

INNOVATIVE TOOLING Solutions for Engine components





ENHANCING YOUR COMPETITIVENESS DELIVERING **EXCELLENCE AND INNOVATION FOR AUTOMOTIVE MANUFACTURERS**

When you work with Seco, you experience a true partnership based on trust, respect and communication. Our solutions exceed milling, holemaking, turning and tool holding products, as we work closely with your team to address and improve every aspect of production. For over 80 years, Seco has developed the tools, processes and services that leading manufacturers turn to for maximum performance. Whatever challenges you encounter, our team is always nearby to help you overcome them through extensive expertise and high quality products.

Seco customers can also access the latest information regarding new products, machining data, manufacturing techniques and other developments by visiting our automotive web site at www.secotools.com/automotive.

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Seco works closely with automotive manufacturers to create and provide solutions that increase productivity and bolster profitability. With 5,000 team members in over 45 countries, we offer a globally networked resource dedicated to solving your challenges and supporting your operations. Through cooperative partnerships with automotive manufacturers and entities around the world, we monitor trends, identify challenges and develop solutions that overcome the industry's most demanding applications.

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SUPPLYING AUTOMOTIVE **TRENDS IN AUTOMOTIVE**

a "green" agenda.

While current hybrids and electric cars demonstrate the industry's commitment to fuel efficiency improvements, alternative fuel technologies and environmental issues, the high cost of purchasing such vehicles will most likely keep petroleum and diesel-based automobiles dominating the market until at least 2020.

It appears that hybrids and electric cars have the biggest growth potential of any vehicle category over the next five years; however, many industry experts believe government subsidies are necessary for a successful roll-out of more economical hybrid and electric cars. Without subsidies, and compared to traditional fuel vehicles, it's unlikely that we will see 'affordable' electric powered cars until after 2015.

Continuing to develop technologies that will produce efficient, reliable and affordable hybrid and electric vehicles is a common thread among automotive manufacturers worldwide. Those companies that take a forwardthinking approach will gain a competitive advantage and secure a leadership position in a realigned automotive value chain.

At Seco, we partner with OEMs and other vehicle-based organisations around the globe to help automotive manufacturers overcome their challenges through world-class cutting tool solutions. Whether we're assisting in reducing costs on a cylinder head application, developing new ways to cut challenging engine materials or improving productivity on a brake caliper component, our advanced technologies, tools, strategies and component solutions can help drive the automotive industry's success.

As the automotive industry continues to innovate towards more efficient and environmentally friendly vehicle performance, Seco will be there to help you meet and overcome any metal cutting challenges within your operations.

With high oil prices, concerns over a lack of future energy supplies and a desire for a cleaner environment, consumers view fuel efficiency a top priority when buying a new vehicle. Therefore, the automotive industry is looking to further accelerate its engineering efforts to better accommodate



ENGINE **COMPONENTS**





CYLINDER HEAD

TURBOCHARGER

Cylinder head designs are key to reducing fuel emissions and meeting strict government regulations. As a result, the components place high demands on processing quality. The components involve extremely complex and demanding machining operations, as well as custom tooling.



CONNECTING ROD machines.



BEARING CAP

Bearing caps contain the main bearings of an engine's crankshaft. As part of their required processing, bearing caps must undergo a tough splitting operation, requiring strong and stable operations. Tooling for bearing cap machining is highly complex and often custom in nature.

Used to generate increased engine power and made from heat resistant stainless steels, turbochargers are complex and difficult components to machine. They require sophisticated, custom tools such as high precision reamers and dedicated carbide grades. Processing includes tight-tolerance holemaking and generating superior surface finishes.

As the critical link between engine crankshaft and piston, connecting rods are forged and split into two parts by either a sawing or cracking process. Machining requires extremely strong and stable precision tooling and



ENGINE **COMPONENTS**





PISTON



CRANKSHAFT



CYLINDER BLOCK

Cylinder blocks house the various main parts of an engine, such as liners and coolant passages. Block designs are often conceptually distinct and involve various different materials requiring bi-metal machining operations, as well as complex production processes and sophisticated high precision tooling.

Pistons are made from aluminium with high silicon content, resulting in a very abrasive material. Machining such material requires high wear resistant tooling, such as cutters and inserts made of PCD.

As one of the most challenging engine components, a crankshaft involves multiple production processes using complex custom tooling. Critical to translating reciprocating linear piston motion into rotation, crankshafts demand the highest possible quality control and exacting tolerances.

- Minimising tool cost per piece when productively drilling numerous holes
- Reaming precise holes with perfect surface finishes
- Ensuring high productivity during turning of the outer diameter and face
- Copying the back profile with high productivity and reliability



MACHINING ENGINE COMPONENTS: TURBOCHARGER



PERFOMAX® DRILL

YOUR CHALLENGE:

Minimising tool cost per piece when productively drilling numerous holes.

OUR SOLUTION:

With strong indexable inserts and a highly stable, low-friction coated drill body, Perfomax achieves excellent productivity and economic performance. The drills feature optimised geometries to eliminate deflection and provide high chip evacuation. Your benefits include increasing throughput and minimising tool cost per part.



SECO REAMING SOLUTIONS

YOUR CHALLENGE:

Reaming precise holes with perfect surface finishes.

OUR SOLUTION:

An interchangeable head reamer, Precimaster™ minimises cost per hole while providing excellent results. Additionally, our Nanofix[™], PrecifixTM and XfixTM lines fill out our range of reaming products, guaranteeing a productive and high quality solution for holes ranging from 2.97 mm to 155 mm in diameter. Your benefits include reducing costs while maintaining exacting tolerances and surface finish requirements.



SECO-CAPTO[™] TURNING TOOL

YOUR CHALLENGE:

Ensuring high productivity during turning of the outer diameter and face.

OUR SOLUTION:

The flexible Seco-Capto quick change turning head system reduces tool change times and can be error-proof modified for mass production applications. Offering highly rigid and accurate performance, the system also enables full automation of presetting by adding electronic data chips to the tool holders. Additionally, using ISO/ANSI Duratomic[®] inserts maximises chip removal rate for this application. Your benefits include reliable accuracy and increased efficiency.



CUSTOM SECO-CAPTO[™] TURNING TOOL

YOUR CHALLENGE:

Copying the back profile with high productivity and reliability.

OUR SOLUTION:

change turning head system reduces tool change times and can be error-proof modified for mass production applications. Offering highly rigid and accurate performance, the system also enables full automation of presetting by adding electronic data chips to the tool holders. Additionally, applying MDT coated inserts maximises chip removal rate for this application. Your benefits include reliable accuracy and increased efficiency.





The flexible Seco-Capto quick

- Roughing component faces with the highest possible productivity and reliability
- Minimising cycle time and maintaining reliability for grooving operations
- Efficiently and securely turning the internal diameter and face



MACHINING ENGINE Components: Turbocharger



R220.29 COPY MILLING CUTTER

YOUR CHALLENGE:

Roughing component faces with the highest possible productivity and reliability.

OUR SOLUTION:

With features perfect for the challenges faced in rough milling turbochargers, the R220.29 copy milling cutter incorporates carbide inserts with strong cutting edges. Round inserts maximise process security and stability, as well as offering improved cost performance by allowing the use of more insert edges. Your benefits include a highly reliable process with minimal cycle times and costs.



SECO-CAPTO™ MDT AXIAL Grooving tool

YOUR CHALLENGE:

Minimising cycle time and maintaining reliability for grooving operations.

OUR SOLUTION:

With a top clamp and serrated contact surfaces between the insert and tool holder, Secoloc insert clamping provides the MDT system with superb stability, which is then further enhanced through the use of long inserts. The Seco-Capto interface adds tremendous flexibility, and the ability to move to full automation by adding electronic data chips to the tool holders. MDT coated carbide inserts optimise chip removal rates in this application. Your benefits include robust performance, high process security and shorter cycle times.



SECO-CAPTO[™] BORING TOOL

YOUR CHALLENGE:

Efficiently and securely turning the internal diameter and face.

OUR SOLUTION:

The flexible Seco-Capto quick change turning head system reduces tool change times and can be error-proof modified for mass production applications. Offering highly rigid and accurate performance, the system also en-ables full automation of presetting by adding electronic data chips to the toolholders. Additionally, applying ISO/ ANSI Duratomic[®] inserts maximises chip removal rate for this application. Your benefits include reliable accuracy and increased efficiency.



- Removing irregular stock with high productivity and reliability
- Maintaining productivity while cutting irregular stock, cast skin and impure surfaces
- Achieving productive and reliable roughing of valve spring seats and tappet bores
- Finishing tappet bores with optimal quality and process security



MACHINING ENGINE COMPONENTS: CYLINDER HEAD



R220.91 CUSTOM FACE MILLING CUTTER

YOUR CHALLENGE:

Removing irregular stock with high productivity and reliability.

OUR SOLUTION:

Available in diameters ranging from 50 mm to 125 mm, the R220.91 provides top performance in irregular stock, with insert geometries for both roughing and finishing. The steel cutter body is balanced and features through coolant holes, while PCD-tipped inserts maximise metal removal rates and tool life. Your benefits include high accuracy, increased tool life and reduced wear on your machine's spindle bearings.



CUSTOM PCD BALL NOSE MILLING CUTTER

YOUR CHALLENGE:

Maintaining productivity while cutting irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

PCD-tipped to provide long, predictable tool life, the Custom PCD Ball Nose Milling Cutter incorporates through coolant holes to maximise performance. A balanced tool with an integrated HSK shank, the cutter offers retrofitting possibilities and lowers costs by reducing tool consumption and increasing part quality. Your benefits include higher process security and productivity.



CUSTOM PCD TOOL

YOUR CHALLENGE:

Achieving productive and reliable roughing of valve spring seats and tappet bores.

OUR SOLUTION:

To maximise productivity, this custom tool performs drilling, spot facing and boring in a single operation. The highest metal removal rates are achieved with PCD 20 inserts. Your benefits include substantial productivity gains through a highly reliable process.



CUSTOM PCD REAMER

YOUR CHALLENGE:

Finishing tappet bores with optimal quality and process security.

OUR SOLUTION:

For the finishing of holes requiring close tolerances and stringent bore geometries, this custom tool achieves the needed quality with minimal cycle times. Balanced and featuring through coolant holes, the tool is PCD tipped and can be reground or reconditioned to its original condition to achieve maximum usable tool life. Your benefits include reducing the costs of achieving high-quality output.

- Productively roughing swirl chambers and guide entrances for boring
- Reliably performing highquality finishing of parent metal bores for valve seats and guides
- Meeting quality and productivity requirements when finishing valve seats and guides
- Reducing cycle times and ensuring reliability for numerous holes Maintaining high
- productivity and reliability when finishing parts with demanding surface finish and flatness requirements



MACHINING ENGINE COMPONENTS: CYLINDER HEAD



CUSTOM PCD TOOL

YOUR CHALLENGE:

Productively roughing swirl chambers and guide entrances for boring.

OUR SOLUTION:

To maximise productivity, this custom tool performs boring and counterboring in a single operation. The highest metal removal rates are achieved with carbide AL geometry or PCD 20 inserts. Your benefits include substantial productivity gains through a highly reliable process.



CUSTOM PCD REAMER

YOUR CHALLENGE:

Reliably performing highquality finishing of parent metal bores for valve seats and guides.

OUR SOLUTION:

For the finishing of holes requiring close tolerances and stringent bore geometries, this custom tool achieves the needed quality with minimal cycle times. Balanced and featuring through coolant holes, the tool is PCD tipped and can be reground or reconditioned to its original condition to achieve maximum usable tool life. Your benefits include reducing the costs of achieving high-quality output.



CUSTOM BIFIX® REAMERS

YOUR CHALLENGE:

Meeting quality and productivity requirements when finishing valve seats and guides.

OUR SOLUTION:

Fully integrated with an HSK attachment, custom Bifix reamers combine multiple operations. Available as single or multi tooth guide reamers made from carbide or PCD, the cutters incorporate patented adjustable cartridges to provide maximum security. Fullface, 4-edge CBN inserts finish the different chamfers on the sintered steel ring seat, and the tool is balanced to minimise wear on spindle bearings. Your benefits include reducing cost per part while increasing the stability of your operations.

CUSTOM PCD STEP DRILL

YOUR CHALLENGE:

Reducing cycle times and ensuring reliability for numerous holes.

OUR SOLUTION:

Featuring a low friction PCD tip and high strength geometry, this tool provides high process security and offers long, predictable tool life. Sharp cutting edges increase hole quality and reduce exit burrs, and the tool allows the use of aggressive cutting data, making it an ideal method for increasing productivity on high speed machining centres. Your benefits include superb quality and reduced costs from higher throughput.





R220.91 CUSTOM FACE MILLING CUTTER

YOUR CHALLENGE:

Maintaining high productivity and reliability when finishing parts with demanding surface finish and flatness requirements.

OUR SOLUTION:

Available in diameters ranging from 50 mm to 200 mm, the R220.91 provides top performance with insert geometries for finishing. The cutter body is balanced and features through coolant holes, while PCD-tipped inserts maximise metal removal rates and tool life. Your benefits include high accuracy, increased tool life and reduced wear on your machine's spindle bearings.

- Drilling numerous holes with low cycle times, high quality and reliability
- Finishing the camshaft line while maintaining quality, productivity and reliability requirements
- Minimising cycle times when producing numerous deep, high-quality holes



MACHINING ENGINE Components: Cylinder Head



SECO FEEDMAX[™] CHAMFER DRILL

YOUR CHALLENGE:

Drilling numerous holes with low cycle times, high quality and reliability.

OUR SOLUTION:

Providing high performance when dealing with angled exits or intersecting holes, the Seco Feedmax Chamfer Drill utilises the light-cutting N geometry and a special edge preparation to increase process security and tool life. The tool also incorporates a low-friction coating, and uses four land margins to increase stability. Your benefits include maintaining productivity in challenging, high-tolerance holes.



CUSTOM BIFIX® REAMER

YOUR CHALLENGE:

Finishing the camshaft line while maintaining quality, productivity and reliability requirements.

OUR SOLUTION:

Each of this pair of custom tools uses a single PCD indexable blade and guide pads to maintain impeccable tolerances, roundness, concentricity and surface finish. The shorter tool machines the first bearing on both camshaft lines, with the longer tool then machining all of the bearings on both lines. Through coolant holes maximise chip evacuation. Your benefits include absolute precision in a proven process for this specific application.



SECO FEEDMAX[™] SD230A

YOUR CHALLENGE:

Minimising cycle times when producing numerous deep, high-quality holes.

OUR SOLUTION:

Featuring sharp, positive and strong cutting edges that provide excellent hole quality, Seco Feedmax SD230A provides high performance in drilling holes of up to 30x tool diameter. Optimised geometries ensure process security, long tool life and exceptional performance in aluminium, reducing exit burrs and minimising workpiece deformation. Your benefits include reliable, productive and cost-efficient holemaking.



- Drilling numerous holes with low cycle times, high quality and reliability
- Producing spot faces with maximum productivity and reliability
- Productively and reliably producing both chamfers when roughing the crank bore
- Establishing an efficient and secure process for finishing the crank bore



MACHINING ENGINE COMPONENTS: CONNECTING ROD



SECO FEEDMAX[™] SD245 CHAMFER DRILL

YOUR CHALLENGE:

Drilling numerous holes with low cycle times, high quality and reliability.

OUR SOLUTION:

Providing high performance when dealing with angled exits or intersecting holes, the Seco Feedmax SD245 Chamfer Drill utilises the lightcutting geometry and a special edge preparation to increase process security and tool life. The tool also incorporates a low-friction coating, and uses four land margins to increase stability. Your benefits include maintaining productivity in challenging, high-tolerance holes.



R417.19 CUSTOM SPOT FACE AND CHAMFERING CUTTER

YOUR CHALLENGE:

Producing spot faces with maximum productivity and reliability.

OUR SOLUTION:

The R417.19 custom tool uses a square positive insert and adjustable cartridge with a chamfering insert to combine spot facing and chamfering operations. The balanced cutter offers smooth cutting action and produces a constant chamfer value on a multi-spindle machine. Your benefits include cost reduction through process optimisation.



CUSTOM CHAMFERING AND BORING BAR

YOUR CHALLENGE:

Productively and reliably producing both chamfers when roughing the crank bore.

OUR SOLUTION:

This custom tool provides both crank bore roughing and chamfering by circular interpolation, with the ability to adjust the chamfer dimension by setting the insert with a fine adjustment screw. Through coolant holes increase tool life and chip evacuation, and the use of ISO/ANSI Duratomic® inserts maximise metal removal rates. Your benefits include greater process efficiency and reduced costs.



CUSTOM XFIX[™] MULTI-TOOTH REAMER

YOUR CHALLENGE:

Establishing an efficient and secure process for finishing the crank bore.

OUR SOLUTION:

Maintaining high precision output while minimising cycle times, Xfix uses up to nine teeth to provide high feed rates, while holding tolerances as tight as IT6. Strong and stable insert cartridges ensure process security, while preloaded guide pads prevent vibration and increase stability. Your benefits include achieving needed tolerances without sacrificing the productivity of your production line.





- Productively and reliably producing both chamfers (V shape) on piston bore
- Drilling the piston bore with minimal cost and time
- Reliably finish cutting the piston bore brass bush with high quality and productivity



MACHINING ENGINE Components: Connecting Rod



CUSTOM PLUNGING AND CHAMFERING CUTTER

YOUR CHALLENGE:

Productively and reliably producing both chamfers (V shape) on piston bore.

OUR SOLUTION:

Specially designed for machining the V shape on the piston side of the connecting rod, this cutter combines spot facing and chamfering to increase productivity. The use of insert cartridges protects the cutter body and allows the chamfer value to be easily adjusted by setting the chamfering insert. Your benefits include an economical solution that streamlines your production process.



CUSTOM PERFOMAX® Chamfer Drill

YOUR CHALLENGE:

Drilling the piston bore with minimal cost and time.

OUR SOLUTION:

Developed specifically to avoid deflection when starting to drill the large stamping dimple, this custom Perfomax drill features two inserts on the outer diameter to stabilise the tool until the centre insert engages the material. A unique flute design optimises chip removal, and the use of Perfomax drilling inserts allows for a very cost-effective process. Your benefits include reducing costs while maintaining high process stability.



CUSTOM BIFIX® PCD REAMER

YOUR CHALLENGE:

Reliably finish cutting the piston bore brass bush with high quality and productivity.

OUR SOLUTION:

To allow for high cutting speeds while maintaining accuracy, the Bifix PCD reamer uses a PCD reaming blade and multiple guide pads to maintain stability. The PCD-tipped blade provides long tool life and excellent surface finishes. Your benefits include highly productive precision machining with lower production costs.



- Creating an efficient and secure process for chamfering bearings before splitting
- Reliably roughing crank bores with minimum cycle time
- Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces
- Meeting surface finish and flatness requirements while productively finishing main faces
- Maximising productivity by combining seal location and chamfer into one operation



MACHINING ENGINE COMPONENTS: BEARING CAP



CUSTOM CHAMFER MILLING CUTTER

YOUR CHALLENGE:

Creating an efficient and secure process for chamfering bearings before splitting.

OUR SOLUTION:

To optimise productivity, this custom tool was designed to allow all chamfers on the bearing cap to be machined in a single pass. A guide bushing supports the front end of the cutter body during the contouring operation to ensure reliable performance. Your benefits include minimising cycle times with an economical solution.



CUSTOM PLUNGE MILLING CUTTER

YOUR CHALLENGE:

Reliably roughing crank bores with minimum cycle time.

OUR SOLUTION:

This custom tool contains an optimum number of teeth for roughing a crank bore by plunging and secures inserts via a centre-lock clamping system. The tool's positive geometry reduces cutting forces and minimises machine power requirements, while through coolant holes improve tool life. Your benefits include increasing productivity and reducing costs.



DOUBLE OCTOMILL[™] FACE MILLING CUTTER

YOUR CHALLENGE:

Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

With sixteen cutting edges per indexable insert, Double Octomill significantly reduces the cost of obtaining high quality results. The tool provides surface finishes with maximum security, achieves tremendous cutter body life and can be used for both roughing and finishing. Your benefits include cost reduction while maintaining top performance.



QUATTROMILL® FACE MILLING CUTTER

YOUR CHALLENGE:

Meeting surface finish and flatness requirements while productively finishing main faces.

OUR SOLUTION:

A super positive geometry with up to a 35-degree effective rake angle makes Quattromill an ideal choice for challenging face milling applications. A robust cutter body with a protective coating houses strong inserts with integrated anvils that protect the pocket seats. Your benefits include maintaining impeccable surface finishes while increasing the productivity and flexibility of your milling operations.







CUSTOM MILLING CUTTER

YOUR CHALLENGE:

Maximising productivity by combining seal location and chamfer into one operation.

OUR SOLUTION:

Combining contouring and chamfering operations, this custom step milling cutter uses a positive geometry to minimise cutting forces and reduce machine power requirements. The balanced tool includes through coolant holes to increase tool life. Your benefits include increased efficiency by combining cutting applications.

- Reducing cycle times for roughing the outer diameter
- Producing spot faces with maximum productivity and reliability
- Drilling numerous holes with low cycle times, high quality and reliability
- Minimising setting and adjusting time in bearing splitting operations



MACHINING ENGINE COMPONENTS: BEARING CAP





CUSTOM OD MACHINING TOOL

YOUR CHALLENGE:

Reducing cycle times for roughing the outer diameter.

OUR SOLUTION:

This custom tool features an integrated HSK-A attachment to reduce weight and overhang, enabling it to be used with a high feed. Positive geometry minimises cutting forces and demands on the machine, and use of ISO/ANSI Duratomic® TK2001 inserts will maximise metal removal rates. Your benefits include boosting productivity and attaining optimal performance from your equipment.



R417.19 CUSTOM SPOT FACE MILLING CUTTER

YOUR CHALLENGE:

Producing spot faces with maximum productivity and reliability.

OUR SOLUTION:

Using a square positive insert with a dedicated geometry for low cutting speeds, this custom tool provides an optimal method for milling spot faces of the fastening holes. The balanced custom cutter offers smooth cutting action and features a centrelock insert clamping system to ensure stability. Your benefits include a cost-effective solution that reduces wear on spindle bearings.



SECO FEEDMAX[™] CHAMFER DRILL

YOUR CHALLENGE:

Drilling numerous holes with low cycle times, high quality and reliability.

OUR SOLUTION:

Providing high performance when dealing with angled exits or intersecting holes, the Seco Feedmax Chamfer Drill utilises the light-cutting geometry and a special edge preparation to increase process security and tool life. The tool also incorporates a low-friction coating, and uses four land margins to increase stability. Your benefits include maintaining productivity in challenging, high-tolerance holes.



GANG DISC MILLING CUTTER

YOUR CHALLENGE:

Minimising setting and adjusting time in bearing splitting operations.

OUR SOLUTION:

Created specifically for the splitting operation, the Gang Disc Milling Cutter uses fixed pockets and positive insert geometries to reduce cutting forces and minimise machine power requirements. The high number of teeth and incorporation of HX grade precision ground carbide inserts provide optimal performance in cast iron. Your benefits include a fast, economical solution for your splitting application.

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- Reducing cycle times for grooving applications
- · Achieving reliable and efficient production when roughing the piston axis bore
- Finishing the piston axis bore while maintaining quality, productivity and reliability requirements
- Copying the face with maximum productivity and reliability
- Ensuring high productivity during turning of the outer diameter and face



MACHINING ENGINE COMPONENTS: PISTON



SECO-CAPTO[™] MDT GROOVING TOOL

YOUR CHALLENGE:

Reducing cycle times for grooving applications.

OUR SOLUTION:

With a top clamp and serrated contact surfaces between the insert and tool holder, Secoloc insert clamping provides the MDT system with superb stability, which is then further enhanced through the use of long inserts. The Seco-Capto interface adds tremendous flexibility, and the ability to move to full automation by adding electronic data chips to the toolholders. PCD grooving inserts provide the highest metal removal rates for this application. Your benefits include robust performance, high process security and shorter cycle times.



CUSTOM BORING TOOL

YOUR CHALLENGE:

Achieving reliable and efficient production when roughing the piston axis bore.

OUR SOLUTION:

Tailored for semi-finishing of piston axis bores, this custom tool incorporates ISO/ANSI positive PCD inserts for maximum material removal rates. Through coolant holes and polished chip flutes offer optimal chip evacuation and optimise tool life. Your benefits include long, reliable tool life and a productive application.



CUSTOM BIFIX® PCD REAMER

YOUR CHALLENGE:

Finishing the piston axis bore while maintaining quality, productivity and reliability requirements.

OUR SOLUTION:

To allow for high cutting speeds while maintaining accuracy, the Bifix PCD reamer uses a PCD reaming blade and multiple guide pads to maintain stability. The PCD-tipped blade provides long tool life and excellent surface finishes. Your benefits include highly productive precision machining with lower production costs.



CUSTOM SECO-CAPTO™ TURNING TOOL | SECO-CAPTO[™] TURNING TOOL

YOUR CHALLENGE:

Copying the face with maximum productivity and reliability. | Ensuring high productivity during turning of the outer diameter and face.

OUR SOLUTION:

The flexible Seco-Capto quick change turning head system reduces tool change times and can be error-proof modified for mass production applications. Offering highly rigid and accurate performance, the system also enables full automation of presetting by adding electronic data chips to the tool holders. Additionally, using ISO/ANSI PCD 20 inserts maximises chip removal rate for this application. Your benefits include reliable accuracy and increased efficiency.



- Cost effectively drilling numerous holes requiring a chamfer
- Producing numerous holes with minimal tool cost per piece
- Reaming precise holes with perfect surface finishes
- Drilling numerous holes with low cycle times, high quality and reliability
- Machining irregular stock, cast skin and impure surfaces efficiently and reliably





MACHINING ENGINE COMPONENTS: CRANKSHAFT



CUSTOM CROWNLOC® SPOT FACE AND CHAMFER DRILL

YOUR CHALLENGE:

Cost effectively drilling numerous holes requiring a chamfer.

OUR SOLUTION:

This custom tool incorporates turning inserts with a Crownloc drill to combine drilling and chamfering into a single operation. Crownloc drills use exchangeable heads with a strong locking system to avoid deflection and provide high chip removal rates. This approach eliminates regrinding costs and increases flexibility by allowing appropriate drill geometries to quickly and easily be applied to different applications. Your benefits include reducing tool inventory and increasing production efficiency.



CROWNLOC® DRILL

YOUR CHALLENGE:

Producing numerous holes with minimal tool cost per piece.

OUR SOLUTION:

Crownloc drills use exchangeable heads with a strong locking system to avoid deflection and provide high chip removal rates. This approach eliminates regrinding costs and increases flexibility by allowing appropriate drill geometries to quickly and easily be applied to different applications. Your benefits include reducing tool inventory and increasing production efficiency.



SECO REAMING SOLUTIONS

YOUR CHALLENGE:

Reaming precise holes with perfect surface finishes.

OUR SOLUTION:

An interchangeable head reamer, Precimaster™ minimises cost per hole while providing excellent results. Additionally, our Nanofix[™], Precifix[™] and Xfix[™] lines fill out our range of reaming products, guaranteeing a productive and high quality solution for holes ranging from 2.97 mm to 155 mm in diameter. Your benefits include reducing costs while maintaining exacting tolerances and surface finish requirements.



SECO FEEDMAX[™] CHAMFER DRILL

YOUR CHALLENGE:

Drilling numerous holes with low cycle times, high quality and reliability.

OUR SOLUTION:

Providing high performance when dealing with angled exits or intersecting holes, the Seco Feedmax Chamfer Drill utilises the light-cutting geometry and a special edge preparation to increase process security and tool life. The tool also incorporates a low-friction coating, and uses four land margins to increase stability. Your benefits include maintaining productivity in challenging, high-tolerance holes.



CUSTOM PIN MILLING CUTTER

YOUR CHALLENGE:

Machining irregular stock, cast skin and impure surfaces efficiently and reliably.

OUR SOLUTION:

This unique cutter offers a profile that mills the bearing surface and two under cuts, and can be adjusted to suit various profiles for differing crankshaft designs. Thick inserts achieve reliable performance with high feed rates, and the tool provides excellent chip evacuation and material removal rates. Your benefits include dramatic reductions to cycle time with a highly secure and safe process.

- · Efficiently turning and broaching irregular stock, interrupted cuts and impure surfaces
- Productively machining the pins despite irregular stock and impure surfaces
- Cost effectively drilling numerous holes requiring a chamfer
- Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces



MACHINING ENGINE COMPONENTS: CRANKSHAFT

CUSTOM TURN BROACHING DISC

YOUR CHALLENGE:

Efficiently turning and broaching irregular stock, interrupted cuts and impure surfaces.

OUR SOLUTION:

By incorporating various turning cartridges, the custom turn broaching disc can perform a variety of turning and grooving operations, from roughing with interruptions to finishing. Using standard, thick inserts in cartridges protected by carbide anvils, the tool offers high process stability and exceptional reliability. Your benefits include a cost-effective, flexible solution with limited machine tool investment.

CUSTOM INTERNAL MILLING CUTTER

YOUR CHALLENGE:

Productively machining the pins despite irregular stock and impure surfaces.

OUR SOLUTION:

Offering a safe and reliable process for machining the pin, this cutter provides a long cutting arc that makes contact with the workpiece materials to optimise performance. The custom tool's profile can be suited to various bearing profiles for different crankshaft designs and maintains tight tolerances in hardened steel. Use of thick Duratomic[®] inserts allows high feed rates to be reliably applied. Your benefits include a stable process for a challenging application.

CUSTOM PERFOMAX® CHAMFER DRILL

YOUR CHALLENGE:

Cost effectively drilling numerous holes requiring a chamfer.

OUR SOLUTION:

By offering the ability to chamfer a hole by plunging after drilling, the custom Perfomax Chamfer Drill combines operations to increase productivity. A unique flute design optimises chip removal, and the use of Perfomax drilling inserts allows for a very cost-effective process. Your benefits include reducing costs while maintaining high process stability.

DOUBLE OCTOMILL[™] FACE MILLING CUTTER

YOUR CHALLENGE:

Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

With sixteen cutting edges per indexable insert, Double Octomill significantly reduces the cost of obtaining high quality results. The tool provides superb surface finishes with maximum security, achieves tremendous cutter body life and can be used for both roughing and finishing. Your benefits include cost reduction while maintaining top performance.

- Eliminating vibration while productively milling both thrust faces
- Maintaining productivity and reliability while square shoulder milling irregular stock, cast skin and impure surfaces

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- · Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces
- Achieving a secure and efficient process for roughing the crank bore line

MACHINING ENGINE COMPONENTS: CYLINDER BLOCK

R335.18 DISC MILLING CUTTER ON STEADYLINE[™] ARBOR

YOUR CHALLENGE:

Eliminating vibration while productively milling both thrust faces.

OUR SOLUTION:

Seco's family of R335 disc milling cutters contain robust bodies for high tool life and incorporate a variety of features designed to optimise machining of cast iron. Positive rake angles reduce cutting forces and vibration to optimise accuracy and energy consumption, and the use of a constant rake angle over the radius maximises chip evacuation. Additionally, the use of Steadyline vibration damping shell mill holders increases dynamic rigidity and allows R335 cutters to be applied with long overhangs. Your benefits include highly productive performance with extended tool life.

R220.88 SQUARE SHOULDER MILLING CUTTER

YOUR CHALLENGE:

Maintaining productivity and reliability while square shoulder milling irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

With a robust cutter body and thick, double-sided square insert, the family of R220.88 cutters provides aggressive material removal in cast iron roughing applications. This close pitch option was developed specifically for automotive components requiring productive milling of small surfaces. Your benefits include top performance and high productivity.

DOUBLE OCTOMILL™ FACE MILLING CUTTER

YOUR CHALLENGE:

Maintaining productivity and reliability while face milling irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

With sixteen cutting edges per indexable insert, Double Octomill significantly reduces the cost of obtaining high quality results. The tool provides superb surface finishes with maximum security, achieves tremendous cutter body life and can be used for both roughing and finishing. Your benefits include cost reduction while maintaining top performance.

CUSTOM BALL NOSE CUTTER

YOUR CHALLENGE:

process for roughing the crank bore line.

OUR SOLUTION:

Designed with strong tangential radius inserts, this custom tool offers extremely high rigidity for roughing the crank bore line. The centre-lock insert clamping system ensures process stability while through coolant holes extend tool life and optimise chip evacuation. Your benefits include achieving constant stock removal on the finishing cut and improving tool life.

Achieving a secure and efficient

- Meeting high table feed and low cutting forces when roughing the cylinder bore
- Meeting stringent tolerance and surface finish specifications when reaming
- Establishing a productive process for milling small areas with irregular stock, cast skin and impure surfaces
- Productively finishing main faces with high surface finish, flatness and waviness requirements

MACHINING ENGINE COMPONENTS: CYLINDER BLOCK

CUSTOM BORING BAR WITH CBN INSERT

YOUR CHALLENGE:

Meeting high table feed and low cutting forces when roughing the cylinder bore.

OUR SOLUTION:

This custom boring bar uses insert cartridges designed specifically to protect the tool body and allow fine adjustment to the positioning of CBN inserts, making it ideal for roughing operations. CBN 300 inserts with an E edge preparation should be used to reduce cutting forces. Your benefits include reliable machining when roughing cylinder bores.

NANOFIX® REAMER

YOUR CHALLENGE:

Meeting stringent tolerance and surface finish specifications when reaming.

OUR SOLUTION:

For holes from 2.97 mm to 12 mm in diameter, Nanofix provides an ideal solution for achieving maximum precision. A multi-tooth solid carbide reamer with through coolant holes, Nanofix incorporates Quick-Fit tool changing, which eliminates the need to recheck overall length when replacing a reamer. Your benefits include easily obtaining high levels of precision in hole reaming.

CUSTOM R220.38 SUPER CLOSE PITCH CUTTER

YOUR CHALLENGE:

Establishing a productive process for milling small areas with irregular stock, cast skin and impure surfaces.

OUR SOLUTION:

Specially designed for automotive applications requiring milling of small cast iron surfaces, the R220.38 super close pitch cutter reduces milling shocks. The tool offers a robust body and achieves maximum chip removal rates when used with tangential inserts. Your benefits include the ability to increase productivity by using more aggressive cutting data.

R220.30 FACE MILLING CUTTER

YOUR CHALLENGE:

Productively finishing main faces with high surface finish, flatness and waviness requirements.

OUR SOLUTION:

Available in diameters ranging from 80 mm to 355 mm, the R220.30 offers superb finishing performance. Using a positive insert with four wiper cutting edges, the tool makes it easy to meet flatness and roughness requirements. MH1000 carbide grade inserts optimise performance for finishing operations in cylinder block face milling. Your benefits include an economical and easy-to-use tool for meeting your quality needs.

- Drilling numerous holes with low cycle times, high quality and reliability
- Achieving productivity and reliability when finishing the crank bore line
- Reaming precise locating holes with perfect surface finishes
- Minimising tool cost per piece when productively drilling numerous holes • Minimising cycle times when producing deep, high-quality holes

MACHINING ENGINE COMPONENTS: CYLINDER BLOCK

SECO FEEDMAX[™] CHAMFER DRILL

YOUR CHALLENGE:

Drilling numerous holes with low cycle times, high quality and reliability.

OUR SOLUTION:

Providing high performance when dealing with angled exits or intersecting holes, the Seco Feedmax Chamfer Drill utilises the light-cutting geometry and a special edge preparation to increase process security and tool life. The tool also incorporates a low-friction coating, and uses four land margins to increase stability. Your benefits include maintaining productivity in challenging, high-tolerance holes.

CUSTOM BORING TOOL WITH ROTARY BUSHING

YOUR CHALLENGE:

Achieving productivity and reliability when finishing the crank bore line.

OUR SOLUTION:

After a short fine boring head creates a pilot hole in the first two bearings, this custom boring tool features an antifriction rotary guide bush to achieve vibration free finishing of the crank bore line. The rotary guide bush can handle any radial or axial load that may be generated and provides excellent precision and reliability. Your benefit includes highly effective and efficient finish boring in a challenging application.

SECO REAMING SOLUTIONS

YOUR CHALLENGE:

Reaming precise locating holes with perfect surface finishes.

OUR SOLUTION:

An interchangeable head reamer, Precimaster™ minimises cost per hole while providing excellent results. Additionally, our Nanofix[™], Precifix[™] and Xfix[™] lines fill out our range of reaming products, guaranteeing a productive and high quality solution for holes ranging from 2.97 mm to 155 mm in diameter. Your benefits include reducing costs while maintaining exacting tolerances and surface finish requirements.

PERFOMAX® DRILL

YOUR CHALLENGE:

Minimising tool cost per piece when productively drilling numerous holes.

OUR SOLUTION:

With strong indexable inserts and a highly stable, low-friction coated drill body, Perfomax achieves excellent productivity and economic performance. The drills feature optimised geometries to eliminate deflection and provide high chip evacuation. Your benefits include increasing throughput and minimising tool cost per part.

SECO FEEDMAX[™] SD230A

YOUR CHALLENGE:

Minimising cycle times when producing deep, high-quality holes.

OUR SOLUTION:

Featuring sharp, positive and strong cutting edges that provide excellent hole quality, Seco Feedmax SD230A provides high performance in drilling holes of up to 30x tool diameter. Optimised geometries ensure process security, long tool life and exceptional performance in aluminium, reducing exit burrs and minimising workpiece deformation. Your benefits include reliable, productive and cost-efficient holemaking.

CASE **STUDIES**

The true test of a potential solution is its real world application. The following examples provide a sample of the documented results Seco products and processes have achieved.

TURBOCHARGER - R220.29 **COPY MILLING CUTTER**

Material:	Heat resi	Heat resistant stainless steel (SMG 11)				
Coolant:	Water sol	uble oil				
Operation:	Rough fa	ce milling				
Criterion:	Avoid not	ch wear on c	utting edge			
Fixturing:	Hydraulio	clamping cl	huck			
Tool:	Copy mill	ling cutter R2	219.29-1642.RE-	06.5A		
Insert 1:	RPHT120	4MOT-M15, I	MS2500			
Cutting		Vc	fz	ap	Z	k
data	Metric	210 m/min	0.30 mm/tooth	2.5 mm	5	5
	Inch	690 sf/min	0.012"/tooth	0.098"	5	5
Results Tool life = 40 pcs. Round insert and grade MS2500 has improved tool life by 30%.						

TURBOCHARGER - SECO-CAPTO[™] TURNING TOOL

Material:	Heat resistant stainless steel (SMG 11)				
Coolant:	Water sol	uble oil			
Operation:	OD turnir	ng & facing Ø	077 with interruptions		
Criterion:	Tool life				
Fixturing:	Hydraulic	clamping cl	huck		
Tool:	Custom S	Seco-Capto C	5-PWLNL35060-08		
Insert 1:	WNMG08	0412-M5, TP	1500		
Cutting		Vc	fz	ap	Z
data	Metric	120 m/min	0.25 to 0.40 mm/rev	3 mm	1
	Inch	395 sf/min	0.012 to 0.016"/rev	0.118"	1
Results Tool life = 30 pcs. 30% increase to tool life via Duratomic [®] insert grade TP1500					

TURBOCHARGER - PERFOMAX® DRILL

Results	Tool life : Achieved	= 40 pcs. I better chip fl	low, while reducing	cutting	forces.
	Inch	395 sf/min	0.0024"/rev	1	1
data	Metric	120 m/min	0.06 mm/rev	1	1
Cutting		Vc	fz	z	k
Insert 2:	SPGX050	2-C1, T400D			
Insert 1:	SCGX050	204-P2, T200	0D		
Tool:	Custom P	Perfomax chan	nfer drill Ø 16.8		
Fixturing:	Hydraulic	clamping fixt	ture		
Operation:	Drilling v	alve axis and	chamfering		
Coolant:	Water sol	uble oil			
Material:	Heat resistant stainless steel (SMG 11)				

CYLINDER HEAD – CUSTOM PCD TOOL

	Increas provide	se to tool life t ed by AL inser	hr t g
Results	Tool life	e = 9600 hole	s
	Inch	3280 sf/min	
data	Metric	1000 m/min	0
Cutting		Vc	
Insert 2:	Custom	CW insert	
Insert 1:	CCGT06	0204F-AL, KX	
Tool:	Custom	tool for valve s	sea
Fixturing:	Hydraul	ic clamping fix	tu
Criterion:	Tool life		
Operation:	Valve se	at and whirlin	g (
Coolant:	Water se	oluble oil	
Material:	Alumini	um (SMG 16)	

CYLINDER HEAD – CUSTOM BIFIX® REAMER

	roundne	ess, seat circula	
Results	Tool life Tool life Minimis	= 5000 plungi = 150000 hole ed run out and	
D 11	Inch	330 st/min	
data	Metric	100 m/min	
Cutting		Vc	
Reamer:	PCD rea	mer Ø 5.00	
Insert 1:	SOHW06	60202S, CBN 20]
Tool:	Custom	Quick-Fit ream	1
Fixturing:	Hydrauli	ic clamping fixt	
Criterion:	Straightn	ess, concentricit)
Operation:	Valve se	at and guide fi	
Coolant:	Water so	oluble oil	
Material:	Heat res	istant sintered	

CYLINDER HEAD – CUSTOM PCD REAMER

lesults	Iool life Improve as well	e = 80000 hole ed straightnes as overall cor	es is, np	
	Inch	2295 sf/min	0	
lata	Metric	700 m/min	0.	
Cutting		Vc		
nsert 1:	None			
ool:	Custom	brazed PCD re	an	
ixturing:	Hydrauli	c clamping fix	tu	
Criterion:	H7 toler	ance, roundne	SS,	
)peration:	Hydrauli	Hydraulic pushers reami		
Coolant:	Water soluble oil			
Naterial:	Alumini	um (SMG 16)		

d steel & brass alloy

- nishing
- y, surface finish, roundness and run out ture
- ner with indexable inserts

CASE **STUDIES**

CONNECTING ROD - CUSTOM CHAMFERING & BORING BAR

Results Tool life = 800 pcs. 25% increase to tool life via Duratomic insert grade TP2500.						
Deculte	Tool lif	o _ 200 noc	01007 / 00001	0.000	-	-
	Inch	920 sf/min	0.007"/tooth	0.098"	2	2
data	Metric	280 m/min	0.18 mm/tooth	2.5 mm	2	2
Cutting		Vc	fz	ap	Z	k
Insert 1:	SCMTO	9T309-F2, TP	2500			
Tool:	Custom	ı step boring	bar Ø 49 mm			
Fixturing:	Hydrau	lic clamping	fixture			
Criterion:	Tool life	;				
	chamfe	ering by circu	lar interpolation			
Operation:	Crank t	oore rough bo	oring (before crac	king) and		
Coolant:	Water s	oluble oil				
Material:	Forged steel (SMG 4)					

CONNECTING ROD – SECO FEEDMAX[™] CHAMFER DRILL

Material:	Forged steel (SMG 4)			
Coolant:	Water sol	luble oil		
Operation:	Drilling t	he 2 bearing	cap holes	
Criterion:	No tool d	eviation allow	ved	
Fixturing:	Hydraulio	clamping fi	kture	
Tool:	SD245A-	C45-9.5-40-	14R1	
Cutting		Vc	fz	ap
data	Metric	75 m/min	0.25 mm/rev	50 mm D.O.C.
	Inch	250 sf/min	0.010"/rev	1.97" D.O.C.
Results Tool life = 1350 holes 24% increase to tool life and improved hole centering due to drill geometry				

BEARING CAP – GANG DISC MILLING CUTTER

Results Tool life = 3500 pcs. Elimination of adjusting time through highly accurate fixed nocket cutters						
	Inch	395 sf/min	0.0035"/tooth	0.472"	32	16
data	Metric	120 m/min	0.09 mm/tooth	12 mm	32	16
Cutting		Vc	fz	ap	z	k
Reamer:	Special L	.H. insert, H)	(
Insert 1:	Special R	.H. insert, H	X			
Tool:	Custom g	gang disc mi	lling cutter			
Fixturing:	Hydraulic	clamping fi	xture			
Criterion:	Tool life					
Operation:	Bearing of	ap splitting				
Coolant:	Dry					
Material:	Cast iron	Cast iron (SMG 13)				

BEARING CAP – Quattromill® face milling cutter

	Overall i part qua	improvements Ility.	5
Results	Tool life	= 1200 pcs.	
	Inch	525 sf/min	
data	Metric	160 m/min	
Cutting		Vc	
Insert 2:	SEEX1204	4 ZZTN M14 M	K
Insert 1:	SEEX1204	4 AFTN M14 M	κ.
Tool:	R220.53-	0125-12-8A	
Fixturing:	Hydraulic	clamping fix	tι
Criterion:	Flatness (0.03 mm (0.00)1
Operation:	Finish fac	ce milling	
Coolant:	Dry		
Material:	Cast iron	(SMG 13)	

BEARING CAP – DOUBLE OCTOMILL^m Face MILLING CUTTER

Material:	Cast Iro	Cast Iron (SMG 13)			
Coolant:	Dry				
Operation:	Rough f	ace milling			
Criterion:	Tool life				
Fixturing:	Hydraul	ic clamping f	ixture		
Tool:	R220.4	8-0125-09-08	S		
Insert 1:	ONMFO	90520ANTN-N	114, MK1500		
Cutting		Vc	fz	ap	Z
data	Metric	220 m/min	0.25 mm/tooth	3 mm	8
	Inch	720 sf/min	0.010"/tooth	0.118"	8
Results	Tool li	fe = 45 min.			
Reduced tool cost via 16 cutting edges per double- sided insert.					

PISTON – CUSTOM BORING TOOL

Results Tool life = 60000 pcs. Minimised abrasiveness wear via insert grade PCD20				20		
	Inch	3330 sf/min	0.005"/tooth	0.059"	2	2
data	Metric	1015 m/min	0.12 mm/tooth	1.5 mm	2	2
Cutting		Vc	fz	ap	Z	k
Insert 1:	CPGWO	CPGW060204F-L1, PCD20				
Tool:	Custom boring tool Ø 21.6 + /-0.08					
Fixturing:	Hydrau	lic clamping ch	luck			
Criterion:	Tool life)				
Operation:	Piston a	axis roughing (3	2 holes)			
Coolant:	Water s	oluble oil				
Material:	Aluminium AS15 (SMG 17)					

1	0	le	s)	

CASE **STUDIES**

FISION .	- 3600	-GAPIU IUK			1	
Material:	Aluminiu	ım AS15 (SMG 17)				
Coolant:	Water soluble oil					
Operation:	0.D. turn	ing and facing				
Criterion:	Tool life					
Fixturing:	Hydraulio	c clamping chuck				
Tool:	Seco-Ca	pto C4-SCLCL-2705	0-09		l	
Insert 1:	CCMW09	T308F-L1, PCD20				
Cutting		Vc	fz	ap		-
data	Metric	1200 m/min	0.15 mm/rev	2 mm		-
	Inch	3935 sf/min	0.006"/rev	0.079"		-
Cutting		a _e	Z	k		-
data	Metric	stroke = 65 mm	1	1		
	Inch	stroke = 2.56"	1	1		20
Results	Tool life	= 6500 pcs.				1
	22% inc	rease to tool life a	nd improved o	verall		
	part qua	llity.				
CRANKS	HAFT _		N BRNACHI	NG DISC		
Material.	Forget st	teel (SMG /)	DIGNOIN			
Coolant.	ruiget steel (SWB 4) Water coluble oil					
Oneration.	Turn broaching of journals					
Criterion:	Tool life					
Fixturing:	Hydraulic clamping fixture					
Tool:	Custom turn broaching disc with 48 casettes					
Insert 1/2:	WNMG080412W-M3, TP3000 / CNMU120616-M5, TP3000					
Insert 3/4:	: NI-LN19-11740, TP200 / Z049264, TP200					
Insert 5:	NI-XN33	-12377, CP30				
Cutting		Vc		fz	And a state	
data	Metric	120 to 200 m/min	0.20 to 0.	045 mm/rev		-
	Inch	395 to 655 sf/min	0.008 to	0.0018"/rev		-
Cutting	Z					
data	Number of casettes per type should be determined					
		for each	application			
Results	esults Tool life = 1200 crankshafts 30% increase to tool life.					

CRANKSHAFT – CUSTOM PIN MILLING CUTTER

Material:	Forged steel (SMG 4)				
Coolant:	Water so	oluble oil			
Operation:	Pin mill	ing			
Criterion:	Tool life				
Fixturing:	Hydraul	ic clamping fi	xture		
Tool:	Custom	R335-65-075	0-24.00-Y-027579	15 fitted with	
	segments				
Insert 1:	SE426399, T350M				
Insert 2:	SE429249, T350M				
Cutting		Vc	fz	Z	k
data	Metric	245 m/min	0.23 mm/tooth	240 inserts	60
	Inch	805 sf/min	0.009"/tooth	240 inserts	60
Results	esults Tool life = 5000 crankshafts				
	Increases to insert life and segment life.				

CYLINDER BLOCK – DOUBLE OCTOMILL[™] FACE MILLING CUTTER

	20/01		
Results	Tool life = 45 min.		
	Inch	720 sf/min	0
data	Metric	220 m/min	0.2
Cutting		Vc	
	ONMFO	90520ANTN-N	A14,
Tool:	R220.48-0125-09-08S		
Fixturing:	Hydraulic clamping fixtu		
Criterion:	Tool life	9	
Operation:	Rough	face milling	
Coolant:	Dry		
Material:	Cast iron (SMG 13)		

CYLINDER BLOCK – PERFOMAX® DRILL

Results	Tool lif New Di	e = 600 pcs. uratomic® grad	
	Inch	stroke = 1.18	
data	Metric	stroke = 30 m	
Cutting		ae	
	Inch	785 sf/min	
data	Metric	240 m/min	
Cutting		Vc	
Insert 2:	SPGX05	502-C1, T400D	
Insert 1:	SCGX0	50204-P2, DP20	
Tool:	Custom	n Perfomax char	
Fixturing:	Hydrau	lic clamping fix	
Criterion:	Tool life	9	
Operation:	Drilling	and chamferin	
Coolant:	Water soluble oil		
Material:	Cast in	on (SMG 13)	

CYLINDER BLOCK – CUSTOM BORING BAR WITH

GBN INSERIS					
Material:	Cast iro	on (SMG 13)	Coolant: Water soluble oil		
Operation:	Cylinde	r bore roughing	Criterion: Tool life		
Fixturing:	Hydraul	lic clamping fixt	ure		
Tool:	Custom	ı multitooth bori	ng bar Ø 133 r	nm	
Insert 1:	SNMNO	90312 S, CBN30	0		
		Vc	fz	ap	
Cutting	Metric	660 m/min	0.17 mm/rev	4.6 mm, 3 passe	
data	Inch	2165 sf/min	0.007"/rev	0.181", 3 passes	
		1st pass 2.6 mm, 2nd and 3rd passes 1 mm			
		1st pass 0.102", 2nd and 3rd passes 0.039"			
		ae	Z	k	
Cutting	Metric	225 mm stroke	6	3	
data	Inch	8.86" stroke	6	3	
Results	Tool life = 400 bores Reduction to cycle time via roug				
	hing gr	ade CBN300 co	mbined with st	epped boring bar.	

ng one hole 30mm deep

xture mfer drill Ø 16.8 000

	fz	ap
0.1	2 mm/rev	16.8 mm
0.	005"/rev	0.661"
	Z	k
	3	1
	3	1

has improved tool life by 25%.

SOLUTIONS MADE FOR YOU

SECO'S ENGINEERING **SERVICES**

When striving to perfect a manufacturing process, having the right tooling partner is critical. Seco provides an extensive unique engineering service, providing full applications support and the necessary expertise to understand your productivity requirement and deliver a winning solution.

NETWORK OF APPLICATION EXPERTS

Seco offers through their Strategic Engineering Group a global support network, consisting of international component specialists having an in-depth knowledge and understanding of the relevant industry segment. Together with locally based Seco application experts, this team ensures that you get the very best support to the component you are machining.

INTEGRATED ENGINEERING SUPPORT

Seco's Component Engineered Tooling (CET) offers a comprehensive approach to process design and optimisation that ensures you achieve the highest levels of productivity, efficiency and cost effectiveness. Specialising in project management from conception to completion, the globally networked CET teams work together with our customers, and can integrate relevant representatives from providers of complementary equipment, such as machine tools, workholding and automation systems.

DOCUMENTED PROCESS OPTIMISATION

We can assist you with current process evaluation and optimisation using the Seco Productivity and Cost Analysis software (PCA). This tool allows us to benchmark existing processes, documenting them against our proposal for potential improvements. PCA can be fully scaled to meet your unique needs, from assessing a single machining application to evaluating workflows throughout your facility.

TAILOR-MADE SOLUTIONS

Seco will ensure that you always get the ultimate tooling solution best suited to your individual requirement, whether it is for standard tooling products or tailor-made solutions. Seco Custom Tooling offers complete support to you in these situations, analysing your application and developing a unique solution around it. With 19 stateof-the-art production facilities worldwide, Seco Custom Tooling is always available to make your challenge our priority.

DELIVERING PERSONAL COMMITMENT

SECO'S BUSINESS SERVICES

100% RELIANCE

Seco is fully committed to constantly improving to set new standards in Quality Assurance as is evident in our global ISO 9001 certification. We rigorously evaluate our processes to ensure that every product we produce is capable of meeting and exceeding our customers' expectations.

Our total commitment to quality is evident in the level of documentation we provide which meets the vigorous requirements of traceability set by our customers. When you partner with Seco, quality becomes a constant you can count on.

LONG-TERM SUSTAINABILITY

Seco has established and maintains a used carbide Recycling Programme; with a commitment to minimising our environmental footprint and conserving non-renewable materials. All aspects of this programme operate within the principles of our ISO 14001 certification, and we make it easy for you to participate. When you recycle used carbide, you not only positively impact the environment, you also recoup a portion of your original expense and help us minimise the cost of tools in the future.

KEEPING THE CUTTING EDGE

to maintain the quality standards required on your workpiece but often, when a tool is removed from use as they show signs of wear, this means discarding an entire cutter when only a small portion of it has been worn. Seco's tool reconditioning service eliminates this potential waste by applying advanced regrinding and recoating processes to bring a tool's geometry, edge preparation and coating back to its original specifications.

Tool Reconditioning is critical

INVENTORY MANAGEMENT

Using Seco Point - Inventory Management is made simple and efficient. This can be achieved through our userfriendly, point-of-use tool dispensers, tool consumption and inventory levels are tracked and monitored. Inventory replenishment can be automated and you receive reports that make it easy to identify where consumption can be reduced.

BUILDING EXPERTISE IN OUR

GLOBAL COMPETENCE CENTRES

SECO GLOBAL **TECHNICAL CENTRES**

Seco's Technical Centres are used to engage with our existing and potential customers to facilitate the transfer of expertise and knowledge, for product introduction, industry specific events and engineer customer specific solutions. In addition, Seco representatives from diverse nations gather to share information and discuss winning solutions developed in their home markets, working together to ensure that we understand and are prepared for the trends and challenges you face.

SECO TECHNICAL EDUCATION PROGRAMME (STEP)

Available at our global technical centres or on-site at your own facility, Seco STEP provides training courses on every aspect of metal cutting, at every level of expertise. Whether instructing your apprentices on the basics of cutting processes or helping your experts stay abreast of the latest technological innovations, Seco STEP is an invaluable resource in maximising workforce knowledge.

SECO AUTOMOTIVE WEBSITE

As part of our commitment to automotive manufacturers, Seco developed a comprehensive web resource dedicated to the industry. Featuring a wide variety of video and written content, the website provides informationon current trends, process innovations, tool data and documented application successes. The userfriendly site incorporates an interactive automotive model to easily obtain data relevant to machining specific components. To learn more, visit www. secotools.com/automotive.

Scan this code to see more. www.secotools.com/automotive

SECO CUSTOMER ZONE & ONLINE STORE

To achieve an even greater level of personal interaction with automotive manufacturers, we provide you with access to the Seco Customer Zone - www. secotools.com/customerzone. This unique web tool provides a wealth of content tailored to your specific needs. From technical applications and product information to interactive training and online ordering. At Seco, we believe that you should always be able to place and monitor the status of orders, regardless of your location or the date or time. The Seco Online Store allows you to research technical information, check product availability, purchase tooling and follow the status of your orders.

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