00	12.00	84.00	32.00	0.50	3	124120
12.00	12.00	84.00	32.00	1.00	3	124121
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12.00	12.00	84.00	32.00	2.00	3	124123
12.00	12.00	84.00	32.00	3.00	3	124124
16.00	16.00	93.00	39.00	0.50	3	124160
16.00	16.00	93.00	39.00	1.00	3	124161
16.00	16.00	93.00	39.00	1.50	3	124162
16.00	16.00	93.00	39.00	2.00	3	124163
16.00	16.00	93.00	39.00	3.00	3	124164
20.00	20.00	105.00	42.00	0.50	3	124200
20.00	20.00	105.00	42.00	1.00	3	124201
20.00	20.00	105.00	42.00	1.50	3	124202
20.00	20.00	105.00	42.00	2.00	3	124203
20.00	20.00	105.00	42.00	3.00	3	124204

See pages 26/27 for cutting data

ALLIGATOR DUO
High Performance End Mills

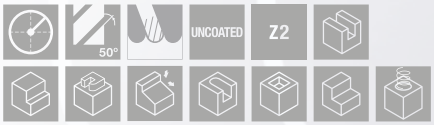
High feed
with excellent finish

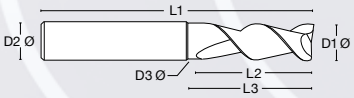
The Alligator Duo 2 flute end mill is designed for machining a wide range of non-ferrous materials such as aluminium alloys.

A well-proven, tried and tested design it has been used for many years on a huge range of components from aerospace and motorsport to mould and die parts.

The flute design and end geometry allow for high speed and feed rates with excellent chip clearance and high material removal rates.

Alligator Duo is especially suitable for roughing strategies and with its sharp corner geometry and no corner breaks is very useful when machining square corners in manufactured parts.





Alligator Duo 2 flute end mill for aluminium

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	2.80	58.00	12.00	20.00	Yes	2	198405
4.00	6.00	3.80	58.00	12.00	20.00	Yes	2	198408
5.00	6.00	4.80	58.00	18.00	24.00	Yes	2	198411
6.00	6.00	5.80	58.00	18.00	30.00	Yes	2	198414
8.00	8.00	7.80	64.00	18.00	30.00	Yes	2	198474
10.00	10.00	9.80	73.00	22.00	35.00	Yes	2	198480
12.00	12.00	11.80	84.00	26.00	45.00	Yes	2	198477
16.00	16.00	15.80	93.00	32.00	50.00	Yes	2	198486
20.00	20.00	19.80	105.00	38.00	55.00	Yes	2	198484

See pages 26/27 for cutting data

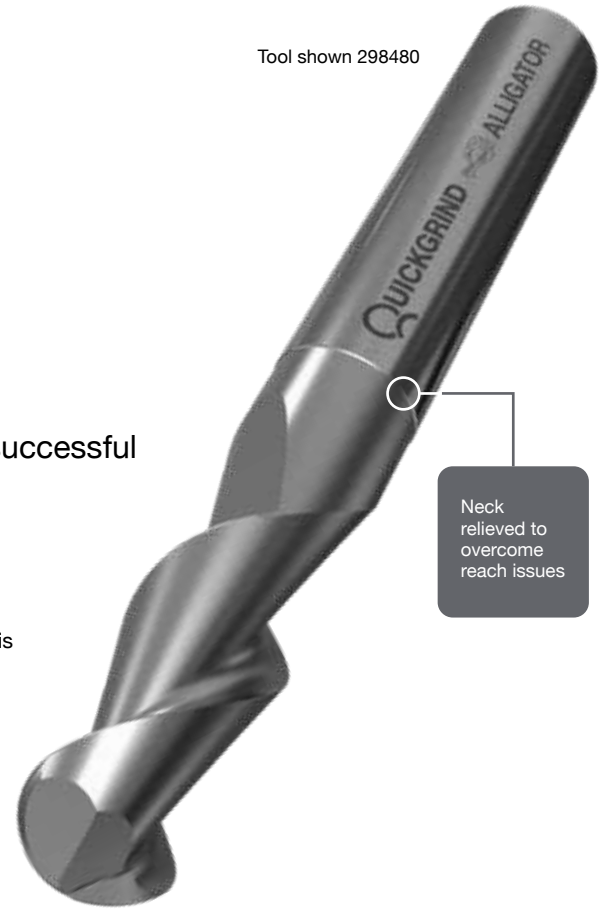
Tool shown 198474

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

ALLIGATOR DUO Ball nose
High Performance Ball Nose End Mills

The ball nose **with bite**

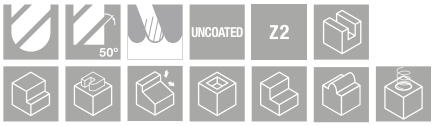
Tool shown 298480

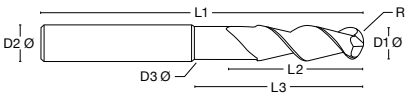


The Alligator Duo 2 flute ball nose is part of our successful Alligator end mill range and offers exceptional performance in non-ferrous materials including aluminium and aluminium alloys.

Copy milling, contour milling and profile milling are all strategies where this tool excels, providing a high degree of swarf removal and resistance to tool wear.

Our standard uncoated Duo ball nose comes in 6.00 to 16.00mm diameter and up to 93.00mm overall length and is ideal for most applications.





Alligator Duo 2 flute ball nose for aluminium

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	5.80	58.00	18.00	30.00	3.00	2	298415
8.00	8.00	7.80	64.00	18.00	30.00	4.00	2	298475
10.00	10.00	9.80	73.00	22.00	35.00	5.00	2	298481
12.00	12.00	11.80	84.00	26.00	45.00	6.00	2	298479
16.00	16.00	15.80	93.00	32.00	50.00	8.00	2	298480

See pages 26/27 for cutting data

Tool shown 298415

Uncoated for most applications

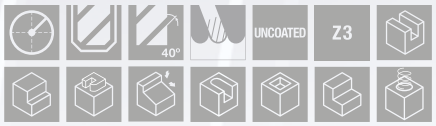
ALLIGATOR TRIO
High Performance End Mills

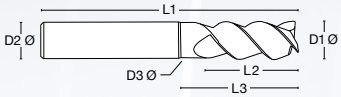
Tool shown 398429

Performance enhanced
with high material removal rates

The Alligator Trio 3 flute end mill is ideal for high productivity machining of aluminium and other non-ferrous materials. Superior grinding techniques provide high material removal rates and excellent chip evacuation.

It is suitable for HSM, slotting, roughing, finishing, trochoidal milling, profiling in mould and die, aerospace and other applications.





Alligator Trio 3 flute end mill for aluminium

D1 Ø mm	D2 Ø mm	D3 Ø mm	L1 mm	L2 mm	L3 mm	Chamfer x 45°	Teeth Z	Stock code
3.00	6.00	2.80	58.00	8.00	16.00	0.05	3	398405
4.00	6.00	3.80	58.00	11.00	18.00	0.06	3	398408
5.00	6.00	4.70	58.00	13.00	20.00	0.06	3	398411
6.00	6.00	5.60	58.00	13.00	20.00	0.08	3	398414
8.00	8.00	7.50	64.00	19.00	25.00	0.10	3	398421
10.00	10.00	9.50	73.00	22.00	30.00	0.15	3	398429
12.00	12.00	11.50	84.00	26.00	36.00	0.15	3	398435
16.00	16.00	15.50	93.00	32.00	42.00	0.20	3	398444
20.00	20.00	19.50	105.00	38.00	50.00	0.25	3	398452

See pages 26/27 for cutting data

Tool shown 398411

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

CAIMAN
High Performance End Mills

The choice
for 6000/7000 series aluminium

Tool shown 698411

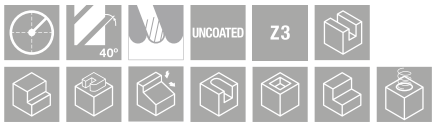
Superior grinding and reinforced flutes

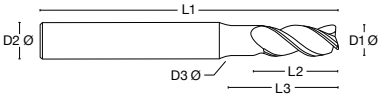
The Caiman is fast becoming the preferred tool when machining 6000 and 7000 series aluminium. Roughing and finishing applications at high speeds and feed rates are where this tool really performs.

Combine this with trochoidal milling where 25% + width of cut (a_e) and depth of cuts (a_p) of 2-3 x D are possible, this tool provides high levels of MRR and excellent swarf evacuation resulting in very long tool life.

Optimised flute design for maximum chip space and swarf evacuation

Tool shown 698405





Caiman 3 flute end mill for 6000/7000 series aluminium

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	2.80	58.00	8.00	13.00	Yes	3	698405
4.00	6.00	3.80	58.00	12.00	18.00	Yes	3	698406
5.00	6.00	4.70	58.00	14.00	20.00	Yes	3	698407
6.00	6.00	-	58.00	14.00	-	Yes	3	698408
8.00	8.00	-	64.00	19.00	-	Yes	3	698409
10.00	10.00	-	73.00	22.00	-	Yes	3	698410
12.00	12.00	-	84.00	26.00	-	Yes	3	698411
16.00	16.00	-	93.00	32.00	-	Yes	3	698412
20.00	20.00	-	105.00	38.00	-	Yes	3	698413

See pages 26/27 for cutting data

MODX®

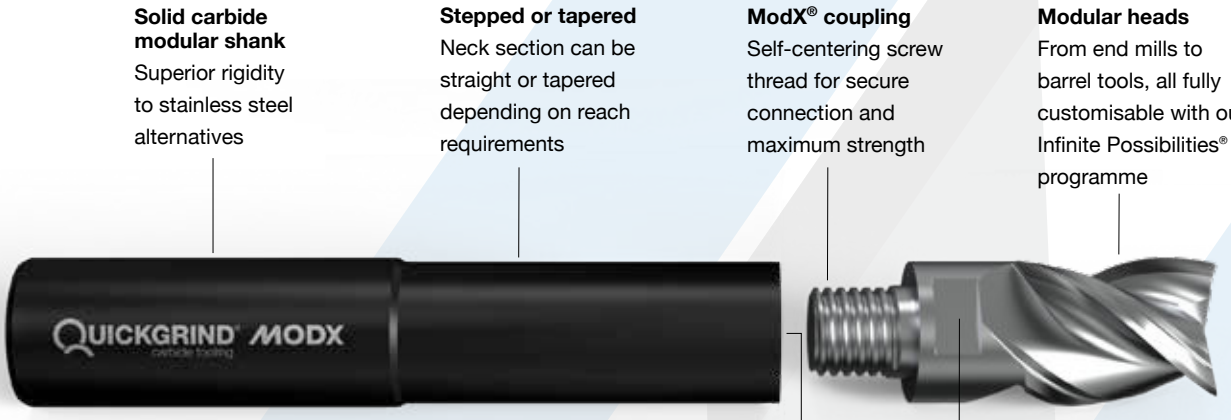
MODULAR SHANKS | EXCHANGEABLE HEADS

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 a choice of coatings and geometries for aluminium and non-ferrous 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 coatings 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.

Roughing end mills
This high performance aluminium cutter with flat-crested-style geometry has enhanced performance in roughing applications. It is ideal for conventional and trochoidal machining strategies and also has variable index and helix.

Aluminium specialists
A range of 2 to 3 flute end mills, ball nose end mills and roughing end mills designed for machining a wide range of aluminium alloys and other non-ferrous materials in aerospace, motorsport and mould and die.

Chamfer tools
Suitable for aluminium and non-ferrous materials and can be used for many machining operations from chamfering to bevelling, deburring, spotting and countersinking. Our standard chamfer tool has a 90° inclusive point angle.

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.

UNCOATED TX-R

Accuracy up
cycle times down

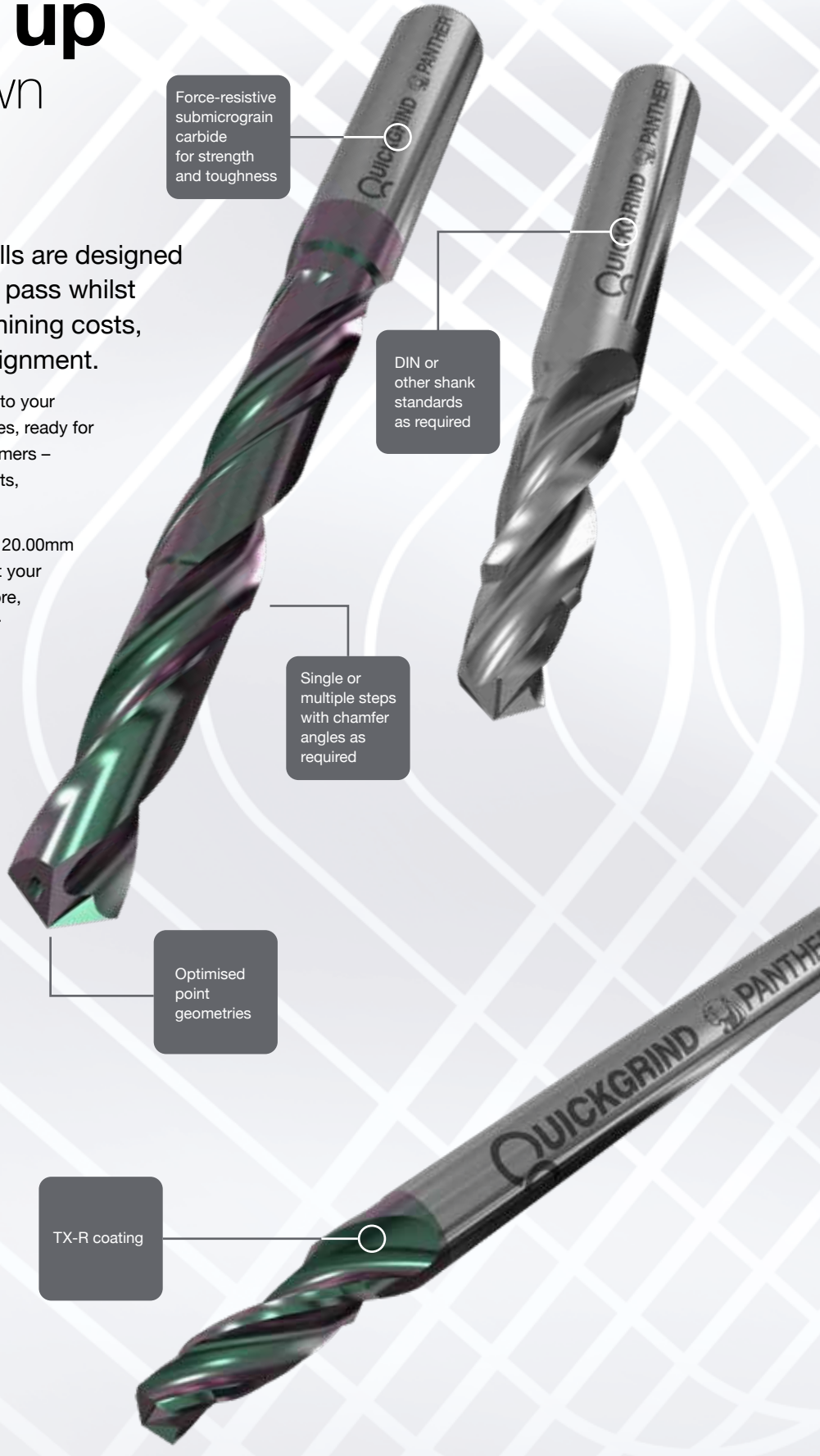
Our Panther multi-diameter drills are designed to create multiple bores in one pass whilst reducing cycle times and machining costs, all with highly accurate bore alignment.

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.

Tools are designed with relevant geometries, with or without coatings, to suit your specifications.

Highly accurate bores in one pass

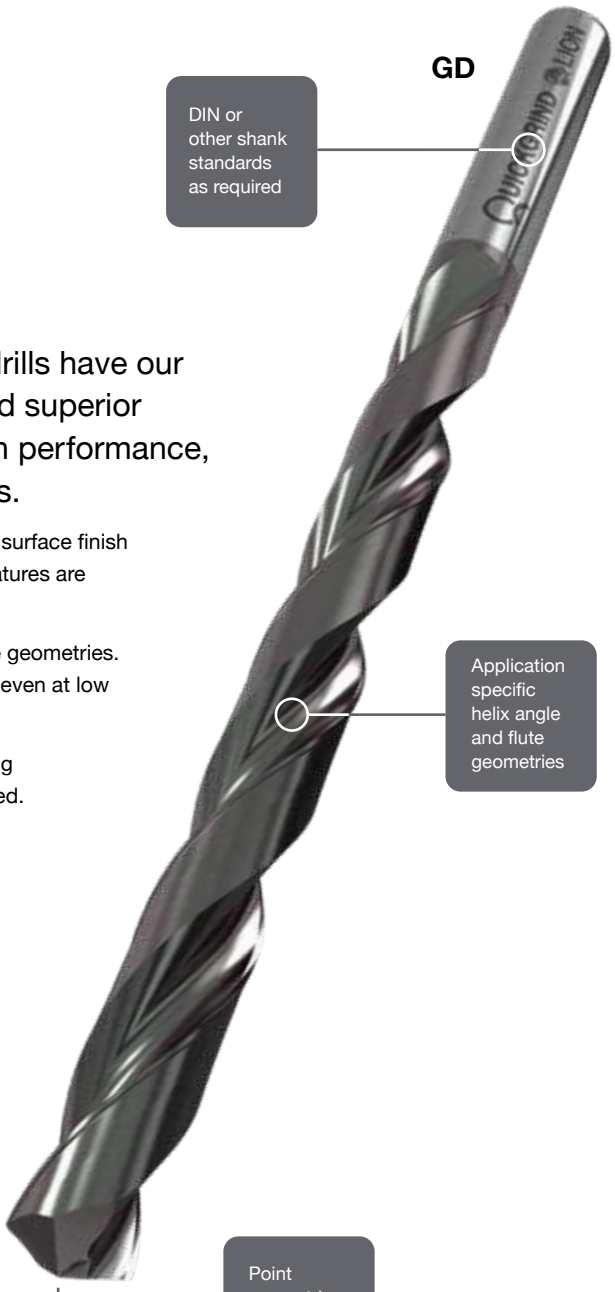


 Tooling images shown are for illustrative purposes only and are not actual size

UNCOATED TX-R TX-G

Versatility
and cost-effectiveness

GD



Our Lion GTC (through-coolant) and GD (solid) drills have our unique blend of micrograin carbide substrate and superior coatings, providing a recipe that guarantees high performance, cost-effective drilling in a wide range of materials.

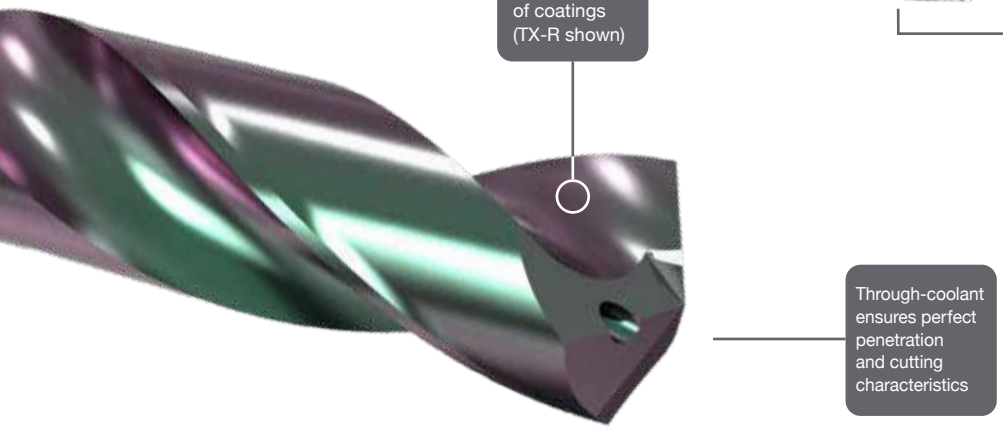
Quickgrind's high quality manufacturing processes ensure a high quality surface finish and excellent coating for optimal chip evacuation. High process temperatures are dissipated safely and effectively.

Lion drills can be designed with application-specific helix angle and flute geometries. The flute form geometry delivers optimal chip generation characteristics even at low cutting speeds.

The GTC through-coolant version ensures perfect penetration and cutting characteristics. Cutting forces and temperatures are considerably reduced.

With their precision-ground point geometry and strong rake angle, combined with high wear and low coefficient of friction coating, Lion GTC and GD drills are versatile and effective in numerous applications. Whether you go for the through-coolant or solid variant, these drills deliver incredible performance at depths of 3xD to 10xD.

GTC



UNCOATED TX-R TX-G

Process-reliable
deep hole drilling

The Leopard DHD rises to the challenge of deep hole drilling with reliable efficiency, up to 50×D.

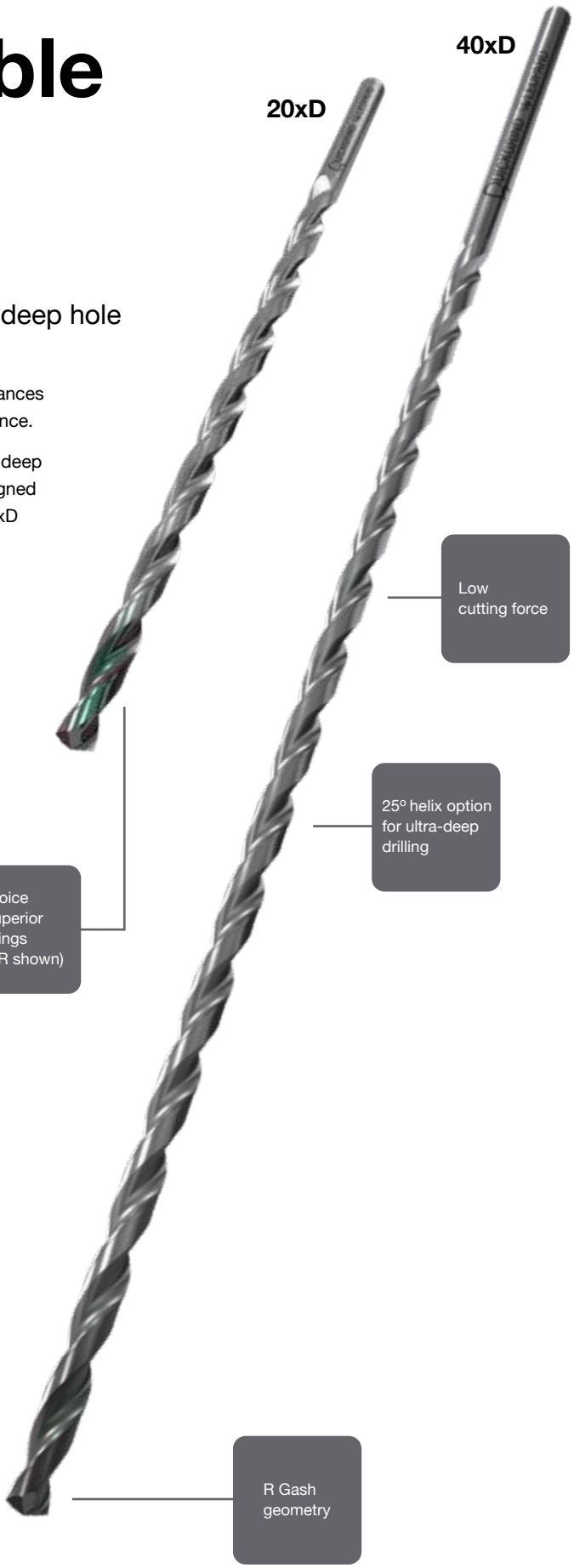
Each tool is produced with perfect symmetry – geometries, tolerances and point angles are all optimised for the best possible performance.

Correct procedures need to be adopted for successful drilling of deep holes ≥20xD and above. Always use a Quickgrind pilot drill (designed +0.02-0.05mm larger than the long drill diameter) and drill to 3-6xD (depending on drill depth) in preparation for the long series drill.

The follow-on drill should enter without coolant and at a much reduced speed and feed, stopping short of the drilled depth. Run at selected higher speed and with coolant before proceeding.

Pecking is recommended on some applications and full retraction of the drill on horizontal operations must be considered. Once full depth is achieved reduce speed and feed on retraction.

As with all drilling applications there are many variables which is why we recommend discussing with our technical team who will help with drill selection and design.



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

High feed
accurate holes

Cougar TF (three flute) drills are used on aluminium and non-ferrous materials and are designed for core drilling and opening out existing bores.

The three flutes allow direct penetration without the need for pre-centring.

Cougar drills are capable of achieving a reamer class finish with added support during the cutting process due to the extra flute.

With three flute drills, under the right circumstances, it is possible to achieve up to 50% higher feed rate per revolution.

Straight
to the point

Tiger straight flute drills are designed for highly productive holemaking in aluminium components including automotive and aerospace.

Their dedicated substrate and optional coatings withstand the abrasive wear resulting from high speeds and temperatures, typical in aluminium silicon alloys. This helps extend tool life and improve productivity.

These drills are also ideal for pre-tapping hole sizes, chamfer holes, radii and multi-step forms.

Tiger drills support complex, multi-step applications and are custom made to suit your precise component requirements. Features include step angles with chamfer and radii, point angle and up to 8xD capability. All of this adds up to high productivity and long tool life, providing you with a low cost per hole.

Like all our drills, Tiger is designed for multiple remanufactures, guaranteeing you new tool performance again and again.

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

TX
ta-C Coating

A smooth
ta-C coating

Superseding conventional DLC coatings, our TX-R and TX-G advanced coatings have been developed for the machining of aluminiums and non-ferrous materials. With an sp3 content of 60%-70% they reach a hardness of over 5000HV.

These thin, smooth and extremely hard coatings are designed to maintain maximum cutting edge sharpness when machining high Si content aluminium alloys.

The TX range also excels in cutting soft noble metals like gold, silver and copper as well as lead-containing and lead-free bronzes and brass alloys. Their variable thickness, very low coefficient of friction and anti-stick properties makes them excellent for machining sticky materials where they avoid build-up on the sharp cutting edge.

Combined with our special grinding knowledge and techniques TX coatings have proven to be a very economical solution for machining difficult materials, reducing the need for expensive PCD inserts and diamond-coated tools.

TX-coated tools are also suitable for remanufacture and recoating thereby bringing even greater savings.

Technical data required

Coating material	ta-C*
Coating thickness	0.5-3µm
Deposition process	PVD Arc
Hardness HV 0.02	>5000
Oxidation temperature	500°C
Coefficient of friction	<0.1
Process temperature	Below 180°C
Adhesion	Very good, typically class 1
Colours	TX-R – rainbow TX-G – dark grey/ black

**Tetrahedral amorphous carbon (also known as diamond-like carbon)*

Name	Colour	Thickness	Recommended applications
TX-R (rainbow)		<0.5µm	Soft non-ferrous/metal machining (Al, Mg etc)
TX-G (general)		<0.6-1µm	Non-ferrous/metal machining AlSi and auto parts, injection moulds & dies

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

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

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

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

Cutting data – end mills

			Feed recommendations				
Tool diameter (mm)			**3.00**	**4.00**	**5.00**	**6.00**	**8.00**
		Vc (M/min)	**Feed per tooth (mm)**				
Non-ferrous	N1	300-550	0.028-0.042	0.030-0.044	0.045-0.050	0.050-0.060	0.065-0.072
	N2	200-350	0.025-0.040	0.028-0.042	0.025-0.040	0.045-0.052	0.058-0.065
	N3	120-220	0.020-0.032	0.022-0.035	0.025-0.032	0.030-0.038	0.036-0.046

Tool diameter (mm)			**10.00**	**12.00**	**16.00**	**20.00**	**-**
		Vc (M/min)	**Feed per tooth (mm)**				
Non-ferrous	N1	300-550	0.068-0.076	0.080-0.100	0.100-0.200	0.200-0.300	-
	N2	200-350	0.065-0.072	0.068-0.085	0.080-0.095	0.100-0.200	-
	N3	120-220	0.046-0.051	0.052-0.063	0.068-0.085	0.080-0.100	-

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

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)**				
Non-ferrous	N1	0.1 x D	0.5 x D	300-500	0.075	0.080	0.100	0.120	0.150
	N2	0.1 x D	0.5 x D	250-300	0.060	0.070	0.080	0.100	0.125
	N3	0.1 x D	0.5 x D	250-300	0.060	0.070	0.080	0.100	0.125
Tool diameter (mm)					**10.00**	**12.00**	**16.00**	**20.00**	**-**
		a_p	**a_e**	**Vc (M/min)**	**Feed per tooth (mm)**				
Non-ferrous	N1	0.1 x D	0.5 x D	300-500	0.175	0.200	0.250	0.280	-
	N2	0.1 x D	0.5 x D	250-300	0.150	0.175	0.200	0.250	-
	N3	0.1 x D	0.5 x D	250-300	0.150	0.175	0.200	0.250	-

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

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)**				
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

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.

Cutting data – aluminium conventional milling

			Feed recommendations				
Tool diameter (mm)			**3.00**	**4.00**	**5.00**	**6.00**	**8.00**
		Vc (M/min)	**Feed per tooth (mm)**				
Non-ferrous	N1	300-550	0.028-0.042	0.028-0.050	0.050-0.063	0.052-0.065	0.070-0.082
	N2	200-350	0.028-0.042	0.028-0.050	0.050-0.063	0.052-0.065	0.070-0.082
	N3	120-220	0.020-0.032	0.022-0.034	0.025-0.038	0.040-0.058	0.065-0.078
Tool diameter (mm)			**10.00**	**12.00**	**16.00**	**20.00**	**-**
		Vc (M/min)	**Feed per tooth (mm)**				
Non-ferrous	N1	300-550	0.100-0.140	0.120-0.152	0.170-0.182	0.185-0.220	-
	N2	200-350	0.100-0.140	0.120-0.152	0.170-0.182	0.185-0.220	-
	N3	120-220	0.090-0.120	0.100-0.130	0.132-0.150	0.145-0.180	-

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**	**6.00**	**8.00**	**8.00**	**8.00**
			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	0.3 x D	0.05 x D	0.1 x D	0.3 x D
Non-ferrous	N1	Vc	300-500	300-500	300-500	300-500	300-500	300-500
		Fz	0.420	0.310	0.205	0.450	0.350	0.250
	N2	Vc	300-400	300-400	300-400	300-400	300-400	300-400
		Fz	0.350	0.250	0.175	0.380	0.270	0.190
	N3	Vc	250-350	250-350	250-350	250-350	250-350	250-350
		Fz	0.350	0.250	0.175	0.380	0.270	0.190
Tool diameter (mm)			**10.00**	**10.00**	**10.00**	**12.00**	**12.00**	**12.00**
			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	0.3 x D	0.05 x D	0.1 x D	0.3 x D
Non-ferrous	N1	Vc	300-500	300-500	300-500	300-500	300-500	300-500
		Fz	0.450	0.350	0.250	0.500	0.360	0.250
	N2	Vc	300-400	300-400	300-400	300-400	300- 400	300-400
		Fz	0.400	0.300	0.205	0.430	0.320	0.220
	N3	Vc	250-350	250-350	250-350	250-350	250-350	250-350
		Fz	0.400	0.300	0.205	0.430	0.300	0.230
Tool diameter (mm)			**16.00**	**16.00**	**16.00**	**20.00**	**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	0.3 x D	0.05 x D	0.1 x D	0.3 x D
Non-ferrous	N1	Vc	300-500	300-500	300-500	300-500	300-500	300-500
		Fz	0.600	0.450	0.310	0.700	0.550	0.380
	N2	Vc	300-400	300-400	300-400	300-400	300-400	300-400
		Fz	0.550	0.400	0.290	0.600	0.450	0.320
	N3	Vc	250-350	250-350	250-350	250-350	250-350	250-350
		Fz	0.570	0.430	0.290	0.600	0.450	0.320

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

QUICKCAM®
ultimate profitability

Reducing cycle times
and increasing profits

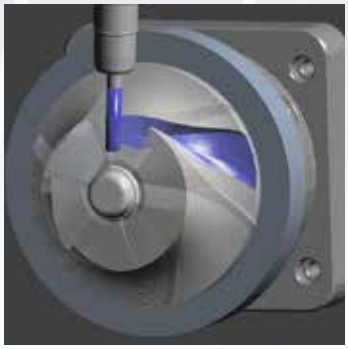
Do you have a component that is taking too long to manufacture? Are you struggling to find the time and resources to investigate advanced machining and cutting tool strategies that could easily double your output? Yes? Then you need to put QuickCam to the test.

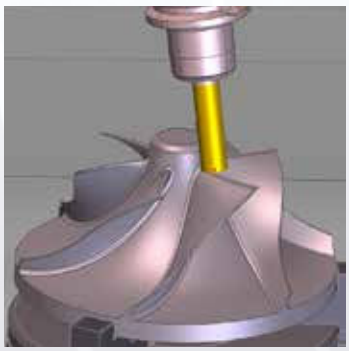
QuickCam is the advanced service from Quickgrind designed to support you with the machining of complex parts in difficult materials.

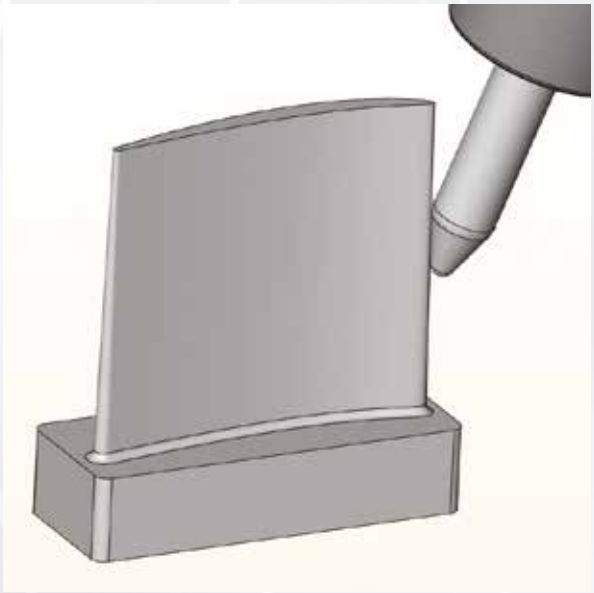
Implementing QuickCam in your business will give you reduced cycle times, leading to reduced tooling costs, increased output and improved capacity.

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.

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

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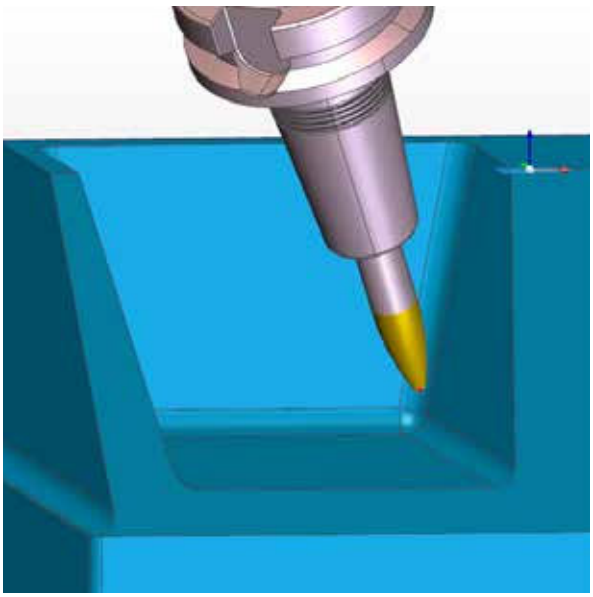


QUICKEDGE®
tooling - good as new

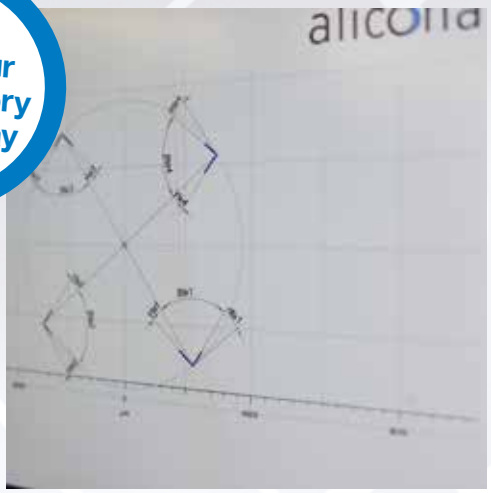
Adding value
to your tooling investment

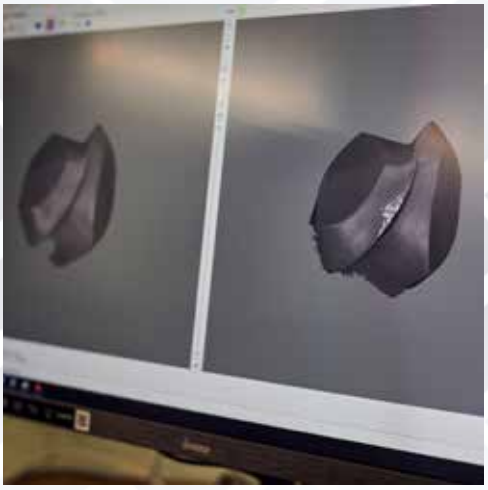
Many of our aluminium cutters are suitable for remanufacture. Our unique QuickEdge process can give you up to nine times extra usage out of your tooling, and with material (and environmental) costs increasing, the benefits of remanufacture are clear.

- 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





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

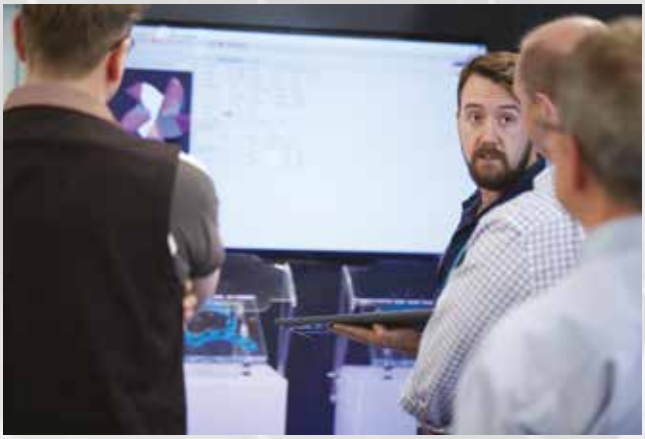
QUICKGRIND® Technical Centre

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