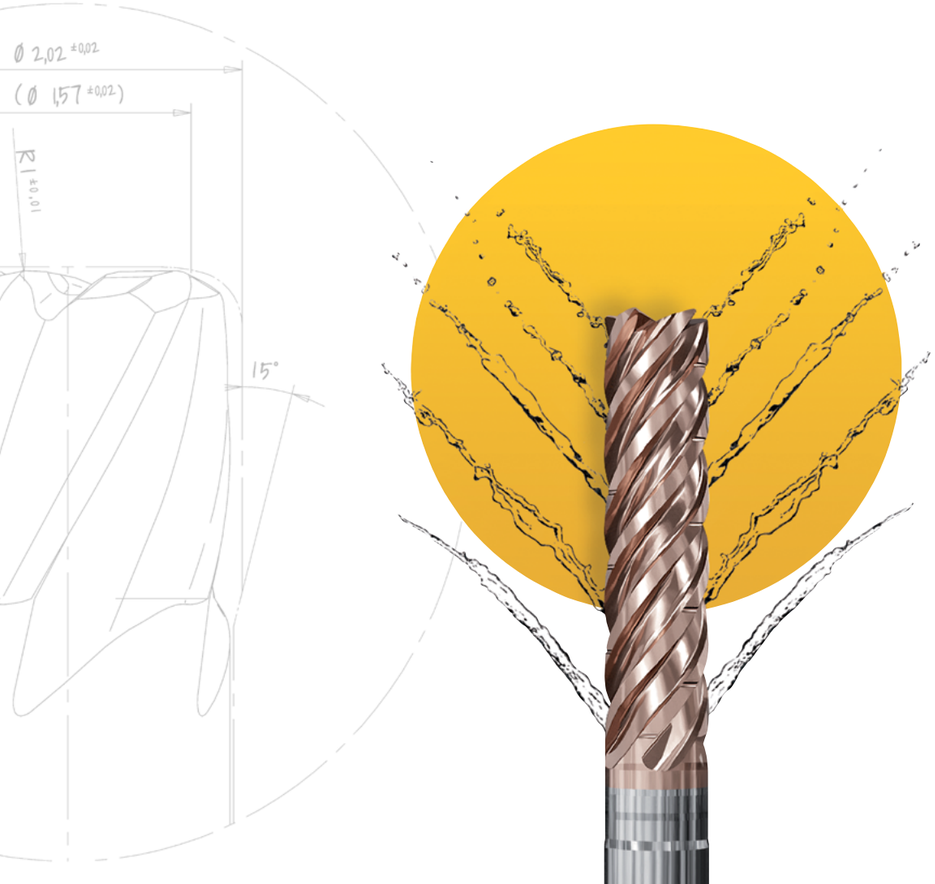

(17225)
mm²
ZECHA
R 0,3 ±0,01
Application Examples
KINGFISHER SERIES
ZECHA



KINGFISHER SERIES

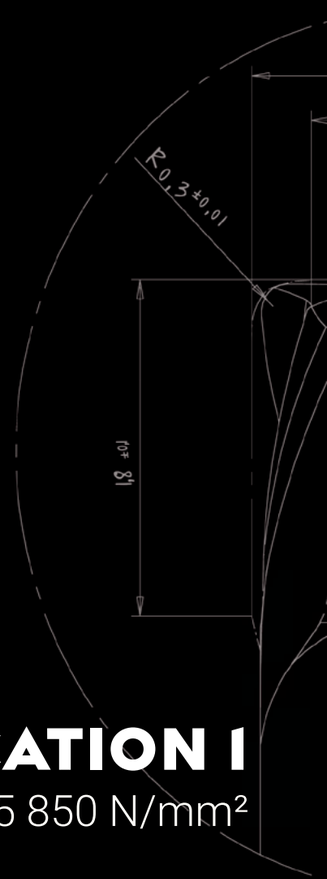
NEXT GENERATION COOLANT DELIVERY

The KINGFISHER SERIES by ZECHA represents the forefront of high-performance milling tools, specifically designed for challenging applications requiring precise coolant placement.

Featuring innovative coolant delivery systems, these tools ensure optimal cooling even for the most difficult materials.

This precise placement enhances the performance and longevity of the tools while achieving superior surface finishes.

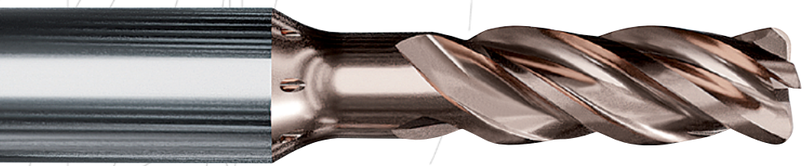
Ideal for high-speed machining and complex milling tasks, the KINGFISHER SERIES combines advanced cutting geometries with efficient cooling technology to deliver unmatched reliability and precision for the most demanding applications.



APPLICATION 1

STEEL DIE 42CrMo4 / 1,225 850 N/mm²

455S.B3.0200.100.040SK



455.T4.0600.100.210SK

THE TOOLS

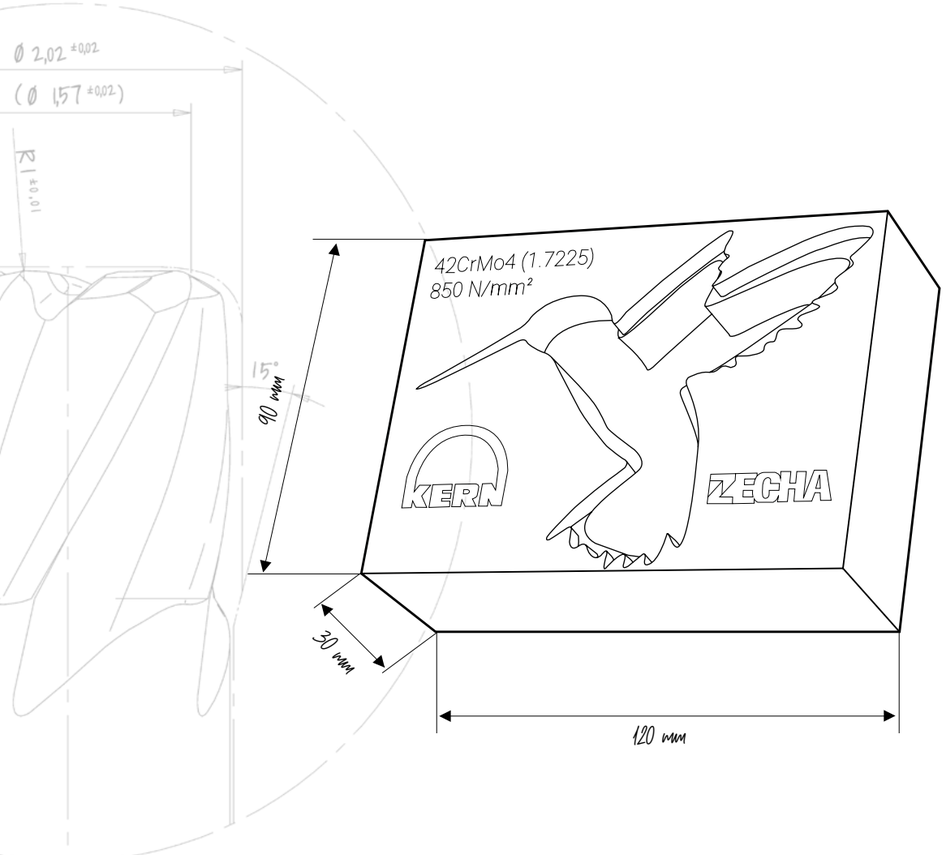
In this case study, we feature the advanced tools from the KINGFISHER SERIES, specifically the 455.T4 series and the 455S.B3 series.

The 455.T4 series is designed for efficient tro-choidal milling, offering superior performance in high-speed machining applications.

Its innovative design ensures optimal material removal while maintaining precision and tool life.

Complementing this, the 455S.B3 series excels in delivering high-quality surface finishes and precise cuts, thanks to its advanced coolant delivery system and cutting geometries.

Together, these tools showcase the KINGFISHER SERIES‘ capability to handle demanding milling tasks with unmatched reliability and accuracy.



THE WORKPIECE

DEMO PIECE: SHOWCASING KINGFISHER SERIES VERSATILITY

In this case study, we will be milling a 120 x 90 x 30 mm workpiece made of 42CrMo4, designed to highlight the wide range of application skills of the KINGFISHER SERIES.

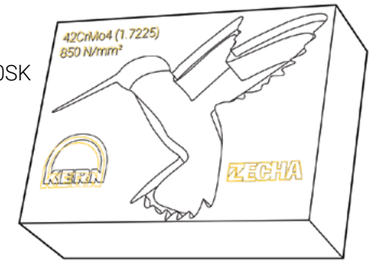
This piece, designed to demonstrate the tools‘ capabilities, showcases the T4 series‘ innovative design for efficient trochoidal milling.

The internal coolant (IC) is used in this application in the particularly deep cavity with compressed air to achieve the best possible chip evacuation, enabling a high metal removal rate during roughing.

This demonstration highlights the versatility and efficiency of the KINGFISHER SERIES in handling complex milling tasks, even when roughing softer steels.

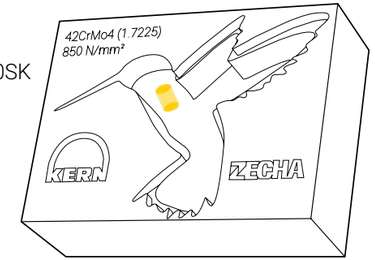
01. ENGRAVING LETTERING

Tool:	455S.B3.0200.100.040SK
RPM:	40,584
Feed rate:	7,305 mm/min
Vc:	254 m/min
fpt:	0.060 mm/t
WOC:	Full gauge
DOC:	0.015 mm
Offset:	0.000 mm
Coolant:	Air
Runtime:	00:00:09 h



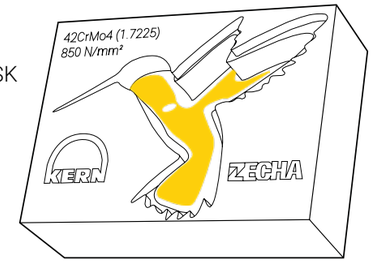
02. HELICAL ENTRY

Tool:	455.T4.0600.100.210SK
RPM:	7,950
Feed rate:	3,200 mm/min
Vc:	150 m/min
fpt:	0.110 mm/t
WOC:	5.000 mm
DOC:	0.400 mm
R-anlge:	1°
Offset:	0.050 mm
Coolant:	Air
Runtime:	00:00:09 h



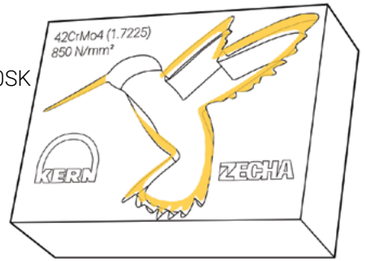
03. ADAPTIVE ROUCHING

Tool:	455.T4.0600.100.210SK
RPM:	11,937
Feed rate:	5,252 mm/min
Vc:	225 m/min
fpt:	0.110 mm/t
WOC:	0.600 mm
DOC:	12.000 mm
Offset:	0.050 mm
Coolant:	Air
Runtime:	00:01:28 h



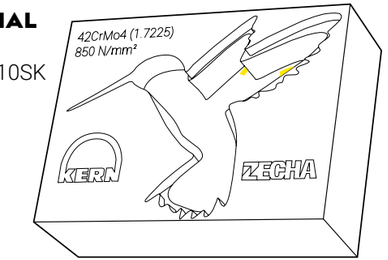
04. 3D-MILLING

Tool:	455S.B3.0200.100.040SK
RPM:	27,056
Feed rate:	2,435 mm/min
Vc:	170 m/min
fpt:	0.030 mm/t
WOC:	0.500 mm
DOC:	1.000 mm
Offset:	0.000 mm
Coolant:	Air
Runtime:	00:01:11 h



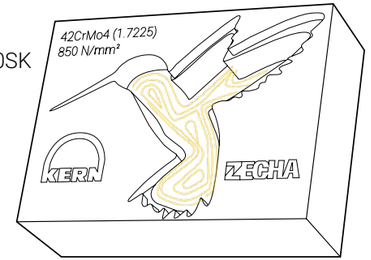
05. ROUGHING REST MATERIAL

Tool:	455.T4.0600.100.210SK
RPM:	11,937
Feed rate:	5,252 mm/min
Vc:	225 m/min
fpt:	0.110 mm/t
WOC:	0.600 mm
DOC:	12.000 mm
Offset:	0.050 mm
Coolant:	Air
Runtime:	00:00:04 h



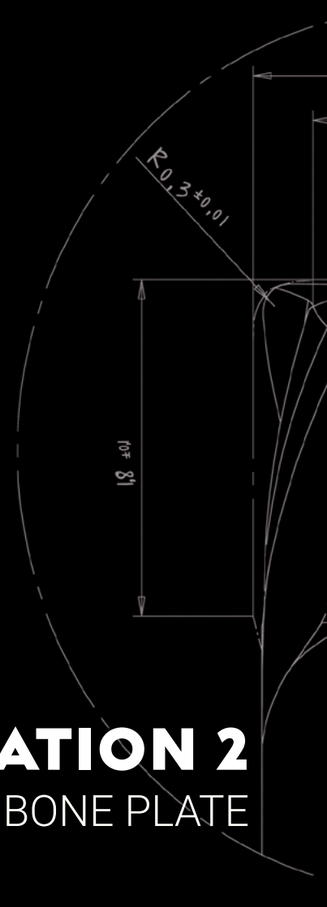
06. PRE-FINISHING

Tool:	455.T4.0600.100.210SK
RPM:	13,263
Feed rate:	7,958 mm/min
Vc:	250 m/min
fpt:	0.110 mm/t
WOC:	0.150 mm
DOC:	12.000 mm
Offset:	0.000 mm
Coolant:	Air
Runtime:	00:00:16 h



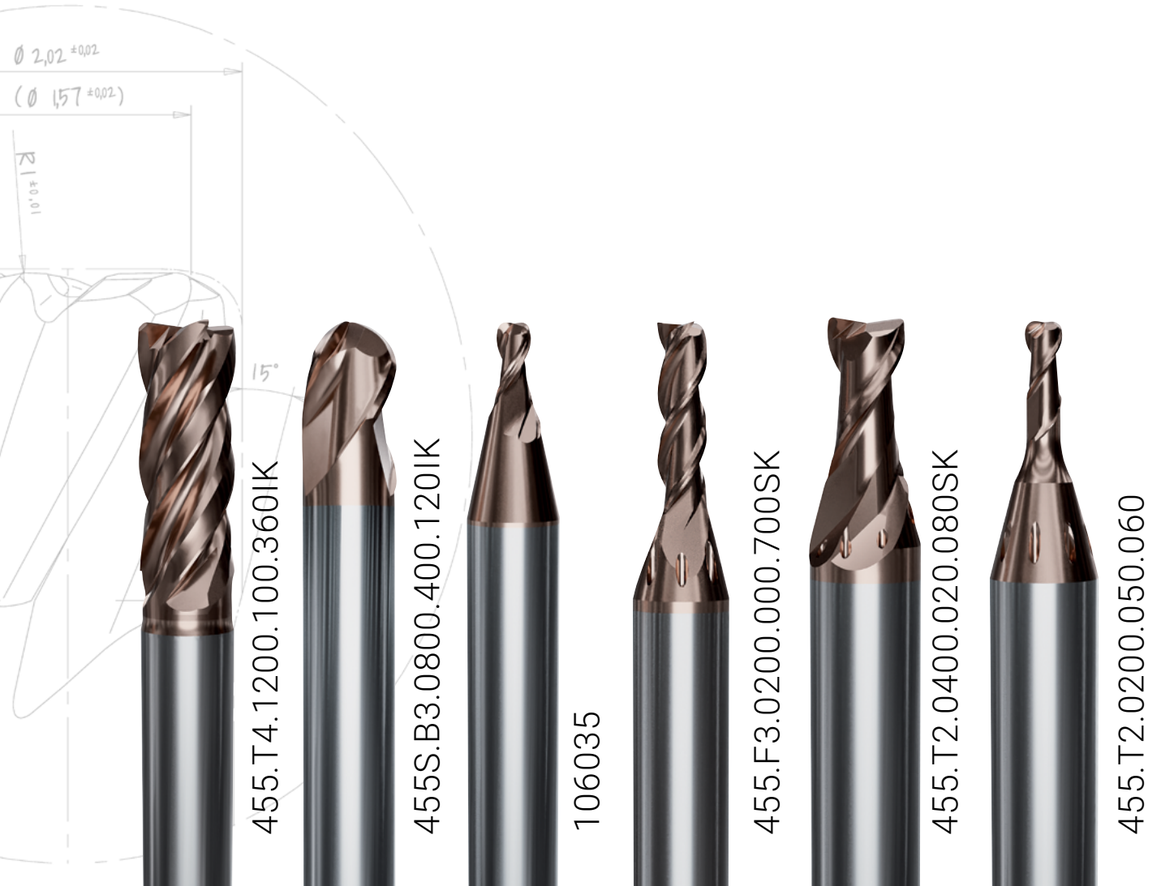
SEE IT IN ACTION

Experience the tools and strategies in action by scanning the QR code below. This will direct you to a video of the milling example on ZECHA's YouTube page, where you can see our precision and performance firsthand.



APPLICATION 2

BONE PLATE



THE TOOLS

In this case study, you'll explore the standout tools of the ZECHA KINGFISHER SERIES, designed for high-performance machining. The 455.T4 series excels in rapid material removal with its four-flute design for high-feed milling, while the 455S.B3 series delivers exceptional accuracy with sharp cutting edges, even at high speeds.

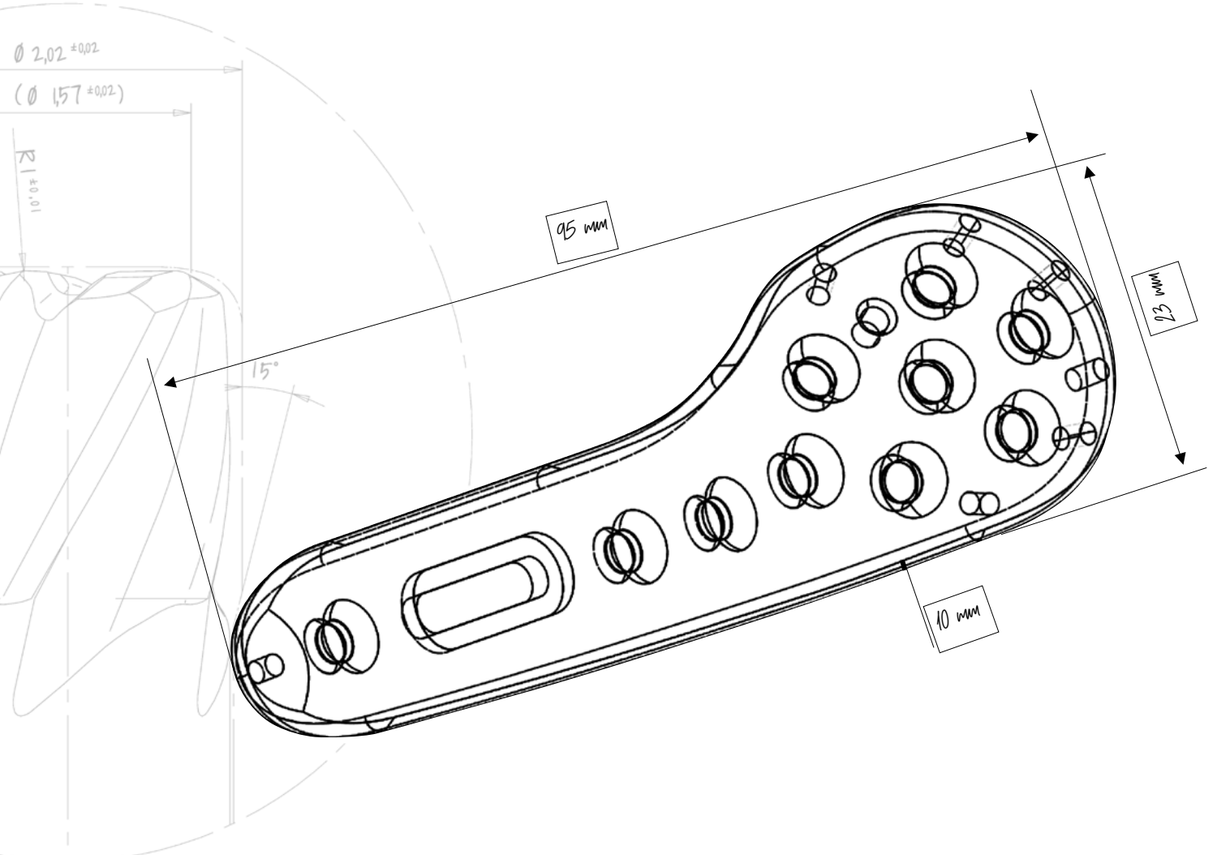
This example showcases the innovative cooling technology in the KINGFISHER SERIES, featuring optimized internal channels that deliver coolant directly to the cutting edges, reducing heat and improving chip evacuation. This design extends tool life, speeds up machining, and ensures superior surface finishes.

As you explore these tools, you'll see how the KINGFISHER SERIES pushes the limits of efficiency and precision, offering versatile solutions for roughing, finishing, and threading that meet the highest standards. The following pages demonstrate how these tools can enhance your machining processes with the speed, reliability, and excellence ZECHA is known for.

ADDITIONAL TOOLS

In addition to the KINGFISHER SERIES, we used several other tools that are available in ZECHA´s range of high-precision carbide tools designed for various machining applications.

In this milling example we used the 612.200BCR, a BCR-coated pilot drill, and the 632K.160BCR, a BCR-coated spiral drill. Also used were two custom tools: the 113555, a form cutter, and 45619, a tapered inside thread mill.



THE WORKPIECE

This case study will showcase the remarkable capabilities of ZECHA's KINGFISHER SERIES as it mills a bone plate (95x23x10mm), demonstrating how these tools significantly enhance both speed and surface quality in demanding applications.

The KINGFISHER tools, with their advanced geometries and innovative cooling technology, allow for much faster milling without compromising on precision.

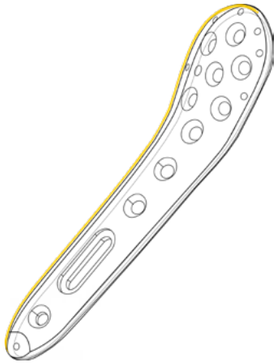
By delivering coolant directly to the cutting edges, these tools reduce heat generation and improve chip evacuation, resulting in extended tool life and consistently superior surface finishes.

When manufacturing critical components like bone plates, surface finish and dimensional accuracy are paramount. A flawless surface minimizes the risk of tissue irritation and ensures proper integration with the body, while precise dimensions are crucial for the correct fit and function of the implant.

As we delve into the specifics of milling a bone plate, you'll see how the KINGFISHER SERIES excels in producing smooth, precise surfaces at a pace that outperforms traditional tools. This case study will highlight the efficiency gains and quality improvements that make KINGFISHER the ideal choice for high-performance machining in medical and other precision-critical industries.

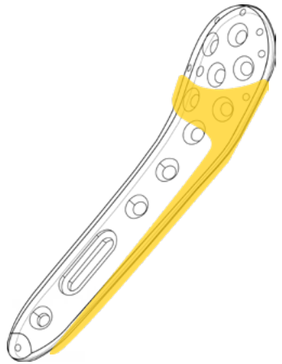
01. ROUGHING BASIC SHAPE

Tool:	455.T4.1200.100.360IK
RPM:	4,775
Feed rate:	2,292 mm/min
Vc:	180 mm/min
fpt:	0.120 mm/t
WOC:	0.600 mm
DOC:	15.000 mm
R-angle:	-
Offset:	0.300 mm
Coolant:	Oil
Runtime:	00:00:55 h



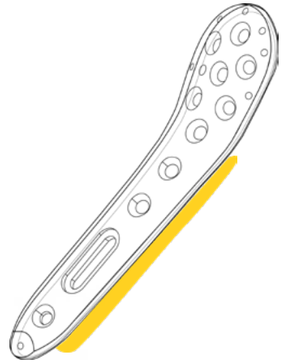
02. ROUGHING BASIC SHAPE

Tool:	455.T4.1200.100.360IK
RPM:	4,775
Feed rate:	2,292 mm/min
Vc:	180 m/min
fpt:	0.120 mm/t
WOC:	0.400 mm
DOC:	30.000 mm
R-angle:	-
Offset:	0.300 mm
Coolant:	Oil
Runtime:	00:03:20 h



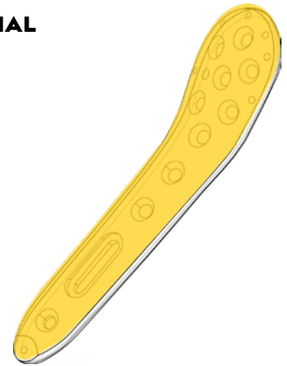
03. ROUGHING BASIC SHAPE

Tool:	455.T4.1200.100.360IK
RPM:	3,581
Feed rate:	1,146 mm/min
Vc:	135 m/min
fpt:	0.080 mm/t
WOC:	0.400 mm
DOC:	10.000 mm
R-angle:	-
Offset:	0.400 mm
Coolant:	Oil
Runtime:	00:01:50 h



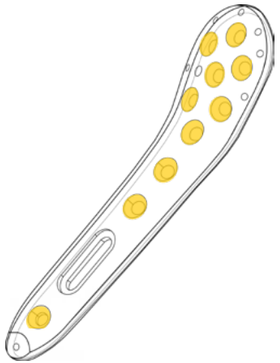
04. ROUGHING RESIDUAL MATERIAL

Tool:	455S.B3.0800.400.120IK
RPM:	5,968
Feed rate:	1,432 mm/min
Vc:	150 m/min
fpt:	0.080 mm/t
WOC:	1.000 mm
DOC:	0.250 mm
R-anlge:	-
Offset:	0.150 mm
Coolant:	Oil
Runtime:	00:01:30 h



05. ROUGHING DRILL HOLES

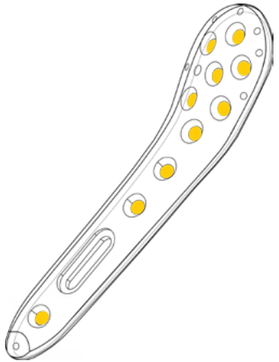
Tool:	106035
RPM:	11,088
Feed rate:	1,774 mm/min
Vc:	90 m/min
fpt:	0.080 mm/t
WOC:	0.000 mm
DOC:	0.300 mm
R-angle:	-
Offset:	0.100 mm
Coolant:	Oil
Runtime:	00:01:15 h



113555

06. FINISHING DRILL HOLES

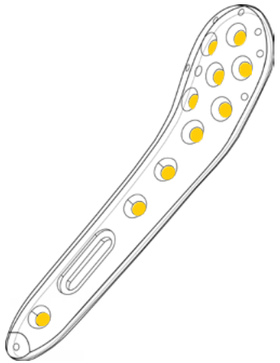
Tool:	113555
RPM:	7,347
Feed rate:	588 mm/min
Vc:	40 m/min
fpt:	0.020 mm/t
WOC:	0.000 mm
DOC:	0.300 mm
R-anlge:	-
Offset:	0.000 mm
Coolant:	Oil
Runtime:	00:00:25 h

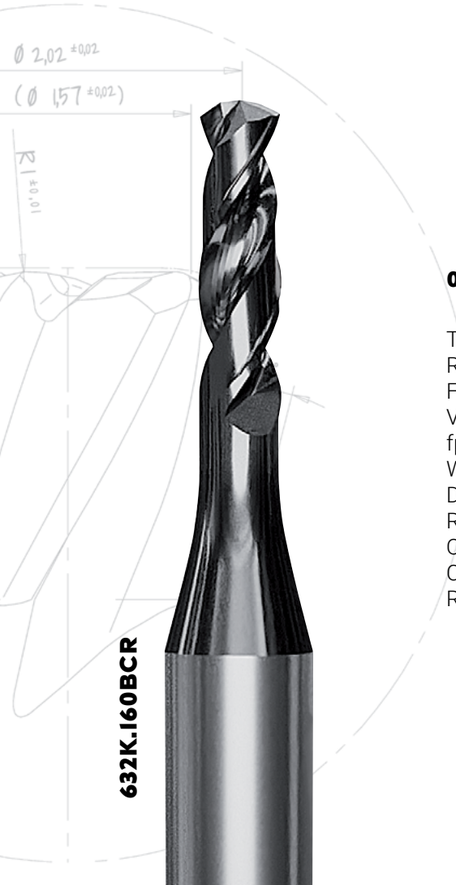


45619

07. INTERNAL TAPER THREAD

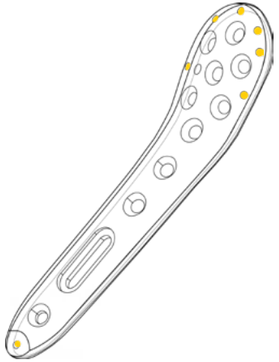
Tool:	45619
RPM:	4,957
Feed rate:	223 mm/min
Vc:	38 m/min
fpt:	0.015 mm/t
WOC:	-
DOC:	-
R-anlge:	-
Offset:	0,000 mm
Coolant:	Oil
Runtime:	00:00:35 h





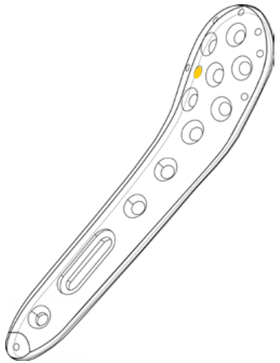
08. DRILLING

Tool:	632K.160BCR
RPM:	5,968
Feed rate:	191 mm/min
Vc:	30 m/min
fpt:	0.016 mm/t
WOC:	-
DOC:	-
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:00:25 h



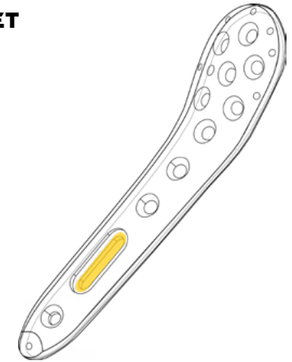
09. PILOT DRILLING

Tool:	612.200BCR
RPM:	4,456
Feed rate:	178 mm/min
Vc:	28 m/min
fpt:	0.020 mm/t
WOC:	-
DOC:	-
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:00:15 h



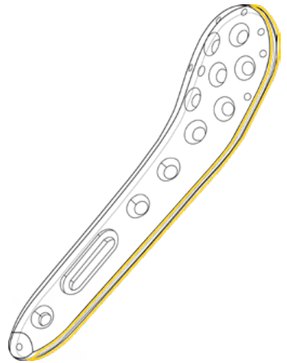
10. ROUGHING/FINISHING POCKET

Tool:	455.F3.0200.000.700SK
RPM:	28,648
Feed rate:	1,203 mm/min
Vc:	180 m/min
fpt:	0.014 mm/t
WOC:	0.100 mm
DOC:	7.000 mm
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:01:25 h



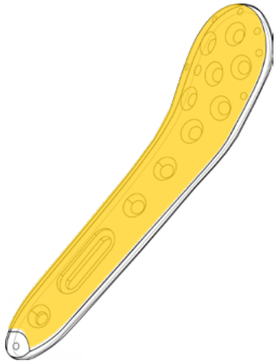
11. CHAMFERING

Tool:	455.T2.0400.020.080SK
RPM:	14,324
Feed rate:	1,146 mm/min
Vc:	180 m/min
fpt:	0.040 mm/t
WOC:	1.000 mm
DOC:	-
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:00:45 h



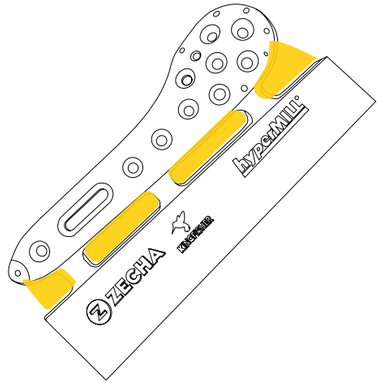
12. FINISHING SURFACE

Tool:	455.B3.0800.400.120IK
RPM:	5,507
Feed rate:	2,005 mm/min
Vc:	140 m/min
fpt:	0.120 mm/t
WOC:	0.250 mm
DOC:	0.300 mm
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:07:20 h



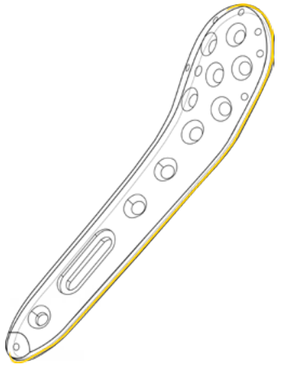
13. MILLING BONE PLATE FREE

Tool:	455.T2.0200.050.060
RPM:	20,690
Feed rate:	1,448 mm/min
Vc:	130 m/min
fpt:	0.035 mm/t
WOC:	0.050 mm
DOC:	-
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:02:20 h



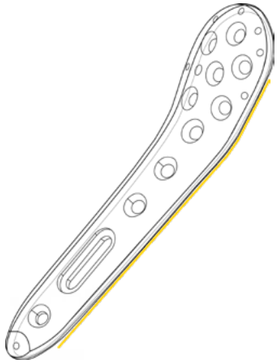
14. FINISHING RADII

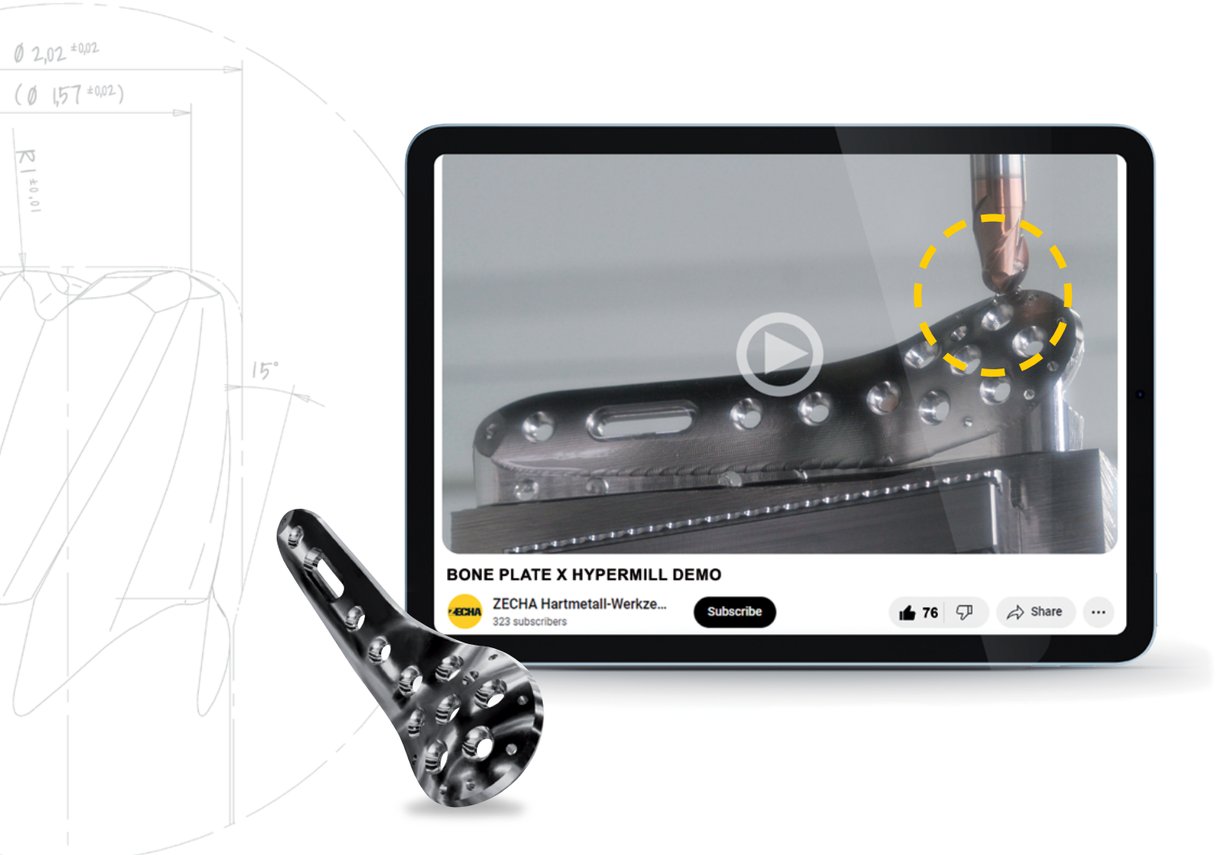
Tool:	455.T2.0400.020.080SK
RPM:	3,979
Feed rate:	159 mm/min
Vc:	50 m/min
fpt:	0.020 mm/t
WOC:	4.000 mm
DOC:	2.000 mm
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:04:15 h



15. SEPARATING

Tool:	455.F3.0200.000.700SK
RPM:	28,648
Feed rate:	1,203 mm/min
Vc:	180 m/min
fpt:	0.014 mm/t
WOC:	0.080 mm
DOC:	7.000 mm
R-anlge:	-
Offset:	-
Coolant:	Oil
Runtime:	00:00:15 h





SEE IT IN ACTION

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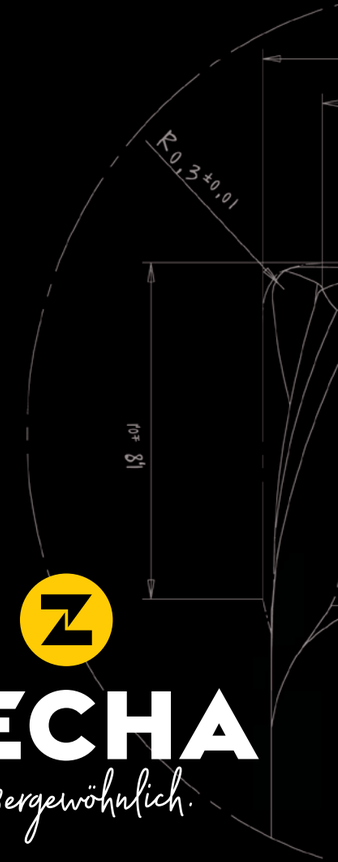

ZECHA

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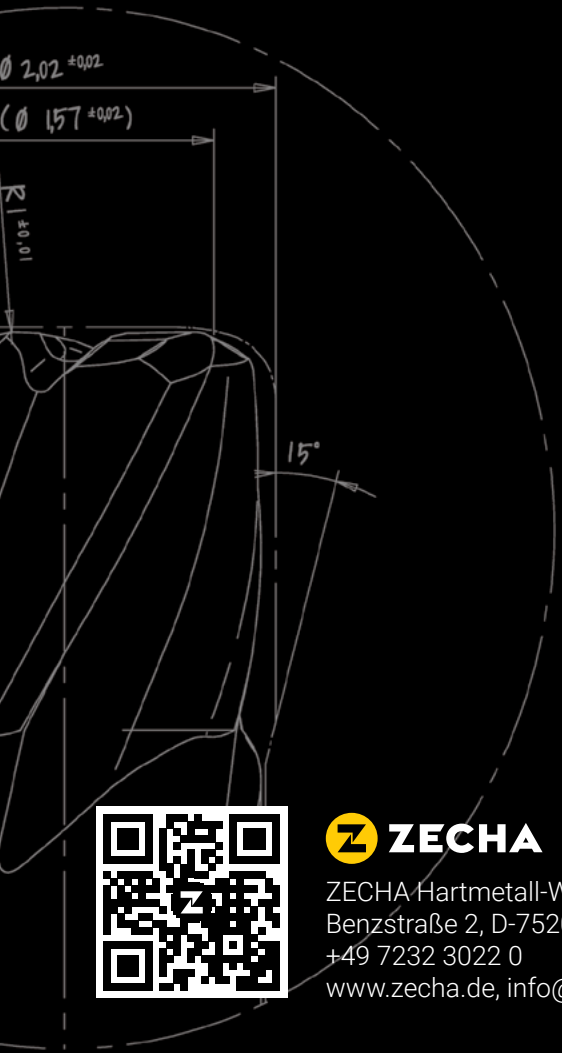

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