Solid carbide drills and end mills

Innovations 2023

MILLER
MAPAL GROUP

OptiMill®-Inox-HPC

Highly productive machining of stainless steel

The OptiMill-Inox-HPC four-edge shoulder milling cutter is a versatile tool. The end milling cutter made of solid carbide can be used for roughing as well as finishing. The special cutting edge preparation creates optimal surfaces.

1 Novel slot profile
– For fast and safe chip removal in ductile materials

2 Unequal spacing and gradient
– Prevents vibrations and offers a smoother running

3 New coating technology
– For maximum wear resistance

4 Innovative face geometry
– For various milling applications (ramping and helix milling)

5 Cutting edge with corner chamfer
– For highest stability

Features

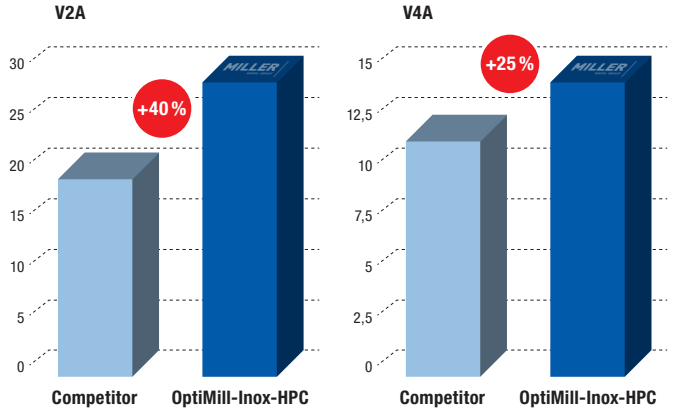
Dimensions:
– Number of cutting edges: 4
– Shank form: HB

Preferred series in stock:
– ø range: 3 mm to 20 mm

Available on request:
– Diameter: 14 mm and 18 mm

Configurable features:
– Shank form: HA

Tool life [m]



Cutting parameters
Full slot milling

Tool ø:	12 mm
a_p:	12 mm
a_e:	12 mm
f_z:	0.05 mm
v_c:	90 m/min

OptiMill®-Tro-Inox

Highly Productive Milling in Stainless Steel

The OptiMill-Tro-Inox impresses through an optimal ratio between the number of cutting edges, chip breakers and a new type of flute shape. The modern multilayer coating is another key advantage of the six-flute solid carbide trochoidal milling cutter. This counteracts adhesive wear and, combined with the carbide matched to the application, ensures optimum results.

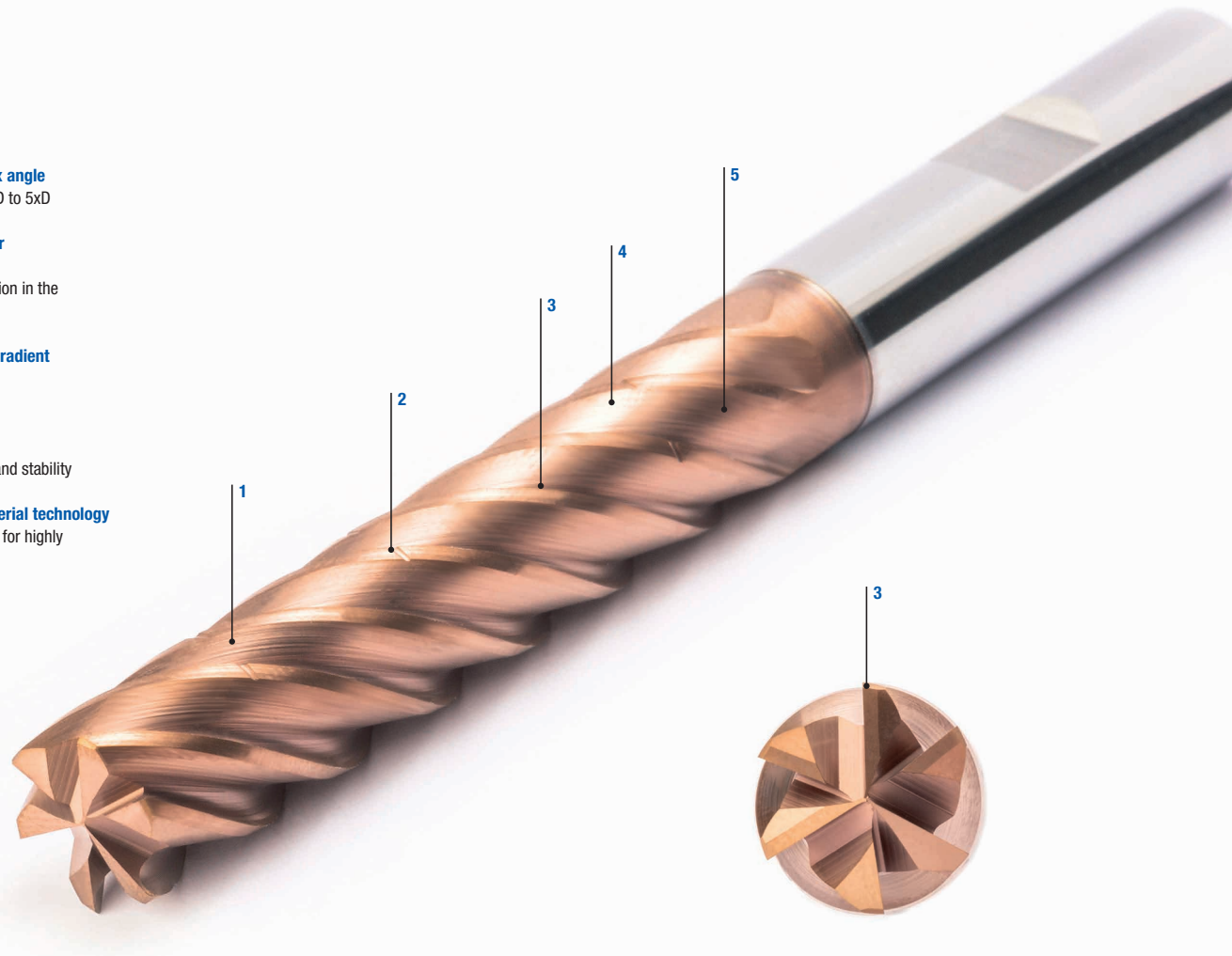
1 Specially adapted helix angle
– To the length ratio of 2xD to 5xD

2 Additional chip breaker
– For safe chip removal
– To avoid chip accumulation in the machining of pockets

3 Unequal spacing and gradient
– Avoidance of vibrations
– Quiet cutting behaviour

4 Core rise
– For maximum stiffness and stability

5 Innovative cutting material technology
– Extremely tough carbide for highly dynamic loads



Features

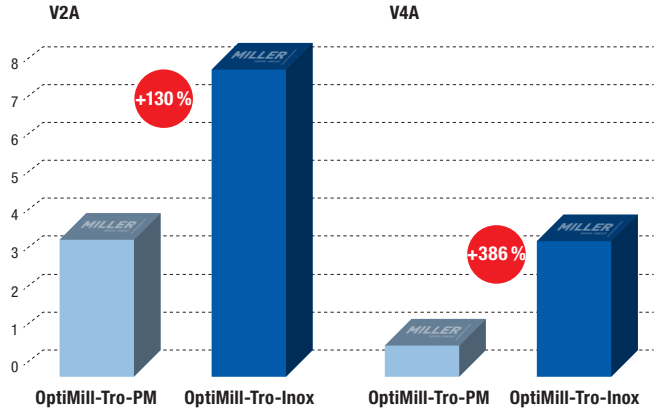
Dimensions:
– Number of cutting edges: 6
– Shank form: HB
– Design: 2xD to 5xD

Preferred series in stock:
– ø range: 4 mm to 20 mm

Available on request:
– Diameter: 14 mm, 18 mm and 25 mm

Configurable features:
– Shank form: HA

Maximum cutting volume up to end of tool life [l]



Cutting parameters
Full slot milling

OptiMill-Tro-PM (z=7)
OptiMill-Tro-Inox (z=6)

v_c V2A:	200 m/min
v_c V4A:	180 m/min
Tool ø:	12 mm
a_p:	60 mm (5xD)
a_e:	0.5 mm
f_z:	0.10 mm/U
h_{max}:	0.07 mm

OptiMill®-Titan-HPC

Versatile roughing and finishing

The OptiMill-Titan-HPC four-edge shoulder milling cutter is a versatile tool. The end milling cutter made of solid carbide can be used for roughing as well as finishing. The special cutting edge preparation creates optimal surfaces.

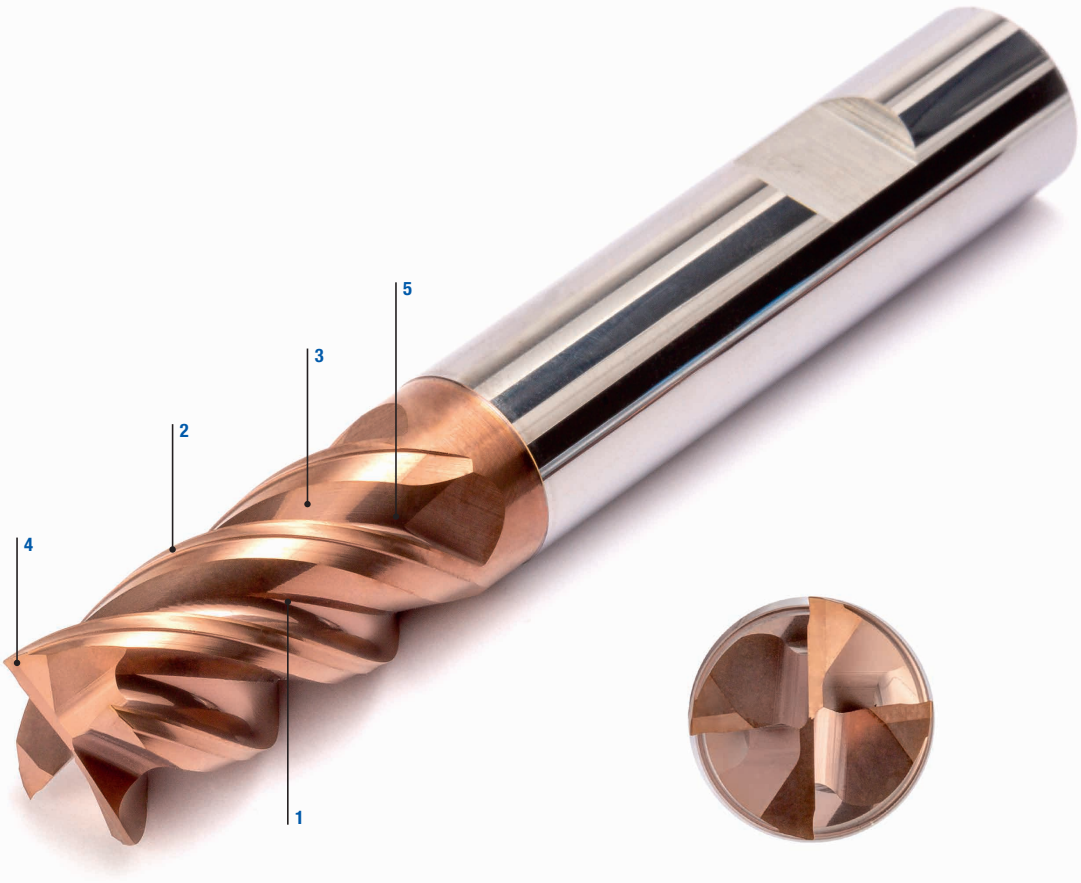
1 Novel groove profile with polished chip spaces
– Very high stability
– Optimal chip transport

2 Unequal spacing and gradient
– Runs as quietly as possible

3 New cutting material technology
– AlTiN-based multi-layer coating for high thermal loads
– Counteracts the adhesion tendency

4 Different corner radii variants available
– For machining of part as close to the contour as possible

5 High core diameter with integrated rise
– For highest stability or stiffness
– Full slot milling up to a depth of 1.5xD possible



Features

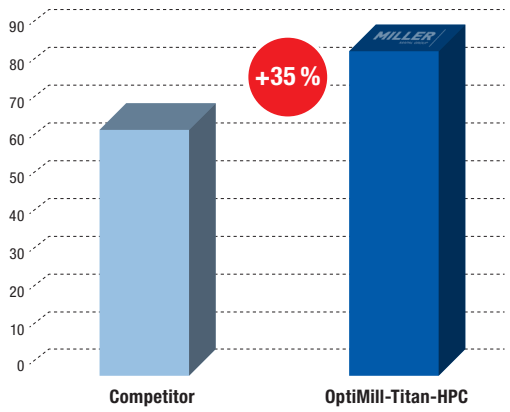
Dimensions:
– Number of cutting edges: 4
– Shank form: HB
– Long design with neck

Preferred series in stock:
– ø range: 6 mm to 25 mm

Available on request:
– Various corner radius designs

Configurable features:
– Shank form: HA

Tool life [m]



Ti6Al4V–1.1800

Tool ø:	12 mm
v_c:	80 m/min
f_z:	0.06 mm
a_p:	12 mm
a_e:	4.8 mm

OptiMill®-Tro-Titan

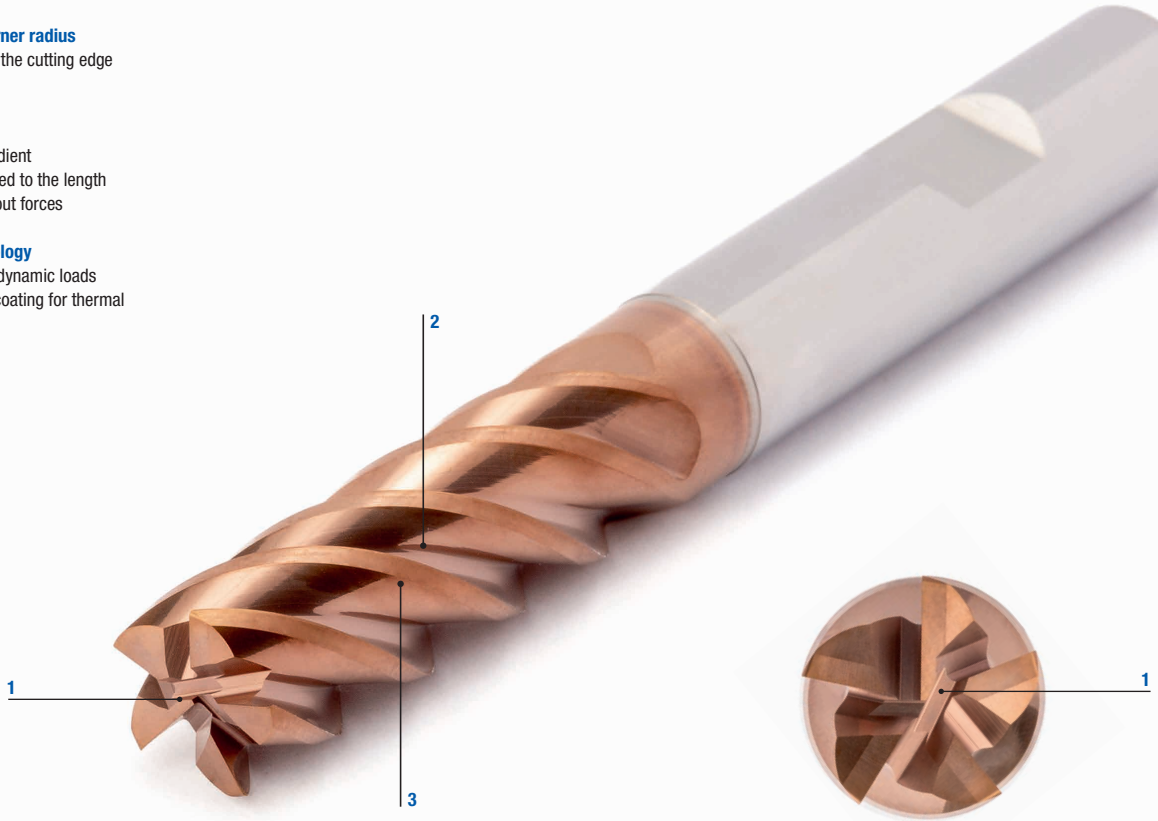
Five-edge trochoidal milling cutter for milling titanium workpiece material

The five-edge shoulder milling cutter OptiMill-Tro-Titan offers maximum material removal rate while providing an excellent surface finish at the same time. The unequal spacing and gradient prevents vibration, which results in quiet cutting behaviour. It is designed for trochoidal milling in part-contact cutting, trimming and for cutting depths up to 3xD.

1 Face geometry with corner radius
– For maximum stability of the cutting edge

2 Cutting edge geometry
– Helix angle: 41° – 42°
– Unequal spacing and gradient
– Special helix angle adapted to the length ratio 3xD to reduce pull-out forces

3 Cutting material technology
– Tough carbide for highly dynamic loads
– AlTiN-based multi-layer coating for thermal loads



Features

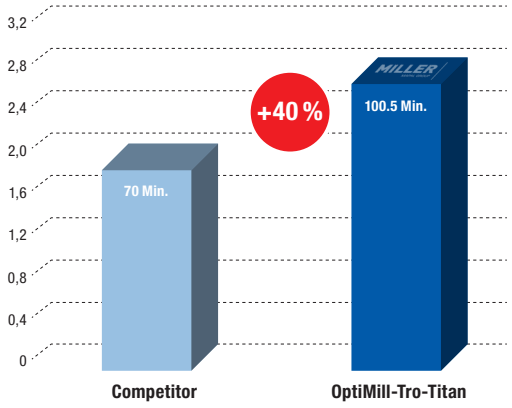
Dimensions:
– Number of cutting edges: 5
– Shank form: HB
– Design: 3xD

Preferred series in stock:
– ø range: 6 mm to 20 mm

Available on request:
– Diameter: 5 mm,14 mm, 18 mm and 25 mm

Configurable features:
– Shank form: HA

Cutting volumes [dm³] *



Ti6Al4V
Nominal ø: 12 mm
f_z: 0,09 mm
a_p: 25 mm
a_e: 1.2 mm
h_{max}: 0.08 mm

* Until end of tool life

MEGA-Speed-Drill-Titan

Cost-efficient and productive

The double edge high-speed drill is equipped with four margin lands for optimum roundness. To bring the maximum coolant flow to the main cutting edge, the coolant is directed backwards along the shell surface. In this way, the margin lands experience maximum cooling, dissipating the generated heat effectively. The convex main cutting edge ensures high stability and long tool life.

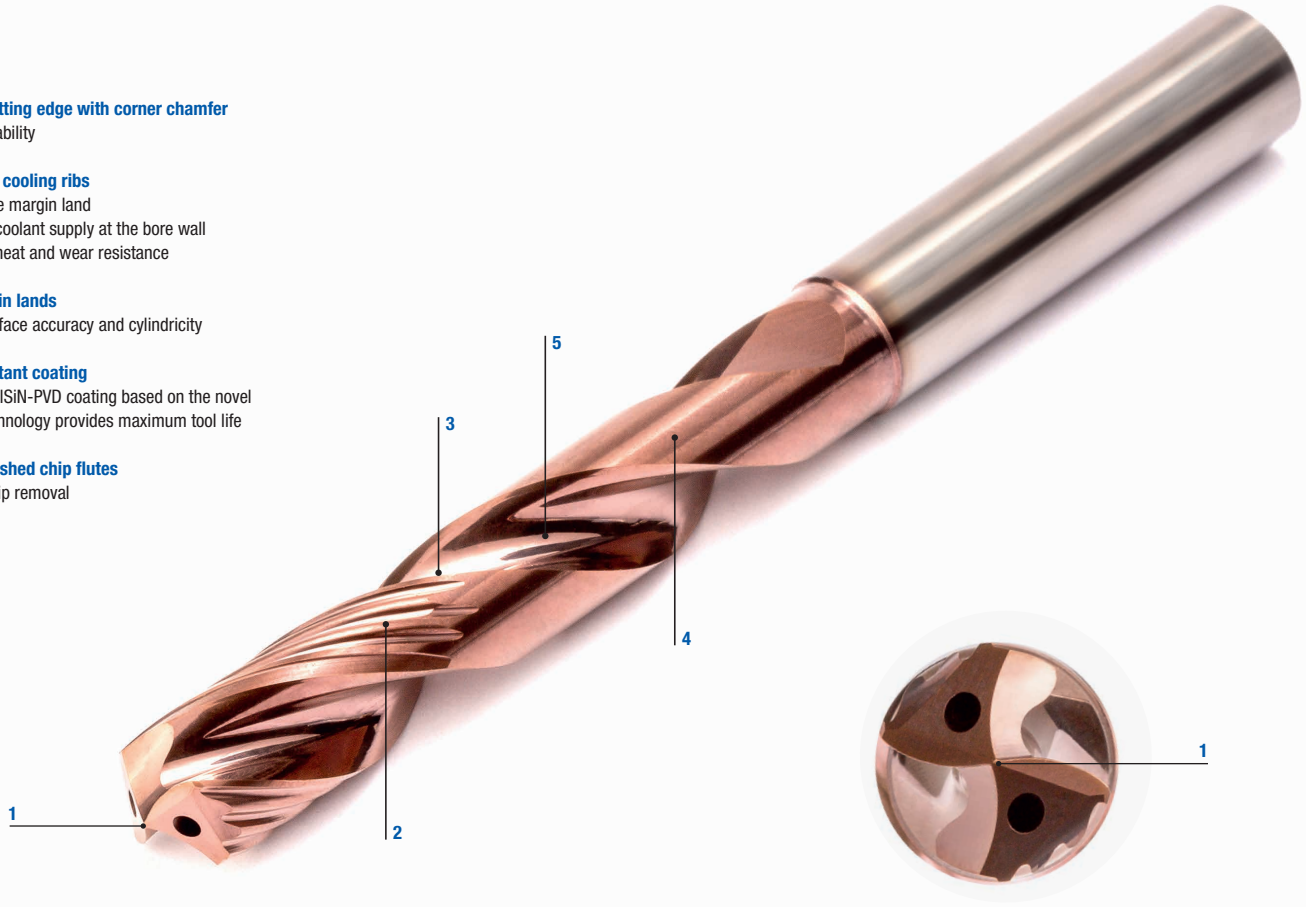
1 Convex cutting edge with corner chamfer
– For high stability

2 Innovative cooling ribs
– Protects the margin land
– Maximum coolant supply at the bore wall
– Maximum heat and wear resistance

3 Four margin lands
– Precise surface accuracy and cylindricity

4 Heat-resistant coating
– Smooth TiAlSiN-PVD coating based on the novel HiPIMS technology provides maximum tool life

5 Highly polished chip flutes
– Reliable chip removal



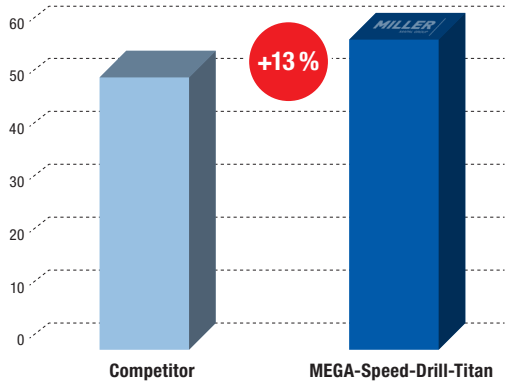
Features

Dimensions:
– Number of cutting edges: 2
– Shank form: HA
– 5xD with internal coolant

Preferred series in stock:
– ø range: 3 mm to 16 mm

Configurable features:
– ø range: 3 mm to 20 mm
– Shank form: HB, HE

Tool life [m]



TiAl6V4-1.1800
Nominal ø: 8.50 mm
v_c: 40 m/min
f_u: 0.2 mm/rev.

Tritan-Drill-Alu

The high-feed drilling specialist for aluminium applications

MILLER has developed the Tritan-Drill-Alu especially for the high-feed machining of aluminium. The solid carbide drill with three cutting edges has a matched, precision-ground groove profile. Large chip spaces and a special, sharp cutting-edge finish guarantee optimum chip formation, reduce heat build-up and ensure reliable chip removal.

1 Three cutting edges
– For high-feed machining with maximum feed rates

1 Extra-large chip spaces with finely ground chip flute profile
– Safe chip removal

2 Self-centring chisel edge
– Best positioning accuracy

3 Sharp prepared cutting edge
– Optimal chip formation

4 Three margin lands
– For perfect guiding properties

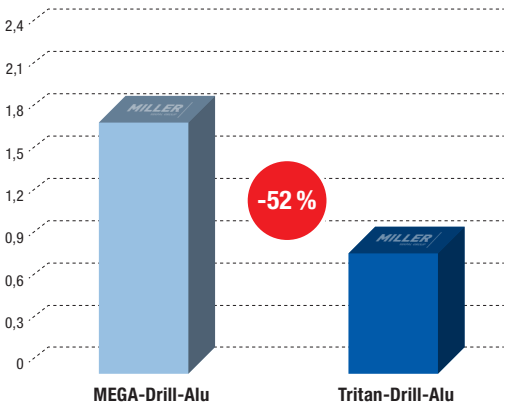
Features

Dimensions:
– Number of cutting edges: 3
– Shank form: HA
– 5xD with internal coolant

Preferred series in stock:
– ø range: 4 mm to 16 mm

Configurable features:
– ø range: 4 mm to 20 mm
– Shank form: HB, HE
– Coating: DLC coating

Processing time in AlSi1MgMn [Sec.]



MEGA-Drill-Alu (z=2)

Tool ø:	10.00 mm
l_B:	50 (5xD)
v_C:	300 m/min
f_U:	0.19 mm/U
t_h:	**1.78 s**

Tritan-Drill-Alu (z=3)

Tool ø:	10.00 mm
l_B:	50 (5xD)
v_C:	300 m/min
f_U:	0.4 mm/U
t_h:	**0.85 s**

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and end mills

Solid carbide drills for steel, aluminium,
stainless steel and hardened materials

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