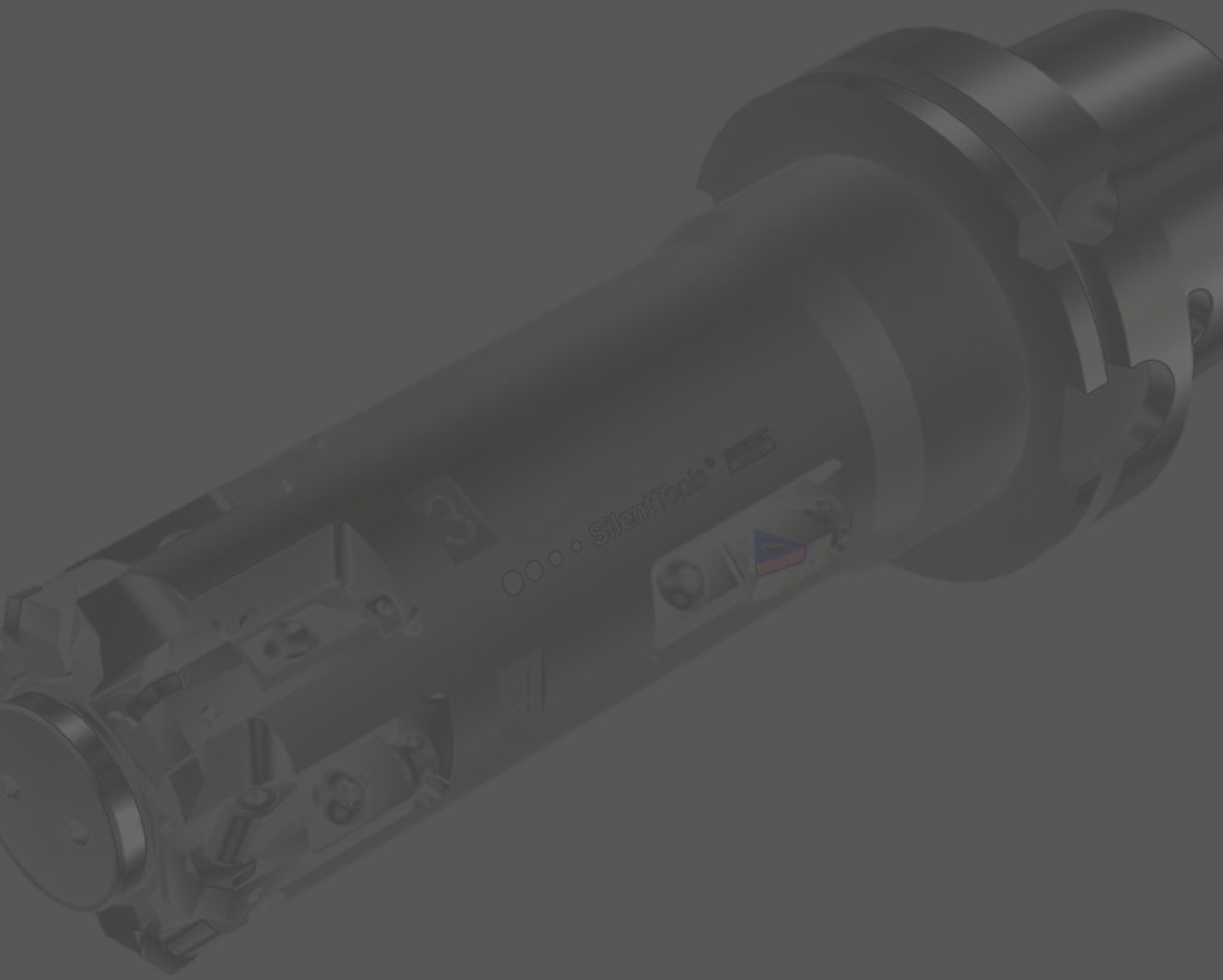
SANDVIK
Coromant

2022

Solutions for automotive aluminium components


SilentTools

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Contents

TREND:
Less weight means less fuel

Since it takes less energy to accelerate a lighter object than a heavier one, lightweight materials offer great potential for increasing vehicle efficiency. A ten percent reduction in vehicle weight can result in a 6-8 percent fuel economy improvement. Replacing cast iron and traditional steel components with lightweight metals such as aluminium alloys or carbon fiber and polymer composites can directly reduce the weight of a vehicle's body and chassis by up to 50 percent and therefore reduce a vehicle's fuel consumption.

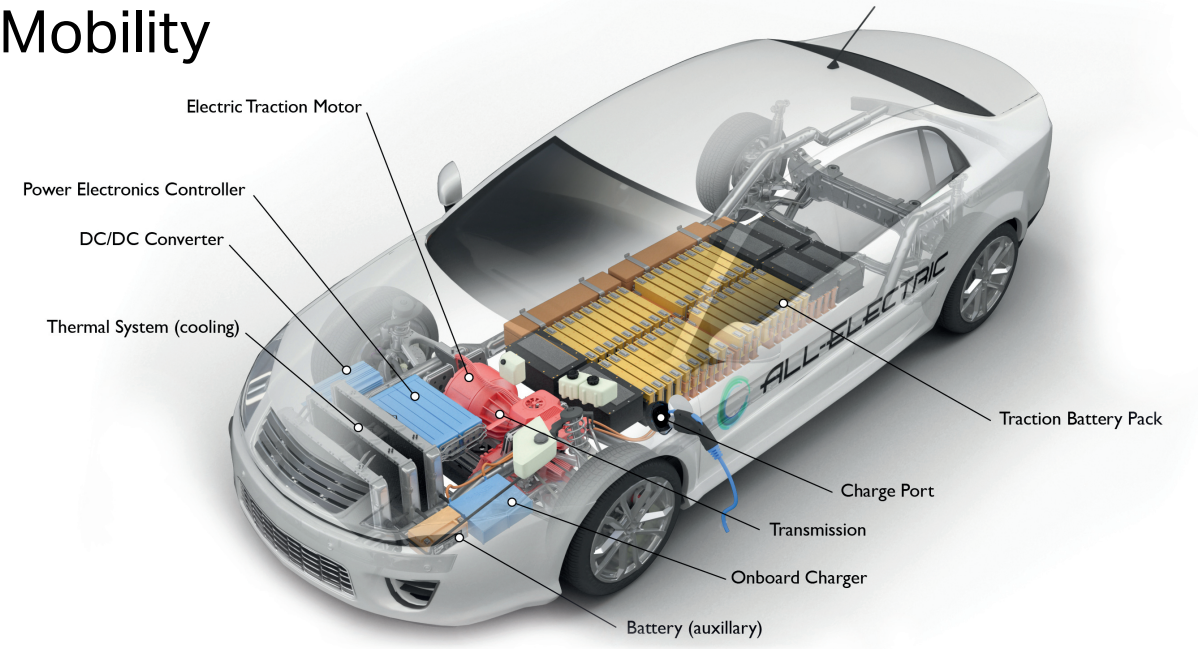
Aluminium

Non-ferrous materials contain soft metals with hardness under 130 HB, except for high strength bronzes (>225HB). Aluminium is one of the metals that belongs to this category. Pure aluminium is soft, ductile, corrosion resistant and has a high electrical conductivity. When applied to an automotive body structure, it provides weight savings of up to 50 percent compared with the traditional mild steel structure. Such weight savings allow other vehicle systems to be downsized, including the engine, transmission, suspension and wheels.

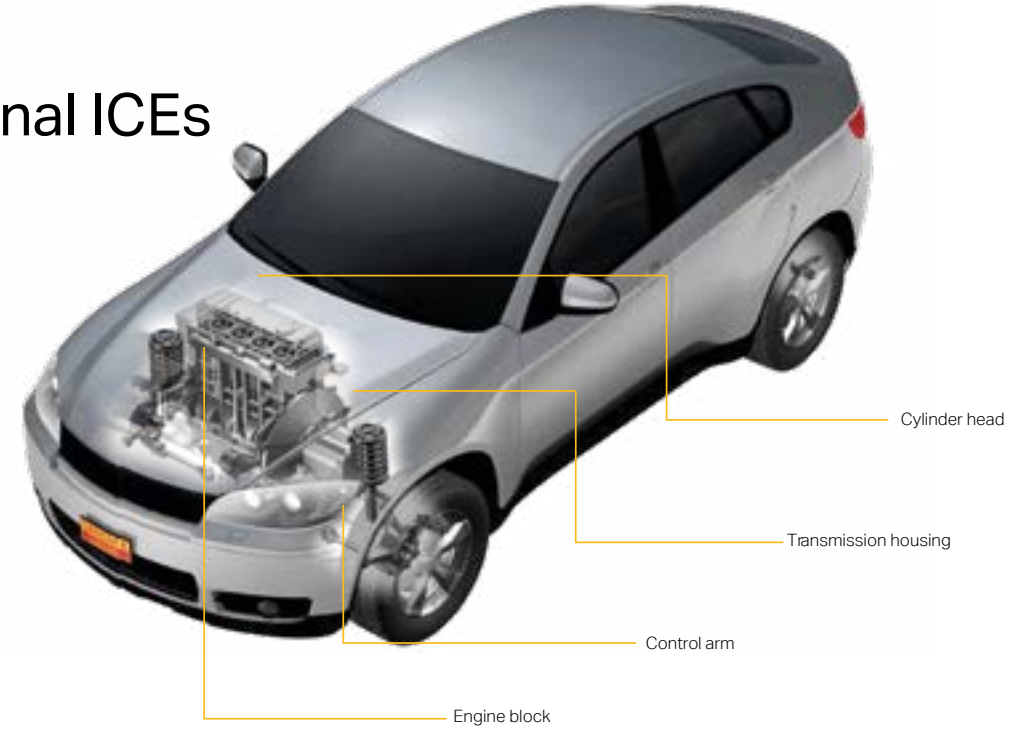
Machinability of aluminium

- When machined, aluminium exhibits a tendency to adhere to the cutting tool, which leads to build-up edge, poor surface finish and cutting tool fracture.
- Relatively easy chip control, if alloyed
- Cutting forces, and thus the power required to machine, are low
- Cast AlSi-alloys are abrasive and over-eutectic AlSi-alloys with Si-content over 12% are very abrasive

e-Mobility



Traditional ICEs



Exchanging traditional steel components with aluminium components provides up to 50% in weight reduction

Did you know?

Aluminium can be recycled continuously with no loss of its qualities. Aluminium recycling benefits present and future generations by conserving energy and other natural resources. It requires up to 95 percent less energy to recycle aluminium than to produce primary metal and thereby avoids corresponding emissions, including greenhouse gases.

CoroDrill® 880

Non-ferrous materials in focus

New CVD diamond coated grades

Benefits

- Low cost per hole thanks to long-lasting insert tool life and/or productivity increase
- Productivity increase thanks to a reduced machine down time with fewer insert changes
- Easier handling in production due to the reliability of the inserts and longer insert tool life
- Good hole surface finish thanks to great resistance to built-up edge

Application area

Automotive industry: Drilling and boring in aluminium components such as cylinder blocks, cylinder heads, knuckles, housings, brake calipers, control arms, transmission cases, steering column covers and yokes.

Niche composite applications such as drilling GFRP rotor/wind mill blades.

Assortment

Insert grade	Insert type	Insert size	Geometry
N124	Peripheral insert	1–9	MS
N134	Central insert	1–9	LM

2. CVD diamond coating is grown directly on the insert substrate and is essentially a pure diamond formed as interconnected diamond microcrystallites with no binder.

3. CVD diamond has all the extreme chemical and physical properties of natural diamond and high-pressure, high-temperature (HPHT) synthetic diamond.

Customer cases

In these customer cases we have compared current uncoated insert grades with the new CVD diamond-coated insert grades.

Case 1: Front control arm

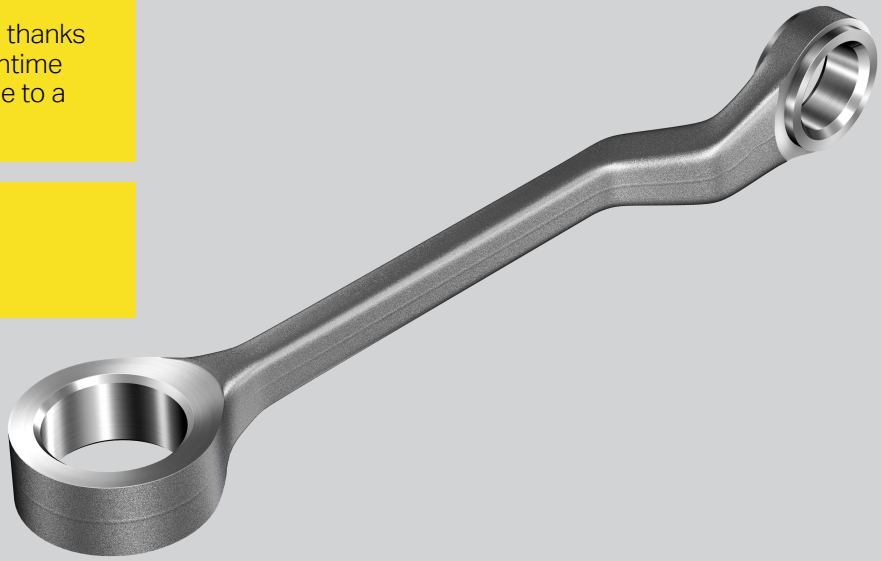
In this particular case, a through hole drilling operation was performed for machining of a front control arm.

Results for the CVD diamond-coated inserts:

17% Lower hole cost per component

10% productivity increase thanks to less machine downtime for insert indexing due to a longer insert tool life.

10 times longer insert tool life



Tips! Increase your cutting data for even better results!

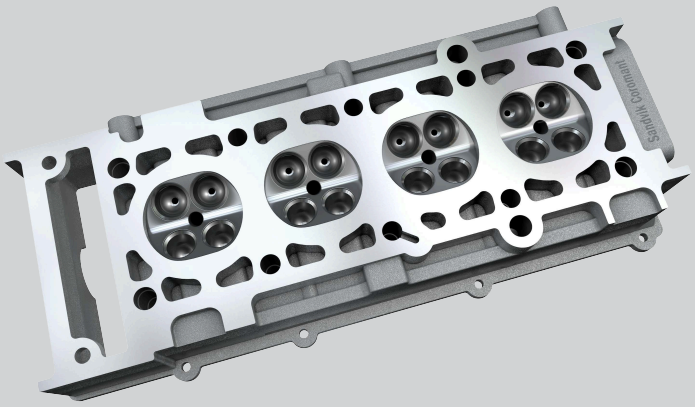
Industry	Automotive
Operation	Through hole drilling
	Hole diameter; depth mm (inch): 22.5; 20 (0.886; 0.787)
Workpiece material	AlSi1Mg-T6 (N.1.3.C.AG), 150 HB

	CVD diamond-coated insert grades	Present insert grades
Central insert	880-04 03 05H-C-LM N134	880-04 03 05H-C-LM H13A
Peripheral insert	880-04 03 W07H-P-MS N124	880-04 03 W07H-P-LM H13A
Cutting data		
v_c m/min	459	459
v_f m/min	1.625	1.625
f_n mm/rev	0.25	0.25
Insert tool life, pcs	30.000	3.000

Case 2: Cylinder head

Blind hole drilling operation was performed during machining of a cylinder head component.

Results for the CVD diamond-coated inserts:



23%	Lower hole cost per component
+332%	insert tool life
+33%	productivity increase
300 h	saved production time per year

Tips! Maximize the output of your machine by combining long tool life and higher cutting data!

Industry	Automotive
Operation	Blind hole drilling
	Hole diameter; depth mm (inch): 22; 84.1 (0.866; 3.31)
Workpiece material	Aluminium 6061-T6 (N.1.3.C.AG), 90-100 HB

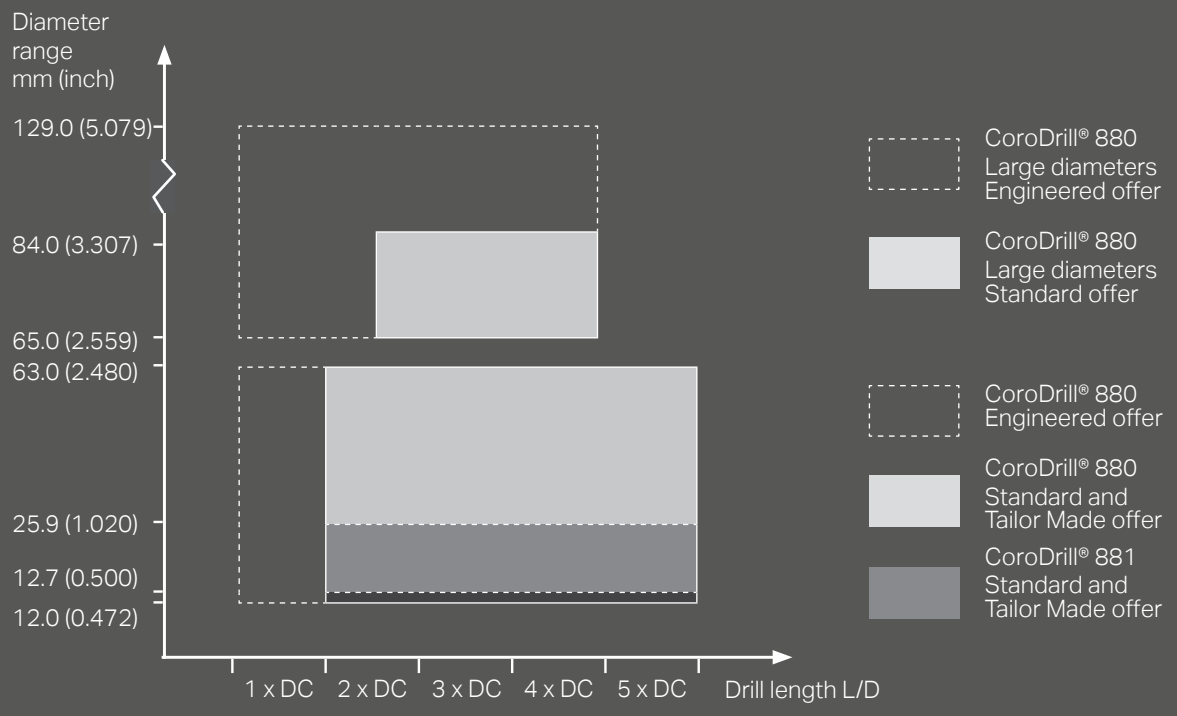
	CVD diamond-coated insert grades	Present insert grades
Central insert	880-04 03 05H-C-LM N134	880-04 03 05H-C-LM H13A
Peripheral insert	880-04 03 W07H-P-MS N124	880-04 03 W07H-P-LM H13A
Cutting data		
v_c m/min	276	207
v_f m/min	0,60	0,46
f_n mm/r	0,15	0,15
Insert tool life, pcs	3.024	700

Features and benefits

- Optimized inserts featuring geometries and coatings for high performance in most materials
- Wiper geometry for great surface finish and high feed machining possibilities
- Optimized chip channels for accelerated chip evacuation
- Excellent chip control and chip evacuation the a result of an optimized flute design

Different drilling concepts

- For hole diameters 12.00–63.50 mm (0.472–2.500 inch), use CoroDrill® 880 indexable insert drill
- For hole diameters 65.00–84.00 mm (2.559–3.307 inch), use CoroDrill® 880 indexable insert drill for large-diameter holes
- Complementary product for unstable conditions and non-rotating applications see CoroDrill® 881



See more about CoroDrill® 880

Cylinder boring solutions

The cylinder block is one of the main structures of an internal combustion engine. It houses the internal components of the engine and the valve heads and oil sump are mounted on it. The cylinder blocks are made of cast iron, or aluminium.

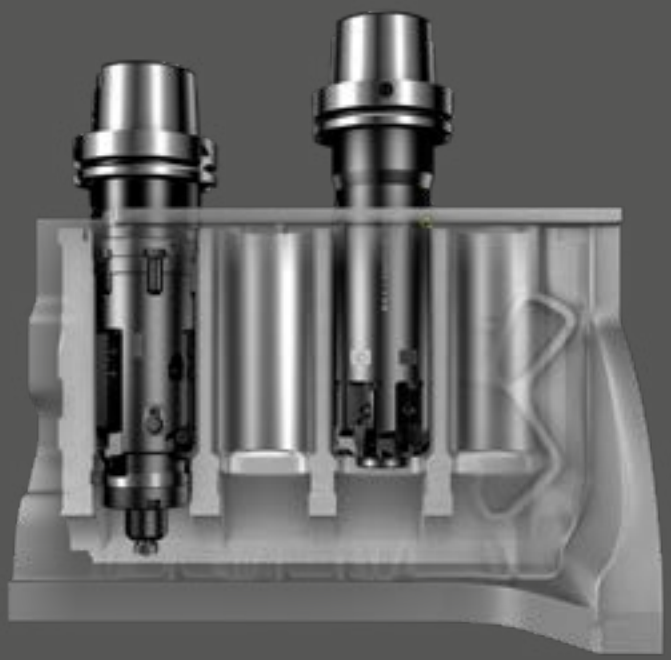
The main feature in the cylinder block is the cylinder bore, in which the pistons work generating the power output.

As the pistons slide into the cylinder bore in a constant friction, the cylinder blocks made of aluminium usually has a bush made of advanced GCI with properties adapted to this condition of friction. These bushes are called as liners and they are mandatory in the cylinder blocks made of aluminium, while they can exist, or not in the cylinder blocks made of cast iron.

In some new aluminium engines, the liners have been replaced by an iron layer created by a cladding process, called as spraying.

Sandvik Coromant offers a complete solution for machining the cylinder bore, in both kind of liners, solid and sprayed.

The program comprises solutions for roughing, semi-finishing and finishing in fixed and moving tools.



B681

Cylinder boring – roughing

B681 is designed and developed for roughing in cylinder boring operations.

The solution produces excellent roundness and cylindricity, allowing for a smooth semi-finishing operation due to the integrated Silent Tools™ damped adaptors.

Silent Tools™ damper

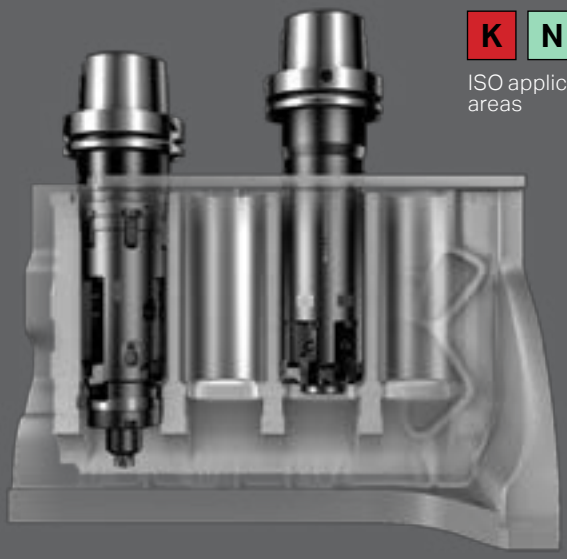
The damper inside the Silent Tools™ adaptor helps provide excellent hole geometry and outstanding surface quality.

Solution for roughing

- Roughing operations while retaining the required high level of quality in roundness and cylindricity
- Provides an excellent foundation for a successful semi-finishing operation
- Machine types: unit centres and transfer lines

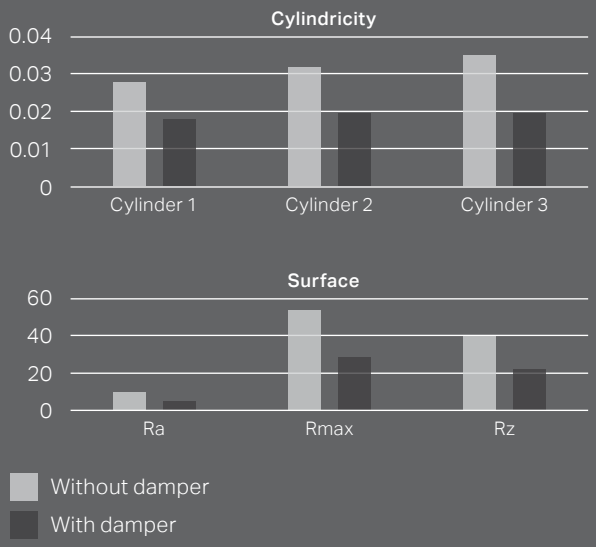
Application

- Cast iron cylinder blocks
- Cast iron cylinder liners and sleeves casted in aluminium blocks
- All cylinder liner operations



K N
ISO application areas

Comparison between conventional tool and Silent Tools™ solution



- Tests have been performed with and without Silent Tools™
- Quality surface, cylindricity and roundness were significantly better with Silent Tools™

  - v_c: 800 m/min (2,625 ft/min)
  - f_z: 0.15 mm/z (0.0059 in/z)
  - v_f: 2,557 mm/min (100.669 in/min)
  - Insert: engineered CBN insert

See more about the boring solution B-681

B683

Cylinder boring – semi finishing

B683 is designed and developed for semi-finishing in cylinder boring operations.

The solution produces excellent roundness and cylindricity, allowing for a smooth finishing operation due to the integrated Silent Tools™ damped adaptor.

Silent Tools™ damper

The damper inside the Silent Tools™ adaptor helps provide excellent hole geometry and outstanding surface quality.

Solution for semi finishing

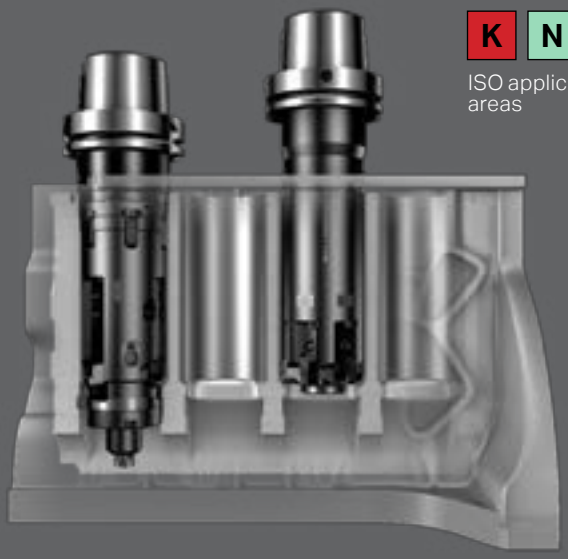
- Semi-finishing operations while retaining the required high level of quality in roundness and cylindricity
- Provides an excellent foundation for a successful finishing operation
- Machine types: unit centres and transfer lines

K N

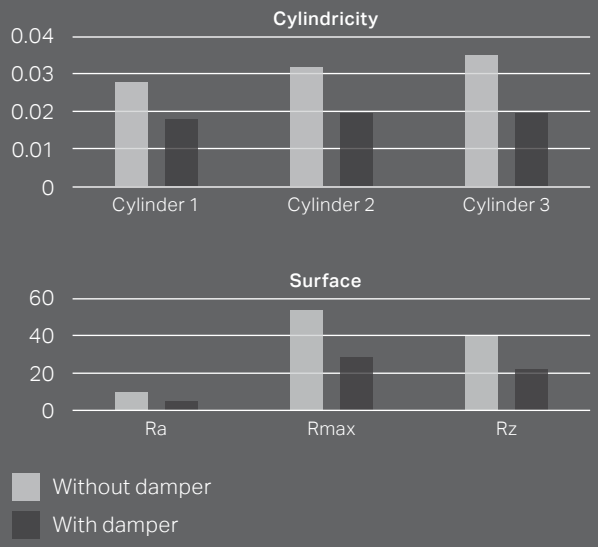
ISO application areas

Application

- Cast iron cylinder blocks
- Cast iron cylinder liners and sleeves casted in aluminium blocks
- All cylinder liner operations



Comparison between conventional tool and Silent Tools™ solution



- Tests have been performed with and without Silent Tools™
- Quality surface, cylindricity and roundness were significantly better with Silent Tools™

  - v_c: 800 m/min (2,625 ft/min)
  - f_z: 0.15 mm/z (0.0059 in/z)
  - v_f: 2,557 mm/min (100.669 in/min)
  - Insert: engineered CBN insert

See more about the boring solution B-683

B685

Stable and productive cylinder boring, from roughing to semi-finishing

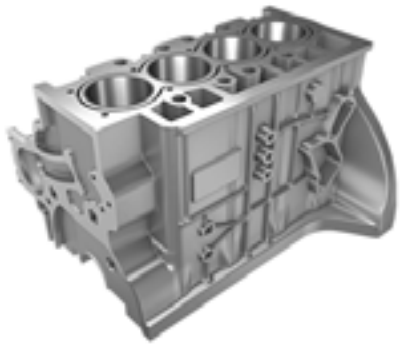
Concept description

Cylinder boring is a key operation in the automotive industry; a high-speed operation with high requirements on tight tolerances. Until now, the operator has adjusted the insert position manually, which is a time-consuming procedure and often requires special devices.

The B685 cylinder boring bar is designed to combine roughing and semi-finishing in one operation. The solution provides excellent roundness and cylindricity and allows for a smooth finishing operation thanks to the integrated Silent Tool dampener.

Features and benefits

- The ability to perform roughing and semi-finishing in one shot saves time and reduces costs
- Provides an excellent foundation for a successful finishing operation
- Silent Tools™ dampening adaptors reduce vibration and result in excellent surface quality, roundness and cylindricity
- Coolant function on the cutting edges
- No need for special devices



Application

- Optimized for the automotive engine industry, mainly engines in passenger cars and light trucks Main components:
  - Engine cylinder blocks in cast iron
  - Engine cylinder blocks in aluminium with integrated cast iron liners or sleeves All cylinder liner operations
- Machine types: unit centers and transfer lines

Technical information

Insert shape: HCGW 100308 (CBN) full face
Edge line preparation: S01320 + 20 µm ER
Grades

- U6F3
- CB20

Cutting data recommendations

v_c m/min (ft/min) 350–600 (1,148–1968)

a_p max mm (inch) 2 (0.0787)

f_z mm/z (inch/z) 0,1–0,15 (0.0039–0,0059)

See more about the boring solution B-685

B687

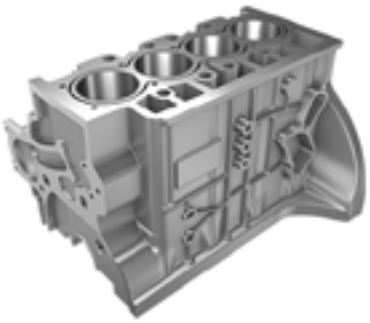
Stable and productive finishing cylinder boring

Concept description

The B687 cylinder boring bar is designed for productive and stable finishing. The cutter is available in different designs depending on operation. Use the three-cartridge design for reliable performance in under-coolant applications.

Benefits and features

- Dimension compensation unit:
  - Possible to set up the tool without any special device
  - Easy to handle compared to other solutions where you need to stop the spindle, remove the tool from the machine, cool it down, adjust it and initiate a new hole
  - Pre-set dimensions
  - Directly set at the final diameter in working position - no actuation needed
- Patented speed control unit
  - No need to stop the spindle during feed-out
  - Reduces cutting time
  - Ensures that no marks are left when the tool leaves the hole
  - No need for special machines
  - No need to switch off the coolant during machining
- Repeatability within 0,002 mm (0,00079 inch) on the diameter
- Integrated coolant



Application

- Optimized for cast iron or aluminium cylinder blocks designed with cast iron liners or
- sleeves Industry segment: Automotive industry
- Machines: Unit centre machines and transfer lines

Cutting data recommendations

v_c m/min (ft/min) 350–800 (1,148–2,624)

a_p mm (inch) 0.1–0.25 (0.0039–0.0098)

f_z mm/z (inch/z) 0.1–0.15 (0.0039–0.0059)

How to use

- Set up in the tool shop
- Use coolant pressure between 10 and 15 bars
- No need to switch off the coolant

Technical information

Insert shape: HCGW 100308 (CBN) full face

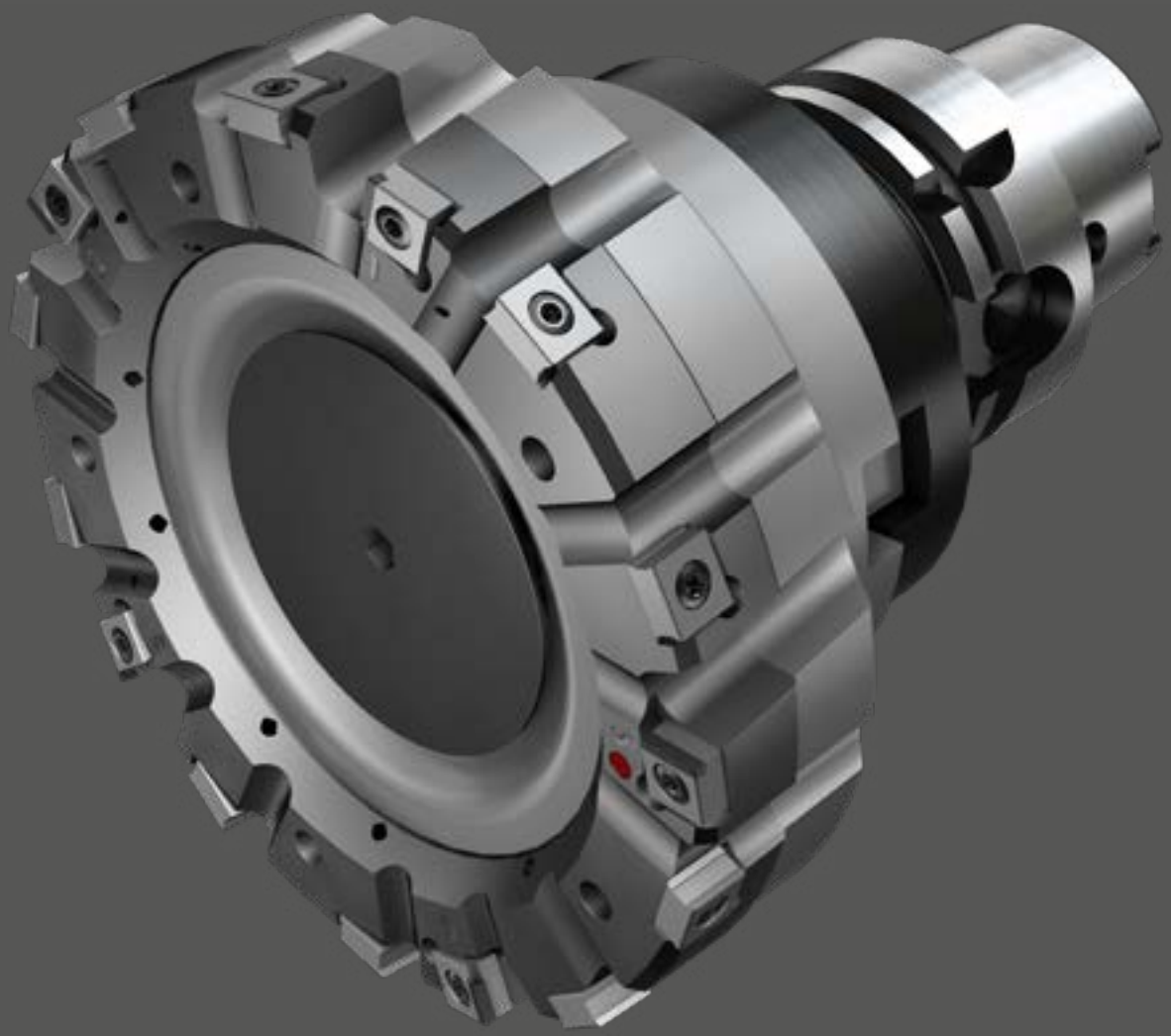
Edge line preparation: S01320 + 20 µm ER

Grades

- U6F3 with high CBN content
- CB20 with lower CBN content than U6F3

See more about the boring solution B-687

Milling solutions



M5Q90

Roughing milling cutter

Developed for first stage roughing operations

M5Q90 is a new concept roughing tangential milling cutter. It is designed to clean surfaces in the first machining stage on newly casted aluminium parts in a single operation without burring.

PCD tangential inserts provide a smooth cutting action, which lowers power consumption and eliminates vibration. This ensures a reliable performance, improved tool life and increased number of components machined per insert.

Features

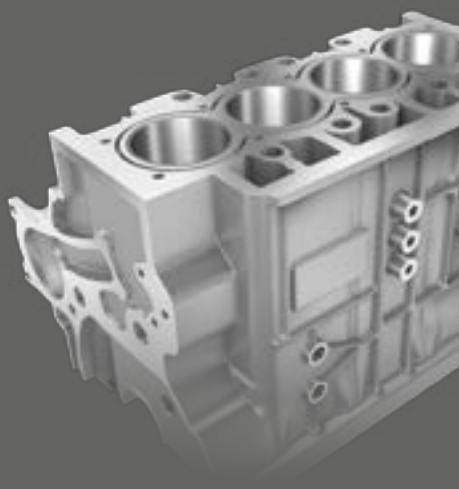
- Tangential insert position for better stability
- Dedicated PCD insert geometries
- Positive cutting angle to reduce cutting efforts
- Rotating prevention system with anti-ejection
- Precision coolant channels designed for emulsion and MQL
- One tip seat design used for all engineered tools
- Inserts and spare parts in stock
- Each tool designed according to requested specifications

Benefits

- Excellent tool life and exceptional surface quality
- Reduced burr formation and high stability
- Easy to set and easy to clamp (screw clamping)
- Reduced load on machined components
- Able to machine in high speed conditions (over 20000 rpm)
- High stability
- Easy adjustment device on the first insert row

Application

- Cubing, first stage, roughing operations
- Aluminium cylinder head, engine block. First machining operation after casting
- Depth of cut with PCD insert in full engagement 2–4 mm (0.079–0.157 inch)
- Greater depth of cut can be obtained by using protective rows containing carbide inserts
- Face milling and shoulder milling



Customer case

Component: Cylinder head

Operation: Cubing

Machine: Makino milling centre A61 12000 RPM max

Country: Italy

Stable process

One tool solution

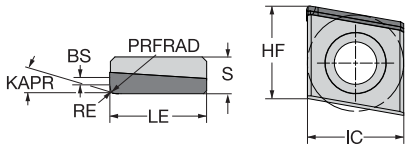
	Competitor	Sandvik Coromant
Tool	Process 2 tools roughing Ø63 mm and finishing Ø80 mm	Process with 1 tool M5Q90 dia.80 mm
Insert	Carbide & PCD	5Q90-120504H-ZR12-NR 009370R9 H13A
Cutting data	Roughing: S.9952 F.7000 Finishing: S.9952 F.8000	Roughing: S.9829 F.4000-7000 Finishing: S.11500 F10000
Outcome	Process control problems (burrs and roughing cutter with limited tool-life). Rough. 80pcs - Finish. 2500pcs	Excellent process control and cycle time. Tool-life: 1050 - 1270 pcs

Sandvik Coromant M5Q90 Square shoulder milling cutter for non-ferrous materials

Cutter bodies

Cutter bodies can be ordered to customer specifications. For more information, and how to order cutter bodies, please contact your local Sandvik Coromant sales representative.

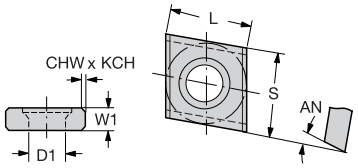
Inserts



			N	Dimensions, mm						
	RE	Ordering code	CD10	KAPR	PRFRAD	LE	S	BS	HF	IC
12		5Q90-1205H-ZR12-NR	★	108.5°	0.4	12	4.86	1.2	12	12.7
	0.8	5Q90-1205H-PR12-NR	★			12	4.86	1.2	12	12.7

Tightening torque: 5.0 Nm (3.69 ft.lb)

Protective row inserts



				N	Dimensions, mm				
	CHW	KCH	Ordering code	H13A	D1	L	S	W1	AN
09	0.7	45°	009370R8	☆	4.1	9.67	9.52	3.97	15°
12	0.7	45°	009370R9	☆	5.6	12.9	12.7	4.76	15°

Tightening torque:
009370R8: 2.5 Nm (1.84 ft.lb)
009370R9: 5.0 Nm (3.69 ft.lb)

Spare parts

Spare parts									
Screw PCD /CW09	Screw CW08	Screw adjust device	Adjust device	Screw cover	Bit PCD / CW09 IP20	Bit CW08 IP10	Torque Key (IP20)	Torque Key (IP20)	Key Adjust Device
5513 016-01	416.1-833	5513 014-02	5513014-021	3213 010-256	5680 084-07	5680 084-06	5680 105-06	5680 100-02	5680 043-13

See more about M5Q90 cutters

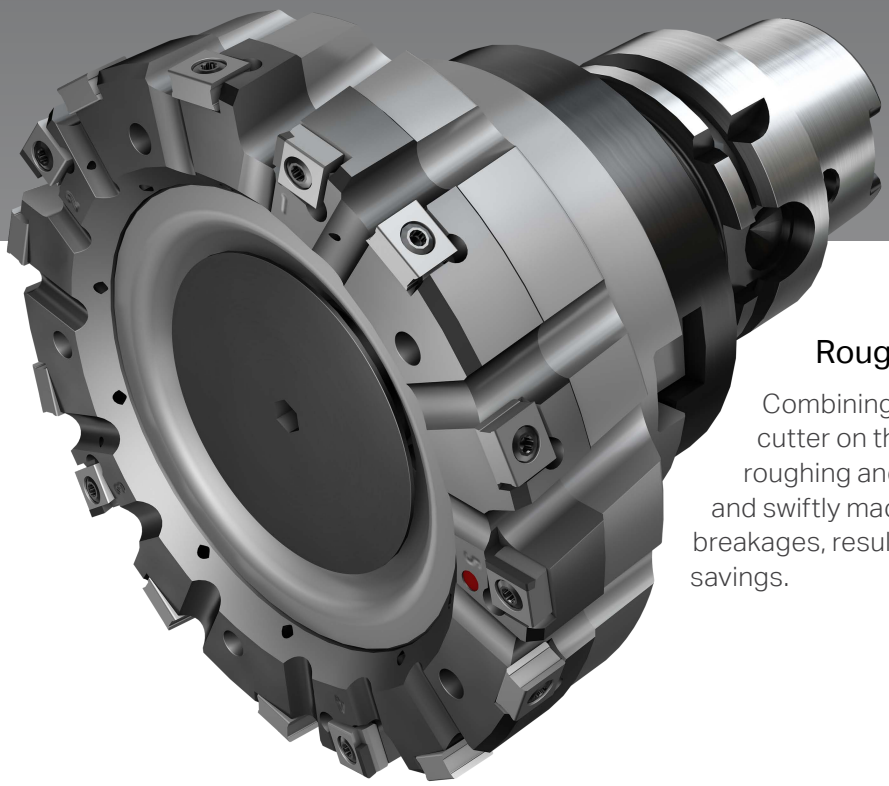
M5C90 aluminium cutter

One shot face milling

The challenge

Roughing and finishing of aluminium parts is an expensive and time-consuming process. It requires two different set-up processes, lots of coolant and enough cutting inserts in stock for each tool. In addition, bad quality finishes, burring and irregular tool wear leading to shortened tool life are a common occurrence during the process. How can you shorten your cycle times, improve surface finish and increase savings?

The solution:
M5C90 – a new concept combination milling cutter

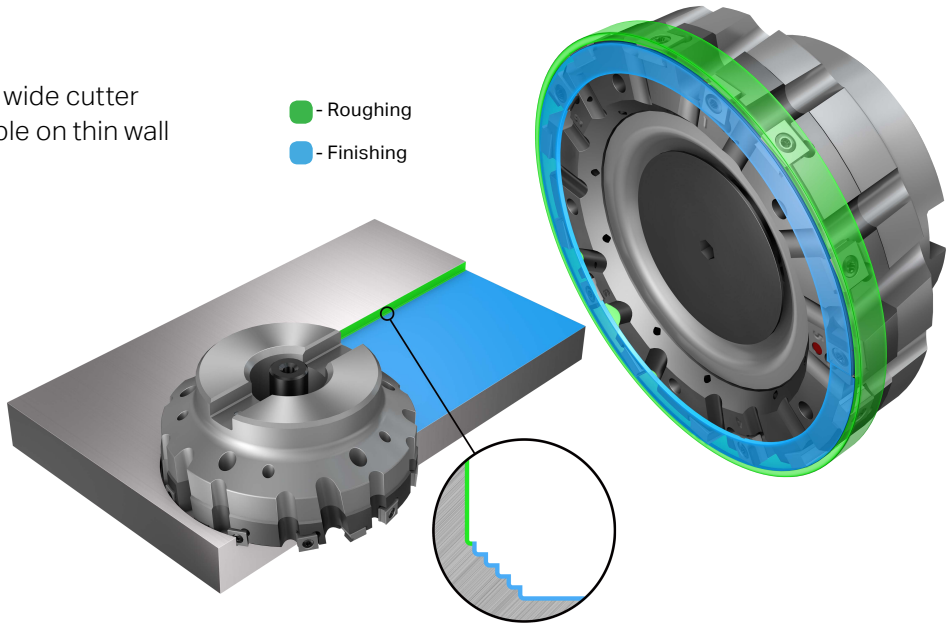


Roughing and finishing in one tool

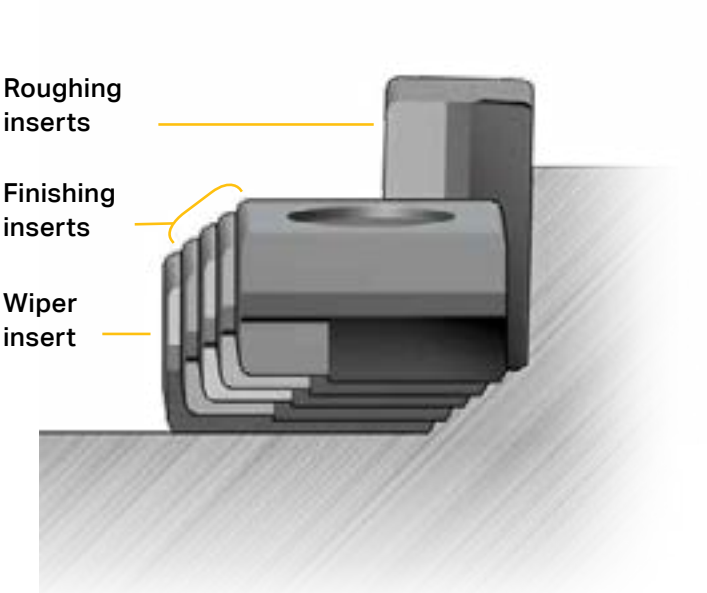
Combining M5B90 with a tangential roughing cutter on the outer diameter, M5C90 provides both roughing and finishing in the same tool. It smoothly and swiftly machines parts without burrs, scratches or breakages, resulting in high feed rates and time and cost savings.

Suitable for use on:

- Cylinder heads
- Cylinder blocks
- All aluminium parts within wide cutter engagement (not applicable on thin wall part)



Advantages of M5C90



The unique radial and axial positioning of the roughing and finishing inserts provides outstanding surface quality in only one operation. Shown is a custom design with 10 roughing inserts, four finishing inserts and one wiper.

Outstanding surface finish

M5C90 provides the same outstanding finishing quality as M5B90. It contains roughing and finishing inserts, one of which is a wiper. This wiper works differently to the cutting inserts and ensures excellent surface quality on every cut, even at high feed rates.

Greatly extended tool life

The unique positioning of the M5C90 inserts into the chip seat delivers a broaching-like effect during operations, resulting in burr-free milling. This prevents uneven tool wear and leads to a much superior tool life, even at high feed rates.

No set-up time

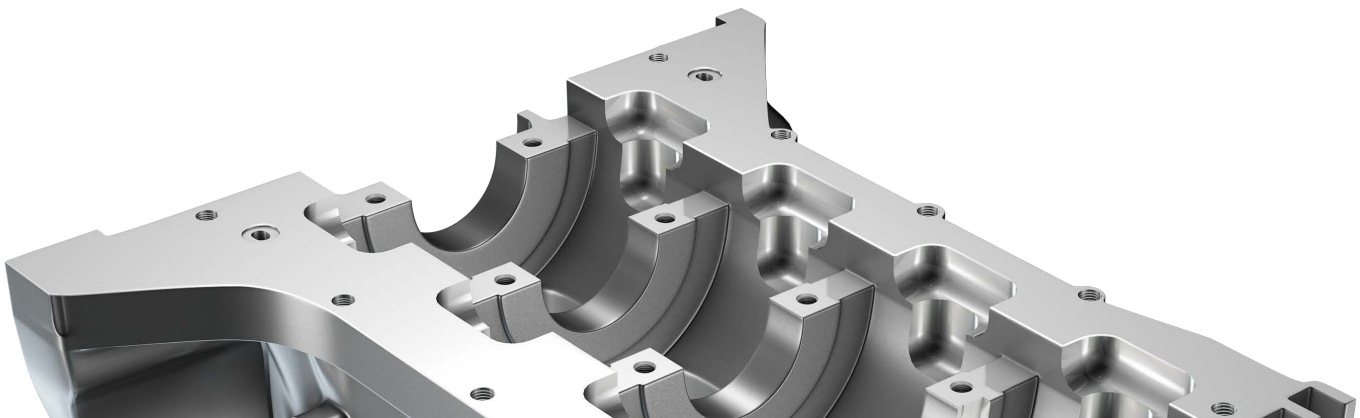
As the M5C90 cutter body is custom-made to your specifications and the standard inserts are fixed, no adjustment or indexing is needed. M5C90 arrives ready to use without requiring any set-up or additional roughing cutter. This means higher feed rate, shorter cycle times and greater productivity.

MQL coolant

M5C90 is suitable for both minimum quantity lubrication and flood applications. Replacing the need for two different tools, and using less coolant per tool, make M5C90 both an environmental and cost-efficient choice

Low weight cutter body

M5C90 is constructed with either a steel body or an aluminium and steel body to meet hard-wearing, yet low weight requirements.



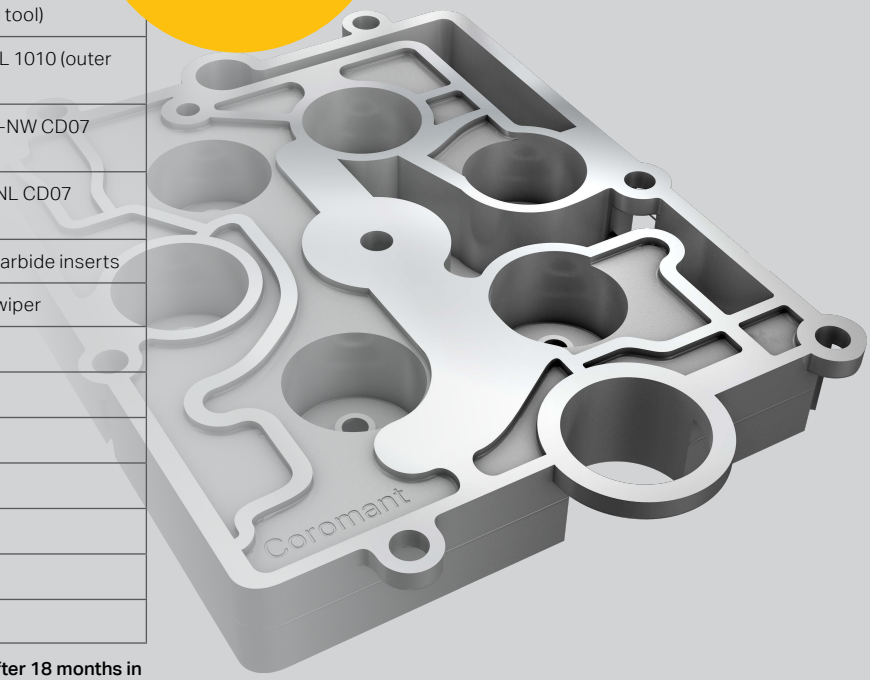
Customer case

Component: Brake system body valve

Material: AlSi12Cu1

Operation: Direct finishing

+18 months
in the machine
and still
counting...



	Sandvik Coromant
Tool	M5C90 (Engineered tool)
Insert	5B90N-090504E-NL 1010 (outer diameter)
	5B90N-0905H-ZS2-NW CD07 (wiper)
	5B90-0905H-PS2-NL CD07 (peripherical)
z_n	Outer diameter 10 carbide inserts
	Inner diameter 4+1 wiper
n, rpm	8000
v_c, m/min (ft/min)	4021 (13192)
v_f, mm/min (in/min)	20000 (787)
f_z mm/z (in/z)	0.25 (0.009)
a_p mm (inch)	2 (0.078)
a_e mm (inch)	140 (5.51)
MRR cm3/min (in3/min)	5600 (342)

! **Tool life not yet determined. The tool is still going strong after 18 months in the machine.**

See more about M5C90 cutters

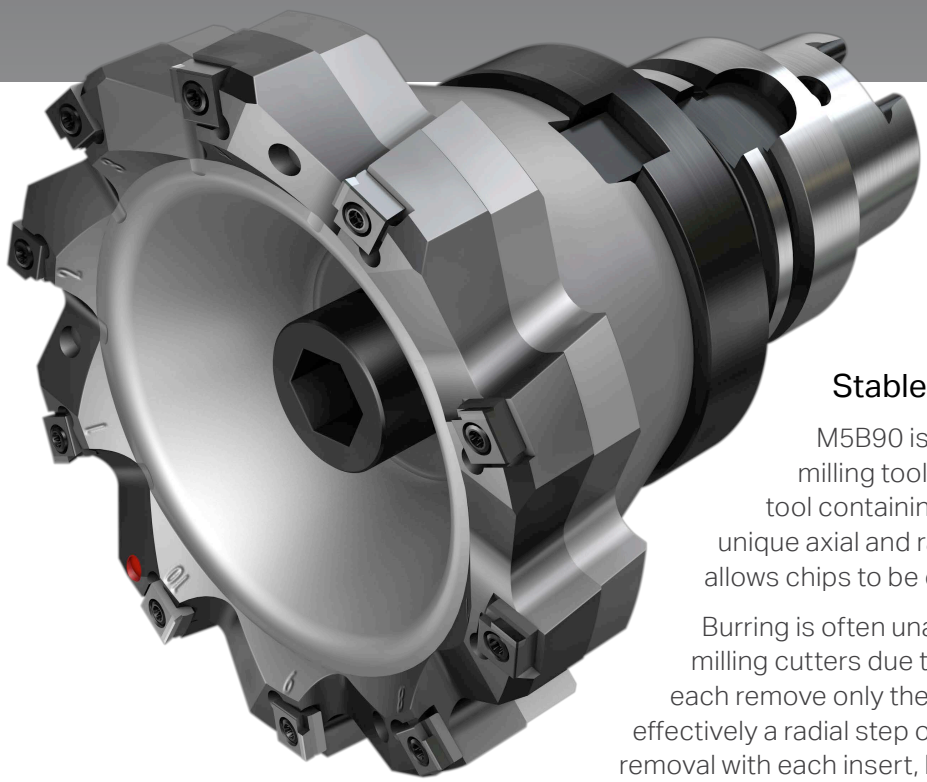
M5B90 aluminium cutter

Face milling

The challenge

Aluminium is a notoriously difficult material to cut, and using conventional milling cutters often results in poor quality finish and burring. These cutters also require lengthy set-up processes and are limited by irregular tool wear, shortened tool life and long cycle times.

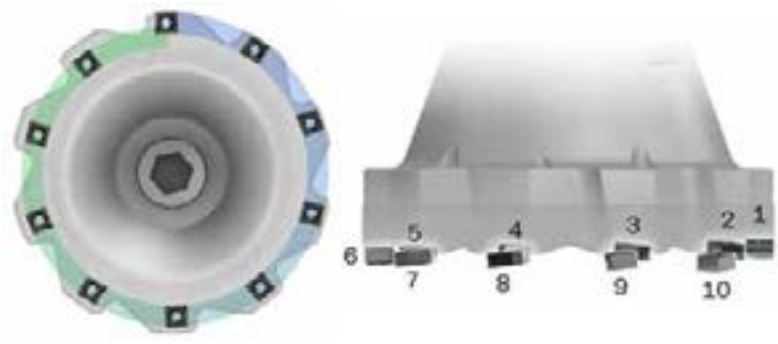
The solution:
M5B90 – a new type of face milling cutter



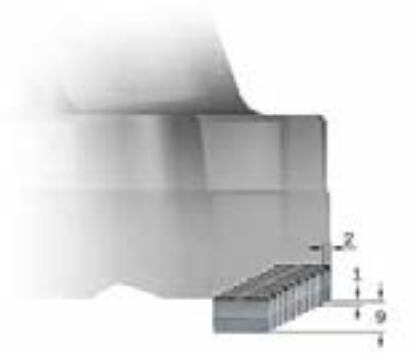
Stable and burr-free face milling

M5B90 is more like a rotary broach than a milling tool. It comprises a single custom-made tool containing several standard inserts. It is this unique axial and radial positioning of the inserts which allows chips to be cut efficiently without any burring.

Burring is often unavoidable with conventional milling cutters due to the depth of cut. M5B90 inserts each remove only the depth of cut per insert, which is effectively a radial step of 1/100 mm. Due to this minute stock removal with each insert, M5B90 results in burr-free milling.



The unique radial and axial positioning of M5B90 inserts. Shown is a custom-made design with nine inserts and one wiper.



Each radial step is minute resulting in no chips forming and consequently no burring.

Advantages of M5B90

Outstanding surface finish

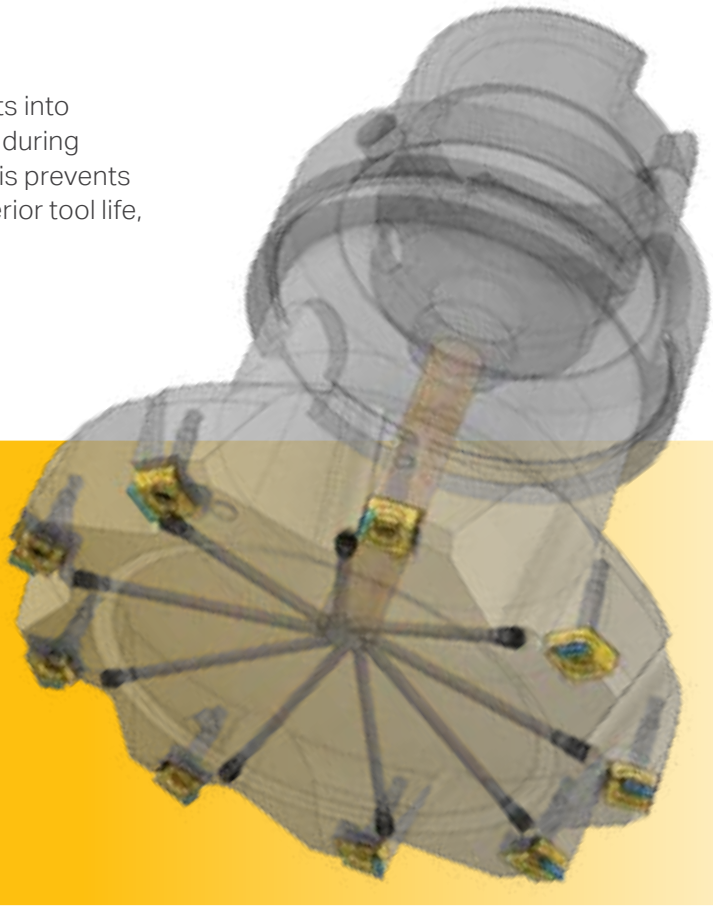
M5B90 includes only a small number of inserts, one of which is a wiper. This wiper works differently to the cutting inserts and ensures excellent surface quality on every cut, even at high feed rates.

High feed

As the M5B90 cutter body is custom-made to your specifications and the standard inserts are fixed, no adjustment or indexing is needed. M5B90 arrives ready to use without requiring any set-up. This means higher feed rate, shorter cycle times and greater productivity.

Greatly extended tool life

The unique positioning of the M5B90 inserts into the tip seat delivers a broaching-like effect during operations, resulting in burr-free milling. This prevents uneven tool wear and leads to a much superior tool life, even at high feed rates.



MQL coolant

M5B90 is suitable for both minimum quantity lubrication and flood applications, making it both an environmental and cost-efficient choice.

Low weight cutter body

M5B90 is constructed with either a steel body or an aluminium and steel body to meet hard-wearing, yet low weight requirements.

Customer case

A Spanish manufacturer of cylinder heads for passenger car engines asked Sandvik Coromant for help. The machining process was unstable and the manufacturer had problems with burr. Another problem was the unpredictable insert tool life, which depended on the cartridge adjustments that differed slightly from set-up to set-up.

Challenge

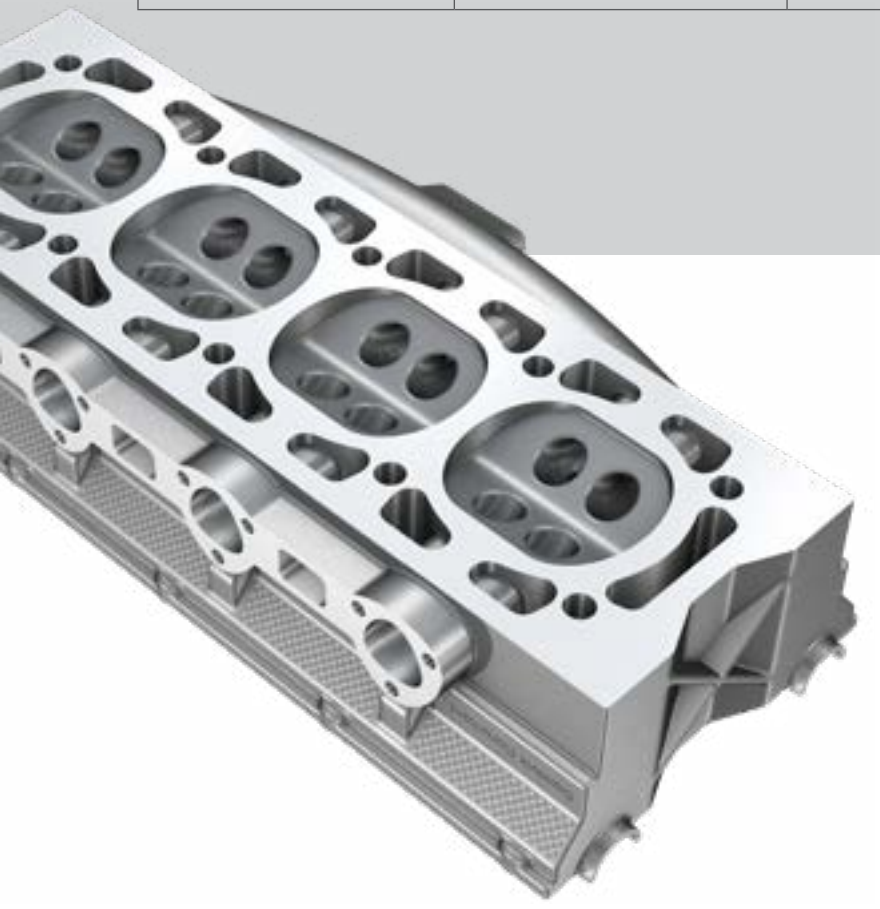
Provide a stable and burr-free machining process with predictable insert tool life.

Solution

M5B90 offered a smooth finishing operation with predictable wear and no burr.
Only very thin chips are produced by the cutter, which are easily removed during the cutting process. This avoids damage to the component face.

	Existing cutter	**M5B90**
Number of teeth, z_n	16	9
Cutting speed, v_c m/min (ft/min)	3140 (10.302)	3800 (12.467)
Spindle speed, n r/min	5000	6000
Feed rate, v_f mm/min (in/min)	8280 (326)	9000 (354)
Depth of cut, a_p mm (inch)	0.5 (0.02)	0.5 (0.02)
Tool life	30000 components on average	45000 components on average

+15 000
Components!



Sandvik Coromant M5B90/M5C90

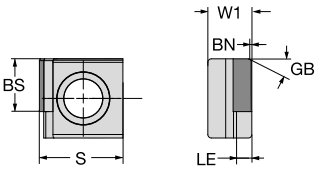
M5B90

M5C90

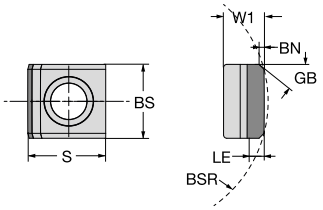
Both cutter bodies above use the same inserts. For more information, and how to order cutter bodies, please contact your local Sandvik Coromant sales representative.

Inserts

Right/Left



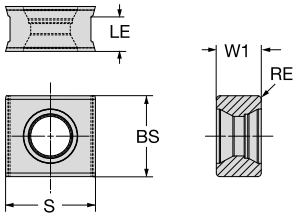
Wiper



Hand	Ordering code	N CD07	Dimensions, mm W1	LE	S	GB	BN	BS	BSR
Right	**5B90-0905H-PS2-NL**	☆	5.00	1.65	9.5	30	0.4	6	
Left	**5B90L-0905H-PS2-NL**	☆	5.00	1.65	9.5	30	0.4	6	
Wiper	**5B90N-0905H-ZS2-NW***	☆	4.96	1.65	9.5	45	0.6	9	200
Wiper	**5B90N-0905H-PS2-NW**	☆	4.96	1.65	9.5	30	0.4	9	500

*Dedicated geometry to tool up the finishing row on the M5C90 concept

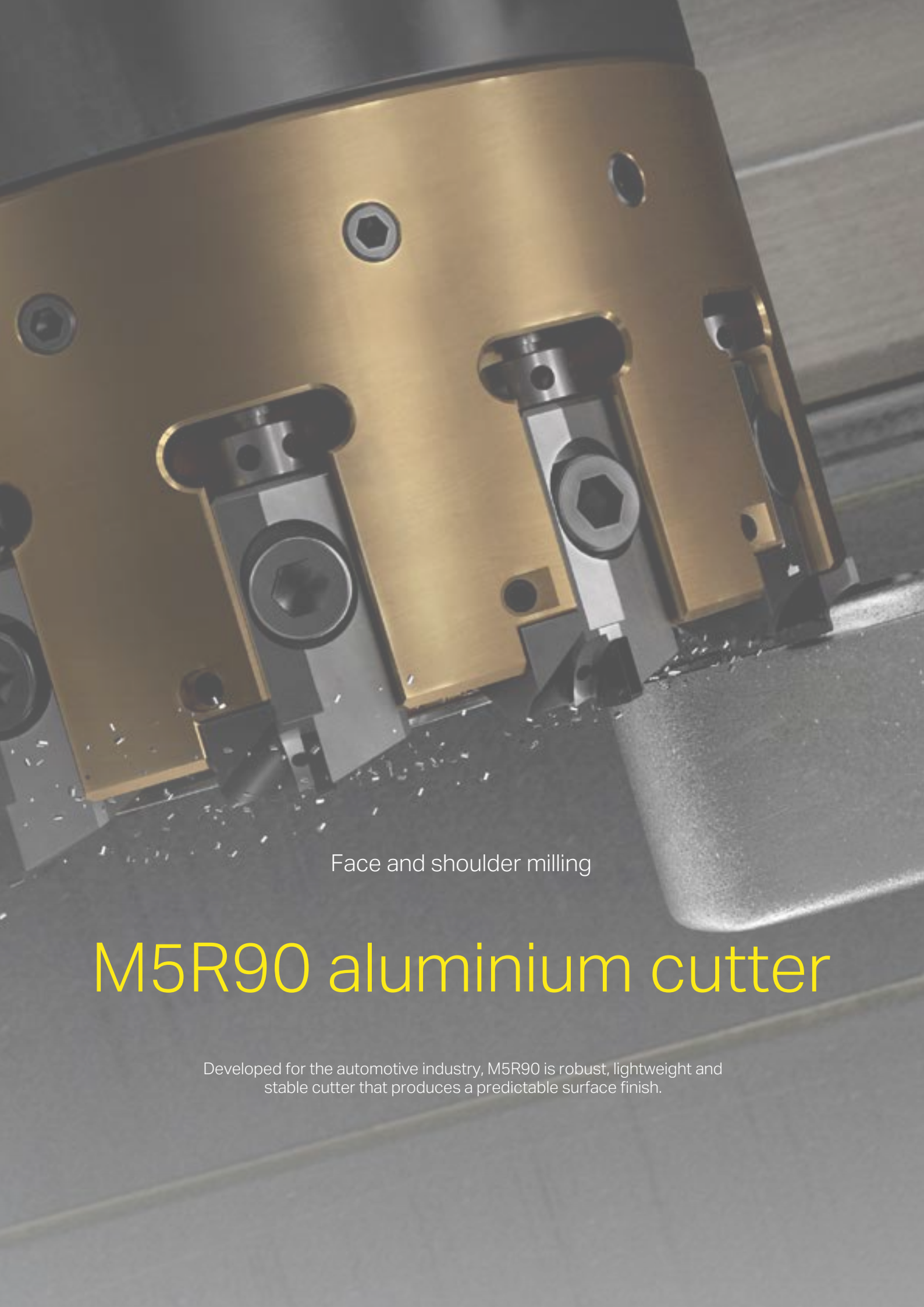
Neutral



Hand	RE	Ordering code	N 1010	Dimensions, mm W1	LE	S	BS
Neutral	0.4	**5B90N-090504E-NL**	☆	5.00	4.50	9.5	9

Insert screw: 5513 020-81
Tightening torque: 3.6 Nm

See more about M5B90 cutters



Face and shoulder milling

M5R90 aluminium cutter

Developed for the automotive industry, M5R90 is robust, lightweight and stable cutter that produces a predictable surface finish.

M5R90 – a new concept for face and shoulder milling

M5R90 is the first choice for roughing to semi-finishing in shoulder milling operations of automotive aluminium components such as cylinder blocks, cylinder heads and transmission housing.

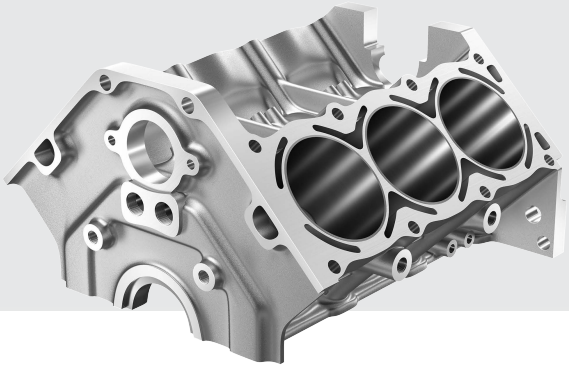
The cutter

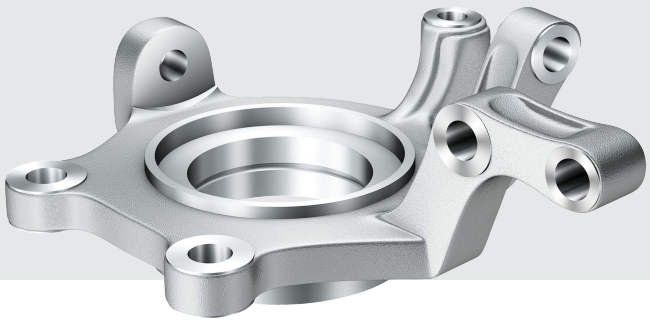
The cutter works with adjustable PCD cartridges and supports a depth of cut of up to 8 mm (0.315 inch) with a 0.4 or 0.8 mm (0.016 or 0.031 inch) radius depending on the cartridge used.

An internal system directs coolant from the spindle to the cutting edge, ensuring an effective cooling effect and cleaning action.

Features and benefits

- The cutter body is produced in a special aluminium alloy combining low weight with high toughness
- High density cutter is balanced with 10 000 rpm in a G2.5 class. This allows it to run at high speed without compromising the machine spindles
- The PCD tips are brazed in a steel cartridge which allows axial adjustments
- The PCD tips can be reground up to three times, ensuring prolonged tool life
- Several cutting edge geometries are available

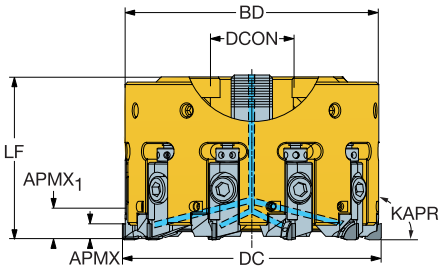




M5R90 Square shoulder milling cutter for non-ferrous material

Arbor - Internal coolant supply

KAPR 90°



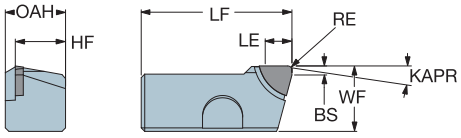
Metric version

	DC	SSC	CZC$_{MS}$	APMX	APMX$_1$	RMPX	CNSC		Ordering code	Dimensions, mm DCON	ISO	BD	LF	NM	KG	CICT
Stocked	63.0	10	22	5.0	8.0	17.000	1	6	**5R90-063Q22-10HX**	22.0	A	61.0	50	14.0	0.4	6
	80.0	10	27	5.0	8.0	14.000	1	8	**5R90-080Q27-10HX**	27.0	A	78.0	50	14.0	0.6	8
	100.0	10	32	5.0	8.0	12.000	1	10	**5R90-100Q32-10HX**	32.0	A	98.0	63	14.0	1.2	10
	125.0	10	40	5.0	8.0	9.000	1	12	**5R90-125Q40-10HX**	40.0	B	123.0	63	14.0	1.8	12
	160.0	10	40	5.0	8.0	7.000	1	16	**5R90-160Q40-10HX**	40.0	C	158.0	63	14.0	2.7	16
	200.0	10	60	5.0	8.0	5.500	1	18	**5R90-200Q60-10HX**	60.0	C	198.0	63	14.0	4.3	18
	250.0	10	60	5.0	8.0	4.400	1	22	**5R90-250Q60-10HX**	60.0	C	248	63	14.0	6.5	22

Inch version

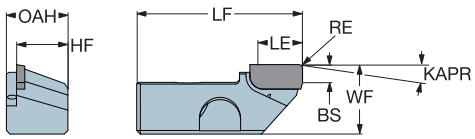
	DC	SSC	CZC$_{MS}$	APMX	APMX$_1$	RMPX	CNSC		Ordering code	Dimensions, mm DCON	ISO	BD	LF	FT/LBS	LBS	CICT
Made to order	2.500	10	3/4	.197	.315	17.000	1	6	**5R90-063R19-10HX**	.750	A	2.421	1.968	10.326	.882	6
	3.000	10	1	.197	.315	14.000	1	8	**5R90-076R25-10HX**	1.000	A	2.921	1.968	10.326	1.323	8
	4.000	10	1 1/2	.197	.315	12.000	1	10	**5R90-102R38-10HX**	1.500	A	3.921	2.480	10.326	2.646	10
	5.000	10	1 1/2	.197	.315	9.000	1	12	**5R90-127R38-10HX**	1.500	B	4.921	2.480	10.326	3.968	12
	6.000	10	1 1/2	.197	.315	7.000	1	16	**5R90-152R38-10HX**	1.500	C	5.921	2.480	10.326	5.952	16
	8.000	10	2 1/2	.197	.315	5.500	1	18	**5R90-203R63-10HX**	2.500	C	7.921	2.480	10.326	9.480	18
	10.000	10	2 1/2	.197	.315	4.400	1	22	**5R90-254R63-10HX**	2.500	C	9.921	2.480	10.326	14.330	22

Cartridge with APMX



		SSC	RE	Ordering code	N CD10	Dimensions, mm, inch LF	HF	WF	LE	BS	OAH	KAPR
Medium	NM	10	0.8	**5R90-10CA08-PR5-NM**	★	30.0	10.0	13.5	5.0	4.6	11.98	90°
						1.181	*.394*	*.531*	*.197*	*.181*	*.472*	
Roughing	NR	10	0.4	**5R90-10CA04-ZR5-NR**	★	30.0	10.0	13.5	5.0	2.3	11.98	15°
						1.181	*.394*	*.531*	*.197*	*.091*	*.472*	

Cartridge with APMX$_1$



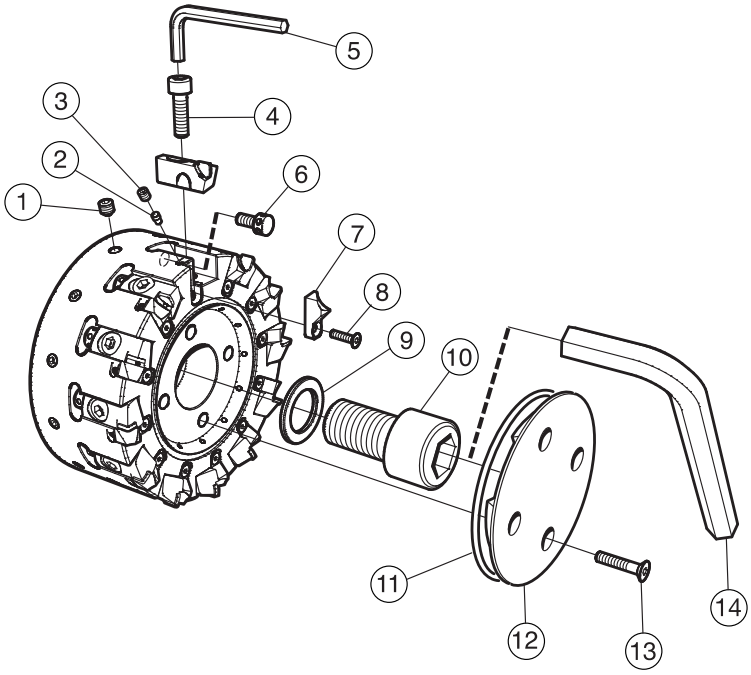
		SSC	RE	Ordering code	N CD10	Dimensions, mm, inch LF	HF	WF	LE	BS	OAH	KAPR
Medium	NM	10	0.8	**5R90-10CA08-PR10-NM**	★	32.3	10.0	13.5	8.0	3.5	11.98	90°
			.031			*1.272*	*.394*	*.531*	*.315*	*.138*	*.472*	

Cartridges to be ordered seperately. Special engineered solutions are available for cutters and cartridges.

R = Right hand

M5R90 Square shoulder milling cutter for non-ferrous material

Spare parts



	Spare parts							
	1	2	3	4	5	6	7	8
D_c mm (inch)	Balancing screw	Wedge	Wedge screw	Cartridge screw	Cartridge screw key	Axial adjusting screw	Chip deflector	Chip deflector screw
63 (2.500)	3214 010 355	5552 008-01	3214 010-253	3212 010-359	3021 010-050	5516 060-01	5691 055-02	3213 010-248
80 (3.000)								
100 (4.000)								
125 (5.000)				3212 010-410			5691 055-01	
160 (6.000)								
200 (8.000)								
250 (10.000)								

	Spare parts					
	9	10	11	12	13	14
D_c mm (inch)	Support washer	Central screw	O'ring	Cover	Cover screw	Central screw key
63 (2.500)	5549 203-02	5512 075-04	3671 020-298	5623 010-09	3213 010-207	3021 012-020
80 (3.000)	5549 203-03	5512 075-05	3671 020-329	5623 010-10	3213 010-208	
100 (4.000)	5549 203-04	5512 075-06	3671 020-520	5623 010-11		
125 (5.000)	5549 203-05		3671 020-750	5623 010-12	3213 010-260	3021 010-025
160 (6.000)	5549 203-06	3212 010-516	3671 020-1076	5623 010-13	3213 010-351	3021 010-040
200 (8.000)	5549 203-01	3212 010-567	3671 020-1488	5623 010-14		
250 (10.000)			3671 020-1950	5623 010-15		

See more about M5R90 cutters

M5F90

Roughing and finishing combination milling cutter

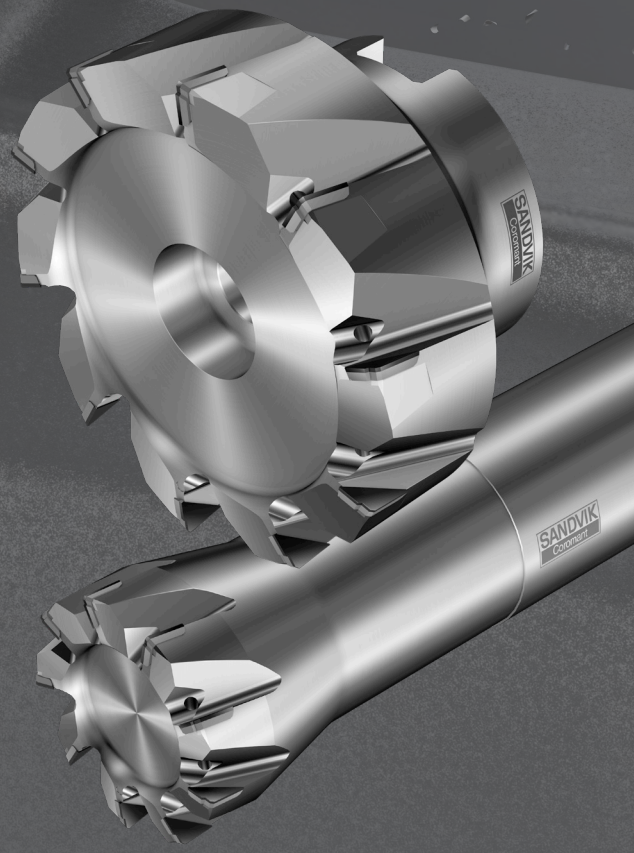
One shot roughing and finishing

Machining parts without burring, scratching or chipping, M5F90 is a concept face-milling cutter that enables roughing and finishing in a single operation, thus saving time.

Dedicated to thin wall aluminium parts, this small cutter body (25–80 mm (0.98–3.15 inch) in diameter) containing brazed PCD tips needs no adjustment and enables high feed rates without cutting vibrations.

Features and benefits

- Dedicated to thin wall milling operations of aluminium parts, but also able to machine large engagement material
- Direct finishing operations with outstanding surface finish
- High feed rates
- Machines aluminium automotive parts without scratches, burrs or chipping
- Roughing and finishing in one tool
- Flexible. Can machine different positions on the same part
- No adjustment needed
- Superior tool life vs. a conventional milling cutter body
- Environmentally friendly due to a low coolant consumption



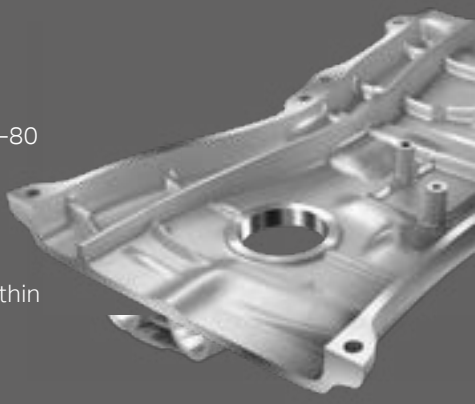
*M5F90 is a patent pending solution

Application

Designed for and adapted to thin wall aluminium automotive parts, the small cutter body (25–80 mm, 0.98–3.15 inch in diameter) containing brazed PCD tips enables high feed rates without vibrations or burrs.

The maximum depth of cut is 4.00 mm (0.157 inch).

M5F90 is made for working on gearbox casings, housings, all automotive aluminium parts within small or wide cutter engagement (applicable on thin wall parts).



Customer case 1

+150%
Time saving

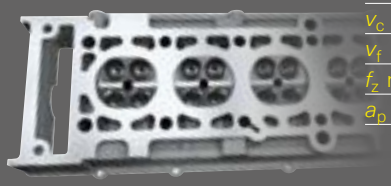
Component: Cylinder head

Material: Aluminium with high rate of silicate

Operation: Finishing side faces

Country: Spain

Machine: CNC machine



	Competitor	Sandvik Coromant
Cutter	Special PCD cutter	5F90 040Q16H CD05
z_n	4	9
n rpm (rev/min)	10000	15915
v_c m/min (ft/min)	1256 (4121)	2000 (6562)
v_f mm/min (inch/min)	10000 (393.7)	15000 (590.6)
f_z mm/z (inch/z)	0.25 (0.010)	0.16 (0.006)
a_p mm (inch)	3 x 0.5 (3 x 0.02)	1.5 (0.06)
	burrs	No burrs

Customer case 2

+44%
Reduction in cycle time

Component: Chain case

Material: Aluminium

Country: USA

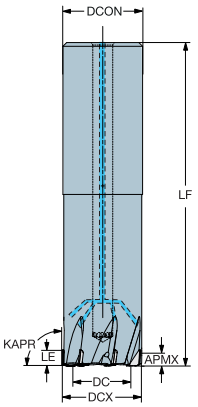
Machine: OKK VP500 (12,000 RPM Max, CAT 40 Spindle)

	Competitor	Sandvik Coromant
Cutter	80 mm indexable cutter with 6 PCD inserts	M5F90-080Q27-L CD05
n rpm (rev/min)	9950	10750
v_c m/min (ft/min)	2501 (8205)	2702 (8865)
v_f mm/min (inch/min)	4370 (172)	12900 (507.87)
f_n mm (inch)	0.44 (0.017)	1.2 (0.047)
a_p mm (inch)	2–3.5 (0.079–0.138) in 2 passes + brushing	2–3.5 (0.079–0.138) in one shot
Cycle time, sec	111	62
Flatness, mm (inch)	-	0.037 (0.001)
Surface finish Rz, mm (inch)	-	2–3 (0.079–0.118)

Sandvik Coromant M5F90 Face milling cutter for non-ferrous materials

Metric version

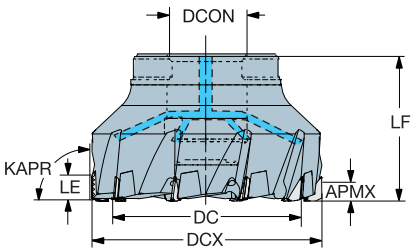
KAPR 90°



Cylindrical shank - Internal coolant supply

DC	CZC_{MS}	APMX	LE	CNSC		Ordering code	N	Dimensions, mm						
							CD05	DCON	DCX	LF	KG	RPMX	CICT	fn max (mm/rev)
20.0	25	4.0	6	1	6	5F90-025A25-H	★	25.0	25.0	120.0	0.387	20000	6	1.0
25.0	32	4.0	6	1	7	5F90-032A32-H	★	32.0	32.0	130.0	0.728	20000	7	1.5
33.0	32	4.0	6	1	9	5F90-040A32-H	★	32.0	40.0	130.0	0.787	20000	9	1.5

KAPR 90°



Arbor - Internal coolant supply

DC	CZC_{MS}	APMX	LE	CNSC		Ordering code	N	Dimensions, mm						
							CD05	DCON	DCX	LF	KG	RPMX	CICT	fn max (mm/rev)
33.0	16	4.0	6	1	9	5F90-040Q16-H	★	16.0	40.0	40.0	0.254	20000	9	1.5
43.0	22	4.0	6	1	10	5F90-050Q22-M	★	22.0	50.0	40.0	0.364	20000	10	1.5
56.0	22	4.0	6	1	10	5F90-063Q22-M	★	22.0	63.0	40.0	0.555	20000	10	1.5
73.0	27	4.0	6	1	10	5F90-080Q27-L	★	27.0	80.0	50.0	1.279	20000	10	1.5

See more about M5F90 cutters

M610

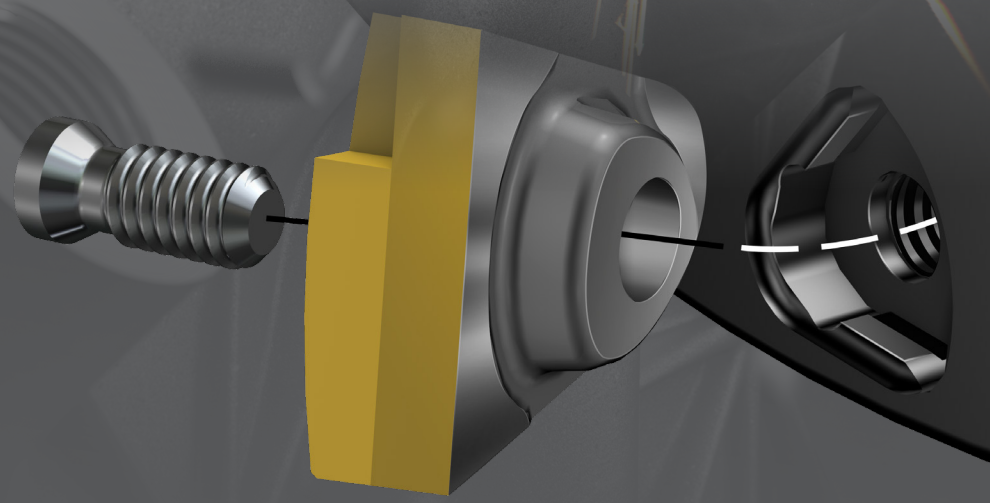
Milling cutter for finishing bi-metal materials

Current bi-metal milling cutters are complex and require adjusting, resulting in low feed rates. In addition, these cutters often cause chipping on the grey cast iron (GCI) parts of products.

M610 is a stand-alone product for finishing milling of bi-metal materials (aluminium and GCI). It requires no set-up and no adjustment, and results in high feed rates with no chipping, burring or scratching on the parts.

Features and benefits

- M610 uses CBN inserts without the need for adjustment
- Machines bi-metal (Al + GCI) parts without burrs, scratches, or chipping
- No adjustment needed
- High feed rate
- Only one spare part, insert screw



*M610 is a patent pending solution

Application

- Bi-metal engine deck face in engine blocks with GCI liners
- Bed plates (insert in GCI)
- Other automotive bi-metal parts with inserts in GCI

Customer case

Component: Engine block

Material: GCI + Aluminium

Operation: Finishing combustion face

Machine: GROB CNC machine

Country: Slovakia

+10 times the speed

+800% Tool life

	Competitor	Sandvik Coromant
Tool	Adjustable cutter with cartridges	M610 cutter
Insert	PCD tips brazed on cartridges	610-1206H-ZS2-WM 7525
z_n	30	15
n rpm (rev/min)	395	3820
v_c m/min (ft/min)	310 (1017)	3000 (9843)
v_f mm/min (inch/min)	948 (37.32)	5720 (225.20)
f_z mm/z (inch/z)	0.08 (0.003)	0.15 (0.006)
a_p mm (inch)	0.5 (0.02) Al + 0.05 (0.002) GCI	0.5 (0.02) Al + 0.05 (0.002) GCI
Tool life	**480 parts**	**More than 4000 parts**

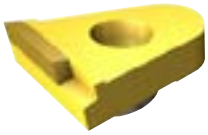
Sandvik Coromant M610 face milling cutter

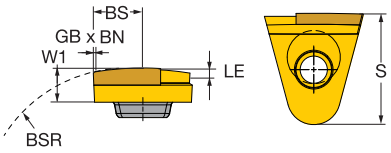
Dedicated to bi-metal materials (Aluminium and gray cast iron)

Cutter bodies

Cutter bodies can be ordered to customer specifications. For more information, and how to order cutter bodies, please contact your local Sandvik Coromant sales representative.

Insert





	W1	L	LE	S	GB	BN	BS	BSR	RE	ISO CODE	H 7525
12	5.8	3	2.25	18.84	45	0.2	8.4	50	0.6	610-1206H-ZS2-WM	★

Insert screw: 5513 020-29
Tightening torque: 4.0 Nm (2.95 ft.lb)

See more about M610 cutters

CoroMill® 331

For grooving and parting off

CoroMill® 331

Multi-purpose side and face milling cutter

Application

- Grooving
- Parting off
- Double half side milling
- Shoulder milling
- Face milling
- Gang milling
- Circular ramping

ISO application area:

P M K N S H

Benefits and features

- Wide range of mounting options
- Wedge type cassette locking
- Accuracy, security and stability due to serrations
- Sometimes that exact dimension you require might be missing. If so, simply turn to our Tailor Made service.
- Easy setting for desired width
- Spring-loaded cassette
- Security with pin-controlled setting range

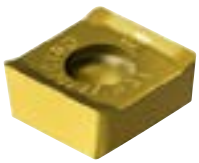
www.sandvik.coromant.com/coromill331

Couplings

- Bore with keyway
- Arbor
- Cylindrical shank
- Adjustable pockets for high precision
- Fixed pockets for high teeth density

Inserts

- Light cutting insert with H tolerance for most materials
- Round insert options and a vast assortment of corner radii
- Inserts with eight edges for face milling operations available.
- Insert geometries and grades for all materials



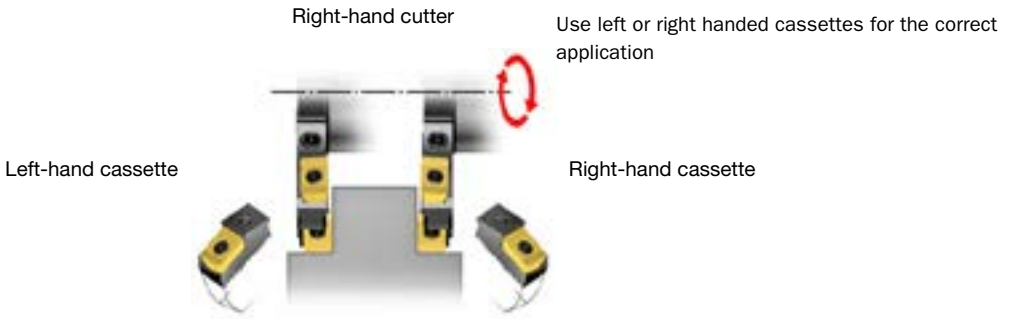
Accuracy, security and stability due to serrations.

Wide setting range

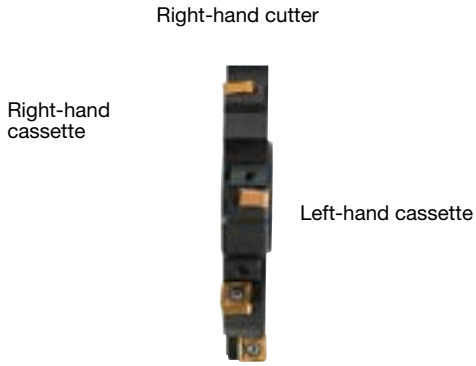
Adjustable pockets for flexibility.

Cutter bodies, cassettes and inserts to combine for all applications

Half side and face mill



Full side and face mill

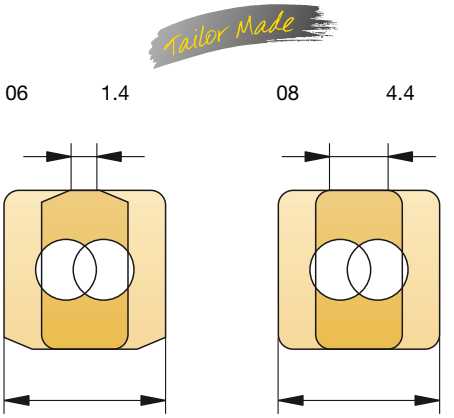


Reduced cutting edge length for Tailor Made inserts

When slotting use the smallest width of the cutter.
The overlap is the most critical factor to optimize.

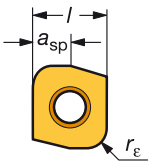
Reduced cutting edge length reduces overlapping, which in turn reduces wear in the overlapping zone, producing better chip control and reducing power consumption by up to 10%.

Tailor Made insert options with reduced cutting edge length and available on request.



Tailor Made insert with reduced cutting edge length.

Standard insert size 08

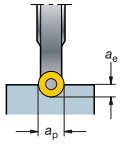


$$a_{sp} \approx \frac{a_p}{2} + 0{,}2$$

Facilitated chip evacuation

Full slot milling with round insert cutter

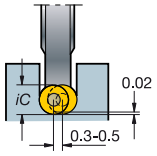
a_e max. IC/2



Max. axial depth of cut a_p = IC
Max. radial depth of cut a_e = IC/2

Note: The contact length of the cutting edge is 180°

a_e more than IC/2

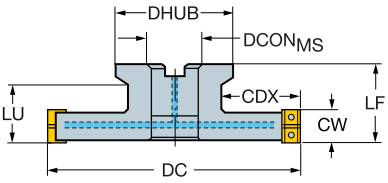


For slots deeper than IC/2, a 0.3 - 0.5 mm adjustment of each cassette is recommended. This will widen the slot 0.3 - 0.5 mm and reduce the contact length for each insert to 90°, which produces a more favorable chip formation and evacuation, and reduces vibration and power consumption.

CoroMill® 331 adjustable full side and face disc milling cutter

Arbor - Internal coolant supply

STDNO ISO 6462
KAPR 90°



								Dimensions, mm										
CW	CWX	DC	CDX		CZC_{MS}	CNSC		Ordering code	$DCON_{MS}$	ISO	LF	LU	DHUB	BAR	NM	KG	RPMX	CICT	MIID
6.00	8.0	80	20.0	04	27	1	3	R331.32C-080Q27CM	27.0	A	50.00	26	51.0	80	0.8	0.51	19300	6	N331.1A-04
		100	22.0	04	27	1	4	R331.32C-100Q27CM	27.0	A	50.00		51.0	80	0.8	0.75	17100	8	N331.1A-04
		125	29.5	04	32	1	5	R331.32C-125Q32CM	32.0	B	50.00		61.0	80	0.8	0.92	15100	10	N331.1A-04
		160	41.0	04	40	1	6	R331.32C-160Q40CM	40.0	B	50.00		73.0	80	0.8	1.38	13200	12	N331.1A-04
8.00	10.0	80	20.0	05	27	1	3	R331.32C-080Q27DM	27.0	A	50.00		51.0	80	1.2	0.54	15000	6	N331.1A-05
		100	22.0	05	27	1	4	R331.32C-100Q27DM	27.0	A	50.00		51.0	80	1.2	1.01	13200	8	N331.1A-05
		125	29.5	05	32	1	5	R331.32C-125Q32DM	32.0	B	50.00		61.0	80	1.2	1.09	11700	10	N331.1A-05
		160	41.0	05	40	1	6	R331.32C-160Q40DM	40.0	B	50.00	26	73.0	80	1.2	1.53	10200	12	N331.1A-05
10.00	12.0	80	20.0	08	27	1	3	R331.32C-080Q27EM	27.0	A	50.00	26	51.0	80	1.2	0.70	18100	6	N331.1A-08
		100	22.0	08	27	1	4	R331.32C-100Q27EM	27.0	A	50.00		51.0	80	1.2	1.10	15900	8	N331.1A-08
		125	29.5	08	32	1	5	R331.32C-125Q32EM	32.0	B	50.00		61.0	80	1.2	1.30	14100	10	N331.1A-08
		160	41.0	08	40	1	6	R331.32C-160Q40EM	40.0	B	50.00		73.0	80	1.2	1.98	12400	12	N331.1A-08
12.00	15.0	80	20.0	08	27	1	3	R331.32C-080Q27FM	27.0	A	50.00	26	51.0	80	1.2	0.62	18100	6	N331.1A-08
		100	22.0	08	27	1	4	R331.32C-100Q27FM	27.0	A	50.00		51.0	80	1.2	0.92	15900	8	N331.1A-08
		125	29.5	08	32	1	5	R331.32C-125Q32FM	32.0	B	50.00		61.0	80	1.2	1.21	14100	10	N331.1A-08
		160	41.0	08	40	1	6	R331.32C-160Q40FM	40.0	B	50.00		73.0	80	1.2	1.94	12400	12	N331.1A-08
15.00	17.5	100	25.5	11	27	1	3	R331.32C-100Q27KM	27.0	A	50.00	32.5	51.0	80	3.0	0.98	14000	6	N331.1A-11
		125	29.5	11	32	1	4	R331.32C-125Q32KM	32.0	B	50.00		61.0	80	3.0	1.23	12400	8	N331.1A-11
		160	41.0	11	40	1	5	R331.32C-160Q40KM	40.0	B	50.00		73.0	80	3.0	2.17	10800	10	N331.1A-11
17.50	20.5	125	29.5	11	32	1	4	R331.32C-125Q32LM	32.0	B	50.00		61.0	80	3.0	1.42	12400	8	N331.1A-11
		160	41.0	11	40	1	5	R331.32C-160Q40LM	40.0	B	50.00		73.0	80	3.0	2.35	10800	10	N331.1A-11
20.50	23.5	160	41.0	14	40	1	5	R331.32C-160Q40QM	40.0	B	50.00		73.0	80	3.0	2.63	9000	10	N331.1A-14
23.50	26.5	160	41.0	14	40	1	5	R331.32C-160Q40RM	40.0	B	50.00		73.0	80	3.0	3.00	9000	10	N331.1A-14

		Spare parts		
CW	DC	Insert screw	Wedge	Screw
6.00	80.00-100.00	5513 020-19	5431 105-07	5516 014-06
6.00	125.00	5513 020-19	5431 105-07	5516 014-06
6.00	160.00	5513 020-19	5431 105-07	5516 014-06
7.90	160.00	5513 020-34	5431 105-06	5516 014-05
8.00	80.00-100.00	5513 020-34	5431 105-06	5516 014-05
8.00	125.00	5513 020-34	5431 105-06	5516 014-05
10.00	80.00-100.00	5513 020-24	5431 105-01	269-832
10.00	125.00	5513 020-24	5431 105-01	269-832
10.00	160.00	5513 020-24	5431 105-01	269-832
12.00	80.00-100.00	5513 020-24	5431 105-02	269-832
12.00	125.00	5513 020-24	5431 105-02	269-832
12.00	160.00	5513 020-24	5431 105-02	269-832
15.00	100.00	5513 020-29	5431 105-04	339-831
15.00	125.00	5513 020-29	5431 105-04	339-831
15.00	160.00	5513 020-29	5431 105-04	339-831
17.50	125.00	5513 020-29	5431 105-04	5516 010-02
17.50	160.00	5513 020-29	5431 105-04	5516 010-02
20.50	160.00	5513 020-29	5431 105-05	5516 010-02
23.50	160.00	5513 020-29	5431 105-05	5516 010-02

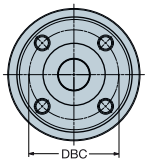
For complete list of spare parts, see www.sandvik.coromant.com

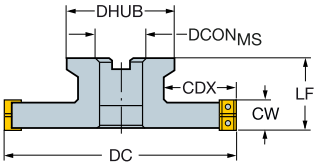
	Accessories
CZC_{MS}	Coolant screw
27	5512 098-05
32	5512 098-04
40	5512 098-03

CoroMill® 331 adjustable full side and face disc milling cutter

Arbor

STDNO ISO6462
KAPR 90°





N331.1A

CW	CWX	DC	CDX		CZCMS		Ordering code	Dimensions, mm DCONMS	ISO	DBC	LF	DHUB	NM	KG	RPMX	CICT	MIID
6.00	8.0	200	51.0	04	40S	8	R331.32-200Q40CM06.00	40.0	C	66.7	63.00	96.0	0.8	6.70	11700	16	N331.1A-04
8.00	10.0	200	51.0	05	40S	8	R331.32-200Q40DM08.00	40.0	C	66.7	63.10	96.0	1.2	8.61	9100	16	N331.1A-05
10.00	12.0	200	51.0	08	40S	8	R331.32-200Q40EM10.00	40.0	C	66.7	63.00	96.0	1.2	8.88	11000	16	N331.1A-08
12.00	15.0	200	51.0	08	40S	8	R331.32-200Q40FM12.00	40.0	C	66.7	63.00	96.0	1.2	7.64	11000	16	N331.1A-08
15.00	17.5	200	51.0	11	40S	6	R331.32-200Q40KM15.00	40.0	C	66.7	63.00	96.0	3.0	9.46	9600	12	N331.1A-11
		250	56.0	11	60	8	R331.32-250Q60KM15.00	60.0	C	101.6	63.00	136.0	3.0	12.73	8500	16	N331.1A-11
		315	88.5	11	60	10	R331.32-315Q60KM15.00	60.0	C	101.6	63.00	136.0	3.0	18.32	7600	20	N331.1A-11
17.50	20.5	200	51.0	11	40S	6	R331.32-200Q40LM17.50	40.0	C	66.7	63.00	96.0	3.0	8.44	9600	12	N331.1A-11
		250	56.0	11	60	8	R331.32-250Q60LM17.50	60.0	C	101.6	63.00	136.0	3.0	12.76	8500	16	N331.1A-11
		315	88.5	11	60	10	R331.32-315Q60LM17.50	60.0	C	101.6	63.00	136.0	3.0	20.00	7600	20	N331.1A-11
20.50	23.5	200	51.0	14	40S	6	R331.32-200Q40QM20.50	40.0	C	66.7	63.00	96.0	3.0	10.30	8000	12	N331.1A-14
		250	56.0	14	60	8	R331.32-250Q60QM20.50	60.0	C	101.6	63.00	136.0	3.0	13.30	7100	16	N331.1A-14
		315	88.5	14	60	10	R331.32-315Q60QM20.50	60.0	C	101.6	63.00	136.0	3.0	19.20	6300	20	N331.1A-14
23.50	26.5	200	51.0	14	40S	6	R331.32-200Q40RM23.50	40.0	C	66.7	63.00	96.0	3.0	10.80	8000	12	N331.1A-14
		250	56.0	14	60	8	R331.32-250Q60RM23.50	60.0	C	101.6	63.00	136.0	3.0	14.00	7100	16	N331.1A-14
		315	88.5	14	60	10	R331.32-315Q60RM23.50	60.0	C	101.6	63.00	136.0	3.0	20.44	6300	20	N331.1A-14

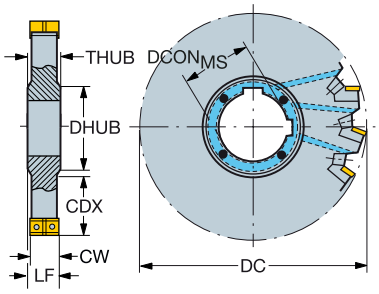
		Spare parts		
CW	DC	Insert screw	Wedge	Screw
6.00	200.00	5513 020-19	5431 105-07	5516 014-06
8.00	200.00	5513 020-34	5431 105-06	5516 014-04
10.00	200.00	5513 020-24	5431 105-01	339-831
12.00	200.00	5513 020-24	5431 105-02	339-831
15.00-17.50	200.00-315.00	5513 020-29	5431 105-04	339-831
20.50-23.50	200.00-315.00	5513 020-29	5431 105-05	339-831

For complete list of spare parts, see www.sandvik.coromant.com

CoroMill® 331 adjustable full side and face disc milling cutter

Bore with keyway - Internal coolant supply

KAPR 90°



CW	CWX	DC	CDX		CZC_{MS}	CNSC		Ordering code	Dimensions, mm $DCON_{MS}$	LF	DRVCT	DHUB	THUB	BAR	NM	KG	RPMX	CICT	MIID
6.00	8.0	80	19.5	04	27	1	3	N331.32C-080S27CM	27.0	10.00	1	39.0	14.0	80	0.8	0.37	19300	6	N331.1A-04
		100	25.5	04	32	1	4	N331.32C-100S32CM	32.0	10.00	1	47.0	14.0	80	0.8	0.49	17100	8	N331.1A-04
		125	34.0	04	40	1	5	N331.32C-125S40CM	40.0	10.00	2	55.0	14.0	80	0.8	0.63	15100	10	N331.1A-04
		160	51.5	04	40	1	6	N331.32C-160S40CM	40.0	10.00	2	55.0	14.0	80	0.8	1.02	13200	12	N331.1A-04
8.00	10.0	80	19.5	05	27	1	3	N331.32C-080S27DM	27.0	12.00	1	39.0	16.0	80	1.2	0.46	15000	6	N331.1A-05
		100	25.5	05	32	1	4	N331.32C-100S32DM	32.0	12.00	1	47.0	16.0	80	1.2	0.59	13200	8	N331.1A-05
		125	34.0	05	40	1	5	N331.32C-125S40DM	40.0	12.00	2	55.0	16.0	80	1.2	0.75	11700	10	N331.1A-05
		160	51.5	05	40	1	6	N331.32C-160S40DM	40.0	12.00	2	55.0	16.0	80	1.2	1.24	10200	12	N331.1A-05
10.00	12.0	80	19.5	08	27	1	3	N331.32C-080S27EM	27.0	13.00	1	39.0	16.0	80	1.2	0.42	18100	6	N331.1A-08
		100	25.5	08	32	1	4	N331.32C-100S32EM	32.0	13.00	1	47.0	16.0	80	1.2	0.62	15900	8	N331.1A-08
		125	34.0	08	40	1	5	N331.32C-125S40EM	40.0	13.00	2	55.0	16.0	80	1.2	0.93	14100	10	N331.1A-08
		160	51.5	08	40	1	6	N331.32C-160S40EM	40.0	13.00	2	55.0	16.0	80	1.2	1.46	12400	12	N331.1A-08
12.00	15.0	80	19.5	08	27	1	3	N331.32C-080S27FM	27.0	14.00	1	39.0	16.0	80	1.2	0.52	18100	6	N331.1A-08
		100	25.5	08	32	1	4	N331.32C-100S32FM	32.0	14.00	1	47.0	16.0	80	1.2	0.69	15900	8	N331.1A-08
		125	34.0	08	40	1	5	N331.32C-125S40FM	40.0	14.00	2	55.0	16.0	80	1.2	1.04	14100	10	N331.1A-08
		160	51.5	08	40	1	6	N331.32C-160S40FM	40.0	14.00	2	55.0	16.0	80	1.2	1.68	12400	12	N331.1A-08
15.00	17.5	100	25.5	11	32	1	3	N331.32C-100S32KM	32.0	16.75	1	47.0	18.5	80	3.0	0.82	14000	6	N331.1A-11
		125	34.0	11	40	1	4	N331.32C-125S40KM	40.0	16.75	1	55.0	18.5	80	3.0	1.23	12400	8	N331.1A-11
		160	51.5	11	40	1	5	N331.32C-160S40KM	40.0	16.75	2	55.0	18.5	80	3.0	2.01	10800	10	N331.1A-11
17.50	20.5	125	34.0	11	40	1	4	N331.32C-125S40LM	40.0	19.50	1	55.0	21.5	80	3.0	1.41	12400	8	N331.1A-11
		160	51.5	11	40	1	5	N331.32C-160S40LM	40.0	19.50	2	55.0	21.5	80	3.0	2.20	10800	10	N331.1A-11
20.50	23.5	160	51.5	14	40	1	5	N331.32C-160S40QM	40.0	22.50	2	55.0	24.5	80	3.0	2.55	9000	10	N331.1A-14
23.50	26.5	160	51.5	14	40	1	5	N331.32C-160S40RM	40.0	25.50	2	55.0	27.5	80	3.0	2.78	9000	10	N331.1A-14

		Spare parts		
CW	DC	Insert screw	Wedge	Screw
6.0	80-160	5513 020-19	5431 105-07	5516 014-06
8.0	80-160	5513 020-34	5431 105-06	5516 014-05
10.0	80-160	5513 020-24	5431 105-01	269-832
12.0	80-160	5513 020-24	5431 105-02	269-832
15.0	100-160	5513 020-29	5431 105-04	5516 010-02
17.5	125-160	5513 020-29	5431 105-04	5516 010-02
20.5	160	5513 020-29	5431 105-05	5516 010-02
23.5	160	5513 020-29	5431 105-05	5516 010-02

For complete list of spare parts, see www.sandvik.coromant.com

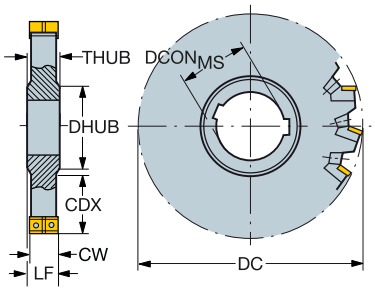
	Accessories	
CZC_{MS}	Coolant screw set	Spacing ring set
27	5512 076-101	5549 091-032
32	5512 076-102	5549 091-042
40	5512 076-103	5549 091-052

CoroMill® 331 adjustable full side and face disc milling cutter

Bore with keyway

KAPR 90°

N331.1A



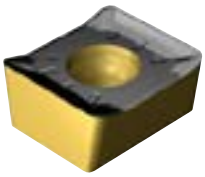
CW	CWX	DC	CDX		CZC_{MS}		Ordering code	Dimensions, mm $DCON_{MS}$	LF	DRVCT	DHUB	THUB	NM	KG	RPMX	CICT	MIID
6.00	8.0	200	64.5	04	50	8	N331.32-200S50CM06.00	50.0	10.00	2	69.0	14.0	0.8	1.34	11700	16	N331.1A-04
8.00	10.0	200	64.5	05	50	8	N331.32-200S50DM08.00	50.0	12.00	2	69.0	16.0	1.2	1.67	9100	16	N331.1A-05
10.00	12.0	200	64.5	08	50	8	N331.32-200S50EM10.00	50.0	13.00	2	69.0	16.0	1.2	1.98	11000	16	N331.1A-08
12.00	15.0	200	64.5	08	50	8	N331.32-200S50FM12.00	50.0	14.00	2	69.0	16.0	1.2	2.38	11000	16	N331.1A-08
15.00	17.5	200	64.5	11	50	6	N331.32-200S50KM15.00	50.0	16.75	2	69.0	18.5	3.0	2.88	9600	12	N331.1A-11
		250	89.5	11	50	8	N331.32-250S50KM15.00	50.0	16.75	2	69.0	18.5	3.0	7.74	8500	16	N331.1A-11
		315	114.5	11	60	10	N331.32-315S60KM15.00	60.0	16.75	2	84.0	18.5	3.0	13.20	7600	20	N331.1A-11
17.50	20.5	200	64.5	11	50	6	N331.32-200S50LM17.50	50.0	19.50	2	69.0	21.5	3.0	3.29	9600	12	N331.1A-11
		250	89.5	11	50	8	N331.32-250S50LM17.50	50.0	19.50	2	69.0	21.5	3.0	8.42	8500	16	N331.1A-11
		315	114.5	11	60	10	N331.32-315S60LM17.50	60.0	19.50	2	84.0	21.5	3.0	12.94	7600	20	N331.1A-11
20.50	23.5	200	64.5	14	50	6	N331.32-200S50QM20.50	50.0	22.50	2	69.0	24.5	3.0	3.86	8000	12	N331.1A-14
		250	89.5	14	50	8	N331.32-250S50QM20.50	50.0	22.50	2	69.0	24.5	3.0	7.10	7100	16	N331.1A-14
		315	114.5	14	60	10	N331.32-315S60QM20.50	60.0	22.50	2	84.0	24.5	3.0	14.28	6300	20	N331.1A-14
23.50	26.5	200	64.5	14	50	6	N331.32-200S50RM23.50	50.0	25.50	2	69.0	27.5	3.0	4.35	8000	12	N331.1A-14
		250	89.5	14	50	8	N331.32-250S50RM23.50	50.0	25.50	2	69.0	27.5	3.0	10.16	7100	16	N331.1A-14
		315	114.5	14	60	10	N331.32-315S60RM23.50	60.0	25.50	2	84.0	27.5	3.0	19.26	6300	20	N331.1A-14

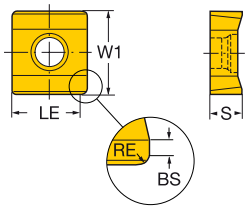
		Spare parts		
CW	DC	Insert screw	Wedge	Screw
6.00	200.00	5513 020-19	5431 105-07	5516 014-06
8.00	200.00	5513 020-34	5431 105-06	5516 014-04
10.00	200.00	5513 020-24	5431 105-01	5516 010-02
12.00	200.00	5513 020-24	5431 105-02	5516 010-02
15.00-17.50	200.00-315.00	5513 020-29	5431 105-04	339-831
20.50-23.50	200.00-315.00	5513 020-29	5431 105-05	339-831

For complete list of spare parts, see www.sandvik.coromant.com

CoroMill® 331 insert for side and face milling

KRINS 90°

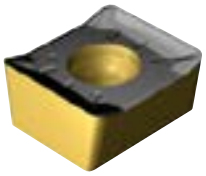


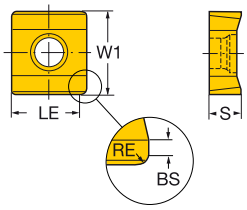


		RE	Ordering code	P								M								K										N				S								H				Dimensions, mm			
				1025	1040	1130	2040	3040	4330	4240	530	1025	1040	1130	2040	4240	530	S90T	1020	1025	3040	3220	3330	4230	4240	H10	H13A	1025	1130	530	H10	H13A	1025	1130	2040	H13A	S90T	1025	1130	3040	530	W1	LE	S	BS
Light	04	0.50	N331.1A-04 35 05E-KL					☆											★		☆	☆	☆																	☆			9.5	4.6	3.50	0.4
		0.50	N331.1A-04 35 05H-NL	☆		☆						☆		☆						☆						☆		☆	☆		★		☆	☆				☆	☆			9.5	4.6	3.50	0.2
		0.50	N331.1A-04 35 05H-PL						☆	☆						☆							☆	☆																		9.5	4.6	3.50	0.4
		0.50	N331.1A-04 35 05H-WL	☆		☆						☆		☆						☆						☆		☆	☆	☆		☆	☆	☆		☆		☆	☆			9.5	4.6	3.50	0.4
		0.50	N331.1A-043505E-L30										☆		☆			☆																☆		☆							9.5	4.6	3.49	0.4
		0.50	N331.1A-043505E-L50		☆	★	☆						★	☆	☆			☆																☆	☆		★						9.5	4.6	3.49	0.4
	05	0.80	N331.1A-05 45 08E-KL					☆											★		☆	☆	☆																	☆			9.5	5.7	4.45	1.2
		0.80	N331.1A-05 45 08H-NL	☆		☆						☆		☆						☆						☆		☆	☆		★		☆	☆				☆	☆			9.5	5.7	4.45	0.8
		0.80	N331.1A-05 45 08H-PL						☆	☆						☆							☆	☆																		9.5	5.7	4.45	1.2
		0.80	N331.1A-05 45 08H-WL	☆		☆						☆		☆						☆						☆		☆	☆	☆		☆	☆	☆		☆		☆	☆			9.5	5.7	4.45	1.2
		0.80	N331.1A-054508E-L30										☆		☆			☆																☆		☆							9.5	5.7	4.49	1.2
		0.80	N331.1A-054508E-L50		☆	★	☆						★	☆	☆			☆																☆	☆		★						9.5	5.7	4.49	1.2
	08	0.80	N331.1A-08 45 08E-KL					☆											★		☆	☆	☆																	☆			9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08H-NL	☆		☆						☆		☆						☆						☆		☆	☆		★		☆	☆				☆	☆			9.5	7.7	4.45	0.9
		0.80	N331.1A-08 45 08H-PL						☆	☆						☆							☆	☆																		9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08H-WL	☆		☆					☆	☆		☆			☆				☆					☆		☆	☆	☆		☆	☆	☆		☆		☆	☆		☆	9.5	7.7	4.45	1.2
		2.00	N331.1A-08 45 20E-KL																☆																								9.5	6.5	4.50	1.2
		2.00	N331.1A-08 45 20H-PL			☆								☆																☆				☆					☆				9.5	6.5	4.50	1.2
		0.80	N331.1A-084508E-L30										☆		☆			☆																☆		☆							9.5	7.7	4.49	1.2
		0.80	N331.1A-084508E-L50		☆	★	☆						★	☆	☆			☆																☆	☆		★						9.5	7.7	4.49	1.2
	11	0.80	N331.1A-11 50 08E-KL					☆											★		☆	☆	☆																	☆			11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08H-NL	☆		☆						☆		☆						☆						☆		☆	☆		★		☆	☆				☆	☆			11.5	10.7	4.95	1.3
		0.80	N331.1A-11 50 08H-PL						☆	☆						☆							☆	☆																		11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08H-WL	☆		☆						☆		☆						☆						☆		☆	☆	☆		☆	☆	☆		☆		☆	☆			11.5	10.7	4.95	1.2
		2.00	N331.1A-11 50 20E-KL																☆																								11.5	9.5	5.00	1.2
		2.00	N331.1A-11 50 20H-PL			☆								☆																☆				☆					☆				11.5	9.5	5.00	1.2
		0.80	N331.1A-115008E-L30										☆		☆			☆																☆		☆							11.5	10.7	4.99	1.2
		0.80	N331.1A-115008E-L50		☆	★	☆						★	☆	☆			☆																☆	☆		★						11.5	10.7	4.99	1.2
	14	0.80	N331.1A-14 50 08E-KL					☆											★		☆	☆	☆																	☆			11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08H-NL	☆		☆						☆		☆						☆						☆		☆	☆		★		☆	☆				☆	☆			11.5	13.7	4.95	1.1
		0.80	N331.1A-14 50 08H-PL						☆	☆						☆							☆	☆																		11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08H-WL	☆		☆						☆		☆						☆						☆		☆	☆	☆		☆	☆	☆		☆		☆	☆			11.5	13.7	4.95	1.2
		0.80	N331.1A-145008E-L30										☆		☆			☆																☆		☆							11.5	13.7	4.98	1.2
		0.80	N331.1A-145008E-L50		☆	★	☆						★	☆	☆			☆																☆	☆		★						11.5	13.7	4.98	1.2
Medium	04	0.50	N331.1A-04 35 05M-KM					☆											☆		☆	☆	☆																	☆			9.5	4.6	3.50	0.4
		0.50	N331.1A-04 35 05M-PM						☆	☆						☆							☆	☆																		9.5	4.6	3.50	0.4
		0.50	N331.1A-043505E-M30			★		☆	★										★		★			☆																★			9.5	4.6	3.50	0.4
	05	0.80	N331.1A-05 45 08E-KM					☆											☆		☆	☆	☆																	☆			9.5	5.7	4.45	1.2
		0.80	N331.1A-05 45 08H-PM						☆															☆																		9.5	5.7	4.45	1.2
		0.80	N331.1A-05 45 08M-KM					☆											☆		☆	☆	☆																	☆			9.5	5.7	4.45	1.2
		0.80	N331.1A-05 45 08M-PM						☆	☆						☆							☆	☆																		9.5	5.7	4.45	1.2
		0.80	N331.1A-054508E-M30			★		☆	★										★		★			☆																★			9.5	5.7	4.50	1.2
	08	0.80	N331.1A-08 45 08E-KM					☆											☆		☆	☆	☆																	☆			9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08H-PM						☆															☆																		9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08H-WM								☆						☆										☆				☆				☆						☆	9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08M-KM					☆											☆		☆	☆	☆																	☆			9.5	7.7	4.45	1.2
		0.80	N331.1A-08 45 08M-PM						☆	☆						☆							☆	☆																		9.5	7.7	4.45	1.2
		2.00	N331.1A-08 45 20E-KM					☆											☆		☆																			☆			9.5	6.5	4.45	1.2
		2.00	N331.1A-08 45 20H-PM			☆			☆					☆											☆					☆				☆					☆				9.5	6.5	4.45	1.2
		0.80	N331.1A-084508E-M30			★		☆	★										★		★			☆																★			9.5	7.7	4.50	1.2

CoroMill® 331 insert for side and face milling

KRINS 90°





		RE	Ordering code	P							M						K								N					S					H			Dimensions, mm			
				1025	1040	1130	2040	3040	4330	4340	530	1025	1040	1130	2040	4340	530	S30T	1020	1025	3040	3220	3330	4330	4340	H10	H13A	1025	1130	530	H10	H13A	1025	1130	2040	H13A	S30T	1025	1130	3040	530	W1	LE	S	BS
Medium	11	0.80	N331.1A-11 50 08E-KM					☆											☆		☆	☆	☆																	☆		11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08H-PM						☆															☆																		11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08H-WM								☆						☆										☆		☆		☆					☆					☆	11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08M-KM					☆											☆		☆	☆	☆																	☆		11.5	10.7	4.95	1.2
		0.80	N331.1A-11 50 08M-PM						☆	☆						☆								☆	☆																	11.5	10.7	4.95	1.2
		2.00	N331.1A-11 50 20E-KM					☆											☆		☆																			☆		11.5	9.5	4.95	1.2
		2.00	N331.1A-11 50 20H-PM			☆			☆					☆					★		★			☆					☆					☆						☆		11.5	9.5	4.95	1.2
		0.80	N331.1A-115008E-M30			★		☆	★										★		★			☆																★		11.5	10.7	5.00	1.2
	14	0.80	N331.1A-14 50 08E-KM					☆											☆		☆	☆	☆																	☆		11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08H-PM						☆															☆																		11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08H-WM																								☆		☆		☆					☆						11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08M-KM					☆											☆		☆	☆	☆																	☆		11.5	13.7	4.95	1.2
		0.80	N331.1A-14 50 08M-PM						☆	☆						☆								☆	☆																	11.5	13.7	4.95	1.2
		0.80	N331.1A-145008E-M30			★		☆	★										★		★			☆																★		11.5	13.7	5.00	1.2

Milling cutters for automotive aluminium components – cutting parameters

RAL 90 - High material removal - Carbide Grade H13A

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 3000	0,10 - 0,30		12,0 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 2500	0,10 - 0,30		12,0 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	800 - 2000	0,10 - 0,30		12,0 mm		X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	800 - 1800	0,10 - 0,30		12,0 mm		X	X

M5Q90 - Cubing and roughing operations

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 3000	0.15 - 0.25		6,00 mm*		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 3000	0.15 - 0.25		6,00 mm*		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 2500	0.15 - 0.25		6,00 mm*	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	1000 - 2000	0.15 - 0.25		6,00 mm*	X	X	X

* Predominant depth of cut for the first row of inserts. Including protective rows of inserts, the depth of cut can reach up to 80mm.

M5C90 - Roughing and finishing solution

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 4000	Given by design		4,00 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 4000	Given by design		4,00 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 3000	Given by design		4,00 mm	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	1000 - 2000	Given by design		4,00 mm	X	X	X

M5B90 - Super finishing applications

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 4000	Given by design		1,0 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 4000	Given by design		1,0 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 3000	Given by design		1,0 mm	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	1000 - 2000	Given by design		1,0 mm	X	X	X

M5F90 - Roughing and finishing solution for thin wall applications

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per Revolution		Max. depth of cut	Coolant		
					DC=25mm	DC > 25mm		Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 4000	1,00 Max.	1,50 Max.	4,00 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 4000	1,00 Max.	1,50 Max.	4,00 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 3000	1,00 Max.	1,50 Max.	4,00 mm	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	1000 - 2000	1,00 Max.	1,50 Max.	4,00 mm	X	X	X

M5R90 - General and shoulder milling applicatiuons

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 4000	0,05 - 0,25		8,00 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 4000	0,05 - 0,25		8,00 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 3000	0,05 - 0,25		8,00 mm	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	1000 - 2000	0,05 - 0,25		8,00 mm	X	X	X

Coromill 590 - General and shoulder milling applications (PCD inserts)

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	1000 - 4000	0,10 - 0,20		5,00 mm		X	X
	N1.2	Al Si <= 1% Si	60-100	1000 - 3000	0,10 - 0,20		5,00 mm		X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1000 - 2500	0,10 - 0,20		5,00 mm	X	X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	700 - 1500	0,10 - 0,20		5,00 mm	X	X	X

M610 - Bimetal face milling applications

ISO	Mc No.	**Bimetal Material (Alu + Gray Cast Iron)**	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	1800 - 4000	0.10 - 0.25		0,7 mm	X	X	
	N1.4	Al Si cast alloys, Si>= 13%	130	1800 - 3000	0.10 - 0.25		0,7 mm	X	X	

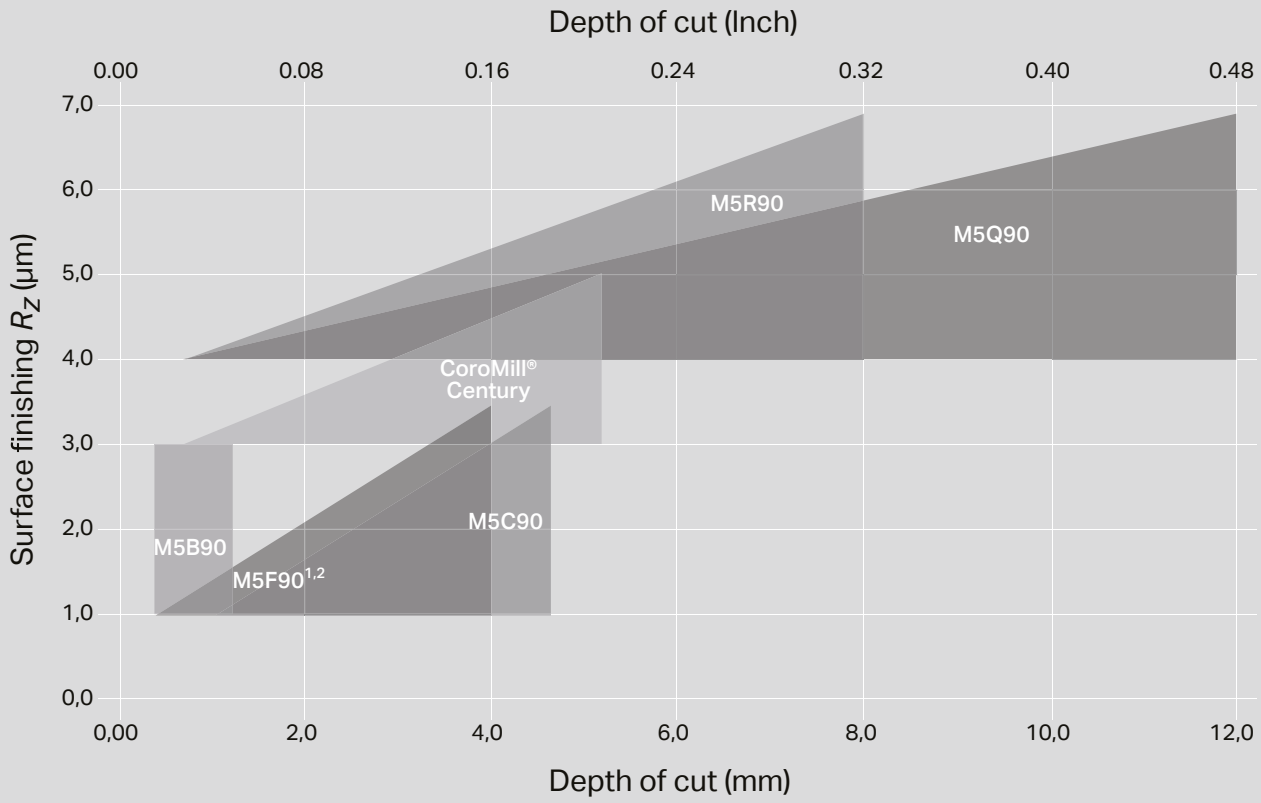
Coromill 331 - Disk Milling - Carbide Grade H10

ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	Feed per tooth	Feed per Revolution	Max. depth of cut	Coolant		
								Dry	MQL	Wet
N	N1.1	Commerically pure Aluminum	60-100	600 - 1200	0,10 - 0,30				X	X
	N1.2	Al Si <= 1% Si	60-100	600 - 1200	0,10 - 0,30				X	X
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	350 - 700	0,10 - 0,30				X	X
	N1.4	Al Si cast alloys, Si>= 13%	130	350 - 500	0,10 - 0,30				X	X

Milling cutters for automotive aluminium components – depth of cut

[1] Wide and low engagement material

[2] Thin wall applications only

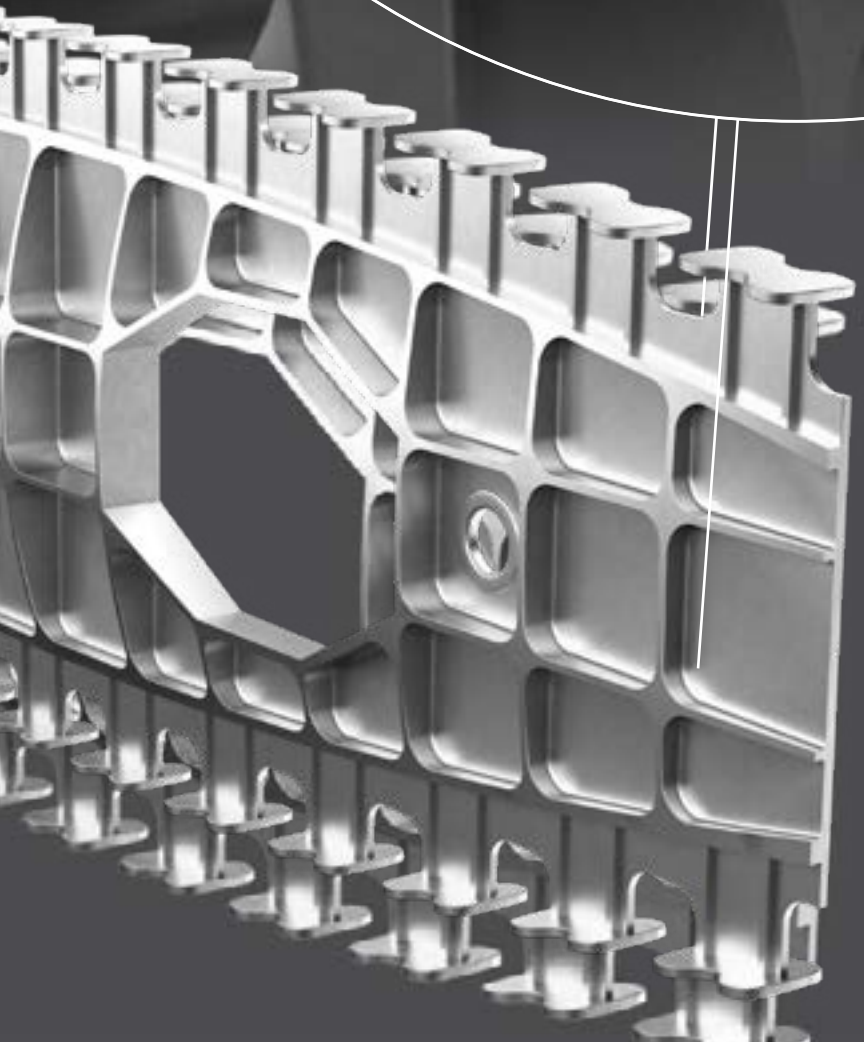


RAL90 aluminium router

Exceptional metal removal rates

The RAL90 aluminium milling cutter sets the standard for a new stability level in high speed milling.

Optimized for high power spindles. RAL90 offers unique metal removal rates. The accuracy of the insert seat interface secures the position of the cutting edge, minimizing total tool run-out.



Benefits

- Dedicated for pocketing of aerospace frame components in aluminium
- Robust, reinforced cutter body designed for high cutting loads enables extreme metal removal rates
- Designed for high security demands with a very limited tool run-out
- Reduced vibration and good chip forming due to a smooth cut

N ISO application area

Application

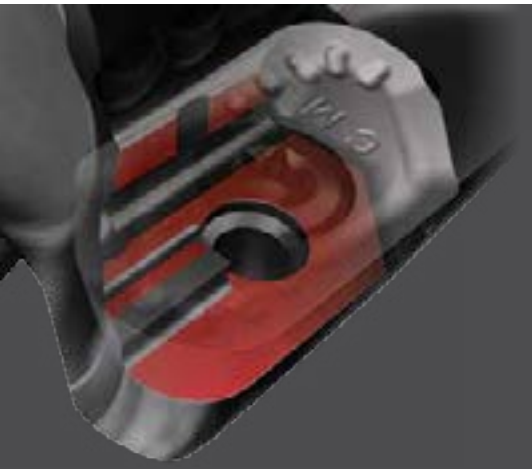
- Pocket milling of aerospace structural frame components in aluminium
- Heavy roughing to semi-finishing with good surface quality

Technical features

- Secure, high-precision interface between tip seat and insert
- Good ramping capacity
- Coolant nozzles with high pressure capability
- Certified EN ISO 15641:2001 for high spindle rotation, e.g. up to 27500 RPM for DC 40 mm

The RAL90 insert geometry optimized for high speed aluminium machining pushes the limit for material removal rates.

- Edge preparation and surface treatment optimized for long tool life
- The double angle cutting edge provides stability during ramping
- Geometry designed for high pressure coolant



iLock™
ingenious locking interface

Need a higher RPM?

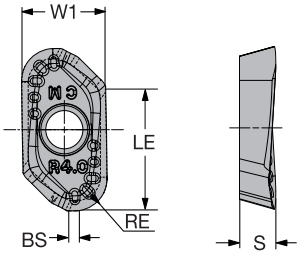
RAL90 Super MRR

In applications requiring even more power and higher metal removal rates, the new RAL90 Super MRR can reach extra high spindle rotation, e.g. up to 33000 RPM for DC 50 mm compared to 23500 RPM for RAL90. This means a 40% productivity increase.

Exceptional performance can be reached thanks to the secure iLock™ tip seat interface, which prevents micro movements and ejection of the insert.

RAL90 Super MRR is designed with couplings dedicated for specific machine tool makers.

RAL90 insert for milling



					N	Dimensions, mm, inch			
			RE	Ordering code	H13A	W1	LE	S	BS
Medium		15	0.50	KPHT 15 04 05 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.020			*.420*	*.590*	*.180*	*.035*
			0.80	KPHT 15 04 08 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.031			*.420*	*.590*	*.180*	*.035*
			1.60	KPHT 15 04 16 FR-CM H13A	☆	10.7	14.0	4.60	1.4
			0.063			*.420*	*.590*	*.180*	*.055*
			2.00	KPHT 15 04 20 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.079			*.420*	*.590*	*.180*	*.035*
			2.50	KPHT 15 04 25 FR-CM H13A	☆	10.7	14.0	4.60	1.2
			0.098			*.420*	*.590*	*.180*	*.047*
			3.10	KPHT 15 04 31 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.122			*.420*	*.590*	*.180*	*.035*
			4.00	KPHT 15 04 40 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.157			*.420*	*.590*	*.180*	*.035*
			5.00	KPHT 15 04 50 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			0.197			*.420*	*.590*	*.180*	*.035*

Feed recommendations

Geometry	ISO N		
	Feed per tooth, f_z mm (inch)		
	min.	rec.	max.
KPHT 15 04	0.10 (.0039)	0.20 (.0078)	0.30 (.0118)

Example of cutting parameters:

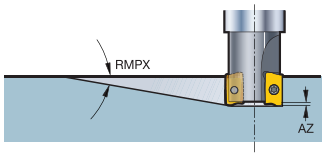
DC: 40 mm; Z=4
n: 23720 RPM
ap: 6 mm (0.236 inch)
ae: 40 mm (1.57 inch)
fz: 0.2 mm/tooth (0.008 in/tooth)
vf:18976 mm/min (747 in/min)
MRR: 4554 cm3/min (278 in3/min)

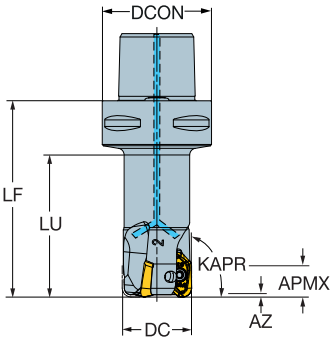
RAL90 square shoulder milling cutter

Internal coolant supply

Coromant Capto®

KAPR 90°



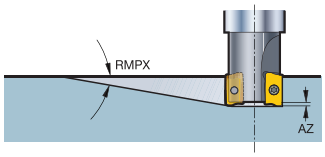


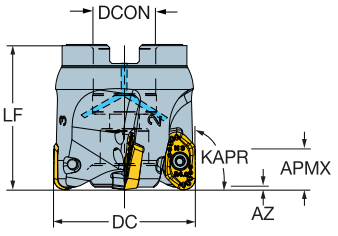
Inch version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, inch DCON	DCX	LF	LU	Lbs	RPMX	CICT	$MIID_E$
1.000	15	C5	.550	15°	.130	1	2	RAL90A-025C5-16L	1.969	1.000	2.900	2.000	1.32	35000	2	KPHT 15 04..
1.250	15	C5	.550	12°	.130	1	3	RAL90A-032C5-16M	1.969	1.250	3.400	2.500	1.65	31000	3	KPHT 15 04..
2.000	15	C5	.550	7°	.130	1	4	RAL90A-050C5-16H	1.969	2.000	3.800	2.900	2.87	23500	4	KPHT 15 04..

Arbor

KAPR 90°





Metric version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	Nm	Kg	RPMX	CICT	$MIID_E$
50.0	15	22	14.0	7°	3.3	1	4	RAL90-050Q22-16H	22.0	50.0	50.0	5.0	0.4	23500	4	KPHT 15 04..
63.0	15	27	14.0	5°	3.3	1	5	RAL90-063Q27-16H	27.0	63.0	50.0	5.0	0.7	20500	5	KPHT 15 04..

Inch version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, inch DCON	DCX	LF	Ft/lbs	Lbs	RPMX	CICT	$MIID_E$
2.000	15	3/4	.550	7°	.130	1	4	RAL90A-050R19-16H	.750	2.000	1.580	3.68	0.66	23500	4	KPHT 15 04..

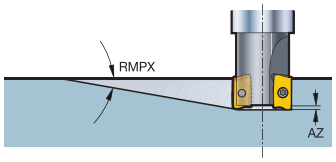
RPMX (max. rev/min) for holders must also be considered.

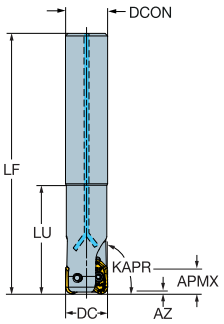
RAL90 square shoulder milling cutter

Internal coolant supply

Cylindrical shank

KAPR 90°





Metric version

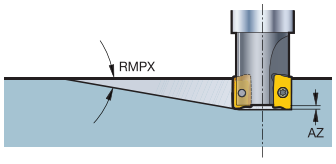
DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	Nm	Kg	RPMX	CICT	$MIID_E$
25.0	15	25	14.0	15°	3.3	1	2	**RAL90-025A25-16L**	25.0	25.0	150.0	5.0	0.6	35000	2	KPHT 15 04..

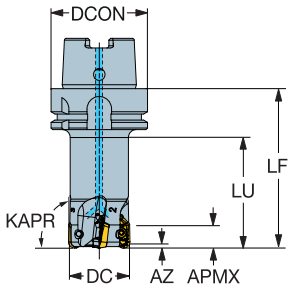
Inch version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, inch DCON	DCX	LF	Ft/lbs	Lbs	RPMX	CICT	$MIID_E$
1.000	15	1	.550	15°	.130	1	2	**RAL90A-025O25-16L**	1.000	1.000	6.000	3.68	1.32	35000	2	KPHT 15 04..
1.250	15	1 1/4	.550	12°	.130	1	3	**RAL90A-032O32-16M**	1.250	1.250	6.000	3.68	1.76	31000	3	KPHT 15 04..

HSK

KAPR 90°





Metric version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	LU	Kg	RPMX	CICT	$MIID_E$
32.0	15	63	14	12°	3.3	1	3	**RAL90-032HA06-16M**	63.0	32.0	92.0	61.0	0.9	31000	3	KPHT 15 04..
40.0	15	63	14	10°	3.3	1	4	**RAL90-040HA06-16H**	63.0	40.0	101.0	70.0	1.3	27500	4	KPHT 15 04..
40.0	15	63	14	10°	3.3	1	4	**RAL90-040HA06L-16H**	63.0	40.0	156.0	125.0	1.6	27500	4	KPHT 15 04..
50.0	15	63	14	7°	3.3	1	4	**RAL90-050HA06-16H**	63.0	50.0	111.0	80.0	1.6	23500	4	KPHT 15 04..

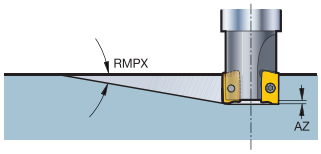
RPMX (max. rev/min) for holders must also be considered.

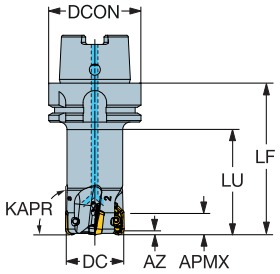
RAL90 Super MRR square shoulder milling cutter

Internal coolant supply

HSK

KAPR 90°





Metric version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	Nm	Kg	RPMX	CICT	$MIID_E$
50.0	15	63	14.0	7°	3.3	1	4	**RAL90-S-050HA06-16H**	80.0	50.0	109.0	5.0	1.9	33000	4	KPHX 15 04..
50.0	15	80	14.0	7°	3.3	1	4	**RAL90-S-050HFM08-16H**	80.0	50.0	100.0	5.0	2.0	33000	4	KPHX 15 04..

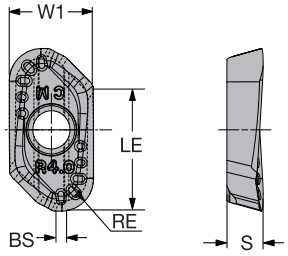
Inch version

DC		CZC_{MS}	APMX	RMPX	AZ	CNSC		Ordering code	Dimensions, inch DCON	DCX	LF	Ft/lbs	Lbs	RPMX	CICT	$MIID_E$
2.000	15	63	.550	7°	.130	1	4	**RAL90A-S-050HA06-16H**	3.150	2.000	4.290	3.68	4.19	33000	4	KPHX 15 04..
2.000	15	80	.550	7°	.130	1	4	**RAL90A-S-050HFM08-16H**	3.150	2.000	3.940	3.68	4.40	33000	4	KPHX 15 04..

HSK-FM for MAKINO's machine models MAG Series A, with two orientation pins for high speed machining of aluminum

RPMX (max. rev/min) for holders must also be considered.

RAL90 Super MRR insert for milling



					N	Dimensions, mm, inch			
		RE	Ordering code		H13A	W1	LE	S	BS
Medium		15	0.80	KPHX 15 04 08 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			.031			*.420*	*.590*	*.180*	*.035*
			2.00	KPHX 15 04 20 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			.079			*.420*	*.590*	*.180*	*.035*
			3.10	KPHX 15 04 31 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			.122			*.420*	*.590*	*.180*	*.035*
			4.00	KPHX 15 04 40 FR-CM H13A	☆	10.7	14.0	4.60	0.9
			.157			*.420*	*.590*	*.180*	*.035*

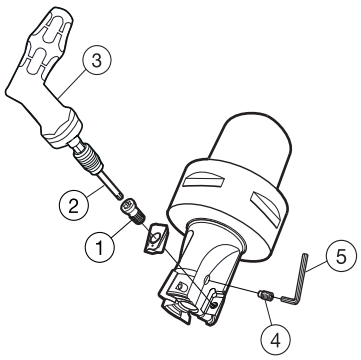
Feed recommendations

Geometry	ISO N		
	Feed per tooth, f_z mm (inch)		
	min.	rec.	max.
KPHX 15 04	0.10 (.0039)	0.20 (.0078)	0.30 (.0118)

Example of cutting parameters:

DC: 50 mm; Z=4
n: 33000 RPM
ap: 7 mm (0.276 inch)
ae: 40 mm (1.57 inch)
fz: 0.19 mm/tooth (0.007 in/tooth)
vf: 25000 mm/min (984 in/min)
MRR=7000 cm3/min (427 in3/min)

Spare parts



RAL90

Metric version

	Spare parts	Accessories			
	1	2	3	4	5
Ordering code	Insert screw	Bit	Torque wrench	Nozzle	Key
RAL90-025A25-16L	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90-32T16-16M	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90-40T16-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-11	174.1-862
RAL90-032HA06-16M	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90-040HA06-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90-040HA06L-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90-050HA06-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90-050Q22-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90-063Q27-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862

Inch version

	Spare parts	Accessories			
	1	2	3	4	5
Ordering code	Insert screw	Bit	Torque wrench	Nozzle	Key
RAL90A-025O25-16L	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90A-032O32-16M	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90A-025C5-16L	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90A-032C5-16M	5513 020-83	5680 084-02	5680 105-05	5691 026-05	170.3-864
RAL90A-050C5-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90A-050R19-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862

RAL90 Super MRR

Metric version

	Spare parts	Accessories			
	1	2	3	4	5
Ordering code	Insert screw	Bit	Torque wrench	Nozzle	Key
RAL90-S-050HA06-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90-S-050HFM08-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862

Inch version

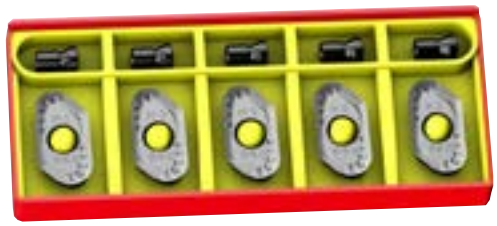
	Spare parts	Accessories			
	1	2	3	4	5
Ordering code	Insert screw	Bit	Torque wrench	Nozzle	Key
RAL90A-S-050HA06-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862
RAL90A-S-050HFM08-16H	5513 020-83	5680 084-02	5680 105-05	5691 026-13	174.1-862

Insert screw must be changed at each insert replacement.
Accessories to be ordered separately

Number of 5691 026-05 is equal to the number of teeth
Number of 5691 026-11 is equal to two times the number of teeth
Number of 5691 026-13 is equal to two times the number of teeth

Spare parts

Insert kits



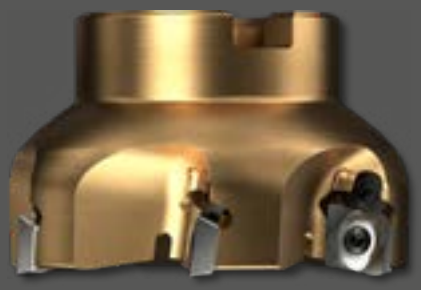
Ordering code	Insert	Quantity	Screw	Quantity
KIT-KPHT150405FR-CM H13A	KPHT 15 04 05 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150408FR-CM H13A	KPHT 15 04 08 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150416FR-CM H13A	KPHT 15 04 16 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150420FR-CM H13A	KPHT 15 04 20 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150425FR-CM H13A	KPHT 15 04 25 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150431FR-CM H13A	KPHT 15 04 31 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150440FR-CM H13A	KPHT 15 04 40 FR-CM H13A	5	5513 020-83	5
KIT-KPHT150450FR-CM H13A	KPHT 15 04 50 FR-CM H13A	5	5513 020-83	5
KIT-KPHX150408FR-CM H13A	KPHX 15 04 08 FR-CM H13A	5	5513 020-83	5
KIT-KPHX150420FR-CM H13A	KPHX 15 04 20 FR-CM H13A	5	5513 020-83	5
KIT-KPHX150431FR-CM H13A	KPHX 15 04 31 FR-CM H13A	5	5513 020-83	5
KIT-KPHX150440FR-CM H13A	KPHX 15 04 40 FR-CM H13A	5	5513 020-83	5

These kits are ordered in a multiple of two. Delivery time is 1-2 weeks.

See more about CoroMill RAL90

CoroMill® Century

Light-cutting face milling cutter



Tailor Made

P K N S H

ISO application area

Application

- Face milling
- Shoulder milling
- Finishing

Cutter bodies

- Diameter range: 40-200 mm (2.000-8.000 inch)
- Max. cutting depth: 2-10 mm (.079-.394 inch)
- Couplings: Coromant Capto® , HSK, arbor and CIS arbor
- Internal coolant

Inserts

- Insert size: 11
- One or two cutting edges
- Cemented carbide, PCD and CBN grades
- Wide assortment of corner radii and chamfer

M

See page J152

See page J149

PCD and carbide inserts

CB50 CB50

Wiper TECHNOLOGY

Wiper insert option for high feed finishing

See page 24

Micro setting

Micro precision setting of insert within 0.1 mm (.0039 inch) setting range on cassette solution.

Macro setting

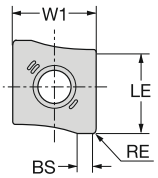
Macro setting of insert within 1 mm (.039 inch) setting range.

Insert setting

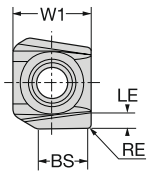
Serrated insert location gives very high security against insert movement.

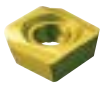
CoroMill® Century insert for milling

KRINS 90°
R/L590..H..L



90°
R/L590..H..W



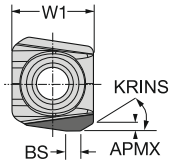
						P		M	K	N	S	Dimensions, mm, inch		
			RE	BS	Ordering code	1020	1030	1030	1020	H10	1030	W1	LE	S
Light		11	0.4	2.0	R590-110504H-NL					☆		11.5	11.0	5.00
			.016	*.079*								*.453*	*.433*	*.197*
			0.8	1.7	R590-110508H-KL				☆			11.5	11.0	5.00
			.031	*.067*								*.453*	*.433*	*.197*
			0.8	1.7	R590-110508H-PL		☆					11.5	11.0	5.00
			.031	*.067*								*.453*	*.433*	*.197*
		11	0.4	7.0	R590-110504H-KTW	☆			☆			11.5	11.0	5.00
			.016	*.276*								*.453*	*.433*	*.197*
			0.4	7.0	R590-110504H-NW					☆		11.5	11.0	5.00
			.016	*.276*								*.453*	*.433*	*.197*
			0.4	7.0	R590-110504H-PTW		☆	☆			☆	11.5	11.0	5.00
			.016	*.276*								*.453*	*.433*	*.197*
			0.8	7.0	R590-110508H-KW				☆			11.5	11.0	5.00
			.031	*.276*								*.453*	*.433*	*.197*
			0.8	7.0	R590-110508H-PW		☆					11.5	11.0	5.00
			.031	*.276*								*.453*	*.433*	*.197*

CoroMill® Century insert for milling

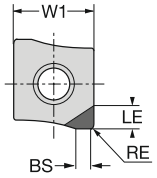
Advanced cutting materials

KRINS

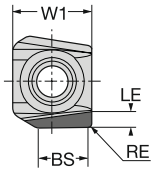
90°
R/L590..H-Z..-KL / R/L590..H-Z..-KW



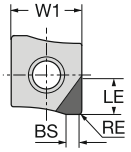
90°
R590..PR2-KM

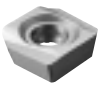


90°
R590..PR2-KW



90°
R590..PR5-KM

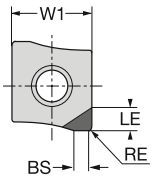


		SSC	RE	KCH	CHW	BS	Ordering code	K CB50	H CB50	Dimensions, mm, inch W1	LE	S
		11		30°	1.0	5.9	**R/L590-1105H-ZC2-KW**	☆	☆	11.5	3.0	5.00
					.058	*.233*				*.453*	*.118*	*.197*
Light		11		30°	1.0	2.3	**R/L590-1105H-ZC2-KL**	☆	☆	11.5	3.0	5.00
					.039	*.092*				*.453*	*.118*	*.197*
		11	0.8			7.1	**R590-110508H-PR2-KW**	☆		11.5	2.0	5.00
			.031			*.280*				*.453*	*.079*	*.197*
Medium		11	0.8			1.5	**R590-110508H-PR2-KM**	☆		11.5	2.0	5.00
			.031			*.059*				*.453*	*.079*	*.197*
		11	0.8			1.5	**R590-110508H-PR5-KM**	☆		11.5	5.0	5.00
			.031			*.059*				*.453*	*.197*	*.197*

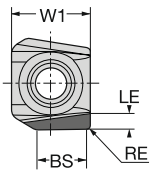
CoroMill® Century insert for milling

Advanced cutting materials

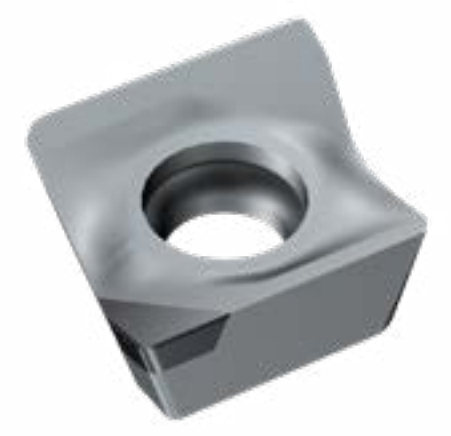
KRINS 90°
R/L590..H-P..-NL

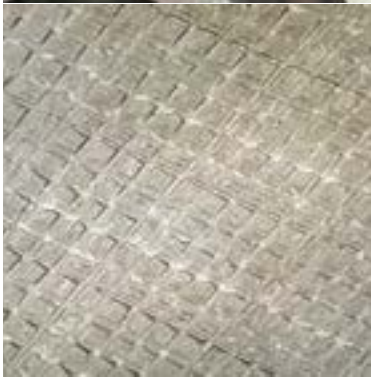


90°
R/L590..H-P..-NW / R/L590..H-R..-NW



		SSC	RE	KCH	CHW	BS	Ordering code	N CD10	Dimensions, mm, inch W1	LE	S
		11		45°	1.0	6.3	**L590-1105H-RC2-NW**	☆	11.5	3.0	5.00
					.039	*.248*			*.453*	*.118*	*.197*
				45°	0.1	7.0	**L590-1105H-RS2-NW**	☆	11.5	3.0	5.00
					.004	*.276*			*.453*	*.118*	*.197*
			0.4			6.8	**R/L590-1105H-RR2-NW**	☆	11.5	3.0	5.00
			.016			*.268*			*.453*	*.118*	*.197*
Light		11		45°	1.0	1.5	**R/L590-1105H-PC2-NL**	☆	11.5	3.0	5.00
					.039	*.059*			*.453*	*.118*	*.197*
				45°	1.0	1.5	**R/L590-1105H-PC5-NL**	☆	11.5	6.0	5.00
					.039	*.059*			*.453*	*.236*	*.197*
			0.4		0.0	2.2	**R/L590-1105H-PR2-NL**	☆	11.5	3.0	5.00
			.016		*.000*	*.087*			*.453*	*.118*	*.197*
			0.4		0.0	2.2	**R/L590-1105H-PR5-NL**	☆	11.5	6.0	5.00
			.016		*.000*	*.087*			*.453*	*.236*	*.197*
				45°	0.1	2.2	**R/L590-1105H-PS2-NL**	☆	11.5	3.0	5.00
					.004	*.087*			*.453*	*.118*	*.197*
				45°	0.1	2.2	**R/L590-1105H-PS5-NL**	☆	11.5	6.0	5.00
					.004	*.087*			*.453*	*.236*	*.197*
		11		45°	1.2	6.0	**R590-1105H-RC2-NW**	☆	11.5	3.0	5.00
					.047	*.236*			*.453*	*.118*	*.197*
				45°	0.3	7.0	**R590-1105H-RS2-NW**	☆	11.5	3.0	5.00
					.010	*.276*			*.453*	*.118*	*.197*



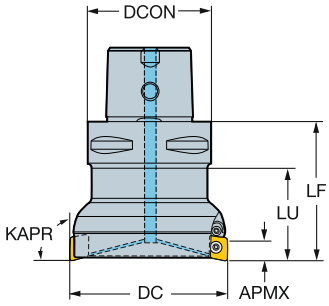


Tailor Made option for special inserts profiles
to provide framed roughness surfaces

CoroMill® Century square shoulder milling cutter

Coromant Capto®

KAPR 90°



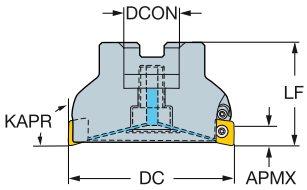
Metric version

DC		CZC_{MS}	APMX	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	LU	Nm	kg	RPMX	CICT	MIID
40.0	11	C3	11.0	1	3	**R590-040C3-11M**	32.0	40.0	55.0	40.0	3.0	0.65	48000	3	R590-1105..
	11	C4	11.0	1	3	**R590-040C4-11M**	40.0	40.0	63.0	40.0	3.0	0.41	39000	3	R590-1105..
50.0	11	C5	11.0	1	1	**R590-050C5-11M**	50.0	50.0	63.0	40.0	3.0	0.70	28000	1	R590-1105..
63.0	11	C5	11.0	1	5	**R590-063C5-11M**	50.0	63.0	63.0	40.0	3.0	1.20	28000	5	R590-1105..
80.0	11	C6	11.0	1	6	**R590-080C6-11M**	63.0	80.0	71.0		3.0	1.96	20000	6	R590-1105..

CoroMill® Century square shoulder milling cutter

Arbor

STDNO ISO 6462:2011
KAPR 90°



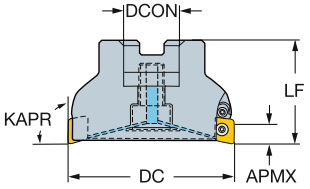
Metric version

DC		CZC_{MS}	APMX	CNSC		Ordering code	Dimensions, mm DCON	ISO	DBC	DCX	LF	Nm	Kg	RPMX	CICT	MIID
50.0	11	22	11.0	1	4	**R590-050Q22S-11M**	22.0	A		50.0	40.0	3.0	0.60	41600	4	R590-1105..
63.0	11	22	11.0	1	5	**R590-063Q22S-11M**	22.0	A		63.0	40.0	3.0	0.80	35100	5	R590-1105..
80.0	11	27	11.0	1	6	**R590-080Q27A-11M**	27.0	A		80.0	50.0	3.0	0.30	27500	6	R590-1105..
	11	27	11.0	1	6	**R590-080Q27S-11M**	27.0	A		80.0	50.0	3.0	1.50	27500	6	R590-1105..
100.0	11	32	11.0	1	6	**R590-100Q32S-11M**	32.0	B		100.0	50.0	3.0	2.16	23800	6	R590-1105..
	11	32	11.0	1	6	**R590-100Q32A-11M**	32.0	B		100.0	50.0	3.0	0.60	23800	6	R590-1105..
125.0	11	40	11.0	1	8	**R590-125Q40S-11M**	40.0	B		125.0	63.0	3.0	3.34	20700	8	R590-1105..
	11	40	11.0	1	8	**R590-125Q40A-11M**	40.0	B		125.0	63.0	3.0	0.90	20700	8	R590-1105..
160.0	11	40S	11.0	1	10	**R590-160Q40A-11M**	40.0	C	66.7	160.0	63.0	3.0	1.70	17900	10	R590-1105..
	11	40S	11.0	1	10	**R590-160Q40S-11M**	40.0	C	66.7	160.0	63.0	3.0	5.64	17900	10	R590-1105..
200.0	11	60	11.0	0	16	**R590-200Q60A-11M**	60.0	C	101.6	200.0	63.0	3.0	2.70	15700	16	R590-1105..
	11	60	11.0	0	16	**R590-200Q60S-11M**	60.0	C	101.6	200.0	63.0	3.0	7.30	15700	16	R590-1105..

CoroMill® Century square shoulder milling cutter

Arbor

STDNO ISO 6462:2011
KAPR 90°



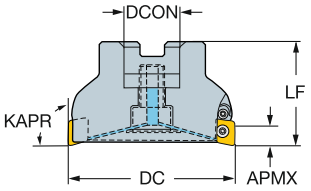
Inch version

DC		CZC_{MS}	APMX	CNSC		Ordering code	Dimensions, inch DCON	ISO	DBC	DCX	LF	Ft/lbs	Lbs	RPMX	CICT	MIID
2.000	11	3/4	.433	1	4	RA590-051R19S-11M	.750	A		2.000	1.575	2.2	0.44	41100	4	R590-1105..
2.500	11	3/4	.433	1	5	RA590-063R19S-11M	.750	A		2.500	1.575	2.2	1.69	34900	5	R590-1105..
3.000	11	1	.433	1	6	RA590-076R25A-11M	1.000	A		3.000	1.969	2.2	1.70	28400	6	R590-1105..
	11	1	.433	1	6	RA590-076R25S-11M	1.000	A		3.000	1.969	2.2	3.12	28400	6	R590-1105..
4.000	11	1 1/2	.433	1	6	RA590-102R38A-11M	1.500	B		4.000	2.480	2.2	3.12	23500	6	R590-1105..
	11	1 1/2	.433	1	6	RA590-102R38S-11M	1.500	B		4.000	2.480	2.2	5.72	23500	6	R590-1105..
5.000	11	1 1/2	.433	1	8	RA590-127R38A-11M	1.500	B		5.000	2.480	2.2	3.96	20500	8	R590-1105..
	11	1 1/2	.433	1	8	RA590-127R38S-11M	1.500	B		5.000	2.480	2.2	8.36	20500	8	R590-1105..
6.000	11	1 1/2	.433	1	10	RA590-152R38A-11M	1.500	B		6.000	2.480	2.2	5.72	18400	10	R590-1105..
	11	1 1/2	.433	1	10	RA590-152R38S-11M	1.500	B		6.000	2.480	2.2	18.48	18400	10	R590-1105..
8.000	11	2 1/2	.433	0	16	RA590-203R63A-11M	2.500	C	4.000	8.000	2.480	2.2	18.70	15600	16	R590-1105..
	11	2 1/2	.433	0	16	RA590-203R63S-11M	2.500	C	4.000	8.000	2.480	2.2	18.48	15600	16	R590-1105..

CoroMill® Century square shoulder milling cutter

Arbor

KAPR 90°



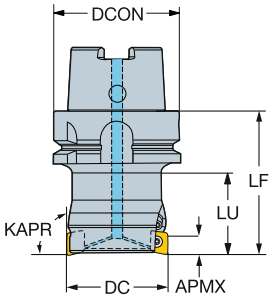
CIS version

DC		CZC_{MS}	APMX	CNSC		Ordering code	Dimensions, mm DCON	DBC	DCX	LF	Nm	kg	RPMX	CICT	MIID
80.0	11	1	11.0	1	6	**RA590-080J25S-11M**	25.4		80.0	50.0	3.0	1.42	27500	6	R590-1105..
	11	1	11.0	1	6	**RA590-080J25A-11M**	25.4		80.0	50.0	3.0	0.94	27500	6	R590-1105..
100.0	11	1 1/4	11.0	1	6	**RA590-100J31A-11M**	31.8		100.0	63.0	3.0	1.15	23800	6	R590-1105..
	11	1 1/4	11.0	1	6	**RA590-100J31S-11M**	31.8		100.0	63.0	3.0	2.60	23800	6	R590-1105..
125.0	11	1 1/2	11.0	1	8	**RA590-125J38A-11M**	38.1		125.0	63.0	3.0	1.80	20700	8	R590-1105..
	11	1 1/2	11.0	1	8	**RA590-125J38S-11M**	38.1		125.0	63.0	3.0	3.80	20700	8	R590-1105..
160.0	11	1 1/2	11.0	1	10	**RA590-160J38A-11M**	38.1		160.0	63.0	3.0	2.60	17900	10	R590-1105..
	11	1 1/2	11.0	1	10	**RA590-160J38S-11M**	38.1		160.0	63.0	3.0	8.40	17900	10	R590-1105..
200.0	11	1 7/8	11.0	1	16	**RA590-200J47A-11M**	47.6	66.7	200.0	63.0	3.0	8.40	15700	16	R590-1105..
	11	1 7/8	11.0	1	16	**RA590-200J47S-11M**	47.6	66.7	200.0	63.0	3.0	8.50	15700	16	R590-1105..

CoroMill® Century square shoulder milling cutter

HSK

KAPR 90°



Metric version

DC		CZC_{MS}	APMX	CNSC		Ordering code	Dimensions, mm DCON	DCX	LF	LU	Nm	kg	RPMX	CICT	MIID
40.0	11	63	11.0	1	3	**R590-040HA06-11M**	63.0	40.0	71.0	40.0	3.0	0.80	20000	3	R590-1105..
50.0	11	63	11.0	1	4	**R590-050HA06-11M**	63.0	50.0	71.0	40.0	3.0	1.00	20000	4	R590-1105..
63.0	11	63	11.0	1	5	**R590-063HA06-11M**	63.0	63.0	71.0	40.0	3.0	1.30	25000	5	R590-1105..
	11	80	11.0	1	5	**R590-063HA08-11M**	80.0	63.0	80.0	50.0	3.0	2.00	16000	5	R590-1105..
80.0	11	80	11.0	1	6	**R590-080HA08-11M**	80.0	80.0	80.0	50.0	3.0	2.70	16000	6	R590-1105..
	11	63	11.0	1	6	**R590-080HA06-11M**	63.0	80.0	71.0		3.0	1.50	20000	6	R590-1105..
100.0	11	63	11.0	1	6	**R590-100HA06-11M**	63.0	100.0	80.0		3.0	1.96	20000	6	R590-1105..
	11	80	11.0	1	6	**R590-100HA08-11M**	80.0	100.0	80.0		3.0	3.00	16000	6	R590-1105..
125.0	11	80	11.0	1	8	**R590-125HA08-11M**	80.0	125.0	80.0		3.0	4.10	16000	8	R590-1105..

See more about CoroMill Century

Solid round tools

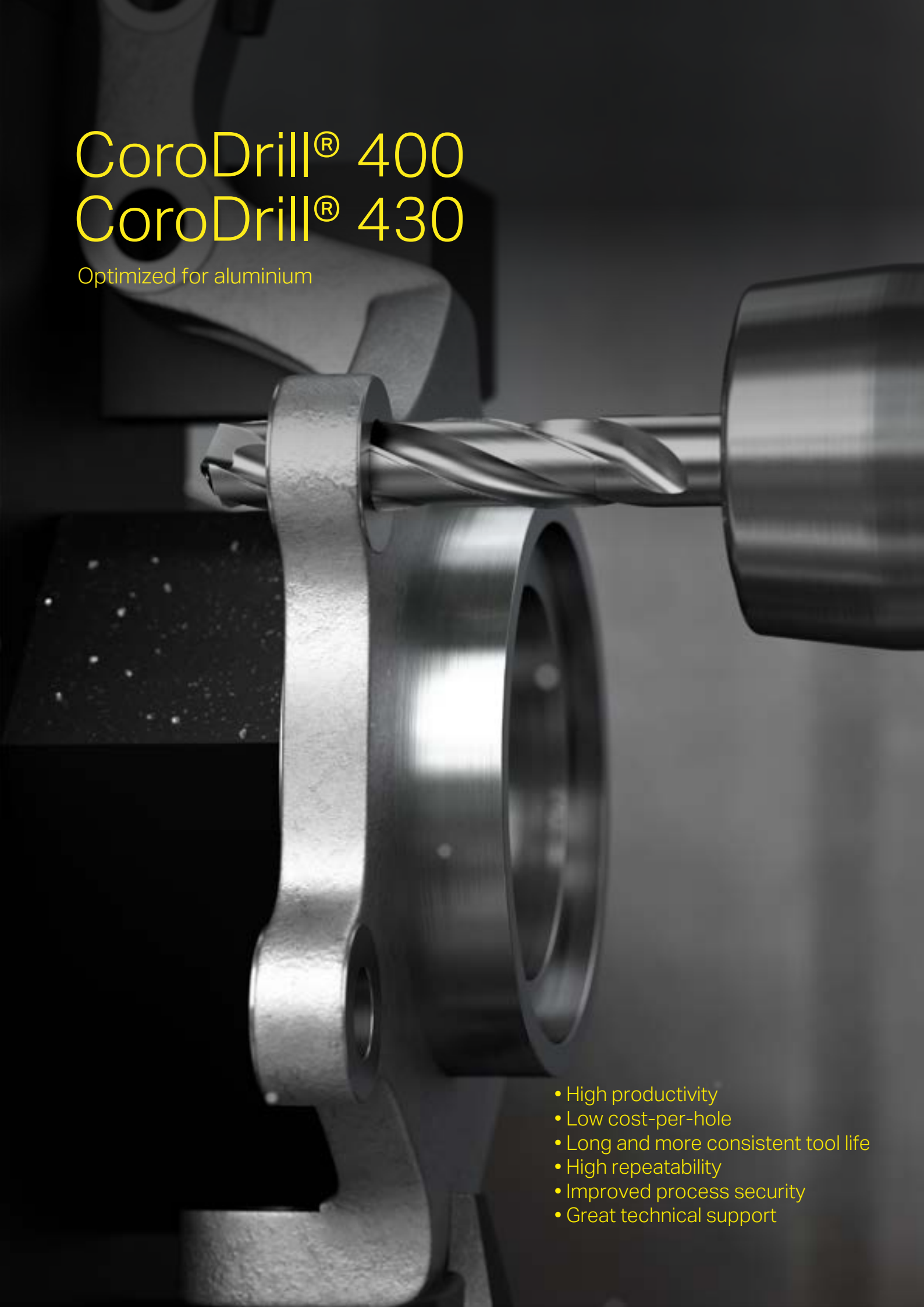
Solid round tools

DRILLING

in aluminium

CoroDrill® 400
CoroDrill® 430

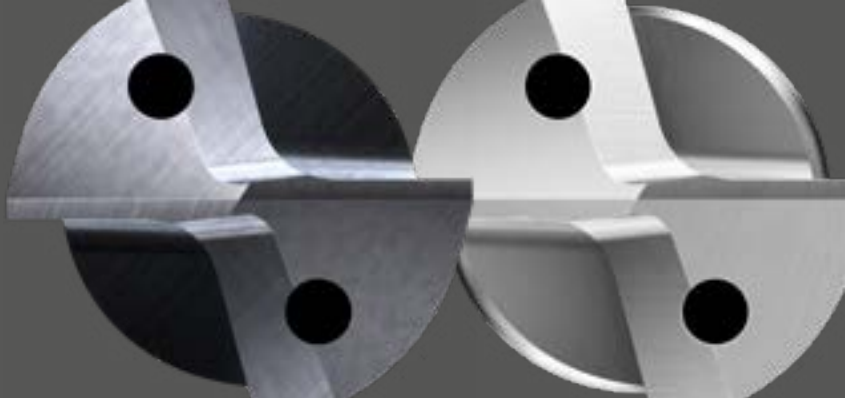
Optimized for aluminium



- High productivity
- Low cost-per-hole
- Long and more consistent tool life
- High repeatability
- Improved process security
- Great technical support

CoroDrill® 400

Advanced solution for drilling aluminium
Straight flutes



Flexible and precise tool solutions

The straight flute CoroDrill® 400 is an optimized solution designed for wide use within the automotive industry. It has been meticulously engineered to meet demanding precision needs.

Available in solid carbide grades and PCD – VEINED technology

High precision and reliability

By creating a dedicated customized solution for the application, you can achieve increased:

- Productivity
- Precision
- Process security
- Reliability

- Complex multi-step form drills with a diameter range of 3-25 mm, up to 8x
- Straight flute and 3 flute geometries
- Minimum quantity lubrication (MQL) supported
- Optimized features, including edge preparation and flute polishing
- Outstanding productivity, low cost per hole
- Flexible tool solutions
- Fast quotations
- Fast and secure delivery

- Customized Solutions, supported by Tailor Made
- Reconditioning
- High reliability and process security
- Exceptional and consistent tool life

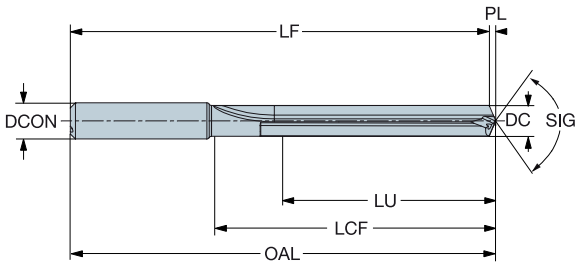
Tailor Made

CoroDrill® 400 solid carbide drill

For aluminium

Internal coolant supply

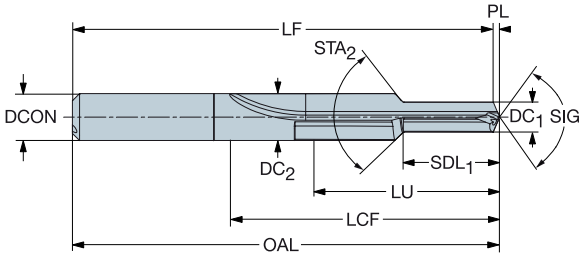
TCHA H9
SIG 135°



DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	N		Dimensions, mm, inch										BAR	PSI	BSG
							N1BU	N1DU	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"			
5.00	.197	30.0	1.181	6	6	**400.1-0500-030A1-NM**	★	★	6.0	.236	85	3.346	84.0	3.308	45	1.785	1.0	.038	20	290	COROMANT
7.00	.276	50.0	1.969	7	8	**400.1-0700-050A1-NM**	★	★	8.0	.315	110	4.331	108.6	4.276	68	2.695	1.4	.054	20	290	COROMANT
10.20	.402	70.0	2.756	6	12	**400.1-1020-070A1-NM**	★	★	12.0	.472	140	5.512	138.0	5.432	92	3.652	2.0	.080	20	290	COROMANT
12.50	.492	75.0	2.953	6	14	**400.1-1250-075A1-NM**	★	★	14.0	.551	150	5.906	147.5	5.807	100	3.956	2.5	.099	20	290	COROMANT

Internal coolant supply

TCHA H9
SIG 135°

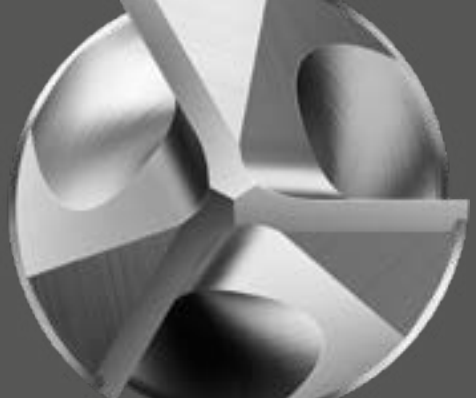


DC_1	DC_1"	DC_2	DC_2"	SDL_1	SDL_1"	STA	LU	LU"	CZC_{MS}	Ordering code	N		Dimensions, mm, inch										BAR	PSI	BSG
											N1BU	N1DU	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"			
5.00	.197	8.00	.315	15.00	.591	90°	31.0	1.220	8	**400.4-0500-031A1-NM**	★	★	8.0	.315	90	3.543	89.0	3.505	50	2.002	1.0	.038	20	0	COROMANT
6.80	.268	10.00	.394	20.40	.803	90°	40.0	1.575	10	**400.4-0680-040A1-NM**	★	★	10.0	.394	105	4.134	103.7	4.081	62	2.452	1.3	.053	20	0	COROMANT
8.50	.335	12.00	.472	25.50	1.004	90°	50.0	1.969	12	**400.4-0850-050A1-NM**	★	★	12.0	.472	125	4.921	123.3	4.855	74	2.940	1.7	.067	20	0	COROMANT
10.20	.402	16.00	.630	30.60	1.205	90°	63.0	2.480	16	**400.4-1020-063A1-NM**	★	★	16.0	.630	145	5.709	143.0	5.629	91	3.605	2.0	.080	20	0	COROMANT

Drill Type 4 to use DC2 RPM, and DC1 feed rate.

CoroDrill® 430

Advanced solution for drilling aluminium
3 flutes drill



Flexible and precise tool solutions

The spiral flute CoroDrill® 430 is an optimized solution for a wide use within the automotive industry. It has been meticulously engineered to meet the demanding need for high precision.

Available in solid carbide grades.

High productivity and consistent tool life

CoroDrill® 430 has dedicated substrate and coating to withstand the abrasive wear resulting from high speeds and temperatures, typical in aluminum silicon alloys and cast iron machining.

This helps extend tool life and improve productivity.

- Complex multi-step form drills with a diameter range of 3-25 mm, up to 8x
- Straight flute and 3 flute geometries
- Minimum quantity lubrication (MQL) supported
- Optimized features, including edge preparation and flute polishing
- Outstanding productivity, low cost per hole
- Flexible tool solutions
- Fast quotations
- Fast and secure delivery
- Customized Solutions, supported by Tailor Made
- Reconditioning
- High reliability and process security
- Exceptional and consistent tool life

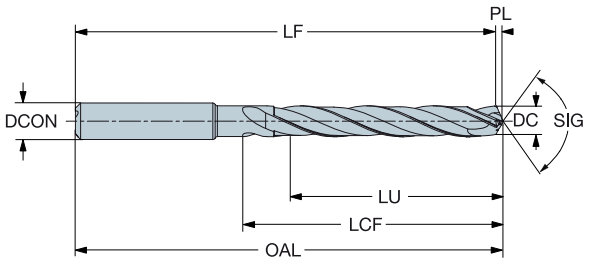
Tailor Made

CoroDrill® 430 solid carbide drill

For aluminium

Internal coolant supply

TCHA H9
SIG 135°

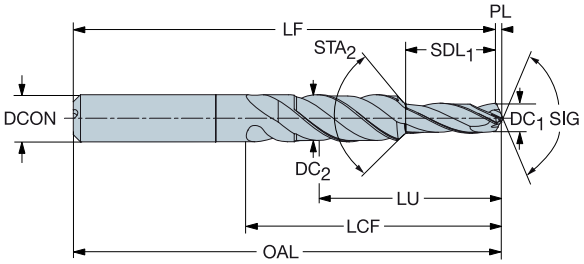


DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	N	N1BU	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BAR	PSI	BSG
5.00	.197	30.0	1.181	6	6	430.1-0500-030A1-NM	★		6.0	.236	85	3.346	84.0	3.306	37	1.476	1.0	.041	20	290	COROMANT
7.00	.276	50.0	1.969	7	8	430.1-0700-050A1-NM	★		8.0	.315	110	4.331	108.6	4.274	60	2.382	1.5	.057	20	290	COROMANT
10.20	.402	70.0	2.756	6	12	430.1-1020-070A1-NM	★		12.0	.472	140	5.512	137.9	5.429	85	3.358	2.1	.083	20	290	COROMANT
12.50	.492	75.0	2.953	6	14	430.1-1250-075A1-NM	★		14.0	.551	150	5.906	147.4	5.804	93	3.693	2.6	.102	20	290	COROMANT

Dimensions, mm, inch

Internal coolant supply

TCHA H9
SIG 135°



DC_1	DC_1"	DC_2	DC_2"	SDL_1	SDL_1"	STA	LU	LU"	CZC_{MS}	Ordering code	N	N1BU	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BAR	PSI	BSG
5.00	.197	8.00	.315	15.00	.591	90°	31.0	1.220	8	430.4-0500-031A1-NM	★		8.0	.315	90	3.543	89.0	3.503	39	1.535	1.0	.041	20	0	COROMANT
6.80	.268	10.00	.394	20.40	.803	90°	40.4	1.591	10	430.4-0680-040A1-NM	★		10.0	.394	105	4.134	103.6	4.078	50	1.984	1.4	.056	20	0	COROMANT
8.50	.335	12.00	.472	25.50	1.004	90°	49.5	1.949	12	430.4-0850-050A1-NM	★		12.0	.472	125	4.921	123.2	4.852	61	2.421	1.8	.069	20	0	COROMANT
10.20	.402	16.00	.630	30.60	1.205	90°	62.6	2.465	16	430.4-1020-063A1-NM	★		16.0	.630	145	5.709	142.9	5.626	78	3.094	2.1	.083	20	0	COROMANT

Dimensions, mm, inch

Drill Type 4 to use DC2 RPM, and DC1 feed rate.

CoroDrill® 860

High performance drills optimized for aluminium

Application

860-NM: Non-ferrous materials, such as aluminium alloys, magnesium and copper based alloys including bronze

ISO application area:

N

Features and benefits

- Optimized cutting data
- Low cost per hole
- Improved performance reliability
- Trouble-free chip evacuation
- Long tool life, controlled wear formation
- Consistent hole tolerance
- Can be reconditioned up to 3 times to its original specification

www.sandvik.coromant.com/corodrill860

Recommendations

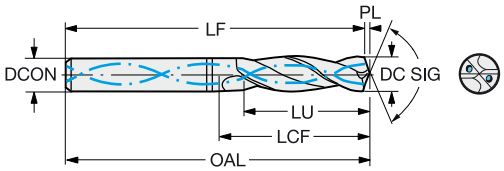
It is recommended to use hydraulic precision chucks.
It is recommended to use internal coolant, minimum recommended pressure 20 bar

CoroDrill® 860 solid carbide drill

For aluminium

Internal coolant supply

TCHA H7
SIG 130°



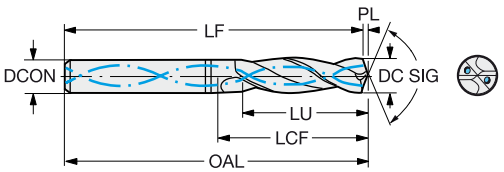
							N	Dimensions, mm, inch									
DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	H10F	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BSG
3.00	.118	9.4	.370	3	6	860.1-0300-009A1-NM	★	6.00	.236	62	2.441	61.6	2.425	20	.787	0.4	.016	DIN 6537 K
3.00	.118	24.4	.961	8	6	860.1-0300-024A1-NM	★	6.00	.236	77	3.032	76.6	3.016	36	1.417	0.4	.016	COROMANT
3.18	.125	10.0	.394	3	6	860.1-0318-010A1-NM	★	6.00	.236	62	2.441	61.6	2.425	20	.787	0.4	.016	DIN 6537 K
3.18	.125	25.8	1.016	8	6	860.1-0318-025A1-NM	★	6.00	.236	77	3.032	76.6	3.016	36	1.417	0.4	.016	COROMANT
3.20	.126	10.0	.394	3	6	860.1-0320-010A1-NM	★	6.00	.236	62	2.441	61.6	2.425	20	.787	0.4	.016	DIN 6537 K
3.20	.126	26.0	1.024	8	6	860.1-0320-026A1-NM	★	6.00	.236	77	3.032	76.6	3.016	36	1.417	0.4	.016	COROMANT
3.30	.130	10.3	.406	3	6	860.1-0330-010A1-NM	★	6.00	.236	62	2.441	61.6	2.425	20	.787	0.4	.016	DIN 6537 K
3.30	.130	26.8	1.055	8	6	860.1-0330-026A1-NM	★	6.00	.236	77	3.032	76.6	3.016	36	1.417	0.4	.016	COROMANT
3.50	.138	11.0	.433	3	6	860.1-0350-011A1-NM	★	6.00	.236	62	2.441	61.5	2.421	20	.787	0.5	.020	DIN 6537 K
3.50	.138	28.3	1.114	8	6	860.1-0350-028A1-NM	★	6.00	.236	77	3.032	76.5	3.012	36	1.417	0.5	.020	COROMANT
3.57	.141	11.2	.441	3	6	860.1-0357-011A1-NM	★	6.00	.236	62	2.441	61.5	2.421	20	.787	0.5	.020	DIN 6537 K
3.57	.141	28.1	1.106	7	6	860.1-0357-029A1-NM	★	6.00	.236	77	3.032	76.5	3.012	36	1.417	0.5	.020	COROMANT
3.70	.146	11.6	.457	3	6	860.1-0370-011A1-NM	★	6.00	.236	62	2.441	61.5	2.421	20	.787	0.5	.020	DIN 6537 K
3.70	.146	27.9	1.098	7	6	860.1-0370-030A1-NM	★	6.00	.236	77	3.032	76.5	3.012	36	1.417	0.5	.020	COROMANT
3.80	.150	11.9	.469	3	6	860.1-0380-011A1-NM	★	6.00	.236	66	2.598	65.5	2.579	24	.945	0.5	.020	DIN 6537 K
3.80	.150	30.9	1.217	8	6	860.1-0380-030A1-NM	★	6.00	.236	86	3.386	85.5	3.366	47	1.850	0.5	.020	COROMANT
3.90	.154	12.2	.480	3	6	860.1-0390-012A1-NM	★	6.00	.236	66	2.598	65.5	2.579	24	.945	0.5	.020	DIN 6537 K
3.90	.154	31.7	1.248	8	6	860.1-0390-031A1-NM	★	6.00	.236	86	3.386	85.5	3.366	47	1.850	0.5	.020	COROMANT
3.97	.156	12.4	.488	3	6	860.1-0397-012A1-NM	★	6.00	.236	66	2.598	65.5	2.579	24	.945	0.5	.020	DIN 6537 K
3.97	.156	32.3	1.272	8	6	860.1-0397-032A1-NM	★	6.00	.236	86	3.386	85.5	3.366	47	1.850	0.5	.020	COROMANT
4.00	.157	12.5	.492	3	6	860.1-0400-012A1-NM	★	6.00	.236	66	2.598	65.5	2.579	24	.945	0.5	.020	DIN 6537 K
4.00	.157	32.5	1.280	8	6	860.1-0400-032A1-NM	★	6.00	.236	86	3.386	85.5	3.366	47	1.850	0.5	.020	COROMANT
4.10	.161	12.8	.504	3	6	860.1-0410-012A1-NM	★	6.00	.236	66	2.598	65.5	2.579	24	.945	0.5	.020	DIN 6537 K
4.10	.161	33.3	1.311	8	6	860.1-0410-033A1-NM	★	6.00	.236	86	3.386	85.5	3.366	47	1.850	0.5	.020	COROMANT
4.20	.165	13.2	.520	3	6	860.1-0420-013A1-NM	★	6.00	.236	66	2.598	65.4	2.575	24	.945	0.6	.024	DIN 6537 K
4.20	.165	34.2	1.346	8	6	860.1-0420-034A1-NM	★	6.00	.236	86	3.386	85.4	3.362	47	1.850	0.6	.024	COROMANT
4.37	.172	13.7	.539	3	6	860.1-0437-013A1-NM	★	6.00	.236	66	2.598	65.4	2.575	24	.945	0.6	.024	DIN 6537 K
4.37	.172	35.5	1.398	8	6	860.1-0437-035A1-NM	★	6.00	.236	86	3.386	85.4	3.362	47	1.850	0.6	.024	COROMANT
4.50	.177	14.1	.555	3	6	860.1-0450-014A1-NM	★	6.00	.236	66	2.598	65.4	2.575	24	.945	0.6	.024	DIN 6537 K
4.50	.177	36.6	1.441	8	6	860.1-0450-036A1-NM	★	6.00	.236	86	3.386	85.4	3.362	47	1.850	0.6	.024	COROMANT
4.60	.181	14.4	.567	3	6	860.1-0460-014A1-NM	★	6.00	.236	66	2.598	65.4	2.575	24	.945	0.6	.024	DIN 6537 K
4.60	.181	37.4	1.472	8	6	860.1-0460-037A1-NM	★	6.00	.236	86	3.386	85.4	3.362	47	1.850	0.6	.024	COROMANT
4.76	.187	14.9	.587	3	6	860.1-0476-014A1-NM	★	6.00	.236	66	2.598	65.4	2.575	28	1.102	0.6	.024	DIN 6537 K
4.76	.187	38.7	1.524	8	6	860.1-0476-038A1-NM	★	6.00	.236	99	3.898	98.4	3.874	60	2.362	0.6	.024	COROMANT
5.00	.197	15.7	.618	3	6	860.1-0500-015A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.00	.197	40.7	1.602	8	6	860.1-0500-040A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.10	.201	16.0	.630	3	6	860.1-0510-015A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.10	.201	41.5	1.634	8	6	860.1-0510-041A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.16	.203	16.2	.638	3	6	860.1-0516-015A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.16	.203	42.0	1.654	8	6	860.1-0516-041A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.20	.205	16.3	.642	3	6	860.1-0520-016A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.20	.205	42.3	1.665	8	6	860.1-0520-042A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.50	.217	17.2	.677	3	6	860.1-0550-017A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.50	.217	44.7	1.760	8	6	860.1-0550-044A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.56	.219	17.4	.685	3	6	860.1-0556-017A1-NM	★	6.00	.236	66	2.598	65.3	2.571	28	1.102	0.7	.028	DIN 6537 K
5.56	.219	45.2	1.780	8	6	860.1-0556-044A1-NM	★	6.00	.236	99	3.898	98.3	3.870	60	2.362	0.7	.028	COROMANT
5.80	.228	17.6	.693	3	6	860.1-0580-017A1-NM	★	6.00	.236	66	2.598	65.2	2.567	28	1.102	0.8	.031	DIN 6537 K
5.80	.228	47.2	1.858	8	6	860.1-0580-046A1-NM	★	6.00	.236	99	3.898	98.2	3.866	60	2.362	0.8	.031	COROMANT
6.00	.236	18.8	.740	3	6	860.1-0600-018A1-NM	★	6.00	.236	66	2.598	65.2	2.567	28	1.102	0.8	.031	DIN 6537 K
6.00	.236	48.8	1.921	8	6	860.1-0600-048A1-NM	★	6.00	.236	99	3.898	98.2	3.866	60	2.362	0.8	.031	COROMANT
6.30	.248	19.7	.776	3	8	860.1-0630-019A1-NM	★	8.00	.315	79	3.110	78.2	3.079	34	1.339	0.8	.031	DIN 6537 K
6.30	.248	51.2	2.016	8	8	860.1-0630-050A1-NM	★	8.00	.315	121	4.764	120.2	4.732	80	3.150	0.8	.031	COROMANT

CoroDrill® 860 solid carbide drill

For aluminium

Internal coolant supply

TCHA H7
SIG 130°



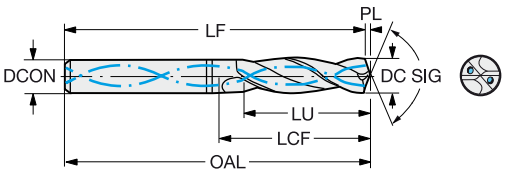
									Dimensions, mm, inch										
DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	H10F	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BSG
6.35	.250	19.9	.783	3	8	860.1-0635-019A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
6.35	.250	51.7	2.035	8	8	860.1-0635-051A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
6.50	.256	20.4	.803	3	8	860.1-0650-020A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
6.50	.256	52.9	2.083	8	8	860.1-0650-052A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
6.60	.260	20.7	.815	3	8	860.1-0660-020A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
6.60	.260	53.7	2.114	8	8	860.1-0660-053A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
6.75	.266	21.1	.831	3	8	860.1-0675-020A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
6.75	.266	54.9	2.161	8	8	860.1-0675-054A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
6.80	.268	21.3	.839	3	8	860.1-0680-020A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
6.80	.268	55.3	2.177	8	8	860.1-0680-054A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
6.90	.272	21.6	.850	3	8	860.1-0690-021A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
7.00	.276	21.9	.862	3	8	860.1-0700-021A1-NM	★	8.00	.315	79	3.110	78.1	3.075	34	1.339	0.9	.035	DIN 6537 K
7.00	.276	56.9	2.240	8	8	860.1-0700-056A1-NM	★	8.00	.315	121	4.764	120.1	4.728	80	3.150	0.9	.035	COROMANT
7.14	.281	22.4	.882	3	8	860.1-0714-021A1-NM	★	8.00	.315	79	3.110	78.0	3.071	41	1.614	1.0	.039	DIN 6537 K
7.30	.287	22.9	.902	3	8	860.1-0730-022A1-NM	★	8.00	.315	79	3.110	78.0	3.071	41	1.614	1.0	.039	DIN 6537 K
7.30	.287	59.4	2.339	8	8	860.1-0730-058A1-NM	★	8.00	.315	121	4.764	120.0	4.724	80	3.150	1.0	.039	COROMANT
7.40	.291	23.2	.913	3	8	860.1-0740-022A1-NM	★	8.00	.315	79	3.110	78.0	3.071	41	1.614	1.0	.039	DIN 6537 K
7.40	.291	60.2	2.370	8	8	860.1-0740-059A1-NM	★	8.00	.315	121	4.764	120.0	4.724	80	3.150	1.0	.039	COROMANT
7.50	.295	23.5	.925	3	8	860.1-0750-023A1-NM	★	8.00	.315	79	3.110	78.0	3.071	41	1.614	1.0	.039	DIN 6537 K
7.50	.295	61.0	2.402	8	8	860.1-0750-060A1-NM	★	8.00	.315	121	4.764	120.0	4.724	80	3.150	1.0	.039	COROMANT
7.94	.313	24.9	.980	3	8	860.1-0794-024A1-NM	★	8.00	.315	79	3.110	77.9	3.067	41	1.614	1.1	.043	DIN 6537 K
7.94	.313	64.6	2.543	8	8	860.1-0794-064A1-NM	★	8.00	.315	121	4.764	119.9	4.720	80	3.150	1.1	.043	COROMANT
8.00	.315	25.1	.988	3	8	860.1-0800-024A1-NM	★	8.00	.315	79	3.110	77.9	3.067	41	1.614	1.1	.043	DIN 6537 K
8.00	.315	65.1	2.563	8	8	860.1-0800-064A1-NM	★	8.00	.315	121	4.764	119.9	4.720	80	3.150	1.1	.043	COROMANT
8.33	.328	26.1	1.028	3	10	860.1-0833-025A1-NM	★	10.00	.394	89	3.504	87.9	3.461	47	1.850	1.1	.043	DIN 6537 K
8.33	.328	67.8	2.669	8	10	860.1-0833-067A1-NM	★	10.00	.394	145	5.709	143.9	5.665	100	3.937	1.1	.043	COROMANT
8.50	.335	26.6	1.047	3	10	860.1-0850-026A1-NM	★	10.00	.394	89	3.504	87.9	3.461	47	1.850	1.1	.043	DIN 6537 K
8.50	.335	69.1	2.720	8	10	860.1-0850-068A1-NM	★	10.00	.394	145	5.709	143.9	5.665	100	3.937	1.1	.043	COROMANT
8.60	.339	27.0	1.063	3	10	860.1-0860-026A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
8.60	.339	70.0	2.756	8	10	860.1-0860-069A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
8.70	.343	27.3	1.075	3	10	860.1-0870-026A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
8.70	.343	70.8	2.787	8	10	860.1-0870-070A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
8.73	.344	27.4	1.079	3	10	860.1-0873-026A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
8.73	.344	71.0	2.795	8	10	860.1-0873-070A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
8.80	.346	27.6	1.087	3	10	860.1-0880-026A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
8.80	.346	71.6	2.819	8	10	860.1-0880-070A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
9.00	.354	28.2	1.110	3	10	860.1-0900-027A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
9.00	.354	73.2	2.882	8	10	860.1-0900-072A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
9.13	.359	28.6	1.126	3	10	860.1-0913-027A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
9.13	.359	74.2	2.921	8	10	860.1-0913-073A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
9.30	.366	29.1	1.146	3	10	860.1-0930-028A1-NM	★	10.00	.394	89	3.504	87.8	3.457	47	1.850	1.2	.047	DIN 6537 K
9.30	.366	75.6	2.976	8	10	860.1-0930-074A1-NM	★	10.00	.394	145	5.709	143.8	5.661	100	3.937	1.2	.047	COROMANT
9.40	.370	29.5	1.161	3	10	860.1-0940-028A1-NM	★	10.00	.394	89	3.504	87.7	3.453	47	1.850	1.3	.051	DIN 6537 K
9.40	.370	76.5	3.012	8	10	860.1-0940-075A1-NM	★	10.00	.394	145	5.709	143.7	5.657	100	3.937	1.3	.051	COROMANT
9.50	.374	29.8	1.173	3	10	860.1-0950-029A1-NM	★	10.00	.394	89	3.504	87.7	3.453	47	1.850	1.3	.051	DIN 6537 K
9.50	.374	77.3	3.043	8	10	860.1-0950-076A1-NM	★	10.00	.394	145	5.709	143.7	5.657	100	3.937	1.3	.051	COROMANT
9.53	.375	29.9	1.177	3	10	860.1-0953-029A1-NM	★	10.00	.394	89	3.504	87.7	3.453	47	1.850	1.3	.051	DIN 6537 K
9.53	.375	77.5	3.051	8	10	860.1-0953-076A1-NM	★	10.00	.394	145	5.709	143.7	5.657	100	3.937	1.3	.051	COROMANT
9.92	.391	31.1	1.224	3	10	860.1-0992-030A1-NM	★	10.00	.394	89	3.504	87.7	3.453	47	1.850	1.3	.051	DIN 6537 K
9.92	.391	80.7	3.177	8	10	860.1-0992-079A1-NM	★	10.00	.394	145	5.709	143.7	5.657	100	3.937	1.3	.051	COROMANT
10.00	.394	31.3	1.232	3	10	860.1-1000-030A1-NM	★	10.00	.394	89	3.504	87.7	3.453	47	1.850	1.3	.051	DIN 6537 K
10.00	.394	81.3	3.201	8	10	860.1-1000-080A1-NM	★	10.00	.394	145	5.709	143.7	5.657	100	3.937	1.3	.051	COROMANT

CoroDrill® 860 solid carbide drill

For aluminium

Internal coolant supply

TCHA H7
SIG 130°



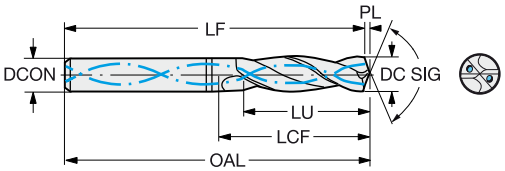
							N	Dimensions, mm, inch										
DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	H10F	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BSG
10.20	.402	32.0	1.260	3	12	860.1-1020-031A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.20	.402	83.0	3.268	8	12	860.1-1020-082A1-NM	★	12.00	.472	171	6.732	169.6	6.677	120	4.724	1.4	.055	COROMANT
10.30	.406	32.3	1.272	3	12	860.1-1030-031A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.30	.406	83.8	3.299	8	12	860.1-1030-082A1-NM	★	12.00	.472	171	6.732	169.6	6.677	120	4.724	1.4	.055	COROMANT
10.32	.406	32.3	1.272	3	12	860.1-1032-031A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.40	.409	32.6	1.283	3	12	860.1-1040-031A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.50	.413	32.9	1.295	3	12	860.1-1050-032A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.50	.413	85.4	3.362	8	12	860.1-1050-084A1-NM	★	12.00	.472	171	6.732	169.6	6.677	120	4.724	1.4	.055	COROMANT
10.72	.422	33.6	1.323	3	12	860.1-1072-032A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.72	.422	87.2	3.433	8	12	860.1-1072-086A1-NM	★	12.00	.472	171	6.732	169.6	6.677	120	4.724	1.4	.055	COROMANT
10.80	.425	33.8	1.331	3	12	860.1-1080-032A1-NM	★	12.00	.472	102	4.016	100.6	3.961	55	2.165	1.4	.055	DIN 6537 K
10.80	.425	87.8	3.457	8	12	860.1-1080-086A1-NM	★	12.00	.472	171	6.732	169.6	6.677	120	4.724	1.4	.055	COROMANT
11.00	.433	34.5	1.358	3	12	860.1-1100-033A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.00	.433	89.5	3.524	8	12	860.1-1100-088A1-NM	★	12.00	.472	171	6.732	169.5	6.673	120	4.724	1.5	.059	COROMANT
11.10	.437	34.8	1.370	3	12	860.1-1110-033A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.10	.437	90.3	3.555	8	12	860.1-1110-089A1-NM	★	12.00	.472	171	6.732	169.5	6.673	120	4.724	1.5	.059	COROMANT
11.11	.437	34.8	1.370	3	12	860.1-1111-033A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.20	.441	35.1	1.382	3	12	860.1-1120-034A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.20	.441	91.1	3.587	8	12	860.1-1120-090A1-NM	★	12.00	.472	171	6.732	169.5	6.673	120	4.724	1.5	.059	COROMANT
11.50	.453	36.0	1.417	3	12	860.1-1150-035A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.50	.453	93.5	3.681	8	12	860.1-1150-092A1-NM	★	12.00	.472	171	6.732	169.5	6.673	120	4.724	1.5	.059	COROMANT
11.51	.453	36.1	1.421	3	12	860.1-1151-035A1-NM	★	12.00	.472	102	4.016	100.5	3.957	55	2.165	1.5	.059	DIN 6537 K
11.80	.465	37.0	1.457	3	12	860.1-1180-035A1-NM	★	12.00	.472	102	4.016	100.4	3.953	55	2.165	1.6	.063	DIN 6537 K
11.80	.465	96.0	3.780	8	12	860.1-1180-094A1-NM	★	12.00	.472	171	6.732	169.4	6.669	120	4.724	1.6	.063	COROMANT
12.00	.472	37.6	1.480	3	12	860.1-1200-036A1-NM	★	12.00	.472	102	4.016	100.4	3.953	55	2.165	1.6	.063	DIN 6537 K
12.00	.472	97.6	3.843	8	12	860.1-1200-096A1-NM	★	12.00	.472	171	6.732	169.4	6.669	120	4.724	1.6	.063	COROMANT
12.10	.476	37.9	1.492	3	14	860.1-1210-036A1-NM	★	14.00	.551	107	4.213	105.4	4.150	60	2.362	1.6	.063	DIN 6537 K
12.10	.476	98.4	3.874	8	14	860.1-1210-097A1-NM	★	14.00	.551	190	7.480	188.4	7.417	140	5.512	1.6	.063	COROMANT
12.20	.480	38.2	1.504	3	14	860.1-1220-037A1-NM	★	14.00	.551	107	4.213	105.4	4.150	60	2.362	1.6	.063	DIN 6537 K
12.30	.484	100.1	3.941	8	14	860.1-1230-098A1-NM	★	14.00	.551	190	7.480	188.4	7.417	140	5.512	1.6	.063	COROMANT
12.50	.492	39.2	1.543	3	14	860.1-1250-038A1-NM	★	14.00	.551	107	4.213	105.3	4.146	60	2.362	1.7	.067	DIN 6537 K
12.50	.492	101.7	4.004	8	14	860.1-1250-100A1-NM	★	14.00	.551	190	7.480	188.3	7.413	140	5.512	1.7	.067	COROMANT
12.70	.500	39.8	1.567	3	14	860.1-1270-038A1-NM	★	14.00	.551	107	4.213	105.3	4.146	60	2.362	1.7	.067	DIN 6537 K
12.70	.500	103.3	4.067	8	14	860.1-1270-102A1-NM	★	14.00	.551	190	7.480	188.3	7.413	140	5.512	1.7	.067	COROMANT
13.00	.512	40.7	1.602	3	14	860.1-1300-039A1-NM	★	14.00	.551	107	4.213	105.3	4.146	60	2.362	1.7	.067	DIN 6537 K
13.00	.512	105.7	4.161	8	14	860.1-1300-104A1-NM	★	14.00	.551	190	7.480	188.3	7.413	140	5.512	1.7	.067	COROMANT
13.10	.516	41.0	1.614	3	14	860.1-1310-039A1-NM	★	14.00	.551	107	4.213	105.2	4.142	60	2.362	1.8	.071	DIN 6537 K
13.10	.516	106.5	4.193	8	14	860.1-1310-105A1-NM	★	14.00	.551	190	7.480	188.2	7.409	140	5.512	1.8	.071	COROMANT
13.50	.531	42.3	1.665	3	14	860.1-1350-041A1-NM	★	14.00	.551	107	4.213	105.2	4.142	60	2.362	1.8	.071	DIN 6537 K
13.50	.531	109.8	4.323	8	14	860.1-1350-108A1-NM	★	14.00	.551	190	7.480	188.2	7.409	140	5.512	1.8	.071	COROMANT
13.89	.547	43.3	1.705	3	14	860.1-1389-042A1-NM	★	14.00	.551	107	4.213	105.1	4.138	60	2.362	1.9	.075	DIN 6537 K
14.00	.551	43.9	1.728	3	14	860.1-1400-042A1-NM	★	14.00	.551	107	4.213	105.1	4.138	60	2.362	1.9	.075	DIN 6537 K
14.00	.551	113.9	4.484	8	14	860.1-1400-112A1-NM	★	14.00	.551	190	7.480	188.1	7.406	140	5.512	1.9	.075	COROMANT
14.20	.559	44.5	1.752	3	16	860.1-1420-043A1-NM	★	16.00	.630	115	4.528	113.1	4.453	65	2.559	1.9	.075	DIN 6537 K
14.29	.563	44.8	1.764	3	16	860.1-1429-043A1-NM	★	16.00	.630	115	4.528	113.1	4.453	65	2.559	1.9	.075	DIN 6537 K
14.29	.563	116.2	4.575	8	16	860.1-1429-114A1-NM	★	16.00	.630	213	8.386	211.1	8.311	160	6.299	1.9	.075	COROMANT
14.50	.571	45.4	1.787	3	16	860.1-1450-044A1-NM	★	16.00	.630	115	4.528	113.1	4.453	65	2.559	1.9	.075	DIN 6537 K
14.50	.571	117.9	4.642	8	16	860.1-1450-116A1-NM	★	16.00	.630	213	8.386	211.1	8.311	160	6.299	1.9	.075	COROMANT
14.68	.578	119.4	4.701	8	16	860.1-1468-117A1-NM	★	16.00	.630	213	8.386	211.0	8.307	160	6.299	2.0	.079	COROMANT
14.75	.581	46.2	1.819	3	16	860.1-1475-044A1-NM	★	16.00	.630	115	4.528	113.0	4.449	65	2.559	2.0	.079	DIN 6537 K
15.00	.591	47.0	1.850	3	16	860.1-1500-045A1-NM	★	16.00	.630	115	4.528	113.0	4.449	65	2.559	2.0	.079	DIN 6537 K
15.00	.591	122.0	4.803	8	16	860.1-1500-120A1-NM	★	16.00	.630	213	8.386	211.0	8.307	160	6.299	2.0	.079	COROMANT

CoroDrill® 860 solid carbide drill

For aluminium

Internal coolant supply

TCHA H7
SIG 130°



DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	N / H10F	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BSG
								Dimensions, mm, inch										
15.08	.594	47.3	1.862	3	16	**860.1-1508-045A1-NM**	★	16.00	.630	115	4.528	113.0	4.449	65	2.559	2.0	.079	DIN 6537 K
15.50	.610	48.6	1.913	3	16	**860.1-1550-047A1-NM**	★	16.00	.630	115	4.528	112.9	4.445	65	2.559	2.1	.083	DIN 6537 K
15.50	.610	126.1	4.965	8	16	**860.1-1550-124A1-NM**	★	16.00	.630	213	8.386	210.9	8.303	160	6.299	2.1	.083	COROMANT
16.00	.630	49.0	1.929	3	16	**860.1-1600-048A1-NM**	★	16.00	.630	115	4.528	112.9	4.445	65	2.559	2.1	.083	DIN 6537 K
16.00	.630	130.1	5.122	8	16	**860.1-1600-128A1-NM**	★	16.00	.630	213	8.386	210.9	8.303	160	6.299	2.1	.083	COROMANT
17.00	.669	53.3	2.098	3	18	**860.1-1700-051A1-NM**	★	18.00	.709	123	4.843	120.7	4.752	73	2.874	2.3	.091	DIN 6537 K
17.00	.669	138.3	5.445	8	18	**860.1-1700-136A1-NM**	★	18.00	.709	234	9.213	231.7	9.122	180	7.087	2.3	.091	COROMANT
17.50	.689	54.8	2.157	3	18	**860.1-1750-053A1-NM**	★	18.00	.709	123	4.843	120.7	4.752	73	2.874	2.3	.091	DIN 6537 K

CoroDrill® 862

Solid carbide drill with internal coolant supply for micro holes

Application

- Achievable hole tolerance: H8–H9
- Suitable for all materials
- Drill lengths: 8–12 × drill diameter

ISO application area:

P M K N S

Benefits and features

- High performance in steel, stainless steel, cast iron and aluminium
- Engineered tool geometry and surface treatment for efficient chip removal
- Good hole entry and exit, tight hole tolerance
- ACM (Advanced Chip Management) flute geometry for small and manageable chips
- Specially designed point geometry reduces thrust forces
- Smooth drill surface enables fast and efficient chip evacuation
- Internal coolant holes deliver coolant directly to the tip of the drill even at deep drilling depths

www.sandvik.coromant.com/corodrill862

Recommendations

Use CoroChuck 930 with your CoroDrill 862 to maintain efficient production through quick and easy tool set ups and changes

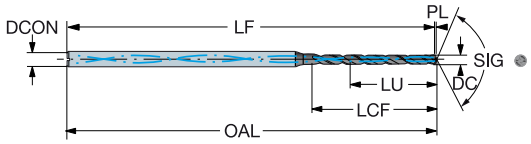
See more about Sandvik Coromant Solid Carbide Drills

CoroDrill® 862 solid carbide drill

For multi-materials

Internal coolant supply

TCHA H9
SIG 140°



							P	M	K	N	S	Dimensions, mm, inch										
DC	DC"	LU	LU"	ULDR	CZC_{MS}	Ordering code	GC34	GC34	GC34	GC34	GC34	DCON	DCON"	OAL	OAL"	LF	LF"	LCF	LCF"	PL	PL"	BSG
1.85	.073	14.5	.571	7	3	862.1-0185-015A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	20	.787	0.3	.012	COROMANT
1.85	.073	22.5	.886	12	3	862.1-0185-022A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	30	1.181	0.3	.012	COROMANT
1.90	.075	14.3	.563	7	3	862.1-0190-015A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	20	.787	0.3	.012	COROMANT
1.90	.075	23.1	.909	12	3	862.1-0190-023A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	30	1.181	0.3	.012	COROMANT
1.98	.078	14.2	.559	7	3	862.1-0198-016A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	20	.787	0.3	.012	COROMANT
1.98	.078	24.0	.945	12	3	862.1-0198-024A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	30	1.181	0.3	.012	COROMANT
2.00	.079	16.3	.642	8	3	862.1-0200-016A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	22	.866	0.3	.012	COROMANT
2.00	.079	24.3	.957	12	3	862.1-0200-024A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	32	1.260	0.3	.012	COROMANT
2.05	.081	16.7	.657	8	3	862.1-0205-016A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	22	.866	0.3	.012	COROMANT
2.05	.081	24.9	.980	12	3	862.1-0205-025A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	32	1.260	0.3	.012	COROMANT
2.08	.082	16.8	.661	8	3	862.1-0208-017A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	22	.866	0.3	.012	COROMANT
2.08	.082	25.3	.996	12	3	862.1-0208-025A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	32	1.260	0.3	.012	COROMANT
2.10	.083	16.8	.661	8	3	862.1-0210-017A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	22	.866	0.3	.012	COROMANT
2.10	.083	25.5	1.004	12	3	862.1-0210-025A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.7	2.862	32	1.260	0.3	.012	COROMANT
2.15	.085	16.6	.654	7	3	862.1-0215-017A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.6	2.858	22	.866	0.4	.016	COROMANT
2.15	.085	26.2	1.032	12	3	862.1-0215-026A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.6	2.858	32	1.260	0.4	.016	COROMANT
2.18	.086	16.6	.654	7	3	862.1-0218-017A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.6	2.858	22	.866	0.4	.016	COROMANT
2.20	.087	16.5	.650	7	3	862.1-0220-018A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.6	2.858	22	.866	0.4	.016	COROMANT
2.20	.087	26.5	1.043	12	3	862.1-0220-026A1-GM	★	★	★	★	★	3.00	.118	73	2.874	72.6	2.858	32	1.260	0.4	.016	COROMANT
2.25	.089	18.4	.724	8	3	862.1-0225-018A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.25	.089	27.4	1.079	12	3	862.1-0225-027A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.26	.089	18.5	.728	8	3	862.1-0226-018A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.30	.091	18.8	.740	8	3	862.1-0230-018A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.30	.091	28.0	1.102	12	3	862.1-0230-028A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.38	.094	19.0	.748	7	3	862.1-0238-019A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.38	.094	29.0	1.142	12	3	862.1-0238-029A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.40	.094	19.0	.748	7	3	862.1-0240-019A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.40	.094	29.2	1.150	12	3	862.1-0240-029A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.44	.096	18.9	.744	7	3	862.1-0244-020A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.44	.096	29.7	1.169	12	3	862.1-0244-029A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.50	.098	18.8	.740	7	3	862.1-0250-020A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	25	.984	0.4	.016	COROMANT
2.50	.098	29.8	1.173	11	3	862.1-0250-030A1-GM	★	★	★	★	★	3.00	.118	78	3.071	77.6	3.055	36	1.417	0.4	.016	COROMANT
2.58	.102	20.6	.811	7	3	862.1-0258-021A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	27	1.063	0.4	.016	COROMANT
2.58	.102	31.4	1.236	12	3	862.1-0258-031A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	38	1.496	0.4	.016	COROMANT
2.60	.102	20.5	.807	7	3	862.1-0260-021A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	27	1.063	0.4	.016	COROMANT
2.60	.102	31.5	1.240	12	3	862.1-0260-031A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	38	1.496	0.4	.016	COROMANT
2.64	.104	20.4	.803	7	3	862.1-0264-021A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	27	1.063	0.4	.016	COROMANT
2.64	.104	31.4	1.236	11	3	862.1-0264-032A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	38	1.496	0.4	.016	COROMANT
2.70	.106	20.3	.799	7	3	862.1-0270-022A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	27	1.063	0.4	.016	COROMANT
2.70	.106	31.3	1.232	11	3	862.1-0270-032A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	38	1.496	0.4	.016	COROMANT
2.71	.107	22.1	.870	8	3	862.1-0271-022A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	30	1.181	0.4	.016	COROMANT
2.71	.107	33.0	1.299	12	3	862.1-0271-033A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.6	3.291	42	1.654	0.4	.016	COROMANT
2.80	.110	22.9	.902	8	3	862.1-0280-022A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	30	1.181	0.5	.020	COROMANT
2.80	.110	34.1	1.343	12	3	862.1-0280-034A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	42	1.654	0.5	.020	COROMANT
2.82	.111	23.0	.906	8	3	862.1-0282-023A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	30	1.181	0.5	.020	COROMANT
2.82	.111	34.3	1.350	12	3	862.1-0282-034A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	42	1.654	0.5	.020	COROMANT
2.87	.113	22.8	.898	7	3	862.1-0287-023A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	30	1.181	0.5	.020	COROMANT
2.87	.113	34.8	1.370	12	3	862.1-0287-034A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	42	1.654	0.5	.020	COROMANT
2.90	.114	22.8	.898	7	3	862.1-0290-023A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	30	1.181	0.5	.020	COROMANT
2.90	.114	34.8	1.370	12	3	862.1-0290-035A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	42	1.654	0.5	.020	COROMANT
2.95	.116	22.6	.890	7	3	862.1-0295-024A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	30	1.181	0.5	.020	COROMANT
2.95	.116	34.6	1.362	11	3	862.1-0295-035A1-GM	★	★	★	★	★	3.00	.118	84	3.307	83.5	3.287	42	1.654	0.5	.020	COROMANT

Cutting parameters - Drilling

CoroDrill 400 WC - Internal coolant supply, metric values					Drill diameter, mm					
ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	1,50 - 3,00	3,01 - 6,00	6,01 - 10,00	10,01 - 14,00	14,01 - 20,00	20,01 - 32,00
N					Feed fn mm/r (start)					
	N1.1	Commerically pure Aluminum	60-100	200 - 450	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.2	Al Si <= 1% Si	60-100	180 - 350	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	180 - 350	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.4	Al Si cast alloys, Si>= 13%	130	150 - 300	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60

CoroDrill 400 PCD - Internal coolant supply, metric values					Drill diameter, mm					
ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	1,50 - 3,00	3,01 - 6,00	6,01 - 10,00	10,01 - 14,00	14,01 - 20,00	20,01 - 32,00
N					Feed fn mm/r (start)					
	N1.1	Commerically pure Aluminum	60-100	300 - 600	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.2	Al Si <= 1% Si	60-100	250 - 500	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	250 - 500	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.4	Al Si cast alloys, Si>= 13%	130	200 - 400	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60

CoroDrill 430 WC - Internal coolant supply, metric values					Drill diameter, mm					
ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	1,50 - 3,00	3,01 - 6,00	6,01 - 10,00	10,01 - 14,00	14,01 - 20,00	20,01 - 32,00
N					Feed fn mm/r (start)					
	N1.1	Commerically pure Aluminum	60-100	200 - 450	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.2	Al Si <= 1% Si	60-100	180 - 350	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	180 - 350	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60
	N1.4	Al Si cast alloys, Si>= 13%	130	150 - 300	0.06 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.60

CoroDrill 860 NM WC - Internal coolant supply, metric values					Drill diameter, mm					
ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	3,00 - 5,00	5,01 - 7,00	7,01 - 10,00	10,01 - 12,00	12,01 - 16,00	16,01 - 20,00
N					Feed fn mm/r (start)					
	N1.1	Commerically pure Aluminum	60-100	320 - 480	0,15 - 0,18	0.15 - 0.25	0.25 - 0.40	0.35 - 0.50	0.40 - 0.60	0.60 - 0.90
	N1.2	Al Si <= 1% Si	60-100	300 - 400	0,15 - 0,18	0.15 - 0.25	0.25 - 0.40	0.35 - 0.50	0.40 - 0.60	0.60 - 0.90
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	250 - 380	0.12 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.70
	N1.4	Al Si cast alloys, Si>= 13%	130	200 - 300	0.12 - 0.15	0.15 - 0.25	0.25 - 0.40	0.30 - 0.45	0.40 - 0.55	0.45 - 0.70

CoroDrill 862 WC - Internal coolant supply, metric values					Drill diameter, mm					
ISO	Mc No.	Material	Hardness Brinell (HB)	Cutting speed (m /min)	1,85 - 2,49	2,50 - 2,99				
N					Feed fn mm/r (start)					
	N1.1	Commerically pure Aluminum	60-100	48 - 72	0.06 - 0.11	0,12 - 0,16				
	N1.2	Al Si <= 1% Si	60-100	48 - 72	0.06 - 0.11	0,12 - 0,16				
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	40 - 60	0.06 - 0.11	0,12 - 0,16				
	N1.4	Al Si cast alloys, Si>= 13%	130	40 - 60	0.06 - 0.11	0,12 - 0,16				

Note: For step drills calculate the RPM on the largest diameter & the feed on the smallest diameter

Note: For drill types 2,4,5 & 6 where the step ratio is above 1.5 i.e. 5.00mm pilot with a 8.00mm largest diameter start at min recommended feed rate.

Note: Cutting speed for solid drills can be reduced up to 20% depending on the coolant characteristics.

Note: Speed and feed can be adjusted with +/- 20% of indicated values

Threading

CoroTap® tools for ISO N

Optimized family of taps for threading aluminium

Thread aluminium with CoroTap® 100, 200 or 300 cutting taps or CoroTap® 400 forming tap

- High speed cobalt (HSS-E) and high speed powder (HSS-PM) for superior wear resistance and longer tool life
- Standard and special coating options

Four different taps designs

CoroTap® 100 straight flute interrupted thread taps for through and blind holes

CoroTap® 200 spiral point taps for through holes

CoroTap® 300 spiral flute taps for blind holes

CoroTap® 400 forming taps for through and blind holes

Optimized

Characteristics

Optimized for aluminium components

Extended tool life

Developed for medium to large batch production

A unique line of refined tools for specific needs that provide extreme efficiency, reliability and durability

Tools dedicated for all the automotive aluminium components

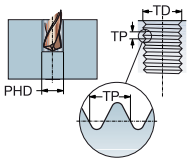
Suitable for using with coolant, or MQL

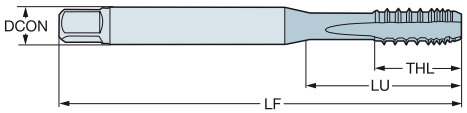
CoroTap® 100 cutting tap with straight flutes

Thread form: Metric

DIN 371

ULDR 2.0
SUBSTRATE HSS-E-PM
COATING UNCOATED





N

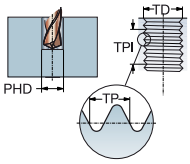
							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	**Ordering code**	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	18.00	3.50 x 2.70	C	6H	**E352M3**	3.5	3.00	56.0	9.0	3	DIN 371
		.709					*.138*	*.118*	*2.205*	*.354*		
M 4	0.70	21.00	4.50 x 3.40	C	6H	**E352M4**	4.5	4.00	63.0	12.0	3	DIN 371
		.827					*.177*	*.157*	*2.480*	*.472*		
M 5	0.80	25.00	6.00 x 4.90	C	6H	**E352M5**	6.0	5.00	70.0	13.0	3	DIN 371
		.984					*.236*	*.197*	*2.756*	*.512*		
M 6	1.00	30.00	6.00 x 4.90	C	6H	**E352M6**	6.0	6.00	80.0	15.0	3	DIN 371
		1.181					*.236*	*.236*	*3.150*	*.591*		
M 8	1.25	35.00	8.00 x 6.20	C	6H	**E352M8**	8.0	8.00	90.0	18.0	3	DIN 371
		1.378					*.315*	*.315*	*3.543*	*.709*		
M 10	1.50	39.00	10.00 x 8.00	C	6H	**E352M10**	10.0	10.00	100.0	20.0	3	DIN 371
		1.535					*.394*	*.394*	*3.937*	*.787*		

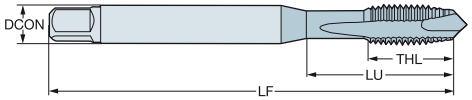
CoroTap® 200 cutting tap with spiral point

Thread form: UNC

DIN/ANSI

ULDR 3.0
SUBSTRATE HSS-E-PM
COATING UNCOATED





N

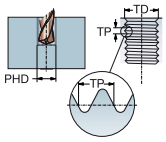
TDZ	TPI	LU	CZC_{MS}	THCHT	TCTR	Ordering code	Dimensions, mm, inch DCON	TD	LF	THL	NOF	BSG
UNC #4-40	40.00	15.47	.141 x .110	B	2B	E8764-40	3.6	2.84	56.0	9.0	2	DIN/ANSI
		.609					*.141*	*.112*	*2.205*	*.354*		
UNC #6-32	32.00	15.08	.141 x .110	B	2B	E8766-32	3.6	3.51	56.0	11.0	2	DIN/ANSI
		.594					*.141*	*.138*	*2.205*	*.433*		
UNC #8-32	32.00	16.58	.168 x .131	B	2B	E8768-32	4.3	4.17	63.0	13.0	2	DIN/ANSI
		.653					*.168*	*.164*	*2.480*	*.512*		
UNC #10-24	24.00	21.42	.194 x .152	B	2B	E87610-24	4.9	4.83	70.0	14.0	2	DIN/ANSI
		.843					*.194*	*.190*	*2.756*	*.551*		
UNC 1/4-20	20.00	25.59	.255 x .191	B	2B	E8761/4	6.5	6.35	80.0	15.0	3	DIN/ANSI
		1.007					*.255*	*.250*	*3.150*	*.591*		
UNC 5/16-18	18.00	30.20	.318 x .238	B	2B	E8765/16	8.1	7.94	90.0	18.0	3	DIN/ANSI
		1.189					*.318*	*.313*	*3.543*	*.709*		
UNC 3/8-16	16.00	32.80	.381 x .286	B	2B	E8763/8	9.7	9.53	100.0	20.0	3	DIN/ANSI
		1.292					*.381*	*.375*	*3.937*	*.787*		
UNC 7/16-14	14.00	72.60	.323 x .242	B	2B	E8767/16	8.2	11.11	100.0	20.0	3	DIN/ANSI
		2.858					*.323*	*.438*	*3.937*	*.787*		
UNC 1/2-13	13.00	81.80	.367 x .275	B	2B	E8761/2	9.3	12.70	110.0	23.0	3	DIN/ANSI
		3.220					*.367*	*.500*	*4.331*	*.906*		

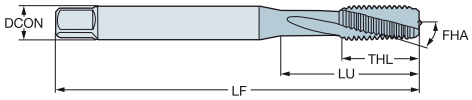
CoroTap® 300 cutting tap with spiral flutes

Thread form: Metric

DIN 371

ULDR 1.5
FHA 15°
SUBSTRATE HSS-E-PM
COATING UNCOATED

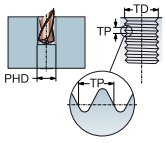


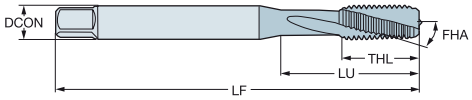


N

							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	Ordering code	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	18.00	3.50 x 2.70	C	6H	E354M3	3.5	3.00	56.0	9.0	3	DIN 371
		.709					*.138*	*.118*	*2.205*	*.354*		
M 4	0.70	21.00	4.50 x 3.40	C	6H	E354M4	4.5	4.00	63.0	12.0	3	DIN 371
		.827					*.177*	*.157*	*2.480*	*.472*		
M 5	0.80	25.00	6.00 x 4.90	C	6H	E354M5	6.0	5.00	70.0	13.0	3	DIN 371
		.984					*.236*	*.197*	*2.756*	*.512*		
M 6	1.00	30.00	6.00 x 4.90	C	6H	E354M6	6.0	6.00	80.0	15.0	3	DIN 371
		1.181					*.236*	*.236*	*3.150*	*.591*		
M 8	1.25	35.00	8.00 x 6.20	C	6H	E354M8	8.0	8.00	90.0	18.0	3	DIN 371
		1.378					*.315*	*.315*	*3.543*	*.709*		
M 10	1.50	39.00	10.00 x 8.00	C	6H	E354M10	10.0	10.00	100.0	20.0	3	DIN 371
		1.535					*.394*	*.394*	*3.937*	*.787*		

ULDR 1.5
FHA 15°
SUBSTRATE HSS-E-PM
COATING PVD ZrN





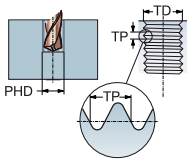
N

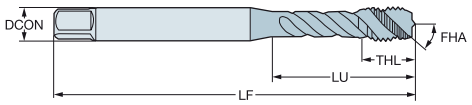
							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	Ordering code	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	18.00	3.50 x 2.70	C	6H	E450M3	3.5	3.00	56.0	9.0	3	DIN 371
		.709					*.138*	*.118*	*2.205*	*.354*		
M 4	0.70	21.00	4.50 x 3.40	C	6H	E450M4	4.5	4.00	63.0	12.0	3	DIN 371
		.827					*.177*	*.157*	*2.480*	*.472*		
M 5	0.80	25.00	6.00 x 4.90	C	6H	E450M5	6.0	5.00	70.0	13.0	3	DIN 371
		.984					*.236*	*.197*	*2.756*	*.512*		
M 6	1.00	30.00	6.00 x 4.90	C	6H	E450M6	6.0	6.00	80.0	15.0	3	DIN 371
		1.181					*.236*	*.236*	*3.150*	*.591*		
M 8	1.25	35.00	8.00 x 6.20	C	6H	E450M8	8.0	8.00	90.0	18.0	3	DIN 371
		1.378					*.315*	*.315*	*3.543*	*.709*		
M 10	1.50	39.00	10.00 x 8.00	C	6H	E450M10	10.0	10.00	100.0	20.0	3	DIN 371
		1.535					*.394*	*.394*	*3.937*	*.787*		

CoroTap® 300 cutting tap with spiral flutes

Thread form: Metric
DIN 371, DIN 376

ULDR	2.5
FHA	35°
SUBSTRATE	HSS-E
COATING	UNCOATED





N

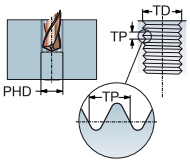
							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	Ordering code	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	18.00	3.50 x 2.70	C	6H	E360M3	3.5	3.00	56.0	9.0	2	DIN 371
		.709					*.138*	*.118*	*2.205*	*.354*		
M 4	0.70	21.00	4.50 x 3.40	C	6H	E360M4	4.5	4.00	63.0	12.0	2	DIN 371
		.827					*.177*	*.157*	*2.480*	*.472*		
M 5	0.80	25.00	6.00 x 4.90	C	6H	E360M5	6.0	5.00	70.0	13.0	2	DIN 371
		.984					*.236*	*.197*	*2.756*	*.512*		
M 6	1.00	30.00	6.00 x 4.90	C	6H	E360M6	6.0	6.00	80.0	15.0	2	DIN 371
		1.181					*.236*	*.236*	*3.150*	*.591*		
M 8	1.25	35.00	8.00 x 6.20	C	6H	E360M8	8.0	8.00	90.0	18.0	2	DIN 371
		1.378					*.315*	*.315*	*3.543*	*.709*		
M 10	1.50	39.00	10.00 x 8.00	C	6H	E360M10	10.0	10.00	100.0	20.0	2	DIN 371
		1.535					*.394*	*.394*	*3.937*	*.787*		
M 12	1.75	83.00	9.00 x 7.00	C	6H	E361M12	9.0	12.00	110.0	23.0	3	DIN 376
		3.268					*.354*	*.472*	*4.331*	*.906*		
M 14	2.00	81.00	11.00 x 9.00	C	6H	E361M14	11.0	14.00	110.0	25.0	3	DIN 376
		3.189					*.433*	*.551*	*4.331*	*.984*		
M 16	2.00	68.00	12.00 x 9.00	C	6H	E361M16	12.0	16.00	110.0	25.0	3	DIN 376
		2.677					*.472*	*.630*	*4.331*	*.984*		
M 18	2.50	81.00	14.00 x 11.00	C	6H	E361M18	14.0	18.00	125.0	30.0	3	DIN 376
		3.189					*.551*	*.709*	*4.921*	*1.181*		
M 20	2.50	95.00	16.00 x 12.00	C	6H	E361M20	16.0	20.00	140.0	30.0	3	DIN 376
		3.740					*.630*	*.787*	*5.512*	*1.181*		

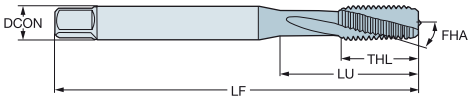
CoroTap® 300 cutting tap with spiral flutes

Thread form: Metric

DIN/ANSI

ULDR 1.5
FHA 15°
SUBSTRATE HSS-E-PM
COATING UNCOATED





N

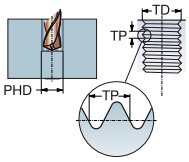
							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	Ordering code	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	15.88	.141 x .110	C	6H	E866M3	3.6	3.00	56.0	9.0	3	DIN/ANSI
		.625					*.141*	*.118*	*2.205*	*.354*		
M 4	0.70	16.58	.168 x .131	C	6H	E866M4	4.3	4.00	63.0	13.0	3	DIN/ANSI
		.653					*.168*	*.157*	*2.480*	*.512*		
M 5	0.80	21.42	.194 x .152	C	6H	E866M5	4.9	5.00	70.0	14.0	3	DIN/ANSI
		.843					*.194*	*.197*	*2.756*	*.551*		
M 6	1.00	25.59	.255 x .191	C	6H	E866M6	6.5	6.00	80.0	15.0	3	DIN/ANSI
		1.007					*.255*	*.236*	*3.150*	*.591*		
M 8	1.25	30.20	.318 x .238	C	6H	E866M8	8.1	8.00	90.0	18.0	3	DIN/ANSI
		1.189					*.318*	*.315*	*3.543*	*.709*		
M 10	1.50	32.80	.381 x .286	C	6H	E866M10	9.7	10.00	100.0	20.0	3	DIN/ANSI
		1.292					*.381*	*.394*	*3.937*	*.787*		
M 12	1.75	86.02	.367 x .275	C	6H	E866M12	9.3	12.00	110.0	23.0	3	DIN/ANSI
		3.386					*.367*	*.472*	*4.331*	*.906*		

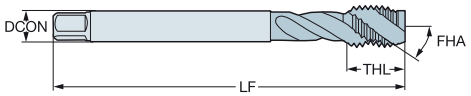
CoroTap® 300 cutting tap with spiral flutes

Thread form: Metric fine

DIN 374

ULDR	2.5
FHA	35°
SUBSTRATE	HSS-E
COATING	UNCOATED





N

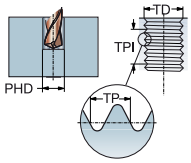
							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	**Ordering code**	DCON	TD	LF	THL	NOF	BSG
MF 4x0.5	0.50	43.00	2.80 x 2.10	C	6H	**E367M4X.5**	2.8	4.00	63.0	12.0	2	DIN 374
		1.693					*.110*	*.157*	*2.480*	*.472*		
MF 5x0.5	0.50	49.00	3.50 x 2.70	C	6H	**E367M5X.5**	3.5	5.00	70.0	13.0	2	DIN 374
		1.929					*.138*	*.197*	*2.756*	*.512*		
MF 6x0.75	0.75	59.00	4.50 x 3.40	C	6H	**E367M6X.75**	4.5	6.00	80.0	15.0	2	DIN 374
		2.323					*.177*	*.236*	*3.150*	*.591*		
MF 8x1	1.00	67.00	6.00 x 4.90	C	6H	**E367M8X1.0**	6.0	8.00	90.0	18.0	2	DIN 374
		2.638					*.236*	*.315*	*3.543*	*.709*		
MF 10x1	1.00	67.00	7.00 x 5.50	C	6H	**E367M10X1.0**	7.0	10.00	90.0	20.0	3	DIN 374
		2.638					*.276*	*.394*	*3.543*	*.787*		
MF 10x1.25	1.25	77.00	7.00 x 5.50	C	6H	**E367M10X1.25**	7.0	10.00	100.0	20.0	3	DIN 374
		3.032					*.276*	*.394*	*3.937*	*.787*		
MF 12x1.25	1.25	73.00	9.00 x 7.00	C	6H	**E367M12X1.25**	9.0	12.00	100.0	21.0	3	DIN 374
		2.874					*.354*	*.472*	*3.937*	*.827*		
MF 12x1.5	1.50	73.00	9.00 x 7.00	C	6H	**E367M12X1.5**	9.0	12.00	100.0	21.0	3	DIN 374
		2.874					*.354*	*.472*	*3.937*	*.827*		
MF 14x1.25	1.25	71.00	11.00 x 9.00	C	6H	**E367M14X1.25**	11.0	14.00	100.0	21.0	3	DIN 374
		2.795					*.433*	*.551*	*3.937*	*.827*		
MF 14x1.5	1.50	71.00	11.00 x 9.00	C	6H	**E367M14X1.5**	11.0	14.00	100.0	21.0	3	DIN 374
		2.795					*.433*	*.551*	*3.937*	*.827*		
MF 16x1.5	1.50	58.00	12.00 x 9.00	C	6H	**E367M16X1.5**	12.0	16.00	100.0	21.0	3	DIN 374
		2.283					*.472*	*.630*	*3.937*	*.827*		
MF 18x1.5	1.50	66.00	14.00 x 11.00	C	6H	**E367M18X1.5**	14.0	18.00	110.0	24.0	3	DIN 374
		2.598					*.551*	*.709*	*4.331*	*.945*		
MF 20x1.5	1.50	80.00	16.00 x 12.00	C	6H	**E367M20X1.5**	16.0	20.00	125.0	24.0	3	DIN 374
		3.150					*.630*	*.787*	*4.921*	*.945*		

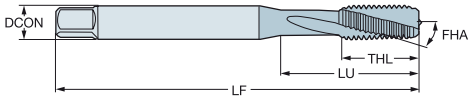
CoroTap® 300 cutting tap with spiral flutes

Thread form: UNC

DIN/ANSI

ULDR 1.5
FHA 15°
SUBSTRATE HSS-E-PM
COATING UNCOATED





N

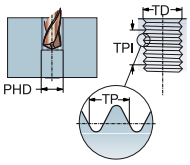
							Dimensions, mm, inch					
TDZ	TPI	LU	CZC_{MS}	THCHT	TCTR	**Ordering code**	DCON	TD	LF	THL	NOF	BSG
UNC #4-40	40.00	15.47	.141 x .110	C	2B	**E8864-40**	3.6	2.84	56.0	9.0	3	DIN/ANSI
		.609					*.141*	*.112*	*2.205*	*.354*		
UNC #6-32	32.00	15.08	.141 x .110	C	2B	**E8866-32**	3.6	3.51	56.0	11.0	3	DIN/ANSI
		.594					*.141*	*.138*	*2.205*	*.433*		
UNC #8-32	32.00	16.58	.168 x .131	C	2B	**E8868-32**	4.3	4.17	63.0	13.0	3	DIN/ANSI
		.653					*.168*	*.164*	*2.480*	*.512*		
UNC #10-24	24.00	21.42	.194 x .152	C	2B	**E88610-24**	4.9	4.83	70.0	14.0	3	DIN/ANSI
		.843					*.194*	*.190*	*2.756*	*.551*		
UNC 1/4-20	20.00	25.59	.255 x .191	C	2B	**E8861/4**	6.5	6.35	80.0	15.0	3	DIN/ANSI
		1.007					*.255*	*.250*	*3.150*	*.591*		
UNC 5/16-18	18.00	30.20	.318 x .238	C	2B	**E8865/16**	8.1	7.94	90.0	18.0	3	DIN/ANSI
		1.189					*.318*	*.313*	*3.543*	*.709*		
UNC 3/8-16	16.00	32.80	.381 x .286	C	2B	**E8863/8**	9.7	9.53	100.0	20.0	3	DIN/ANSI
		1.292					*.381*	*.375*	*3.937*	*.787*		
UNC 1/2-13	13.00	81.80	.367 x .275	C	2B	**E8861/2**	9.3	12.70	110.0	23.0	3	DIN/ANSI
		3.220					*.367*	*.500*	*4.331*	*.906*		
UNC 5/8-11	11.00	65.80	.480 x .360	C	2B	**E8865/8**	12.2	15.88	110.0	23.0	3	DIN/ANSI
		2.591					*.480*	*.625*	*4.331*	*.906*		
UNC 3/4-10	10.00	77.50	.590 x .442	C	2B	**E8863/4**	15.0	19.05	125.0	30.0	4	DIN/ANSI
		3.051					*.590*	*.750*	*4.921*	*1.181*		

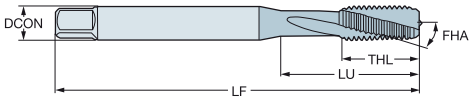
CoroTap® 300 cutting tap with spiral flutes

Thread form: UNF

DIN/ANSI

ULDR 1.5
FHA 15°
SUBSTRATE HSS-E-PM
COATING UNCOATED





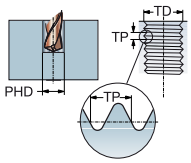
N

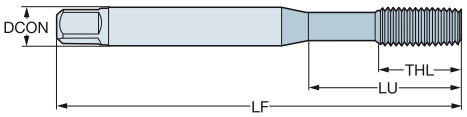
							Dimensions, mm, inch					
TDZ	TPI	LU	CZC_{MS}	THCHT	TCTR	**Ordering code**	DCON	TD	LF	THL	NOF	BSG
UNF #10-32	32.00	21.42	.194 x .152	C	2B	**E8871O-32**	4.9	4.83	70.0	14.0	3	DIN/ANSI
		.843					*.194*	*.190*	*2.756*	*.551*		
UNF 1/4-28	28.00	25.59	.255 x .191	C	2B	**E8871/4**	6.5	6.35	80.0	15.0	3	DIN/ANSI
		1.007					*.255*	*.250*	*3.150*	*.591*		
UNF 5/16-24	24.00	30.20	.318 x .238	C	2B	**E8875/16**	8.1	7.94	90.0	18.0	3	DIN/ANSI
		1.189					*.318*	*.313*	*3.543*	*.709*		
UNF 3/8-24	24.00	32.80	.381 x .286	C	2B	**E8873/8**	9.7	9.53	100.0	20.0	3	DIN/ANSI
		1.292					*.381*	*.375*	*3.937*	*.787*		
UNF 1/2-20	20.00	81.80	.367 x .275	C	2B	**E8871/2**	9.3	12.70	110.0	23.0	3	DIN/ANSI
		3.220					*.367*	*.500*	*4.331*	*.906*		

CoroTap® 400 forming tap

Thread form: Metric
DIN 2174

ULDR 3.0
SUBSTRATE HSS-E
COATING DLC a-C:N





N

							Dimensions, mm, inch					
TDZ	TP	LU	CZC_{MS}	THCHT	TCTR	Ordering code	DCON	TD	LF	THL	NOF	BSG
M 3	0.50	18.00	3.50 x 2.70	C	6HX	E313M3	3.5	3.00	56.0	9.0	4	DIN 2174
		.709					*.138*	*.118*	*2.205*	*.354*		
M 4	0.70	21.00	4.50 x 3.40	C	6HX	E313M4	4.5	4.00	63.0	12.0	5	DIN 2174
		.827					*.177*	*.157*	*2.480*	*.472*		
M 5	0.80	25.00	6.00 x 4.90	C	6HX	E313M5	6.0	5.00	70.0	13.0	5	DIN 2174
		.984					*.236*	*.197*	*2.756*	*.512*		
M 6	1.00	30.00	6.00 x 4.90	C	6HX	E313M6	6.0	6.00	80.0	15.0	5	DIN 2174
		1.181					*.236*	*.236*	*3.150*	*.591*		
M 8	1.25	35.00	8.00 x 6.20	C	6HX	E313M8	8.0	8.00	90.0	18.0	5	DIN 2174
		1.378					*.315*	*.315*	*3.543*	*.709*		

Cutting parameters – Tapping Aluminum

CoroTap 100 - 200 - 300

ISO	Mc No.	Material	Hardness Brinell (HB)	HSS - E - PM
N				Vc (m/min)
	N1.1	Commerically pure Aluminum	60-100	40
	N1.2	Al Si <= 1% Si	60-100	40
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	35
	N1.4	Al Si cast alloys, Si>= 13%	130	25

CoroTap 400 -

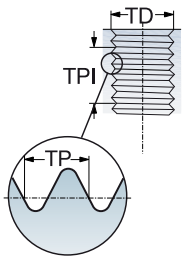
ISO	Mc No.	Material	Hardness Brinell (HB)	HSS - E DLC a-C:N
N				Vc (m/min)
	N1.1	Commerically pure Aluminum	60-100	60
	N1.2	Al Si <= 1% Si	60-100	60
	N1.3	Al Si cast alloys, Si <= 1% and <13%	75-90	55
	N1.4	Al Si cast alloys, Si>= 13%	130	40

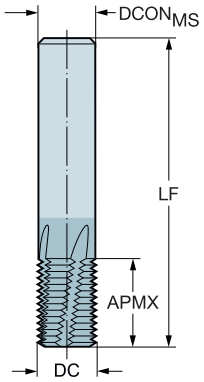
See more about Sandvik Coromant Tappings

CoroMill Plura™ solid carbide end mill for thread milling

Internal threads

FHA 10°
BSG COROMANT
TCDCON h6





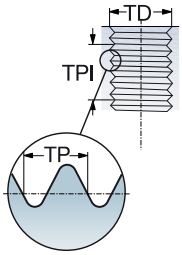
Metric/Metric Fine, 60°

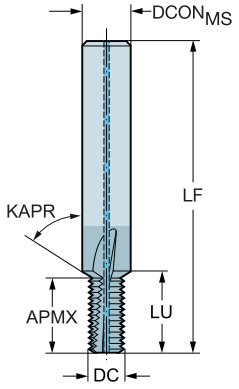
FTDZ	TP	DC	CZC_{MS}	APMX	CNSC	CXSC	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, mm $DCON_{MS}$	LF
M4X0.7	0.70	3.20	6.0	8.40	0	0	3	R217.13-032070AC08N	★	★	★	★	★	★	6.00	57.00
M5X0.8	0.80	4.10	6.0	11.20	0	0	3	R217.13-041080AC11N	★	★	★	★	★	★	6.00	57.00
M6X0,5	0.50	4.80	6.0	10.00	1	1	3	R217.13C048050AC10N	★	★	★	★	★	★	6.00	57.00
M8X0,75	0.75	6.00	6.0	12.00	1	1	3	R217.13C060075AC12N	★	★	★	★	★	★	6.00	57.00
M6X1.0	1.00	4.50	6.0	13.00	1	1	4	R217.14C045100AC13N	★	★	★	★	★	★	6.00	57.00
M8X1.25	1.25	6.00	6.0	17.50	1	1	4	R217.14C060125AK17N	★	★	★	★	★	★	6.00	65.00
M10X1.5	1.50	7.50	8.0	21.00	1	1	4	R217.14C075150AK21N	★	★	★	★	★	★	8.00	72.00
M10X1,0	1.00	8.00	8.0	16.00	1	1	4	R217.14C080100AC16N	★	★	★	★	★	★	8.00	63.00
M12X1.75	1.75	9.50	10.0	26.25	1	1	4	R217.14C095175AK26N	★	★	★	★	★	★	10.00	80.00
M14X2.0	2.00	10.00	10.0	30.00	1	1	5	R217.15C100200AK30N	★	★	★	★	★	★	10.00	83.00
M14X1,5	1.50	12.00	12.0	22.50	1	1	4	R217.14C120150AC22N	★	★	★	★	★	★	12.00	83.00
M16X2.0	2.00	12.00	12.0	34.00	1	1	5	R217.15C120200AK34N	★	★	★	★	★	★	12.00	92.00
M18X1,5	1.50	16.00	16.0	30.00	1	1	5	R217.15C160150AC30N	★	★	★	★	★	★	16.00	92.00
M20X2,5	2.50	16.00	16.0	42.50	1	1	5	R217.15C160250AK42N	★	★	★	★	★	★	16.00	105.00
M24X3,0	3.00	19.00	20.0	50.00	1	1	5	R217.15C190300AK50N	★	★	★	★	★	★	20.00	125.00

CoroMill Plura™ solid carbide end mill for thread milling

Internal threads

FHA 10°
BSG COROMANT
TCDCON h6





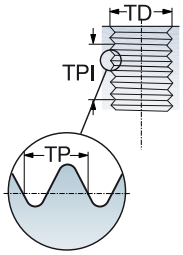
Metric/Metric Fine, 60°

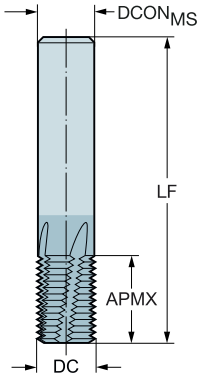
FTDZ	TP	DC	CZC_{MS}	APMX	LU	CNSC	CXSC	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, mm $DCON_{MS}$	LF
M3X0.5	0.50	2.30	6.0	5.00	6.00	0	0	3	R217.13-023050CC06K	★	★	★	★	★	★	6.00	57.0
M4X0.70	0.70	3.20	6.0	8.80	9.50	1	1	3	R217.13C032070CC08K	★	★	★	★	★	★	6.00	57.0
M5X0.80	0.80	4.10	6.0	10.72	11.67	1	1	3	R217.13C041080CC11K	★	★	★	★	★	★	6.00	57.0
M6X1.0	1.00	4.80	8.0	12.78	13.58	1	1	3	R217.13C048100CC13K	★	★	★	★	★	★	8.00	63.0
M8X1.25	1.25	6.50	10.0	17.35	18.24	1	1	3	R217.13C065125CC17K	★	★	★	★	★	★	10.00	72.0
M10X1.5	1.50	8.20	12.0	22.41	23.41	1	1	3	R217.13C082150CC21K	★	★	★	★	★	★	12.00	83.0
M12X1.75	1.75	9.90	14.0	26.00	27.00	1	1	4	R217.14C099175CC26K	★	★	★	★	★	★	14.00	83.0
M14X2.0	2.00	11.60	16.0	31.30	32.40	1	1	4	R217.14C116200CC30K	★	★	★	★	★	★	16.00	92.0
M16X2.0	2.00	13.60	18.0	33.30	34.40	1	1	4	R217.14C136200CC34K	★	★	★	★	★	★	18.00	92.0

CoroMill Plura™ solid carbide end mill for thread milling

Internal threads

FHA 10°
BSG COROMANT
TCDCON h6



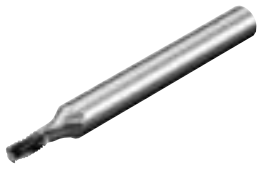


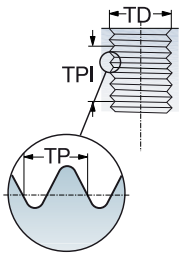
Metric/Metric Fine, 60°

FTDZ	TP	DC	CZC_{MS}	APMX	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, mm $DCON_{MS}$	LF
MF6X0.5	0.50	4.80	6.0	10.00	3	R217.13-048050AC10N	★	★	★	★	★	★	6.00	57.00
MF8X0.75	0.75	6.00	6.0	12.00	3	R217.13-060075AC12N	★	★	★	★	★	★	6.00	57.00
MF8X1.0	1.00	6.00	6.0	12.00	3	R217.13-060100AC12N	★	★	★	★	★	★	6.00	57.00
MF10X1	1.00	8.00	8.0	16.00	4	R217.14-080100AC16N	★	★	★	★	★	★	8.00	63.00
MF12X1	1.00	10.00	10.0	20.00	4	R217.14-100100AC20N	★	★	★	★	★	★	10.00	72.00
MF12X1.5	1.50	10.00	10.0	21.00	4	R217.14-100150AC20N	★	★	★	★	★	★	10.00	72.00
MF14X1	1.00	12.00	12.0	22.00	4	R217.14-120100AC22N	★	★	★	★	★	★	12.00	83.00
MF14X1.5	1.50	12.00	12.0	22.50	4	R217.14-120150AC22N	★	★	★	★	★	★	12.00	83.00
MF16X1	1.00	14.00	14.0	26.00	5	R217.15-140100AC26N	★	★	★	★	★	★	14.00	83.00
MF16X1.5	1.50	14.00	14.0	27.00	5	R217.15-140150AC26N	★	★	★	★	★	★	14.00	83.00
MF20X2	2.00	16.00	16.0	30.00	5	R217.15-160200AC30N	★	★	★	★	★	★	16.00	92.00
M20X2,5	2.50	16.00	16.0	42.50	5	R217.15-160250AC42N	★	★	★	★	★	★	16.00	105.00
M24X3	3.00	19.00	20.0	50.00	5	R217.15-190300AC50N	★	★	★	★	★	★	20.00	125.00
MF24X2	2.00	20.00	20.0	36.00	5	R217.15-200200AC35N	★	★	★	★	★	★	20.00	104.00
MF28X2	2.00	25.00	25.0	46.00	6	R217.16-250200AC46N	★	★	★	★	★	★	25.00	121.00

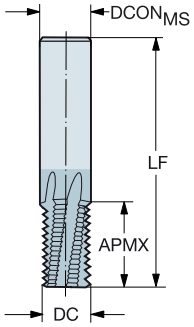
CoroMill Plura™ solid carbide end mill for thread milling

Internal threads





FHA 27°
BSG COROMANT
TCDCON h6



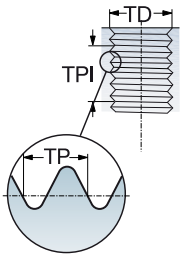
MJ 60°

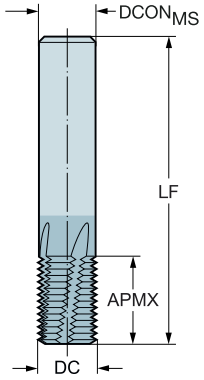
FTDZ	TP	DC	CZC_{MS}	APMX	CNSC	CXSC	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, mm $DCON_{MS}$	LF
MJ4X0.7	0.70	3.00	6.0	6.30	0	0	3	R217.13-030070AC6H	★	★	★	★	★	★	6.00	54.00
MJ5X0.8	0.80	3.90	6.0	8.00	0	0	3	R217.13-039080AC8H	★	★	★	★	★	★	6.00	54.00
MJ6X1	1.00	4.80	6.0	9.00	0	0	3	R217.13-048100AC9H	★	★	★	★	★	★	6.00	54.00
MJ8X1.25	1.25	6.30	8.0	12.50	1	1	4	R217.14C063125AC12H	★	★	★	★	★	★	8.00	58.00
MJ10X1.5	1.50	7.50	8.0	15.00	1	1	4	R217.14C075150AC15H	★	★	★	★	★	★	8.00	58.00
MJ12X1.75	1.75	9.50	10.0	19.25	1	1	4	R217.14C095175AC19H	★	★	★	★	★	★	10.00	72.00

CoroMill Plura™ solid carbide end mill for thread milling

Internal threads

FHA 10°
BSG COROMANT
TCDCON h6





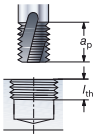
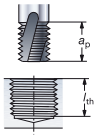
UN 60°

FTDZ	TPI	DC	CZC_{MS}	APMX	CNSC	CXSC	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, inch $DCON_{MS}$	LF
1/4-20 UNC	20.0	.189	6.0	.551	1	1	3	R217.33C048200AC13N	★	★	★	★	★	★	.236	2.244
5/16-18 UNC	18.0	.217	6.0	.556	1	1	3	R217.33C055180AC14N	★	★	★	★	★	★	.236	2.244
3/8-16 UNC	16.0	.295	8.0	.750	1	1	4	R217.34C075160AC19N	★	★	★	★	★	★	.315	2.480
7/16-14 UNC	14.0	.315	8.0	.785	1	1	4	R217.34C080140AC19N	★	★	★	★	★	★	.315	2.480
1/2-13 UNC	13.0	.394	10.0	.846	1	1	4	R217.34C100130AC21N	★	★	★	★	★	★	.394	2.835
9/16-12 UNC	12.0	.394	10.0	.833	1	1	4	R217.34C100120AC21N	★	★	★	★	★	★	.394	2.835
5/8-11 UNC	11.0	.472	12.0	1.000	1	1	4	R217.34C120110AC25N	★	★	★	★	★	★	.472	3.268
3/4-10 UNC	10.0	.551	14.0	1.300	1	1	5	R217.35C140100AC33N	★	★	★	★	★	★	.551	3.268

UNC / UNF, 60°

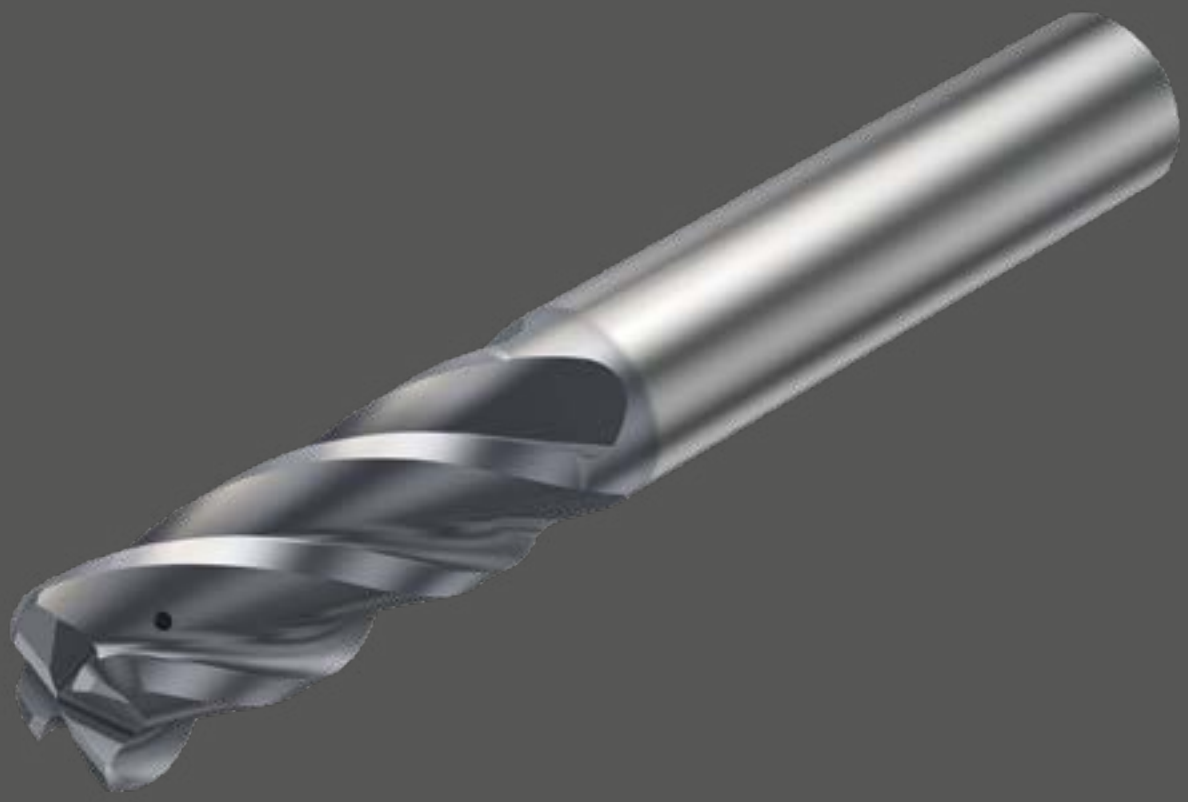
FTDZ	TPI	DC	CZC_{MS}	APMX	CNSC	CXSC	ZEFP	Ordering code	P 1630	M 1630	K 1630	N 1630	S 1630	H 1630	Dimensions, inch $DCON_{MS}$	LF
1/4-28 UNF	28.0	.189	6.0	.536	1	1	3	R217.33C048280AC13N	★	★	★	★	★	★	.236	2.244
5/16-24 UNF	24.0	.236	6.0	.541	1	1	3	R217.33C060240AC13N	★	★	★	★	★	★	.236	2.244
7/16-20 UNF	20.0	.315	8.0	.750	1	1	4	R217.34C080200AC19N	★	★	★	★	★	★	.315	2.480
9/16-18 UNF	18.0	.394	10.0	.889	1	1	4	R217.34C100180AC22N	★	★	★	★	★	★	.394	2.835
3/4-16 UNF	16.0	.551	14.0	1.250	1	1	5	R217.35C140160AC31N	★	★	★	★	★	★	.551	3.268

Cutting parameters – Thread milling aluminium

ISO	Material MC	Hardness HB	HRC	Thread mill Thread	Dimensions, mm, inch DC	DC"	ZEFP	 $l_{Th} = 0.5 \times a_p$ Cutting speed v_c m/min	ft/min	Feed per tooth, f_z mm	inch	 $l_{Th} = a_p$ Cutting speed v_c m/min	ft/min	Feed per tooth, f_z mm	inch
N	**Aluminium**			M2	1.55	.061	3	390	1280	0.06	.0023	375	1230	0.055	.0022
	N1.2.Z.UT	60		M4	3.2	.126	3	503	1660	0.040	.0016	503	1660	0.035	.0014
				M10	8.2	.323	4	1120	3700	0.089	.0036	1060	3500	0.061	.0024
				M20	16	.630	5	1130	3750	0.089	.0036	1060	3500	0.089	.0036
				M2	1.55	.061	3	377	1237	0.058	.0022	365	1198	0.054	.0022
	N1.3.C.UT	95		M4	3.2	.126	3	434	1430	0.040	.0016	404	1330	0.018	.0007
				M10	8.2	.323	4	461	1520	0.061	.0025	432	1420	0.061	.0034
				M20	16	.630	5	467	1540	0.089	.0036	436	1445	0.089	.0036
				M2	1.55	.061	3	125	410	0.056	.0022	123	404	0.054	.0022
		150		M4	3.2	.126	3	273	900	0.028	.0011	262	890	0.021	.0009
				M10	8.2	.323	4	278	920	0.053	.0021	260	870	0.026	.0012
				M20	16	.630	5	282	930	0.089	.0036	263	880	0.071	.0028

See more about Sandvik Coromant thread milling

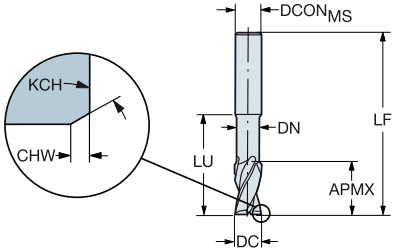
Solid carbide end mills



CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

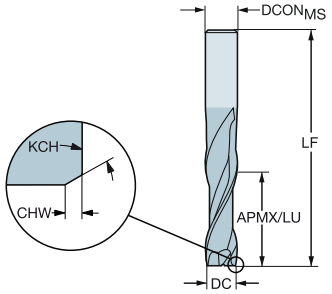
FHA 25°
BSG COROMANT
TCDC h10
TCDCON h6



Metric version

DC	CZC$_{MS}$	APMX	CHW	KCH	LU	ZEFP	Ordering code	N H10F	Dimensions, mm DCON$_{MS}$	LF	DN
2.0	3	3.0			9.0	2	2P120-0200-NC	★	3.0	38.0	1.9
3.0	3	4.0			12.0	2	2P120-0300-NC	★	3.0	38.0	2.9
4.0	4	6.0			14.0	2	2P120-0400-NC	★	4.0	50.0	3.8
5.0	6	8.0			16.0	2	2P120-0500-NC	★	6.0	57.0	4.8
6.0	6	10.0			28.0	2	2P120-0600-NC	★	6.0	65.0	5.7
8.0	8	12.0			35.0	2	2P120-0800-NC	★	8.0	80.0	7.6
10.0	10	14.0	0.10	45°	45.0	2	2P120-1000-NC	★	10.0	90.0	9.5
12.0	12	16.0	0.10	45°	50.0	2	2P120-1200-NC	★	12.0	100.0	11.4
16.0	16	20.0	0.15	45°	63.0	2	2P120-1600-NC	★	16.0	115.0	15.2
20.0	20	20.0	0.15	45°	70.0	2	2P120-2000-NC	★	20.0	125.0	19.0

FHA 25°
BSG COROMANT
TCDC h10
TCDCON h6



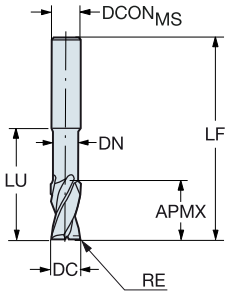
Metric version

DC	CZC$_{MS}$	APMX	CHW	KCH	LU	ZEFP	Ordering code	N H10F	Dimensions, mm DCON$_{MS}$	LF
2.0	3	8.0			8.0	2	2P160-0200-NA	★	3.0	38.0
3.0	3	12.0			12.0	2	2P160-0300-NA	★	3.0	38.0
4.0	4	14.0			14.0	2	2P160-0400-NA	★	4.0	50.0
5.0	6	16.0			16.0	2	2P160-0500-NA	★	6.0	57.0
6.0	6	22.0			22.0	2	2P160-0600-NA	★	6.0	65.0
8.0	8	28.0			28.0	2	2P160-0800-NA	★	8.0	80.0
10.0	10	32.0	0.10	45°	32.0	2	2P160-1000-NA	★	10.0	90.0
12.0	12	38.0	0.10	45°	38.0	2	2P160-1200-NA	★	12.0	100.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

FHA	25°
BSG	COROMANT
TCDC	h10
TCDCON	h6



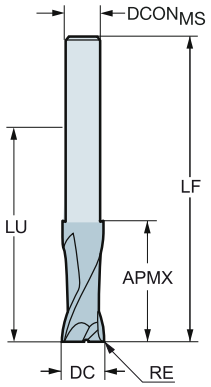
Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N / H10F	$DCON_{MS}$	LF	DN
								Dimensions, mm		
2.0	3	3.0	0.15	5.0	2	2P121-0200-NC	★	3.0	38.0	1.8
	3	3.0	0.15	8.0	2	2P122-0200-NC	★	3.0	50.0	1.8
3.0	3	4.5	0.15	9.0	2	2P121-0300-NC	★	3.0	38.0	2.7
	3	4.5	0.15	12.0	2	2P122-0300-NC	★	3.0	50.0	2.7
4.0	4	6.0	0.15	12.0	2	2P121-0400-NC	★	4.0	50.0	3.7
	4	6.0	0.15	16.0	2	2P122-0400-NC	★	4.0	60.0	3.7
5.0	5	7.5	0.15	15.0	2	2P121-0500-NC	★	5.0	50.0	4.7
	5	7.5	0.15	20.0	2	2P122-0500-NC	★	5.0	60.0	4.6
6.0	6	9.0	0.15	18.0	2	2P121-0600-NC	★	6.0	57.0	5.7
	6	9.0	0.15	24.0	2	2P122-0600-NC	★	6.0	65.0	5.5
8.0	8	12.0	0.15	24.0	2	2P121-0800-NC	★	8.0	63.0	7.7
	8	12.0	0.15	32.0	2	2P122-0800-NC	★	8.0	80.0	7.4
10.0	10	15.0	0.15	30.0	2	2P121-1000-NC	★	10.0	72.0	9.7
	10	15.0	0.15	40.0	2	2P122-1000-NC	★	10.0	89.0	9.2
12.0	12	18.0	0.15	36.0	2	2P121-1200-NC	★	12.0	83.0	11.7
	12	18.0	0.15	48.0	2	2P122-1200-NC	★	12.0	100.0	11.0
14.0	14	21.0	0.15	42.0	2	2P121-1400-NC	★	14.0	83.0	13.7
16.0	16	24.0	0.15	48.0	2	2P121-1600-NC	★	16.0	92.0	15.7
	16	24.0	0.15	64.0	2	2P122-1600-NC	★	16.0	120.0	15.0
20.0	20	30.0	0.15	60.0	2	2P121-2000-NC	★	20.0	104.0	19.7
	20	30.0	0.15	80.0	2	2P122-2000-NC	★	20.0	150.0	19.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

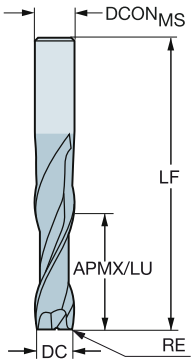
FHA 25°
BSG COROMANT
TCDC h10
TCDCON h6



Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF
3.0	2	4.0	0.15	32.0	2	**2P123-0300-NG**	★	2.9	60.0
4.0	3	5.0	0.15	32.0	2	**2P123-0400-NG**	★	3.8	60.0
5.0	4	8.0	0.15	42.0	2	**2P123-0500-NG**	★	4.8	70.0
6.0	5	9.0	0.15	64.0	2	**2P123-0600-NG**	★	5.8	100.0
8.0	7	11.0	0.15	64.0	2	**2P123-0800-NG**	★	7.8	100.0
10.0	9	15.0	0.15	60.0	2	**2P123-1000-NG**	★	9.7	100.0
12.0	11	17.0	0.15	80.0	2	**2P123-1200-NG**	★	11.7	125.0
16.0	15	23.0	0.15	77.0	2	**2P123-1600-NG**	★	15.7	125.0
20.0	19	26.0	0.15	100.0	2	**2P123-2000-NG**	★	19.7	150.0

FHA 25°
BSG COROMANT
TCDC h10
TCDCON h6



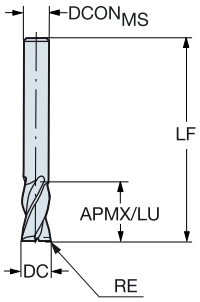
Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF
2.0	3	8.0	0.15	8.0	2	**2P170-0200-NA**	★	3.0	50.0
3.0	3	12.0	0.15	12.0	2	**2P170-0300-NA**	★	3.0	50.0
4.0	4	16.0	0.15	16.0	2	**2P170-0400-NA**	★	4.0	60.0
5.0	5	20.0	0.15	20.0	2	**2P170-0500-NA**	★	5.0	60.0
6.0	6	24.0	0.15	24.0	2	**2P170-0600-NA**	★	6.0	65.0
7.0	7	28.0	0.15	28.0	2	**2P170-0700-NA**	★	7.0	79.0
8.0	8	32.0	0.15	32.0	2	**2P170-0800-NA**	★	8.0	79.0
9.0	9	36.0	0.15	36.0	2	**2P170-0900-NA**	★	9.0	88.0
10.0	10	40.0	0.15	40.0	2	**2P170-1000-NA**	★	10.0	88.0
12.0	12	48.0	0.15	48.0	2	**2P170-1200-NA**	★	12.0	99.0
14.0	14	56.0	0.15	56.0	2	**2P170-1400-NA**	★	14.0	105.0
16.0	16	64.0	0.15	64.0	2	**2P170-1600-NA**	★	16.0	120.0
20.0	20	80.0	0.15	80.0	2	**2P170-2000-NA**	★	20.0	150.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

FHA	30°
BSG	COROMANT
TCDC	h10
TCDCON	h6



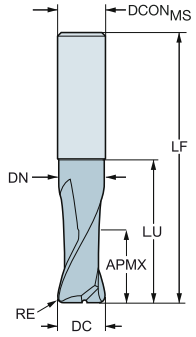
Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF
2.0	3	4.0	0.15	4.0	2	**2P232-0200-NA**	★	3.0	38.0
3.0	3	5.0	0.15	5.0	2	**2P232-0300-NA**	★	3.0	38.0
4.0	4	7.0	0.15	7.0	2	**2P232-0400-NA**	★	4.0	50.0
5.0	5	9.0	0.15	9.0	2	**2P232-0500-NA**	★	5.0	50.0
6.0	6	18.0	0.15	18.0	2	**2P232-0600-NA**	★	6.0	57.0
7.0	7	18.0	0.15	18.0	2	**2P232-0700-NA**	★	7.0	60.0
8.0	8	18.0	0.15	18.0	2	**2P232-0800-NA**	★	8.0	63.0
9.0	9	20.0	0.15	20.0	2	**2P232-0900-NA**	★	9.0	67.0
10.0	10	22.0	0.15	22.0	2	**2P232-1000-NA**	★	10.0	72.0
12.0	12	22.0	0.15	22.0	2	**2P232-1200-NA**	★	12.0	83.0
14.0	14	25.0	0.15	25.0	2	**2P232-1400-NA**	★	14.0	83.0
16.0	16	29.0	0.15	29.0	2	**2P232-1600-NA**	★	16.0	92.0
18.0	18	33.0	0.15	33.0	2	**2P232-1800-NA**	★	18.0	92.0
20.0	20	36.0	0.15	36.0	2	**2P232-2000-NA**	★	20.0	104.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

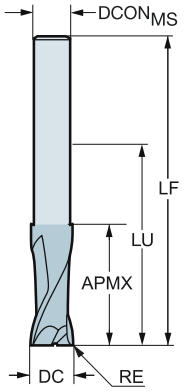
FHA 30°
BSG COROMANT
TCDC h10
TCDCON h6



Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N / H10F	Dimensions, mm $DCON_{MS}$	LF	DN
3.0	3	4.5	0.20	8.0	2	2S220-0300-020-NC	★	3.0	38.0	2.7
4.0	4	6.0	0.30	11.0	2	2S220-0400-030-NC	★	4.0	50.0	3.7
5.0	5	7.5	0.50	14.0	2	2S220-0500-050-NC	★	5.0	50.0	4.7
6.0	6	9.0	1.00	17.0	2	2S220-0600-100-NC	★	6.0	57.0	5.7
8.0	8	12.0	1.00	23.0	2	2S220-0800-100-NC	★	8.0	63.0	7.7
10.0	10	15.0	1.50	29.0	2	2S220-1000-150-NC	★	10.0	72.0	9.7
12.0	12	18.0	1.50	35.0	2	2S220-1200-150-NC	★	12.0	83.0	11.7
16.0	16	24.0	2.00	47.0	2	2S220-1600-200-NC	★	16.0	92.0	15.7

FHA 30°
BSG COROMANT
TCDC h10
TCDCON h6



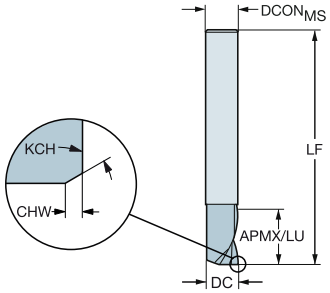
Metric version

DC	CZC_{MS}	APMX	RE	LU	ZEFP	Ordering code	N / H10F	Dimensions, mm $DCON_{MS}$	LF
3.0	2	4.0	0.20	32.0	2	2S221-0300-020-NG	★	2.9	60.0
4.0	3	5.0	0.30	32.0	2	2S221-0400-030-NG	★	3.8	60.0
5.0	4	8.0	0.50	42.0	2	2S221-0500-050-NG	★	4.8	70.0
6.0	5	9.0	1.00	64.0	2	2S221-0600-100-NG	★	5.8	100.0
8.0	7	13.0	1.00	64.0	2	2S221-0800-100-NG	★	7.8	100.0
10.0	9	15.0	1.50	60.0	2	2S221-1000-150-NG	★	9.7	100.0
12.0	11	17.0	1.50	80.0	2	2S221-1200-150-NG	★	11.7	125.0
16.0	15	23.0	2.00	77.0	2	2S221-1600-200-NG	★	15.7	125.0
20.0	19	26.0	2.50	100.0	2	2S221-2000-250-NG	★	19.7	150.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material

FHA	30°
BSG	DIN 6527 L
TCDC	h10
TCDCON	h6



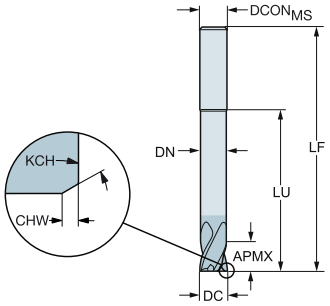
Metric version

DC	CZC_{MS}	APMX	CHW	KCH	LU	ZEFP	Ordering code	N 1630	N H10F	$DCON_{MS}$	LF
										Dimensions, mm	
3.0	6	7.0			7.0	1	2P230-0300-NA		★	6.0	57.0
	6	7.0			7.0	1	2P231-0300-NA	★		6.0	57.0
4.0	6	8.0			8.0	1	2P230-0400-NA		★	6.0	57.0
	6	8.0			8.0	1	2P231-0400-NA	★		6.0	57.0
5.0	6	10.0			10.0	1	2P230-0500-NA		★	6.0	57.0
	6	10.0			10.0	1	2P231-0500-NA	★		6.0	57.0
6.0	6	10.0			10.0	1	2P230-0600-NA		★	6.0	57.0
	6	10.0			10.0	1	2P231-0600-NA	★		6.0	57.0
8.0	8	16.0			16.0	1	2P230-0800-NA		★	8.0	63.0
	8	16.0			16.0	1	2P231-0800-NA	★		8.0	63.0
10.0	10	19.0	0.10	45°	19.0	1	2P230-1000-NA		★	10.0	72.0
	10	19.0	0.10	45°	19.0	1	2P231-1000-NA	★		10.0	72.0

CoroMill Plura™ solid carbide end mill for large chip removal

For non-ferrous material with silicon content > 9%

FHA	30°
BSG	COROMANT
TCDC	h10
TCDCON	h6



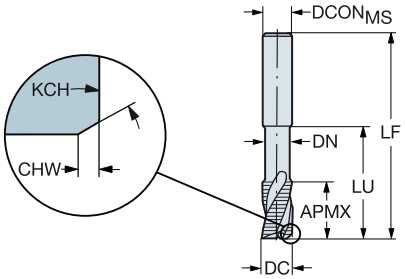
Metric version

DC	CZC_{MS}	APMX	CHW	KCH	LU	ZEFP	Ordering code	N N20C	O N20C	Dimensions, mm $DCON_{MS}$	LF	DN
1.0	3	1.0			2.0	2	**2P210-0100-NC**	★	☆	3.0	50.0	
1.5	3	1.5			1.5	2	**2P210-0150-NC**	★	☆	3.0	50.0	
2.0	3	2.0			2.0	2	**2P210-0200-NC**	★	☆	3.0	50.0	
3.0	6	3.0			3.0	2	**2P210-0300-NC**	★	☆	6.0	80.0	
4.0	6	4.0			40.0	2	**2P210-0400-NC**	★	☆	6.0	100.0	3.8
5.0	6	5.0			50.0	2	**2P210-0500-NC**	★	☆	6.0	100.0	4.8
6.0	6	6.0			60.0	4	**2P210-0600-NC**	★	☆	6.0	100.0	5.7
8.0	8	8.0			80.0	4	**2P210-0800-NC**	★	☆	8.0	120.0	7.6
10.0	10	10.0	0.10	45°	100.0	4	**2P210-1000-NC**	★	☆	10.0	150.0	9.5
12.0	12	12.0	0.10	45°	100.0	4	**2P210-1200-NC**	★	☆	12.0	150.0	11.4
16.0	16	16.0	0.15	45°	100.0	4	**2P210-1600-NC**	★	☆	16.0	150.0	15.2

CoroMill Plura™ solid carbide end mill for roughing with chip breaker

For non-ferrous material

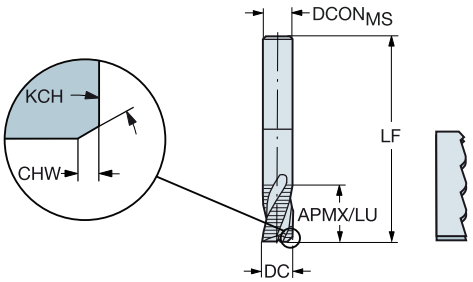
FHA 40°
BSG COROMANT
TCDC h12
TCDCON h5



Metric version

DC	CZC$_{MS}$	APMX	CHW	KCH	LU	ZEFP	Ordering code	N H10F	Dimensions, mm DCON$_{MS}$	LF	DN
6.0	8	10.0	0.64	55°	24.0	3	R216.33-06040-AJ10U	★	8.0	63.0	5.5
8.0	10	12.0	0.64	55°	29.0	3	R216.33-08040-AJ12U	★	10.0	72.0	7.5
10.0	12	14.0	0.83	55°	35.0	3	R216.33-10040-AJ14U	★	12.0	83.0	9.5
12.0	12	16.0	0.83	55°	50.0	3	R216.33-12040-AJ16U	★	12.0	100.0	11.4
16.0	16	20.0	1.00	55°	63.0	3	R216.33-16040-AJ20U	★	16.0	115.0	15.2
20.0	20	20.0	1.00	55°	70.0	3	R216.33-20040-AJ20U	★	20.0	125.0	19.0
25.0	25	25.0	1.29	55°	75.0	3	R216.33-25040-AJ25U	★	25.0	135.0	23.8

FHA 40°
BSG DIN 6527 L
TCDC h12
TCDCON h5



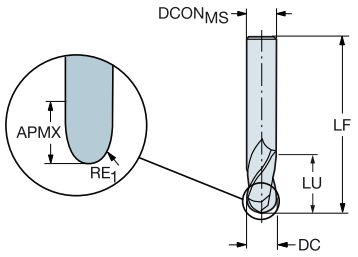
Metric version

DC	CZC$_{MS}$	APMX	CHW	KCH	LU	ZEFP	Ordering code	N H10F	Dimensions, mm DCON$_{MS}$	LF
6.0	6	13.0	0.64	55°	13.0	3	R216.33-06040-AC13U	★	6.0	57.0
8.0	8	19.0	0.64	55°	19.0	3	R216.33-08040-AC19U	★	8.0	63.0
10.0	10	22.0	0.83	55°	22.0	3	R216.33-10040-AC22U	★	10.0	72.0
12.0	12	26.0	0.83	55°	26.0	3	R216.33-12040-AC26U	★	12.0	83.0
14.0	14	26.0	1.00	55°	26.0	3	R216.33-14040-AC26U	★	14.0	83.0
16.0	16	32.0	1.00	55°	32.0	3	R216.33-16040-AC32U	★	16.0	92.0
20.0	20	38.0	1.00	55°	38.0	3	R216.33-20040-AC38U	★	20.0	104.0

CoroMill Plura™ solid carbide ball nose end mill for profiling

For non-ferrous material

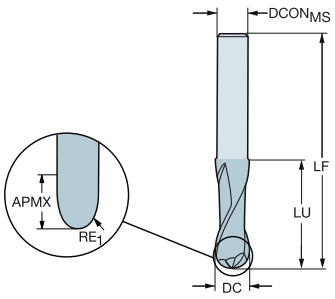
FHA	30°
BSG	COROMANT
TCDC	h9
TCDCON	h6
PSIR	0°



Metric version

DC	CZC_{MS}	APMX	RE_1	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF
2.0	6	6.0	1.00	6.0	2	R216.42-02030-AK60A	★	6.0	57.0
3.0	6	7.0	1.50	7.0	2	R216.42-03030-AK07A	★	6.0	80.0
4.0	6	8.0	2.00	8.0	2	R216.42-04030-AK08A	★	6.0	80.0
5.0	6	10.0	2.50	10.0	2	R216.42-05030-AK10A	★	6.0	80.0
6.0	6	10.0	3.00	10.0	2	R216.42-06030-AK10A	★	6.0	80.0
8.0	8	16.0	4.00	16.0	2	R216.42-08030-AK16A	★	8.0	100.0
10.0	10	19.0	5.00	19.0	2	R216.42-10030-AK19A	★	10.0	100.0
12.0	12	22.0	6.00	22.0	2	R216.42-12030-AK22A	★	12.0	100.0
16.0	16	26.0	8.00	26.0	2	R216.42-16030-AK26A	★	16.0	100.0

FHA	40°
BSG	COROMANT
TCDC	h10
TCDCON	h6
PSIR	0°



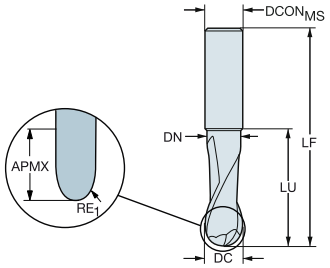
Metric version

DC	CZC_{MS}	APMX	RE_1	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF
3.0	2	4.0	1.50	32.0	2	2B320-0300-NG	★	2.9	60.0
4.0	3	5.0	2.00	32.0	2	2B320-0400-NG	★	3.8	60.0
5.0	4	8.0	2.50	42.0	2	2B320-0500-NG	★	4.8	70.0
6.0	5	9.0	3.00	64.0	2	2B320-0600-NG	★	5.8	100.0
8.0	7	13.0	4.00	64.0	2	2B320-0800-NG	★	7.8	100.0
10.0	9	15.0	5.00	60.0	2	2B320-1000-NG	★	9.7	100.0
12.0	11	17.0	6.00	80.0	2	2B320-1200-NG	★	11.7	125.0
16.0	15	23.0	8.00	77.0	2	2B320-1600-NG	★	15.7	125.0

CoroMill Plura™ solid carbide ball nose end mill for profiling

For non-ferrous material

FHA	40°
BSG	COROMANT
TCDC	h10
TCDCON	h8
PSIR	0°



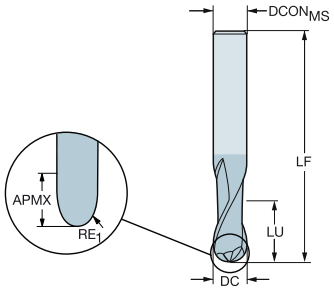
Metric version

DC	CZC_{MS}	APMX	RE_1	LU	ZEFP	Ordering code	N H10F	Dimensions, mm $DCON_{MS}$	LF	DN
3.0	3	5.0	1.50	8.8	2	2B330-0300-NC	★	3.0	38.0	2.7
4.0	4	7.0	2.00	11.8	2	2B330-0400-NC	★	4.0	50.0	3.7
5.0	5	10.0	2.50	14.8	2	2B330-0500-NC	★	5.0	50.0	4.7
6.0	6	11.0	3.00	17.8	2	2B330-0600-NC	★	6.0	57.0	5.7
8.0	8	14.0	4.00	23.8	2	2B330-0800-NC	★	8.0	63.0	7.7
10.0	10	18.0	5.00	29.8	2	2B330-1000-NC	★	10.0	73.0	9.7
12.0	12	22.0	6.00	35.8	2	2B330-1200-NC	★	12.0	83.0	11.7
16.0	16	29.0	8.00	47.8	2	2B330-1600-NC	★	16.0	92.0	15.7

CoroMill Plura™ solid carbide ball nose end mill for profiling

For non-ferrous material with silicon content > 9%

FHA	30°
BSG	COROMANT
TCDC	h9
TCDCON	h8
PSIR	0°



Metric version

DC	CZC$_{MS}$	APMX	RE$_1$	LU	ZEFP	Ordering code	N 20C	O 20C	DCON$_{MS}$	LF
1.0	3	3.0	0.50	3.0	2	2B230-0100-NA	★	☆	3.0	38.0
1.5	3	3.0	0.75	3.0	2	2B230-0150-NA	★	☆	3.0	38.0
2.0	3	6.0	1.00	6.0	2	2B230-0200-NA	★	☆	3.0	38.0
3.0	3	7.0	1.50	7.0	2	2B230-0300-NA	★	☆	3.0	38.0
4.0	6	8.0	2.00	8.0	2	2B230-0400-NA	★	☆	6.0	57.0
6.0	6	10.0	3.00	10.0	2	2B230-0600-NA	★	☆	6.0	57.0
8.0	8	16.0	4.00	16.0	2	2B230-0800-NA	★	☆	8.0	63.0
10.0	10	19.0	5.00	19.0	2	2B230-1000-NA	★	☆	10.0	72.0
12.0	12	22.0	6.00	22.0	2	2B230-1200-NA	★	☆	12.0	83.0

CoroMill® 316 – exchangeble heads cutter

When to use

First choice for aluminium and thermoplastic machining

ISO material	N
Grade	H10F
Shank	Coromant EH

Product range

For non-ferrous material

Coromant EH coupling

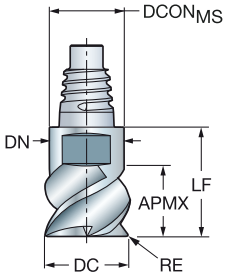
The Coromant EH coupling provides reliability and accuracy between the head and the shank. It is easy to handle and the head can bea changed in few seconds.

For ordering, see Rotating tools catalogue.

CoroMill® 316 solid carbide head for large chip removal

For non-ferrous material

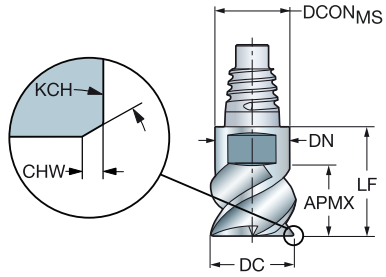
FHA 45°
BSG COROMANT
TCDC h9



Metric version

DC	CZC$_{MS}$	APMX	RE	ZEFP	Ordering code	N H10F	DCON$_{MS}$	LF	DN
							Dimensions, mm		
10.0	E10	5.5	1.00	3	316-10SM345-10010A	★	9.7	12.4	9.7
	E10	5.5	2.50	3	316-10SM345-10025A	★	9.7	12.4	9.7
12.0	E12	6.5	1.00	3	316-12SM345-12010A	★	11.7	14.5	11.7
	E12	6.5	2.50	3	316-12SM345-12025A	★	11.7	14.5	11.7
	E12	6.5	4.00	3	316-12SM345-12040A	★	11.7	14.5	11.7
16.0	E16	8.5	1.50	3	316-16SM345-16015A	★	15.5	18.7	15.5
	E16	8.5	2.50	3	316-16SM345-16025A	★	15.5	18.7	15.5
	E16	8.5	4.00	3	316-16SM345-16040A	★	15.5	18.7	15.5
20.0	E20	11.0	2.50	3	316-20SM345-20025A	★	19.3	21.3	19.3
	E20	11.0	4.00	3	316-20SM345-20040A	★	19.3	21.3	19.3
25.0	E25	13.5	4.00	3	316-25SM345-25040A	★	24.2	25.6	24.2

FHA 45°
BSG COROMANT
TCDC h9

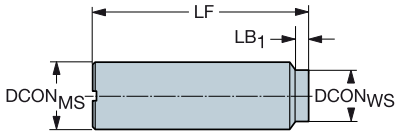


Metric version

DC	CZC$_{MS}$	APMX	CHW	KCH	ZEFP	Ordering code	N H10F	DCON$_{MS}$	LF	DN
								Dimensions, mm		
10.0	E10	5.5	0.10	45°	3	316-10SM345-10000A	★	9.7	12.4	9.7
12.0	E12	6.5	0.10	45°	3	316-12SM345-12000A	★	11.7	14.5	11.7
16.0	E16	8.5	0.15	45°	3	316-16SM345-16000A	★	15.5	18.7	15.5
20.0	E20	11.0	0.15	45°	3	316-20SM345-20000A	★	19.3	21.3	19.3
25.0	E25	13.5	0.15	45°	3	316-25SM345-25000A	★	24.2	25.6	24.2

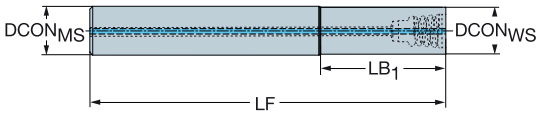
Cylindrical shank to Coromant EH adaptor

Straight design



Steel shank

					Dimensions, mm								
CZC_{MS}	CZC_{WS}	CNSC	CXSC	Ordering code	$DCON_{MS}$	$DCON_{WS}$	LSC	LF	LB_1	BAR	NM	KG	RPMX
10	E10	1	1	**E10-A10-SS-075**	10.0	9.6	54	75.0	20.0	80	12.00	0.09	40000
12	E12	1	1	**E12-A12-SS-100**	12.0	11.6	77	100.0	22.0	80	15.00	0.14	31000
16	E10	1	1	**E10-A16-SS-065**	16.0	9.6	57	65.0	5.0	80	12.00	0.14	40000
	E12	1	1	**E12-A16-SS-065**	16.0	11.6	58	65.0	5.0	80	15.00	0.15	40000
20	E16	1	1	**E16-A20-SS-070**	20.0	15.4	63	70.0	5.0	80	30.00	0.26	40000
	E16	1	1	**E16-A20-SS-110**	20.0	15.4	83	110.0	25.0	80	30.00	0.33	40000
	E20	1	1	**E20-A20-SS-120**	20.0	19.2	89	120.0	30.0	80	50.00	0.38	34000
25	E20	1	1	**E20-A25-SS-080**	25.0	19.2	73	80.0	5.0	80	50.00	0.39	40000
	E25	1	1	**E25-A25-SS-140**	25.0	24.1	99	140.0	40.0	80	65.00	0.63	25000
32	E25	1	1	**E25-A32-SS-080**	32.0	24.1	73	80.0	5.0	80	65.00	0.62	40000



Heavy metal shank

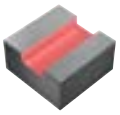
					Dimensions, mm							
CZC_{MS}	CZC_{WS}	CNSC	CXSC	Ordering code	$DCON_{MS}$	$DCON_{WS}$	LSC	LF	LB_1	BAR	KG	RPMX
10	E10	1	1	**EH10-A10-SH-100**	10.0	9.6	79	100.0	20.0	80	0.18	26000
12	E12	1	1	**EH12-A12-SH-110**	12.0	11.6	84	110.0	25.0	80	0.26	25000
16	E16	1	1	**EH16-A16-SH-130**	16.0	15.4	94	130.0	35.0	80	0.52	22000
20	E20	1	1	**EH20-A20-SH-160**	20.0	19.2	114	160.0	45.0	80	0.92	17000
25	E25	1	1	**EH25-A25-SH-185**	25.0	24.1	119	185.0	65.0	80	1.58	16000

For spare parts, visit www.sandvik.coromant.com

Cutting speed recommendations

Optimized - CoroMill Plura™ solid carbide end mill for large chip removal

Optimized - CoroMill® 316 solid carbide head for large chip removal



					a_e = 1.0 x DC			a_e = 0.5 x DC			a_e = 0.1 x DC		
					a_p = 0.5 x DC			a_p = 1.0 x DC			a_p = 1.5 x DC		
ISO	MC No.	CMC	Material	HB	f_z	v_c m/min	v_c feet/min	f_z	v_c m/min	v_c feet/min	f_z	v_c m/min	v_c feet/min
N	N1.2.Z.AG	30.12	Aluminium based alloys	100	I01	800	2625	I02	980	3215	I03	1120	3675
	N1.3.C.UT	30.21	Aluminium based alloys	75	I01	270	886	I02	360	1181	I03	480	1575
	N1.4.C.NS	30.42	Aluminium based alloys	130	I01	100	328	I02	130	427	I03	190	623
	N3.2.C.UT	33.2	Copper and copper alloys	90	I01	150	492	I02	200	656	I03	290	951
O	O7.0.S.UT		Graphite		-	-	-	I04	450	1476	I05	500	1640

For optimized cutting data see CoroPlus® ToolGuide.

Feed recommendations

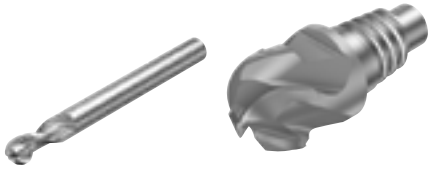
mm/tooth
inch/tooth

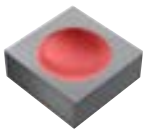
DC	1.000	2.000	3.000	4.000	6.000	8.000	10.000	12.000	14.000	16.000	18.000	18.000
f_z	*0.039*	*0.079*	*0.118*	*0.157*	*0.236*	*0.315*	*0.394*	*0.472*	*0.551*	*0.630*	*0.709*	*0.709*
I01	0.020	0.040	0.040	0.040	0.072	0.110	0.130	0.150	0.180	0.200	0.220	0.220
	0.0008	*0.0016*	*0.0016*	*0.0016*	*0.0028*	*0.0043*	*0.0051*	*0.0059*	*0.0071*	*0.0079*	*0.0087*	*0.0087*
I02	0.030	0.060	0.070	0.070	0.100	0.170	0.220	0.220	0.220	0.260	0.260	0.310
	0.0012	*0.0024*	*0.0028*	*0.0028*	*0.0039*	*0.0067*	*0.0087*	*0.0087*	*0.0087*	*0.0102*	*0.0102*	*0.0122*
I03	0.040	0.070	0.070	0.110	0.150	0.200	0.260	0.260	0.260	0.260	0.330	0.440
	0.0016	*0.0028*	*0.0028*	*0.0043*	*0.0059*	*0.0079*	*0.0102*	*0.0102*	*0.0102*	*0.0102*	*0.0130*	*0.0173*
I04	0.010	0.010	0.010	0.020	0.020	0.030	0.040	0.050	0.060	0.070	-	-
	0.0004	*0.0004*	*0.0004*	*0.0008*	*0.0008*	*0.0012*	*0.0016*	*0.0020*	*0.0024*	*0.0028*	-	-
I05	0.010	0.020	0.020	0.030	0.040	0.060	0.080	0.100	0.120	0.140	-	-
	0.0004	*0.0008*	*0.0008*	*0.0012*	*0.0016*	*0.0024*	*0.0031*	*0.0039*	*0.0047*	*0.0055*	-	-

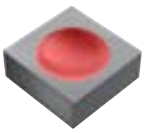
Cutting speed recommendations

Optimized - CoroMill Plura™ solid carbide ball nose end mill for profiling

Optimized - CoroMill® 316 solid carbide head for profiling







					a_e = 0.05 x DC			a_e = 0.01 x DC			
ISO	MC No.	CMC	Material	HB	f_z	v_c m/min	v_c feet/min	f_z	v_c m/min	v_c feet/min
N	N1.2.Z.AG	30.12	Aluminium based alloys	100	N03	1765	5791	N06	1765	5791
	N1.3.C.UT	30.21	Aluminium based alloys	75	N03	755	2477	N06	910	2986
	N1.4.C.NS	30.42	Aluminium based alloys	130	N03	280	919	N06	335	1099
	N3.2.C.UT	33.2	Copper and copper alloys	90	N03	505	1657	N06	615	2018

Feed recommendations

mm/tooth
inch/tooth

DC	1.000	2.000	3.000	4.000	6.000	6.350	7.938	8.000	9.525	10.000	12.000	12.700	16.000	20.000	25.000	25.400
f_z	*0.039*	*0.079*	*0.118*	*0.157*	*0.236*	*0.250*	*0.313*	*0.315*	*0.375*	*0.394*	*0.472*	*0.500*	*0.630*	*0.787*	*0.984*	*1.000*
N03	0.060	0.080	0.100	0.130	0.180	0.180	0.260	0.260	0.330	0.330	0.330	0.330	0.380	0.440	0.500	0.500
	0.0024	*0.0031*	*0.0039*	*0.0051*	*0.0071*	*0.0071*	*0.0102*	*0.0102*	*0.0130*	*0.0130*	*0.0130*	*0.0130*	*0.0150*	*0.0173*	*0.0197*	*0.0197*

See more about Sandvik Coromant solid carbide end mills

Reamers

Reaming is a machining process used for semi-finishing and finishing operation in straight or conical holes by using dedicated tools called reamers.

Reaming is a very important process in the automotive industry as it is present in the production of large number of components. In cylinder blocks, cylinder heads and housings, reaming operation represents around 34% of the machining costs.

They are three main types of reamers:

1- Solid reamers
2- Bladed reamers
3- Brazed PCD reamers

Reamers can produce holes with tolerances up to IT6 and surface finishing < RZ 3.2.

The decision about what kind of reamer to apply in a certain process will depend on the component characteristics and process details, but there are no set rules.

- Solid reamers are versatile and normally used in small diameter holes, up to 16 mm. They can be designed with some special geometries like step diameters and chamfers.
- Bladed reamers are very flexible and can be produced in diameters above 5 mm. The major advantage in this concept is the replaceable cutting edge, but it has the disadvantage of low productivity, due to the reduced number of effective cuts.
- Brazed PCD reamers can be produced In diameters above 6 mm and this concept allow different hole geometries like multi step, chamfers, radius and other special profiles.

See the Sandvik Coromant solid carbide reaming offer

Blade reamers

Blade reamers

Blade reamers are intended for finishing and semi-finishing operations and their main characteristics are the replaceable cutting blades and guide pads fixed in the reamer body.
The key feature in this concept are the guide pads.

The cutting pressure generated by the blade, making the guide pads touch the hole walls with a relative pressure, securing the perfect hole dimension and geometry.

The body of the reamer has two or more brazed guide pads, which have a fixed diameter with a dimension near to the minimal theoretical diameter of the component hole.

The cutting blade rest in a tip-seat with two pins, which by the action of two screws make the adjustment of the reamer (diameter and conicity).

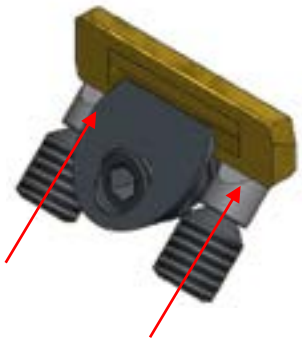
Guide pads

The blade reamers can be designed with special geometries for internal, external or conical shapes. The diameters range from 5.00 mm to 250.00 mm.

Depending on the diameter of the reamer, it can have 1, 2 or 4 cutting blades.

The blades, as well as the guide pads can be done with different materials according to the application.

Sandvik Coromant can provide different materials for both blades and guide pads, as well as optimized tool designs to outperform the reaming operations.



Blade adjustment

The blade reamers can be designed with a monoblock concept with different kind of shanks, but it is more common to have it designed with a radial and axial flange interface.

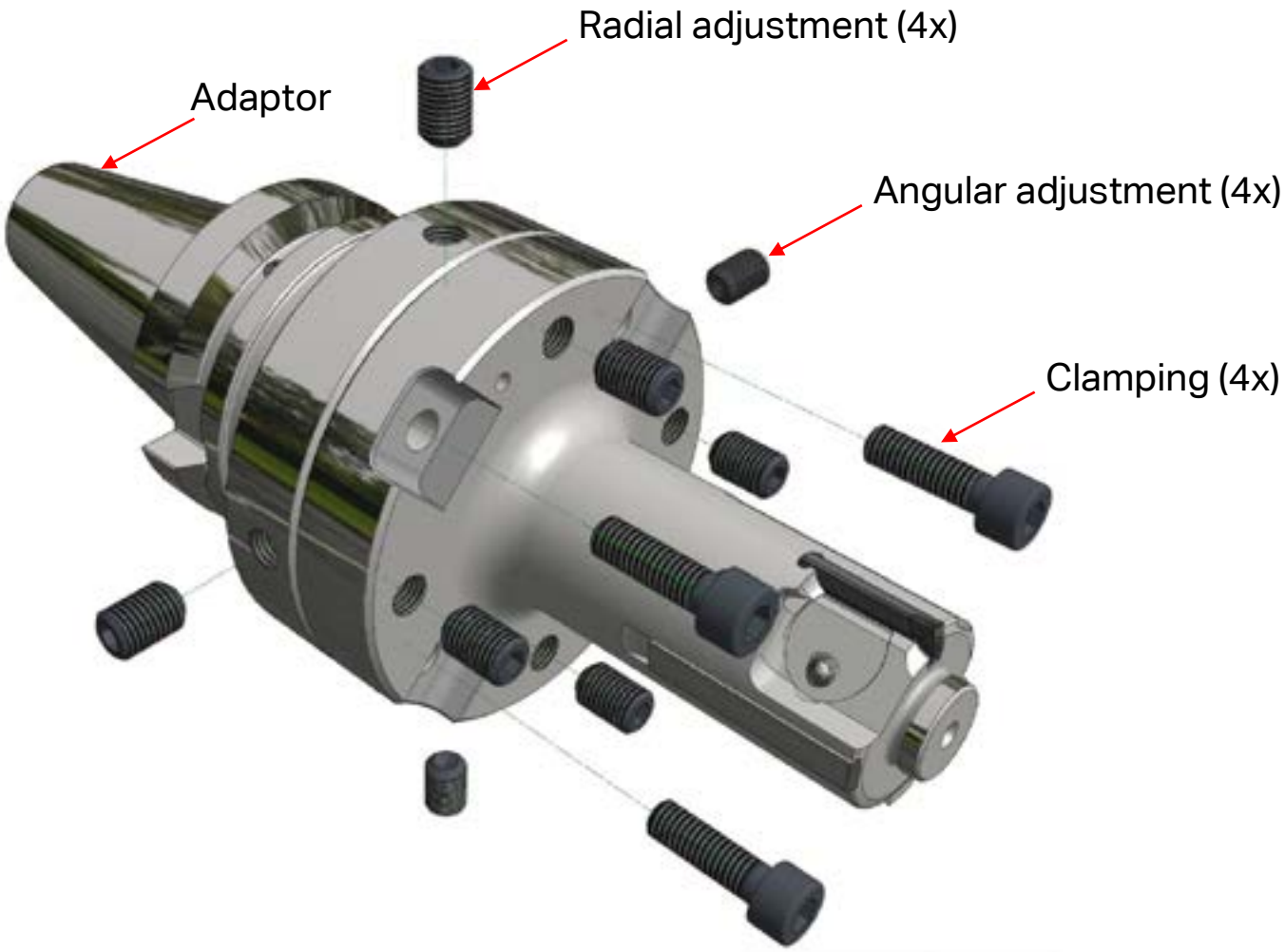
Axial and radial flange set

Due to its accuracy characteristics, the blade reamers are very sensitive to run outs, in both senses, radial and angular.

Major run outs can damage the machine spindle and the tool itself, and make the process unstable as well decrease tool life.

The axial and radial flanges are an assembling interface which allow to correct the machine spindle run-out, securing the right condition for the blade reamer.

A blade reamer designed with an axial/radial flange can be used in different holders with different couplings, like ISO, HSK, etc.



Blade reamers adjustment

Before being assembled in the tool holder, the blade reamer should be adjusted to the right diameters and the right position in the cutting blade. A dedicated preset equipment which allows a fast and accurate way of adjusting the blade reamer is used for this.

These presetters are available in different sizes depending on the size of the reamers to be adjusted.

The standard size allow to adjust reamers with diameters up to 80 mm and length up to 300 mm.

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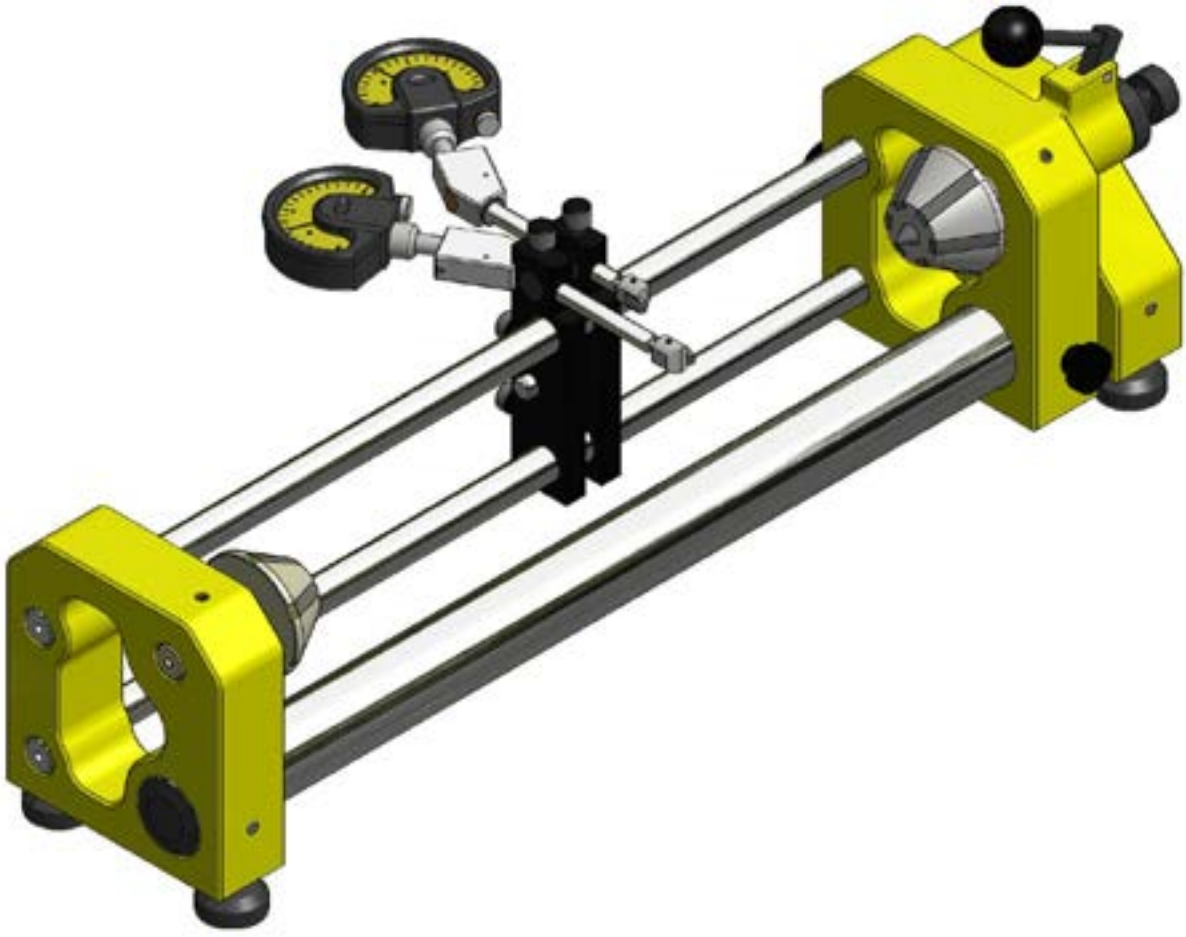


The other sizes of presetters equipments can be supplied as specials.

Blades - geometries

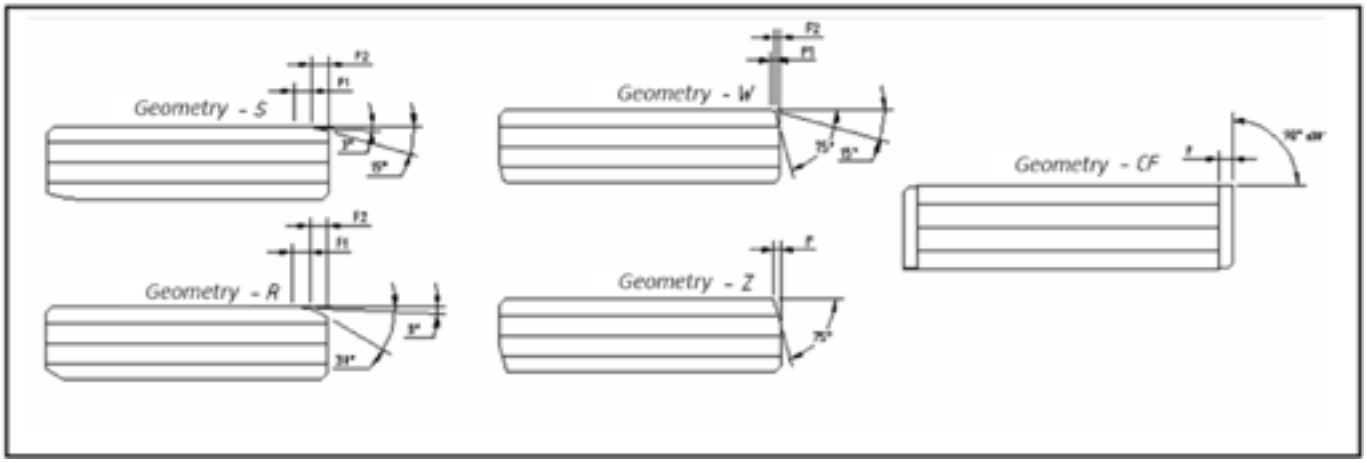
S – Through holes, to machining steel and high demands for surface finishing

W – Through holes, first option for machining cast iron

R – Through holes, first option for machining steel

Z – Through holes, first option for machining aluminum alloys

CF – Front cutting. Blind holes, suitable for all materials



Blade reamers – cutting data recommendation

Component Material	Blade Grade	Blade Coating	Stock material mm	Rake Angle	Cutting Speed M/min.	Feed mm/ver.
Low alloy steel	Carbide	TiN, TiAlN	0,20 - 0,40	0 - 10	60	0,15
	Cermet	Uncoated		0	100	0,10
High alloy steel	Carbide	TiN, AlCrN	0,15 - 0,30	0 - 10	40	0,15
	Cermet	Uncoated		0	80	0,10
Hardned Steel *	CBN	Uncoated	0,10 - 0,20	0	80	0,08
Stainless steel	Carbide	TiN, AlCrN	0,15 - 0,30	0 - 10	40	0,15
	Cermet	Uncoated		0	80	0,10
Gray Cast Iron	Carbide	TiAlN, AlCrN	0,30 - 0,50	0	100	0,15
Nodular Cast Iron	Carbide	TiN, TiAlN, AlCrN	0,30 - 0,50	0 - 10	80	0,15
	Cermet	TiAlN		0	120	0,10
Aluminum Alloys	Carbide	Uncoated	0,40 - 2,00	0 - 10	120	0,05
	PCD	Uncoated		0 - 6	200	0,05
Non Ferrous Alloys	Carbide	Uncoated	0,40- 2,00	0 -10	120	0,05
	PCD	Uncoated		0 - 6	200	0,05

Brazed PCD tools

Brazed PCD Tools

For drilling, milling, reaming and boring applications

The brazed PCD tools are essential for some applications in the automotive aluminium components. The current production resources and the PCD blanks availability make it possible to design and produces a huge range and types of brazed PCD tools for different process/applications in the machining of aluminium components.

Brazed PCD tools are ideal for:

1 – Small dimensions/combined tools

2 – Complex shape possibilities

3 – Accurate tools/dimensions

4 – Higher productivity

Sandvik Coromant provide a comprehensive assortment of brazed PCD tools, simple or complex covering the applications areas:

- Brazed PCD DRILL BORING TOOLS

- Brazed PCD REAMER

- Brazed PCD MILLS

- Brazed PCD

All the brazed PCD tools are non-stocked and designed according to the component/feature characteristics.

Renewing the cutting edges of brazed PCD tools requires regrinding, re-tipping and repairing.

Sandvik Coromant offers a complete services structure for supporting brazed PCD tools. Contact our local representative.

Dedicated feature solutions

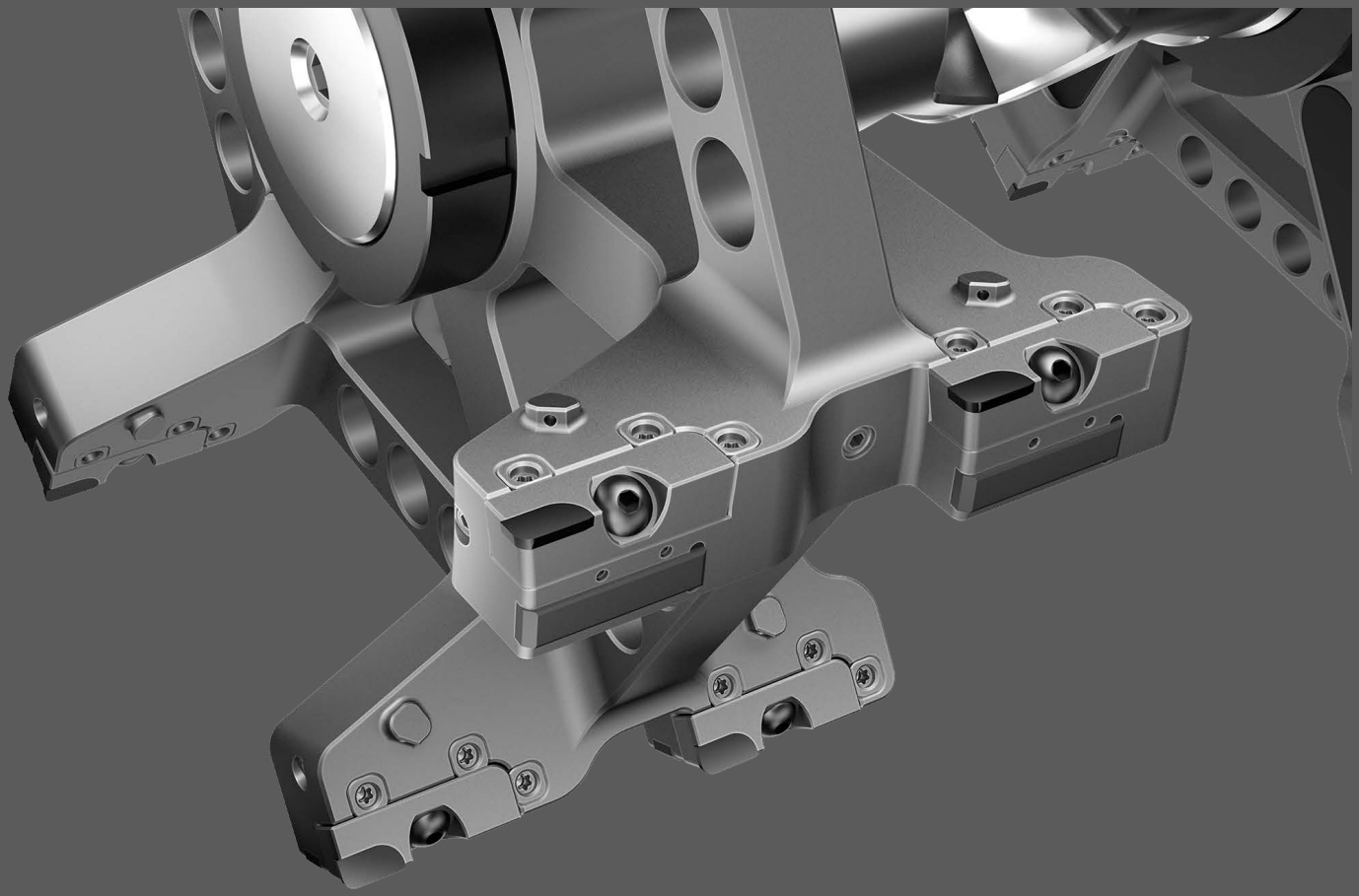
Valve seat and guide

Camshaft line

Crankshaft line

Stator housing

Battery rack



Valve seat and guide

Valve seat and guide are one of the most important features in an internal combustion engine (ICE) and its machining process is one of the most expensive in the total engine machining cost.

Smaller engines, common in hybrids vehicles, have small dimensions on the valve seat and guide features. Accurate and dedicated reamers are required for these operations.

Housing (Parent metal)

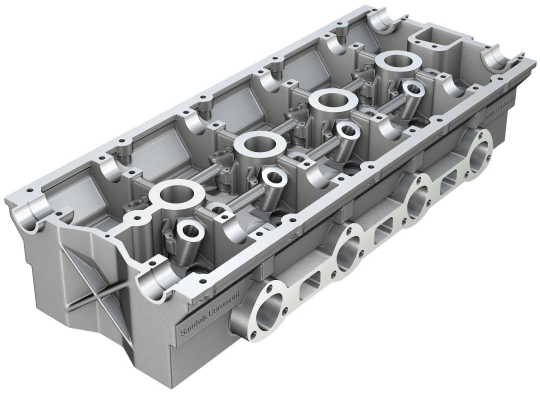
Valve guide and seat finishing

Sandvik Coromant has a complete offer for these features which include solutions in brazed PCD for the housing operation and bladed solutions combined with solid carbide reamers for machining the valve seat and guide. By using a solid carbide reamer, it is possible to machine valve guide starting from 4 mm diameter.

Camshaft line

The camshaft line is one of the most important features in a cylinder head component. This feature requires similar machining process as the crankshaft line in a cylinder block.

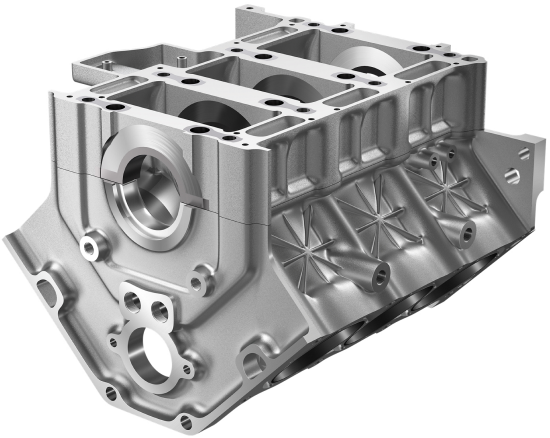
It is a critical and demanding application that requires high accuracy in the production process and the tooling costs are high. The quality demand on this complete feature is related to a high accuracy on the journals' (bearing) diameters. A tight concentricity between the journals (bearings) and the high diameter/length ratio of the hole, 1:10 or more.



Application data Ref:
Camshaft line (blade reamer)
Vc = 236 m/mm
S = 3.000 rpm
D = 25.05 mm
Vf = 360 mm/min
Fn = 0.12 mm
Tool life = 30.000 pieces

The best solution for camshaft/crankshaft operations is the blade reamer with PCD blades for aluminium and coated carbide for cast iron. The overall tooling costs are high.

Crankshaft line



Component description

The crankshaft line is also a critical feature in the automotive area and it is very similar to the camshaft line, high accuracy and long hole.

In the aluminium cylinder blocks, generally the crankshaft line is a bimetallic feature, half in aluminium (cylinder block) and half in nodular cast iron (bearing caps).

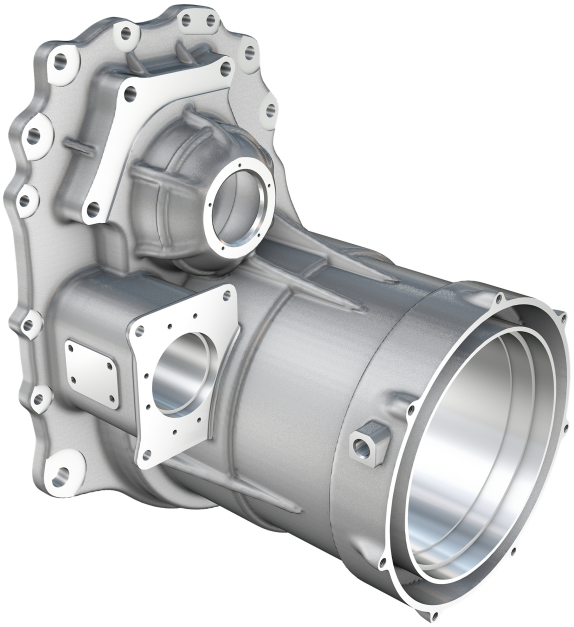
The crankshaft line can be machined using different concepts of processes and tools, like bladed reamers, or brazed PCD reamers, using a pre-machined hole as pilot for the long reamer, or by using a line boring bar, which uses an external guide bush in type clamping device.

Sandvik Coromant can offer all concepts to machining crankshaft lines.

Stator housing

A key component in the e-mobility area is the stator housing and its cover. The rotor inside the housing spins with high revolutions and places high demands on precision and noise dampening to secure bearing life and minimize noise levels. The concentricity seat is a critical demand for this component.

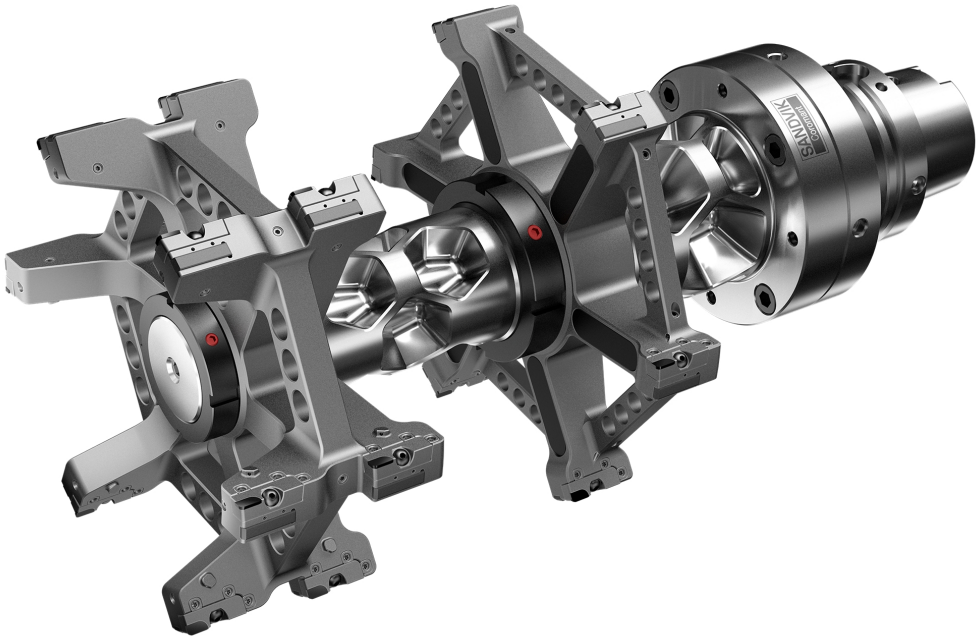
The inside bore of the housing places high demands on the machining operation to meet the high tolerances and avoiding vibrations. This large bore with long overhangs demands for big tools, which requires light-weight constructions to be compatible with small and fast machines common for machining aluminium components.



Sandvik Coromant provides dedicated and optimized solutions for machining stator housings and its covers.

These solutions are specials and designed according to the component and machine characteristics, securing the highest process productivity, as well as, the highest quality out put in the component. They can be boring based solutions, bladed solutions, brazed PCD solutions, or combined solutions.

Independent on if the process is designed for a machining center, or a CNC lather, or even both machines together, we have the best solution for it. Get in contact with our representatives.

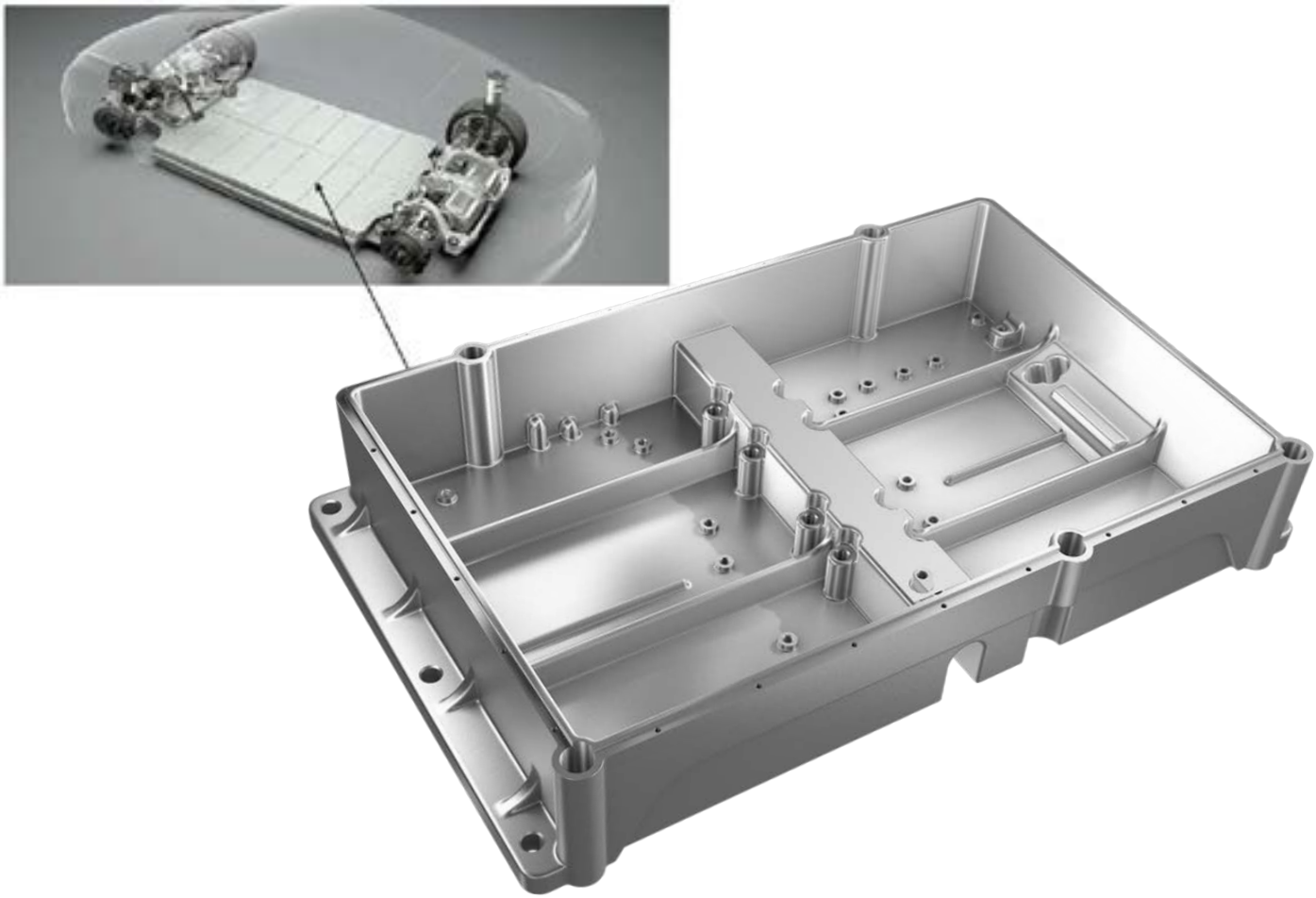


Battery rack

This component comes in many shapes and sizes tailored to suit the battery system used by the OEM and to fit the space available in the respective car model.

Keeping the weight of this rather large component as low as possible while still maintaing the functionality of a stable and safe storage for the battery pack.

Key challenges lie in the fixturing, avoiding geometrical distorsions and vibrations on this large but often thin-walled component.



The Sandvik Coromant current assortment for machining automotive aluminium components cover all the demands for machining the battery racks.

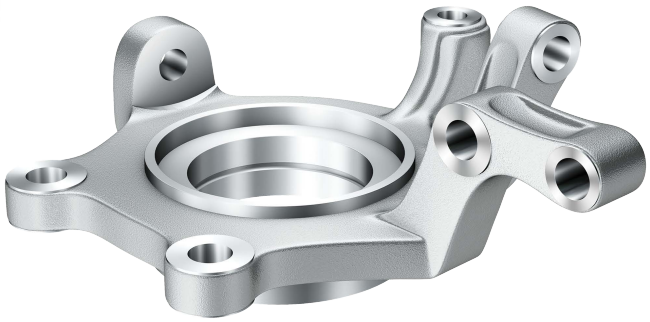
The main process in this kind of components are: face milling, end milling, drilling, tapping, boring and reaming. Most of these process will use standard tool, with some exceptions in the reaming and boring operation.

General components/features

Steering housing

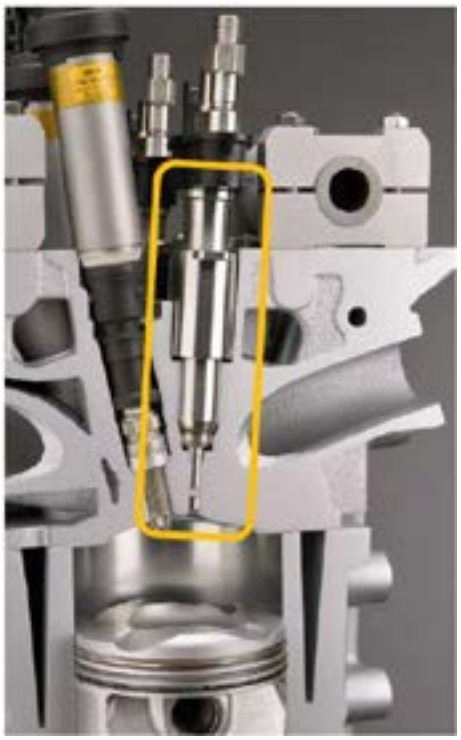
General components/features

Knuckles



General components/features

Fuel injection nozzle

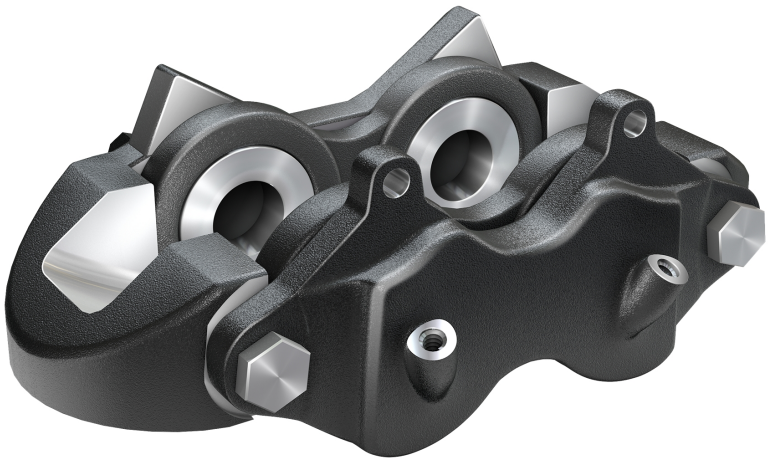


Spark plug

General components/features

Brake systems - ABS

Callipers



General components/features

Water/oil pumps

Solutions for automotive aluminium components

2022

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