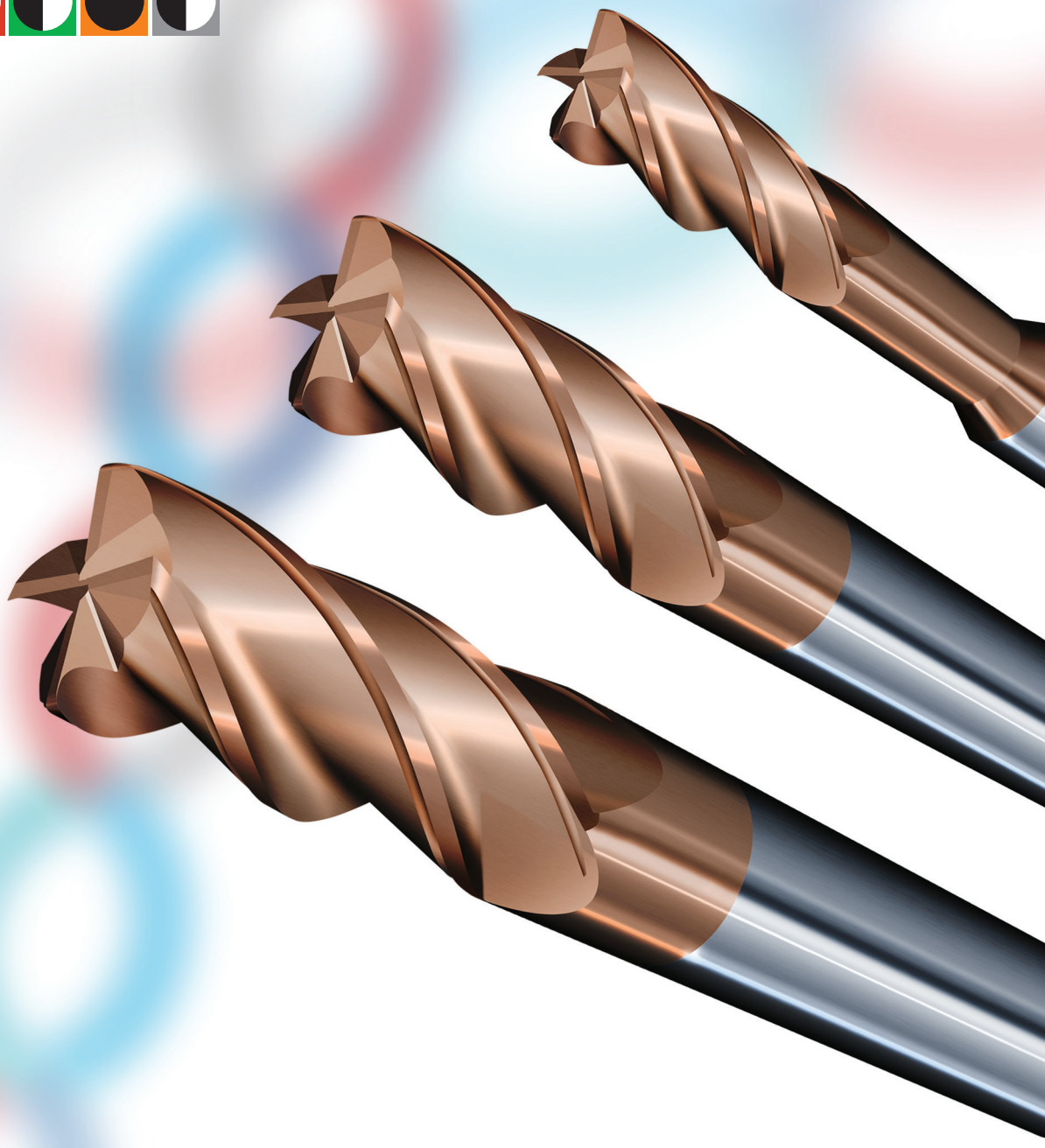
QUICKGRIND carbide tooling

MIRAGE

High Performance End Mills
for Stainless Steels & Super Alloys

P M K N S H



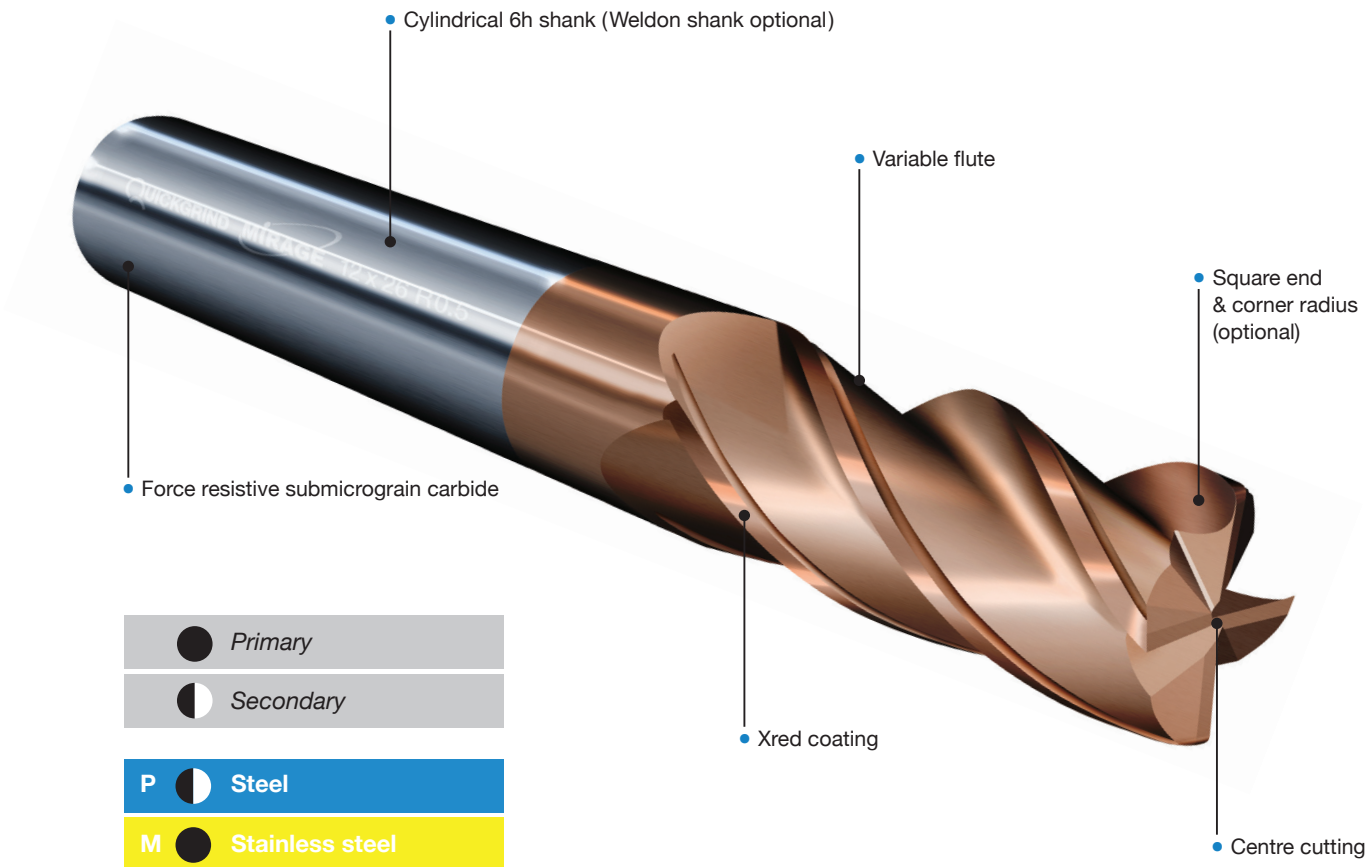
TOTAL SOLUTION ENGINEERING. **IT'S IN OUR DNA.**

BRITISH MADE

KEY FEATURES

MIRAGE

The Mirage End Mill provides unrivalled high performance.
Designed for multiple applications in a wide range of component materials.



	Primary
	Secondary
P	**Steel**
M	**Stainless steel**
K	**Cast iron**
N	**Non-ferrous materials**
S	**High-temp alloys**
H	**Hardened materials**

APPLICATIONS

+ Roughing & finishing
+ Slotting
+ Profiling
+ HSM strategic milling
+ HSC strategic milling
+ Trochoidal milling

BENEFITS

+ Higher feeds & speeds
+ Higher wear resistance
+ Vibration suppression
+ Increased material removal rates

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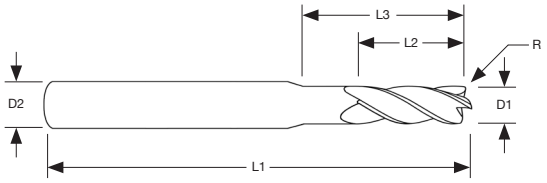
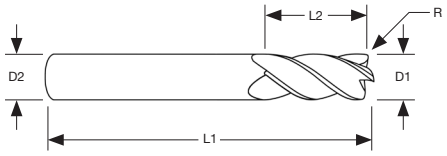
MIRAGE



VHM | Z4 | RH | DIN6535HA | DIN6535HB

Tool	Stock item	EDP	D1 (dia)	L2	L3	L1	R	D2
MIR 03.10.20.000	•	195605	3.00	10.00	20.00	58.00		6.00
MIR 03.10.20.025	•	195606	3.00	10.00	20.00	58.00	0.25	6.00
MIR 03.10.20.050	•	195607	3.00	10.00	20.00	58.00	0.50	6.00
MIR 04.11.20.000	•	195608	4.00	11.00	20.00	58.00		6.00
MIR 04.11.20.025	•	195609	4.00	11.00	20.00	58.00	0.25	6.00
MIR 04.11.20.050	•	195610	4.00	11.00	20.00	58.00	0.50	6.00
MIR 05.14.22.000	•	195611	5.00	14.00	22.00	58.00		6.00
MIR 05.14.22.025	•	195612	5.00	14.00	22.00	58.00	0.25	6.00
MIR 05.14.22.050	•	195613	5.00	14.00	22.00	58.00	0.50	6.00
MIR 05.14.22.100	•	195670	5.00	14.00	22.00	58.00	1.00	6.00

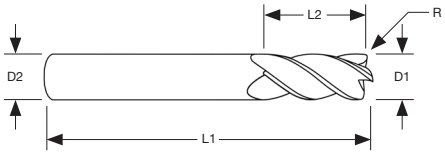


VHM | Z4 | RH | DIN6535HA | DIN6535HB

Tool	Stock item	EDP	D1 (dia)	L2	L1	R	D2
MIR 06.13.00.000	•	195614	6.00	13.00	58.00		6.00
MIR 06.13.00.025	•	195615	6.00	13.00	58.00	0.25	6.00
MIR 06.13.00.050	•	195616	6.00	13.00	58.00	0.50	6.00
MIR 06.13.00.075		195617	6.00	13.00	58.00	0.75	6.00
MIR 06.13.00.100	•	195618	6.00	13.00	58.00	1.00	6.00
MIR 06.13.00.150	•	195619	6.00	13.00	58.00	1.50	6.00
MIR 06.13.00.200		195620	6.00	13.00	58.00	2.00	6.00
MIR 08.18.00.000	•	195621	8.00	18.00	64.00		8.00
MIR 08.18.00.025	•	195675	8.00	18.00	64.00	0.25	8.00
MIR 08.18.00.050	•	195622	8.00	18.00	64.00	0.50	8.00
MIR 08.18.00.075		195623	8.00	18.00	64.00	0.75	8.00
MIR 08.18.00.100	•	195624	8.00	18.00	64.00	1.00	8.00
MIR 08.18.00.150		195625	8.00	18.00	64.00	1.50	8.00
MIR 08.18.00.200	•	195626	8.00	18.00	64.00	2.00	8.00
MIR 08.18.00.300	•	195627	8.00	18.00	64.00	3.00	8.00

HIGH PERFORMANCE 4 FLUTE END MILLS
SOLID CARBIDE X-RED COATED VARIABLE FLUTE

MIRAGE



VHM | Z4 | RH | DIN6535HA | DIN6535HB

Tool	Stock item	EDP	D1 (dia)	L2	L3	L1	R	D2
MIR 10.22.00.000	•	195628	10.00	22.00		73.00		10.00
MIR 10.22.00.025	•	195681	10.00	22.00		73.00	0.25	10.00
MIR 10.22.00.050	•	195629	10.00	22.00		73.00	0.50	10.00
MIR 10.22.00.075		195630	10.00	22.00		73.00	0.75	10.00
MIR 10.22.00.080	•	195663	10.00	22.00		73.00	0.80	10.00
MIR 10.22.00.100	•	195631	10.00	22.00		73.00	1.00	10.00
MIR 10.22.00.125	•	195691	10.00	22.00		73.00	1.25	10.00
MIR 10.22.00.150	•	195632	10.00	22.00		73.00	1.50	10.00
MIR 10.22.00.200	•	195633	10.00	22.00		73.00	2.00	10.00
MIR 10.22.00.300	•	195634	10.00	22.00		73.00	3.00	10.00
MIR 12.26.00.000	•	195635	12.00	26.00		84.00		12.00
MIR 12.26.00.025	•	195679	12.00	26.00		84.00	0.25	12.00
MIR 12.26.00.050	•	195636	12.00	26.00		84.00	0.50	12.00
MIR 12.26.00.075		195637	12.00	26.00		84.00	0.75	12.00
MIR 12.26.00.100	•	195638	12.00	26.00		84.00	1.00	12.00
MIR 12.26.00.150	•	195639	12.00	26.00		84.00	1.50	12.00
MIR 12.26.00.200	•	195640	12.00	26.00		84.00	2.00	12.00
MIR 12.26.00.250	•	195682	12.00	26.00		84.00	2.50	12.00
MIR 12.26.00.300		195641	12.00	26.00		84.00	3.00	12.00
MIR 16.32.00.000	•	195644	16.00	32.00		93.00		16.00
MIR 16.32.00.025	•	195678	16.00	32.00		93.00	0.25	16.00
MIR 16.32.00.050	•	195645	16.00	32.00		93.00	0.50	16.00
MIR 16.32.00.075		195646	16.00	32.00		93.00	0.75	16.00
MIR 16.32.00.100	•	195647	16.00	32.00		93.00	1.00	16.00
MIR 16.32.00.150		195648	16.00	32.00		93.00	1.50	16.00
MIR 16.32.00.200	•	195649	16.00	32.00		93.00	2.00	16.00
MIR 16.32.00.300	•	195650	16.00	32.00		93.00	3.00	16.00
MIR 16.32.00.400	•	195651	16.00	32.00		93.00	4.00	16.00
MIR 16.32.50.050	•	195680	16.00	32.00	50.00	93.00	0.50	16.00
MIR 20.38.00.000		195652	20.00	38.00		104.00		20.00
MIR 20.38.00.050	•	195653	20.00	38.00		104.00	0.50	20.00
MIR 20.38.00.075		195654	20.00	38.00		104.00	0.75	20.00
MIR 20.38.00.100	•	195655	20.00	38.00		104.00	1.00	20.00
MIR 20.38.00.150		195656	20.00	38.00		104.00	1.50	20.00
MIR 20.38.00.200	•	195657	20.00	38.00		104.00	2.00	20.00
MIR 20.38.00.300	•	195658	20.00	38.00		104.00	3.00	20.00

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Material group	Material type	Cut type	Speed m/min	Feed per tooth (Fz) mm 3	6	10	12	16	20
Steels P	Tool steels H13/P20/ D2	Slot	45	0.006	0.017	0.037	0.043	0.052	0.059
		Profile	56	0.006	0.017	0.037	0.043	0.052	0.059
		Light	93	0.014	0.041	0.083	0.098	0.100	0.133
	High strength alloys 4320/5120	Slot	77	0.008	0.022	0.045	0.055	0.060	0.075
		Profile	96	0.008	0.022	0.045	0.055	0.060	0.075
		Light	158	0.019	0.050	0.107	0.127	0.155	0.168
Stainless M	Precipitation 13-8/15-5/ 17-4PH	Slot	88	0.006	0.017	0.037	0.043	0.052	0.059
		Profile	110	0.006	0.017	0.037	0.043	0.052	0.059
		Light	181	0.014	0.041	0.083	0.098	0.100	0.133
	Austenitic 303/304/ 316L	Slot	96	0.006	0.017	0.037	0.043	0.052	0.059
		Profile	120	0.006	0.017	0.037	0.043	0.052	0.059
		Light	198	0.014	0.041	0.083	0.098	0.100	0.133
	Martensitic 403/410/ 416	Slot	138	0.008	0.022	0.045	0.055	0.060	0.075
		Profile	173	0.008	0.022	0.045	0.055	0.060	0.075
		Light	286	0.019	0.050	0.107	0.127	0.155	0.168
Cast iron K	Grey cast iron	Slot	108	0.010	0.026	0.056	0.067	0.075	0.091
		Profile	135	0.010	0.026	0.056	0.067	0.075	0.091
		Light	223	0.023	0.062	0.128	0.154	0.180	0.205
	SG iron	Slot	80	0.010	0.026	0.056	0.067	0.075	0.091
		Profile	101	0.010	0.026	0.056	0.067	0.075	0.091
		Light	166	0.023	0.062	0.128	0.154	0.180	0.205
Non-ferrous N	Aluminium 6061/ 6082	Slot	250	0.025	0.060	0.120	0.140	0.160	0.180
		Profile	350	0.025	0.060	0.120	0.140	0.160	0.180
		Light	450	0.040	0.120	0.200	0.300	0.350	0.400
	Die-cast aluminium 10% Si	Slot	180	0.025	0.060	0.120	0.140	0.160	0.180
		Profile	200	0.025	0.060	0.120	0.140	0.160	0.180
		Light	320	0.040	0.120	0.200	0.300	0.350	0.400
High temp alloys S	Titanium alloys Ti6AL4V/ Ti5Al-5V-5Mo	Slot	52	0.007	0.019	0.040	0.048	0.055	0.064
		Profile	65	0.007	0.019	0.040	0.048	0.055	0.064
		Light	108	0.016	0.043	0.091	0.110	0.120	0.147
	Inconel/ Hastelloy/ Incoloy	Slot	19	0.005	0.014	0.029	0.036	0.040	0.048
		Profile	24	0.005	0.014	0.029	0.036	0.040	0.048
		Light	40	0.012	0.034	0.069	0.082	0.095	0.109
Hardened materials H	Hardened steels 45-55 Hrc	Slot	40	0.006	0.017	0.037	0.043	0.046	0.059
		Profile	50	0.006	0.017	0.037	0.043	0.046	0.059
		Light	70	0.014	0.041	0.083	0.098	0.100	0.133

Cut type

Slot
ap=D1
ae=D1

Profile
ap=1.5xD
ae=0.5xD

Light
ap=L2
ae=0.05xD

Note
Mirage End Mills are suitable for Profile and Light cuts in material group N

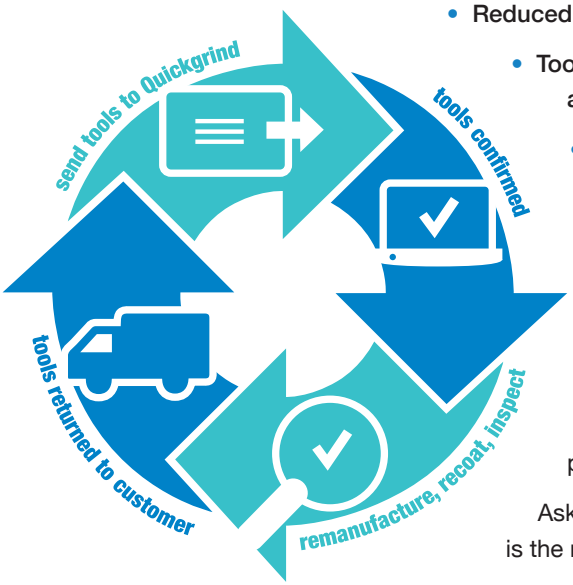
USEFUL FORMULAE

Cutting speed	= **Vc** (m/min)	$Vc = \frac{d \times \pi \times n}{1000}$	*(m/min)*	Tool diameter	= **d** (mm)
Spindle speed	= **n** (rpm)	$n = \frac{Vc \times 1000}{\pi \times d}$	*(rpm)*	No. of flutes	= **z**
Feed per tooth	= **Fz** (mm)	$Fz = \frac{Vf}{z \times n}$	*(mm)*	π	= **3.142**
Table feed	= **Vf** (mm/min)	$Vf = fz \times z \times n$	*(mm/min)*	Depth of cut	= **ap**
				Width of cut	= **ae**

TOOLS FOR REMANUFACTURE

QUICKEDGE tooling - good as new

The Quickedge process can give you up to 7x extra usage out of your carbide tooling. And with material costs continuing to increase you can't afford to ignore the benefits that remanufacture offers.



- **Reduced delivery issues and stock outs**
- **Tools controlled by size, number of reissues and remanufactures**
- **Reduced logistics costs**
- **Extremely attractive price/performance over the life of the tool**

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 seven Quickedge remanufactures you will continue to enjoy new tool performance.

Ask for a sample and discover why remanufacture is the right choice for your business.

We are also experts at remanufacturing tooling from other manufacturers – please ask us for details.

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SAMPLE CUSTOMER ENQUIRY DRAWING

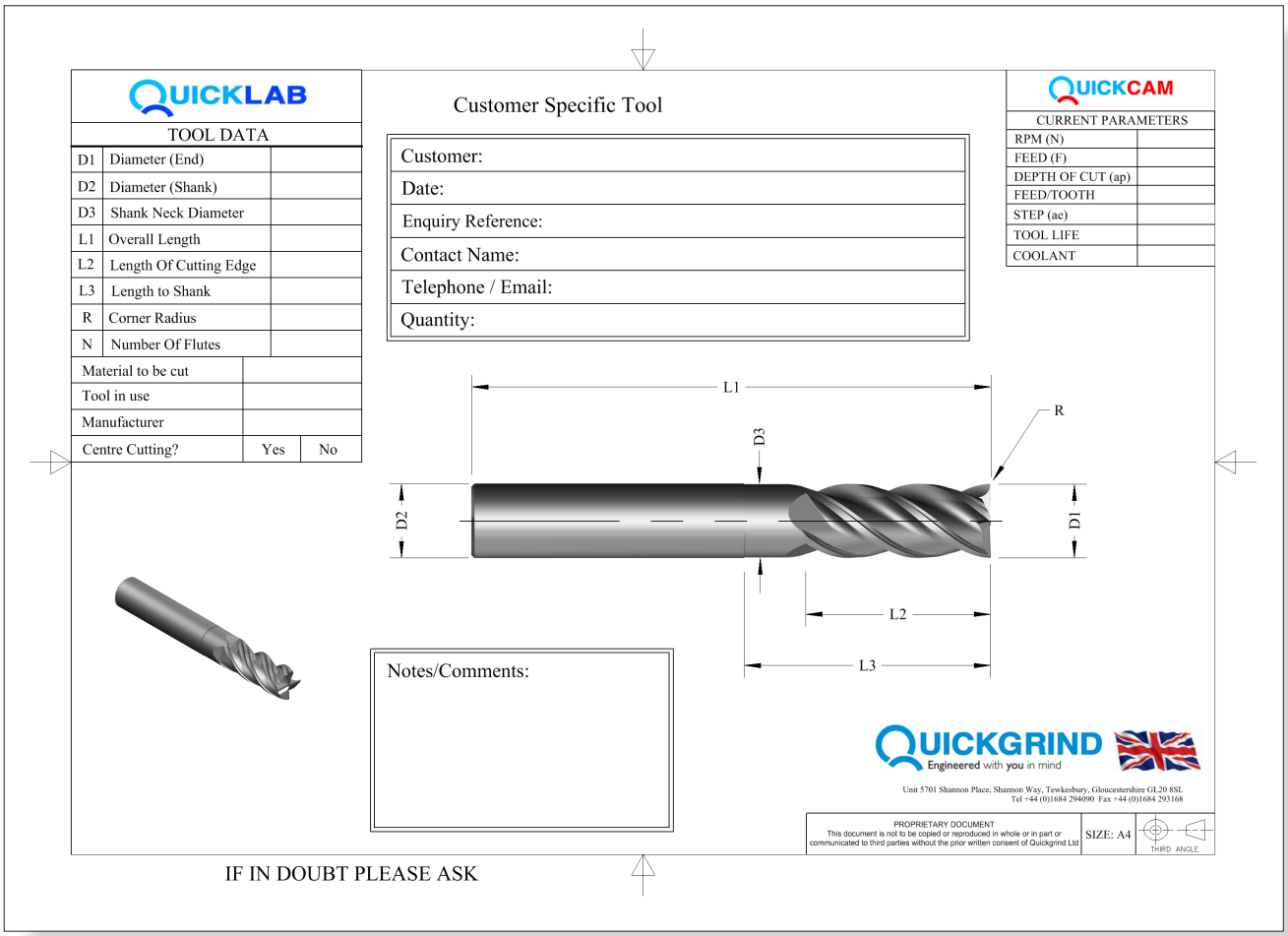
At Quickgrind we pride ourselves on supplying you, the customer, with tooling that enables you to achieve your goals. In this respect we will work with you to develop specific tools whether that means a modification to a standard or a tailored solution.

"When it comes to round shank carbide tooling, a tailored solution is unquestionably best if you are looking to enhance your tool performance and your company's productivity, competitiveness and reputation for great quality and delivery," says Ross Howell, Quickgrind's Managing Director.

You will be surprised to discover that the price of a Quickgind bespoke tool is not much different to a standard one, but the benefits to you will be huge.

Call or email us now to request our Customer Specific Tool drawing (example below) for:–

- **Corner radius not shown in our list**
- **Neck relief**
- **Longer or shorter flute length**
- **Longer or shorter overall length**
- **Or any other type of configuration or tool**



gtma APPROVED MEMBER Supporting Manufacturing Excellence

QUICKGRIND
carbide tooling

OPEN MIND
THE CAM FORCE
APPLICATION PARTNER

Also available:

Solid Carbide Conical Barrel Tools

The **Eliminator** is designed to greatly improve cycle machining times on finishing and semi-finishing operations; available in 3 and 4 flute with three geometries to suit aluminium, steels and high temperature alloys

Solid Carbide Coated High Feed Tools

The **Spectre** 3 flute range from 3.00mm to 12.00mm

The **Phantom** 4 flute range 12.00mm and 16.00mm with and without through coolant

Suitable for titanium, inconel, stainless steels, duplex, PH steels and hardened steels

Solid Carbide Coated 3 Flute End Mills with increased neck relief

The **Delta** range from 3.00mm to 20.00mm

Suitable for stainless steels, duplex, PH steels, titanium and tool steels

Solid Carbide Coated 4 Flute End Mills with increased flute length

The **QPlus** range from 3.00mm to 20.00mm

An economic universal tool suitable for steels, some stainless steels and cast iron

Solid Carbide Coated Ball Nose End Mills

The 2 flute **Gladiator** range from 3.00mm to 12.00mm in short and long series

The new 4 flute **Zodiac** range from 3.00mm to 16.00mm

Suitable for titanium, inconel, stainless steels, duplex, PH steels and hardened steels

Solid Carbide End Mills for aluminium

The **Alligator** range from 3.00mm to 20.00mm 2 and 3 flute

Solid Carbide Taper End Mills

The **Vortex** range is available with taper angles of 1.5^0 to 5^0 as standard and as bespoke tools from 0.5^0 to 45^0. There is almost no limit to what we can offer you the customer. Tip diameters range from 1.00mm to 12.00mm in square end or ballnose and are available in 2, 3 or 4 flutes. Suitable for a wide range of materials and applications.

We produce a wide range of other solid carbide tooling such as lollipops, routers, undercut tools, bull noses, woodruffs, multi-flute super finishers and more.

Quickgrind has been at the forefront of tool design and manufacture for over 50 years. Its founder, Eddie Howell, saw a compelling industry need for shorter lead times for specialised tool production. His company made steady improvements, in-line with the technology of the time. In the years since his son Ross came on board, further technological advances have helped Quickgrind take massive strides forward in innovating the cutting tool manufacturing industry.

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TOTAL SOLUTION ENGINEERING. **IT'S IN OUR DNA.**

BRITISH MADE

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