

CoroMill® MH20

High feed milling

Best-in-class high-feed pocketing

Time to level up your high-feed milling operations with best-in-class CoroMill® MH20. This is a versatile tool with a large application area, but primarily designed for pocketing applications in ISO S, M and P materials.

Thanks to its light cutting action, in combination with a robust shank design, CoroMill® MH20 ensures secure and vibration-free machining, even with long overhangs.



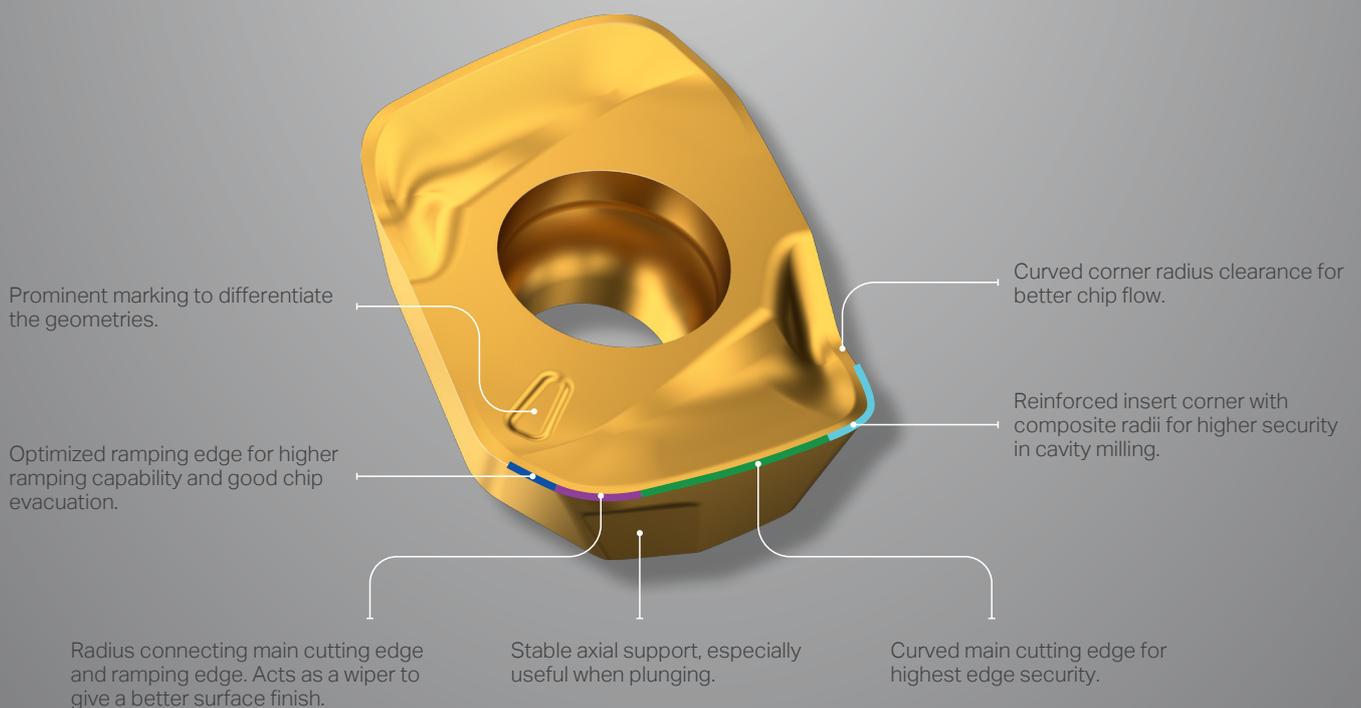
Robust cutter body

The robust cutter body with increased strength guarantees a longer tool life and excellent stability at long overhangs. An open insert pocket design and a secure insert position ensure reliable machining with excellent chip evacuation and less vibration.



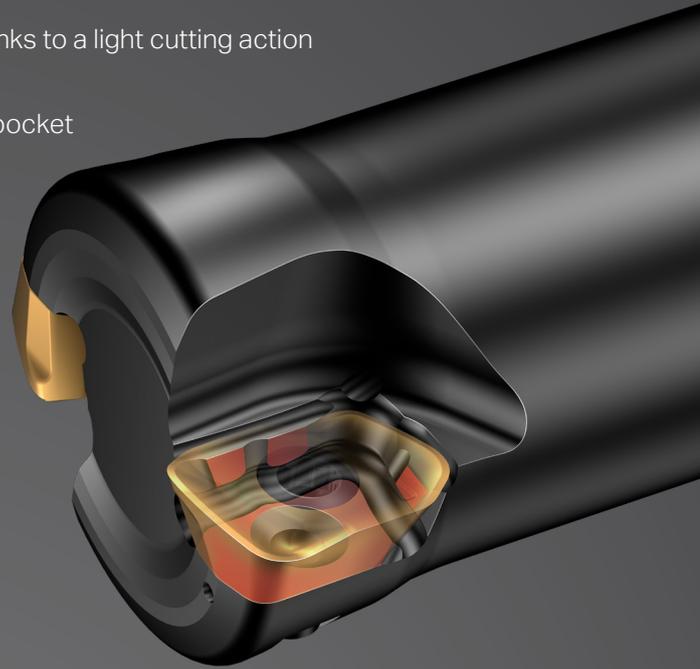
Curved insert design

The single-sided, two-edged positive insert has a strong curved edge with a reinforced corner radius, ensuring secure and reliable machining against shoulders and corners in pocketing. A sloped edge for gradual cutting engagement into the workpiece ensures a gradual chip load on the cutting zone and improves chip formation. This design generates lower cutting forces and develops them in a favorable direction to keep vibration to a minimum.



Features and benefits

- High-feed concept suitable for many milling operations helps to reduce the number of tools and, thus, the cycle time
- Excellent stability at long overhangs with minimum vibration thanks to a light cutting action and a robust tool design
- Optimized edge-line security for reliable corner machining and pocket milling makes unsupervised machining possible
- Open insert pocket design for excellent chip evacuation
- Light cutting action means less power consumption enabling the use of smaller machines
- Creates better surface finish with smaller cusps leaving less stock for the next operation
- Optimized geometries for high performance in ISO S, M and P materials



Application areas

- High feed pocket milling, corner machining, ramping, helical ramping, full slotting, plunge milling, shoulder milling and face milling
- For roughing and semi-finishing
- Main industry segments and components
 - Aerospace: Frame, landing gear, engine casing
 - Oil and gas: Valve body, spools, connectors
 - Die and mold: Forging dies, molds, press tools



Customer challenges in ISO S

Applications

- Aerospace frame open and closed pocket milling
- Full slotting and hole making with helical ramping cycles
- Long overhang cavity milling
- Low engagement shoulder milling
- Multi-task turn milling

Challenges

- Chip evacuation
- Insert security and reliability
- Tool life
- Cutter body damage (chip rubbing)

CoroMill® MH20 solution

- Use E-L30 geometry for excellent chip formation and evacuation in sticky materials.
- The curved main cutting edge provides maximum security against notch wear and the reinforced insert corner makes corner machining reliable. The improved tool body material ensures less insert seat deformation and better mounting repeatability.
- The sloped edge gives gradual and positive cutting engagement which regulates the cutting force and minimizes the impact load. Periphery ground E-L30 geometry gives predictable and gradual wear characteristics.
- The improved tool body material can better withstand chip rubbing.



Customer challenges in ISO M

Applications

- Oil and gas open and closed pocket milling
- Full slotting and hole making with helical ramping cycles
- Long overhang cavity milling
- Low engagement shoulder milling
- Multi-task turn milling



Challenges

- Chip formation
- Insert security and reliability
- Long overhang machining
- Predictable and repeated tool life

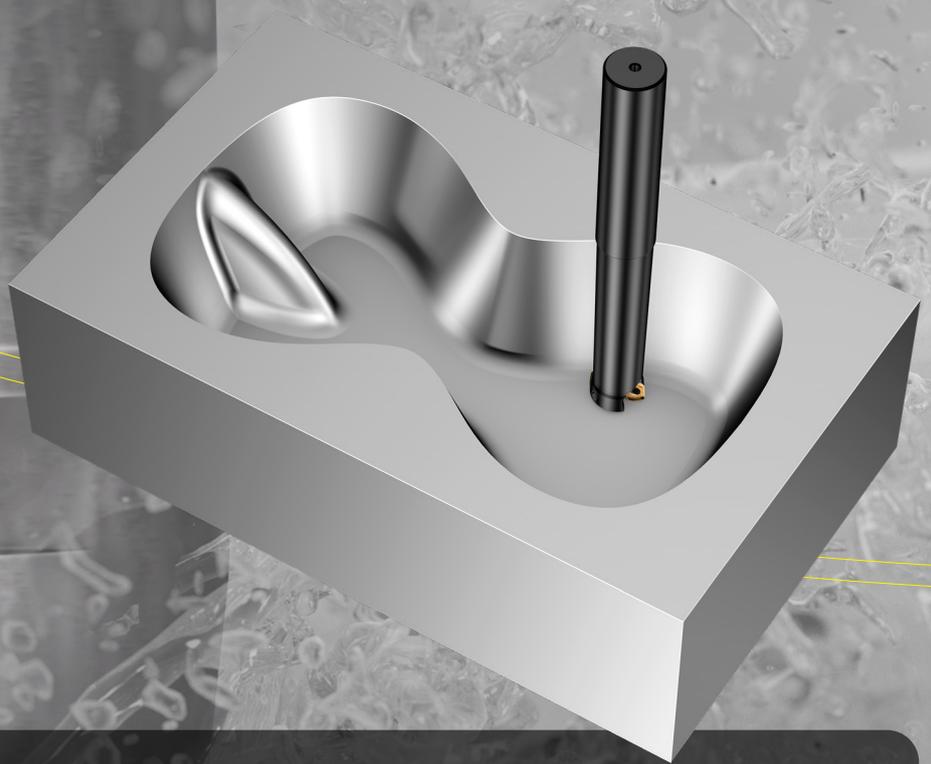
CoroMill® MH20 solution

- Use E-L30 geometry for excellent chip formation and evacuation in sticky materials.
- The curved main cutting edge provides maximum security against notch wear and the reinforced insert corner makes corner machining reliable. The improved tool body material ensures less insert seat deformation and better mounting repeatability.
- Robust steel shank design ensures better stability and less deflection.
- The two cutting edges have an equal tool life and the E-L30 geometry offers predictable and gradual wear characteristics.

Customer challenges in ISO P

Applications

- Mold cavity pocket milling up to HRC 48
- Mold base deep cavity milling
- Die block corner machining
- Low engagement shoulder milling



Challenges

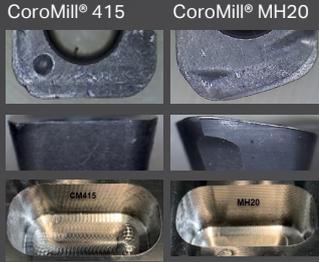
- High cutting forces
- Long overhang machining
- High metal removal rates
- Long contact time
- Higher hardness

CoroMill® MH20 solution

- M-M20 and M-M50 geometries are optimized for higher edge-line security in high-alloy ISO P applications.
- Use light cutting geometry M-M20 for trouble-free machining at long overhangs. The robust shank design ensures better stability and less deflection.
- Use strong M-M50 geometry for the highest metal removal rates in stable applications.
- Use grade GC4340 for high security in long-contact applications.
- Use M-M20 with GC1010 for high hardness in stable applications. Use M-M50 with GC1130 for high hardness in unstable set-ups.

Performance test, ISO S

Component: Aerospace wing support
 Material: S4.3.Z.AN (Ti6Al4V)
 Operation: Pocketing
 Machine: Okuma M560V-Genos, CAT40 BIG-PLUS®



	CoroMill® 415	CoroMill® MH20
Tool	415-016A12-05H, $z_n: 3$	MH20-AR016O16-06L, $z_n: 2$
Insert	415N-050212E-M30 S30T	M20-060320E-L30 S30T
Tool overhang, mm (inch)	40 (1.575)	40 (1.575)
v_c , m/min (ft/min)	69 (226)	69 (226)
n , rpm	1000	1000
f_z , mm (inch)	0.51 (0.020)	0.51 (0.020)
v_r , mm/min (in/min)	1530 (60.2)	1016 (40.0)
a_p / a_{e_r} , mm (inch)	0.8 / 16 (0.031 / 0.630)	0.8 / 15.8 (0.031 / 0.622)
Tool life, min	49	64.5

Result: With CoroMill® MH20, the customer improved the tool life by 32% and achieved a much higher component surface quality. The insert corner of the CoroMill® MH20 demonstrated better edge-line security and lower vibration tendency.

Performance test, ISO M

Component: Food processing machine component
 Material: M1.0.Z.AQ (AISI 304)
 Operation: Side and face milling
 Machine: DMG MORI NT4250, Coromant Capto® C6



	Competitor	Sandvik Coromant
Tool	DCX: 25 mm (1 inch), $z_n: 4$	MH20-025A25-06H, $z_n: 4$
Insert	-	MH20-06 03 20E-L30 1040
Tool overhang, mm (inch)	Chuck+70 (2.76) = 160 (6.30)	Chuck+90 (3.54) = 180 (7.09)
v_c , m/min (ft/min)	120 (394)	120 (394)
n , rpm	1530	1530
f_z , mm (inch)	0.85 (0.033)	0.85 (0.033)
v_r , mm/min (in/min)	5200 (205)	5200 (205)
a_p / a_{e_r} , mm (inch)	0.75 / 20 (0.030 / 0.787)	0.75 / 20 (0.030 / 0.787)
Tool life, min	3 components / 49.5 min	3 components / 49.5 min

Result: After machining three components, the competitor insert clearly showed notch wear and micro chipping. The CoroMill® MH20 insert had less wear, providing a reliable cutting edge with a secure and better edge-line quality.

Performance test, ISO P

Component: Axis
 Material: P2.1.Z.AN (30CrMnSiNi2A), non-hardened
 Operation: Deep slotting and cut off
 Machine: Haitian HISION GLU16 VMC, BT50



	Competitor	Sandvik Coromant
Tool	DCX: 25 mm (1 inch), $z_n: 3$	MH20-R025A25-08M, $z_n: 3$
Insert	-	MH20-08 04 25M-M50 4340
Tool overhang, mm (inch)	Chuck+122 (4.80)	Chuck+110 (4.33)
v_c , m/min (ft/min)	142 (466)	142 (466)
n , rpm	1800	1800
f_z , mm (inch)	0.426 (0.017)	0.481 (0.019)
v_r , mm/min (in/min)	2300 (90.6)	2600 (102)
a_p / a_{e_r} , mm (inch)	0.5 / 25 (0.020 / 0.984)	0.5 / 25 (0.020 / 0.984)
Tool life, min	1 component / 348 min	1 component / 308 min

Result: CoroMill® MH20 could increase productivity by 22% and showed less wear than the competitor, offering secure and reliable performance.

Sustainability with CoroMill® MH20

New cutter body material increasing strength and inserts with high edge-line security guarantee a longer tool life and reliable machining with less scrap. In addition, with less vibration and a more reliable concept design, the risk of tool breakage is reduced, making the operator and workplace environment safer.

With a better surface finish achieved, the need for a semi-finishing tool is greatly reduced. This also means fewer tools in use, fewer stoppages and a quicker machining process with less inventory.

Equally important, this light-cutting concept uses less machine power, resulting in reduced energy consumption and a lower noise level.



For more information and the full assortment, contact your local Sandvik Coromant representative or visit www.sandvik.coromant.com/coromillmh20

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C-1040:292 en-US © AB Sandvik Coromant 2021

