



ZCC Cutting Tools
Europe GmbH



Die and mould making

Tooling solutions from ZCC Cutting Tools Europe

– EN –



Contents

High-performance tooling solutions for
your die and mould making applications

ZCC Cutting Tools Europe – solutions for die and mould making applications	3
Six-sided machining	4
Contour roughing	8
Semi-finishing and finishing of contours	10
Micro-machining	14
High accuracy pocket milling	16
Core holes and cooling channels.....	20

ZCC Cutting Tools Europe – solutions for die and mould making

The manufacturing processes involved in die and mould making are both complex and demanding. Here's why:

- **Strict standards for precision** on components down to the micrometre range
- Stringent requirements in terms of **process reliability**
- Requirement to comply with strict **shape and position tolerances** for components
- High **chip removal rates**
- **Process stability** despite large overhangs in deep moulds while also guaranteeing extremely high **surface qualities**

ZCC Cutting Tools Europe offers an **extensive range of solutions** built around **high-quality milling tools** and **drills** that deliver **extremely long tool lives**, especially in precision machining operations performed at high speeds.

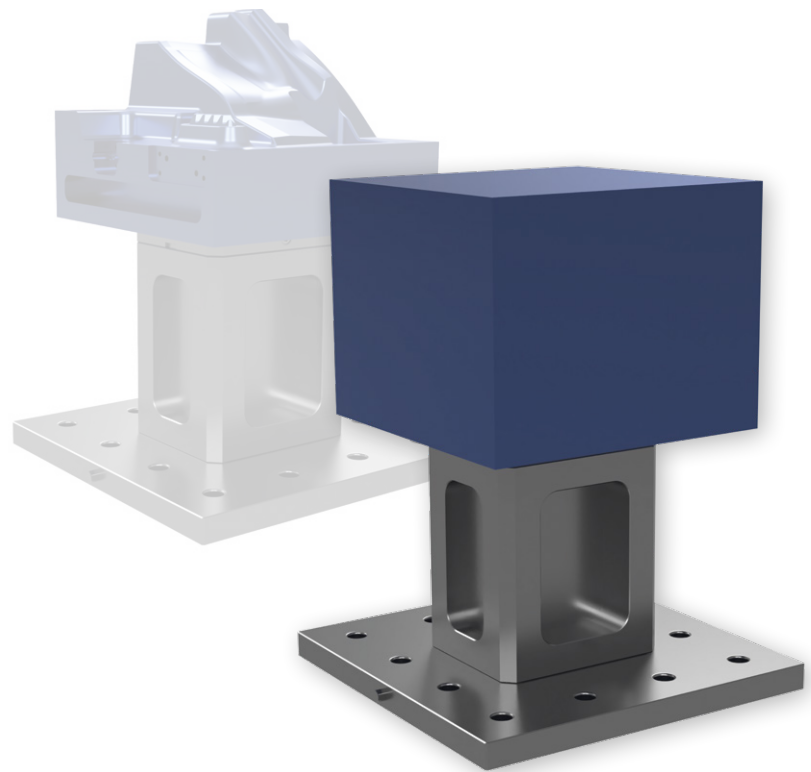
The moulded component shown was produced in collaboration with our partner ALZMETALL GmbH & Co. KG and serves as the starting point for the creation of this competence brochure.

The tooling applications shown represent the majority of the relevant machining steps in die and mould making. ZCC-CT Europe offers you the right tools for the entire process.

You can find more information at: <https://www.zccct-europe.com>.

Six-sided machining

ZCC Cutting Tools Europe offers flexible, tried-and-tested milling systems that deliver dimensional stability and high surface qualities.



Applications

FMA01 Face milling cutter with SEET**

FMA17 Face milling cutter with SNGX1205ANN**

FMA04 Face milling cutter with ODHT0605**

FMA12 Face milling cutter with ONHU**

EMP09 Square shoulder/face milling cutter with LNKT**

EMP13 Square shoulder/face milling cutter with ANGX**

FMWX Finishing cutter with XEEC**

Six-sided machining

Dimensional stability and high surface quality



FMA01 Face milling cutter with SEET**

With its positive cutting geometry, the 45° face milling system produces flawless surfaces thanks to the low cutting forces, all while keeping power consumption low. The wide variety of chip breakers and grades are available for almost any face milling application.

Typical application

Machining type	Face milling
Material	1.2379
Insert type	SEET12T3-DM YB9320
Cutting speed	215 m/min
Feed rate per tooth	0.22 mm
Depth of cut	3.00 mm



FMA17 Face milling cutter with SNGX1205ANN**

The 45° FMA17 milling system was specially developed for highly efficient facing operations where ultra-high surface qualities are called for. The eight-edged inserts additionally further boost efficiency in facing applications.

Typical application

Machining type	Face milling
Material	1.2767 ESU
Insert type	SNGX1205ANN-GM YBG205H
Cutting speed	230 m/min
Feed rate per tooth	0.25 mm
Depth of cut	3.00 mm



FMA04 Face milling cutter with ODHT0605**

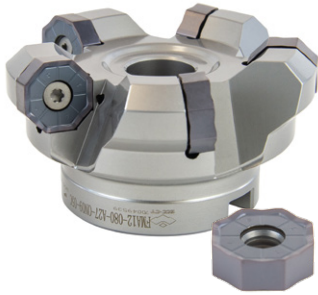
With its positive, eight-edged inserts, the new 45° milling system is able to handle a wide range of applications in and around finishing and semi-finishing. The positive cutting edge design allows for low cutting forces and provides increased stability, ensuring consistent, reliable processes.

Typical application

Machining type	Face milling
Material	1.2379
Insert type	ODHT060508-GM YB9320
Cutting speed	300 m/min
Feed rate per tooth	0.50 mm
Depth of cut	3.00 mm

Six-sided machining

Dimensional stability and high surface quality



FMA12 Face milling cutter with ONHU**

The 16-edged 45° face milling system is extremely well suited for efficient machining operations with high chip removal rates. Its positive chip former design reduces cutting forces and makes the system an excellent choice for ductile materials and low-performance machines.

Typical application

Machining type	Face milling
Material	1.2379
Insert type	ONHU09T508ANN-GM YB9320
Cutting speed	240 m/min
Feed rate per tooth	0.42 mm
Depth of cut	2.00 mm



EMP09 Square shoulder/face milling cutter with LNKT**

With its tangential insert, the 90° square shoulder milling system is able to deliver highly consistent results along with maximum productivity. The wide range of insert sizes and chip formers on offer means the right tool is available for every square shoulder and face milling application.

Typical application

Machining type	Square shoulder/face milling
Material	1.2767 ESU
Insert type	LNKT120612PNR-GM YB9320
Cutting speed	230 m/min
Feed rate per tooth	0.25 mm
Depth of cut	6.00 mm



EMP13 Square shoulder/face milling cutter with ANGX**

With its double-sided ANGX insert, the 90° square shoulder milling system is well suited for efficient shoulder milling operations. Consistent and reliable results are made possible by reduced cutting forces, which enables smooth machining. Ground cutting edges and optimised milling bodies guarantee shoulder-free transitions during 90° shoulder milling operations. The end result is top-class surface qualities.

Typical application

Machining type	Square shoulder/face milling
Material	1.2767 ESU
Insert type	ANGX110508PNR-GM YB9320
Cutting speed	220 m/min
Feed rate per tooth	0.18 mm
Depth of cut	5.10 mm

Six-sided machining

Dimensional stability and high surface quality

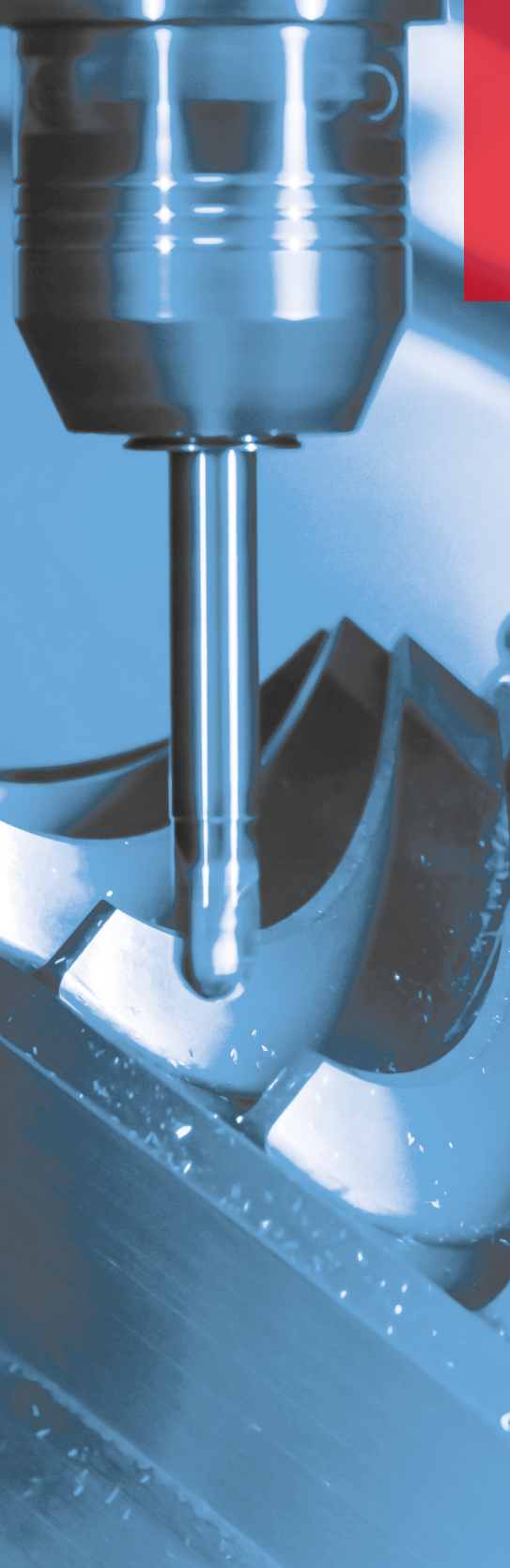


FMWX Finishing cutter with XEEC**

With its wiper insert, the high-feed milling cutter was designed to produce high-quality surface finishes in the shortest machining times possible. Because the insert seats are manufactured to ultra-precise tolerances, no subsequent adjustments to the cutting edge height are necessary. In addition to that, internal cooling improves chip removal, resulting in a longer tool life.

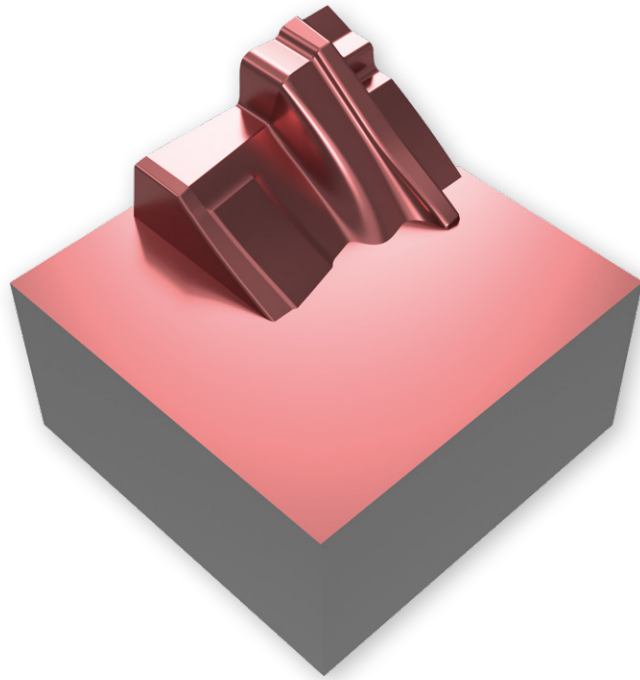
Typical application

Machining type	Face milling
Material	1.2767 ESU
Insert type	XEEC120904 YBD152
Cutting speed	280 m/min
Feed rate per revolution	3.50 mm/rev.
Depth of cut	0.05 mm



Contour roughing

ZCC Cutting Tools Europe offers a variety of ultra-efficient tool systems that deliver maximum chip removal rates as well as consistent results in the pre-machining of moulds.



Applications

XMR01 High-feed milling cutter with SDMT**

FMR11 Profile milling cutter with RDMT/RDMW**/RPMT/RPMW**

Contour roughing

Maximum chip removal rates



XMR01 High-feed milling cutter with SDMT**

The 15° high-feed milling system delivers maximum productivity and process reliability. The SDMT09T312-DM YBC205H features a cutting geometry that results in lower cutting forces. This in turn reduces vibrations and the load on the spindle when used in combination with the XMR01 milling cutter.

Typical application

Machining type	Contour roughing
Material	1.2767 ESU
Insert type	SDMT09T312-DM YBD252
Cutting speed	300 m/min
Feed rate per tooth	1.20 mm
Depth of cut	0.70 mm

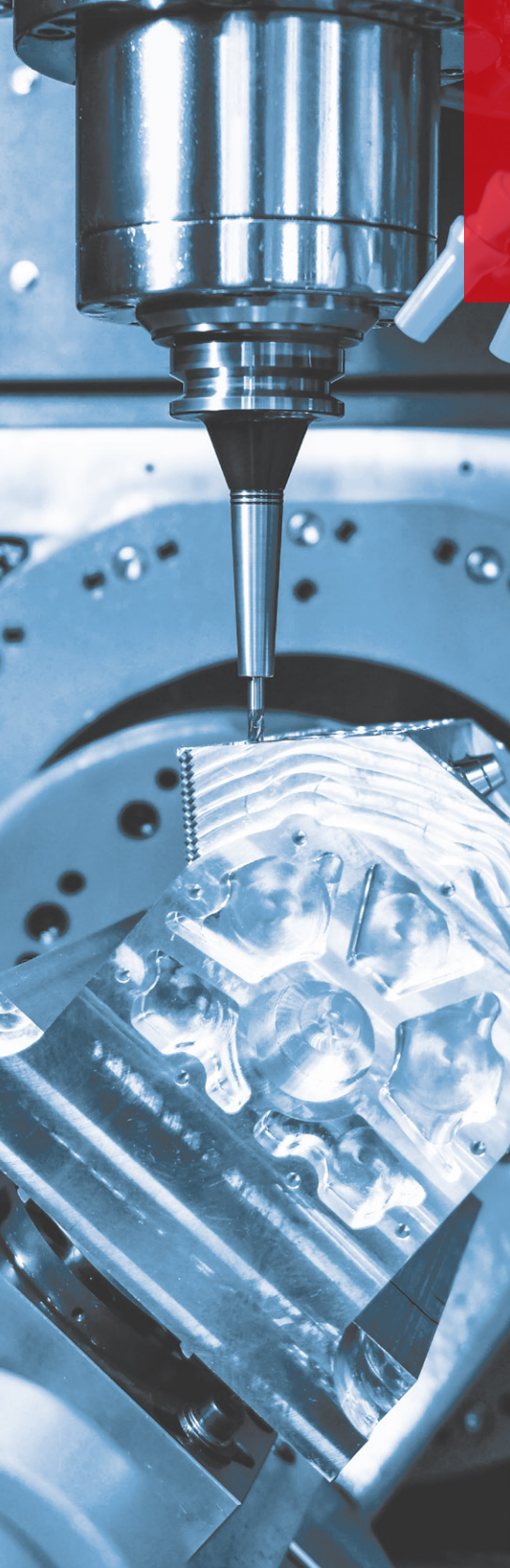


FMR11 Profile milling cutter with RDMT/RDMW** / RPMT/RPMW**

The round insert milling system is the ideal choice where the goal is to achieve maximum chip removal rates in a wide range of applications. Its positive cutting edge geometry enables low-vibration machining, even with larger overhangs, while indexing ensures optimal use of the cutting edge.

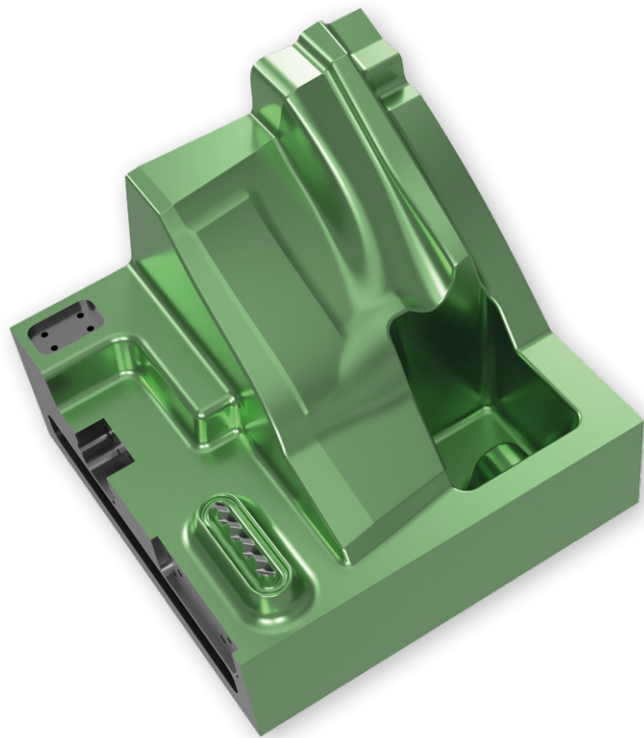
Typical application

Machining type	Contour roughing
Material	1.2379 ESU
Insert type	RDKW1003MO-1 YB9320
Cutting speed	420 m/min
Feed rate per tooth	0.75 mm
Depth of cut	0.80 mm



Semi-finishing and finishing of contours

ZCC Cutting Tools Europe offers an array of specialised tool series that are ideally suited for the unique challenges when it comes to achieving precise results and long tool lives in contour pre-finishing and finishing operations.



Applications

- BMR04** Profile milling cutter with ZO^{HX}** for semi-finishing applications
- QCH-ZO^{HX} series** Interchangeable head milling cutters with ZO^{HX}** for semi-finishing applications
- EPM series** Solid carbide milling cutters for contour finishing applications
- PM series** Solid carbide milling cutters for contour finishing applications
- HM series** Solid carbide milling cutters for hard machining applications
- Q-PM series** Solid carbide interchangeable head milling cutters for contour finishing applications

Semi-finishing and finishing of contours

Maximum precision and long tool lives



BMR04 Profile milling cutter with ZOHX** for semi-finishing applications

The profile milling cutter is the ideal choice for efficient finishing of moulds and dies. The ground chip breaker guarantees high-quality surface finishes every time in soft and hard machining applications.

Typical application

Machining type	Semi-finishing
Material	1.2379 (58–62 HRC)
Insert type	ZOHX1604-HM YBH053
Cutting speed	120 m/min
Feed rate per tooth	0.20 mm
Depth of cut	0.50 mm



QCH-ZOHX series Interchangeable head milling cutters with ZOHX** for semi-finishing applications

Interchangeable head milling cutter systems are the ideal choice as this ensures that the tool is optimally aligned with the component. The QCH system is available with a non-proprietary metric interface as well as with the patented Q thread from ZCC Cutting Tools that boasts optimised clamping forces and repeatability.

Typical application

Machining type	Semi-finishing
Material	1.2767 ESU
Insert type	ZOHX2005-GM YBG252
Cutting speed	163 m/min
Feed rate per tooth	0.28 mm
Depth of cut	0.50 mm



EPM series Solid carbide milling cutters for contour finishing applications

The EPM series includes solid carbide end mills and ball nose cutters for any application. The ultra-fine grain substrate and the tried-and-tested AlCr coating guarantee maximum process reliability and allow for long tool lives in a wide range of applications.

Typical application

Machining type	Contour finishing
Material	1.2767 ESU
Solid carbide tool	EPM-2B-R6.0 KMG406
Cutting speed	320 m/min
Feed rate per tooth	0.16 mm
Depth of cut	0.20 mm
Cutting width	0.20 mm

Semi-finishing and finishing of contours

Maximum precision and long tool lives



PM series Solid carbide milling cutters for contour finishing applications

The PM series offers a wide range of cutters for use in producing free-form surfaces. The highly stable cutting edge in combination with cutting-edge coating technology guarantees reliable results in milling operations, even at high cutting speeds.

Typical application

Machining type	Contour finishing
Material	Hardox® 500
Solid carbide tool	PM-4H-R8.0R2.0 KMG405
Cutting speed	90 m/min
Feed rate per tooth	0.45 mm
Depth of cut	0.50 mm
Cutting width	3.00 mm



HM series Solid carbide milling cutters for hard machining applications

The HM series includes solid carbide tools for hard machining operations. Long tool lives when machining materials in the HRC 58–68 range are made possible thanks to the optimised wedge angle and cutting edges.

Typical application

Machining type	Contour finishing
Material	1.2343 ESU
Solid carbide tool	HM-4R-D10.0R1.0 KMG555
Cutting speed	160 m/min
Feed rate per tooth	0.07 mm
Depth of cut	0.40 mm
Cutting width	1.50 mm



Q-PM series Solid carbide interchangeable head milling cutters for contour finishing applications

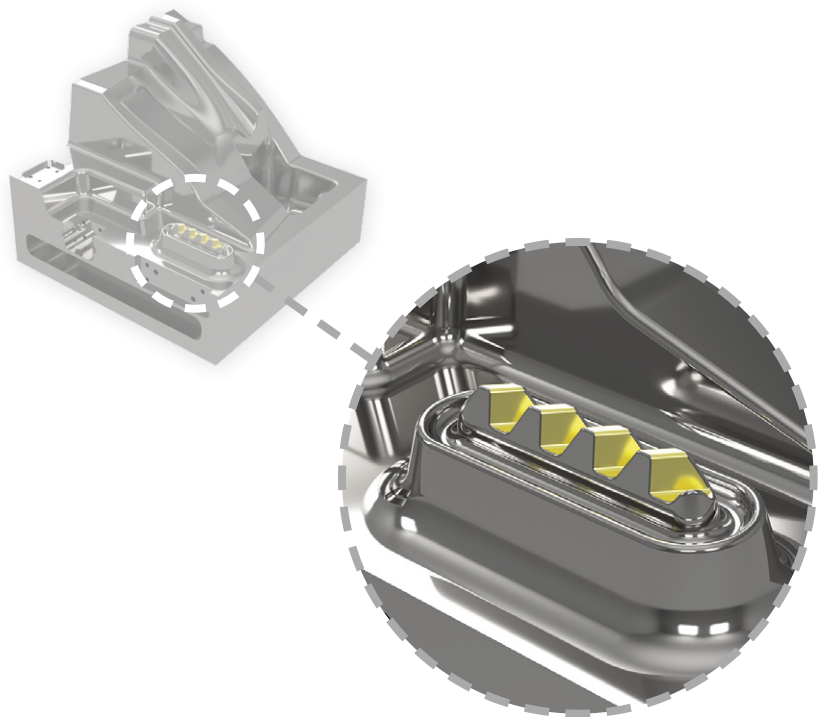
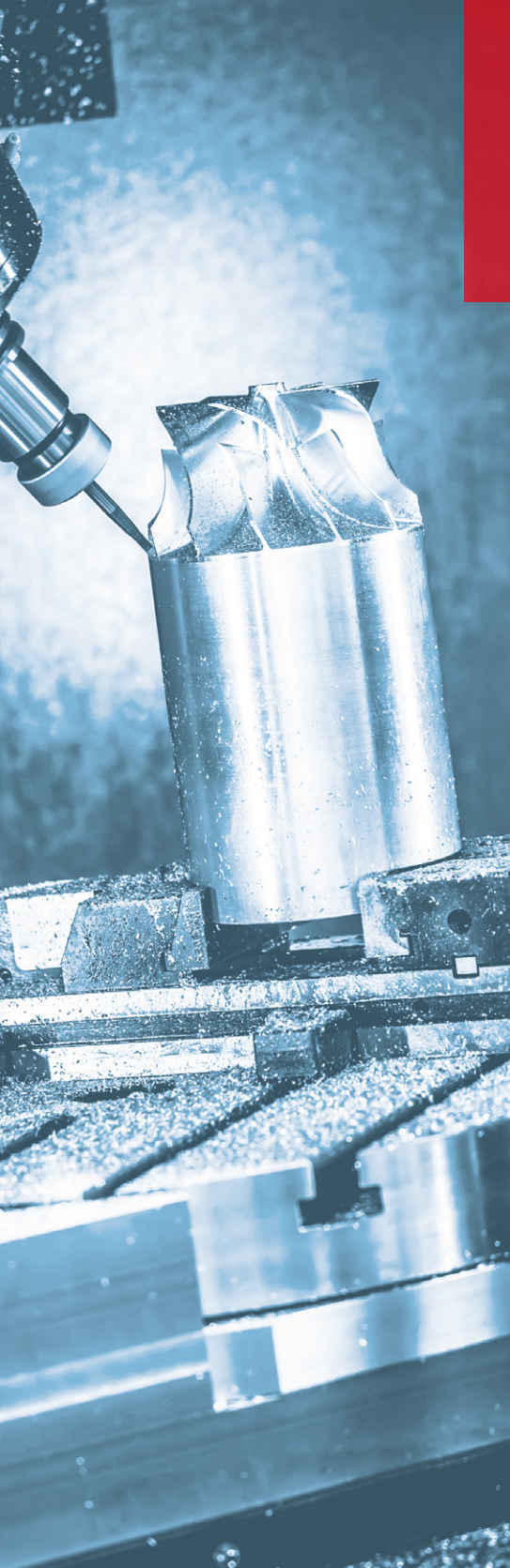
The Q-PM series includes the patented Q thread that provides for maximum repeatability and precise concentricity (< 0.02 mm). The Q thread in conjunction with the HM and PM series offers maximum variability thanks to the large combination of shank lengths and geometries available.

Typical application

Machining type	Contour finishing
Material	1.2379
Solid carbide tool	Q08-PM-4R-D12.0R1.0 KMG405 (length: 8xD)
Cutting speed	180 m/min
Feed rate per tooth	0.30 mm
Depth of cut	0.60 mm
Cutting width	12.00 mm

Micro-machining

The main focus when it comes to micro-machining is on dimensional stability and the quality of the cutting edge. ZCC Cutting Tools Europe offers a number of product lines that are highly suitable for micro-machining operations, particularly in ultra-precise machining applications.



Applications

Micro PM series Solid carbide milling cutters for contour finishing applications (soft machining)

Micro HM series Solid carbide milling cutters for contour finishing applications (hard machining)

Micro-machining

Highly versatile with consistent results every time



Micro PM series

Solid carbide milling cutters for contour finishing applications (soft machining)

The Micro PM series, which includes 276 solid carbide milling tools available in diameters from 0.3 to 5.00 mm, is designed for use in mould-making applications under difficult conditions. The cutters features radius tolerances of +/- 5 µm and can handle material hardnesses of up to HRC 60, ensuring the highest possible contour accuracy and flexibility in your applications. The h5 shank tolerance guarantees reliable and consistent shrinkage.

Typical application

Machining type	Contour finishing
Material	1.2343 ESU
Solid carbide tool	PM-2RP-D1.5-R0.3-M16 KMG405
Cutting speed	65 m/min
Feed rate per tooth	0.03 mm
Depth of cut	0.10 mm
Cutting width	0.60 mm



Micro HM series

Solid carbide milling cutters for contour finishing applications (hard machining)

A wide range of shoulder and ball nose cutters on offer in diameters ranging from 0.50 to 5.00 mm is available in the Micro HM series. The extremely wear-resistant PVD coating with optimised micro-hardness ensures long tool lives and top-quality surface finishes on components.

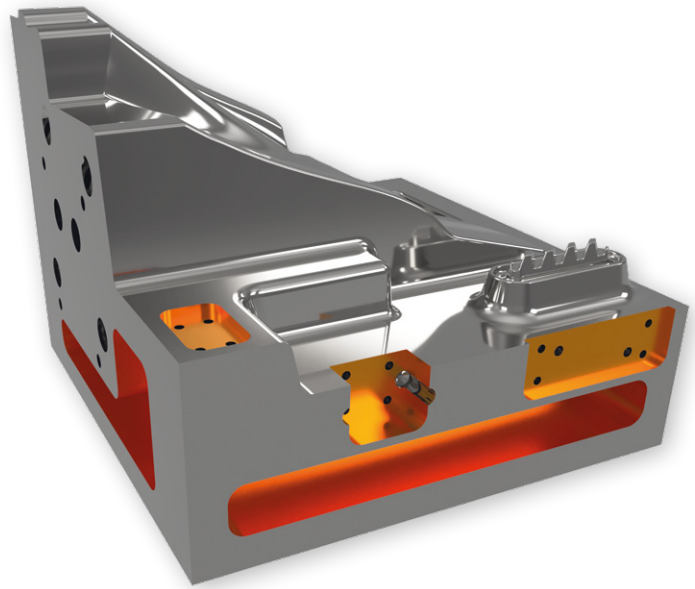
Typical application

Machining type	Contour finishing
Material	Toolox® 44
Solid carbide tool	HM-2BP-R0.6-M06 KMG555
Cutting speed	120 m/min
Feed rate per tooth	0.02 mm
Depth of cut	0.10 mm
Cutting width	0.10mm



High accuracy pocket milling

The ultra-fast, efficient machining of standard pockets is possible with the wide range of tool series available from ZCC Cutting Tools Europe.



Applications

- DIN series** Solid carbide milling cutters for HPC machining applications
- UM/UMC series** Solid carbide milling cutters for HSC/TPC machining applications
- VPM series** Solid carbide hybrid milling cutter for HSC machining applications
- Q-VPM series** Solid carbide interchangeable head milling cutter for roughing applications

High accuracy pocket milling

Efficient machining



DIN series Solid carbide milling cutters for HPC machining applications

The DIN series includes a range of milling tools for efficient HPC machining. The cutting edge design reduces vibrations and minimises cutting forces, while the tried-and-tested dimensions ensure the cutters are highly compatible with existing product lines.

Typical application

Machining type	HPC milling (standard geometries)
Material	1.2379
Solid carbide tool	5602R38414GM-1200 KMG406
Cutting speed	160 m/min
Feed rate per tooth	0.07 mm
Depth of cut	10.00 mm
Cutting width	12.00 mm



UM/UMC series Solid carbide milling cutters for HSC/TPC machining applications

The high-performance end mill is optimised for HSC and TPC machining of a wide range of materials. The patented core design provides for maximum tool stability and high metal removal rates. The cutting-edge PVD coating technology with enhanced hardness properties helps ensure top-notch performance.

Typical application

Machining type	HSC/TPC milling (standard geometries)
Material	1.2343 ESU
Solid carbide tool	UMC-4E-D12.0 KMG405
Cutting speed	280 m/min
Feed rate per tooth	0.15 mm
Depth of cut	35.00 mm
Cutting width	1.00 mm

High accuracy pocket milling

Efficient machining

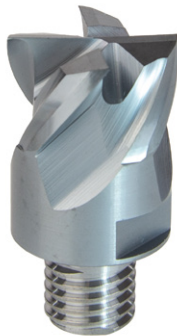


VPM series Solid carbide hybrid milling cutter for HSC machining applications

The newly developed tool geometry combines maximum tool rigidity with a large chip pocket. In combination with fracture-resistant carbide, the wear-resistant AlCr coating ensures maximum consistency in your milling operations. The VPM series is able to handle a wide range of applications – from efficient full-slot milling to HSC strategies with larger contact widths.

Typical application

Machining type	HSC milling (standard geometries)
Material	Toolox® 44
Solid carbide tool	VPM-4E-D8.0 KMG406
Cutting speed	220 m/min
Feed rate per tooth	0.1 mm
Depth of cut	18.00 mm
Cutting width	1.40 mm



Q-VPM series Solid carbide interchangeable head milling cutters for roughing applications

The hybrid interchangeable head milling cutter is particularly well suited for the efficient roughing of deep contours and pockets. Short set-up times made possible thanks to quick tool changes and maximum precision in recurring operations are just a few of the many advantages. The cutters' tool geometry means that they can be used in any HPC and HSC strategy.

Typical application

Machining type	Roughing of deep cavities
Material	1.2343 ESU
Solid carbide tool	Q08-VPM-4E-D12.0 KMG406 (length: 12xD)
Cutting speed	130 m/min
Feed rate per tooth	0.14 mm
Depth of cut	0.30 mm
Cutting width	12.00 mm

High accuracy pocket milling

Efficient machining

Notes

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

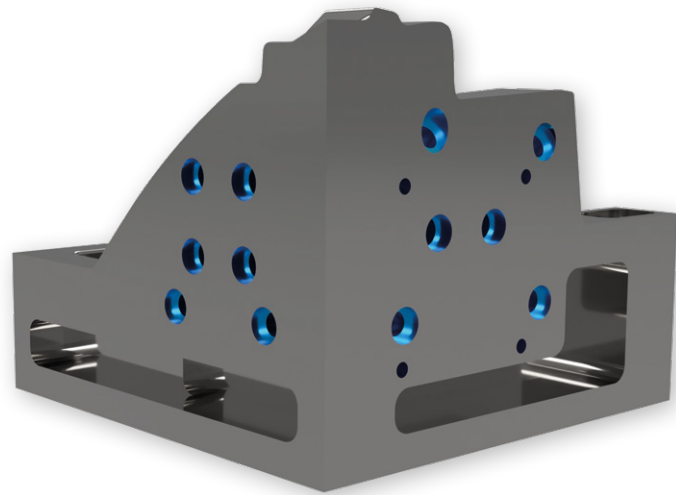
.....

.....

.....

Core holes and cooling channels

The core hole and coolant channel drills from ZCC Cutting Tools Europe are optimally suited for delivering consistent results in your drilling applications. Not only that, they also offer high cutting capacities along with an extremely long tool life.



Applications

- ZSD series** Indexable insert drills with SPMX**
- GD series** Solid carbide high-feed drills
- SU series** Universal solid carbide drills
- SL series** Universal solid carbide deep hole drills
- SH series** Solid carbide hard metal drills for hardnesses up to HRC 68
- 3112H7 series** Universal solid carbide reamers
- FM series** Solid carbide deburring cutters

Core holes and cooling channels

For consistent results every time in your drilling applications



ZSD series Indexable insert drills with SPMX**

The indexable insert drilling system is deployed in machining operations up to 5xD where keeping costs low is of the essence. The wave-shaped chip former ensures excellent chip breaking and high process reliability. Higher surface qualities are achieved thanks to the inserts' wiper geometry. The milling bodies boast increased rigidity, guaranteeing smooth operation and precisely drilled holes.

Typical application

Machining type	General drilling
Material	1.2767 ESU
Milling body	ZSD02-175-XP20-SP05-02
Insert type	SPGT050204-PM YBG205
Cutting speed	160 m/min
Feed rate	0.12 mm
Drilling depth	30.00 mm



GD series Solid carbide high-feed drills

The GD series boasts a cutting edge geometry that allows it to easily handle high feed rates when working with steel and cast materials. Maximum feed rates reduce machining time, while the multilayer PVD coating also contributes to long tool lives and reliable machining results.

Typical application

Machining type	General drilling
Material	1.2343 ESU
Solid carbide tool	1536GD05C-1020 KDG304
Cutting speed	120 m/min
Feed rate	0.32 mm
Drilling depth	45.00 mm



SU series Universal solid carbide drills

The SU series is well-known for its ability to produce top-notch surface finishes and dimensional stability in almost any material. In addition, the uniform distribution of cutting forces, made possible by S-Cut technology, guarantees reliable machining results.

Typical application

Machining type	General drilling
Material	1.2767 ESU
Solid carbide tool	1536SU05C-1400 KDG303
Cutting speed	130 m/min
Feed rate	0.17 mm
Drilling depth	42.00 mm

Core holes and cooling channels

For consistent results every time in your drilling applications



SL series Universal solid carbide deep hole drills

The SL series features an upgraded cutting edge design that guarantees reliable chip breaking – even in ductile materials. The ultra-smooth PVD coating and polished chip spaces also provide for enhanced chip removal, while the double margins ensure maximum concentricity.

Typical application

Machining type	Deep hole drilling
Material	1.2767 ESU
Solid carbide tool	1588SL30C-0800 KDG303
Cutting speed	70 m/min
Feed rate	0.11 mm
Drilling depth	227.00 mm



SH series Solid carbide hard metal drill for hardnesses up to HRC 68

The optimised face geometry with a split point angle makes it possible to create holes to ultra-precise shape and position tolerances in steels with hardnesses of up to HRC 68. The rugged tool design and wear-resistant carbide guarantee reliable results along with a long tool life.

Typical application

Machining type	General drilling (hard drilling)
Material	1.2343 ESU (HRC 54+2)
Solid carbide tool	1534SH03-0300 KDG303
Cutting speed	45 m/min
Feed rate	0.015 mm
Drilling depth	8.00 mm



3112H7 series Universal solid carbide reamers

Thanks to the extremely hard and ultra-thin PVD coating, it is possible to machine stainless steel with a hardness up to HRC 60. In addition, the reamers' highly versatile cutting edge design makes them well suited for use with a wide range of other materials.

Typical application

Machining type	Reaming
Material	1.2379
Solid carbide tool	3112H7-0600 KRG102
Cutting speed	25 m/min
Feed rate	0.18 mm
Drilling depth	13.00 mm

Core holes and cooling channels

For consistent results every time in your drilling applications



FM series Solid carbide deburring cutters

The optimised cutting edges on the deburring cutters in the FM series allow for vibration-free deburring and long tool lives. The FM series offers a wide range of chamfer milling cutters with 60°/90°/120° point angles.

Typical application

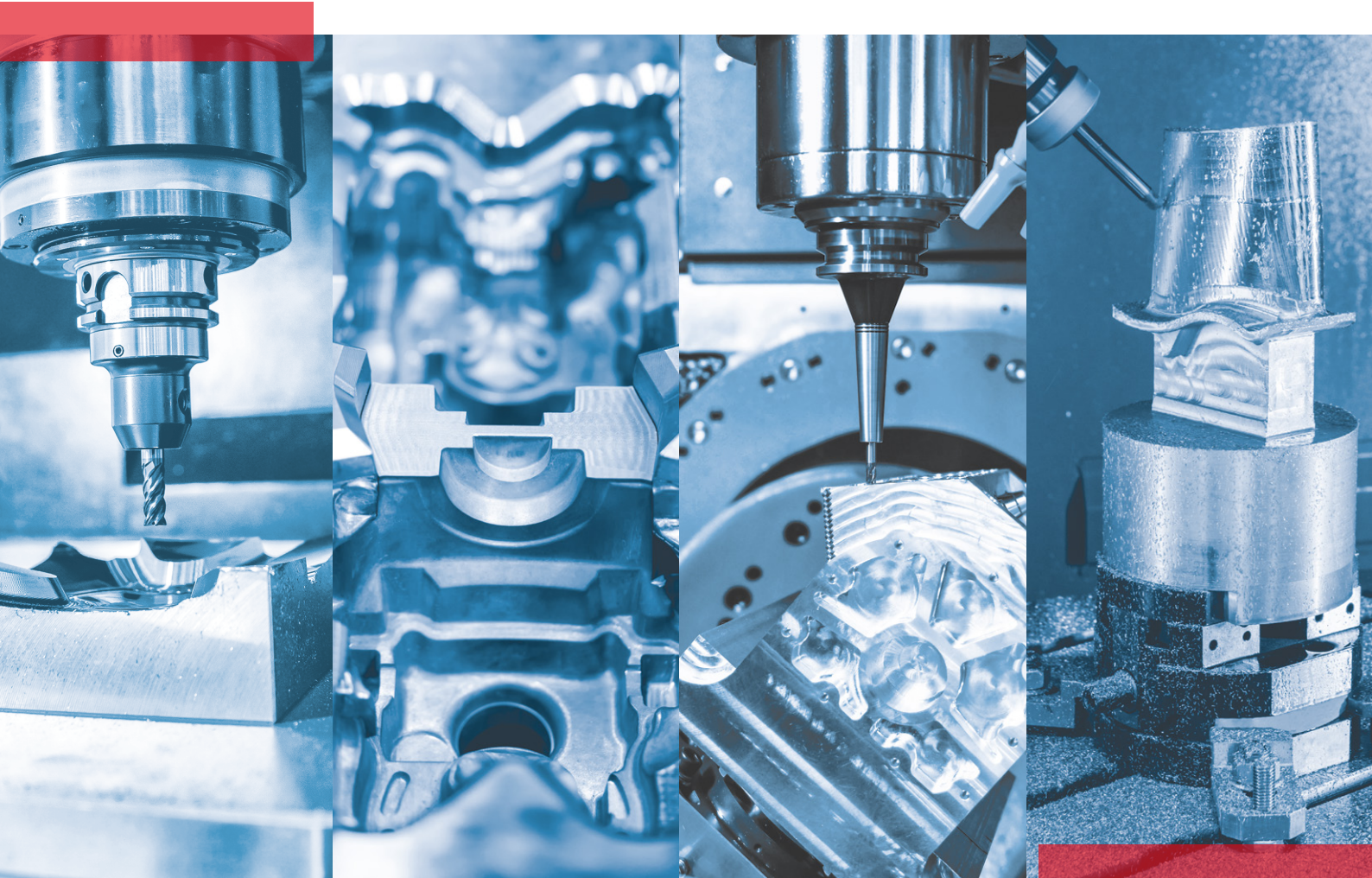
Machining type	Contour deburring
Material	1.2767 ESU
Solid carbide tool	5601R906FM-1200 KMG303
Cutting speed	200 m/min
Feed rate per tooth	0.10 mm



Scan for PDF

Die and mould making

Tooling solutions from ZCC Cutting Tools Europe



753 | Form | v1.0 | 1.1 | 07.23

Europe head office

ZCC Cutting Tools Europe GmbH

www.zccct-europe.com

Wanheimer Str. 57, 40472 Düsseldorf, Germany

Tel. : +49 (0) 211-989240-0

Fax : +49 (0) 211-989240-111

E-Mail : info@zccct-europe.com

France branch office

ZCC Cutting Tools Europe GmbH Succursale Française

www.zccct-europe.com

14, Allée Charles Pathé, 18000 Bourges, France

Tel. : +33 (0) 2 45 41 01 40

Fax : +33 (0) 800 74 27 27

E-Mail : ventes@zccct-europe.com

UK branch office

ZCC Cutting Tools Europe GmbH UK Division

www.zccct-europe.com

4200 Waterside Centre, Solihull Parkway

Birmingham Business Park

Birmingham, West Midlands, B37 7YN, UK

Tél. : +44 (0) 121 8095469

Fax : +49 (0) 211-989240-111

E-Mail : infouk@zccct-europe.com

For more information on ZCC Cutting Tools Europe's range of products and services, visit www.zccct-europe.com.