Member IMC Group Tungaloy

MillLine

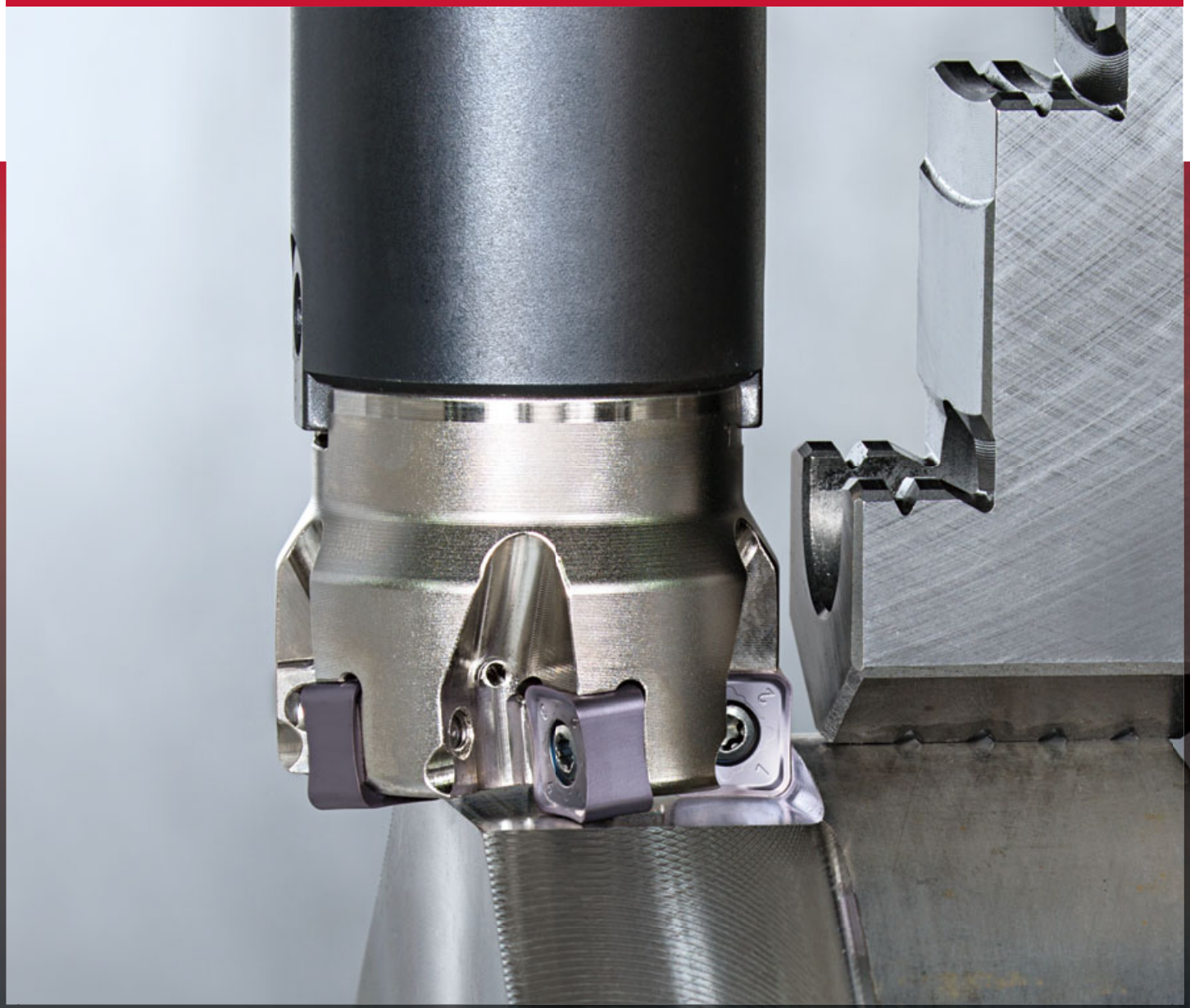
For more information

Square shoulder milling cutter

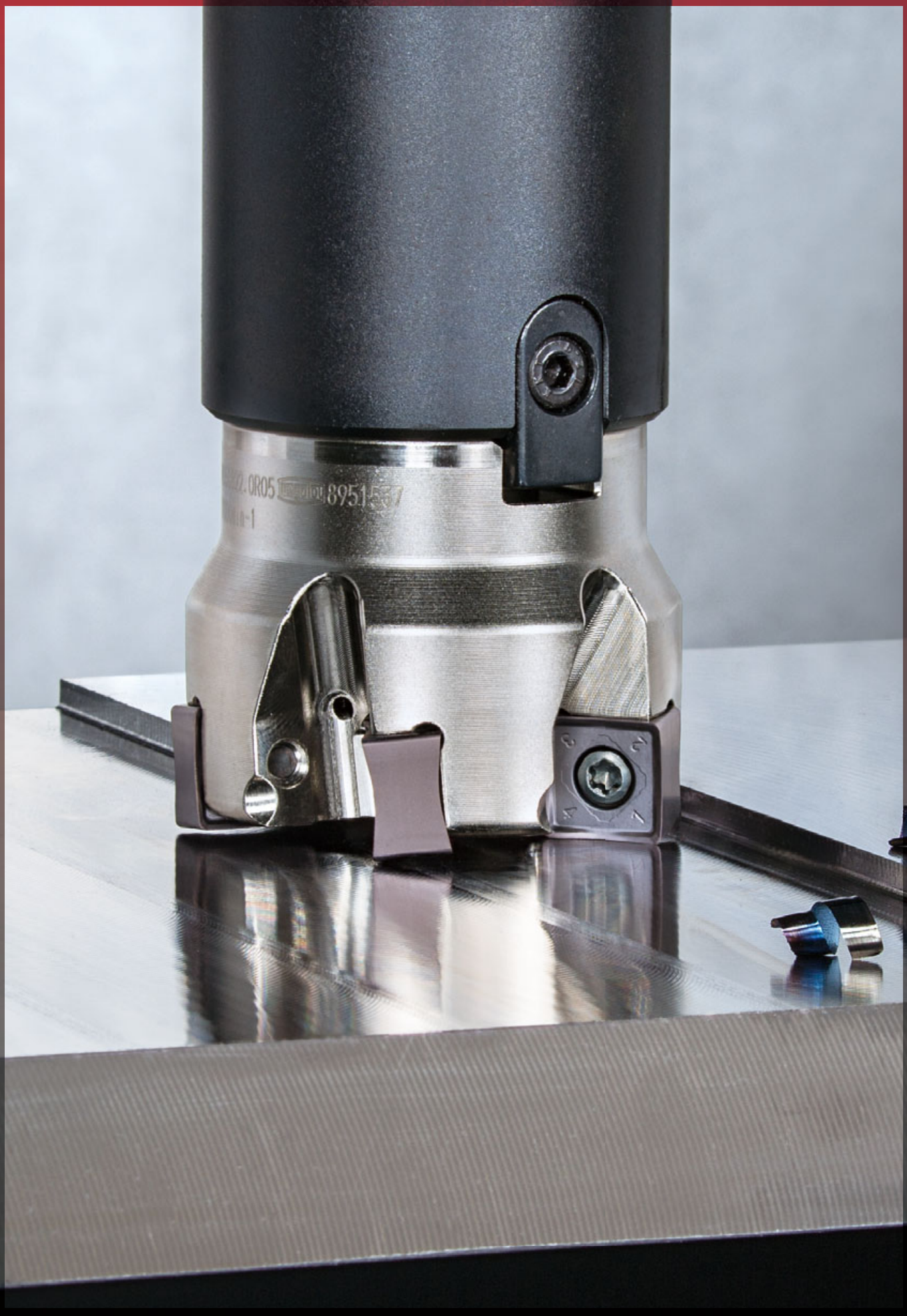
DOQMILL UAD

Tungaloy Report No. 522-US

Face milling cutter with 8 cutting edge inserts for ultimate clearance — **Now available in AH8015 grade**



TUNGALOY ADDFORCE ACCELERATED LINES



TUNGALOY ADDFORCE MILL
ACCELERATED MILLING

DOQUAD MILL

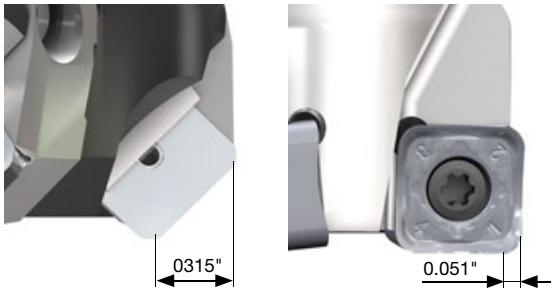
Milling cutter with 8 cornered insert for high utilization
in face milling operations

Improves surface finishing quality around fixtures, clamping systems, and side walls.

Face milling cutter with maximum clearance and economy

Designed to avoid tool interference in rough and finish face milling operations

Provides better clearance and economy



Conventional cutter
4 cutting edges

8 cutting edges

No interference with side walls, fixtures, and clamping systems

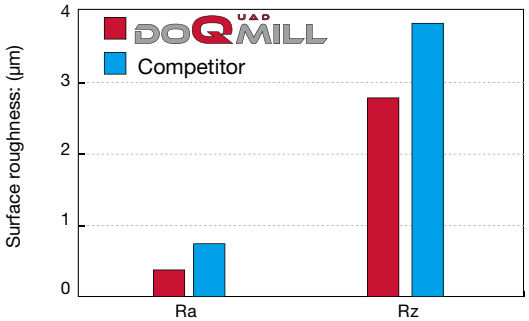
✓ Clear ✓ Clear

High accuracy

M4 clamp screw and optimized insert seat ensure secure insert retention

Wiper insert is also available for precision surface finish requirements

Available in R0.8 (with built-in wiper), R1.2, and R2.0



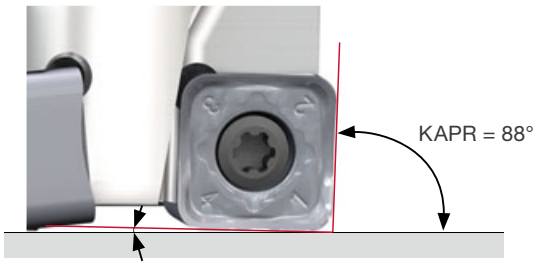
P

Cutter	: THSN12U2.00B0.75R05 (ø2.000", CICT = 5)
Insert	: SNMU120608HNEN-MM AH3135
Workpiece material	: 4140 (270HB)
Cutting speed	: *Vc* = 656 sfm
Feed per tooth	: *fz* = 0.006 ipt
Depth of cut	: *ap* = 0.020"
Width of cut	: *ae* = 1.200"
Coolant	: Wet

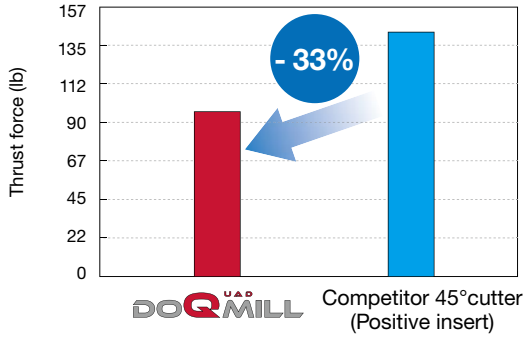
Cutter design optimized for low cutting force and chattering prevention

The insert's cutting edge features a large rake angle which generates low cutting load, while the large entering angle reduces lifting of the workpiece to ensure stability.

Ideal for milling workpieces with thin wall/base or when the fixture is weak



Thrust force

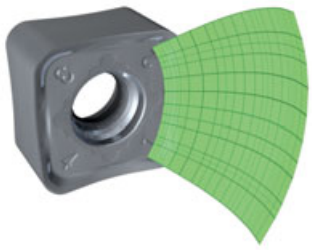


P

Cutter	: THSN12U2.00B0.75R05 (ø2.000", CICT = 1)
Insert	: SNMU120608HNEN-MM AH3135
Workpiece material	: 1055 (200HB)
Cutting speed	: *Vc* = 492 sfm
Feed per tooth	: *fz* = 0.006 ipt
Depth of cut	: *ap* = 0.118"
Width of cut	: *ae* = 1.200"
Coolant	: Wet

Stable cutting performance due to the concave shape cutting edges

- Creates barrel-shape chips for effective chip evacuation, Eliminating re-cutting in all operations including slotting



Chip formation (slotting)

P

Cutter	: THSN12U2.00B0.75R05 (ø2.000", CICT = 5)
Insert	: SNMU120620EN-MM AH3135
Workpiece material	: 4140 (270HB)
Cutting speed	: *Vc* = 656 sfm
Feed per tooth	: *fz* = 0.008 ipt
Depth of cut	: *ap* = 0.354"
Width of cut	: *ae* = 2.000"
Coolant	: Dry

Reinforced insert with resistance to fracture

Comparison of insert toughness

Feed: *fz* (ipt)

	0.004	0.008	0.012
DOQMILL	OK	OK	OK
Competitor	OK	OK	Fractured

P

Cutter	: THSN12U2.00B0.75R05 (ø2.000", CICT = 5)
Insert	: SNMU120620EN-MM AH3135
Workpiece material	: 4140 (270HB)
Cutting speed	: *Vc* = 656 sfm
Feed per tooth	: *fz* = 0.004 - 0.012 ipt
Depth of cut	: *ap* = 0.197"
Width of cut	: *ae* = 1.200"
Coolant	: Dry

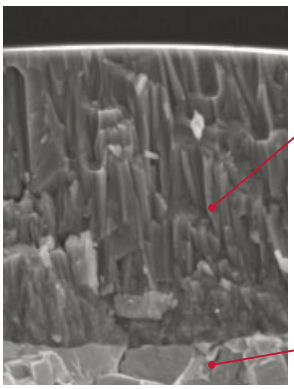
DOQMILL UAD

Rich grade lineup for every kind of material

New

AH8015 K S H P

- PVD coated grades with hard coating layer and carbide substrate
- Strong resistance to wear, heat, and built-up edge, ideal for machining hardened steel, heat resistant super alloy or cast iron



PVD grade featuring high aluminum-content multilayered coating

- A combination of over 20% harder coating surface and multilayered coating structure helps prevent micro-cracks from progressing into catastrophic failure.
- Enhanced adhesion of coating and substrate eliminates delamination.

New dedicated substrate

- Dedicated carbide substrate with excellent wear resistance

AH3225 P M K H

- Nano multi-layer coating technology with three major properties for optimal cutting edge integrity
- Increased resistance to wear, fracture, oxidation, built-up edge, and delamination

AH3135 M P S H

- PVD grade for high fracture resistance
- Most suitable for steel and stainless steel in general cutting parameters

AH120 K P

- PVD grade with a well-balanced wear and fracture resistance
- Ideal for general machining of steel and stainless steel

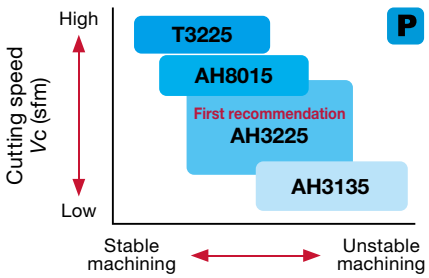
T1215 K

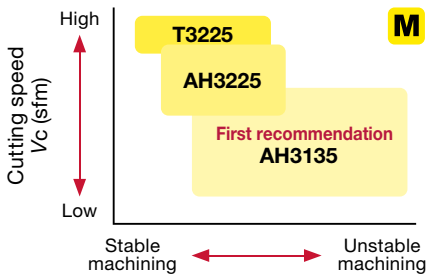
- CVD grade with outstanding wear and chipping resistance
- Best for cast iron at high-speed machining

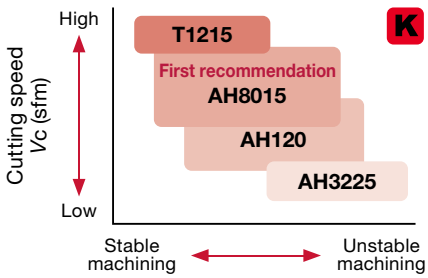
T3225 P M

- CVD grade with high chipping and fracture resistance

APPLICATION AREAS



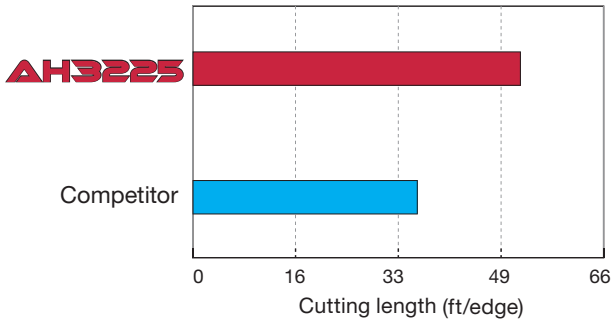




CUTTING PERFORMANCE

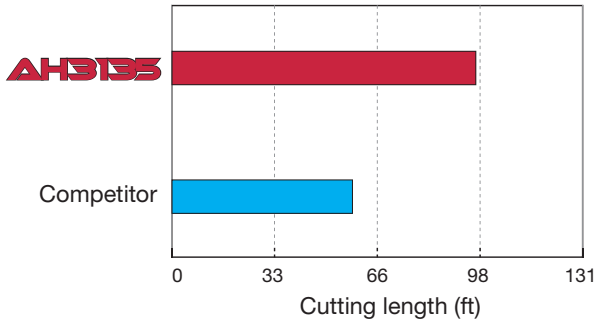
Long tool life

P 1055



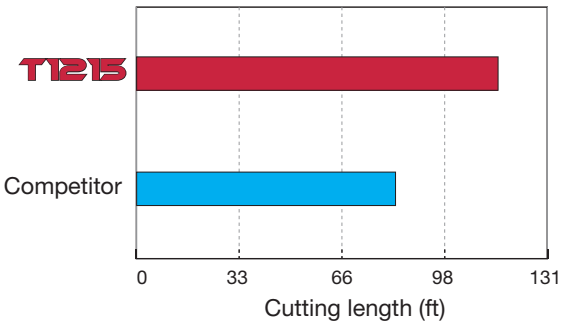
Cutter : THSN12U3.00B1.00R05 (ø3.000", CICT = 5)
Insert : SNMU120608HNEN-MM AH3225
Cutting speed : *Vc* = 492 sfm
Feed per tooth : *fz* = 0.008 ipt
Depth of cut : *ap* = 0.079"
Width of cut : *ae* = 2.000"
Coolant : Dry
Machine : Vertical M/C, BT40

P 4140 (270HB)



Cutter : THSN12U2.00B0.75R05 (ø2.000", CICT = 5)
Insert : SNMU120620EN-MM AH3135
Cutting speed : *Vc* = 656 sfm
Feed per tooth : *fz* = 0.007 ipt
Depth of cut : *ap* = 0.118"
Width of cut : *ae* = 1.200"
Coolant : Dry

K 80-55-06 (160HB)

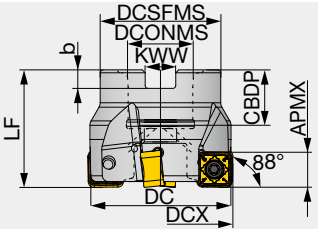


Cutter : THSN12U2.00B0.75R05 (ø2.000", CICT = 5)
Insert : SNMU120620EN-MM T1215
Cutting speed : *Vc* = 1,148 sfm
Feed per tooth : *fz* = 0.005 ipt
Depth of cut : *ap* = 0.118"
Width of cut : *ae* = 1.200"
Coolant : Dry

THSN12

88° face mills with double sided square inserts

GAMP = +3°, GAMF = -11°

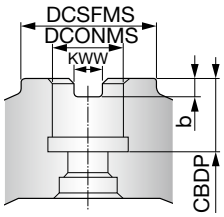


Inch	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT (lb)	Air hole	Insert	Arbor type
THSN12U2.00B0.75R04	0.374	2.000	2.024	4	1.850	1.575	0.750	0.750	0.315	0.197	0.920	With	SNMU1206...	A
THSN12U2.00B0.75R05	0.374	2.000	2.024	5	1.850	1.575	0.750	0.750	0.315	0.197	0.910	With	SNMU1206...	A
THSN12U2.50B0.75R04	0.374	2.500	2.524	4	1.850	1.575	0.750	0.750	0.315	0.197	1.220	With	SNMU1206...	A
THSN12U2.50B0.75R06	0.374	2.500	2.524	6	1.850	1.575	0.750	0.750	0.315	0.197	1.220	With	SNMU1206...	A
THSN12U3.00B1.00R05	0.374	3.000	3.024	5	1.969	1.969	1.000	1.024	0.374	0.236	2.120	With	SNMU1206...	A
THSN12U3.00B1.00R08	0.374	3.000	3.024	8	1.969	1.969	1.000	1.024	0.374	0.236	2.090	With	SNMU1206...	A
THSN12U4.00B1.50R06	0.374	4.000	4.024	6	3.150	1.969	1.500	1.299	0.626	0.394	3.640	Without	SNMU1206...	B
THSN12U4.00B1.50R08	0.374	4.000	4.024	8	3.150	1.969	1.500	1.299	0.626	0.394	3.550	Without	SNMU1206...	B

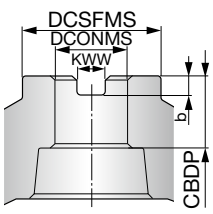
Metric	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
THSN12M050B22.0R04	9.5	50	50.6	4	41	40	22	20	10.4	6.3	0.32	with	SNMU1206...
THSN12M050B22.0R05	9.5	50	50.6	5	41	40	22	20	10.4	6.3	0.32	with	SNMU1206...
THSN12M063B22.0R04	9.5	63	63.6	4	47	40	22	20	10.4	6.3	0.54	with	SNMU1206...
THSN12M063B22.0R06	9.5	63	63.6	6	47	40	22	20	10.4	6.3	0.52	with	SNMU1206...
THSN12J080B25.4R05	9.5	80	80.6	5	58	50	25.4	26	9.5	6	1.13	with	SNMU1206...
THSN12J080B25.4R08	9.5	80	80.6	8	58	50	25.4	26	9.5	6	1.15	with	SNMU1206...
THSN12M080B27.0R05	9.5	80	80.6	5	58	50	27	22	12.4	7	1.17	with	SNMU1206...
THSN12M080B27.0R08	9.5	80	80.6	8	58	50	27	22	12.4	7	1.14	with	SNMU1206...
THSN12J100B31.7R06	9.5	100	100.6	6	60	50	31.75	32	12.7	8	1.43	with	SNMU1206...
THSN12J100B31.7R08	9.5	100	100.6	8	60	50	31.75	32	12.7	8	1.39	with	SNMU1206...
THSN12M100B32.0R06	9.5	100	100.6	6	60	50	32	28.5	14.4	8	1.4	with	SNMU1206...
THSN12M100B32.0R08	9.5	100	100.6	8	60	50	32	28.5	14.4	8	1.38	with	SNMU1206...

Arbor type

Arbor type A



Arbor type B



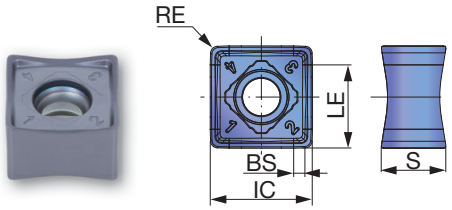
SPARE PARTS

Designation	Clamping screw	Torx bit	Grip	Lubricant (Optional)	Center bolt 1	Center bolt 2 (Optional)
THSN12U2.00, 2.50...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	-	(C0.375X1.125H)
THSN12U3.00...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	-	(C0.500X1.375H)
THSN12U4.00...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	-	(TMBA-0.750H)
THSN12M050..., THSN12M063...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	CM10x30H	-
THSN12J080..., THSN12M080...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	CM12X30H	-
THSN12J100..., THSN12M100...	CSPB-4	BLD IP15/S7	H-TB2W	(M-1000)	TMBA-M16H	-

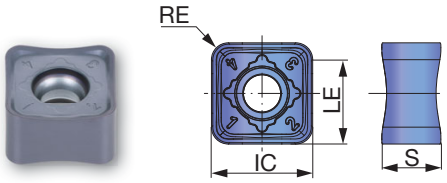
Recommended clamping torque: 2.58 lbs·ft, 3.5 N·m

INSERTS

SNMU120608HNEN-MM



SNMU120612/20EN-MM



		AH120	AH3225	AH3135	AH8015	T1215	T3225
P	Steel	☆	★	☆			★
M	Stainless		☆	★			★
K	Cast iron	★	☆		★	★	
N	Non-ferrous						
S	Superalloys	★		☆	★		
H	Hard materials				★		

★ : First choice
☆ : Second choice

Designation	RE	APMX	Coated						LE	S	IC	BS
			AH120	AH3225	AH3135	AH8015	T1215	T3225				
SNMU120608HNEN-MM	0.031	0.374	●	●	●	●	●	●	0.386	0.295	0.472	0.055
SNMU120612EN-MM	0.047	0.374		●	●	●	●		0.425	0.285	0.472	-
SNMU120620EN-MM	0.079	0.374		●	●	●	●		0.394	0.276	0.472	-

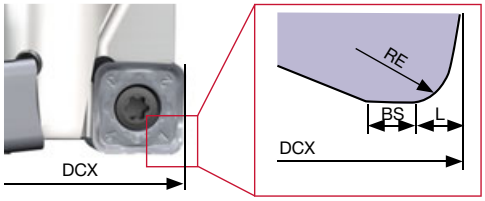
● : New product
● : Line up

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness	Priority	Grades	Chip-breaker	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steels 1015, etc.	- 200HB	First choice	AH3225	MM	328 - 820	0.002 - 0.012
			For wear resistance	T3225	MM	656 - 1148	0.002 - 0.010
	High carbon steels, alloyed steels 1055, 4140(H), etc.	- 300HB	First choice	AH3225	MM	328 - 820	0.002 - 0.012
			For wear resistance	T3225	MM	591 - 984	0.002 - 0.010
	Prehardened steel NAK80, PX5, etc.	30 - 40HRC	First choice	AH3225	MM	328 - 656	0.002 - 0.010
			For wear resistance	T3225	MM	492 - 820	0.002 - 0.008
M	Austenitic stainless steel 304,316, etc.	- 200HB	First choice	AH3135	MM	328 - 656	0.002 - 0.010
			For wear resistance	T3225	MM	328 - 820	0.002 - 0.008
	Stainless cast steel Hu etc.	-	First choice	T3225	MM	197 - 394	0.002 - 0.008
			For fracture resistance	AH3135	MM	197 - 394	0.002 - 0.008
K	Gray cast iron No.250, etc.	150 - 250HB	First choice	AH8015	MM	328 - 1148	0.002 - 0.012
			For wear resistance	T1215	MM	328 - 820	0.002 - 0.012
	Ductile cast iron 65-45-12, etc.	150 - 250HB	First choice	AH8015	MM	328 - 1148	0.002 - 0.010
			For wear resistance	T1215	MM	262 - 656	0.002 - 0.012
S	Titanium alloy Ti-6Al-4V, etc.	- 40HRC	First choice	AH3135	MM	98 - 197	0.002 - 0.008
	Heat resistant alloy Inconel718, etc.	- 40HRC	First choice	AH8015	MM	33 - 131	0.002 - 0.006
H	Hardened steel H13	40 - 50HRC	First choice	AH3225	MM	262 - 427	0.002 - 0.006
	Hardened steel D2, etc.	50 - 60HRC	First choice	AH8015	MM	164 - 230	0.001 - 0.003

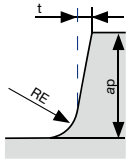
Tool offset

To eliminate uncut amount in face milling operation, adjust the programming according to the offset (L) listed below.



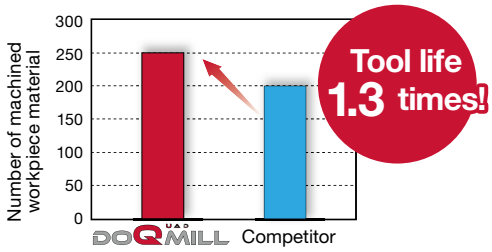
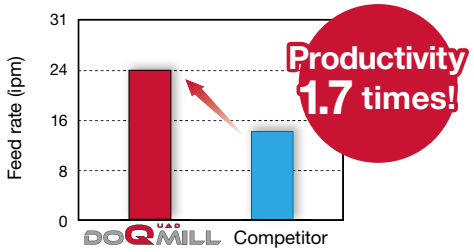
Designation	RE	BS	L
SNMU120608HNEN-MM	0.031	0.055	0.051
SNMU120612EN-MM	0.047	-	0.067
SNMU120620EN-MM	0.079	-	0.098

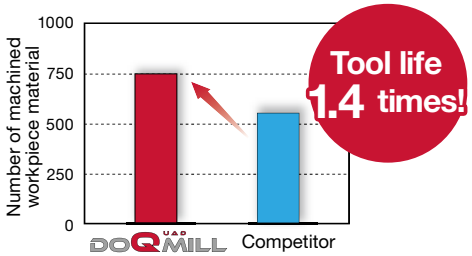
The following table shows the amount overcut (t) when the cutter is used as a shoulder milling cutter.



Designation / *ap* (in)	0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354	0.374
SNMU120608HNEN-MM	0.0004	0.0016	0.0020	0.0020	0.0028	0.0035	0.0055	0.0079	0.0106	0.0106
SNMU120612EN-MM	-	0	0	0.0004	0.0008	0.0020	0.0035	0.0059	0.0087	0.0098
SNMU120620EN-MM	-	0	0	0	0.0008	0.0020	0.0035	0.0059	0.0087	0.0098

PRACTICAL EXAMPLES

	Workpiece type	Steering knuckle	Shaft
	Cutter	THSN12U2.00B0.75R04 (ø2.000", CICT = 4)	THSN12U2.00B0.75R04 (ø2.000", CICT = 4)
	Insert	SNMU120620EN-MM	SNMU120620EN-MM
	Grade	AH3135	AH3135
	Workpiece material	450-10S	Alloy steel (35HRC)
		 K	 P
Cutting conditions	Cutting speed : *Vc* (sfm)	466	774
	Feed per tooth: *fz* (ipt)	0.009	0.004
	Feed speed : *Vf* (ipm)	31.496	23.622
	Depth of cut : *ap* (in)	0.079	0.079
	Cutting width : *ae* (in)	1.181	1.378
	Method of machining	Face milling	Face milling
	Coolant	External	External
	Machine	Vertical M/C	Vertical M/C
	Results	 Despite poor workpiece rigidity, **DoQuad-Mill** provided low cutting load and tool life predictability.	 Robust **DoQuad-Mill** improved machining efficiency over the competitor's shoulder milling cutter.

	Workpiece type	Shaft	Connecting rod
	Cutter	THSN12U2.00B0.75R04 (ø2.000", CICT = 4)	EHSN12M040C32.0R03 (Special tool, ø40 mm, CICT = 3)
	Insert	SNMU120620EN-MM	SNMU120620EN-MM
	Grade	AH3135	AH3135
	Workpiece material	Alloy steel	Forged steel (28HRC)
		 P	 P
Cutting conditions	Cutting speed : *Vc* (sfm)	515	525
	Feed per tooth: *fz* (ipt)	0.008	0.004
	Feed speed : *Vf* (ipm)	31.496	15.039
	Depth of cut : *ap* (in)	0.079	0.079
	Cutting width : *ae* (in)	1.575	1.575
	Method of machining	Shoulder milling	Shoulder milling
	Coolant	External supply	External supply
	Machine	Vertical M/C	Vertical M/C
	Results	 Conventional shoulder mill could not improve feed due to insert fracture. **DoQuad-Mill** doubled feed thanks to its high cutting edge integrity.	 Short insert life due to fracture was more common with conventional shoulder mill. **DoQuad-Mill** improved tool life thanks to its high cutting edge integrity.

Tungaloy-NTK America Inc.

United States

3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.
Inside Sales: +1-888-554-8394
Technical Support: +1-888-554-8391
Fax: +1-888-554-8392
www.tungaloy.com/us

Canada

432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779 Fax: +1-519-758-5791
www.tungaloy.com/ca

Mexico

C Los Arellano 113, Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone:+52-449-929-5410 Fax:+52-449-929-5411
www.tungaloy.com/mx

Scan for instant web access

Member IMC Group Tungaloy

tungaloy.com/us

follow us at:
facebook.com/TungaloyNTK
instagram.com/tungaloyntkamerica
linkedin.com/company/tungaloyntkamerica
tiktok.com/@tungaloyntkamerica

To see Tungaloy products in action visit:

YouTube
www.youtube.com/tungaloycorporation

Distributed by:

Explore the Tungaloy world!
Tungaloy APP & SNS

FIND US ON THE CLOUD!
machiningcloud.com

AS9100 Certified
78006
2015.11.04

ISO 14001 Certified
EC97J1123
1997.11.26

Produced from Recycled paper Mar. 2026 (TJ)