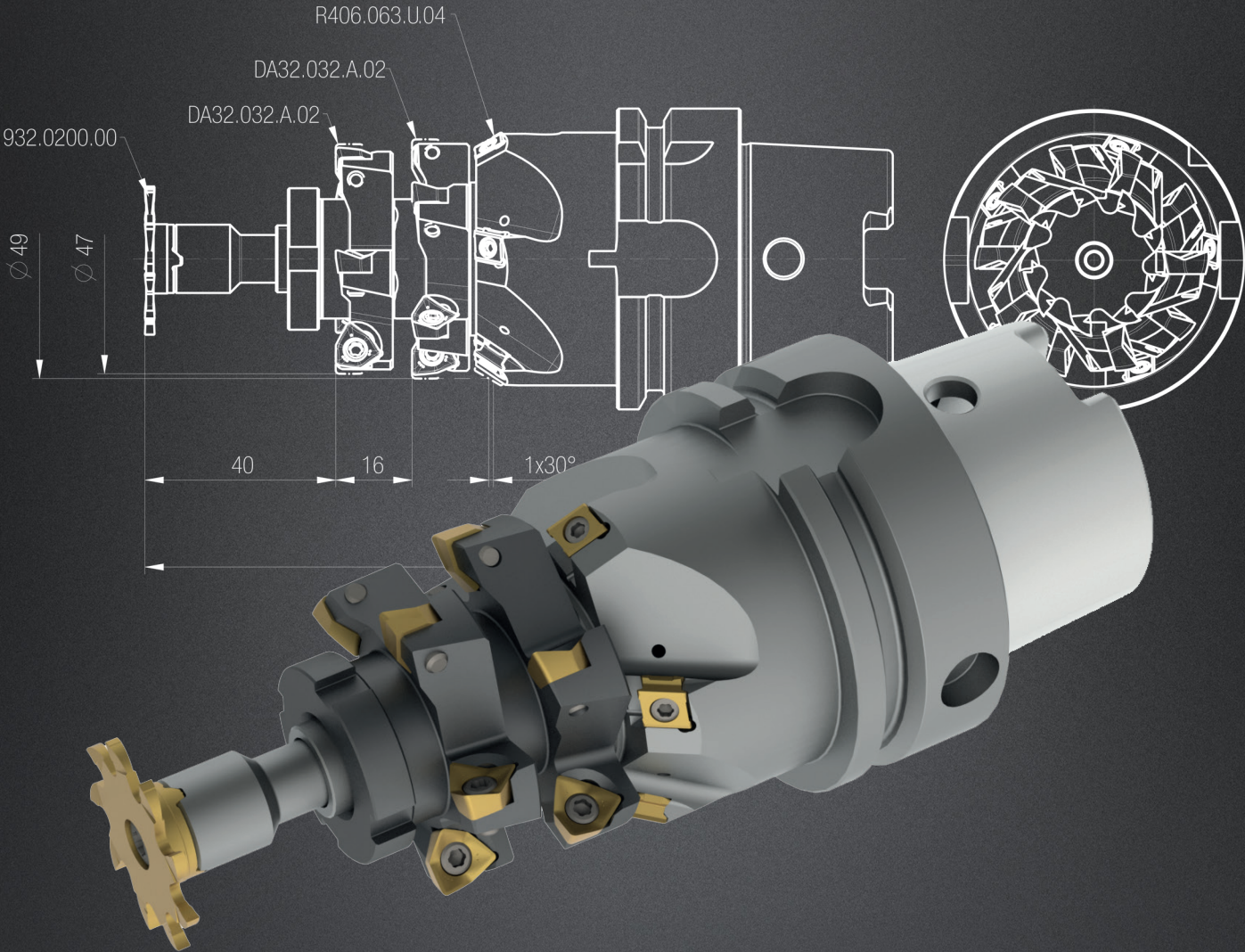


SPECIAL AND COMBI TOOLS



- REQUIREMENTS
- TASKS
- SOLUTIONS
- ADVANTAGES

DEAR READER,



Tool manufacturers are concentrating more and more on standard solutions. In many cases this is understandable, as the cost of developing special and combination tools is often very high. We take a different approach and give special and combination tools a lot of attention at our company. In addition, we have integrated processes that enable production of customised tools and with which we offer fast delivery times. In order to do this as effectively as possible with small quantities of special inserts and tool holder, we developed the „Greenline“ system. The description of this production control system is:

To deliver all orders for up to fifty inserts, including coating, within five⁽¹⁾ working days after approval of the drawing by the customer. For up to five tool holders ordered, the target is ten⁽¹⁾ working days.

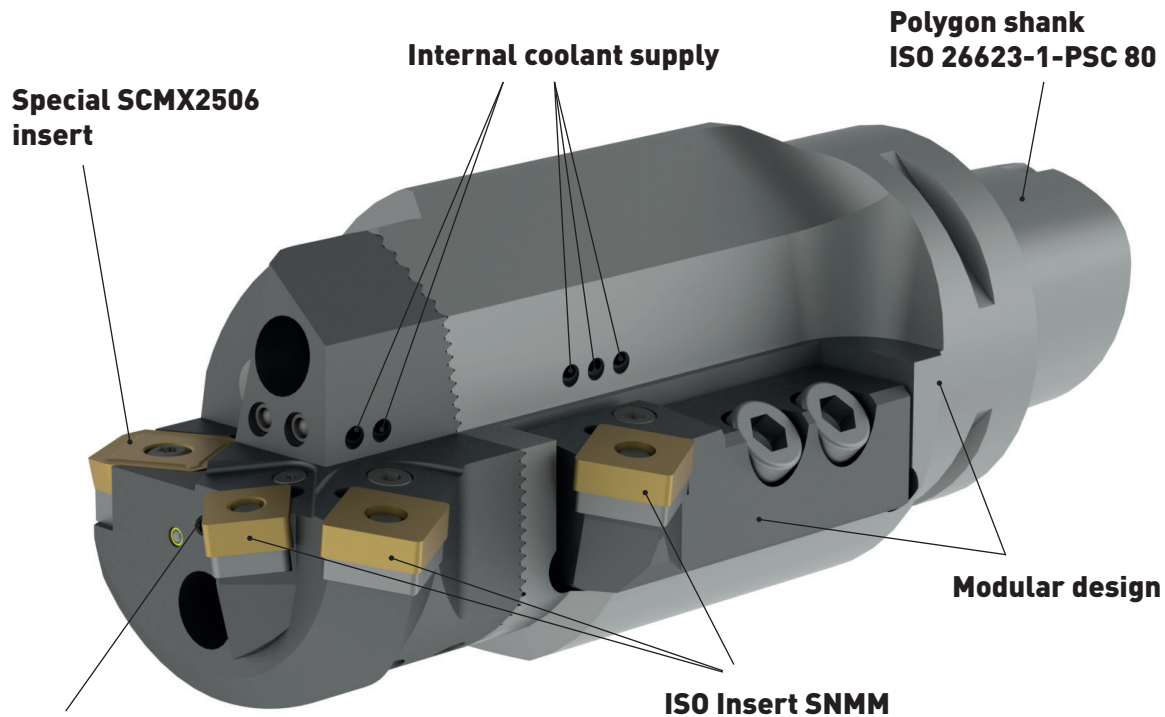
In addition to 25,000 permanently available standard tools, we have delivered over 150,000 special solutions to our customers. Currently, special and combination tools account about half of our production. On the following pages you will find examples that we have produced. If you are interested in a consultation, our sales engineers will be happy to assist you at any time.

A handwritten signature in black ink, appearing to read 'M. Rommel'. The signature is stylized and fluid.

Matthias Rommel, CEO Paul Horn GmbH

⁽¹⁾Please note that delivery times may be longer for orders placed from outside Germany.

TWO INSERTS FOR HIGHER PERFORMANCE



Targeted coolant supply directly to the cutting edge

REQUIREMENT

Reduction in the time required for pre-machining API and Premium fittings.

TASK FOR HORN

Design a solution to save tool change time.

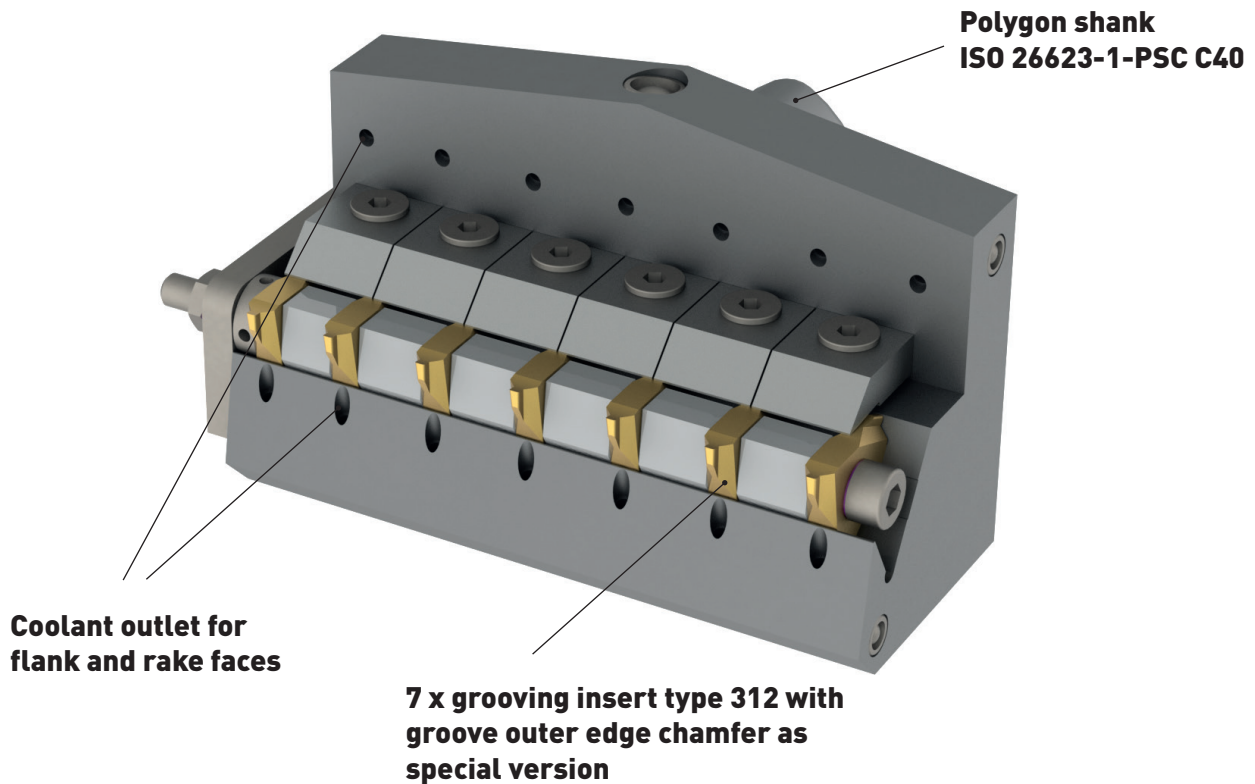
TOOL SOLUTION

Modular combination tool with internal coolant supply for face turning. Internal turning with two ISO inserts arranged one behind the other and high-feed turning of the outer diameter with insert SCMX2506.

ADVANTAGE

Longer tool life for internal turning and 30% reduction in machining time due to the simultaneous use of two ISO inserts.

MORE EFFICIENCY THROUGH MULTIPLE GROOVING TOOLS



REQUIREMENT

The machining of shafts with different varieties of grooves.

TASK FOR HORN

Design a tool with the required flexibility to makes it possible to produce a shaft with five, six or seven grooves simultaneously.

TOOL SOLUTION

A multiple grooving tool based on our 312 grooving system with a polygon shank design and cooling directly to the cutting edge.

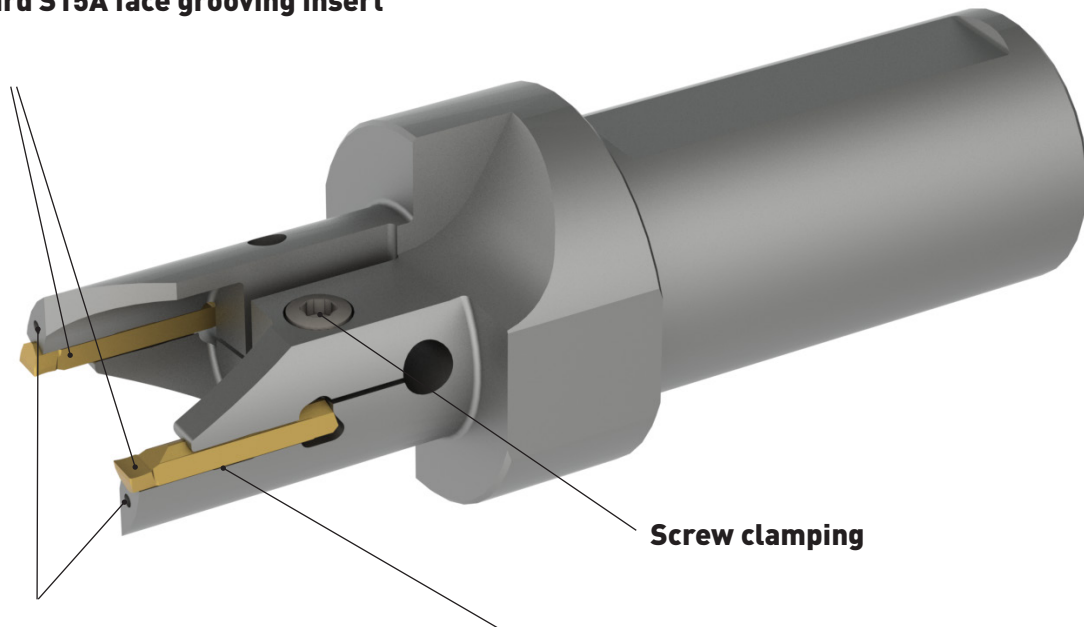
ADVANTAGE

Increased tool life through the use of multiple inserts, quick changeover cycles. Reduction of machining time by 80 %.

DUAL AXIAL GROOVING



Standard S15A face grooving insert



Targeted coolant supply directly to the cutting edge

Prismatic insert mounting

REQUIREMENT

Fast, reliable production of an axial groove with a depth of 1.574 inch [40 mm] and a width of 0.222 in [5.65 mm].

TASK FOR HORN

Design a tool that allows the groove to be machined as efficiently as possible.

TOOL SOLUTION

A special tool based on our axial parting system 15A/25A with two offset inserts and targeted coolant supply directly to the cutting edges.

ADVANTAGE

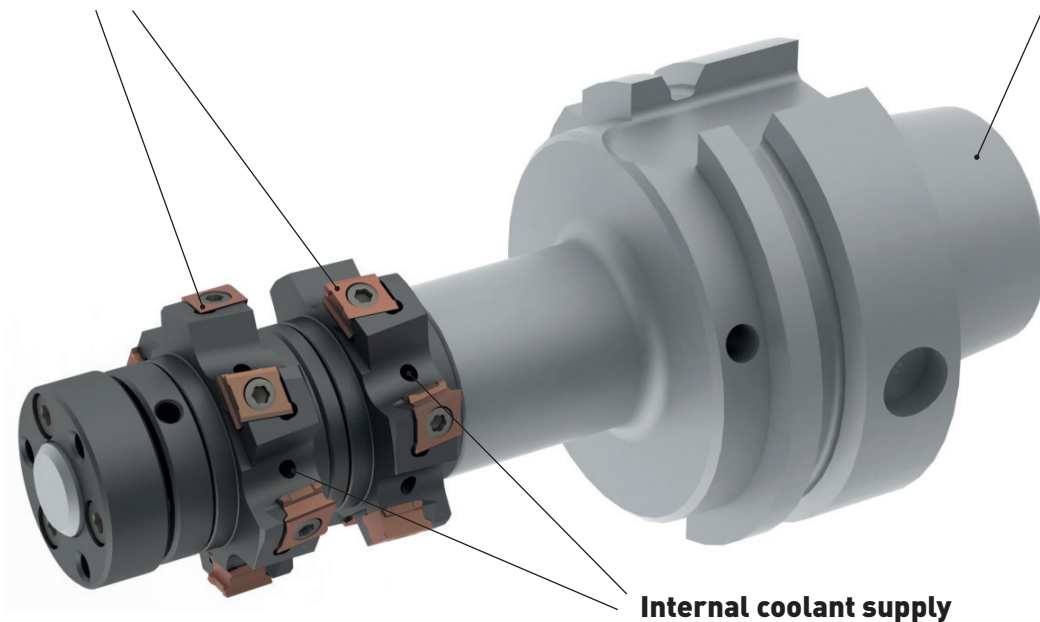
Efficient chip removal due to chipbreaker geometry and offset cutting edge, low cycle time due to high metal removal rate. Reduction of machining time by 50 %.

SUCCESS WITH DOUBLE THE MILLING POWER



Special 406 tangential milling inserts

HSK B-63



Internal coolant supply

REQUIREMENT

Reliable production of two grooves .433 in [11 mm] by turn-milling in one pass.

TASK FOR HORN

Design a milling tool for simultaneous milling with indexable inserts.

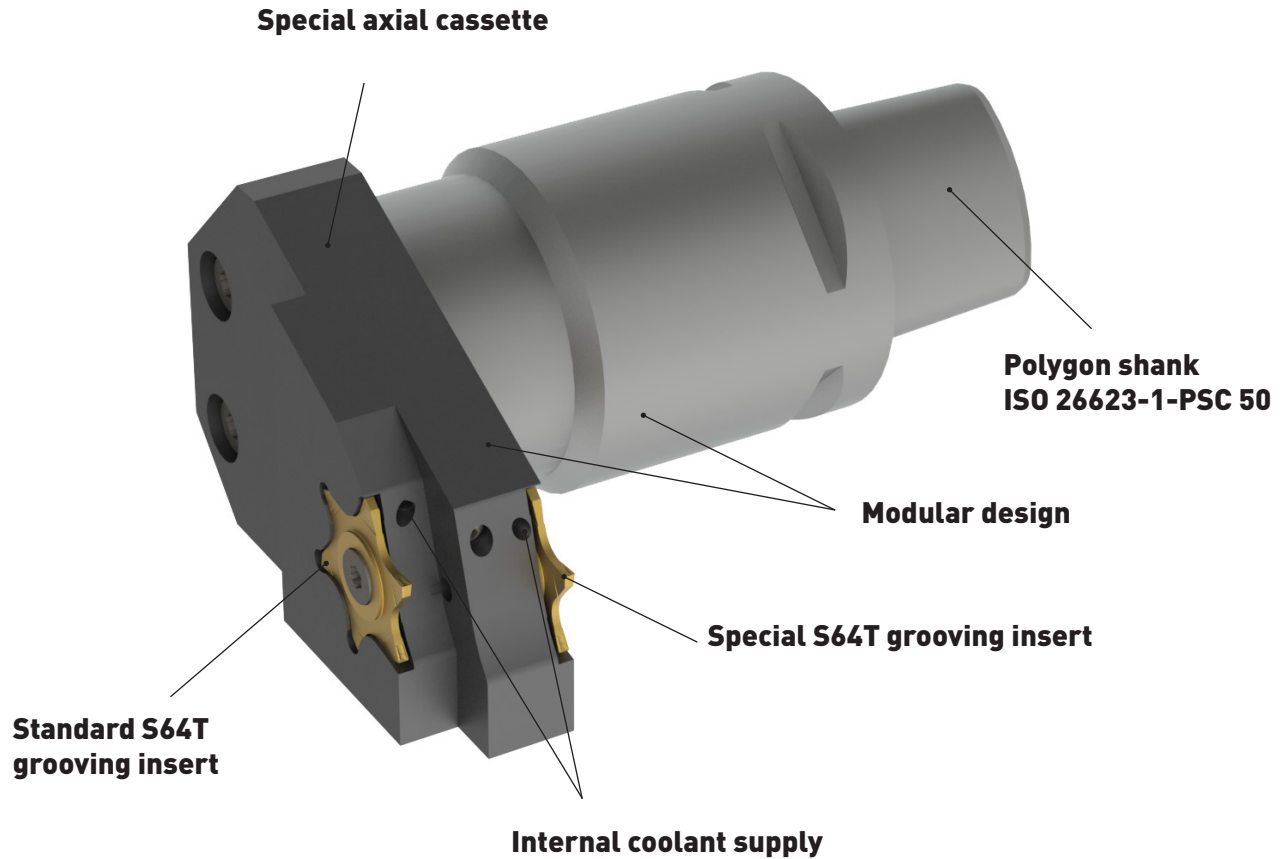
TOOL SOLUTION

A modular combination milling tool with HSK B-63 interface with special 406 tangential inserts.

ADVANTAGE

Process reliability is guaranteed and set-up times reduced by 80 %.

FRONT AND BACK IN ONE CLAMPING



REQUIREMENT

Generate two grooves without tool change and avoid an interference contour.

TASK FOR HORN

Design a modular tool to create two grooves with one tool change and one tool station

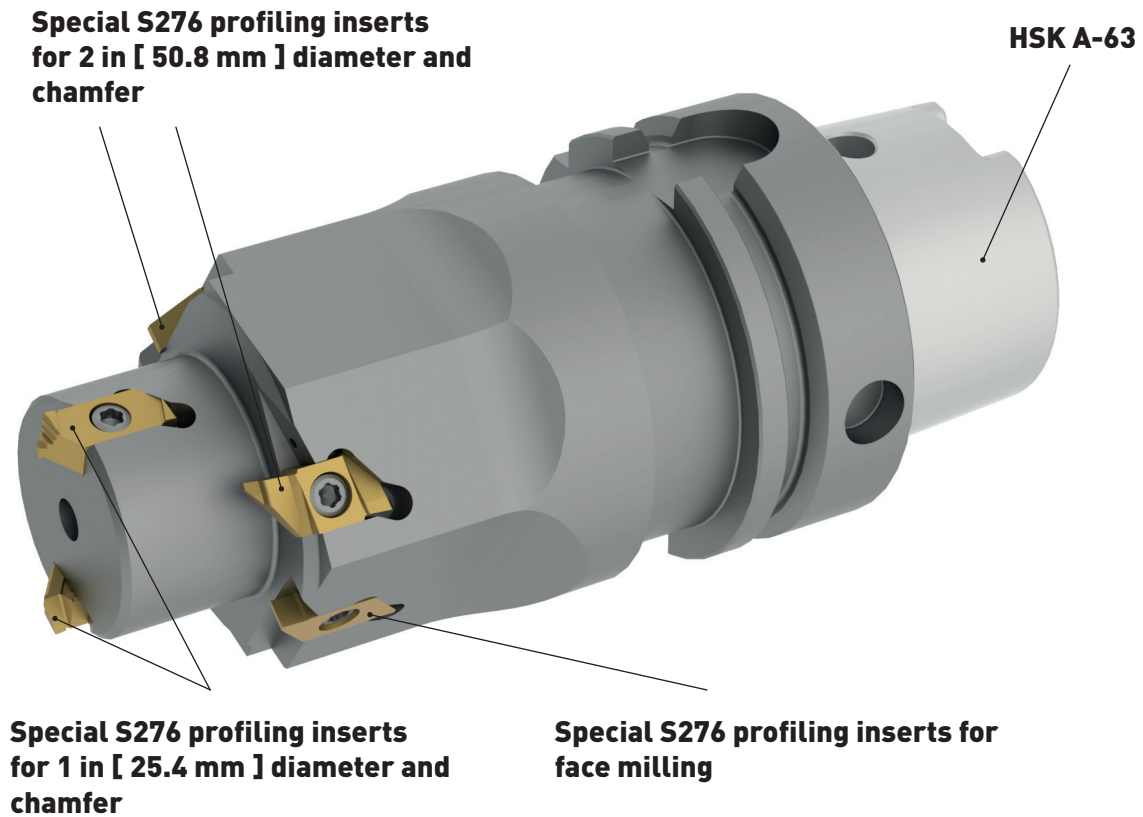
TOOL SOLUTION

A multi-part combination parting tool based on polygon shank PSC50 with long extension to bypass the interference contour.

ADVANTAGE

Both grooves are machined with this combination tool without changing tools. Thanks to the targeted coolant supply directly to the cutting edge, the grooves can be produced efficiently and reliably. Reduction of machining time by 25 %.

PLUNGING AND CHAMFERING IN ONE PASS



REQUIREMENT

Production of two diameters including the chamfers.

TASK FOR HORN

The design of a tool with interchangeable cutting edges. The required tolerance on the work-piece must be maintained.

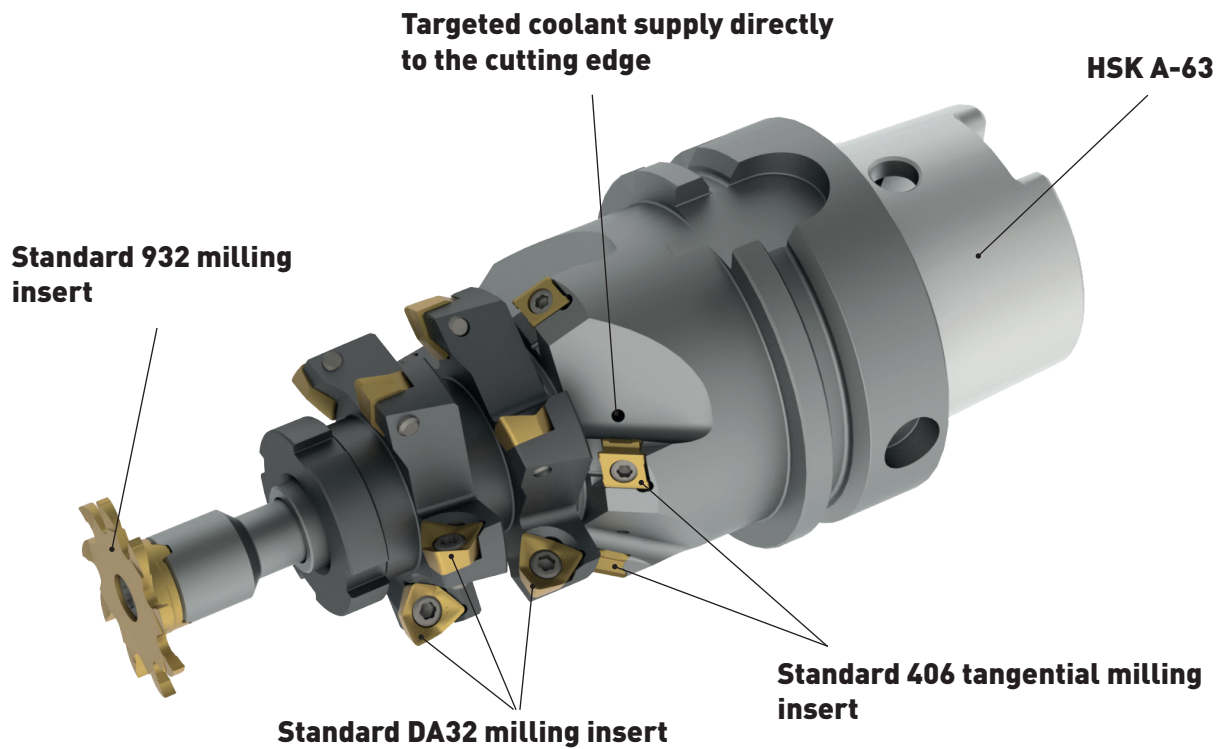
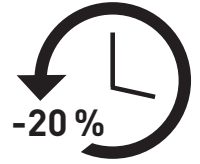
TOOL SOLUTION

A monobloc tool based on HSK A-63 with special S276 tangentially mounted profiling inserts. Due to the precise design of the inserts and the cutter body, no length offset adjustment is required.

ADVANTAGE

The use of the combination tool eliminates a tool change and setting up of the machine is much more convenient. Reduction of machining time by 35 %.

GROOVE AND STEPPED BORE MILLING COMBINATION TOOL



REQUIREMENT

Produce a stepped bore and an undercut.

TASK FOR HORN

The stepped bore including the chamfers and a groove need to be machined with one tool.

TOOL SOLUTION

A combination tool based on HSK A-63. The tool has a modular design. Due to the mounting position of the inserts, standard versions can be used.

ADVANTAGE

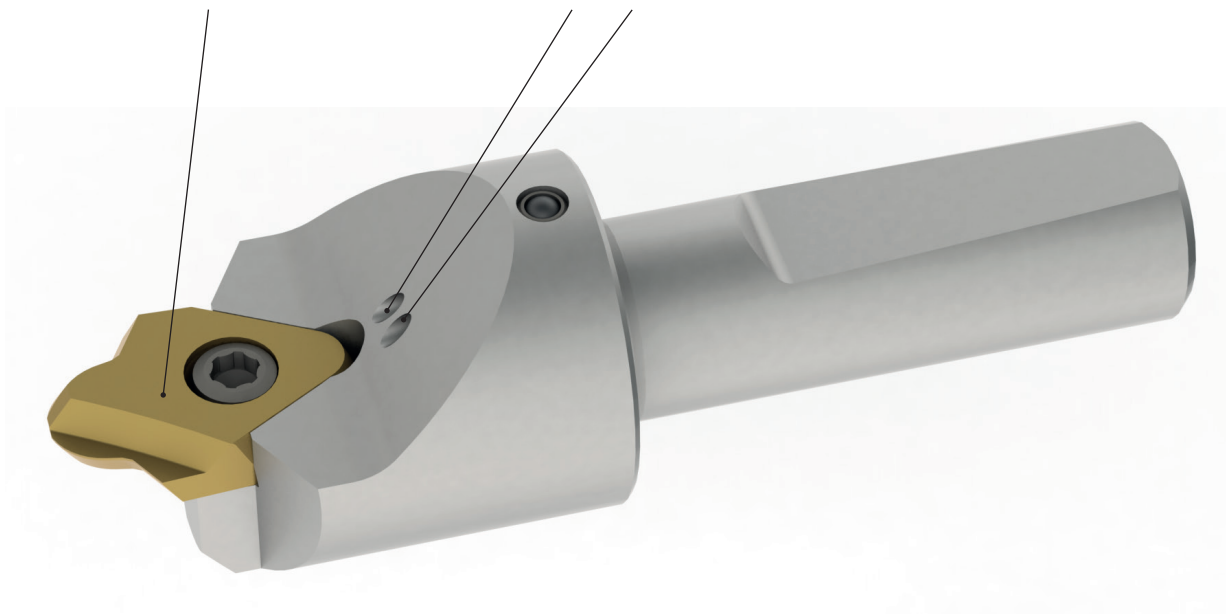
Today, the customer uses only the combination tool instead of three individual tools. Tool change times are eliminated and no tools need to be adjusted relative to each other. Reduction of machining time by 20 %.

FORM SINK WITH EXCHANGEABLE INSERTS



Special S117 form boring insert

Targeted coolant supply directly to the cutting edge



REQUIREMENT

Manufacture of a countersink on a lathe.

TASK FOR HORN

A solution for an efficient form boring tool for series production.

TOOL SOLUTION

A form boring tool type D117 with exchangeable inserts. The tool has targeted internal cooling and a high-precision insert seat.

ADVANTAGE

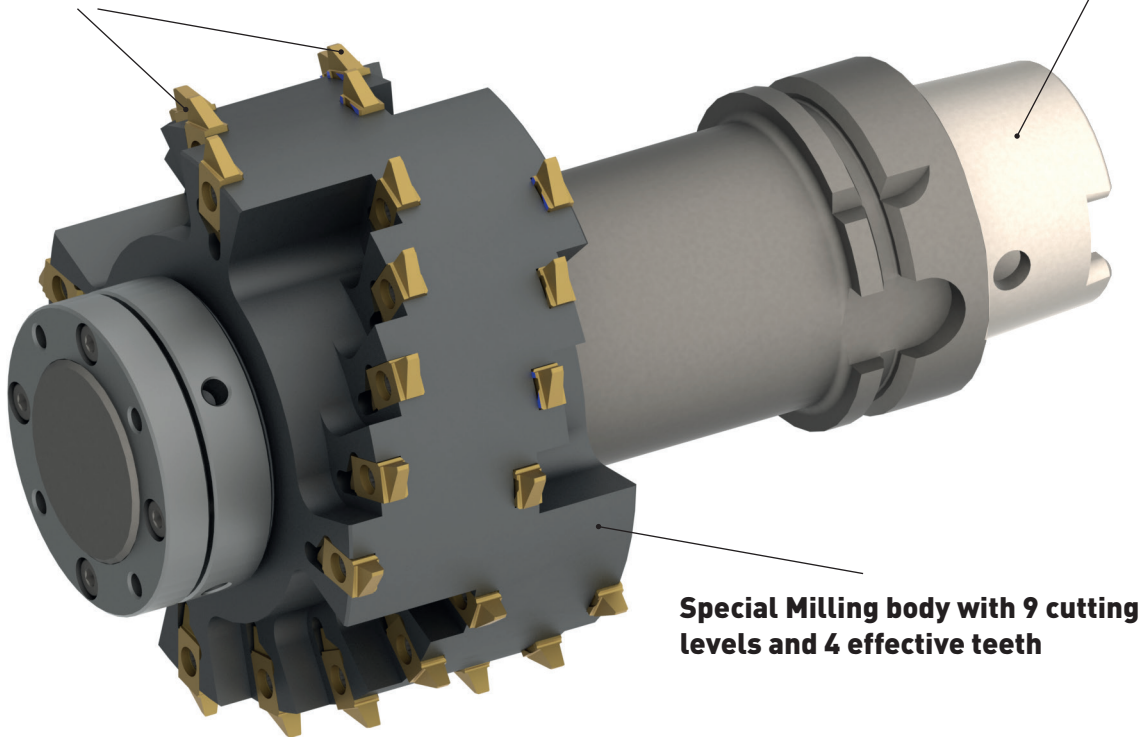
The S117 insert seat provides quick insert change and short cycle times due to the double-edged design. The carbide grade EG55 promotes long tool life. Reduction of machining time by 50 %.

PRODUCTION OF A SPUR GEAR IN ONE PASS



**Special S274
milling insert**

HSK A-63



**Special Milling body with 9 cutting
levels and 4 effective teeth**

REQUIREMENT

The production of a spur gear in one pass of module 6.8 with 9 teeth.

TASK FOR HORN

The design of a tool that produces the required gear quality and reduces machining time.

TOOL SOLUTION

A modular special milling tool type M274 with 36 inserts, nine cutting levels with four inserts each and four effective teeth in cut.

ADVANTAGE

The customer can mill the complete gear in just one pass. By using the precision-ground S274 inserts, the required gear quality is achieved. Reduction of machining time by 60 %.



**FIND YOUR RIGHT TOOLING
SOLUTION NOW.**

www.PHorn.de

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