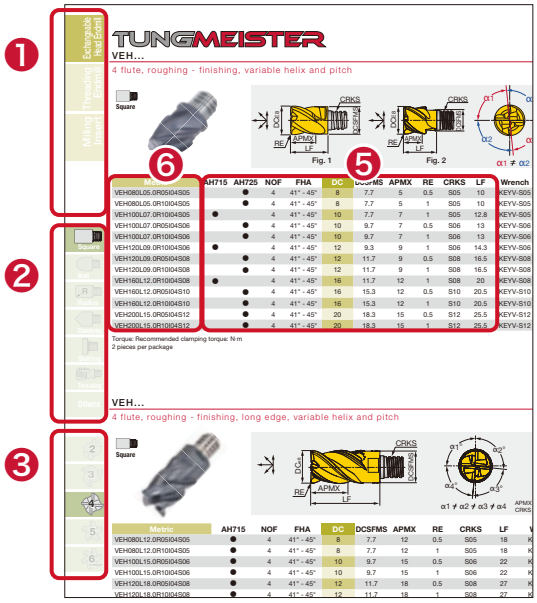
Endmill

EndMill - Content structure

- Products are listed by application.
- Endmills in the catalog are our standard items.



How to use the page

Method 1.

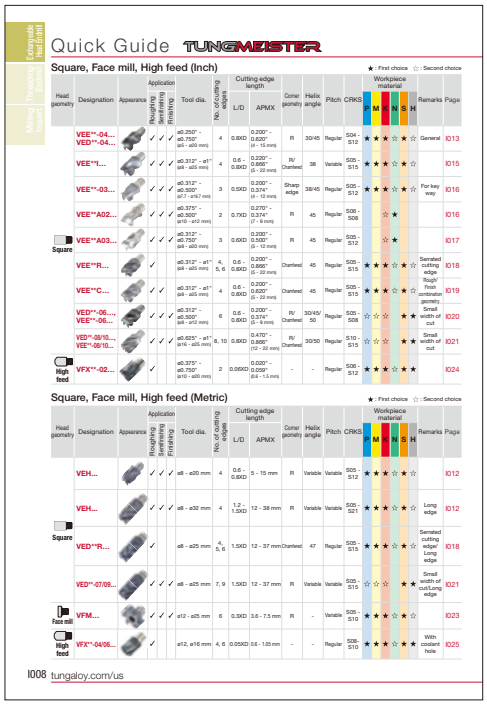
Select the tool type at the index on the right page, choose the application (❶), cutting edge shape (❷), and the number of cutting edges (❸), and check the designation you need (❻) in the dimension table (❺).

Method 2.

Select the tool series name on I004 – I005 and check the details on the product page.

Method 3.

Select the application and the cutting edge shape from Quick Guide on I008 - I011 , and see the details on each page.



Icon

Head geometry

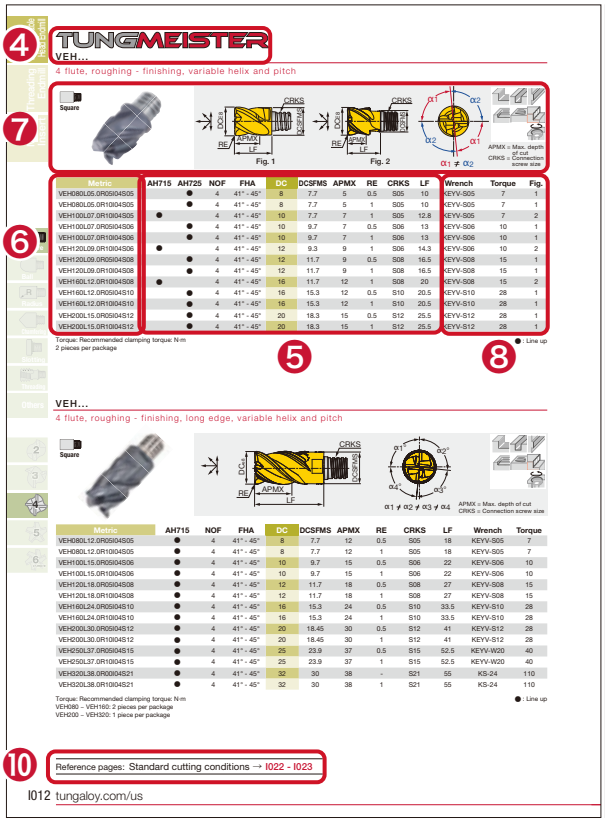
	Square
	Ball nose
R	Radius
	Chamfering
	Slotting
	Threading

No. of cutting edges

2	2
3	3
4	4
5	5
6 or more	6 or more

Application

Shoulder milling	Side slotting	Hole enlarging
Deep shoulder milling	Side milling	Holemaking
Shoulder milling (with radius)	Pocketing	Counterboring
Face milling	Ramping	Hole chamfering
Slotting	Profiling	Chamfering
Slotting (with radius)	Plunging	Cutting-off



4 TUNGMEISTER

VEH...

4 flute, roughing - finishing, variable helix and pitch

7

Square

Fig. 1

Fig. 2

APMX = Max. depth of cut
CRKS = Connection screw size

6

Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque	Fig.
VEH080L05.0R05I04S05		●	4	41° - 45°	8	7.7	5	0.5	S05	10	KEYV-S05	7	1
VEH080L05.0R10I04S05		●	4	41° - 45°	8	7.7	5	1	S05	10	KEYV-S05	7	1
VEH100L07.0R10I04S05	●		4	41° - 45°	10	7.7	7	1	S05	12.8	KEYV-S05	7	2
VEH100L07.0R05I04S06		●	4	41° - 45°	10	9.7	7	0.5	S06	13	KEYV-S06	10	1
VEH100L07.0R10I04S06		●	4	41° - 45°	10	9.7	7	1	S06	13	KEYV-S06	10	1
VEH120L09.0R10I04S06	●		4	41° - 45°	12	9.3	9	1	S06	14.3	KEYV-S06	10	2
VEH120L09.0R05I04S08		●	4	41° - 45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15	1
VEH120L09.0R10I04S08		●	4	41° - 45°	12	11.7	9	1	S08	16.5	KEYV-S08	15	1
VEH160L12.0R10I04S08	●		4	41° - 45°	16	11.7	12	1	S08	20	KEYV-S08	15	2
VEH160L12.0R05I04S10		●	4	41° - 45°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28	1
VEH160L12.0R10I04S10		●	4	41° - 45°	16	15.3	12	1	S10	20.5	KEYV-S10	28	1
VEH200L15.0R05I04S12		●	4	41° - 45°	20	18.3	15	0.5	S12	25.5	KEYV-S12	28	1
VEH200L15.0R10I04S12		●	4	41° - 45°	20	18.3	15	1	S12	25.5	KEYV-S12	28	1

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

5

8

VEH...

4 flute, roughing - finishing, long edge, variable helix and pitch

Square

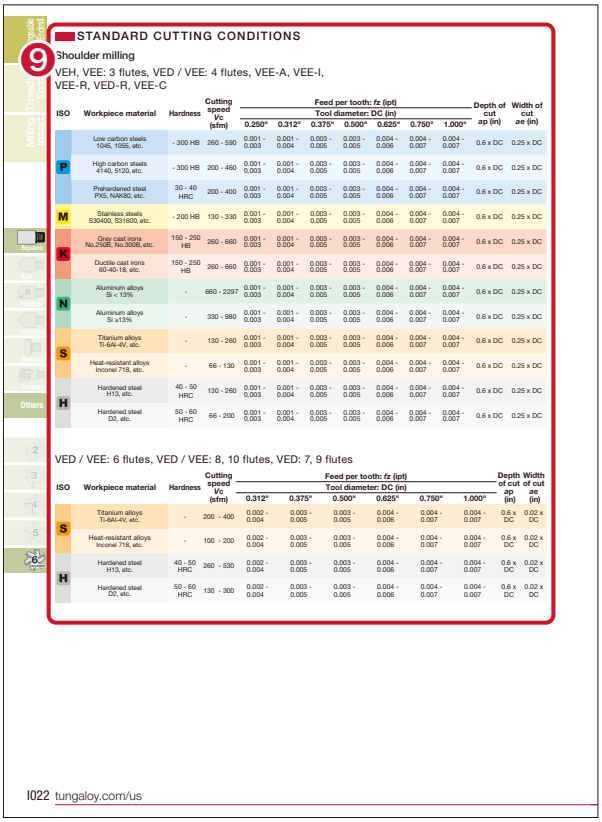
APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VEH080L12.0R05I04S05	●	4	41° - 45°	8	7.7	12	0.5	S05	18	KEYV-S05	7
VEH080L12.0R10I04S05	●	4	41° - 45°	8	7.7	12	1	S05	18	KEYV-S05	7
VEH100L15.0R05I04S06	●	4	41° - 45°	10	9.7	15	0.5	S06	22	KEYV-S06	10
VEH100L15.0R10I04S06	●	4	41° - 45°	10	9.7	15	1	S06	22	KEYV-S06	10
VEH120L18.0R05I04S08	●	4	41° - 45°	12	11.7	18	0.5	S08	27	KEYV-S08	15
VEH120L18.0R10I04S08	●	4	41° - 45°	12	11.7	18	1	S08	27	KEYV-S08	15
VEH160L24.0R05I04S10	●	4	41° - 45°	16	15.3	24	0.5	S10	33.5	KEYV-S10	28
VEH160L24.0R10I04S10	●	4	41° - 45°	16	15.3	24	1	S10	33.5	KEYV-S10	28
VEH200L30.0R05I04S12	●	4	41° - 45°	20	18.45	30	0.5	S12	41	KEYV-S12	28
VEH200L30.0R10I04S12	●	4	41° - 45°	20	18.45	30	1	S12	41	KEYV-S12	28
VEH250L37.0R05I04S15	●	4	41° - 45°	25	23.9	37	0.5	S15	52.5	KEYV-W20	40
VEH250L37.0R10I04S15	●	4	41° - 45°	25	23.9	37	1	S15	52.5	KEYV-W20	40
VEH320L38.0R05I04S21	●	4	41° - 45°	32	30	38	-	S21	55	KS-24	110
VEH320L38.0R10I04S21	●	4	41° - 45°	32	30	38	1	S21	55	KS-24	110

Torque: Recommended clamping torque: N·m
VEH080 – VEH160: 2 pieces per package
VEH200 – VEH320: 1 piece per package

● : Line up

10 Reference pages: Standard cutting conditions → I022 - I023



9 STANDARD CUTTING CONDITIONS

Shoulder milling

VEH, VEE: 3 flutes, VED / VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VED-R, VEE-C

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt) Tool diameter: DC (in) 0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut ap (in)	Width of cut ae (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	260 - 590	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
P	High carbon steels 4140, 5120, etc.	- 300 HB	200 - 460	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
P	Prehardened steel P45, NAK80, etc.	30 - 40 HRC	200 - 400	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	130 - 330	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Ductile cast irons 60-40-18, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si ≤ 13%	-	660 - 2297	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si ≥13%	-	330 - 980	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 130	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 200	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC

VED / VEE: 6 flutes, VED / VEE: 8, 10 flutes, VED: 7, 9 flutes

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt) Tool diameter: DC (in) 0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut ap (in)	Width of cut ae (in)
S	Titanium alloys Ti-6Al-4V, etc.	-	200 - 400	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	100 - 200	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	260 - 530	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	130 - 300	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC

❶ : Application
❷ : Cutting edge shape
❸ : Number of cutting edges
❹ : Endmill series name
❺ : Dimension table
❻ : Endmill designation
❼ : Dimension drawing (conforming to ISO13399)
❽ : Spare parts
❾ : Standard cutting conditions
❿ : Reference page

Coolant hole

Workpiece material

- P Steel
- M Stainless steel
- K Cast iron
- N Non-ferrous metal
- S Superalloy
- H Hard material

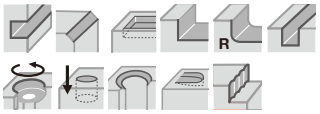
When ordering
- Please specify the designation and quantity for TungMeister heads.
  e.g. **VEE031L20C004-U06S05** ... 2 (two heads per package)
- Please specify the designation and quantity for TungMeister shanks.
  e.g. **VSS031L300S05UC** ... 1 (one shank per package)

*Wrenches for TungMeister are sold separately.

Exchangeable Head Endmill

TUNGMEISTER

Endmills with exchangeable heads
for reduced tool change time
ø0.250" - ø1.000" (ø5 mm - ø32 mm)



I006 -

P M K N S H

Inch ✓ Metric ✓

Threading Endmill

		Inch	Metric
	**THREADMILLING**  I056 P M K N S H		✓
	**SOLIDTHREAD** I057 - Solid threading tool series for machining small diameters, such as M1x0.25 and 0-80UNF.		✓
	**TUNGMEISTER** I006 - Head-changeable milling tool for less down-time than solid tapping tools.	✓	✓
	**Indexable thread milling cutter** I074 - Many different types of inserts for various threading diameters and pitches, leading to the tool integration and reduced tool cost.		✓

TUNGMEISTER

Optimal tool combination for maximum productivity

Significantly reduced tool indexing time improves machining efficiency

1 Wide range of geometries

45 different types of geometries are available. The head indexing is easy and highly accurate with the precision thread.

2 Three kinds of shank material

Users can choose the most suitable combination according to the machining parameters, length and application required.

Steel: For general purpose
Carbide: For highly accurate machining due to excellent rigidity
Tungsten: Reduced chattering due to high vibration damping capacity


Straight shank & neck


Straight shank & taper neck


Straight shank & neck (carbide)


Straight (for slotting)


High rigidity shank


ER collet


Adaptor for TungFlex

No setup time

Machine downtime is decreased considerably. Simplified setup since only the head is indexed.

Increases productivity by 90%

Exchange time / Piece

TUNGMEISTER — less than 1 minute

Solid endmill — 10 minutes

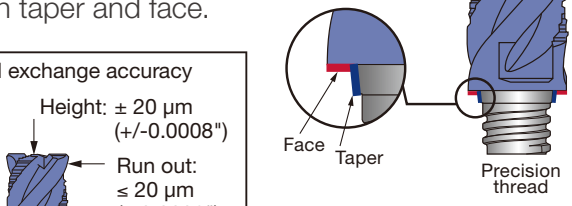
High accuracy and repeatability

Repeatability and accuracy are maintained due to full contact of both taper and face.

Head exchange accuracy

Height: ± 20 µm (+/-0.0008")

Run out: ≤ 20 µm (≤ 0.0008")



Reference pages: I012 - I055

Square

VEH, VEE, VED

Extensive tool diameter range from 5 to 32 mm, 0.250" to 1".

Covers a broad range of applications from precision machining to large size parts.

Threading

VMT

Thread milling heads

With multiple teeth
for ISO, Unified, and Whitworth threads

ISO metric
VMT***IS

Unified
VMT***UN

Whitworth
VMT***W

Threading

VTR

Thread milling heads

With single tooth
for ISO and Whitworth threads

ISO metric
60° partial profile
VTR***IS

Whitworth
55° partial profile
VTR***W

Quick Guide TUNGMEISTER

Square, Face mill, High feed (Inch)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Application: Roughing	Application: Semifinishing	Application: Finishing	Tool dia.	No. of cutting edges	Cutting edge length: L/D	Cutting edge length: APMX	Corner geometry	Helix angle	Pitch	CRKS	Workpiece material: P	M	K	N	S	H	Remarks	Page
Square	VEE**-04... VED**-04...		✓	✓	✓	ø0.250" - ø0.750" (ø5 - ø20 mm)	4	0.8XD	0.200" - 0.620" (4 - 15 mm)	R	30/45	Regular	S04 - S12	★	★	★	☆	★	☆	General	I013
	VEE**I...		✓	✓	✓	ø0.312" - ø1" (ø8 - ø25 mm)	4	0.6 - 0.8XD	0.220" - 0.866" (5 - 22 mm)	R/ Chamfered	38	Variable	S05 - S15	★	★	★	☆	★	☆		I015
	VEE**-03...		✓	✓	✓	ø0.312" - ø0.500" (ø7.7 - ø19.7 mm)	3	0.5XD	0.200" - 0.374" (4 - 12 mm)	Sharp edge	38/45	Regular	S05 - S12	★	★	★	☆	★	☆	For key way	I016
	VEE**A02...		✓	✓	✓	ø0.375" - ø0.500" (ø10 - ø12 mm)	2	0.7XD	0.270" - 0.374" (7 - 9 mm)	R	45	Regular	S06 - S08			☆	★				I016
	VEE**A03...		✓	✓	✓	ø0.312" - ø0.750" (ø8 - ø20 mm)	3	0.6XD	0.200" - 0.500" (5 - 12 mm)	R	45	Regular	S05 - S12			☆	★				I017
	VEE**R...		✓			ø0.312" - ø1" (ø8 - ø25 mm)	4, 5, 6	0.6 - 0.8XD	0.200" - 0.866" (5 - 22 mm)	Chamfered	45	Regular	S05 - S15	★	★	★	☆	★	☆	Serrated cutting edge	I018
	VEE**C...		✓	✓		ø0.312" - ø1" (ø8 - ø25 mm)	4	0.6 - 0.8XD	0.200" - 0.620" (5 - 22 mm)	Chamfered	45	Regular	S05 - S15	★	★	★	☆	★	☆	Rough/ Finish combination geometry	I019
	VED**-06..., VEE**-06...		✓	✓	✓	ø0.312" - ø0.500" (ø8 - ø12 mm)	6	0.6 - 0.8XD	0.200" - 0.374" (5 - 9 mm)	R/ Chamfered	30/45/ 50	Regular	S05 - S08	☆	☆	☆		★	★	Small width of cut	I020
	VED**-08/10..., VEE**-08/10...		✓	✓	✓	ø0.625" - ø1" (ø16 - ø25 mm)	8, 10	0.8XD	0.470" - 0.866" (12 - 22 mm)	R/ Chamfered	30/50	Regular	S10 - S15	☆	☆	☆		★	★	Small width of cut	I021
High feed	VFX**-02...		✓			ø0.375" - ø0.750" (ø10 - ø20 mm)	2	0.06XD	0.020" - 0.059" (0.6 - 1.5 mm)	-	-	Regular	S06 - S12	★	★	★	☆	★	★		I024

Square, Face mill, High feed (Metric)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Application: Roughing	Application: Semifinishing	Application: Finishing	Tool dia.	No. of cutting edges	Cutting edge length: L/D	Cutting edge length: APMX	Corner geometry	Helix angle	Pitch	CRKS	Workpiece material: P	M	K	N	S	H	Remarks	Page
Square	VEH...		✓	✓	✓	ø8 - ø20 mm	4	0.6 - 0.8XD	5 - 15 mm	R	Variable	Variable	S05 - S12	★	★	★	☆	★	☆		I012
	VEH...		✓	✓	✓	ø8 - ø32 mm	4	1.2 - 1.5XD	12 - 38 mm	R	Variable	Variable	S05 - S21	★	★	★	☆	★	☆	Long edge	I012
	VED**R...		✓			ø8 - ø25 mm	4, 5, 6	1.5XD	12 - 37 mm	Chamfered	47	Regular	S05 - S15	★	★	★	☆	★	☆	Serrated cutting edge/ Long edge	I018
	VED**-07/09...		✓	✓	✓	ø8 - ø25 mm	7, 9	1.5XD	12 - 37 mm	R	Variable	Variable	S05 - S15	☆	☆	☆		★	★	Small width of cut/Long edge	I021
Face mill	VFM...		✓	✓	✓	ø12 - ø25 mm	6	0.3XD	3.6 - 7.5 mm	R	-	Variable	S05 - S10	★	★	★	☆	★	☆		I023
High feed	VFX**-04/06...		✓			ø12, ø16 mm	4, 6	0.05XD	0.6 - 1.05 mm	-	-	Regular	S08-S10	★	★	★	☆	★	★	With coolant hole	I025

Profiling (ball, radius, barrel) (Inch)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Application: Roughing	Application: Semifinishing	Application: Finishing	Tool dia.	No. of cutting edges	Helix angle	Pitch	CRKS	Workpiece material: P	M	K	N	S	H	Remarks	Page
Ball	VBB**-BM...		✓	✓		ø0.312" - ø0.625" (ø8 - ø16 mm)	2	0	Regular	S05 - S10	★	★	★	☆	★	★	Economical type	I026
	VBB**-BG...				✓	ø0.312" - ø0.625" (ø8 - ø16 mm)	2	0	Regular	S05 - S10	★	★	★	☆	★	★	High accuracy h7	I026
	VBD**-BG...			✓	✓	ø0.312" - ø0.625" (ø8 - ø16 mm)	2	30	Regular	S05 - S10	★	★	★	☆	★	★	Low cutting force	I027
	VBD**-BG-04... VBE**-BG-04...		✓	✓	✓	ø0.250" - ø1" (ø5 - ø20 mm)	4	30/38	Regular	S04 - S15	★	★	★	☆	★	★	Low cutting force	I027
	VBB**-SG...		✓	✓	✓	ø0.375" - ø0.750" (ø10 - ø20 mm)	2	0	Regular	S05 - S10	★	★	★	☆	★	★	High accuracy h7/ Sphere cutting edge	I028
	VBE**-BGA...		✓	✓	✓	ø0.312" - ø0.750" (ø8 - ø20 mm)	2	45	Regular	S05 - S12			☆	★				I028
Radius	VRB**-02... VRC**-02...		✓	✓		ø0.625" - ø0.750" (ø10 - ø20 mm)	2	0/15	Regular	S06 - S12	★	★	★	☆	★	☆	Economical type	I030
	VRD**-06...			✓	✓	ø0.312" - ø0.625" (ø8 - ø16 mm)	6	30	Regular	S05 - S10	★	★	★	☆	★	☆		I030

Profiling (ball, radius, barrel) (Metric)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Application: Roughing	Application: Semifinishing	Application: Finishing	Tool dia.	No. of cutting edges	Helix angle	Pitch	CRKS	Workpiece material: P	M	K	N	S	H	Remarks	Page
Barrel	VBO...			✓	✓	ø8 - ø16 mm	4, 5	30	Regular	S05 - S10	★	★	★	☆	★	☆	Profiling/ Long edge	I032
	VBO...			✓	✓	ø10 - ø16 mm	4	30	Regular	S06 - S10	★	★	★	☆	★	☆	Profiling/ Short edge	I032
Bull nose	VBN...			✓	✓	ø10 - ø16 mm	6	35	Regular	S06 - S10	★	★	★	☆	★	☆	Profiling	I032
Lens	VBL...			✓	✓	ø8 - ø16 mm	6	30	Regular	S05 - S10	★	★	★	☆	★	☆	Profiling	I033

Quick Guide TUNGMEISTER

Inch

Multi-function (chamfering, spot drill, center hole, counterboring)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Center edge (Z-feed capability)	Tool dia.	No. of cutting edges	Chamfering angle	Helix angle	Pitch	CRKS	Workpiece material P	M	K	N	S	H	Remarks	Page
Chamfering	VCA**-04/06...		Without	ø0.375" (ø10 - ø20 mm)	4, 6	45	0	Regular	S06 - S12	★	★	★	☆	★	☆		I035
Counterboring	VGC**-02...		With	ø0.312" - ø0.625" (ø7.8 - ø16 mm)	2	-	10	Regular	S05 - S10	★	★	★	☆	★	☆	For counterboring	I039

Slotting (Inch)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Groove width	Tool dia.	No. of cutting edges	Edge shape	Helix angle	Pitch	CRKS	Workpiece material P	M	K	N	S	H	Remarks	Page
Slotting	VTB**-06...		0.056" - 0.312" (2 - 8 mm)	ø0.500" - ø1" (ø13.5 - ø25 mm)	6	R	0	Regular	S05 - S10	★	★	★	☆	★	☆		I042
	VTB**-C006...		0.062", 0.078" (2 mm)	ø0.500" (ø13.5 mm)	6	Chamfered	0	Regular	S05	★	★	★	☆	★	☆	With 45° chamfer	I043

Metric

Multi-function (chamfering, spot drill, center hole, counterboring)

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Center edge (Z-feed capability)	Tool dia.	No. of cutting edges	Chamfering angle	Helix angle	Pitch	CRKS	Workpiece material P	M	K	N	S	H	Remarks	Page
Chamfering	VCW**-02...		Without	ø11.8 mm	2	45	0	Regular	S06	★	★	★	☆	★	☆	Back chamfering capability	I035
	VCR**-02...		Without	ø8 - ø20 mm	2	R	0	Regular	S05 - S12	★	★	★	☆	★	☆		I035
Chamfering Spot drill	VCP**-02...		With	ø8 - ø16.5 mm	2	30/45/60	0	Regular	S05 - S10	★	★	★	☆	★	☆		I036
	VDS...		With	ø8 - ø16 mm	2	45	10	Regular	S05 - S10	★	★	★	☆	★	☆	Low cutting force	I037
Center hole	VDP**-02...		With	ø1.07 - ø6.46 mm	2	-	0	Regular	S04 - S12	★	★	★	☆	★	☆	For center hole	I038

Metric

Slotting (Metric)

★ : First choice ☆ : Second choice

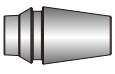
Head geometry	Designation	Appearance	Groove width	Tool dia.	No. of cutting edges	Edge shape	Helix angle	Pitch	CRKS	Workpiece material P	M	K	N	S	H	Remarks	Page
Slotting	VST**-3...		1.2 - 3.17 mm	ø15.7 - ø17.7 mm	3	R	0	Regular	S06	★	★	★	☆	★	☆		I040
	VST**-4/6...		0.76 - 10 mm	ø21.7 - ø27.7 mm	4, 6	R	0	Regular	S08, S10	★	★	★	☆	☆	☆		I041
	VST**A45...		3.4 - 5.5 mm	ø17.7 - ø21.7 mm	3, 4	Chamfered	0	Regular	S06, S08	★	★	★	☆	★	☆	For chamfering, 45° chamfer angle	I041

Threading

★ : First choice ☆ : Second choice

Head geometry	Designation	Appearance	Feature	Wiper edge	No. of cutting edges	Tool dia.	Internal/ External	Thread type	Min. thread size	CRKS	Workpiece material P	M	K	N	S	H	Page
Threading	VMT***IS		Full profile	With	3 - 6	ø10 - ø16 mm	Internal	ISO metric	M12X0.75	S05 - S08	★	★	★	☆	★	☆	I044
	VMT***UN		Full profile	With	3, 4, 5	ø10 - ø16 mm	Internal	Unified	9/16-24 UNEF	S05 - S08	★	★	★	☆	★	☆	I044
	VMT***W		Full profile	With	4	ø10, ø16 mm	Internal/ External	Whitworth	G1/4	S05, S08	★	★	★	☆	★	☆	I045
	VTR***IS		Partial profile	Without	3, 4	ø15.7 - ø21.7 mm	Internal/ External	60° partial profile	M20X0.5	S06, S08	★	★	★	☆	★	☆	I045
	VTR***W		Partial profile	Without	4	ø21.7 mm	Internal/ External	55° partial profile	G3/4	S08	★	★	★	☆	★	☆	I045

Shank

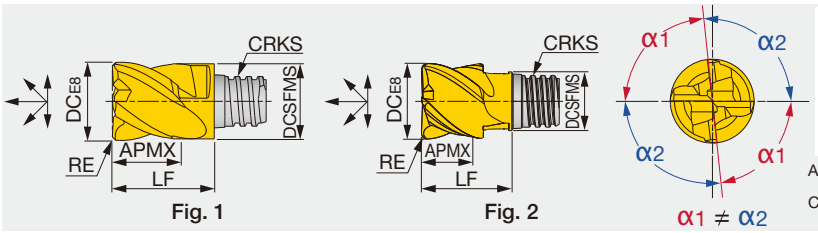
Shank	Neck	Appearance	Material Steel	Carbide	Carbide (with coolant hole)	Tungsten (with coolant hole)	Page
Straight	Straight		✓	✓	✓	✓	I048 - I050
Weldon	Straight		✓	-	-	-	I050
Straight	Taper		✓	✓	-	✓	I051, I052
High rigidity shank			✓	✓	-	-	I048
Straight (slotting)			✓	✓	✓	-	I053
Adaptor for TungFlex			✓	-	-	-	I053
ER collet			✓	-	-	-	I054

TUNGMEISTER

VEH...

4 flute, roughing - finishing, variable helix and pitch

Square



Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque	Fig.
VEH080L05.0R05I04S05		●	4	41° - 45°	8	7.7	5	0.5	S05	10	KEYV-S05	7	1
VEH080L05.0R10I04S05		●	4	41° - 45°	8	7.7	5	1	S05	10	KEYV-S05	7	1
VEH100L07.0R10I04S05	●		4	41° - 45°	10	7.7	7	1	S05	12.8	KEYV-S05	7	2
VEH100L07.0R05I04S06		●	4	41° - 45°	10	9.7	7	0.5	S06	13	KEYV-S06	10	1
VEH100L07.0R10I04S06		●	4	41° - 45°	10	9.7	7	1	S06	13	KEYV-S06	10	1
VEH120L09.0R10I04S06	●		4	41° - 45°	12	9.3	9	1	S06	14.3	KEYV-S06	10	2
VEH120L09.0R05I04S08		●	4	41° - 45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15	1
VEH120L09.0R10I04S08		●	4	41° - 45°	12	11.7	9	1	S08	16.5	KEYV-S08	15	1
VEH160L12.0R10I04S08	●		4	41° - 45°	16	11.7	12	1	S08	20	KEYV-S08	15	2
VEH160L12.0R05I04S10		●	4	41° - 45°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28	1
VEH160L12.0R10I04S10		●	4	41° - 45°	16	15.3	12	1	S10	20.5	KEYV-S10	28	1
VEH200L15.0R05I04S12		●	4	41° - 45°	20	18.3	15	0.5	S12	25.5	KEYV-S12	28	1
VEH200L15.0R10I04S12		●	4	41° - 45°	20	18.3	15	1	S12	25.5	KEYV-S12	28	1

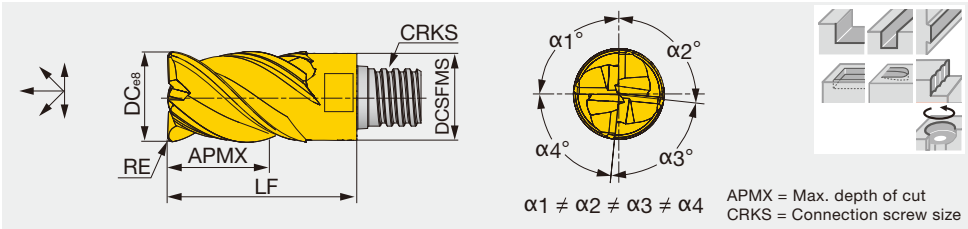
Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

VEH...

4 flute, roughing - finishing, long edge, variable helix and pitch

Square



Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VEH080L12.0R05I04S05	●	4	41° - 45°	8	7.7	12	0.5	S05	18	KEYV-S05	7
VEH080L12.0R10I04S05	●	4	41° - 45°	8	7.7	12	1	S05	18	KEYV-S05	7
VEH100L15.0R05I04S06	●	4	41° - 45°	10	9.7	15	0.5	S06	22	KEYV-S06	10
VEH100L15.0R10I04S06	●	4	41° - 45°	10	9.7	15	1	S06	22	KEYV-S06	10
VEH120L18.0R05I04S08	●	4	41° - 45°	12	11.7	18	0.5	S08	27	KEYV-S08	15
VEH120L18.0R10I04S08	●	4	41° - 45°	12	11.7	18	1	S08	27	KEYV-S08	15
VEH160L24.0R05I04S10	●	4	41° - 45°	16	15.3	24	0.5	S10	33.5	KEYV-S10	28
VEH160L24.0R10I04S10	●	4	41° - 45°	16	15.3	24	1	S10	33.5	KEYV-S10	28
VEH200L30.0R05I04S12	●	4	41° - 45°	20	18.45	30	0.5	S12	41	KEYV-S12	28
VEH200L30.0R10I04S12	●	4	41° - 45°	20	18.45	30	1	S12	41	KEYV-S12	28
VEH250L37.0R05I04S15	●	4	41° - 45°	25	23.9	37	0.5	S15	52.5	KEYV-W20	40
VEH250L37.0R10I04S15	●	4	41° - 45°	25	23.9	37	1	S15	52.5	KEYV-W20	40
VEH320L38.0R00I04S21	●	4	41° - 45°	32	30	38	-	S21	55	KS-24	110
VEH320L38.0R10I04S21	●	4	41° - 45°	32	30	38	1	S21	55	KS-24	110

Torque: Recommended clamping torque: N·m
VEH080 ~ VEH160: 2 pieces per package
VEH200 ~ VEH320: 1 piece per package

● : Line up

Reference pages: Standard cutting conditions → I022 - I023

VEE**-04..., VED**-04...

4 flute, roughing - finishing, general

Square

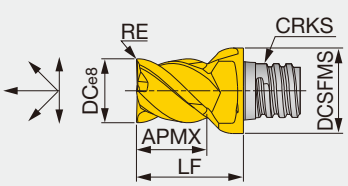


Fig. 1**

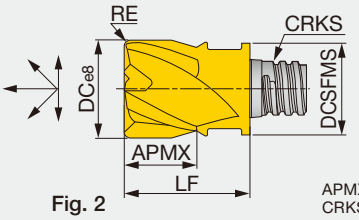
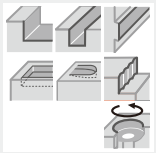


Fig. 2



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque	Fig.
VEE025L20R000-U04S05	●	4	45°	0.250	0.300	0.200	-	S05	0.390	KEYV-S05	5.16	1
VED031L20R015-U04S05	●	4	30°	0.312	0.300	0.200	0.015	S05	0.390	KEYV-S05	5.16	2
VED031L20R031-U04S05	●	4	30°	0.312	0.300	0.200	0.031	S05	0.390	KEYV-S05	5.16	2
VED031L20R062-U04S05	●	4	30°	0.312	0.300	0.200	0.062	S05	0.390	KEYV-S05	5.16	2
VEE031L20R000-U04S05	●	4	45°	0.312	0.300	0.200	-	S05	0.390	KEYV-S05	5.16	2
VEE031L20R015-U04S05	●	4	45°	0.312	0.300	0.200	0.015	S05	0.390	KEYV-S05	5.16	2
VEE031L20R031-U04S05	●	4	45°	0.312	0.300	0.200	0.031	S05	0.390	KEYV-S05	5.16	2
VEE031L20R062-U04S05	●	4	45°	0.312	0.300	0.200	0.062	S05	0.390	KEYV-S05	5.16	2
VED037L27R015-U04S06	●	4	30°	0.375	0.370	0.275	0.015	S06	0.512	KEYV-S06	7.38	2
VED037L27R031-U04S06	●	4	30°	0.375	0.370	0.275	0.031	S06	0.512	KEYV-S06	7.38	2
VEE037L27R000-U04S06	●	4	45°	0.375	0.370	0.275	-	S06	0.512	KEYV-S06	7.38	2
VEE037L27R015-U04S06	●	4	45°	0.375	0.370	0.275	0.015	S06	0.512	KEYV-S06	7.38	2
VEE037L27R030-U04S06	●	4	45°	0.375	0.370	0.275	0.031	S06	0.512	KEYV-S06	7.38	2
VEE037L27R062-U04S06	●	4	45°	0.375	0.370	0.275	0.062	S06	0.512	KEYV-S06	7.38	2
VEE037L47R000-U04S06	●	4	45°	0.375	0.370	0.470	-	S06	0.748	KEYV-S06	7.38	2
VED050L37R015-U04S08	●	4	30°	0.500	0.488	0.374	0.015	S08	0.650	KEYV-S08	11.06	2
VED050L37R031-U04S08	●	4	30°	0.500	0.488	0.374	0.031	S08	0.650	KEYV-S08	11.06	2
VEE050L37R000-U04S08	●	4	45°	0.500	0.488	0.374	-	S08	0.650	KEYV-S08	11.06	2
VEE050L37R015-U04S08	●	4	45°	0.500	0.488	0.374	0.015	S08	0.650	KEYV-S08	11.06	2
VEE050L37R031-U04S08	●	4	45°	0.500	0.488	0.374	0.031	S08	0.650	KEYV-S08	11.06	2
VEE050L37R062-U04S08	●	4	45°	0.500	0.488	0.374	0.062	S08	0.650	KEYV-S08	11.06	2
VED062L47R015-U04S10	●	4	30°	0.625	0.600	0.470	0.015	S10	0.810	KEYV-S10	20.65	2
VED062L47R031-U04S10	●	4	30°	0.625	0.600	0.470	0.031	S10	0.810	KEYV-S10	20.65	2
VED062L47R062-U04S10	●	4	30°	0.625	0.600	0.470	0.062	S10	0.810	KEYV-S10	20.65	2
VEE062L47R000-U04S10	●	4	45°	0.625	0.600	0.470	-	S10	0.810	KEYV-S10	20.65	2
VEE062L47R031-U04S10	●	4	45°	0.625	0.600	0.470	0.031	S10	0.810	KEYV-S10	20.65	2
VED075L62R015-U04S12	●	4	30°	0.750	0.720	0.620	0.015	S12	1.000	KEYV-S12	20.65	2
VED075L62R031-U04S12	●	4	30°	0.750	0.720	0.620	0.031	S12	1.000	KEYV-S12	20.65	2
VED075L62R062-U04S12	●	4	30°	0.750	0.720	0.620	0.062	S12	1.000	KEYV-S12	20.65	2
VEE075L62R000-U04S12	●	4	45°	0.750	0.720	0.620	-	S12	1.000	KEYV-S12	20.65	2
VEE075L62R031-U04S12	●	4	45°	0.750	0.720	0.620	0.031	S12	1.000	KEYV-S12	20.65	2

Torque: Recommended clamping torque: lbs·ft

● : Line up

**Fig. 1: Avoid interference with workpiece when using this cutting head. The shank diameter is larger than the cutter diameter when assembled.

2 pieces per package

Reference pages: Standard cutting conditions → I022 - I023

Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque	Fig.
VEE050L04.0R05-04S04		●	4	45°	5	6	4	0.5	S04	8.5	KEYV-S05	4	1
VEE060L04.0R05-04S04		●	4	45°	6	5.8	4	0.5	S04	8.5	KEYV-S05	4	2
VEE060L05.0R00-04S05	●	●	4	45°	6	8	5	-	S05	10	KEYV-S05	7	1
VEE080L05.0R00-04S05		●	4	45°	8	7.7	5	-	S05	10	KEYV-S05	7	2
VED080L05.0R05-04S05		●	4	30°	8	7.7	5	0.5	S05	10	KEYV-S05	7	2
VED080L05.0R10-04S05		●	4	30°	8	7.7	5	1	S05	10	KEYV-S05	7	2
VED080L05.0R15-04S05		●	4	30°	8	7.7	5	1.5	S05	10	KEYV-S05	7	2
VEE100L07.0R00-04S06		●	4	45°	10	9.7	7	-	S06	13	KEYV-S06	10	2
VED100L07.0R05-04S06		●	4	30°	10	9.7	7	0.5	S06	13	KEYV-S06	10	2
VEE100L07.0R05-04S06		●	4	45°	10	9.7	7	0.5	S06	13	KEYV-S06	10	2
VED100L07.0R10-04S06		●	4	30°	10	9.7	7	1	S06	13	KEYV-S06	10	2
VEE100L07.0R10-04S06		●	4	45°	10	9.7	7	1	S06	13	KEYV-S06	10	2
VEE120L09.0R00-04S08	●	●	4	45°	12	11.7	9	-	S08	16.5	KEYV-S08	15	2
VED120L09.0R05-04S08		●	4	30°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15	2
VEE120L09.0R05-04S08		●	4	45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15	2
VED120L09.0R10-04S08	●	●	4	30°	12	11.7	9	1	S08	16.5	KEYV-S08	15	2
VEE120L09.0R10-04S08		●	4	45°	12	11.7	9	1	S08	16.5	KEYV-S08	15	2
VEE160L12.0R00-04S10	●	●	4	45°	16	15.3	12	-	S10	20.5	KEYV-S10	28	2
VED160L12.0R05-04S10	●	●	4	30°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28	2
VEE160L12.0R05-04S10		●	4	45°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28	2
VED160L12.0R10-04S10		●	4	30°	16	15.3	12	1	S10	20.5	KEYV-S10	28	2
VEE160L12.0R10-04S10		●	4	45°	16	15.3	12	1	S10	20.5	KEYV-S10	28	2
VED160L12.0R15-04S10		●	4	30°	16	15.3	12	1.5	S10	20.5	KEYV-S10	28	2
VEE160L12.0R15-04S10		●	4	45°	16	15.3	12	1.5	S10	20.5	KEYV-S10	28	2
VED160L12.0R20-04S10		●	4	30°	16	15.3	12	2	S10	20.5	KEYV-S10	28	2
VEE160L12.0R20-04S10		●	4	45°	16	15.3	12	2	S10	20.5	KEYV-S10	28	2
VED160L12.0R30-04S10		●	4	30°	16	15.3	12	3	S10	20.5	KEYV-S10	28	2
VEE160L12.0R30-04S10	●	●	4	45°	16	15.3	12	3	S10	20.5	KEYV-S10	28	2
VED160L12.0R40-04S10		●	4	30°	16	15.3	12	4	S10	20.5	KEYV-S10	28	2
VEE160L12.0R40-04S10		●	4	45°	16	15.3	12	4	S10	20.5	KEYV-S10	28	2
VEE200L15.0R00-04S12		●	4	45°	20	18.3	15	-	S12	25.5	KEYV-S12	28	2
VED200L15.0R05-04S12		●	4	30°	20	18.3	15	0.5	S12	25.5	KEYV-S12	28	2
VED200L15.0R10-04S12	●	●	4	30°	20	18.3	15	1	S12	25.5	KEYV-S12	28	2
VED200L15.0R20-04S12		●	4	30°	20	18.3	15	2	S12	25.5	KEYV-S12	28	2
VED200L15.0R30-04S12		●	4	30°	20	18.3	15	3	S12	25.5	KEYV-S12	28	2

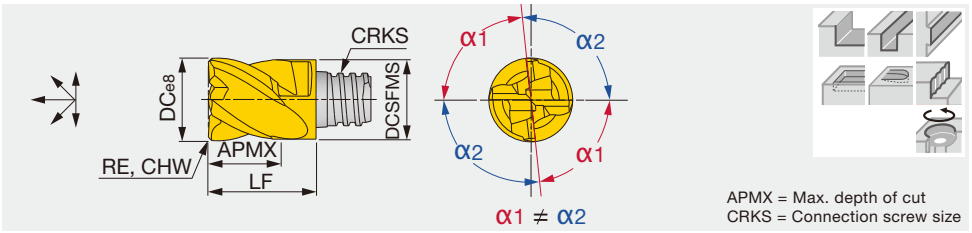
Torque: Recommended clamping torque: N·m
**Fig. 1: Avoid interference with workpiece when using this cutting head. The shank diameter is larger than the cutter diameter when assembled.
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I022 - I023

VEE**-I...

4 flute, roughing - finishing, variable pitch



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque
VEE031L22C012IU04S05	●	4	38°	0.312	0.303	0.220	-	0.012	S05	0.393	KEYV-S05	5.16
VEE037L29C016IU04S06	●	4	38°	0.375	0.370	0.299	-	0.016	S06	0.512	KEYV-S06	7.38
VEE050L37C020IU04S08	●	4	38°	0.500	0.488	0.374	-	0.020	S08	0.650	KEYV-S08	11.06
VEE062L50C024IU04S10	●	4	38°	0.625	0.602	0.500	-	0.024	S10	0.810	KEYV-S10	20.65
VEE075L62C024IU04S12	●	4	38°	0.750	0.726	0.629	-	0.024	S12	1.004	KEYV-S12	20.65
VEE100L86C024IU04S15	●	4	38°	1.000	0.940	0.863	-	0.024	S15	1.456	KEYV-W20	29.5
VEE100L86R000IU04S15	●	4	38°	1.000	0.941	0.866	-	-	S15	1.457	KEYV-W20	29.5
VEE100L86R015IU04S15	●	4	38°	1.000	0.941	0.866	0.015	-	S15	1.457	KEYV-W20	29.5
VEE100L86R031IU04S15	●	4	38°	1.000	0.941	0.866	0.031	-	S15	1.457	KEYV-W20	29.5
VEE100L86R062IU04S15	●	4	38°	1.000	0.941	0.866	0.062	-	S15	1.457	KEYV-W20	29.5
VEE100L86R125IU04S15	●	4	38°	1.000	0.941	0.866	0.125	-	S15	1.457	KEYV-W20	29.5

Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque*
VEE080L05.0C30I04S05		●	4	38°	8	7.7	5	-	0.3	S05	10	KEYV-S05	7
VEE100L07.0C40I04S06		●	4	38°	10	9.7	7	-	0.4	S06	13	KEYV-S06	10
VEE120L09.0C50I04S08		●	4	38°	12	11.7	9	-	0.5	S08	16.5	KEYV-S08	15
VEE160L12.0C60I04S10	●	●	4	38°	16	15.3	12	-	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60I04S12		●	4	38°	20	18.3	15	-	0.6	S12	25.5	KEYV-S12	28
VEE250L22.0C60I04S15		●	4	38°	25	23.9	22	-	0.6	S15	37	KEYV-W20	40
VEE250L22.0R00I04S15		●	4	38°	25	23.9	22	-	-	S15	37	KEYV-W20	40
VEE250L22.0R05I04S15	●	●	4	38°	25	23.9	22	0.5	-	S15	37	KEYV-W20	40
VEE250L22.0R10I04S15		●	4	38°	25	23.9	22	1	-	S15	37	KEYV-W20	40
VEE250L22.0R20I04S15		●	4	38°	25	23.9	22	2	-	S15	37	KEYV-W20	40
VEE250L22.0R30I04S15		●	4	38°	25	23.9	22	3	-	S15	37	KEYV-W20	40

Torque: Recommended clamping torque: lbs·ft (*N·m)
VEE031 ~ VEE100 / VEE080 ~ VEE200: 2 pieces per package
VEE250: 1 piece per package

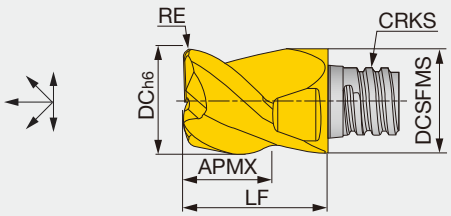
● : Line up

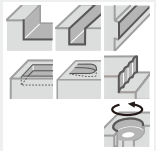
Reference pages: Standard cutting conditions → I022 - I023

TUNGMEISTER

VEE**-03...

3 flute, roughing - finishing, general, for key way





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VEE031L20R000-U03S05	●	3	45°	0.312	0.300	0.200	-	S05	0.390	KEYV-S05	5.16
VEE037L27R000-U03S06	●	3	45°	0.375	0.370	0.275	-	S06	0.512	KEYV-S06	7.38
VEE050L37R000-U03S08	●	3	45°	0.500	0.488	0.374	-	S08	0.650	KEYV-S08	11.06

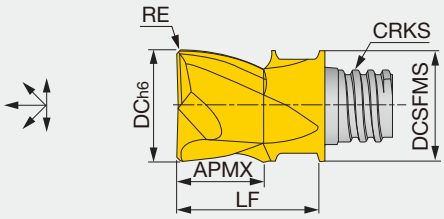
Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VEE077L04.0R02-03S05		●	3	38°	7.7	7.7	4	0.2	S05	10	KEYV-S05	7
VEE080L05.0R00-03S05		●	3	45°	8	7.7	5	-	S05	10	KEYV-S05	7
VEE097L05.0R03-03S06		●	3	38°	9.7	9.7	5	0.3	S06	13	KEYV-S06	10
VEE100L07.0R00-03S06		●	3	45°	10	9.7	7	-	S06	13	KEYV-S06	10
VEE117L07.0R03-03S08	●	●	3	38°	11.7	11.7	7	0.3	S08	16.5	KEYV-S08	15
VEE120L09.0R00-03S08		●	3	45°	12	11.7	9	-	S08	16.5	KEYV-S08	15
VEE157L08.0R03-03S10	●	●	3	38°	15.7	15.3	8	0.3	S10	20.5	KEYV-S10	28
VEE197L12.0R04-03S12		●	3	38°	19.7	18.3	12	0.4	S12	25.5	KEYV-S12	28

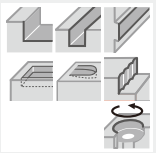
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

VEE**A02...

2 flute, roughing - finishing, for non-ferrous metal, general





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VEE037L27R000AU02S06	●	2	45°	0.375	0.360	0.270	-	S06	0.510	KEYV-S06	7.38
VEE037L27R020AU02S06	●	2	45°	0.375	0.360	0.270	0.02	S06	0.512	KEYV-S06	7.38
VEE050L37R000AU02S08	●	2	45°	0.500	0.488	0.374	-	S08	0.650	KEYV-S08	11.06
VEE050L37R020AU02S08	●	2	45°	0.500	0.488	0.374	0.02	S08	0.650	KEYV-S08	11.06

Metric	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VEE100L07.0R05A02S06	●	2	45°	10	9.7	7	0.5	S06	13	KEYV-S06	10
VEE100L07.0R10A02S06	●	2	45°	10	9.7	7	1	S06	13	KEYV-S06	10
VEE120L09.0R05A02S08	●	2	45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15

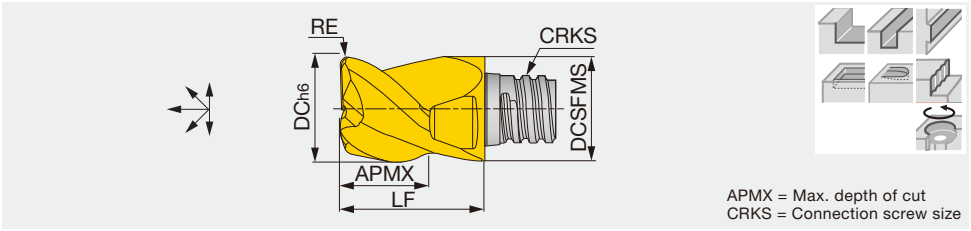
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I022 - I023

VEE**A03...

3 flute, roughing - finishing, for non-ferrous metal, general



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VEE031L20R020AU03S05	●	3	45°	0.312	0.300	0.200	0.020	S05	0.390	KEYV-S05	5.16
VEE037L23R031AU03S06	●	3	45°	0.375	0.360	0.230	0.031	S06	0.510	KEYV-S06	7.38
VEE037L23R062AU03S06	●	3	45°	0.375	0.360	0.230	0.062	S06	0.510	KEYV-S06	7.38
VEE050L31R031AU03S08	●	3	45°	0.500	0.488	0.315	0.031	S08	0.650	KEYV-S08	11.06
VEE050L31R062AU03S08	●	3	45°	0.500	0.488	0.315	0.062	S08	0.650	KEYV-S08	11.06
VEE050L31R094AU03S08	●	3	45°	0.500	0.488	0.315	0.094	S08	0.650	KEYV-S08	11.06
VEE050L31R125AU03S08	●	3	45°	0.500	0.488	0.315	0.125	S08	0.650	KEYV-S08	11.06
VEE062L39R000AU03S10	●	3	45°	0.625	0.600	0.390	-	S10	0.810	KEYV-S10	20.65
VEE062L39R031AU03S10	●	3	45°	0.625	0.600	0.390	0.031	S10	0.810	KEYV-S10	20.65
VEE062L39R062AU03S10	●	3	45°	0.625	0.600	0.390	0.062	S10	0.810	KEYV-S10	20.65
VEE062L39R094AU03S10	●	3	45°	0.625	0.600	0.390	0.094	S10	0.810	KEYV-S10	20.65
VEE062L39R125AU03S10	●	3	45°	0.625	0.600	0.390	0.125	S10	0.810	KEYV-S10	20.65
VEE075L47R062AU03S12	●	3	45°	0.750	0.720	0.470	0.062	S12	1.000	KEYV-S12	20.65
VEE075L47R094AU03S12	●	3	45°	0.750	0.720	0.470	0.094	S12	1.000	KEYV-S12	20.65
VEE075L47R125AU03S12	●	3	45°	0.750	0.720	0.470	0.125	S12	1.000	KEYV-S12	20.65
VEE075L50R008AU03S12	●	3	45°	0.750	0.720	0.500	0.008	S12	1.000	KEYV-S12	20.65
VEE075L50R020AU03S12	●	3	45°	0.750	0.720	0.500	0.020	S12	1.000	KEYV-S12	20.65

Metric	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VEE080L05.0R05A03S05	●	3	45°	8	7.7	5	0.5	S05	10	KEYV-S05	7
VEE100L06.0R05A03S06	●	3	45°	10	9.7	6	0.5	S06	13	KEYV-S06	10
VEE100L06.0R10A03S06	●	3	45°	10	9.7	6	1	S06	13	KEYV-S06	10
VEE120L08.0R05A03S08	●	3	45°	12	11.7	8	0.5	S08	16.5	KEYV-S08	15
VEE120L08.0R10A03S08	●	3	45°	12	11.7	8	1	S08	16.5	KEYV-S08	15
VEE160L10.0R00A03S10	●	3	45°	16	15.3	10	-	S10	20.5	KEYV-S10	28
VEE160L10.0R10A03S10	●	3	45°	16	15.3	10	1	S10	20.5	KEYV-S10	28
VEE160L10.0R20A03S10	●	3	45°	16	15.3	10	2	S10	20.5	KEYV-S10	28
VEE200L12.0R05A03S12	●	3	45°	20	18.3	12	0.5	S12	25.5	KEYV-S12	28
VEE200L12.0R10A03S12	●	3	45°	20	18.3	12	1	S12	25.5	KEYV-S12	28
VEE200L12.0R20A03S12	●	3	45°	20	18.3	12	2	S12	25.5	KEYV-S12	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

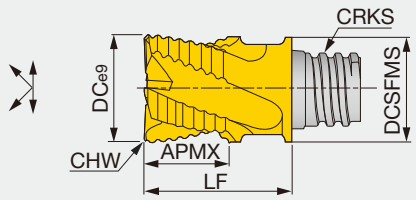
Reference pages: Standard cutting conditions → I022 - I023

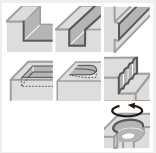
TUNGMEISTER

VEE**R...

4, 5, 6 flute, roughing, serrated cutting edge

Square





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	RMPX	Wrench	Torque
VEE031L20C012RU04S05	●	4	45°	0.312	0.300	0.200	0.012	S05	0.390	-	KEYV-S05	5.16
VEE037L27C012RU04S06	●	4	45°	0.375	0.360	0.270	0.012	S06	0.512	-	KEYV-S06	7.38
VEE050L37C016RU04S08	●	4	45°	0.500	0.488	0.374	0.016	S08	0.650	-	KEYV-S08	11.06
VEE062L47C024RU05S10	●	5	45°	0.625	0.600	0.470	0.024	S10	0.800	-	KEYV-S10	20.65
VEE075L59C024RU06S12	●	6	45°	0.750	0.720	0.590	0.024	S12	1.000	3°	KEYV-S12	20.65
VEE100L86C020RU06S15	●	6	45°	1.000	0.941	0.866	0.020	S15	1.457	3°	KEYV-W15	29.50

Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	RMPX	Wrench	Torque*
VEE080L05.0C25R04S05	●	●	4	45°	8	7.7	5	0.25	S05	10	5°	KEYV-S05	7
VEE100L07.0C30R04S06	●	●	4	45°	10	9.7	7	0.3	S06	13	5°	KEYV-S06	10
VEE120L09.0C35R04S08	●	●	4	45°	12	11.7	9	0.35	S08	16.5	5°	KEYV-S08	15
VEE160L12.0C40R05S10	●	●	5	45°	16	15.3	12	0.4	S10	20.5	5°	KEYV-S10	28
VEE200L15.0C40R06S12		●	6	45°	20	18.3	15	0.4	S12	25.5	3°	KEYV-S12	28
VEE250L22.0C50R06S15		●	6	45°	25	23.9	22	0.5	S15	37	3°	KEYV-W20	40

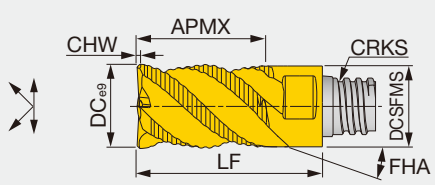
Torque: Recommended clamping torque: lbs·ft (*N·m)
VEE031 ~ VEE075 / VEE080 ~ VEE200: 2 pieces per package
VEE100 / VEE250: 1 piece per package

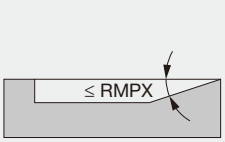
● : Line up

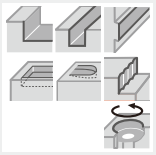
VED**R...

4, 5, 6 flute, roughing, long cutting edge, serrated cutting edge

Square







APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	RMPX	Wrench	Torque
VED080L12.0C25R04S05	●	4	47°	8	7.7	12	0.25	S05	18	5°	KEYV-S05	7
VED100L15.0C30R04S06	●	4	47°	10	9.6	15	0.3	S06	22	5°	KEYV-S06	10
VED120L18.0C35R04S08	●	4	47°	12	11.7	18	0.35	S08	27	5°	KEYV-S08	15
VED160L24.0C40R05S10	●	5	47°	16	15.3	24	0.4	S10	33.5	5°	KEYV-S10	28
VED200L30.0C40R06S12	●	6	47°	20	18.45	30	0.4	S12	41	3°	KEYV-S12	28
VED250L37.0C50I06S15	●	6	47°	25	23.9	37	0.5	S15	52.5	3°	KEYV-W20	40

Torque: Recommended clamping torque: N·m
VED080 ~ VED160: 2 pieces per package
VED200, VED250: 1 piece per package

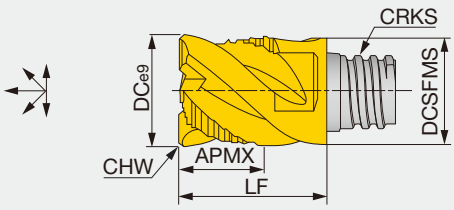
● : Line up

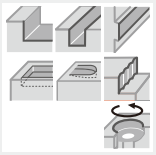
Reference pages: Standard cutting conditions → I022 - I023

VEE**C...

4 flute, roughing - semi finishing, roughing and finishing edge combination

Square





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	Wrench	Torque
VEE031L20C012CU04S05	●	4	45°	0.312	0.300	0.200	0.012	S05	0.390	KEYV-S05	5.16
VEE037L27C012CU04S06	●	4	45°	0.375	0.360	0.275	0.012	S06	0.510	KEYV-S06	7.38
VEE050L36C016CU04S08	●	4	45°	0.500	0.488	0.369	0.016	S08	0.650	KEYV-S08	11.06
VEE062L47C024CU04S10	●	4	45°	0.625	0.600	0.470	0.024	S10	0.800	KEYV-S10	20.65
VEE075L62C024CU04S12	●	4	45°	0.750	0.720	0.620	0.024	S12	1.000	KEYV-S12	20.65

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	Wrench	Torque*
VEE080L05.0C30C04S05	●	4	45°	8	7.7	5	0.3	S05	10	KEYV-S05	7
VEE100L07.0C30C04S06	●	4	45°	10	9.7	7	0.3	S06	13	KEYV-S06	10
VEE120L09.0C40C04S08	●	4	45°	12	11.7	9	0.4	S08	16.5	KEYV-S08	15
VEE160L12.0C60C04S10	●	4	45°	16	15.3	12	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60C04S12	●	4	45°	20	18.3	15	0.6	S12	25.5	KEYV-S12	28
VEE250L22.0C60C04S15	●	4	45°	25	23.9	22	0.6	S15	37	KEYV-W20	40

Torque: Recommended clamping torque: lbs·ft (*N·m)
VEE031 ~ VEE075 / VEE080 ~ VEE200: 2 pieces per package
VEE250: 1 piece per package

● : Line up

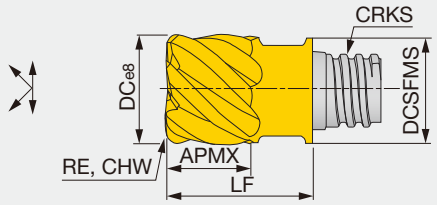
Reference pages: Standard cutting conditions → I022 - I023

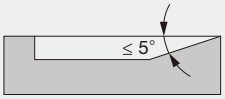
TUNGMEISTER

VED**-06..., VEE**-06...

6 flute, roughing - finishing, small width of cut

Square





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque
VED031L20R015-U06S05	●		6	30°	0.312	0.300	0.200	0.015	-	S05	0.390	KEYV-S05	5.16
VEE031L20R000-U06S05	●		6	45°	0.312	0.300	0.200	-	-	S05	0.390	KEYV-S05	5.16
VEE031L20R031-U06S05	●		6	45°	0.312	0.300	0.200	0.031	-	S05	0.390	KEYV-S05	5.16
VEE031L20C004-U06S05		●	6	50°	0.312	0.300	0.200	-	0.004	S05	0.390	KEYV-S05	5.16
VED037L27R015-U06S06	●		6	30°	0.375	0.370	0.275	0.015	-	S06	0.512	KEYV-S06	7.38
VED037L27R031-U06S06	●		6	30°	0.375	0.370	0.275	0.031	-	S06	0.512	KEYV-S06	7.38
VEE037L27R000-U06S06	●		6	45°	0.375	0.370	0.275	-	-	S06	0.512	KEYV-S06	7.38
VEE037L27R015-U06S06	●		6	45°	0.375	0.370	0.275	0.015	-	S06	0.512	KEYV-S06	7.38
VEE037L27R031-U06S06	●		6	45°	0.375	0.370	0.275	0.031	-	S06	0.512	KEYV-S06	7.38
VEE037L27R062-U06S06	●		6	45°	0.375	0.370	0.275	0.062	-	S06	0.512	KEYV-S06	7.38
VEE037L27C004-U06S06		●	6	50°	0.375	0.370	0.270	-	0.004	S06	0.510	KEYV-S06	7.38
VED050L37R015-U06S08	●		6	30°	0.500	0.488	0.374	0.015	-	S08	0.650	KEYV-S08	11.06
VED050L37R031-U06S08	●		6	30°	0.500	0.488	0.374	0.031	-	S08	0.650	KEYV-S08	11.06
VEE050L37R000-U06S08	●		6	45°	0.500	0.488	0.374	-	-	S08	0.650	KEYV-S08	11.06
VEE050L37R015-U06S08	●		6	45°	0.500	0.488	0.374	0.015	-	S08	0.650	KEYV-S08	11.06
VEE050L37R031-U06S08	●		6	45°	0.500	0.488	0.374	0.031	-	S08	0.650	KEYV-S08	11.06
VEE050L37R062-U06S08	●		6	45°	0.500	0.488	0.374	0.062	-	S08	0.650	KEYV-S08	11.06
VEE050L37C004-U06S08		●	6	50°	0.500	0.488	0.374	-	0.004	S08	0.650	KEYV-S08	11.06

Metric	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque*
VEE080L05.0R05-06S05	●		6	45°	8	7.7	5	0.5	-	S05	10	KEYV-S05	7
VEE080L05.0R10-06S05	●		6	45°	8	7.7	5	1	-	S05	10	KEYV-S05	7
VEE080L05.0R15-06S05	●		6	45°	8	7.7	5	1.5	-	S05	10	KEYV-S05	7
VEE080L05.0C10-06S05		●	6	50°	8	7.7	5	-	0.1	S05	10	KEYV-S05	7
VEE100L07.0R00-06S06	●		6	45°	10	9.7	7	-	-	S06	13	KEYV-S06	10
VED100L07.0R05-06S06	●		6	30°	10	9.7	7	0.5	-	S06	13	KEYV-S06	10
VEE100L07.0R05-06S06	●		6	45°	10	9.7	7	0.5	-	S06	13	KEYV-S06	10
VED100L07.0R10-06S06	●		6	30°	10	9.7	7	1	-	S06	13	KEYV-S06	10
VEE100L07.0R10-06S06	●		6	45°	10	9.7	7	1	-	S06	13	KEYV-S06	10
VED100L07.0R15-06S06	●		6	30°	10	9.7	7	1.5	-	S06	13	KEYV-S06	10
VEE100L07.0R15-06S06	●		6	45°	10	9.7	7	1.5	-	S06	13	KEYV-S06	10
VEE100L07.0C10-06S06		●	6	50°	10	9.7	7	-	0.1	S06	13	KEYV-S06	10
VEE120L09.0R00-06S08	●		6	45°	12	11.7	9	-	-	S08	16.5	KEYV-S08	15
VED120L09.0R05-06S08	●		6	30°	12	11.7	9	0.5	-	S08	16.5	KEYV-S08	15
VED120L09.0R10-06S08	●		6	30°	12	11.7	9	1	-	S08	16.5	KEYV-S08	15
VEE120L09.0R10-06S08	●		6	45°	12	11.7	9	1	-	S08	16.5	KEYV-S08	15
VEE120L09.0R15-06S08	●		6	45°	12	11.7	9	1.5	-	S08	16.5	KEYV-S08	15
VEE120L09.0C10-06S08		●	6	50°	12	11.7	9	-	0.1	S08	16.5	KEYV-S08	15

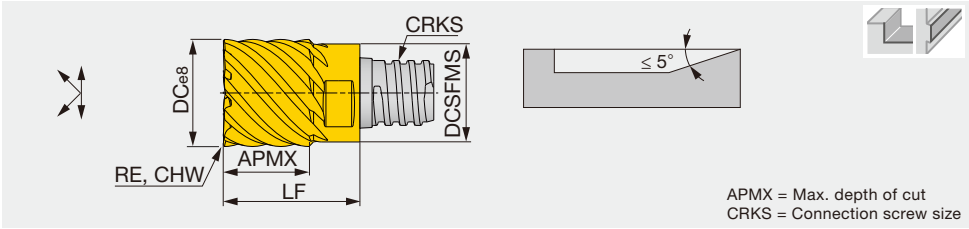
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I022 - I023

VED**-08/10..., VEE**-08/10...

8, 10 flute, roughing - finishing, small width of cut



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque
VED062L47R000-U08S10	●		8	30°	0.625	0.600	0.470	-	-	S10	0.810	KEYV-S10	20.65
VED062L47R015-U08S10	●		8	30°	0.625	0.600	0.470	0.015	-	S10	0.810	KEYV-S10	20.65
VED062L47R031-U08S10	●		8	30°	0.625	0.600	0.470	0.031	-	S10	0.810	KEYV-S10	20.65
VED062L47R062-U08S10	●		8	30°	0.625	0.600	0.470	0.062	-	S10	0.810	KEYV-S10	20.65
VEE062L47C008-U08S10		●	8	50°	0.625	0.600	0.470	-	0.008	S10	0.810	KEYV-S10	20.65
VED075L62R031-U10S12	●		10	30°	0.750	0.720	0.620	0.031	-	S12	1.000	KEYV-S12	20.65
VED075L62R062-U10S12	●		10	30°	0.750	0.720	0.620	0.062	-	S12	1.000	KEYV-S12	20.65
VEE075L62C008-U10S12		●	10	50°	0.750	0.720	0.620	-	0.008	S12	1.000	KEYV-S12	20.65
VED100L86R031-U10S15	●		10	30°	1.000	0.941	0.866	0.031	-	S15	1.457	KEYV-W20	29.50
VED100L86R062-U10S15	●		10	30°	1.000	0.941	0.866	0.062	-	S15	1.457	KEYV-W20	29.50

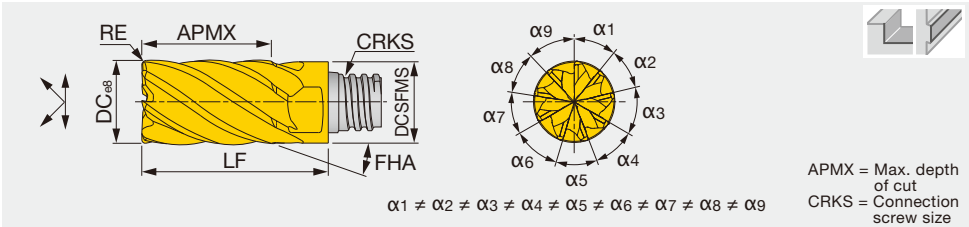
Metric	AH715	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque*
VED160L12.0R05-08S10		●		8	30°	16	15.3	12	0.5	-	S10	20.5	KEYV-S10	28
VED160L12.0R10-08S10	●	●		8	30°	16	15.3	12	1	-	S10	20.5	KEYV-S10	28
VED160L12.0R16-08S10		●		8	30°	16	15.3	12	1.6	-	S10	20.5	KEYV-S10	28
VED160L12.0R20-08S10		●		8	30°	16	15.3	12	2	-	S10	20.5	KEYV-S10	28
VEE160L12.0C20-08S10			●	8	50°	16	15.3	12	-	0.2	S10	20.5	KEYV-S10	28
VED200L15.0R10-10S12		●		10	30°	20	18.3	15	1	-	S12	25.5	KEYV-S12	28
VED200L15.0R20-10S12		●		10	30°	20	18.3	15	2	-	S12	25.5	KEYV-S12	28
VEE200L15.0C20-10S12			●	10	50°	20	18.3	15	-	0.2	S12	25.5	KEYV-S12	28
VED250L22.0R10-10S15		●		10	30°	25	23.9	22	1	-	S15	37	KEYV-W20	40

Torque: Recommended clamping torque: lbs·ft (*N·m)
VED/VEE062 ~ VED/VEE075 / VEE/VED160 ~ VED/VEE200: 2 pieces per package
VED100 / VED250: 1 piece per package

● : Line up

VED**-07/09...

7, 9 flute, roughing - finishing, long edge, variable helix and pitch, small width of cut



α1 ≠ α2 ≠ α3 ≠ α4 ≠ α5 ≠ α6 ≠ α7 ≠ α8 ≠ α9

APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VED080L12.0R05I07S05	●	7	34° - 40°	8	7.7	12	0.5	S05	18	KEYV-S05	7
VED100L15.0R05I07S06	●	7	34° - 40°	10	9.6	15	0.5	S06	22	KEYV-S06	10
VED120L18.0R05I07S08	●	7	34° - 40°	12	11.7	18	0.5	S08	27	KEYV-S08	15
VED160L24.0R08I09S10	●	9	34° - 40°	16	15.3	24	0.8	S10	33.5	KEYV-S10	28
VED200L30.0R10I09S12	●	9	34° - 40°	20	18.45	30	1	S12	41	KEYV-S12	28
VED250L37.0R10I09S15	●	9	34° - 40°	25	23.9	37	1	S15	52.5	KEYV-W20	40

Torque: Recommended clamping torque: N·m
VED080 ~ VED160: 2 pieces per package
VED200, VED250: 1 piece per package

● : Line up

Reference pages: Standard cutting conditions → I022 - I023

STANDARD CUTTING CONDITIONS

Shoulder milling

VEH, VEE: 3 flutes, VED / VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VED-R, VEE-C

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut *ap* (in)	Width of cut *ae* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	260 - 590	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
P	High carbon steels 4140, 5120, etc.	- 300 HB	200 - 460	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	200 - 400	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	130 - 330	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Ductile cast irons 60-40-18, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si < 13%	-	660 - 2297	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si ≥13%	-	330 - 980	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 130	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 200	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC

VED / VEE: 6 flutes, VED / VEE: 8, 10 flutes, VED: 7, 9 flutes

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut *ap* (in)	Width of cut *ae* (in)
S	Titanium alloys Ti-6Al-4V, etc.	-	200 - 400	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	100 - 200	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	260 - 530	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	130 - 300	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.02 x DC

Slotting

VEH, VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C

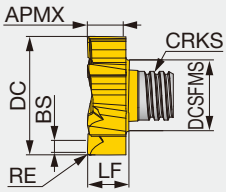
ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut *ap* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	260 - 590	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
P	High carbon steels 4140, 5120, etc.	- 300 HB	200 - 460	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	200 - 400	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	130 - 330	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
K	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
K	Ductile cast irons 60-40-18, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
N	Aluminum alloys Si < 13%	-	660 - 2297	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
N	Aluminum alloys Si ≥13%	-	330 - 980	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 130	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 200	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC

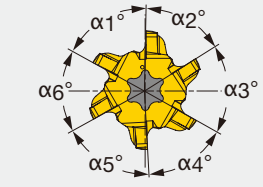
TUNGMEISTER

VFM...

6 flute, roughing - finishing, for face milling

Face mill





α1 ≠ α2 ≠ α3 ≠ α4 ≠ α5 ≠ α6

APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	BS	CRKS	LF	Wrench	Torque
VFM120L03.6R02I06S05	●	6	10°	12	7.7	3.6	0.2	1.2	S05	4.4	KEYV-T20	7
VFM160L04.8R04I06S06	●	6	10°	16	9.7	4.8	0.4	2	S06	5.6	KEYV-T25	10
VFM200L06.0R04I06S08	●	6	10°	20	11.7	6	0.4	2	S08	7	KEYV-T40L	15
VFM250L07.5R04I06S10	●	6	10°	25	15.3	7.5	0.4	2	S10	8.55	KEYV-T50L	28

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I024

STANDARD CUTTING CONDITIONS

Face milling

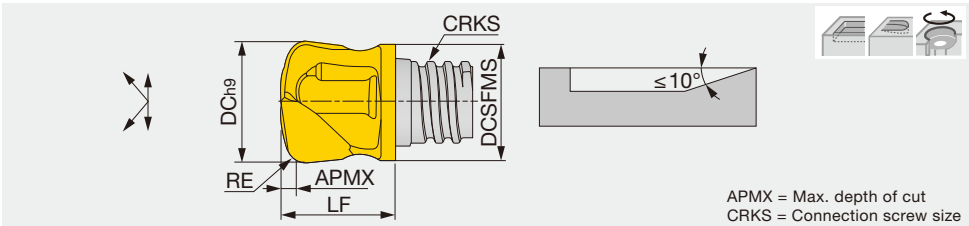
VFM

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC ø12 mm	ø16 mm	ø20 mm	ø25 mm	Depth of cut *ap* (in)	Width of cut *ae* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	262 - 591	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
P	High carbon steels 4140, 5120, etc.	- 300 HB	197 - 459	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	197 - 394	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	131 - 328	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
K	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	262 - 656	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
K	Ductile cast irons 60-40-18, etc.	150 - 250 HB	262 - 656	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
N	Aluminum alloys Si < 13%	-	656 - 2297	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
N	Aluminum alloys Si ≥ 13%	-	328 - 984	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 262	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	131 - 262	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 197	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.039	0.7 x DC

TUNGMEISTER

VFX**-02...

2 flute, roughing



APMX = Max. depth of cut
CRKS = Connection screw size

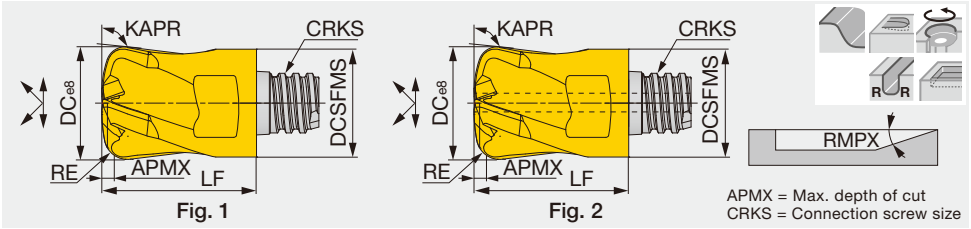
Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE(1)	CRKS	LF	Wrench	Torque	*fz*(mm/t)
VFX100L00.6R20-02S06	●	2	0°	10	9.6	0.6	2	S06	12.5	KEYV-S06	10	0.3 - 0.6
VFX120L01.0R25-02S08	●	2	0°	12	11.5	1.0	2.5	S08	11.1	KEYV-S08	15	0.5 - 1
VFX160L01.1R30-02S10	●	2	0°	16	15.2	1.1	3	S10	13.5	KEYV-S10	28	0.55 - 1.1
VFX200L01.5R33-02S12	●	2	0°	20	18.3	1.5	3.3	S12	17.5	KEYV-S12	28	0.75 - 1.5

Torque: Recommended clamping torque: N·m
(1) Corner radius for CAM programming
For VFX head, taper neck shank or Tungsten shank should be recommended.
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I025

4, 6 flute, roughing



Metric	AH715	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	KAPR	CRKS	LF	RMPX	Wrench	Torque	*fz*(mm/t)	Fig.
VFX120L0.60R18E04S08	●			4	20°	12	11.5	0.6	1.8	97°	S08	16.5	5°	KEYV-S08	15	0.16 - 0.67	2
VFX120L0.60R18H04S08		●		4	20°	12	11.5	0.6	1.8	97°	S08	16.5	5°	KEYV-S08	15	0.16 - 0.67	1
VFX120L0.65R12E06S08			●	6	20°	12	11.5	0.65	0.6	97°	S08	12	3°	KEYV-S08	15	0.16 - 0.54	2
VFX160L0.80R22E04S10	●			4	20°	16	15.4	0.8	2.2	97°	S10	20.5	5°	KEYV-S10	28	0.2 - 0.75	2
VFX160L0.80R22H04S10		●		4	20°	16	15.4	0.8	2.2	97°	S10	20.5	5°	KEYV-S10	28	0.2 - 0.75	1
VFX160L1.05R20E06S10			●	6	20°	16	15.4	1.05	1	97°	S10	16	3°	KEYV-S10	28	0.2 - 0.65	2

Torque: Recommended clamping torque: N·m
Slot milling is not recommended for workpiece materials such as stainless steel where chips tend to adhere.
Also max. ae < 0.4D.
2 pieces per package

● : Line up

STANDARD CUTTING CONDITIONS

High feed milling

VFX: 2, 4, 6 flutes

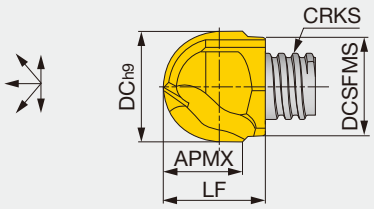
ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	ø10 mm		ø12 mm		ø16 mm		ø20 mm		Width of cut
				Feed per tooth *fz* (ipt)	Depth of cut *ap* (in)	Feed per tooth *fz* (ipt)	Depth of cut *ap* (in)	Feed per tooth *fz* (ipt)	Depth of cut *ap* (in)	Feed per tooth *fz* (ipt)	Depth of cut *ap* (in)	*ae* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	328 - 656	0.012 - 0.028	0.020	0.016 - 0.031	0.020	0.020 - 0.035	0.030	0.024 - 0.039	0.039	0.6 x DC
P	Alloy steel 4140, 8620, etc.	- 300 HB	262 - 591	0.008 - 0.024	0.020	0.012 - 0.028	0.020	0.016 - 0.031	0.030	0.020- 0.035	0.039	0.6 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	262 - 525	0.008 - 0.020	0.016	0.008 - 0.020	0.016	0.012 - 0.024	0.020	0.012 - 0.024	0.030	0.6 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	197 - 328	0.008 - 0.024	0.016	0.008 - 0.024	0.016	0.012 - 0.028	0.020	0.012 - 0.028	0.030	0.6 x DC
K	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	328 - 722	0.012 - 0.028	0.020	0.016 - 0.031	0.030	0.020 - 0.035	0.030	0.024 - 0.039	0.039	0.6 x DC
K	Ductile cast irons 60-40-18, etc.	150 - 250 HB	328 - 722	0.008 - 0.024	0.020	0.012 - 0.028	0.030	0.016 - 0.031	0.030	0.020 - 0.035	0.039	0.6 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 262	0.008 - 0.020	0.016	0.008 - 0.020	0.016	0.008 - 0.024	0.020	0.008 - 0.024	0.020	0.25 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.004 - 0.012	0.012	0.004 - 0.012	0.012	0.004 - 0.012	0.016	0.004 - 0.012	0.016	0.25 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	131 - 262	0.008 - 0.016	0.012	0.008 - 0.016	0.012	0.012 - 0.020	0.016	0.012 - 0.020	0.016	0.45 x DC
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 197	0.004 - 0.008	0.008	0.004 - 0.008	0.008	0.004 - 0.012	0.012	0.004 - 0.012	0.012	0.25 x DC

Please note that the feed per tooth should not exceed the maximum feed per tooth for each product.

TUNGMEISTER

VBB**-BM...

2 flute, roughing - semi finishing, economical



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque
VBB0312L31-BM-U02S05	●	2	0°	0.312	0.300	0.310	S05	0.390	KEYV-S05	5.16
VBB0375L38-BM-U02S06	●	2	0°	0.375	0.360	0.380	S06	0.478	KEYV-S06	7.38
VBB0500L50-BM-U02S08	●	2	0°	0.500	0.480	0.508	S08	0.646	KEYV-S08	11.06
VBB0625L63-BM-U02S10	●	2	0°	0.625	0.600	0.630	S10	0.750	KEYV-S10	20.65

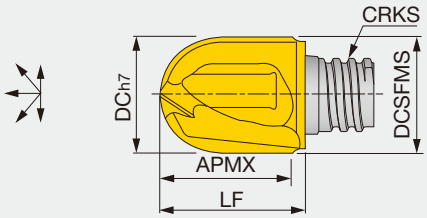
Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque*
VBB080L08.0-BM-02S05	●	2	0°	8	7.6	8	S05	10	KEYV-S05	7
VBB100L10.0-BM-02S06	●	2	0°	10	9.5	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BM-02S08	●	2	0°	12	11.5	11.5	S08	15.3	KEYV-S08	15
VBB160L16.0-BM-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

VBB**-BG...

2 flute, finishing, high accuracy (h7 tolerance), for hardened steel



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH750	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque
VBB0312L31-BG-U02S05	●	2	0°	0.312	0.300	0.312	S05	0.390	KEYV-S05	5.16
VBB0375L38-BG-U02S06	●	2	0°	0.375	0.360	0.380	S06	0.480	KEYV-S06	7.38
VBB0500L50-BG-U02S08	●	2	0°	0.500	0.480	0.500	S08	0.640	KEYV-S08	11.06
VBB0625L63-BG-U02S10	●	2	0°	0.625	0.598	0.630	S10	0.752	KEYV-S10	20.65

Metric	AH750	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque*
VBB080L08.0-BG-02S05	●	2	0°	8	7.6	8	S05	10	KEYV-S05	7
VBB100L10.0-BG-02S06	●	2	0°	10	9.6	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BG-02S08	●	2	0°	12	11.5	12	S08	15.3	KEYV-S08	15
VBB160L16.0-BG-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

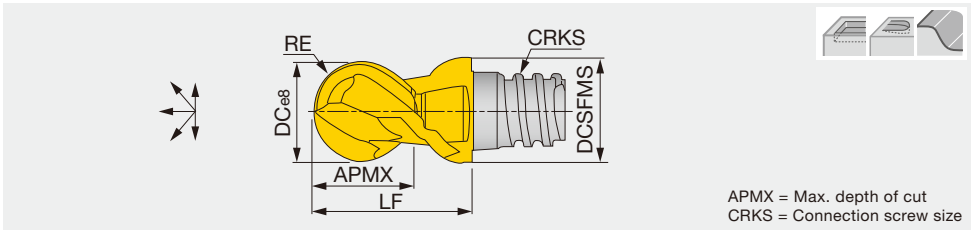
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I029

VBD**-BG...

2 flute, semi finishing - finishing, helix cutting edge



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VBD0312L20-BG-U02S05	●	2	30°	0.312	0.300	0.200	0.156(1)	S05	0.350	KEYV-S05	5.16
VBD0375L27-BG-U02S06	●	2	30°	0.375	0.360	0.275	0.188(1)	S06	0.512	KEYV-S06	7.38
VBD0500L37-BG-U02S08	●	2	30°	0.500	0.488	0.374	0.249(2)	S08	0.650	KEYV-S08	11.06
VBD0625L47-BG-U02S10	●	2	30°	0.625	0.600	0.470	0.313(2)	S10	0.800	KEYV-S10	20.65

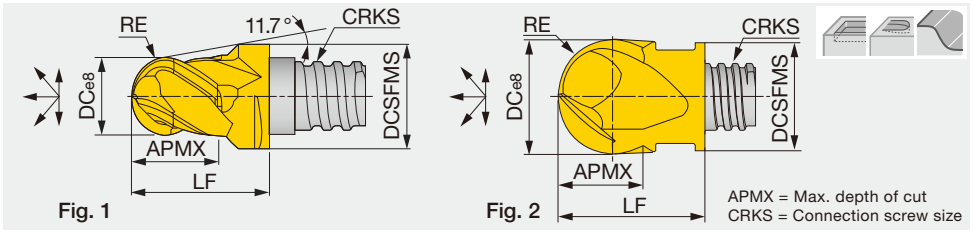
Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VBD080L05.0-BG-02S05	●	2	30°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7
VBD100L07.0-BG-02S06	●	2	30°	10	9.7	7	4.982(1)	S06	13	KEYV-S06	10
VBD120L09.0-BG-02S08	●	2	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15
VBD160L09.5-BG-02S10	●	2	30°	16	15.3	9	7.978(2)	S10	20.5	KEYV-S10	28

The tolerance of RE: (1) ± 0.0004", ± 0.01 mm (2) ± 0.0005", ± 0.012 mm
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

VBD**-BG-04..., VBE**-BG-04...

4 flute, roughing - finishing, helix cutting edge



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque	Fig.
VBE0250L20-BG-U04S05		●	4	38°	0.250	0.300	0.200	0.124(1)	S05	0.390	KEYV-S05	5.16	1
VBE0312L20-BG-U04S05		●	4	38°	0.312	0.300	0.200	0.156(1)	S05	0.350	KEYV-S05	5.16	2
VBD0375L27-BG-U04S06		●	4	38°	0.375	0.360	0.275	0.188(1)	S06	0.512	KEYV-S06	7.38	2
VBD0500L37-BG-U04S08		●	4	30°	0.500	0.488	0.374	0.249(2)	S08	0.650	KEYV-S08	11.06	2
VBD0625L47-BG-U04S10		●	4	30°	0.625	0.600	0.470	0.313(2)	S10	0.800	KEYV-S10	20.65	2
VBD0750L62-BG-U04S12	●	●	4	30°	0.750	0.720	0.620	0.374(2)	S12	1.000	KEYV-S12	20.65	2
VBD100L86-BG-U04S15		●	4	30°	1.000	0.940	0.860	0.500(3)	S15	1.450	KEYV-W20	29.5	2

Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*	Fig.
VBE050L04.0-BG-04S04		●	4	38°	5	6	4	2.487(1)	S04	8.5	KEYV-S05	4	1
VBE060L04.0-BG-04S04		●	4	38°	6	5.8	4	2.987(1)	S04	8.5	KEYV-S05	4	2
VBE060L05.5-BG-04S05		●	4	38°	6	8	5.5	2.987(1)	S05	10	KEYV-S05	7	1
VBD080L05.0-BG-04S05	●	●	4	30°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7	2
VBD100L07.0-BG-04S06	●	●	4	30°	10	9.7	7	4.982(1)	S06	13	KEYV-S06	10	2
VBD120L09.0-BG-04S08		●	4	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15	2
VBD160L12.0-BG-04S10	●	●	4	30°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28	2
VBD200L15.0-BG-04S12		●	4	30°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28	2

The tolerance of RE: (1) ± 0.0004", ± 0.01 mm (2) ± 0.0005", ± 0.012 mm (3) ± 0.0008"
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

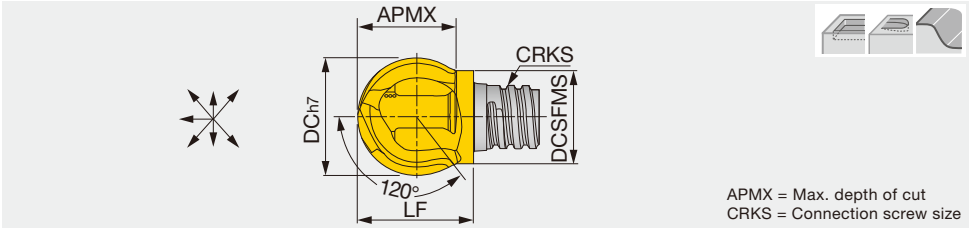
● : Line up

Reference pages: Standard cutting conditions → I029

TUNGMEISTER

VBB**-SG...

2 flute, roughing - finishing, sphere cutting edge, high accuracy (h7 tolerance)



APMX = Max. depth of cut
CRKS = Connection screw size

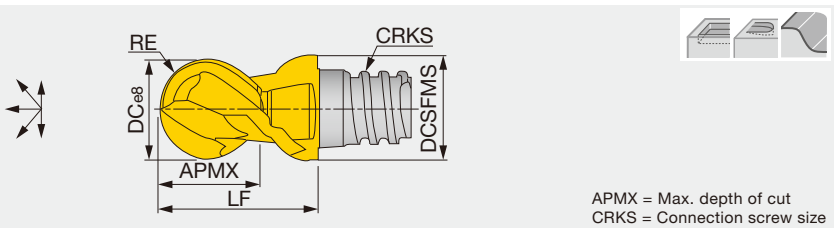
Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque
VBB0375L31-SG-U02S05	●	2	0°	0.375	0.300	0.315	S05	0.389	KEYV-S05	5.16
VBB0500L37-SG-U02S06	●	2	0°	0.500	0.378	0.378	S06	0.482	KEYV-S06	7.38
VBB0625L50-SG-U02S08	●	2	0°	0.625	0.480	0.508	S08	0.606	KEYV-S08	11.06
VBB0750L63-SG-U02S10	●	2	0°	0.750	0.600	0.634	S10	0.710	KEYV-S10	20.65

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	CRKS	LF	Wrench	Torque*
VBB100L08.0-SG-02S05	●	2	0°	10	7.6	7.5	S05	10	KEYV-S05	7
VBB120L09.6-SG-02S06	●	2	0°	12	9.5	9	S06	11.6	***KEYV-S08	10
VBB160L12.9-SG-02S08	●	2	0°	16	12.2	12	S08	15.4	***KEYV-S10	15
VBB200L16.1-SG-02S10	●	2	0°	20	15.2	15	S10	18.4	KEYV-S10	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
● : Line up
*** The wrench size for these heads is different from the ones for the other head types.
For pull-cutting on the vertical wall
2 pieces per package

VBE**-BGA...

2 flute, roughing - finishing, for non-ferrous metal, helix cutting edge



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VBE0312L20-BGAU02S05	●	2	45°	0.312	0.300	0.200	0.156(1)	S05	0.390	KEYV-S05	5.16
VBE0375L27-BGAU02S06	●	2	45°	0.375	0.360	0.270	0.187(1)	S06	0.510	KEYV-S06	7.38
VBE0500L37-BGAU02S08	●	2	45°	0.500	0.488	0.374	0.250(2)	S08	0.650	KEYV-S08	11.06
VBE0625L47-BGAU02S10	●	2	45°	0.625	0.600	0.470	0.312(2)	S10	0.800	KEYV-S10	20.65
VBE0750L50-BGAU02S12	●	2	45°	0.750	0.720	0.500	0.374(2)	S12	1.000	KEYV-S12	20.65

Metric	KS15F	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VBE080L05.0-BGA02S05	●	2	45°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7
VBE100L07.0-BGA02S06	●	2	45°	10	9.7	7	4.982(1)	S06	13	KEYV-S06	10
VBE120L09.0-BGA02S08	●	2	45°	12	11.7	9	5.987(2)	S08	16.5	KEYV-S08	15
VBE160L12.0-BGA02S10	●	2	45°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28
VBE200L15.0-BGA02S12	●	2	45°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28

The tolerance of RE : (1) ± 0.0004", ± 0.01 mm (2) ± 0.0005", ± 0.012 mm
● : Line up
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

Reference pages: Standard cutting conditions → I029

STANDARD CUTTING CONDITIONS

Profiling for roughing

VBB-BM / BG / SG, VBD-BG, VBE-BGA

ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut *ap* (in)	Pick feed *Pf* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	328 - 656	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
	High carbon steels 4140, etc.	- 300 HB	262 - 591	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	262 - 525	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
M	Stainless steels 304, 316, etc.	- 200 HB	197 - 328	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
K	Grey cast irons 250, 300, etc.	150 - 250 HB	328 - 722	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
	Ductile cast irons 400-15S, etc.	150 - 250 HB	328 - 722	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
N	Aluminum alloys Si < 13%	-	656 -2297	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
	Aluminum alloys Si ≥13%	-	328 - 984	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.4 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 262	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.2 x DC
	Heat-resistant alloys Inconel 718, etc.	50 - 60 HRC	66 - 131	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.2 x DC
H	Hardened steel SKD61, SKT4, etc. H13, etc.	-	131 - 262	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.2 x DC
	Hardened steel SKD11, SKH, etc. D2, etc.	50 - 60 HRC	66 - 197	0.001 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.003 - 0.006	0.003 - 0.006	0.3 x DC	0.2 x DC

Profiling for semi-finishing and finishing

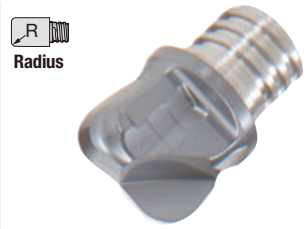
VBB-BM / BG / SG, VBD-BG, VBE-BGA

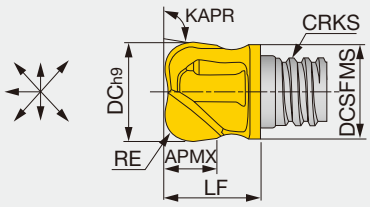
ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	Depth of cut *ap* (in)	Pick feed *Pf* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	394 - 820	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
	High carbon steels 4140, etc.	- 300 HB	328 - 722	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	328 - 656	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
M	Stainless steels 304, 316, etc.	- 200 HB	262 - 394	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
K	Grey cast irons 250, 300, etc.	150 - 250 HB	394 - 919	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
	Ductile cast irons 400-15S, etc.	150 - 250 HB	394 -919	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
N	Aluminum alloys Si < 13%	-	984 - 3281	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
	Aluminum alloys Si ≥13%	-	492 - 1312	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.1 x DC	0.15 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	164 - 328	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.08 x DC	0.1 x DC
	Heat-resistant alloys Inconel 718, etc.	50 - 60 HRC	98 - 164	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.08 x DC	0.1 x DC
H	Hardened steel SKD61, SKT4, etc. H13, etc.	-	164 - 328	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.08 x DC	0.1 x DC
	Hardened steel SKD11, SKH, etc. D2, etc.	50 - 60 HRC	98 - 262	0.001 - 0.003	0.001 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	0.004 - 0.007	0.08 x DC	0.1 x DC

TUNGMEISTER

VRB**-02..., VRC**-02...

2 flute, roughing - semi finishing, economical





APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	KAPR	CRKS	LF	Wrench	Torque
VRB062L31R187-U02S10	●	2	-	0.625	0.600	0.310	0.190	97°	S10	0.580	KEYV-S10	20.65
VRB075L45R250-U02S12	●	2	-	0.750	0.720	0.450	0.250	97°	S12	0.680	KEYV-S12	20.65
VRB075L45R312-U02S12	●	2	-	0.750	0.720	0.450	0.312	97°	S12	0.680	KEYV-S12	20.65

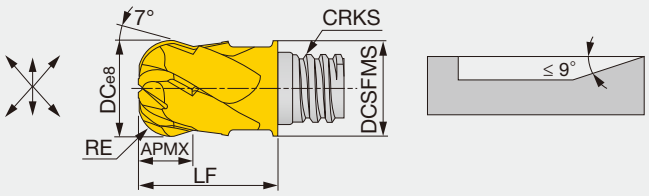
Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	KAPR	CRKS	LF	Wrench	Torque*
VRC100L07.0R10-02S06	●	2	15°	10	9.5	7	1	95°	S06	12.4	KEYV-S06	10
VRB100L06.0R20-02S06	●	2	0°	10	9.2	6	2	97°	S06	12.4	KEYV-S06	10
VRB120L05.7R30-02S06	●	2	0°	12	9.5	5.7	3	97°	S06	9.1	***KEYV-S08	10
VRB120L05.4R40-02S06	●	2	0°	12	9.5	5.4	4	97°	S06	9.1	***KEYV-S08	10
VRB120L06.3R16-02S08	●	2	0°	12	11.5	5.9	1.6	97°	S08	11.1	KEYV-S08	15
VRB120L06.2R20-02S08	●	2	0°	12	11.5	6.2	2	97°	S08	11.1	KEYV-S08	15
VRB120L06.1R25-02S08	●	2	0°	12	11.5	5.8	2.5	97°	S08	11.1	KEYV-S08	15
VRB120L06.1R30-02S08	●	2	0°	12	11.5	5.7	3	97°	S08	11.1	KEYV-S08	15
VRB120L05.9R40-02S08	●	2	0°	12	11.5	5.5	4	97°	S08	11.1	KEYV-S08	15
VRB160L08.0R50-02S10	●	2	0°	16	15.2	8	5	97°	S10	20.2	KEYV-S10	28
VRB200L11.1R30-02S12	●	2	0°	20	18.3	11	3	97°	S12	17	KEYV-S12	28
VRB200L11.5R40-02S12	●	2	0°	20	18.3	11.3	4	97°	S12	17.3	KEYV-S12	28
VRB200L11.5R50-02S12	●	2	0°	20	18.3	11.3	5	97°	S12	17.3	KEYV-S12	28
VRB200L11.4R60-02S12	●	2	0°	20	18.3	11.2	6	97°	S12	17.3	KEYV-S12	28
VRB200L11.3R80-02S12	●	2	0°	20	18.3	11.1	8	97°	S12	17.3	KEYV-S12	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
*** The wrench size for these heads is different from the ones for the other head types.
Suitable for contouring operation.
2 pieces per package

● : Line up

VRD**-06...

6 flute, semi finishing - finishing, helix cutting edge



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VRD031L16R078-U06S05	●	6	30°	0.312	0.300	0.160	0.078	S05	0.390	KEYV-S05	5.16
VRD037L19R031-U06S06	●	6	30°	0.375	0.360	0.190	0.031	S06	0.510	KEYV-S06	7.38
VRD037L19R062-U06S06	●	6	30°	0.375	0.360	0.190	0.062	S06	0.510	KEYV-S06	7.38
VRD037L19R125-U06S06	●	6	30°	0.375	0.360	0.190	0.125	S06	0.510	KEYV-S06	7.38
VRD050L27R062-U06S08	●	6	30°	0.500	0.480	0.270	0.062	S08	0.650	KEYV-S08	11.06
VRD050L27R125-U06S08	●	6	30°	0.500	0.480	0.270	0.125	S08	0.650	KEYV-S08	11.06
VRD050L27R156-U06S08	●	6	30°	0.500	0.480	0.270	0.156	S08	0.650	KEYV-S08	11.06
VRD062L35R200-U06S10	●	6	30°	0.625	0.600	0.350	0.200	S10	0.807	KEYV-S10	20.65

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VRD080L04.0R20-06S05	●	6	30°	8	7.7	4	2	S05	10	KEYV-S05	7
VRD100L05.0R30-06S06	●	6	30°	10	9.7	5	3	S06	13	KEYV-S06	10
VRD120L07.0R40-06S08	●	6	30°	12	11.7	7	4	S08	16.5	KEYV-S08	15
VRD160L09.0R50-06S10	●	6	30°	16	15.3	9	5	S10	20.5	KEYV-S10	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I031

STANDARD CUTTING CONDITIONS

Shoulder milling

VRB, VRC, VRD

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipr) Tool diameter: DC (in) 0.312"	0.375"	0.500"	0.625"	0.750"	Depth of cut *ap* (in)	Width of cut *ae* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	262 - 591	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
P	High carbon steels 4140, etc.	- 300 HB	197 - 459	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	197 - 394	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
M	Stainless steels 304, 316, etc.	- 200 HB	131 - 328	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Grey cast irons 250, 300, etc.	150 - 250 HB	262 - 656	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	262 - 656	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si < 13%	-	656 - 2297	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
N	Aluminum alloys Si ≥13%	-	328 - 984	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 262	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel SKD61, SKT4, etc. H13, etc.	40 - 50 HRC	131 - 262	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC
H	Hardened steel SKD11, SKH, etc. D2, etc.	50 - 60 HRC	66 - 197	0.002 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.6 x DC	0.25 x DC

Slotting

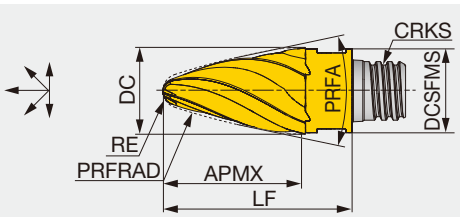
VRB, VRC, VRD

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipr) Tool diameter: DC (in) 0.312"	0.375"	0.500"	0.625"	0.750"	Depth of cut *ap* (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	164 - 230	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
P	High carbon steels 4140, etc.	- 300 HB	131 - 262	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	131 - 230	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
M	Stainless steels 304, 316, etc.	- 200 HB	98 - 197	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
K	Grey cast irons 250, 300, etc.	150 - 250 HB	164 - 394	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	164 - 394	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
N	Aluminum alloys Si < 13%	-	427 - 1312	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
N	Aluminum alloys Si ≥13%	-	230 - 656	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	66 - 131	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
S	Heat-resistant alloys Inconel 718, etc.	-	33 - 66	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
H	Hardened steel SKD61, SKT4, etc. H13, etc.	40 - 50 HRC	82 - 197	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC
H	Hardened steel SKD11, SKH, etc. D2, etc.	50 - 60 HRC	33 - 98	0.001 - 0.002	0.0016 - 0.002	0.002 - 0.0024	0.0024 - 0.0031	0.0028 - 0.0039	0.5 x DC

TUNGMEISTER

VBO...

4, 5 flute, semi finishing - finishing, long edge, high productive profiling



APMX = Max. depth of cut
CRKS = Connection screw size

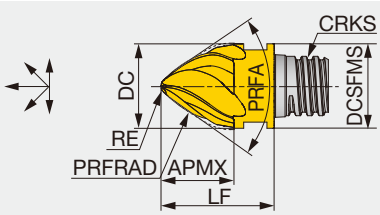
Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	PRFRAD	PRFA	CRKS	LF	Wrench	Torque
VBO080L12.0R900-4S05	●	4	30°	8	7.7	12	1	90	33.6°	S05	18	KEYV-S05	7
VBO100L15.0R850-5S06	●	5	30°	10	9.7	15	2	85	27.3°	S06	22	KEYV-S06	10
VBO120L19.0R800-5S08	●	5	30°	12	11.7	19	2	80	29.3°	S08	27	KEYV-S08	15
VBO160L25.0R750-5S10	●	5	30°	16	15.3	25	3	75	26.7°	S10	33.5	KEYV-S10	28

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

VBO...

4 flute, semi finishing - finishing, short edge, high productive profiling



APMX = Max. depth of cut
CRKS = Connection screw size

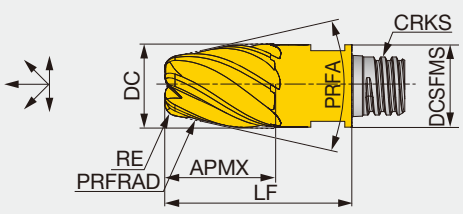
Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	PRFRAD	PRFA	CRKS	LF	Wrench	Torque
VBO100L08.0R250-4S06	●	4	30°	10	9.7	8	0.8	25	70.8°	S06	13	KEYV-S06	10
VBO120L09.0R300-4S08	●	4	30°	12	11.7	9	1.2	30	71.6°	S08	16.5	KEYV-S08	15
VBO160L13.0R400-4S10	●	4	30°	16	15.3	13	1.6	40	70.3°	S10	20.5	KEYV-S10	28

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

VBN...

6 flute, semi finishing - finishing, high productive profiling



APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	RE	PRFRAD	PRFA	CRKS	LF	Wrench	Torque
VBN100L13.0R450-6S06	●	6	35°	10	9.7	13	1.5	45	15.1°	S06	22	KEYV-S06	10
VBN120L15.0R500-6S08	●	6	35°	12	11.7	15	2	50	15.1°	S08	27	KEYV-S08	15
VBN160L18.0R600-6S10	●	6	35°	16	15.3	18	2	60	15.1°	S10	33.5	KEYV-S10	28

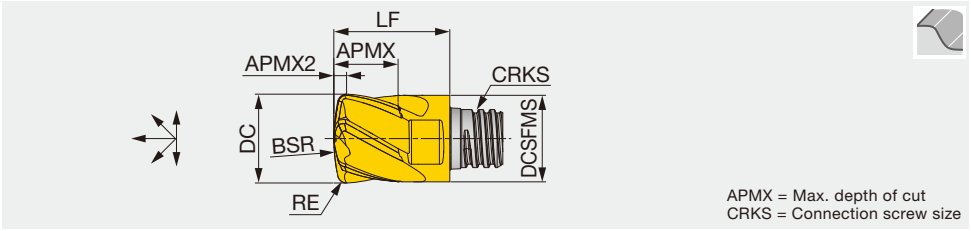
Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I034

VBL...

6 flute, semi finishing - finishing, high productive profiling



APMX = Max. depth of cut
CRKS = Connection screw size

Metric	AH715	NOF	FHA	DC	DCSFMS	APMX	APMX2	RE	BSR	CRKS	LF	Wrench	Torque
VBL080L0.90R160-6S05	●	6	30°	8	7.7	5.5	0.9	0.5	16	S05	10	KEYV-S05	7
VBL100L1.40R200-6S06	●	6	30°	10	9.7	7.5	1.42	1	20	S06	13	KEYV-S06	10
VBL120L1.50R240-6S08	●	6	30°	12	11.7	9	1.55	1	24	S08	16.5	KEYV-S08	15
VBL160L1.80R320-6S10	●	6	30°	16	15.3	12	1.8	1	32	S10	20.5	KEYV-S10	28

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

TARGET APPLICATIONS

VBO-short

Convex-curved surfaces, tapered surfaces, and surfaces consisting of combinations of a small corner radius and walls (the corner radius must be larger than the tool's nose radius).

VBO-long

Convex-curved and tapered surfaces in gentler profile than those of VBO-short.

VBN

Impellers, blisks, blades, and other aerospace parts.

Reference pages: Standard cutting conditions → I034

STANDARD CUTTING CONDITIONS

Profiling

VBO, VBN, VBL

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth: *fz* (ipt) Tool diameter: DC (in) 10 mm	12 mm	16 mm	Cusp height (in)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	328 - 656	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
P	High carbon steel 4140, etc.	- 300 HB	262 - 591	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	262 - 525	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
M	Stainless steels 304, 316, etc.	- 200 HB	197 - 328	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
K	Gray cast irons 250, 300, etc.	150 - 250 HB	328 - 722	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	328 - 722	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
N	Aluminum alloys Si < 13%	-	656 - 2297	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
N	Aluminum alloys Si ≥13%	-	328 - 984	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 262	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
S	Heat-resistant alloys Inconel718, etc.	-	66 - 131	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
H	Hardened steel H13, etc.	40 - 50 HRC	131 - 262	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 197	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004

TIPS FOR USING ON 3-AXIS MACHINES

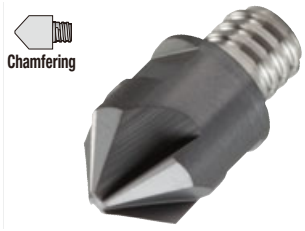
The VBO/VBN milling heads are designed for the use on 5-axis machines. However, they are also effective on 3-axis machining centers when either of the following conditions is satisfied.

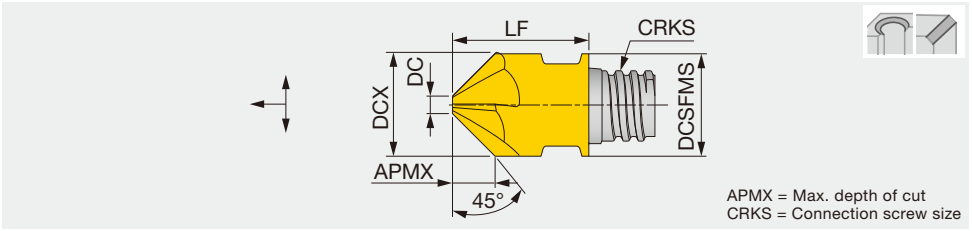
1. The angled walls or curved surfaces to be machined have tilt angles within the range specified in the chart on the right.
2. Use as a regular tapered ball mill with only the nose radius of the tool tip, and not the radius on the tool side, to be used. Please note that the working diameter will be smaller that those of a ball mill of the same working diameter.

	Designation	Applicable ranges of tilt angles on workpiece Min.	Mean	Max.
VBO-short	VBO100L08.0R250-4S06	56°	70.8°	85°
	VBO120L09.0R300-4S08	58°	71.6°	85°
	VBO160L13.0R400-4S10	56°	70.3°	85°
VBO-long	VBO100L15.0R850-5S06	20°	27.3°	35°
	VBO120L19.0R800-5S08	19°	29.3°	40°
	VBO160L25.0R750-5S10	10°	26.7°	43°
VBN	VBN100L13.0R450-6S06	0°	15.1°	29°
	VBN120L15.0R500-6S08	0°	15.1°	29°
	VBN160L18.0R600-6S10	0°	15.1°	29°

VCA**-04/06...

4, 6 flute, chamfering angle: 45°





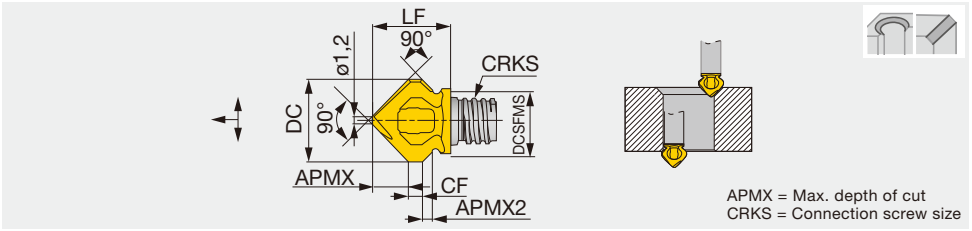
Inch	AH725	NOF	FHA	DCX	DCSFMS	APMX	DC	CRKS	LF	Wrench	Torque
VCA0375L16A45-U04S06	●	4	0°	0.375	0.375	0.150	0.073	S06	0.512	KEYV-S06	7.38

Metric	AH715	AH725	NOF	FHA	DCX	DCSFMS	APMX	DC	CRKS	LF	Wrench	Torque*
VCA100L04.0A45-04S06	●	●	4	0°	10	10	4	1.95	S06	13	KEYV-S06	10
VCA120L05.0A45-04S08	●	●	4	0°	12	12	5	1.95	S08	16.5	KEYV-S08	15
VCA127L05.3A45-04S08		●	4	0°	12.7	12.7	5.3	1.98	S08	16.5	KEYV-S08	15
VCA160L06.5A45-06S10	●	●	6	0°	16	16	6.5	3	S10	20.3	KEYV-S10	28
VCA200L07.5A45-06S12		●	6	0°	20	18.3	7.5	5	S12	25.5	KEYV-S12	28

Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package
● : Line up

VCW**-02...

2 flute, chamfering angle: 45°, back chamfering capability

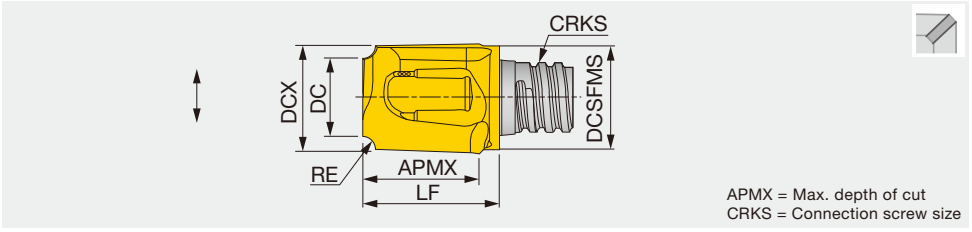


Metric	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	APMX2	CF	CRKS	LF	Wrench	Torque
VCW118L05.0A45-02S06	●	●	2	0°	11.8	9.3	5	1.2	2	S06	11.2	***KEYV-S08	10

Torque: Recommended clamping torque: N·m
*** The wrench size for these heads is different from the ones for the other head types.
Available for chamfering of reverse side.
2 pieces per package
● : Line up

VCR**-02...

2 flute, radius chamfering



Metric	AH725	NOF	FHA	DCX	DCSFMS	DC	APMX	RE	CRKS	LF	Wrench	Torque
VCR080L07.5R10-02S05	●	2	0°	8	7.6	5.8	7.5	1	S05	10.5	KEYV-S05	7
VCR100L09.5R16-02S06	●	2	0°	10	9.5	6.8	9.5	1.6	S06	12.5	KEYV-S06	10
VCR100L09.5R25-02S06	●	2	0°	10	9.5	5.1	9.5	2.5	S06	12.5	KEYV-S06	10
VCR127L12.0R30-02S08	●	2	0°	12.7	12.2	6.5	12	3	S08	15.6	KEYV-S08	15
VCR127L12.0R40-02S08	●	2	0°	12.7	12.2	4.7	12	4	S08	15.6	KEYV-S08	15
VCR160L15.0R50-02S10	●	2	0°	16	15.2	6.2	15	5	S10	19.1	KEYV-S10	28
VCR200L07.0R60-02S12	●	2	0°	20	18.3	8	7	6	S12	17.4	KEYV-S12	28

Torque: Recommended clamping torque: N·m
2 pieces per package
● : Line up

Reference pages: Standard cutting conditions → I036

STANDARD CUTTING CONDITIONS

Chamfering and countersinking (Milling, Z-feed chamfering)

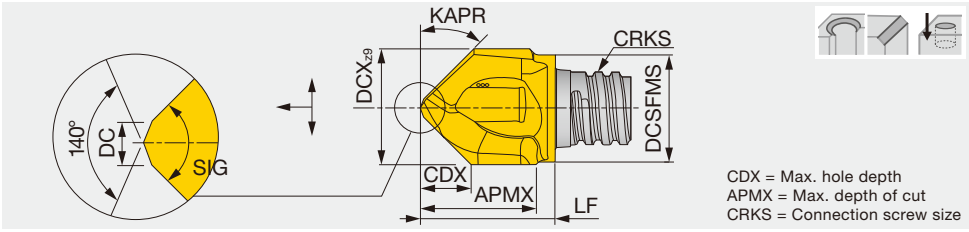
VCA, VCW, VCR

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	197 - 328	0.0024 - 0.0047
P	High carbon steels 4140,etc.	- 300 HB	164 - 262	0.0024 - 0.0047
P	Prehardened steel PX5, NAK80 etc	30 - 40 HRC	131 - 230	0.0024 - 0.0047
M	Stainless steels SUS304, SUS316, etc. 304, 316, etc.	- 200 HB	98 - 164	0.0024 - 0.0047
K	Grey cast irons 250, 300, etc.	150 - 250 HB	262 - 394	0.0024 - 0.0047
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	262 - 394	0.0024 - 0.0047
N	Aluminum alloys	-	328 - 656	0.0031 - 0.0059
S	Titanium alloys Ti-6Al-4V, etc.	-	98 - 164	0.0020 - 0.0039
S	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.0016 - 0.0031
H	Hardened steel H13, etc.	40 - 50 HRC	98 - 164	0.0020 - 0.0039
H	Hardened steel D2, etc.	50 - 60 HRC	66 - 131	0.0016 - 0.0031

TUNGMEISTER

VCP**-02...

2 flute, chamfering angle: 30°, 45°, 60°



Metric	AH715	AH725	SIG	NOF	FHA	DCX	DCSFMS	APMX	CDX	CRKS	LF	DC	KAPR	Wrench	Torque
VCP100L09.5A30-02S06		●	60°	2	0°	10	9.5	8.5	7.5	S06	11.75	1.5	60°	KEYV-S06	10
VCP120L12.0A30-02S08	●	●	60°	2	0°	12	11.5	11	9.2	S08	15.4	1.5	60°	KEYV-S08	15
VCP160L15.0A30-02S10	●	●	60°	2	0°	16	15.2	16	12	S10	20.2	2.5	60°	KEYV-S10	28
VCP080L07.7A45-02S05	●	●	90°	2	0°	8	7.6	7.5	3.7	S05	9.75	1	45°	KEYV-S05	7
VCP083L07.9A45-02S05		●	90°	2	0°	8.3	7.6	7.5	3.8	S05	10	1	45°	KEYV-S05	7
VCP100L09.0A45-02S06	●	●	90°	2	0°	10	9.5	9.5	4.4	S06	11.75	1.5	45°	KEYV-S06	10
VCP104L09.0A45-02S06		●	90°	2	0°	10.4	9.5	9.5	4.6	S06	11.75	1.5	45°	KEYV-S06	10
VCP120L12.0A45-02S08	●	●	90°	2	0°	12	11.5	11.5	5.4	S08	15.4	1.5	45°	KEYV-S08	15
VCP124L12.0A45-02S08		●	90°	2	0°	12.4	11.5	11.5	5.6	S08	15.4	1.5	45°	KEYV-S08	15
VCP160L15.0A45-02S10	●	●	90°	2	0°	16	15.2	15	7.1	S10	18.8	1.5	45°	KEYV-S10	28
VCP165L15.0A45-02S10		●	90°	2	0°	16.5	15.2	15	7.1	S10	18.8	1.5	45°	KEYV-S10	28
VCP100L09.5A60-02S06		●	120°	2	0°	10	9.5	9.5	2.7	S06	12.7	1.5	30°	KEYV-S06	10
VCP120L12.0A60-02S08	●	●	120°	2	0°	12	11.5	11.5	3.3	S08	15.2	1.5	30°	KEYV-S08	15
VCP160L15.5A60-02S10	●	●	120°	2	0°	16	15.2	16	4.4	S10	19.9	1.5	30°	KEYV-S10	28

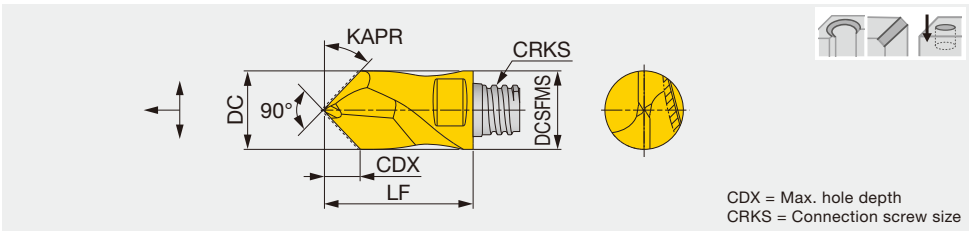
Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

Reference pages: Standard cutting conditions → I037

VDS...

2 flute, chamfering angle: 45°, helix cutting edge



CDX = Max. hole depth
CRKS = Connection screw size

Metric	AH725	NOF	FHA	DC	DCSFMS	CDX	KAPR	CRKS	LF	Wrench	Torque
VDS080A45-02S05	●	2	10°	8	7.7	3.7	45°	S05	15	KEYV-S05	7
VDS100A45-02S06	●	2	10°	10	9.7	4.4	45°	S06	19	KEYV-S06	10
VDS120A45-02S08	●	2	10°	12	11.7	5.4	45°	S08	23	KEYV-S08	15
VDS160A45-02S10	●	2	10°	16	15.3	7.1	45°	S10	28	KEYV-S10	28

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

STANDARD CUTTING CONDITIONS

Spot drill

VCP, VDS

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed *f* (ipr)
P	Carbon steel 1045, 1055, etc.	- 300 HB	197 - 328	0.0024 - 0.0047
	Alloy steel 4140, 8620, etc.	- 300 HB	164 - 262	0.0024 - 0.0047
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	131 - 230	0.0024 - 0.0047
M	Stainless steels 304, 316, etc.	- 200 HB	98 - 164	0.0024 - 0.0047
K	Gray cast irons 250, 300, etc.	150 - 250 HB	262 - 394	0.0024 - 0.0047
	Ductile cast irons 400-15S, etc.	150 - 250 HB	262 - 394	0.0024 - 0.0047
N	Aluminum alloys	-	328 - 656	0.0031 - 0.0063
S	Titanium alloys Ti-6Al-4V, etc.	-	98 - 164	0.002 - 0.0039
	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.0016 - 0.0031
H	Hardened steel H13, etc.	40 - 50 HRC	98 - 164	0.002 - 0.0039
	Hardened steel D2, etc.	50 - 60 HRC	66 - 131	0.0016 - 0.0031

TUNGMEISTER

VDP**-02...

2 flute, A/B type center

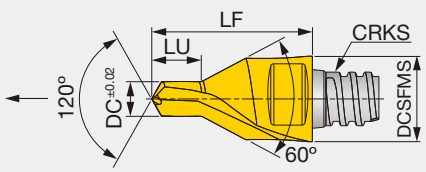


Fig. 1 Type A

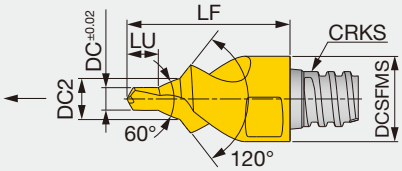


Fig. 2 Type B

CRKS = Connection screw size

Metric	AH725	NOF	FHA	DC±0.02	DC2	DCSFMS	LU	CRKS	LF	Wrench	Torque	Fig.
VDP107L1.60A30-02S04	●	2	0°	1.07	-	6	1.6	S04	10	KEYV-S05	4	1
VDP165L2.40A30-02S04	●	2	0°	1.65	-	6	2.4	S04	10	KEYV-S05	4	1
VDP207L2.90A30-02S04	●	2	0°	2.07	-	6	2.9	S04	10	KEYV-S05	4	1
VDP328L04.6A30-02S05	●	2	0°	3.28	-	8	4.6	S05	15	KEYV-S05	7	1
VDP412L05.9A30-02S06	●	2	0°	4.12	-	10	5.9	S06	19	KEYV-S06	10	1
VDP513L07.2A30-02S08	●	2	0°	5.13	-	12	7.2	S08	23	KEYV-S08	15	1
VDP646L08.9A30-02S10	●	2	0°	6.46	-	16	8.9	S10	28	KEYV-S10	28	1
VDP324L4.38B30-02S08	●	2	0°	3.24	6.77	12	4.4	S08	23	KEYV-S08	15	2
VDP409L5.60B30-02S08	●	2	0°	4.09	8.56	12.7	5.6	S08	23	KEYV-S08	15	2
VDP509L6.89B30-02S12	●	2	0°	5.09	10.69	18.45	6.9	S12	25.5	KEYV-S12	28	2
VDP641L8.63B30-02S12	●	2	0°	6.41	13.29	20	8.6	S12	25.5	KEYV-S12	28	2

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

STANDARD CUTTING CONDITIONS

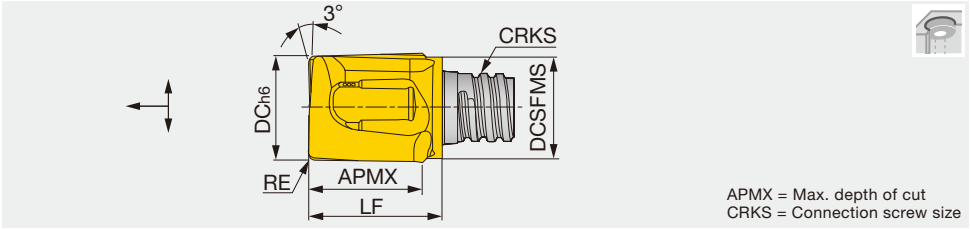
Center drill

VDP

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed : *f* (ipt) VDP107	VDP165	VDP207	VDP324 / VDP328	VDP409 / VDP412	VDP509 / VDP513	VDP641
P	Carbon steel 1045, 1055, etc.	- 300 HB	131 - 262	0.0008 - 0.0016	0.001 - 0.002	0.001 - 0.002	0.0016 - 0.0031	0.002 - 0.0039	0.002 - 0.0039	0.0024 - 0.0047
P	Alloy steel 4140, 8620, etc.	- 300 HB	98 - 164	0.0008 - 0.0016	0.001 - 0.002	0.001 - 0.002	0.0016 - 0.0031	0.002 - 0.0039	0.002 - 0.0039	0.0024 - 0.0047
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	66 - 98	0.0008 - 0.0016	0.001 - 0.002	0.001 - 0.002	0.0016 - 0.0031	0.002 - 0.0039	0.002 - 0.0039	0.0024 - 0.0047
M	Stainless steels 304, 316, etc.	- 200 HB	49 - 82	0.0006 - 0.0012	0.0008 - 0.0016	0.0008 - 0.0016	0.0016 - 0.0031	0.002 - 0.0039	0.002 - 0.0039	0.0024 - 0.0047
K	Gray cast irons 250, 300, etc.	150 - 250 HB	197 - 328	0.0008 - 0.0016	0.001 - 0.002	0.001 - 0.002	0.002 - 0.0035	0.0028 - 0.0005	0.0028 - 0.0047	0.0047 - 0.0071
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	197 - 328	0.0008 - 0.0016	0.001 - 0.002	0.001 - 0.002	0.0016 - 0.0031	0.002 - 0.0039	0.002 - 0.0039	0.0039 - 0.0059
S	Titanium alloys Ti-6Al-4V, etc.	-	49 - 82	0.0004 - 0.0008	0.0004 - 0.0008	0.0006 - 0.0012	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028
S	Heat-resistant alloys Inconel 718, etc.	-	33 - 66	0.0004 - 0.0008	0.0004 - 0.0008	0.0006 - 0.0012	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024
H	Hardened steel H13, etc.	40 - 50 HRC	49 - 82	-	-	-	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028
H	Hardened steel D2, etc.	50 - 60 HRC	33 - 66	-	-	-	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024

VGC**-02...

2 flute, for counterboring (can be used for milling)



APMX = Max. depth of cut
CRKS = Connection screw size

Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque
VGC031L31R016-U02S05	●	2	10°	0.312	0.297	0.310	0.016	S05	0.390	KEYV-S05	5.16
VGC037L38R016-U02S06	●	2	10°	0.375	0.360	0.380	0.016	S06	0.485	KEYV-S06	7.38
VGC050L43R016-U02S08	●	2	10°	0.500	0.453	0.433	0.016	S08	0.600	KEYV-S08	11.06
VGC056L46R016-U02S08	●	2	10°	0.562	0.450	0.460	0.016	S08	0.590	KEYV-S08	11.06
VGC062L60R016-U02S10	●	2	10°	0.625	0.600	0.600	0.016	S10	0.750	KEYV-S10	20.65
VGC062L60R032-U02S10	●	2	10°	0.625	0.600	0.600	0.032	S10	0.750	KEYV-S10	20.65

Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VGC078L08.0R02-02S05	●	2	10°	7.8	7.6	8	0.2	S05	10	KEYV-S05	7
VGC080L08.0R04-02S05	●	2	10°	8	7.6	8	0.4	S05	10	KEYV-S05	7
VGC080L08.0R10-02S05	●	2	10°	8	7.6	8	1	S05	10	KEYV-S05	7
VGC080L08.0R20-02S05	●	2	10°	8	7.6	8	2	S05	10	KEYV-S05	7
VGC098L09.0R03-02S06	●	2	10°	9.8	9.5	9.5	0.3	S06	12.4	KEYV-S06	10
VGC100L09.0R04-02S06	●	2	10°	10	9.5	9.5	0.4	S06	12.4	KEYV-S06	10
VGC100L09.0R10-02S06	●	2	10°	10	9.5	9.5	1	S06	12.4	KEYV-S06	10
VGC100L09.0R20-02S06	●	2	10°	10	9.5	9.5	2	S06	12.4	KEYV-S06	10
VGC120L10.0R04-02S08	●	2	10°	12	11.5	10	0.4	S08	14.2	KEYV-S08	15
VGC120L10.0R10-02S08	●	2	10°	12	11.5	10	1	S08	14.2	KEYV-S08	15
VGC120L10.0R20-02S08	●	2	10°	12	11.5	10	2	S08	14.2	KEYV-S08	15
VGC160L15.0R04-02S10	●	2	10°	16	15.2	15	0.4	S10	19	KEYV-S10	28
VGC160L15.0R08-02S10	●	2	10°	16	15.2	15	0.8	S10	19	KEYV-S10	28

Can drill with step feed (Maximum depth: *ap* x 0.5)
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up

STANDARD CUTTING CONDITIONS

Counterboring

VGC

ISO	Workpiece material	Hardness	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steels 1045, 1055, etc.	HB 300 -	131 - 262	0.002 - 0.003
	High carbon steels 4140,etc.	HB 300 -	98 - 164	0.002 - 0.003
	Prehardened steel PX5, NAK80 etc	HRC 40 - 30	66 - 98	0.002 - 0.003
M	Stainless steels 304, 316, etc.	HB 200 -	49 - 82	0.002 - 0.003
K	Grey cast irons 250, 300, etc.	HB 250 - 150	197 - 328	0.002 - 0.004
	Ductile cast irons 400-15S, etc.	HB 250 - 150	197 - 328	0.002 - 0.003
S	Titanium alloys Ti-6Al-4V etc	-	49 - 82	0.002 - 0.003
	Heat-resistant alloys Inconel 718 etc	-	33 - 66	0.001 - 0.002
H	Hardened steel SKD61, SKT4 etc H13, etc.	HRC 50 - 40	49 - 82	0.002 - 0.003
	Hardened steel SKD11, SKH etc D2, etc.	HRC 60 - 50	33 - 66	0.001 - 0.002

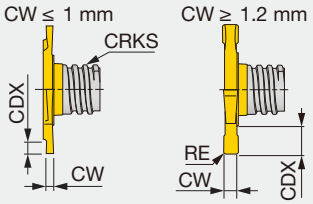
- When drilling, the step feed (pecking) operation should be applied with the depth of 0.011" - 0.019" per step.
- Apply the same cutting conditions as the VEE type head when conducting shoulder milling or slotting operations.

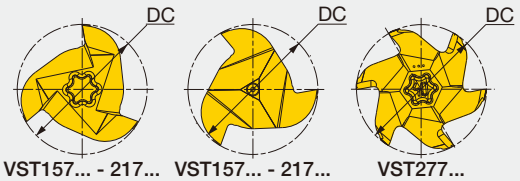
TUNGMEISTER

VST**-3...

3 flute, for slotting

Slotting





VST157... - 217... GH730 | VST157... - 217... GH130 | VST277...

CRKS = Connection screw size

Metric	GH730	AH735	NOF	FHA	DC	CW±0.02	RE	CRKS	CDX	Wrench	Torque
VST157W1.50R010-3S06	●		3	0°	15.7	1.5	0.1	S06	2.8	KEYV-177(2) / KEYV-T20(3)	10
VST157W1.57R020-3S06	●		3	0°	15.7	1.57	0.2	S06	2.8	KEYV-177(2) / KEYV-T20(3)	10
VST157W2.00R020-3S06	●		3	0°	15.7	2	0.2	S06	2.8	KEYV-177(2) / KEYV-T20(3)	10
VST157W2.39R020-3S06	●		3	0°	15.7	2.39	0.2	S06	2.8	KEYV-177(2) / KEYV-T20(3)	10
VST157W2.50R020-3S06	●		3	0°	15.7	2.5	0.2	S06	2.8	KEYV-177(2) / KEYV-T20(3)	10
VST157W3.00R020-3S06	●		3	0°	15.7	3	0.2	S06	2.8	KEYV-177(2) / KEYV-T25(3)	10
VST157W3.17R020-3S06			3	0°	15.7	3.17	0.2	S06	2.8	KEYV-177	10
VST177W1.20R005-3S06	●		3	0°	17.7	1.2(1)	0.05	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W1.40R005-3S06	●		3	0°	17.7	1.4(1)	0.05	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W1.50R010-3S06	●		3	0°	17.7	1.5	0.1	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W1.57R020-3S06	●		3	0°	17.7	1.57	0.2	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W1.70R005-3S06	●		3	0°	17.7	1.7(1)	0.05	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W2.00R020-3S06	●		3	0°	17.7	2	0.2	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W2.20R110-3S06			3	0°	17.7	2.20	1.1	S06	3.8	KEYV-177	10
VST177W2.39R020-3S06			3	0°	17.7	2.39	0.2	S06	3.8	KEYV-177	10
VST177W2.50R020-3S06	●		3	0°	17.7	2.5	0.2	S06	3.8	KEYV-177(2) / KEYV-T20(3)	10
VST177W3.00R020-3S06	●	▲	3	0°	17.7	3	0.2	S06	3.8	KEYV-177(2) / KEYV-T25(3)	10
VST177W3.17R020-3S06			3	0°	17.7	3.17	0.2	S06	3.8	KEYV-177	10

(1) CW is based on DIN471 / 472
(2) Applicable for GH130, AH735
(3) Applicable for GH730
Torque: Recommended clamping torque: N·m
2 pieces per package

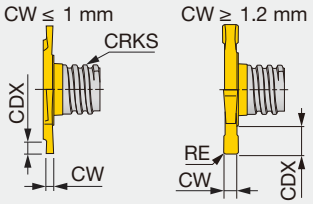
● : Line up
▲ : To be discontinued

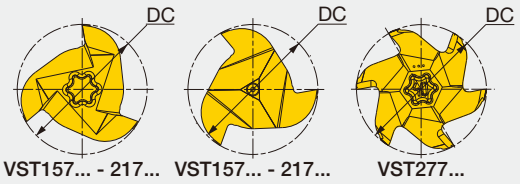
Reference pages: Standard cutting conditions → I043

VST**-4/6...

4, 6 flute, for slotting

Slotting





VST157... - 217... GH730 | VST157... - 217... GH130 | VST277...

CRKS = Connection screw size

Metric	GH730	AH735	NOF	FHA	DC	CW±0.02	RE	CRKS	CDX	Wrench	Torque
VST217W0.76R000-4S08	●		4	0°	21.7	0.76(1)	-	S08	1.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W0.86R000-4S08			4	0°	21.7	0.86(1)	-	S08	1.7	KEYV-217	15
VST217W0.96R000-4S08	●		4	0°	21.7	0.96(1)	-	S08	1.9	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.00R005-4S08	●		4	0°	21.7	1	0.05	S08	2	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.20R005-4S08	●		4	0°	21.7	1.2(1)	0.05	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.40R005-4S08	●		4	0°	21.7	1.4(1)	0.05	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.57R000-4S08	●		4	0°	21.7	1.57	-	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.70R010-4S08	●		4	0°	21.7	1.7(1)	0.1	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W1.95R020-4S08	●		4	0°	21.7	1.95(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W2.00R020-4S08	●		4	0°	21.7	2	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W2.25R020-4S08	●		4	0°	21.7	2.25(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W2.39R020-4S08	●		4	0°	21.7	2.39	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W2.50R020-4S08	●	▲	4	0°	21.7	2.5	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W2.75R020-4S08	●		4	0°	21.7	2.75(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T25(3)	15
VST217W3.00R020-4S08	●	▲	4	0°	21.7	3	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W3.17R020-4S08	●		4	0°	21.7	3.17	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W3.25R020-4S08	●		4	0°	21.7	3.25(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W4.00R020-4S08	●		4	0°	21.7	4	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W4.25R020-4S08	●		4	0°	21.7	4.25(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W4.75R020-4S08	●		4	0°	21.7	4.75	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST217W5.25R020-4S08	●		4	0°	21.7	5.25(1)	0.2	S08	4.5	KEYV-217(2) / KEYV-T30L(3)	15
VST277W2.50R020-6S10	●		6	0°	27.7	2.5	0.2	S10	6	KEYV-T40L	28
VST277W5.25R020-6S10	●		6	0°	27.7	5.25(1)	0.2	S10	6	KEYV-T40L	28
VST277W10.0R020-6S10	●		6	0°	27.7	10	0.2	S10	6	KEYV-T40L	28

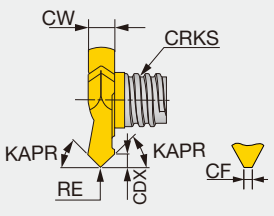
(1) CW is based on DIN471 / 472
(2) Applicable for GH130, AH735
(3) Applicable for GH730
Torque: Recommended clamping torque: N·m
2 pieces per package

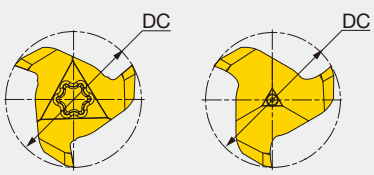
● : Line up
▲ : To be discontinued

VST**A45...

3, 4 flute, for slotting with 45°chamfer

Slotting





GH730 | GH130

CRKS = Connection screw size

Metric	GH730	NOF	FHA	DC	CW	KAPR	CRKS	CDX	CF	RE	Wrench	Torque
VST177L01.40A45-3S06	●	3	0°	17.7	3.4	45°	S06	1.4	-	0.1	KEYV-177(1) / KEYV-T25(2)	10
VST217L01.70A45-4S08	●	4	0°	21.7	5.5	45°	S08	1.7	1.5	-	KEYV-217(1) / KEYV-T30L(2)	15

(1) Applicable for GH130
(2) Applicable for GH730
Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

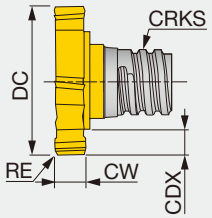
Reference pages: Standard cutting conditions → I043

TUNGMEISTER

VTB**-06...

6 flute, for T-slotting

Slotting



CRKS = Connection screw size

Inch	GH730	AH735	GH130	NOF	FHA	DC $^{0}_{-0.002"}$	CW$^{\pm 0.0008"}$	CDX	CRKS	RE	Wrench	Torque
VTB05W125R016-U06S05	●	▲	▲	6	0°	0.500	0.125	0.088	S05	0.016	KEYV-T20	5.16
VTB06W056R016-U06S06	●		▲	6	0°	0.625	0.056	0.125	S06	0.016	KEYV-T20	7.38
VTB06W063R016-U06S06	●		▲	6	0°	0.625	0.063	0.125	S06	0.016	KEYV-T20	7.38
VTB06W068R016-U06S06	●		▲	6	0°	0.625	0.068	0.125	S06	0.016	KEYV-T20	7.38
VTB06W078R016-U06S06	●		▲	6	0°	0.625	0.078	0.125	S06	0.016	KEYV-T20	7.38
VTB06W086R016-U06S06	●		▲	6	0°	0.625	0.086	0.125	S06	0.016	KEYV-T25	7.38
VTB06W105R016-U06S06	●		▲	6	0°	0.625	0.105	0.125	S06	0.016	KEYV-T25	7.38
VTB06W125R016-U06S06	●		▲	6	0°	0.625	0.125	0.125	S06	0.016	KEYV-T25	7.38
VTB06W156R016-U06S06	●		▲	6	0°	0.625	0.156	0.125	S06	0.016	KEYV-T25	7.38
VTB07W156R016-U06S08	●		▲	6	0°	0.750	0.156	0.120	S08	0.016	KEYV-T30L	11.06
VTB07W187R016-U06S08	●		▲	6	0°	0.750	0.187	0.120	S08	0.016	KEYV-T30L	11.06
VTB07W250R016-U06S08	●		▲	6	0°	0.750	0.250	0.120	S08	0.016	KEYV-T30L	11.06
VTB08W187R016-U06S08	●	▲	▲	6	0°	0.875	0.187	0.190	S08	0.015	KEYV-T40L	11.06
VTB08W250R016-U06S08	●		▲	6	0°	0.875	0.250	0.190	S08	0.015	KEYV-T40L	11.06
VTB08W312R016-U06S08	●		▲	6	0°	0.875	0.312	0.190	S08	0.015	KEYV-T40L	11.06
VTB10W187R016-U06S10	●		▲	6	0°	1.000	0.187	0.177	S10	0.015	KEYV-T50L	20.65
VTB10W250R016-U06S10	●		▲	6	0°	1.000	0.250	0.177	S10	0.015	KEYV-T50L	20.65

Metric	GH730	AH735	GH130	NOF	FHA	DC $^{0}_{-0.05}$	CW$^{\pm 0.02}$	CDX	CRKS	RE	Wrench	Torque*
VTB135W3.00R04-06S05	●		▲	6	0°	13.5	3	2.65	S05	0.4	KEYV-T20	7
VTB135W4.00R04-06S05	●		▲	6	0°	13.5	4	2.65	S05	0.4	KEYV-T20	7
VTB160W2.00R04-06S06	●		▲	6	0°	16	2	2.9	S06	0.4	KEYV-T20	10
VTB160W3.00R04-06S06	●		▲	6	0°	16	3	2.9	S06	0.4	KEYV-T25	10
VTB160W4.00R04-06S06	●		▲	6	0°	16	4	2.9	S06	0.4	KEYV-T25	10
VTB165W2.00R04-06S06	●		▲	6	0°	16.5	2	3.15	S06	0.4	KEYV-T20	10
VTB165W3.00R04-06S06	●		▲	6	0°	16.5	3	3.15	S06	0.4	KEYV-T25	10
VTB165W4.00R04-06S06	●		▲	6	0°	16.5	4	3.15	S06	0.4	KEYV-T25	10
VTB195W4.00R04-06S08	●		▲	6	0°	19.5	4	3.45	S08	0.4	KEYV-T30L	15
VTB195W5.00R04-06S08	●		▲	6	0°	19.5	5	3.45	S08	0.4	KEYV-T30L	15
VTB195W6.00R04-06S08	●		▲	6	0°	19.5	6	3.45	S08	0.4	KEYV-T30L	15
VTB225W5.00R04-06S08	●		▲	6	0°	22.5	5	4.95	S08	0.4	KEYV-T40L	15
VTB225W6.00R04-06S08	●		▲	6	0°	22.5	6	4.95	S08	0.4	KEYV-T40L	15
VTB225W8.00R04-06S08	●		▲	6	0°	22.5	8	4.95	S08	0.4	KEYV-T40L	15
VTB250W6.00R04-06S08	●		▲	6	0°	25	6	5.9	S08	0.4	KEYV-T50L	15
VTB250W8.00R04-06S08	●		▲	6	0°	25	8	5.9	S08	0.4	KEYV-T50L	15
VTB250W5.00R04-06S10	●		▲	6	0°	25	5	4.3	S10	0.4	KEYV-T50L	28
VTB250W6.00R04-06S10		▲	▲	6	0°	25	6	4.3	S10	0.4	KEYV-T50L	28
VTB250W8.00R04-06S10	●		▲	6	0°	25	8	4.3	S10	0.4	KEYV-T50L	28

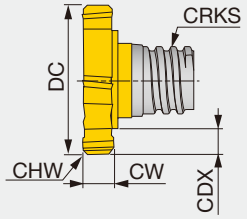
Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

● : Line up
▲ : To be discontinued

Reference pages: Standard cutting conditions → I043

6 flute, for T-slotting with 45°chamfer

Slotting



CRKS = Connection screw size

Inch	GH730	GH130	NOF	FHA	DC $^{0}_{-0.002}$"	CW$^{\pm0.0008}$"	CDX	CRKS	CHW	Wrench	Torque
VTB05W062C006-U06S05	●	▲	6	0°	0.500	0.062	0.089	S05	0.006	KEYV-T20	5.16
VTB05W078C006-U06S05	●	▲	6	0°	0.500	0.078	0.089	S05	0.006	KEYV-T20	5.16

Metric	GH730	GH130	NOF	FHA	DC $^{0}_{-0.05}$	CW$^{\pm0.02}$	CDX	CRKS	CHW	Wrench	Torque*
VTB135W2.00C15-06S05	●	▲	6	0°	13.5	2	2.65	S05	0.15	KEYV-T20	7

Torque: Recommended clamping torque: lbs·ft (*N·m)
2 pieces per package

●: Line up
▲: To be discontinued

STANDARD CUTTING CONDITIONS

Slotting

VST, VTB

ISO	Workpiece material	Hardness	VST		VTB	
			Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	262 - 591	0.002 - 0.006	262 - 591	0.003 - 0.007
P	High carbon steels 4140,etc.	- 300 HB	197 - 394	0.002 - 0.005	197 - 394	0.002 - 0.006
M	Stainless steels 304, 316, etc.	- 200 HB	164 - 394	0.002 - 0.005	164 - 394	0.002 - 0.006
K	Grey cast irons 250, 300, etc.	150 - 250 HB	328 - 656	0.002 - 0.006	328 - 656	0.003 - 0.007
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	328 - 656	0.002 - 0.005	328 - 656	0.002 - 0.006
N	Aluminum alloys Si < 13%	-	656 - 1969	0.002 - 0.006	656 - 1969	0.003 - 0.007
N	Aluminum alloys Si ≥13%	-	328 - 984	0.001 - 0.005	328 - 984	0.002 - 0.006
S	Titanium alloys Ti-6Al-4V, etc.	-	131 - 197	0.002 - 0.003	131 - 197	0.002 - 0.006
S	Heat-resistant alloys Inconel 718, etc.	-	49 - 115	0.001 - 0.004	49 - 115	0.001 - 0.004

Tolerance of tool diameter

Basic dimensions (mm)		Permissible dimensional deviations (μm)						
>	≤	e8	e9	h6	h7	h9	h10	z9
6	10	-25 -47	-25 -61	0 -9	0 -15	0 -36	0 -58	+78 +42
10	14	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+93 +50
14	18	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+103 +60
18	30	-40 -73	-40 -92	0 -13	0 -21	0 -52	0 -84	-

JISB0401-2: 1998 (ISO286-2: 1988) extract

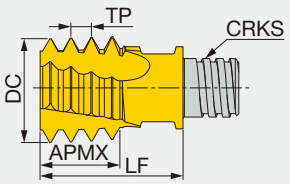
TUNGMEISTER

ISO metric (M)

VMT***IS

3 - 6 flute, full profile, for internal thread

Threading



CRKS = Connection screw size

Metric	AH725	TP	Application range	DC	NOF	APMX	LF	CRKS	Wrench	Torque
VMT100L06IS07-4S05	●	0.75	≥ M12	10	4	6	12.8	S05	KEYV-S05	7
VMT100L06IS10-4S05	●	1	≥ M12	10	4	6	12.8	S05	KEYV-S05	7
VMT100L06IS15-4S05	●	1.5	≥ M13	10	4	6	12.8	S05	KEYV-S05	7
VMT120L08IS15-4S06	●	1.5	≥ M16	12	4	7.6	14.3	S06	KEYV-S06	10
VMT120L08IS20-4S06	●	2	≥ M16	12	4	8	14.3	S06	KEYV-S06	10
VMT160L12IS15-6S08	●	1.5	≥ M20	16	6	12	19	S08	KEYV-T30L	15
VMT160L12IS20-5S08	●	2	≥ M19	16	5	12	19	S08	KEYV-T30L	15
VMT154L13IS25-5S08	●	2.5	≥ M20	15.4	5	12.7	20	S08	KEYV-S08	15
VMT160L12IS30-3S08	●	3	≥ M20	16	3	12	19	S08	KEYV-T30L	15

Torque: Recommended clamping torque: N·m
2 pieces per package

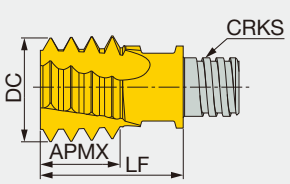
● : Line up

Unified (UN, UNC, UNF, UNEF, UNS)

VMT***UN

3, 4, 5 flute, full profile, for internal thread

Threading



CRKS = Connection screw size

Metric	AH725	TPI	Application range	DC	NOF	APMX	LF	CRKS	Wrench	Torque
VMT100L06UN24-4S05	●	24	≥ 1/2	10	4	5.3	12.8	S05	KEYV-S05	7
VMT100L06UN20-4S05	●	20	≥ 1/2	10	4	5.1	12.8	S05	KEYV-S05	7
VMT120L08UN16-4S06	●	16	≥ 5/8	12	4	8	14.3	S06	KEYV-S06	10
VMT120L10UN14-4S06	●	14	≥ 5/8	12	4	9	14.3	S06	KEYV-T25	10
VMT160L13UN12-5S08	●	12	≥ 13/16	16	5	12.7	19	S08	KEYV-T30L	15
VMT150L13UN10-4S08	●	10	≥ 3/4	15.4	4	12.7	19	S08	KEYV-T30L	15
VMT160L11UN09-3S08	●	9	≥ 7/8	16	3	11.3	19	S08	KEYV-T30L	15
VMT160L13UN08-3S08	●	8	≥ 15/16	16	3	12.7	20	S08	KEYV-S08	15

Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up

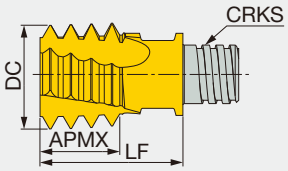
Reference pages: Standard cutting conditions → I046

Whitworth (G, Rp, BSP, PF, PS)

VMT***W

4 flute, full profile, for internal/external thread

Threading



CRKS = Connection screw size

Metric	AH725	TPI	Application range	DC	NOF	APMX	LF	CRKS	Wrench	Torque
VMT100L06W19-4S05	●	19	1/4, 3/8	10	4	5.3	12.8	S05	KEYV-S05	7
VMT160L13W14-4S08	●	14	1/2, 5/8, 3/4, 7/8	16	4	12.7	20	S08	KEYV-S08	15
VMT160L11W11-4S08	●	11	≥1	16	4	11.6	19	S08	KEYV-T30L	15

Torque: Recommended clamping torque: N·m
2 pieces per package

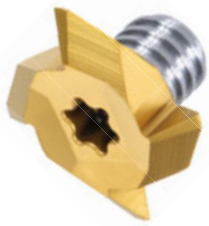
● : Line up

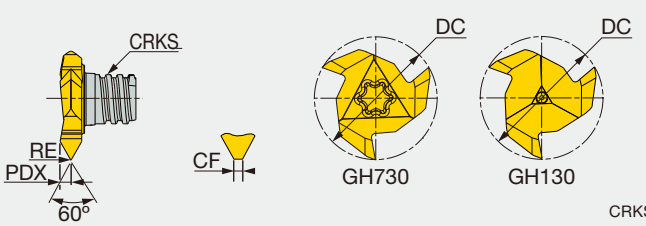
60° partial profile

VTR***IS

3, 4 flute, partial profile, for internal/external thread

Threading





CRKS = Connection screw size

Metric	GH730	GH130	TP TPN	TP TPX	Smallest Possible thread	DC	NOF	RE	CF	PDX	CRKS	Wrench	Torque
VTR160L12IS05-3S06	●	▲	0.5	2	M20	15.7	3	-	0.05	1.4	S06	KEYV-177(1) / KEYV-T25(2)	10
VTR160L12IS15-3S06	●	▲	1.5	2	M22	15.7	3	0.05	-	1.4	S06	KEYV-177(1) / KEYV-T25(2)	10
VTR220L28IS30-4S08	●	▲	3	4.5	M36	21.7	4	0.2	-	2.8	S08	KEYV-217(1) / KEYV-T30L(2)	15

(1) Applicable for GH130
(2) Applicable for GH730
Torque: Recommended clamping torque: N·m
2 pieces per package

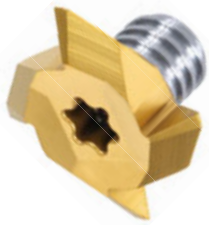
● : Line up
▲ : To be discontinued

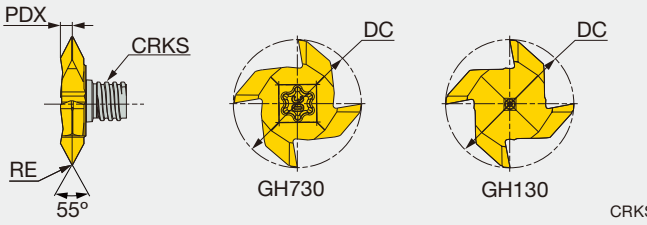
55° partial profile

VTR***W

4 flute, partial profile, for internal/external thread

Threading





CRKS = Connection screw size

Metric	GH730	GH130	TPI TPIN	TPI TPIX	Smallest Possible thread	DC	NOF	RE	PDX	CRKS	Wrench	Torque
VTR220L24W14-4S08	●	▲	14	11	3/4	21.7	4	0.2	2.4	S08	KEYV-217(1) / KEYV-T30L(2)	15

(1) Applicable for GH130
(2) Applicable for GH730
Torque: Recommended clamping torque: N·m
2 pieces per package

● : Line up
▲ : To be discontinued

Reference pages: Standard cutting conditions → I046

STANDARD CUTTING CONDITIONS

Threading

VMT, VTR

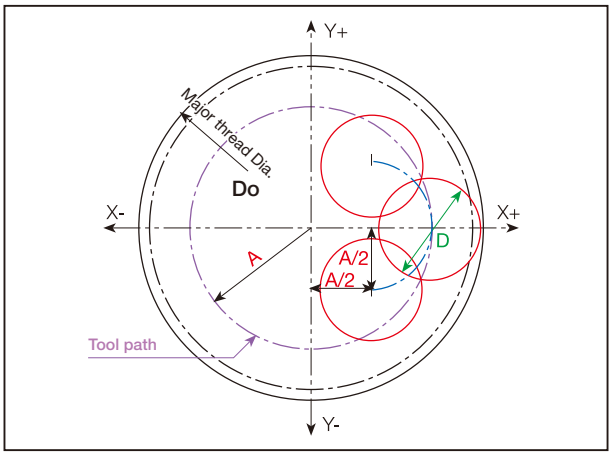
ISO	Material		Condition	Tensile strength [N/mm²]	Hardness HB	Cutting speed (sfm)	Tool dia. (in) / Feed (ipt) ø10 (0.394")	ø12 (0.472")	ø15.4 (0.606"), ø15.7 (0.618"), ø16 (0.630")	ø21.7 (0.787")
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	328 - 820	0.0031	0.0035	0.0047	0.0059
		≥ 0.25 %C	Annealed	650	190	262 - 689	0.0031	0.0035	0.0047	0.0059
		< 0.55 %C	Quenched and tempered	850	250	213 - 558	-	-	-	-
		≥ 0.55 %C	Annealed	750	220	361 - 591	0.0028	0.0031	0.0039	0.0047
			Quenched and tempered	1000	300	312 - 525	0.0028	0.0031	0.0039	0.0047
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	295 - 525	0.002	0.002	0.0028	0.0031
			Quenched and tempered	930	275	213 - 656	0.002	0.002	0.0028	0.0031
				1000	300	230 - 689	0.002	0.002	0.0028	0.0031
				1200	350	312 - 525	0.002	0.002	0.0028	0.0031
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	427 - 558	0.002	0.002	0.0028	0.0031
			Quenched and tempered	1100	325	246 - 328	0.002	0.002	0.0028	0.0031
	Stainless steel and cast steel		Ferritic/martensitic	680	200	361 - 558	0.002	0.002	0.0028	0.0031
			Martensitic	820	240	230 - 509	0.002	0.002	0.0028	0.0031
M	Stainless steel		Annealed	600	180	279 - 328	0.002	0.002	0.0028	0.0031
K	Cast iron nodular (GGG)		Ferritic/martensitic	-	180	394 - 525	0.0031	0.0035	0.0047	0.0059
			Pearlitic	-	260	246 - 525	0.0031	0.0035	0.0047	0.0059
	Gray cast iron (GG)		Ferritic	-	160	230 - 492	0.0031	0.0035	0.0047	0.0059
			Pearlitic	-	250	361 - 459	0.0031	0.0035	0.0047	0.0059
	Malleable cast iron		Ferritic	-	130	394 - 525	0.0031	0.0035	0.0047	0.0059
			Pearlitic	-	230	361 - 459	0.0031	0.0035	0.0083	0.0059
N	Aluminum-wrought alloy		Not cureable	-	60	525 - 984	0.0031	0.0035	0.0047	0.0059
			Cured	-	100	-	-	-	-	-
	Aluminum-cast, alloyed	≤12% Si	Not cureable	-	75	492 - 1148	0.0031	0.0035	0.0047	0.0059
			Cured	-	90	-	-	-	-	-
		>12% Si	High temperature	-	130	328 - 820	0.002	0.002	0.0028	0.0031
	Copper alloys	>1% Pb	Free cutting	-	110	-	-	-	-	-
			Brass	-	90	-	-	-	-	-
			Electrolitic copper	-	100	-	-	-	-	-
	Non-metallic		Duroplastics, fiber plastics	-	-	328 - 1312	0.0043	0.0047	0.0059	0.0071
			Hard rubber	-	-	-	-	-	-	-
S	High temp. alloys	Fe based	Annealed	-	200	-	-	-	-	-
			Cured	-	280	-	-	-	-	-
		Ni or Co based	Annealed	-	250	66 - 262	0.0012	0.0012	0.0016	0.0016
			Cured	-	350	-	-	-	-	-
			Cast	-	320	-	-	-	-	-
	Titanium Ti alloys			RM 400	-	-	-	-		-
			Alpha+beta alloys cured	RM 1050	-	66 - 262	0.0012	0.0012	0.0016	0.0016
H	Hardened steel		Hardened	-	55 HRC	180 - 213	-	-	-	-
			Hardened	-	60 HRC	148 - 180	-	-	-	-
	Chilled cast iron		Cast	-	400	295 - 344	-	-	-	-
	Cast iron		Hardened	-	55 HRC	180 - 213	-	-	-	-

Thread Milling CNC Program for Internal Thread

Right-hand thread (climb milling) from bottom up. Program is based on tool center.
This method of programming needs no tool radius compensation value, other than an offset for wear.

General Program

G90 G00 G54 G43 H1X0 Y0 Z10 S (n : Number of revolutions)
G00 Z-(to thread depth)
G01 G91 G41 D1 X (A/2) Y-(A/2) Z0 F (Center of tool)
G03 X(A/2) Y(A/2) R (A/2) Z(1/8 pitch) F (Cutting edge)
G03 X0 Y0 I -(A) J0 Z (pitch)
G03 X-(A/2) Y(A/2) R (A/2) Z(1/8 pitch)
G01 G40 X -(A/2) Y-(A/2) Z0
G90 X0 Y0 Z0



$$A = \frac{Do - D}{2}$$

A = Radius of tool path
Do = Major thread diameter
D = Cutting diameter

F (Center of tool) = n x *f* x z

F (Cutting edge) = $\frac{Do - D}{Do}$ x n x *f* x z

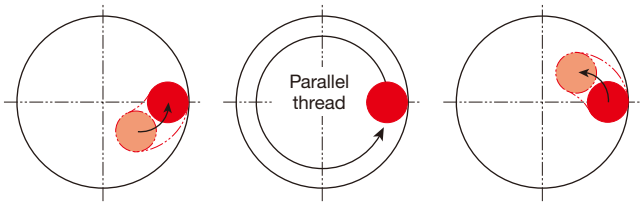
n : Number of revolutions
f : rev / tooth
z : Number of edge

Internal Thread

Example: M20x2.0 **IN-RH** (Thread depth 20 mm)
Tool : **MTEC1010C27 2.0ISO**
(Cutting dia. 10 mm)
A=(**Do**-**D**)/2=(20-10)/2=5
A/2=2.5
(Tool compensation of radius=0)

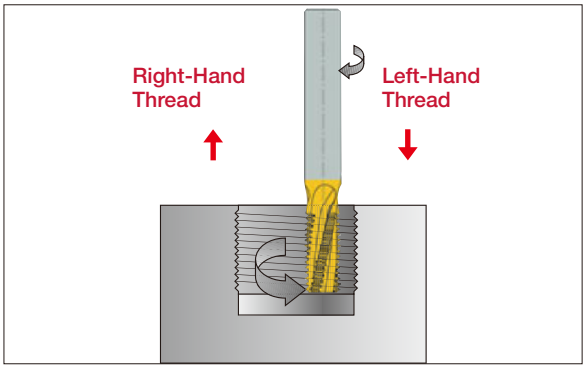
G90 **G0** G54 G43 G17 **H1X0** **Y0** **Z10** S4000
G0 **Z**-20
G01 G91 G41 **D1X** 2.5 **Y**-2.5 **Z0** F840
G03 **X**2.5 **Y**2.5 **R**2.5 **Z**0.25 F420
G03 **X0** **Y0** **I**-5.0 **J0** **Z**2.0
G03 **X**-2.5 **Y**2.5 **R**2.5 **Z**0.25
G01 G40 **X**-2.5 **Y**-2.5 **Z0**
G90 **G0** **X0** **Y0** **Z0**
M30
%

Machining procedure

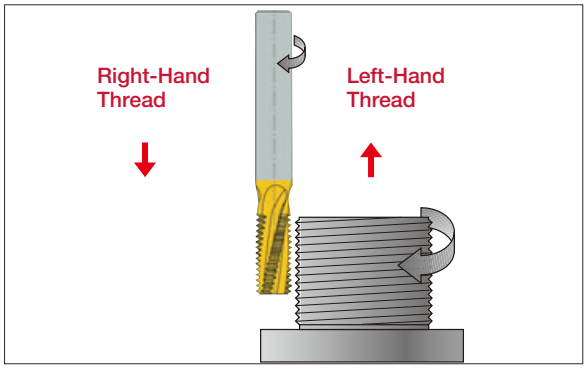


(a) Tool approach (b) Machining thread (c) Tool retraction

Internal Thread



External Thread



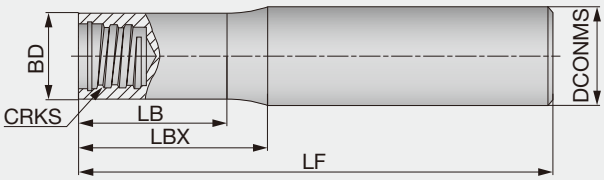
A thread milling operation is applicable for thread cutting in non-symmetrical parts utilizing the advantage of helical interpolation programs on modern machining centers.

For more details, please check ThreadMilling advisor.

TUNGMEISTER

VSS...

Straight neck and cylindrical shank

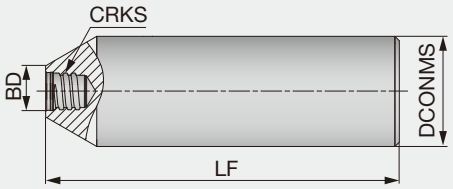


CRKS = Connection screw size

Inch	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material
VSS031L250S05US	0.312	0.300	2.500	0.590	0.567	S05	Cylindrical	Steel
VSS031L300S05UC	0.312	0.300	3.000	1.000	0.950	S05	Cylindrical	Carbide
VSS031L350S05UC	0.312	0.300	3.500	1.500	1.450	S05	Cylindrical	Carbide
VSS031L400S05UC	0.312	0.300	4.000	2.000	1.950	S05	Cylindrical	Carbide
VSS031L300S05UW	0.312	0.299	3.000	1.000	0.978	S05	Cylindrical	Tungsten
VSS031L450S05UW	0.312	0.299	4.500	2.000	1.978	S05	Cylindrical	Tungsten
VSS037L300S06US	0.375	0.364	3.000	0.787	0.768	S06	Cylindrical	Steel
VSS037L400S06UC	0.375	0.364	4.000	1.250	1.200	S06	Cylindrical	Carbide
VSS037L475S06UC	0.375	0.364	4.750	2.000	1.950	S06	Cylindrical	Carbide
VSS037L355S06UW	0.375	0.364	3.550	0.750	0.680	S06	Cylindrical	Tungsten
VSS050L350S08US	0.500	0.480	3.540	0.630	0.530	S08	Cylindrical	Steel
VSS050L400S08UC	0.500	0.480	4.000	1.500	1.400	S08	Cylindrical	Carbide
VSS050L550S08UC	0.500	0.480	5.500	2.500	2.450	S08	Cylindrical	Carbide
VSS050L425S08UW	0.500	0.480	4.252	0.630	0.594	S08	Cylindrical	Tungsten
VSS062L400S10US	0.625	0.598	4.000	0.787	0.744	S10	Cylindrical	Steel
VSS062L325S10UC	0.625	0.600	3.250	1.250	1.180	S10	Cylindrical	Carbide
VSS062L450S10UC	0.625	0.600	4.500	2.500	2.430	S10	Cylindrical	Carbide
VSS062L550S10UC	0.625	0.600	5.500	3.500	3.430	S10	Cylindrical	Carbide
VSS062L700S10UC	0.625	0.600	7.000	5.000	4.930	S10	Cylindrical	Carbide
VSS075L500S12US	0.750	0.720	5.000	1.000	0.880	S12	Cylindrical	Steel
VSS075L400S12UC	0.750	0.720	4.000	1.500	1.430	S12	Cylindrical	Carbide
VSS075L550S12UC	0.750	0.720	5.500	3.000	2.930	S12	Cylindrical	Carbide
VSS075L800S12UC	0.750	0.720	8.000	4.500	4.430	S12	Cylindrical	Carbide
VSS100L537S15US	1.000	0.957	5.375	1.375	1.313	S15	Cylindrical	Steel
VSS100L475S15UC	1.000	0.957	4.750	2.375	2.313	S15	Cylindrical	Carbide
VSS100L675S15UC	1.000	0.957	6.750	4.000	3.938	S15	Cylindrical	Carbide
VSS100L1000S15UC	1.000	0.957	10.000	6.000	5.938	S15	Cylindrical	Carbide

VSSD...

High rigidity shank



CRKS = Connection screw size

Metric	DCONMS	BD	LF	CRKS	Shank shape	Shank material
VSSD06L050S04-S	6	5.8	50	S04	Cylindrical	Steel
VSSD06L060S04-C	6	5.8	60	S04	Cylindrical	Carbide
VSSD08L050S04-S	8	5.8	50	S04	Cylindrical	Steel
VSSD08L060S04-C	8	5.8	60	S04	Cylindrical	Carbide
VSSD10L055S05-S	10	7.6	55	S05	Cylindrical	Steel
VSSD12L065S06-S	12	9.6	65	S06	Cylindrical	Steel
VSSD16L065S08-S	16	11.6	65	S08	Cylindrical	Steel
VSSD20L070S10-S	20	15.3	70	S10	Cylindrical	Steel
VSSD25L075S12-S	25	18.3	75	S12	Cylindrical	Steel
VSSD32L100S15-S	32	23.9	100	S15	Cylindrical	Steel
VSSD40L100S21-S	40	30	100	S21	Cylindrical	Steel

VSSD...

Straight neck and cylindrical shank

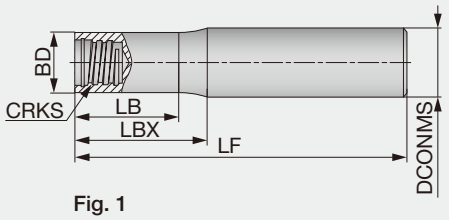


Fig. 1

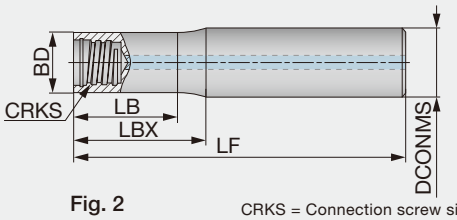


Fig. 2

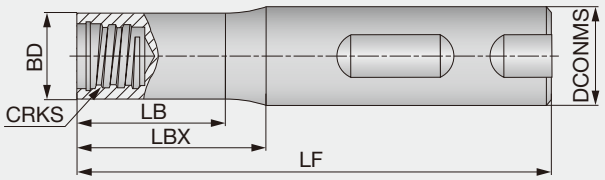
CRKS = Connection screw size

Metric	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material	Fig.
VSSD08L060S05-S	8	7.6	60	15	12.8	S05	Cylindrical	Steel	1
VSSD08L070S05-C	8	7.6	70	20	19	S05	Cylindrical	Carbide	1
VSSD08L090S05-C	8	7.6	90	40	39	S05	Cylindrical	Carbide	1
VSSD08L110S05-C	8	7.6	110	60	59	S05	Cylindrical	Carbide	1
VSSD10L070S06-C	10	9.6	70	20	18.5	S06	Cylindrical	Carbide	1
VSSD10L075S06-S	10	9.6	75	20	19.4	S06	Cylindrical	Steel	1
VSSD10L090S06-C	10	9.6	90	40	38.5	S06	Cylindrical	Carbide	1
VSSD10L110S06-C	10	9.6	110	60	58.5	S06	Cylindrical	Carbide	1
VSSD10L150S06-C	10	9.6	150	100	98.5	S06	Cylindrical	Carbide	1
VSSD12L070S08-C	12	11.5	70	20	17	S08	Cylindrical	Carbide	1
VSSD12L070S08-C-A	12	11.5	70	20	17	S08	Cylindrical	Carbide	2
VSSD12L090S08-C	12	11.5	90	40	37	S08	Cylindrical	Carbide	1
VSSD12L090S08-S	12	11.5	90	16	13.6	S08	Cylindrical	Steel	1
VSSD12L090S08-S-A	12	11.5	90	16	13.6	S08	Cylindrical	Steel	2
VSSD12L090LS08-C-A	12	11.5	90	40	37	S08	Cylindrical	Carbide	2
VSSD12L090LS08-S-A	12	11.5	90	42	37	S08	Cylindrical	Steel	2
VSSD12L110S08-C	12	11.5	110	60	58	S08	Cylindrical	Carbide	1
VSSD12L110S08-C-A	12	11.5	110	60	57	S08	Cylindrical	Carbide	2
VSSD12L130S08-C	12	11.5	130	80	78	S08	Cylindrical	Carbide	1
VSSD12L130S08-C-A	12	11.5	130	80	77	S08	Cylindrical	Carbide	2
VSSD16L090S10-C	16	15.2	90	40	38	S10	Cylindrical	Carbide	1
VSSD16L090S10-C-A	16	15.2	90	40	38	S10	Cylindrical	Carbide	2
VSSD16L100S10-S	16	15.2	100	20	18	S10	Cylindrical	Steel	1
VSSD16L100S10-S-A	16	15.2	100	20	18	S10	Cylindrical	Steel	2
VSSD16L100LS10-S-A	16	15.2	100	42	38	S10	Cylindrical	Steel	2
VSSD16L110S10-C	16	15.2	110	60	58	S10	Cylindrical	Carbide	1
VSSD16L110S10-C-A	16	15.2	110	60	58	S10	Cylindrical	Carbide	2
VSSD16L130S10-C	16	15.2	130	80	78	S10	Cylindrical	Carbide	1
VSSD16L130S10-C-A	16	15.2	130	80	78	S10	Cylindrical	Carbide	2
VSSD16L150S10-C	16	15.2	150	100	98	S10	Cylindrical	Carbide	1
VSSD20L090S12-C	20	18.3	90	40	37	S12	Cylindrical	Carbide	1
VSSD20L120S12-S	20	18.3	120	25	20.5	S12	Cylindrical	Steel	1
VSSD20L130S12-C	20	18.3	130	80	77	S12	Cylindrical	Carbide	1
VSSD20L200S12-C	20	18.3	200	120	117	S12	Cylindrical	Carbide	1
VSSD25L120S15-C	25	23.9	120	60	58	S15	Cylindrical	Carbide	1
VSSD25L135S15-S	25	23.9	135	35	33	S15	Cylindrical	Steel	1
VSSD25L170S15-C	25	23.9	170	100	98	S15	Cylindrical	Carbide	1
VSSD25L250S15-C	25	23.9	250	150	148	S15	Cylindrical	Carbide	1
VSSD32L100S21-S	32	30	100	35	32	S21	Cylindrical	Steel	1
VSSD32L150S21-S	32	30	150	54	50	S21	Cylindrical	Steel	1

TUNGMEISTER

VSSD**-W...

Straight neck and weldon shank



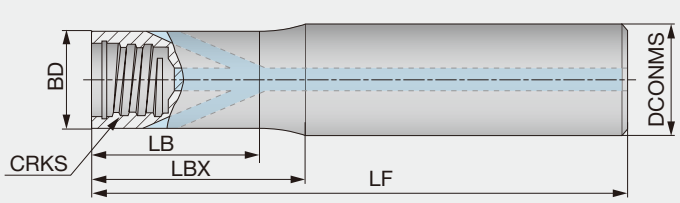
CRKS = Connection screw size

Inch	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material
VSS050L218W05US	0.500	0.299	2.185	0.174	-	S05	Weldon	Steel
VSS062L258W06US	0.625	0.366	2.559	0.226	-	S06	Weldon	Steel
VSS062L258W08US	0.625	0.480	2.559	0.125	-	S08	Weldon	Steel
VSS075L275W10US	0.750	0.598	2.756	0.131	-	S10	Weldon	Steel
VSS100L300W12US	1.000	0.720	3.000	0.283	-	S12	Weldon	Steel

Metric	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material
VSSD12L055W05-S	12	7.6	55	3.8	-	S05	Weldon	Steel
VSSD16L065W06-S	16	9.6	65	6	-	S06	Weldon	Steel
VSSD16L065W08-S	16	11.5	65	4	-	S08	Weldon	Steel
VSSD20L070W10-S	20	15.2	70	4	-	S10	Weldon	Steel
VSSD25L075W12-S	25	18.3	75	6	-	S12	Weldon	Steel

VSSD**-W-A...

Straight shank and neck with coolant hole

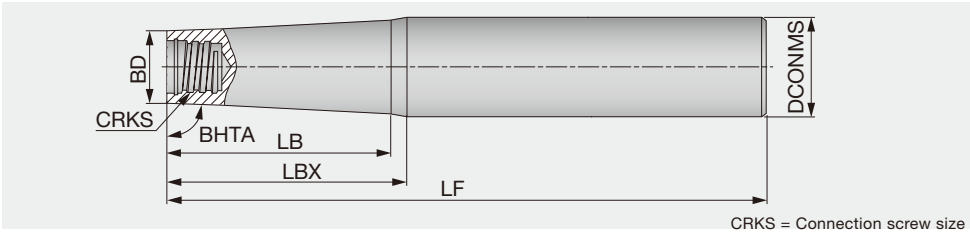


CRKS = Connection screw size

Metric	DCONMS	BD	LF	LBX	LB	CRKS	Shank material
VSSD10L070S06-W-A	10	9.6	70	20	19	S06	Tungsten
VSSD10L090S06-W-A	10	9.6	90	40	39	S06	Tungsten
VSSD10L110S06-W-A	10	9.6	110	60	59	S06	Tungsten
VSSD12L070S08-W-A	12	11.5	70	20	19	S08	Tungsten
VSSD12L090S08-W-A	12	11.5	90	40	39	S08	Tungsten
VSSD12L110S08-W-A	12	11.5	110	60	59	S08	Tungsten
VSSD12L130S08-W-A	12	11.5	130	80	79	S08	Tungsten
VSSD16L070S10-W-A	16	15.2	70	20	18.5	S10	Tungsten
VSSD16L090S10-W-A	16	15.2	90	40	36.5	S10	Tungsten
VSSD16L110S10-W-A	16	15.2	110	60	58.5	S10	Tungsten
VSSD16L130S10-W-A	16	15.2	130	80	78.5	S10	Tungsten
VSSD20L090S12-W-A	20	18.3	90	40	37	S12	Tungsten
VSSD20L130S12-W-A	20	18.3	130	80	77	S12	Tungsten

VTS...

Tapered neck and cylindrical shank



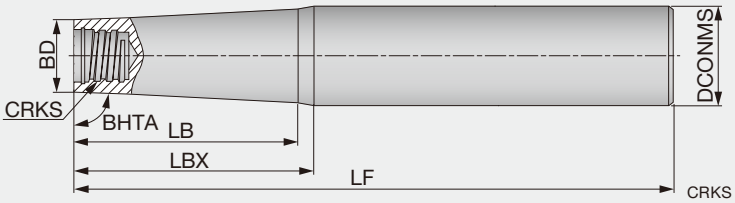
CRKS = Connection screw size

Inch	BHTA	DCONMS	BD	LF	LBX	LB	CRKS	Shank material
VTS050L300S05US	85°	0.500	0.300	3.000	1.000	0.930	S05	Steel
VTS050L400S05US	89°	0.500	0.300	4.000	1.500	1.300	S05	Steel
VTS062L500S06US	85°	0.625	0.370	5.000	1.380	1.283	S06	Steel
VTS062L630S06US	89°	0.625	0.364	6.300	2.170	1.750	S06	Steel
VTS062L550S08US	85°	0.625	0.480	5.500	0.870	0.770	S08	Steel
VTS075L650S08US	89°	0.750	0.480	6.500	3.150	2.770	S08	Steel
VTS075L550S10US	85°	0.750	0.598	5.500	0.880	-	S10	Steel
VTS100L670S10US	89°	1.000	0.598	6.700	2.295	-	S10	Steel
VTS075L750S10US	89°	0.750	0.600	7.500	3.150	2.950	S10	Steel
VTS100L630S12US	89°	1.000	0.720	6.300	1.600	-	S12	Steel
VTS100L800S12US	89°	1.000	0.720	8.000	3.750	3.400	S12	Steel
VTS125L600S15US	85°	1.250	0.957	6.000	1.750	1.594	S15	Steel
VTS125L750S12US	89°	1.250	0.720	7.500	3.150	-	S12	Steel
VTS037L350S05UC	89°	0.375	0.300	3.500	1.500	-	S05	Carbide
VTS050L450S05UC	89°	0.500	0.300	4.500	2.500	2.354	S05	Carbide
VTS062L600S05UC	89°	0.625	0.300	6.000	4.000	3.900	S05	Carbide
VTS050L550S06UC	89°	0.500	0.364	5.500	2.500	2.470	S06	Carbide
VTS062L650S06UC	89°	0.625	0.364	6.500	3.500	3.380	S06	Carbide
VTS062L650S08UC	89°	0.625	0.480	6.500	3.500	3.440	S08	Carbide
VTS075L700S08UC	89°	0.750	0.480	7.000	4.000	3.900	S08	Carbide
VTS075L650S10UC	89°	0.750	0.600	6.500	4.000	-	S10	Carbide
VTS075L880S10UC	89°	0.750	0.600	8.800	6.300	6.240	S10	Carbide
VTS100L1000S12UC	89°	1.000	0.720	10.000	5.500	-	S12	Carbide
VTS125L1000S15UC	89°	1.250	0.957	10.000	6.000	-	S15	Carbide
VTS125L1200S15UC	89°	1.250	0.941	12.000	8.000	-	S15	Carbide
VTS075L550S06UW	85°	0.750	0.370	5.500	2.240	-	S06	Tungsten
VTS062L670S06UW	89°	0.625	0.364	6.700	2.180	1.770	S06	Tungsten
VTS075L670S08UW	89°	0.750	0.480	6.700	3.150	2.770	S08	Tungsten

TUNGMEISTER

VTSD...

Taper neck and straight shank

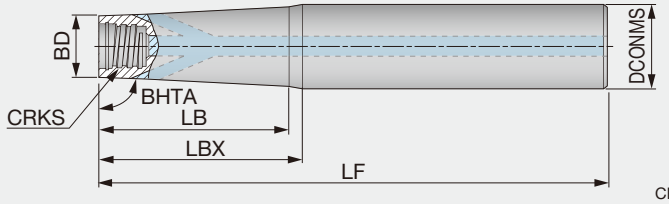


CRKS = Connection screw size

Metric	BHTA	DCONMS	BD	LF	LBX	LB	CRKS	Shank material
VTSD08L080S04-S	87.4°	8	5.8	80	24	-	S04	Steel
VTSD12L080S05-S	85°	12	7.6	80	25	-	S05	Steel
VTSD12L100S05-S	89°	12	7.6	100	35	29	S05	Steel
VTSD12L110S05-C	89°	12	7.6	110	60	56	S05	Carbide
VTSD12L130S05-C	89°	12	7.6	130	80	77	S05	Carbide
VTSD16L125S06-S	85°	16	9.6	125	34	31	S06	Steel
VTSD16L130S08-C	89°	16	11.5	130	80	76.5	S08	Carbide
VTSD16L140S08-S	85°	16	11.5	140	22	19	S08	Steel
VTSD16L150S05-C	89°	16	7.6	150	100	91	S05	Carbide
VTSD16L150S06-C	89°	16	9.6	150	100	94.5	S06	Carbide
VTSD16L150S08-C	89°	16	11.5	150	100	98	S08	Carbide
VTSD16L160S06-S	89°	16	9.6	160	55	46.5	S06	Steel
VTSD16L170S06-C	89°	16	9.6	170	120	116.5	S06	Carbide
VTSD20L140S10-S	85°	20	15.2	140	27.5	-	S10	Steel
VTSD20L170S08-C	89°	20	11.5	170	120	112	S08	Carbide
VTSD20L170S08-S	89°	20	11.5	170	80	69.5	S08	Steel
VTSD20L170S10-C	89°	20	15.2	170	120	119	S10	Carbide
VTSD20L190S10-C	89°	20	15.2	190	140	-	S10	Carbide
VTSD20L190S10-S	89°	20	15.2	190	80	73	S10	Steel
VTSD20L210S10-C	89°	20	15.2	210	160	-	S10	Carbide
VTSD25L160S12-S	85°	25	18.3	160	40	-	S12	Steel
VTSD25L170S10-S	85°	25	15.2	170	56	-	S10	Steel
VTSD25L180S12-C	89°	25	18.3	180	120	115	S12	Carbide
VTSD25L210S12-S	89°	25	18.3	210	100	94.5	S12	Steel
VTSD25L250S12-C	89°	25	18.3	250	140	136.5	S12	Carbide
VTSD32L155S15-S	85°	32	23.9	155	45	-	S15	Steel
VTSD32L190S12-S	85°	32	18.3	190	80	-	S12	Steel
VTSD32L220S15-S	88°	32	23.9	220	100	-	S15	Steel
VTSD32L250S15-C	89°	32	23.9	250	150	145	S15	Carbide
VTSD32L300S15-C	89°	32	23.9	300	200	198	S15	Carbide
VTSD40L150S21-S	85°	40	30	150	57	-	S21	Steel

VTSD**-W-A...

Straight shank and taper neck with coolant hole

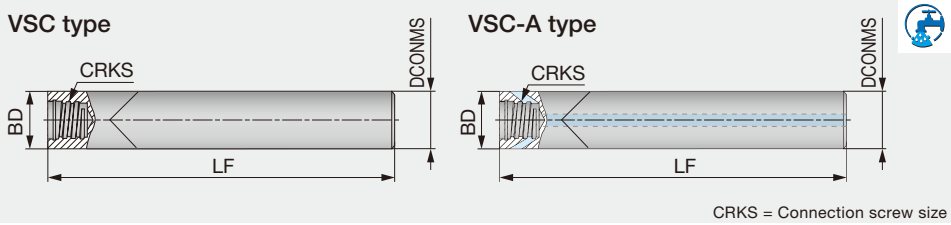


CRKS = Connection screw size

Metric	BHTA	DCONMS	BD	LF	LBX	LB	CRKS	Shank material
VTSD12L110S06-W-A	89°	12	9.6	110	60	59	S06	Tungsten
VTSD16L170S06-W-A	89°	16	9.6	170	120	116	S06	Tungsten

VSC...

Straight shank for VST type slotting heads



CRKS = Connection screw size

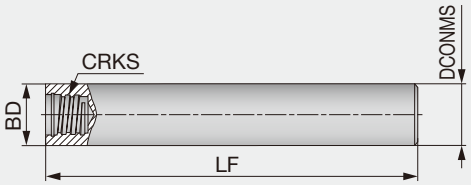
Inch	DCONMS	BD	LF	CRKS	Air hole	Shank material
VSC095L080S06-C	0.375	0.375	3.150	S06	without	Carbide
VSC127L120S08-C-A	0.500	0.500	4.724	S08	with	Carbide

Metric	DCONMS	BD	LF	CRKS	Air hole	Shank material
VSC100L100S06-C	10	10	100	S06	without	Carbide
VSC120L100S08-C-A	12	12	100	S08	with	Carbide

For VSC-C type shank, just VST slotting head is recommended.
If other heads are used on the VSC-C shank, the depth of cut must be smaller than the max. *ap* in each head.
The VSC-C type shank does not have external clearance, so the shank may interfere with the work piece.

VSTD...

Straight shank for VTB type T-slotting heads



CRKS = Connection screw size

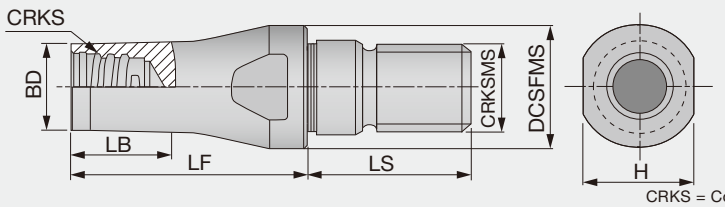
Inch	DCONMS	BD	LF	CRKS	Shank material
VST031L275S05US	0.312	0.312	2.750	S05	Steel
VST037L325S06US	0.375	0.375	3.250	S06	Steel
VST050L375S08US	0.500	0.500	3.750	S08	Steel
VST062L400S10US	0.625	0.625	4.000	S10	Steel

Metric	DCONMS	BD	LF	CRKS	Shank material
VSTD06L070S04-S	6	6	70	S04	Steel
VSTD08L070S05-S	8	8	70	S05	Steel
VSTD10L080S06-S	10	10	80	S06	Steel
VSTD12L090S08-S	12	12	90	S08	Steel
VSTD16L100S10-S	16	16	100	S10	Steel

For VSTD type shank, just VTB T-slotting head is recommended.
If other heads are used on the VSTD shank, the depth of cut must be smaller than the max. *ap* in each head.
The VSTD type shank does not have external clearance, so the shank may interfere with the work piece.

VAD**-M...

TungFlex conversion adaptor

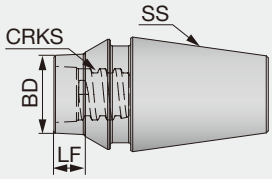


CRKS = Connection screw size

Metric	BD	DCSFMS	LF	LS	LB	CRKS	CRKSMS	H	Shank material
VAD130L016S08-S-M8	11.7	13	16	17.5	6	S08	M8	11	Steel
VAD130L025S08-S-M8	11.7	13	25	17.5	20	S08	M8	11	Steel
VAD180L020S08-S-M10	11.7	18	20	20	12	S08	M10	13	Steel
VAD180L025S08-S-M10	11.7	18	25	20	15	S08	M10	11	Steel
VAD210L020S08-S-M12	11.7	21	20	20	10	S08	M12	12.75	Steel
VAD210L025S08-S-M12	11.7	21	25	20	13	S08	M12	12.75	Steel

VER...

Straight neck with ER11/16 collet



CRKS = Connection screw size

Metric	SS	BD	LF	CRKS	Shank material
VER11AL006S04-S	ER11	5.8	6	S04	Steel
VER11AL006S05-S	ER11	7.9	6	S05	Steel
VER11AL020S05-S	ER11	7.9	20	S05	Steel
VER16AL012S05-S	ER16	7.9	12	S05	Steel
VER16AL020S05-S	ER16	7.9	20	S05	Steel
VER16AL010S06-S	ER16	9.9	10	S06	Steel
VER16AL020S06-S	ER16	9.9	20	S06	Steel
VER16AL006S08-S	ER16	11.6	6	S08	Steel
VER16AL020S08-S	ER16	11.6	20	S08	Steel

WRENCHES

Appearance	Designation	Connection screw size	Torque (lb·ft)	Torque (N·m)	Applicable head
	KEYV-S05	S04	2.95	4	Square Ball Radius Drilling Chamfering Counterboring Barrel Lens Bull nose Indexable modular head
		S05	5.16	7	
	KEYV-S06	S06	7.38	10	
	KEYV-S08	S08	11.06	15	
	KEYV-S10	S10	20.65	28	
	KEYV-S12	S12	20.65	28	
	KEYV-W20	S15	29.50	40	
	KS-24	S21	81.13	110	Square
	KEYV-177	S06	7.38	10	Slotting VST Threading VTR
	KEYV-217	S08	11.06	15	
	KEYV-T20	S05	5.16	7	Slotting VTB Face mill
		S06	7.38	10	
	KEYV-T25	S06	7.38	10	
	KEYV-T30L	S08	11.06	15	
	KEYV-T40L	S08	11.06	15	Slotting VST, VTB Face mill
		S10	20.65	28	
	KEYV-T50L	S08	11.06	15	Slotting VTB Face mill
		S10	20.65	28	

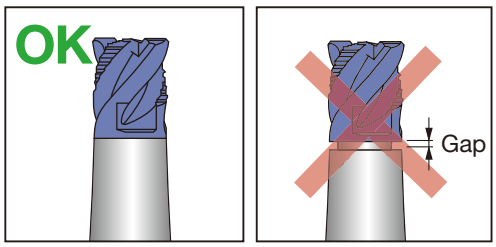
Note: Wrenches are sold separately.

TORQUE WRENCHES

Appearance		Designation	Stock	Connection screw size	TM Head description	Torque (lb·ft)	Torque (N·m)
Handle		TORQUEWRENCH5-50NM9x12	●	-	-	-	5 - 50
Open wrenches for cylindrical heads		TM-WRENCH-6-05	●	S05	VEH, VED, VEE, VEE-I, VEE-R, VEE-C, VEE-A, VFX**-04/06, VRD, VBD-BG, VBE-BG, VBE-BGA, VDP, VDS, VCA, VBO, VBL, VBN, HPAV06-S	5.16	7
		TM-WRENCH-8-06	●	S06		7.38	10
		TM-WRENCH-10-08	●	S08		11.06	15
		TM-WRENCH-13-10	●	S10		20.65	28
		TM-WRENCH-16-12	●	S12		20.65	28
		TM-WRENCH-20-15	●	S15		29.50	40
Open wrenches for 2 flute heads		TM-WRENCH-4E-05	●	S05	VRB, VRC, VFX**-02, VBB-BM, VBB-BG, VBB-SG, VCP, VGC, VCW, VCR	5.16	7
		TM-WRENCH-5E-06	●	S06		7.38	10
		TM-WRENCH-7E-08	●	S08		11.06	15
		TM-WRENCH-8E-10	●	S10		20.65	28
		TM-WRENCH-9E-12	●	S12		20.65	28
90° adaptor for Torx bits		INSERT-TOOL-9X12MM	●	-	-	-	-
Torx bits sockets		BIT-SOCKET-T20-DRIVE	●	S05, S06	VFM120, VTB135, VTB160W2.00, VTB165W2.00	5.16, 7.38	7, 10
		BIT-SOCKET-T25-DRIVE	●	S06	VFM160, VTB160W3.00, VTB160W4.00, VTB165W3.00, VTB165W4.00	7.38	10
		BIT-SOCKET-T30-DRIVE	●	S08	VTB195	11.06	15
		BIT-SOCKET-T40-DRIVE	●	S08, S10	VFM200, VST277, VTB225	11.06, 20.65	15, 28
		BIT-SOCKET-T50-DRIVE	●	S08, S10	VFM250, VTB250	11.06, 20.65	15, 28

CAUTIONARY POINTS IN USE

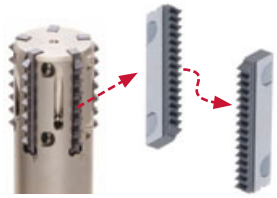
· The cutting heads specified by Tungaloy must be used. Avoid using alternate heads that are not Tungaloy products as this will damage the shank and can cause severe accident or injury.
· Before setting the head, clean the connection screw with an air blast or a wiping cloth to remove chips and other foreign matter that may remain.
· Do not apply the lubricant to the connection screw.
· Please use the correct wrench with the correct cutting head. Tighten the head slowly until the face of the head contacts the shank. (Please refer to the picture shown on the right.) Do not re-tightening or over-tightening. Excessive tightening may cause the cutting head to break.
· Do not apply excessive force or a hammer when tightening or exchanging the cutting heads.



THREADMILLING

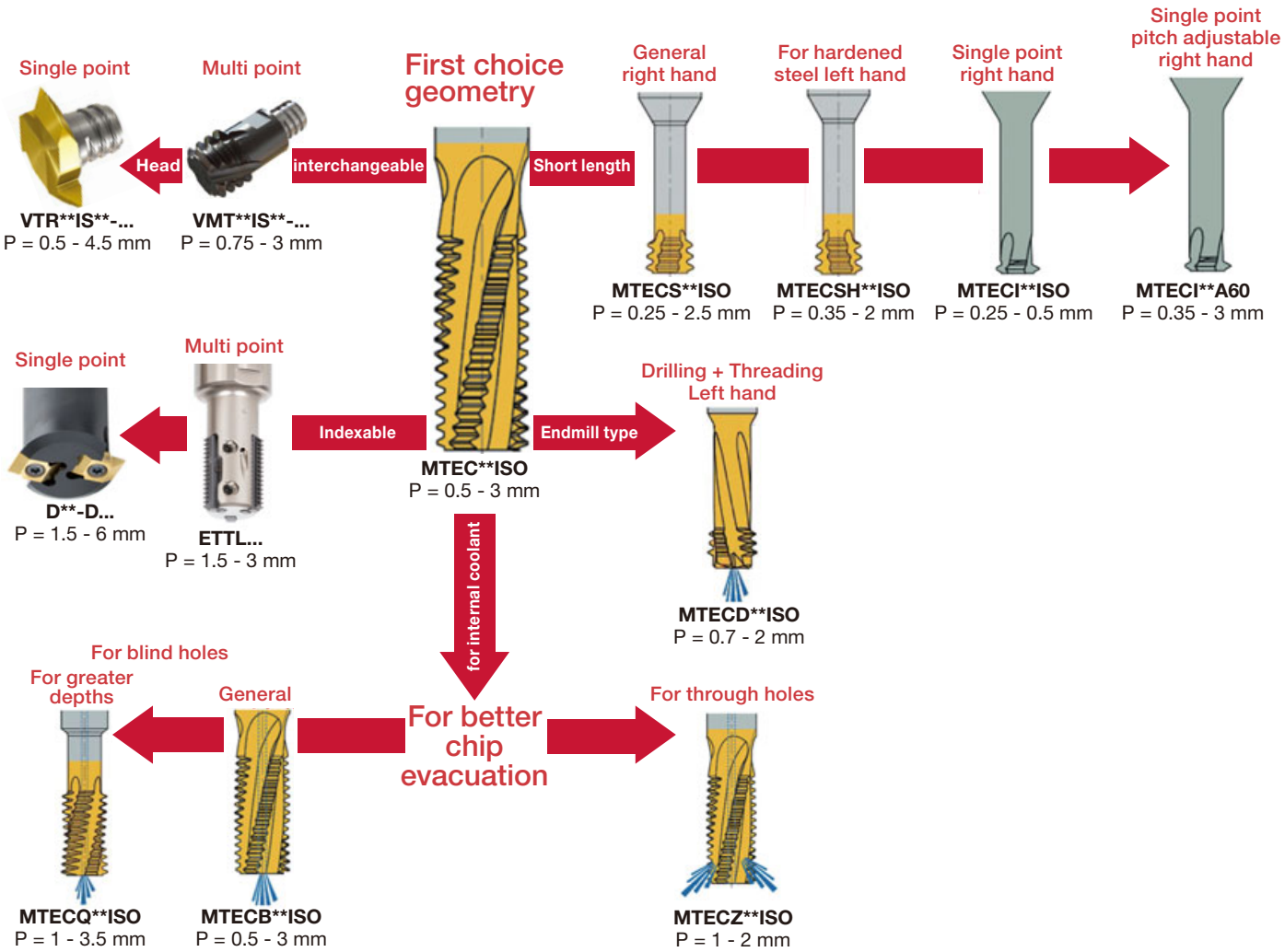
Highly economical tool design

Cost reduction



2-corner double sided inserts

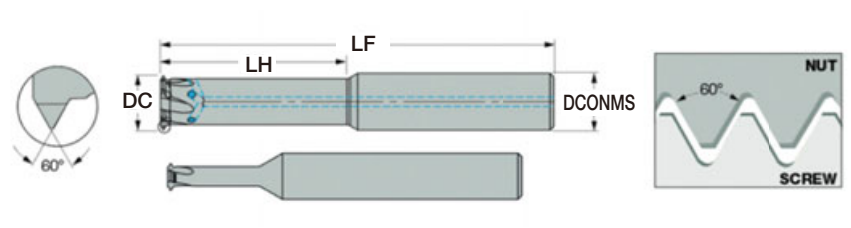
Tool selection guide for internal ISO metric threads



Reference pages: I057 - I079

ISO metric (M), Unified (UN, UNC, UNF, UNFE, UNS)

MTECI-A60



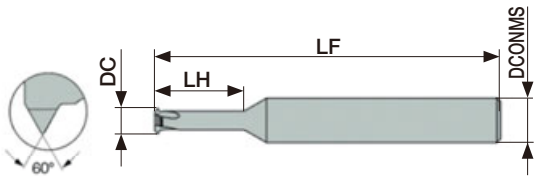
Designation	ISO Metric					Unified					DCONMS (mm)	DC (mm)	NOF	LH (mm)	LF (mm)	Coolant hole	Grade
	Internal			External		Internal			External								
	Pitch (mm)		Application range	Pitch (mm)		TPI		Application range	TPI								
	min.	max.		min.	max.	min.	max.		min.	max.							
MTECI03019C5A60	0.35	0.6	≥M2.5x0.35 ≥M2.5x0.4 ≥M2.5x0.45 ≥M3x0.5 ≥M3x0.6	0.35	0.6	40	72	≥#8-48UN ≥#8-44UN ≥#8-40UN ≥#8-36UN ≥#8-48UN ≥#10-28UN ≥#10-24UN	40	72	3	1.9	3	5.2	39	Without	AH710
MTECI06032C9A60	0.5	1.0	≥M4x0.5 ≥M4x0.6 ≥M4x0.7 ≥M4.5x0.75 ≥M4.5x0.8 ≥M5x1	0.5	1.0	24	48	≥#3-72UN ≥#3-64UN ≥#3-56UN ≥#3-48UN ≥#4-44UN ≥#4-40UN	24	48	6	3.2	3	9.5	57	Without	AH710
MTECI0604C12A60	0.5	1.0	≥M5x0.5 ≥M5x0.6 ≥M5x0.7 ≥M5x0.75 ≥M5x0.8 ≥M6x1	0.5	1.0	24	48	≥#10-48UN ≥#10-44UN ≥#10-40UN ≥#10-36UN ≥#12-32UN ≥#12-28UN ≥#12-24UN	24	48	6	4	3	12.5	58	Without	AH710
MTECI0605D20A60	0.5	0.8	≥M6	0.4	0.8	28	56	≥M1/4	32	64	6	5	4	20	58	With	AH725
MTECI0808D28A60	0.5	0.8	≥M9	0.4	0.8	28	56	≥M3/8	32	64	8	8	4	28	64	With	AH725
MTECI0808D30A60	1.0	1.75	≥M10	0.8	1.5	14	28	≥M7/16	16	32	8	8	4	30	64	With	AH725
MTECI1010D35A60	1.0	1.75	≥M12	0.8	1.5	14	28	≥M1/2	16	32	10	10	4	35	73	With	AH725
MTECI1212E40A60	2.0	3.0	≥M16	1.75	2.5	8	13	≥M11/16	10	15	12	12	5	40	84	With	AH725
MTECI1616E50A60	2.0	3.0	≥M20	1.75	2.5	8	13	≥M13/16	10	15	16	16	5	50	101	With	AH725

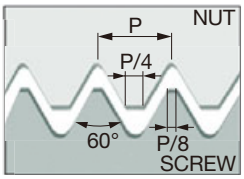
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD
ISO metric (M)

MTECI-ISO

Solid carbide internal threading endmill, for ISO metric profile

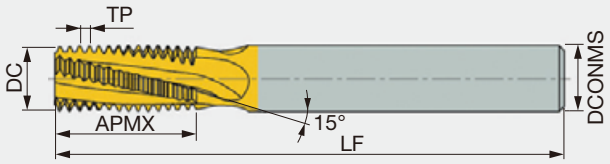


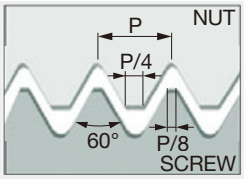


Metric	Pitch	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECI03007C30.25ISO	0.25	≥M1	6	0.72	3	3.6	39	Without	AH710
MTECI03009C40.25ISO	0.25	≥M1.2	6	0.9	3	4.3	39	Without	AH710
MTECI03011C50.3ISO	0.3	≥M1.4	6	1.05	3	5.0	39	Without	AH710
MTECI03012C60.35ISO	0.35	≥M1.6	6	1.2	3	5.7	39	Without	AH710
MTECI03016C70.4ISO	0.4	≥M2	6	1.55	3	7.1	39	Without	AH710
MTECI03024C100.5ISO	0.5	≥M3	6	2.37	3	10.6	39	Without	AH710

MTEC-ISO

Solid carbide internal threading endmill, for ISO metric profile



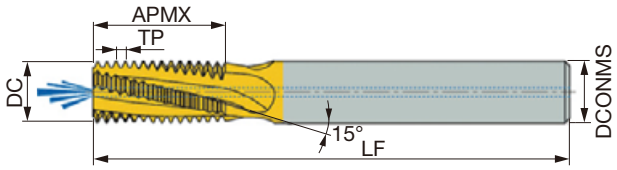


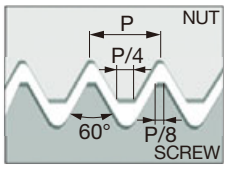
Metric	TP	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTEC06022C50.5ISO	0.5	≥ M3	6	2.2	3	5.3	58	Without	AH725
MTEC06038C100.5ISO	0.5	≥ M5	6	3.8	3	10.3	58	Without	AH725
MTEC06031C70.7ISO	0.7	≥ M4	6	3.1	3	7.4	58	Without	AH725
MTEC06045C100.75ISO	0.75	≥ M6	6	4.5	3	10	58	Without	AH725
MTEC06036C90.8ISO	0.8	≥ M5	6	3.6	3	9.2	58	Without	AH725
MTEC0604C101.0ISO	1	≥ M6	6	4	3	10.5	58	Without	AH725
MTEC0604C141.0ISO	1	≥ M6	6	4	3	14.5	58	Without	AH725
MTEC0606C121.0ISO	1	≥ M9	6	6	3	12.5	58	Without	AH725
MTEC0808D161.0ISO	1	≥ M10	8	8	4	16.5	64	Without	AH725
MTEC0605C141.25ISO	1.25	≥ M8	6	5	3	14.4	58	Without	AH725
MTEC0605C191.25ISO	1.25	≥ M8	6	5	3	19.4	58	Without	AH725
MTEC0807C171.5ISO	1.5	≥ M10	8	7	3	17.3	64	Without	AH725
MTEC0807C241.5ISO	1.5	≥ M10	8	7	3	24.8	76	Without	AH725
MTEC1010D211.5ISO	1.5	≥ M14	10	10	4	21.8	73	Without	AH725
MTEC1616F331.5ISO	1.5	≥ M20	16	16	6	33.8	105	Without	AH725
MTEC0808C201.75ISO	1.75	≥ M12	8	8	3	20.1	64	Without	AH725
MTEC0808C281.75ISO	1.75	≥ M12	8	8	3	28.9	76	Without	AH725
MTEC1010C272.0ISO	2	≥ M14	10	10	3	27	73	Without	AH725
MTEC1010C392.0ISO	2	≥ M14	10	10	3	39	105	Without	AH725
MTEC1212D272.0ISO	2	≥ M18	12	12	4	27	84	Without	AH725
MTEC2020F412.0ISO	2	≥ M24	20	20	6	41	105	Without	AH725
MTEC1414D332.5ISO	2.5	≥ M20	14	14	4	33.8	84	Without	AH725
MTEC1414D482.5ISO	2.5	≥ M20	14	14	4	48.8	105	Without	AH725
MTEC1616C403.0ISO	3	≥ M24	16	16	3	40.5	105	Without	AH725
MTEC1616C583.0ISO	3	≥ M24	16	16	3	58.5	120	Without	AH725

Reference pages: Standard cutting conditions → I070 - I072

MTECB-ISO

Solid carbide internal threading endmill, with coolant hole, for ISO metric profile





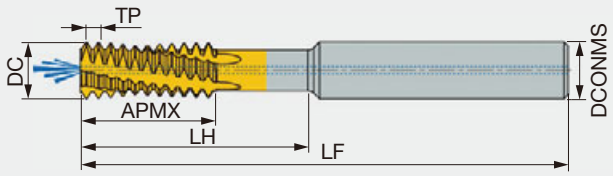
Metric	TP	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECB06038C100.5ISO	0.5	≥ M5	6	3.8	3	10.3	58	With	AH725
MTECB06031C70.7ISO	0.7	≥ M4	6	3.1	3	7.4	58	With	AH725
MTECB06045C100.75ISO	0.75	≥ M6	6	4.5	3	10.1	58	With	AH725
MTECB1010D240.75ISO	0.75	≥ M12	10	10	4	24.4	73	With	AH725
MTECB06038C90.8ISO	0.8	≥ M5	6	3.8	3	9.2	58	With	AH725
MTECB06046C101.0ISO	1	≥ M6	6	4.6	3	10.5	58	With	AH725
MTECB06046C141.0ISO	1	≥ M6	6	4.6	3	14.5	58	With	AH725
MTECB0606C121.0ISO	1	≥ M9	6	6	3	12.5	58	With	AH725
MTECB0808D161.0ISO	1	≥ M10	8	8	4	16.5	64	With	AH725
MTECB1010D241.0ISO	1	≥ M12	10	10	4	24.5	73	With	AH725
MTECB0606C141.25ISO	1.25	≥ M8	6	6	3	14.4	58	With	AH725
MTECB0606C191.25ISO	1.25	≥ M8	6	6	3	19.4	58	With	AH725
MTECB08078C171.5ISO	1.5	≥ M10	8	7.8	3	17	64	With	AH725
MTECB08078C241.5ISO	1.5	≥ M10	8	7.8	3	24.8	76	With	AH725
MTECB1010D211.5ISO	1.5	≥ M14	10	10	4	21.8	73	With	AH725
MTECB1212D261.5ISO	1.5	≥ M16	12	12	4	26.3	84	With	AH725
MTECB1616F331.5ISO	1.5	≥ M20	16	16	6	33.8	105	With	AH725
MTECB1009C201.75ISO	1.75	≥ M12	10	9	3	20.1	73	With	AH725
MTECB1009C281.75ISO	1.75	≥ M12	10	9	3	28.9	73	With	AH725
MTECB1010C272.0ISO	2	≥ M14	10	10	3	27	73	With	AH725
MTECB12118D272.0ISO	2	≥ M16	12	11.8	4	27	84	With	AH725
MTECB12118D392.0ISO	2	≥ M16	12	11.8	4	39	105	With	AH725
MTECB1615E332.5ISO	2.5	≥ M20	16	15	5	33.8	105	With	AH725
MTECB1615E482.5ISO	2.5	≥ M20	16	15	5	48.8	105	With	AH725
MTECB2018D583.0ISO	3	≥ M24	20	18	4	58.5	120	With	AH725

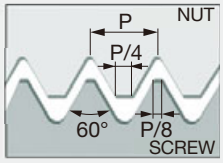
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD

MTECQ-ISO

Solid carbide deep internal threading endmill, with internal coolant hole, for ISO metric profile

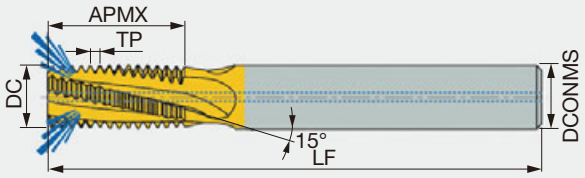


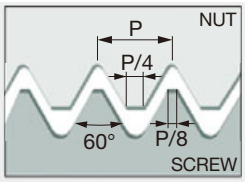


Metric	TP	Application range	DCONMS	DC	NOF	APMX	LH	LF	Coolant hole	Grade
MTECQ1212D381.0ISO	1	≥M14	12	12	4	21	38	84	With	AH725
MTECQ1010D301.5ISO	1.5	≥M13	10	10	4	18	30	73	With	AH725
MTECQ2020F562.0ISO	2	≥M24	20	20	6	34	56	105	With	AH725
MTECQ2020D453.5ISO	3.5	≥M26	20	20	4	28	45.5	105	With	AH725

MTECZ-ISO

Solid carbide internal threading endmill for through hole, with coolant hole in the flute, for ISO metric profile





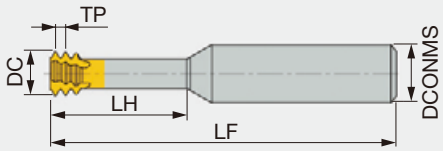
Metric	TP	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECZ06048C101.0ISO	1	≥ M6	6	4.8	3	10.5	58	With	AH725
MTECZ0808D161.0ISO	1	≥ M10	8	8	4	16.5	64	With	AH725
MTECZ0606C141.25ISO	1.25	≥ M8	6	6	3	14.4	58	With	AH725
MTECZ0606C191.25ISO	1.25	≥ M8	6	6	3	19.4	58	With	AH725
MTECZ08078C171.5ISO	1.5	≥ M10	8	7.8	3	17	64	With	AH725
MTECZ1010D211.5ISO	1.5	≥ M14	10	10	4	21.8	73	With	AH725
MTECZ1212D261.5ISO	1.5	≥ M16	12	12	4	26.3	84	With	AH725
MTECZ1616E331.5ISO	1.5	≥ M20	16	16	5	33.8	101	With	AH725
MTECZ1009C281.75ISO	1.75	≥ M12	10	9	3	28.9	73	With	AH725
MTECZ1010C272.0ISO	2	≥ M14	10	10	3	27	73	With	AH725
MTECZ12118D272.0ISO	2	≥ M16	12	11.8	4	27	84	With	AH725

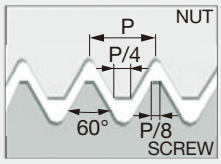
2
3
4
5
6 or more

Reference pages: Standard cutting conditions → I070 - I072

MTECS-ISO

Small diameter solid carbide internal threading endmill, short edge type, for ISO metric profile





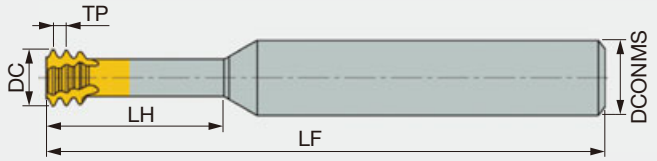
Metric	TP	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECS03007C20.25ISO	0.25	≥M1	3	0.72	3	2.5	39	Without	AH725
MTECS03009C30.25ISO	0.25	≥M1.2	3	0.9	3	3	39	Without	AH725
MTECS03011C40.3ISO	0.3	≥M1.4	3	1.05	3	4	39	Without	AH725
MTECS03012C50.35ISO	0.35	≥M1.6	3	1.2	3	4.8	39	Without	AH725
MTECS03016C60.4ISO	0.4	≥M2	3	1.53	3	6	39	Without	AH725
MTECS06016C40.4ISO	0.4	≥M2	6	1.53	3	4.5	58	Without	AH725
MTECS03017C70.45ISO	0.45	≥M2.2	3	1.65	3	7	39	Without	AH725
MTECS06017C50.45ISO	0.45	≥M2.2	6	1.65	3	5	58	Without	AH725
MTECS0602C50.45ISO	0.45	≥M2.5	6	1.95	3	5.5	58	Without	AH725
MTECS0602C70.45ISO	0.45	≥M2.5	6	1.95	3	7.5	58	Without	AH725
MTECS06024C60.5ISO	0.5	≥M3	6	2.37	3	6.5	58	Without	AH725
MTECS06024C90.5ISO	0.5	≥M3	6	2.37	3	9.5	58	Without	AH725
MTECS06024C90.5ISOL	0.5	≥M3	6	2.37	3	9.5	105	Without	AH725
MTECS03024C120.5ISO	0.5	≥M3	3	2.4	3	12.5	39	Without	AH725
MTECS03024C150.5ISO	0.5	≥M3	3	2.4	3	15.5	39	Without	AH725
MTECS06054D200.5ISO	0.5	≥M6	6	5.35	4	20	58	Without	AH725
MTECS06028C100.6ISO	0.6	≥M3.5	6	2.75	3	10.5	58	Without	AH725
MTECS06028C70.6ISO	0.6	≥M3.5	6	2.75	3	7.5	58	Without	AH725
MTECS06031C120.7ISO	0.7	≥M4	6	3.1	3	12.5	58	Without	AH725
MTECS06031C120.7ISOL	0.7	≥M4	6	3.1	3	12.5	105	Without	AH725
MTECS06031C160.7ISO	0.7	≥M4	6	3.1	3	16.7	58	Without	AH725
MTECS06031C90.7ISO	0.7	≥M4	6	3.1	3	9	58	Without	AH725
MTECS0808D250.75ISO	0.75	≥M10	8	8	4	25	64	Without	AH725
MTECS06038C120.8ISO	0.8	≥M5	6	3.8	3	12.5	58	Without	AH725
MTECS06038C160.8ISO	0.8	≥M5	6	3.8	3	16	58	Without	AH725
MTECS06038C160.8ISOL	0.8	≥M5	6	3.8	3	16	105	Without	AH725
MTECS06047C141.0ISO	1	≥M6	6	4.65	3	14	58	Without	AH725
MTECS06047C201.0ISO	1	≥M6	6	4.65	3	20	58	Without	AH725
MTECS06047C201.0ISOL	1	≥M6	6	4.65	3	20	105	Without	AH725
MTECS0606C181.25ISO	1.25	≥M8	6	6	3	18	58	Without	AH725
MTECS0606C241.25ISO	1.25	≥M8	6	6	3	24	58	Without	AH725
MTECS08078C231.5ISO	1.5	≥M10	8	7.8	3	23	64	Without	AH725
MTECS08078C311.5ISO	1.5	≥M10	8	7.8	3	31.5	64	Without	AH725
MTECS1009C261.75ISO	1.75	≥M12	10	9	3	26	73	Without	AH725
MTECS12118D352.0ISO	2	≥M16	12	11.8	4	35	84	Without	AH725
MTECS12118D502.0ISO	2	≥M16	12	11.8	4	50	105	Without	AH725
MTECS1615E432.5ISO	2.5	≥M20	16	15	5	43	100	Without	AH725

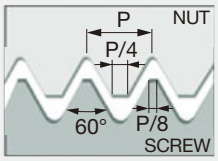
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD

MTECSH-ISO

Small diameter solid carbide internal threading endmill, short edge type, left hand cutting, for ISO metric profile

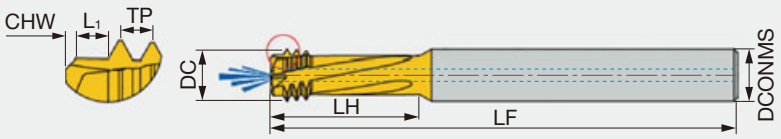


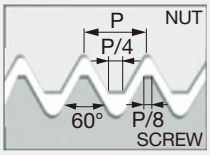


Metric	TP	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECSH03012C50.35ISO	0.35	≥M1.6	3	1.2	3	4.8	39	Without	AH750
MTECSH03016C60.4ISO	0.4	≥M2	3	1.55	3	6	39	Without	AH750
MTECSH06016C40.4ISO	0.4	≥M2	6	1.55	3	4.5	58	Without	AH750
MTECSH06017C50.45ISO	0.45	≥M2.2	6	1.65	3	5	58	Without	AH750
MTECSH0602C50.45ISO	0.45	≥M2.5	6	1.95	3	5.5	58	Without	AH750
MTECSH0602C70.45ISO	0.45	≥M2.5	6	1.95	3	7.5	58	Without	AH750
MTECSH06024C60.5ISO	0.5	≥M3	6	2.35	3	6.5	58	Without	AH750
MTECSH06024C90.5ISO	0.5	≥M3	6	2.35	3	9.5	58	Without	AH750
MTECSH06028C70.6ISO	0.6	≥M3.5	6	2.75	3	7.5	58	Without	AH750
MTECSH06031C120.7ISO	0.7	≥M4	6	3.1	3	12.5	58	Without	AH750
MTECSH06038C120.8ISO	0.8	≥M5	6	3.8	3	12.5	58	Without	AH750
MTECSH06047C141.0ISO	1	≥M6	6	4.65	3	14	58	Without	AH750
MTECSH06047C201.0ISO	1	≥M6	6	4.65	3	20	58	Without	AH750
MTECSH0606C181.25ISO	1.25	≥M8	6	5.95	3	18	58	Without	AH750
MTECSH0606C241.25ISO	1.25	≥M8	6	5.95	3	24	58	Without	AH750
MTECSH08078C231.5ISO	1.5	≥M10	8	7.8	3	23	64	Without	AH750
MTECSH1009C261.75ISO	1.75	≥M12	10	9	3	26	73	Without	AH750
MTECSH12118D352.0ISO	2	≥M16	12	11.8	4	35	84	Without	AH750

MTECD-ISO

Small diameter solid carbide endmill for internal threading, drilling, and chamfering, short edge type, left hand cutting, for ISO metric profile

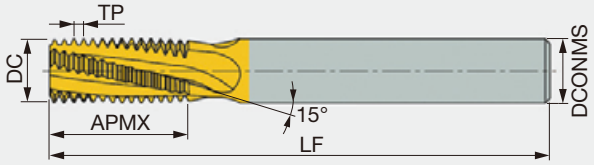


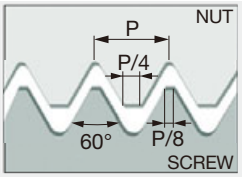


Metric	TP	Application range	DCONMS	DC	NOF	LH	LF	CHW	L1	Coolant hole	Grade
MTECD06032C110.7ISO	0.7	M4	6	3.15	3	11.6	58	0.2	0.7	Without	AH725
MTECD0604C140.8ISO	0.8	M5	6	4	3	14.4	58	0.3	0.8	Without	AH725
MTECD08047C141.0ISO	1	M6-M7	8	4.7	3	14	64	0.4	1	With	AH725
MTECD08061D181.25ISO	1.25	M8-M9	8	6.1	4	18	64	0.5	1.3	With	AH725
MTECD08078D231.5ISO	1.5	M10-M12	8	7.8	4	23	64	0.6	1.5	With	AH725
MTECD1009D261.75ISO	1.75	M12-M14	10	9	4	26	73	0.6	1.8	With	AH725
MTECD12118D352.0ISO	2	M16-M19	12	11.8	4	35	84	0.6	2	With	AH725

MTECE-ISO

Solid carbide external threading endmill, for ISO metric profile



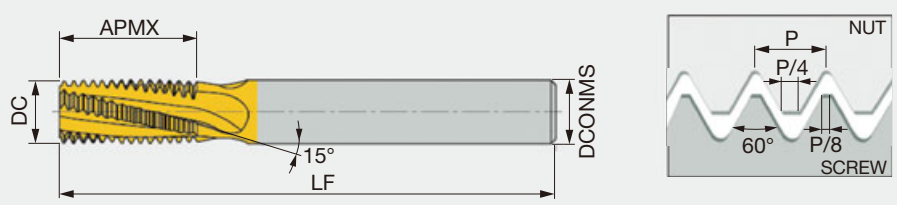


Metric	TP	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECE1010D161.0ISO	1	10	10	4	16.5	73	Without	AH725
MTECE1010D161.25ISO	1.25	10	10	4	16.9	73	Without	AH725
MTECE1010D151.5ISO	1.5	10	10	4	15.8	73	Without	AH725
MTECE1212D201.5ISO	1.5	12	12	4	20.3	84	Without	AH725
MTECE1212D201.75ISO	1.75	12	12	4	20.1	84	Without	AH725
MTECE1212D212.0ISO	2	12	12	4	21	84	Without	AH725

Unified (UN, UNC, UNF, UNFE, UNS)

MTEC-UN

Solid carbide internal threading endmill, for UN profile



Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTEC06032C632UN	32	≤ #8 (0.164)	6	3.2	3	6.8	58	Without	AH725
MTEC0604C1128UN	28	≤ 1/4	6	4	3	11.3	58	Without	AH725
MTEC0606C1428UN	28	≤ 5/16	6	6	3	14.5	58	Without	AH725
MTEC0605C1424UN	24	≤ 5/16	6	5	3	14.3	58	Without	AH725
MTEC0807C2124UN	24	≤ 3/8	8	7	3	20	64	Without	AH725
MTEC06045C1220UN	20	≤ 1/4	6	4.5	3	12.1	58	Without	AH725
MTEC0807C2120UN	20	≤ 7/16	8	7	3	20	64	Without	AH725
MTEC1212E2720UN	20	≤ 11/16	12	12	5	27.3	84	Without	AH725
MTEC0605C1418UN	18	≤ 5/16	6	5	3	14.8	58	Without	AH725
MTEC1010D2618UN	18	≤ 9/16	10	10	4	26.1	73	Without	AH725
MTEC0606C1616UN	16	≤ 3/8	6	6	3	16.7	58	Without	AH725
MTEC1212D3116UN	16	≤ 5/8	12	12	4	30	84	Without	AH725
MTEC1615E3714UN	14	≤ 13/16	16	15	5	37.2	105	Without	AH725
MTEC0808C2213UN	13	≤ 1/2	8	8	3	22.5	64	Without	AH725
MTEC1010C2612UN	12	≤ 9/16	10	10	3	26.5	73	Without	AH725
MTEC1616E4112UN	12	≤ 13/16	16	16	5	41.3	105	Without	AH725
MTEC1010C2811UN	11	≤ 5/8	10	10	3	28.9	73	Without	AH725
MTEC1212C3410UN	10	≤ 11/16	12	12	3	34.3	84	Without	AH725
MTEC1615C389UN	9	≤ 7/8	16	15	3	38.1	105	Without	AH725
MTEC1616C428UN	8	≤ 15/16	16	16	3	42.9	105	Without	AH725

MTECB-UN

Solid carbide internal threading endmill, with coolant hole, for UN profile

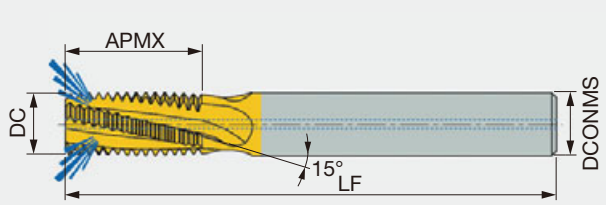
Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECB06032C632UN	32	≥ #8 (0.164)	6	3.2	3	6.8	58	With	AH725
MTECB0606C1432UN	32	≥ 5/16	6	6	3	16	58	With	AH725
MTECB0605C1128UN	28	≥ 1/4	6	5	3	11.3	58	With	AH725
MTECB08066C1424UN	24	≥ 5/16	8	6.6	3	14.3	64	With	AH725
MTECB0808D2124UN	24	≥ 3/8	8	8	4	20.6	64	With	AH725
MTECB0808C2120UN	20	≥ 7/16	8	8	3	21	64	With	AH725
MTECB1010D2220UN	20	≥ 1/2	10	10	4	22.3	73	With	AH725
MTECB06056C1418UN	18	≥ 5/16	6	5.6	3	14.8	58	With	AH725
MTECB12113D2618UN	18	≥ 9/16	12	11.3	4	26.1	84	With	AH725
MTECB08067C1616UN	16	≥ 3/8	8	6.7	3	16.7	64	With	AH725
MTECB1212D3116UN	16	≥ 5/8	12	12	4	31	84	With	AH725
MTECB1616E3714UN	14	≥ 13/16	16	16	5	37.2	105	With	AH725
MTECB10092C2213UN	13	≥ 1/2	10	9.2	3	22.5	73	With	AH725
MTECB12114C2811UN	11	≥ 5/8	12	11.4	3	28.9	84	With	AH725
MTECB16144D3410UN	10	≥ 3/4	16	14.4	4	34.3	105	With	AH725
MTECB20195D428UN	8	≥ 1	20	19.5	4	42.9	105	With	AH725

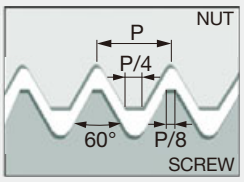
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD

MTECZ-UN

Solid carbide internal threading endmill, with coolant hole in the flute, for UN profile

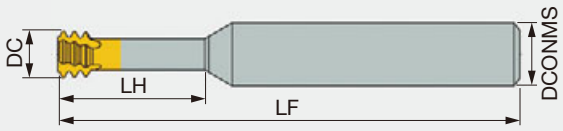


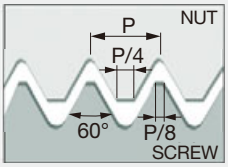


Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECZ1010D2220UN	20	≥ 1/2	10	10	4	22.3	73	With	AH725
MTECZ12113D2618UN	18	≥ 9/16	12	11.3	4	26.1	84	With	AH725
MTECZ08067C1616UN	16	≥ 3/8	8	6.7	3	16.7	64	With	AH725
MTECZ16144D3410UN	10	≥ 3/4	16	14.4	4	34.3	101	With	AH725

MTECS-UN

Small diameter solid carbide internal threading endmill, short edge type, for UN profile



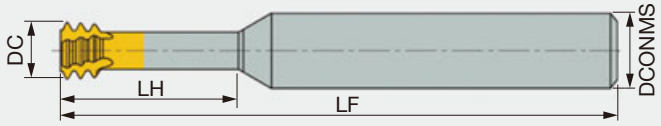


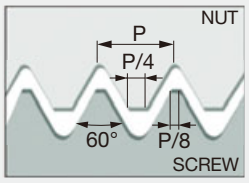
Metric	TPI	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECS03012C880UN	80	≤ #0 (0.060)	3	1.15	3	8	39	Without	AH725
MTECS03015C672UN	72	≤ #1 (0.073)	3	1.45	3	6	39	Without	AH725
MTECS06016C656UN	56	≤ #2 (0.086)	6	1.65	3	6.6	58	Without	AH725
MTECS06016C456UN	56	≤ #2 (0.086)	6	1.65	3	4.4	58	Without	AH725
MTECS06019C548UN	48	≤ #3 (0.099)	6	1.9	3	5.2	58	Without	AH725
MTECS03021C1240UN	40	≤ #4 (0.112)	3	2.1	3	12	39	Without	AH725
MTECS06021C840UN	40	≤ #4 (0.112)	6	2.1	3	8	58	Without	AH725
MTECS06021C640UN	40	≤ #4 (0.112)	6	2.1	3	6.3	58	Without	AH725
MTECS06024C940UN	40	≤ #5 (0.125)	6	2.45	3	9.6	58	Without	AH725
MTECS06033C936UN	36	≤ #8 (0.164)	6	3.3	3	9	58	Without	AH725
MTECS06025C732UN	32	≤ #6 (0.138)	6	2.55	3	7.1	58	Without	AH725
MTECS06025C1032UN	32	≤ #6 (0.138)	6	2.55	3	10.5	58	Without	AH725
MTECS06032C932UN	32	≤ #8 (0.164)	6	3.2	3	9.5	58	Without	AH725
MTECS06032C1232UN	32	≤ #8 (0.164)	6	3.2	3	12.5	58	Without	AH725
MTECS06037C1032UN	32	≤ #10 (0.190)	6	3.7	3	10.5	58	Without	AH725
MTECS06037C1532UN	32	≤ #10 (0.190)	6	3.7	3	15	58	Without	AH725
MTECS0605C1428UN	28	≤ 1/4	6	5	3	14.5	58	Without	AH725
MTECS0605C1928UN	28	≤ 1/4	6	5	3	19	58	Without	AH725
MTECS08066C1724UN	24	≤ 5/16	8	6.6	3	17	64	Without	AH725
MTECS08066C2424UN	24	≤ 5/16	8	6.6	3	24	64	Without	AH725
MTECS06047C1420UN	20	≤ 1/4	6	4.75	3	14	58	Without	AH725
MTECS06047C1920UN	20	≤ 1/4	6	4.75	3	19	58	Without	AH725
MTECS06047C1920UN-L	20	≤ 1/4	6	4.75	3	19	105	Without	AH725
MTECS0808C2520UN	20	≤ 7/16	8	8	3	25	64	Without	AH725
MTECS0606C1718UN	18	≤ 5/16	6	6	3	17	58	Without	AH725
MTECS0606C2318UN	18	≤ 5/16	6	6	3	23	58	Without	AH725
MTECS1212D3518UN	18	≤ 5/8	12	12	4	35	84	Without	AH725
MTECS08067C2216UN	16	≤ 3/8	8	6.7	3	22	64	Without	AH725
MTECS08067C3016UN	16	≤ 3/8	8	6.7	3	30.2	64	Without	AH725
MTECS08077C2514UN	14	≤ 7/16	8	7.7	3	25	64	Without	AH725
MTECS10092C2713UN	13	≤ 1/2	10	9.2	3	27.5	73	Without	AH725
MTECS12114C3411UN	11	≤ 5/8	12	11.4	3	34.5	84	Without	AH725
MTECS12114C5011UN	11	≤ 5/8	12	11.4	3	50	105	Without	AH725

Reference pages: Standard cutting conditions → I070 - I072

MTECSH-UN

Small diameter solid carbide internal threading endmill, short edge type, left hand cutting, for UN profile, for hardened steel

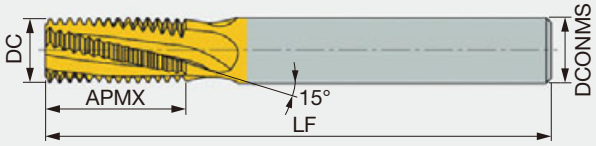


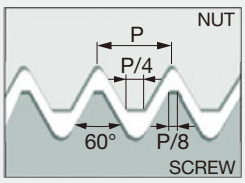


Metric	TPI	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECSH06012C480UN	80	≥ #0 (0.060)	6	1.15	3	4	58	Without	AH725
MTECSH06016C656UN	56	≥ #2 (0.086)	6	1.65	3	6.6	58	Without	AH725
MTECSH06019C548UN	48	≥ #3 (0.099)	6	1.9	3	5.2	58	Without	AH725
MTECSH06021C640UN	40	≥ #4 (0.112)	6	2.1	3	6.3	58	Without	AH725
MTECSH06021C840UN	40	≥ #4 (0.112)	6	2.1	3	8	58	Without	AH725
MTECSH06024C740UN	40	≥ #5 (0.125)	6	2.45	3	7	58	Without	AH725
MTECSH06024C940UN	40	≥ #5 (0.125)	6	2.45	3	9.6	58	Without	AH725
MTECSH06025C1032UN	32	≥ #6 (0.138)	6	2.55	3	10.5	58	Without	AH725
MTECSH06032C932UN	32	≥ #8 (0.164)	6	3.2	3	9.5	58	Without	AH725
MTECSH06037C1032UN	32	≥ #10 (0.190)	6	3.7	3	10.5	58	Without	AH725
MTECSH06037C1532UN	32	≥ #10 (0.190)	6	3.7	3	15	58	Without	AH725
MTECSH06042C1128UN	28	≥ #12 (0.216)	6	4.2	3	11	58	Without	AH725
MTECSH0605C1428UN	28	≥ 1/4	6	5	3	14.5	58	Without	AH725
MTECSH06035C1024UN	24	≥ #10 (0.190)	6	3.5	3	10.6	58	Without	AH725
MTECSH08066C1724UN	24	≥ 5/16	8	6.6	3	17	64	Without	AH725
MTECSH08066C2424UN	24	≥ 5/16	8	6.6	3	24	64	Without	AH725
MTECSH06047C1920UN	20	≥ 1/4	6	4.75	3	19	58	Without	AH725
MTECSH0808C2520UN	20	≥ 7/16	8	8	3	25	64	Without	AH725
MTECSH0606C1718UN	18	≥ 5/16	6	6	3	17	58	Without	AH725
MTECSH0606C2318UN	18	≥ 5/16	6	6	3	23	58	Without	AH725
MTECSH08067C2216UN	16	≥ 3/8	8	6.7	3	22	64	Without	AH725
MTECSH08077C2514UN	14	≥ 7/16	8	7.7	3	25	64	Without	AH725
MTECSH10092C2713UN	13	≥ 1/2	10	9.2	3	27.5	73	Without	AH725
MTECSH12114C3411UN	11	≥ 5/8	12	11.4	3	34.5	84	Without	AH725

MTEC E-UN

Solid carbide external threading endmill, for UN profile





Metric	TPI	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECE1010D1624UN	24	10	10	4	16.4	73	Without	AH725
MTECE1212E2120UN	20	12	12	5	21	84	Without	AH725

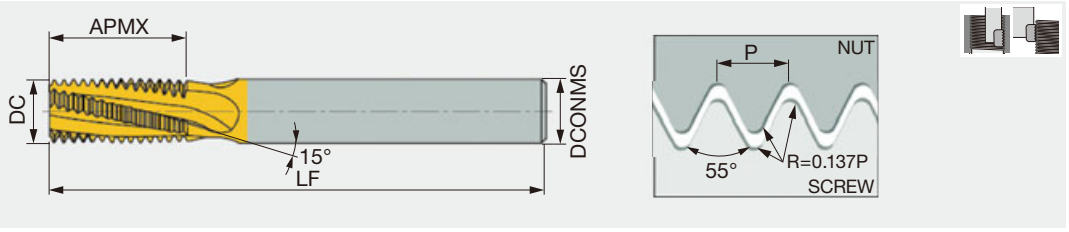
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD

Whitworth parallel pipe thread (G, Rp, BSP, PF, PS)

MTEC-W

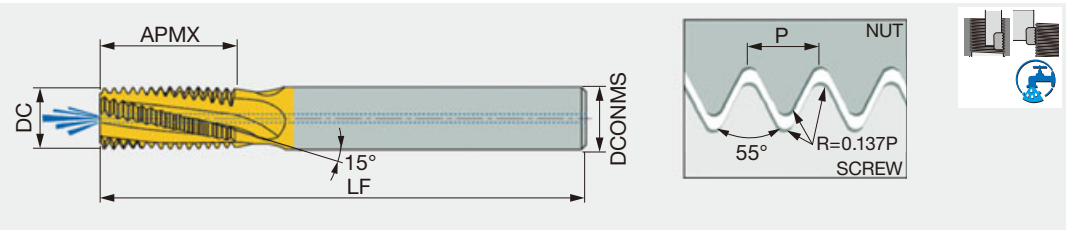
Solid carbide internal and external threading endmill, for G, BSP profile



Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTEC0606C928W	28	1/16, 1/8	6	6	3	9.5	58	Without	AH725
MTEC0808C1419W	19	1/4, 3/8	8	8	3	14	64	Without	AH725
MTEC1212D1914W	14	1/2, 5/8, 3/4, 7/8	12	12	4	19.3	84	Without	AH725
MTEC1212D2614W	14	1/2, 5/8, 3/4, 7/8	12	12	4	26.3	84	Without	AH725
MTEC1212C2411W	11	≥ 1	12	12	3	24.2	84	Without	AH725
MTEC1616D3811W	11	≥ 1	16	16	4	38.1	105	Without	AH725

MTECB-W

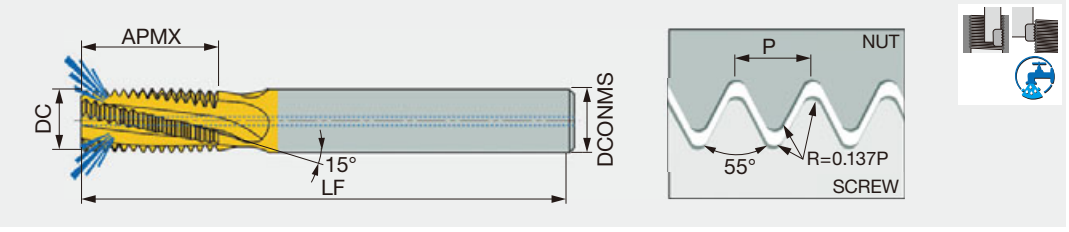
Solid carbide internal and external threading endmill, with coolant hole, for G, BSP profile



Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECB08078C1428W	28	1/8	8	7.8	3	14.1	64	Without	AH725
MTECB1010D1619W	19	1/4, 3/8	10	10	4	16.7	73	Without	AH725
MTECB1616E2614W	14	1/2, 5/8, 3/4, 7/8	16	16	5	26.3	105	Without	AH725
MTECB1616D3811W	11	≥ 1	16	16	4	38.1	105	Without	AH725
MTECB2020E4711W	11	≥ 1	20	20	5	47.3	105	Without	AH725

MTECZ-W

Solid carbide internal and external threading endmill for through hole, with coolant hole, for G, BSP profile

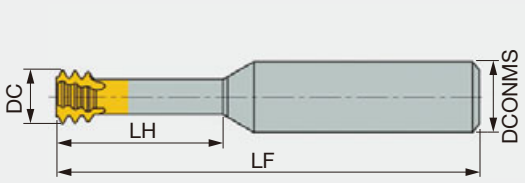


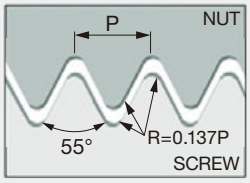
Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECZ08078C1428W	28	1/8	8	7.8	3	14.1	64	With	AH725
MTECZ1010D1619W	19	1/4, 3/8	10	10	4	16.7	73	With	AH725
MTECZ1616E2614W	14	1/2, 5/8, 3/4, 7/8	16	16	5	26.3	101	With	AH725

Reference pages: Standard cutting conditions → I070 - I072

MTECS-W

Solid carbide internal and external threading endmill, short edge type, for G, BSP profile



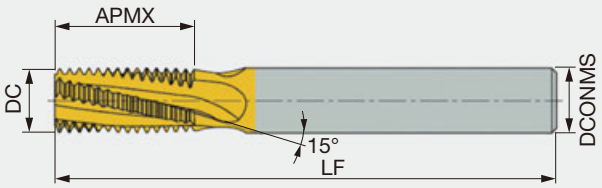


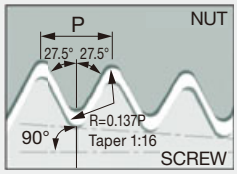
Metric	TPI	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECS08078C1928W	28	1/8	8	7.8	3	19.5	64	Without	AH725
MTECS1010D3019W	19	1/4, 3/8	10	10	4	30	73	Without	AH725
MTECS1212D3714W	14	1/2, 5/8, 3/4, 7/8	12	12	4	37	84	Without	AH725

Tapered pipe thread (R, Rc, RT, BSPT)

MTEC-BSPT

Solid carbide internal and external threading endmill. for R, RC, BSPT profile





Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTEC0606C928BSPT	28	1/8	6	6	3	9.5	58	Without	AH725
MTEC0808C1419BSPT	19	1/4, 3/4	8	8	3	14	64	Without	AH725
MTEC1212D1914BSPT	14	1/2, 7/8	12	12	4	19.1	84	Without	AH725
MTEC1616D2811BSPT (1)	11	1, 1 1/4, 1 1/2, 2, 2 1/2	16	16	4	28.9	105	Without	AH725

(1) When the hole depth to be threaded exceeds APMX, use ETTL025M022W25.0F043R03-RT instead.

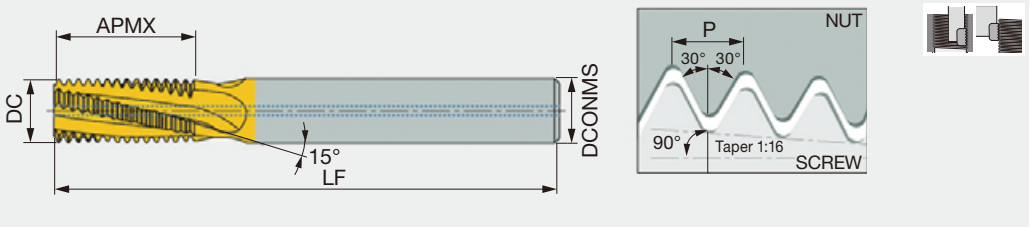
Reference pages: Standard cutting conditions → I070 - I072

SOLIDTHREAD

NPT

MTEC-NPT

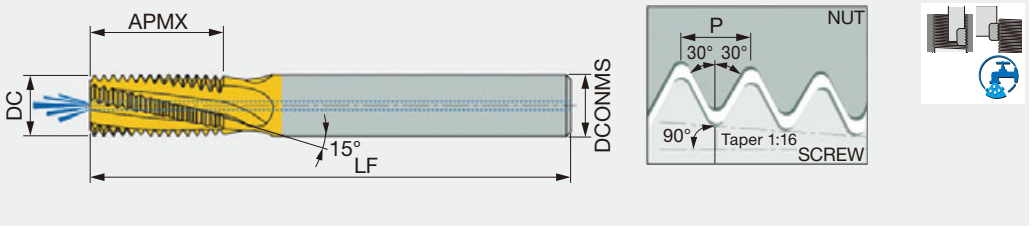
Solid carbide internal and external threading endmill. for NPT profile



Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTEC0606C927NPT	27	1/16, 1/8	6	6	3	9.9	58	Without	AH725
MTEC0808C1418NPT	18	1/4, 3/8	8	8	3	14.8	64	Without	AH725
MTEC1212D2014NPT	14	1/2, 3/4	12	12	4	20.9	84	Without	AH725
MTEC1616D2711.5NPT	11.5	1, 1 1/4, 1 1/2, 2	16	16	4	27.6	105	Without	AH725
MTEC2020D398NPT (1)	8	2 1/2 - 6	20	20	4	39.7	105	Without	AH725

MTECB-NPT

Solid carbide internal and external threading endmill, with coolant hole, for NPT profile

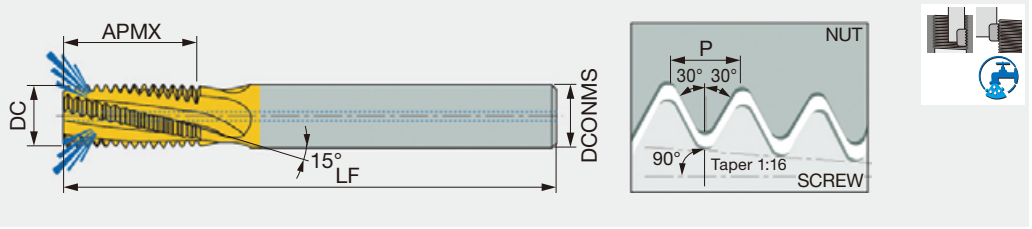


Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECB08076C1027NPT	27	1/8	8	7.6	3	10.8	64	With	AH725
MTECB1010D1618NPT	18	1/4, 3/8	10	10	4	16.2	73	With	AH725
MTECB16155D2214NPT	14	1/2, 3/4	16	15.5	4	22.7	105	With	AH725

NPTF

MTECZ-NPTF

Solid carbide internal and external threading endmill for through hole, with coolant hole in the flute, for NPTF profile



Metric	TPI	Application range	DCONMS	DC	NOF	APMX	LF	Coolant hole	Grade
MTECZ08076C1027NPTF	27	1/8	8	7.6	3	10.8	64	With	AH725
MTECZ1010D1618NPTF	18	1/4, 3/8	10	10	4	16.2	73	With	AH725

Reference pages: Standard cutting conditions → I070 - I072

MJ

MTECS-MJ

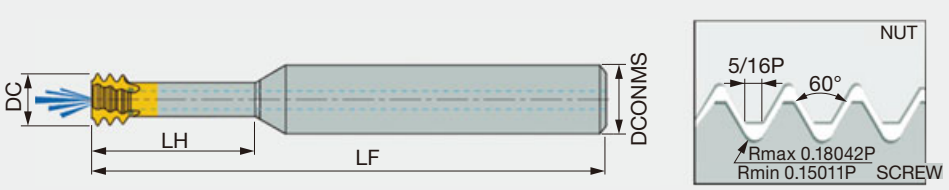
Small diameter solid carbide internal threading endmill, short edge type, with coolant hole, for MJ profile

Metric	TP	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECS06032C100.7MJ	0.7	≥ 4	6	3.2	3	10	58	Without	AH725
MTECS06039C120.8MJ	0.8	≥ 5	6	3.9	3	12.5	58	Without	AH725
MTECS06048C151.0MJ	1	≥ 6	6	4.8	3	15	58	Without	AH725
MTECS08061C201.25MJ	1.25	≥ 8	8	6.1	3	20	64	With	AH725
MTECS0808C251.5MJ	1.5	≥ 10	8	8	3	25	64	With	AH725
MTECS10092C301.75MJ	1.75	≥ 12	10	9.2	3	30	73	With	AH725
MTECS1010C352.0MJ	2	≥ 14	10	10	3	35	73	With	AH725

UNJ (UNJ, UNJC, UNJF, UNJEF)

MTECS-UNJ

Small diameter solid carbide internal threading endmill, short edge type, with coolant hole, for UNJ profile



Metric	TPI	Application range	DCONMS	DC	NOF	LH	LF	Coolant hole	Grade
MTECS06033C1032UNJ	32	≥ #8	6	3.3	3	10.5	58	Without	AH725
MTECS08051C1628UNJ	28	≥ 1/4	8	5.1	3	16	64	With	AH725
MTECS08067C2024UNJ	24	≥ 5/16	8	6.7	3	20	64	With	AH725
MTECS06049C1620UNJ	20	≥ 1/4	6	4.9	3	16	58	Without	AH725
MTECS0808C2820UNJ	20	≥ 7/16	8	8	3	28	64	With	AH725
MTECS08061C2018UNJ	18	≥ 5/16	8	6.15	3	20	64	With	AH725
MTECS08069C2416UNJ	16	≥ 3/8	8	6.9	3	24	64	With	AH725
MTECS10094C2713UNJ	13	≥ 1/2	10	9.4	3	27.5	73	With	AH725

Reference pages: Standard cutting conditions → I070 - I072

THREADMILLING

STANDARD CUTTING CONDITIONS

ISO	Material		Condition	Tensile strength [N/mm²]	Hardness HB	Cutting speed (sfm) AH725
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	328 - 820
		≥ 0.25 %C	Annealed	650	190	262 - 689
		< 0.55 %C	Quenched and tempered	850	250	213 - 558
		≥ 0.55 %C	Annealed	750	220	361 - 591
			Quenched and tempered	1000	300	312 - 525
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	295 - 525
			Quenched and tempered	930	275	213 - 656
				1000	300	230 - 689
				1200	350	312 - 525
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	427 - 558
			Quenched and tempered	1100	325	246 - 328
	Stainless steel and cast steel		Ferritic/martensitic	680	200	361 - 558
			Martensitic	820	240	230 - 509
M	Stainless steel		Annealed	600	180	279 - 328
K	Cast iron nodular (GGG)		Ferritic/martensitic	-	180	394 - 525
			Pearlitic	-	260	246 - 525
	Gray cast iron (GG)		Ferritic	-	160	230 - 492
			Pearlitic	-	250	361 - 459
	Malleable cast iron		Ferritic	-	130	394 - 525
			Pearlitic	-	230	361 - 459
N	Aluminum- wrought alloy		Not cureable	-	60	525 - 984
			Cured	-	100	-
	Aluminum-cast, alloyed	≤12% Si	Not cureable	-	75	492 - 1148
			Cured	-	90	-
		>12% Si	High temperature	-	130	328 - 820
	Copper alloys	>1% Pb	Free cutting	-	110	-
			Brass	-	90	-
			Electrolitic copper	-	100	-
	Non-metallic		Duroplastics, fiber plastics	-	-	328 - 1312
			Hard rubber	-	-	-
S	High temp. alloys	Fe based	Annealed	-	200	-
			Cured	-	280	-
		Ni or Co based	Annealed	-	250	66 - 262
			Cured	-	350	-
			Cast	-	320	-
	Titanium Ti alloys			RM 400	-	-
			Alpha+beta alloys cured	RM 1050	-	66 - 262
H	Hardened steel		Hardened	-	55 HRC	180 - 213
			Hardened	-	60 HRC	148 - 180
	Chilled cast iron		Cast	-	400	295 - 344
	Cast iron		Hardened	-	55 HRC	180 - 213

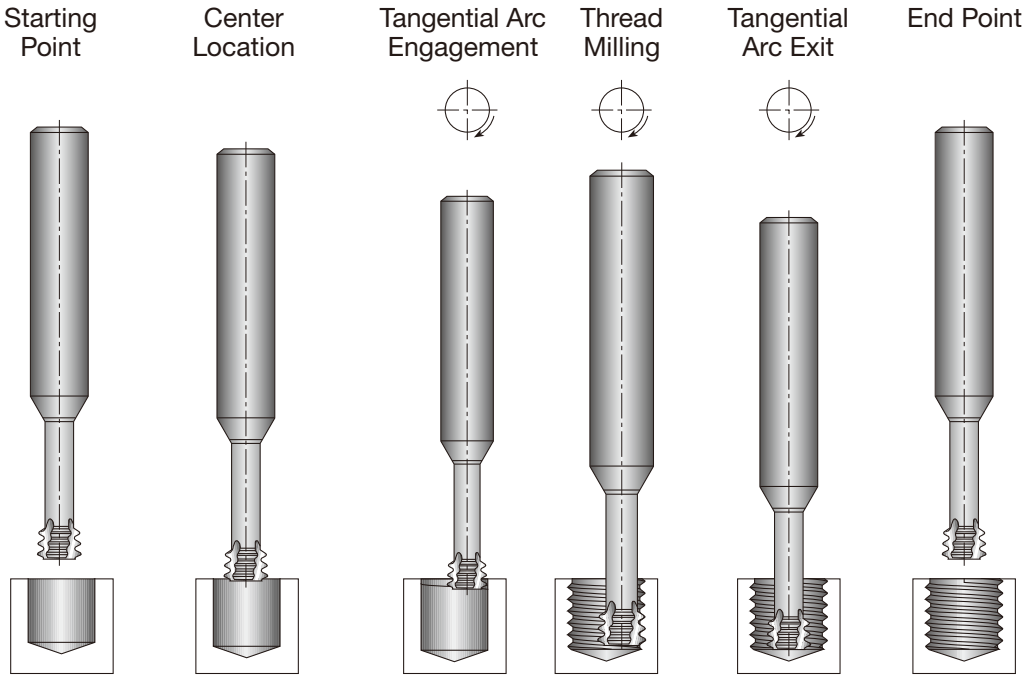
Tool dia. : mm (in)											
Feed (ipr)											
ø2 (0.079")	ø3 (0.118")	ø4 (0.157")	ø6 (0.236")	ø8 (0.315")	ø10 (0.394")	ø12 (0.472")	ø14 (0.551")	ø16 (0.630")	ø20 (0.787")	ø25 (0.984")	ø30 (1.181")
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
-	-	-	-	-	-	-	-	-	-	-	-
0.0008	0.0012	0.0012	0.002	0.0024	0.0028	0.0031	0.0035	0.0039	0.0047	0.0059	0.0071
0.0008	0.0012	0.0012	0.002	0.0024	0.0028	0.0031	0.0035	0.0039	0.0047	0.0059	0.0071
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0043
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0083	0.0059	0.0071	0.0083
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
-	-	-	-	-	-	-	-	-	-	-	-
0.0012	0.0016	0.0016	0.0024	0.0028	0.0031	0.0035	0.0043	0.0047	0.0059	0.0071	0.0083
-	-	-	-	-	-	-	-	-	-	-	-
0.0008	0.0008	0.0012	0.0012	0.0016	0.002	0.002	0.0024	0.0028	0.0031	0.0039	0.0047
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.002	0.0024	0.0028	0.0035	0.0039	0.0043	0.0047	0.0051	0.0059	0.0071	0.0087	0.0098
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0016	0.0016	0.0016	0.002	0.002
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.0008	0.0008	0.0008	0.0012	0.0012	0.0012	0.0012	0.0016	0.0016	0.0016	0.002	0.002
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

When using long edge type tools, Feed should be reduced to 40% of above table.

THREADMILLING

MTECS
Small Diameter, Short edge type

Thread Milling - Procedure

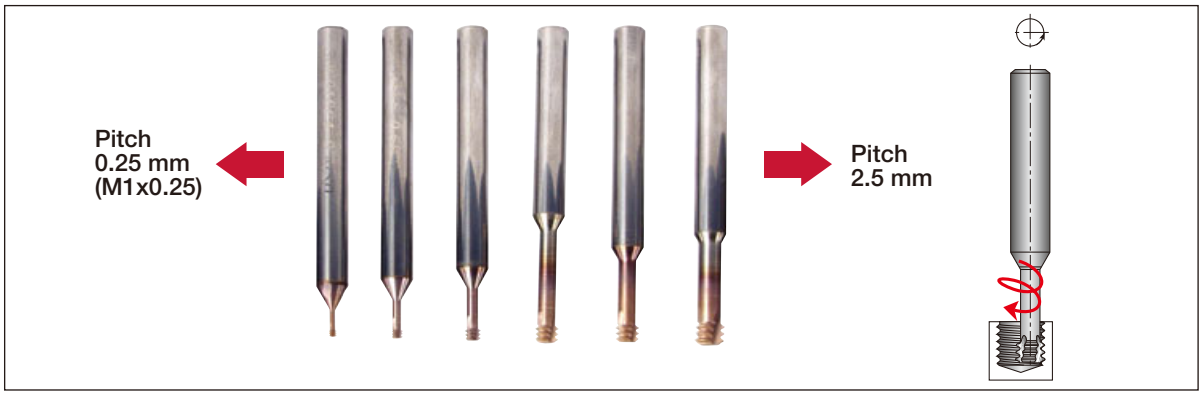


STANDARD CUTTING CONDITIONS

ISO	Material	Cutting speed (sfm)	ø0.059" (ø1.5 mm)	ø0.079" (ø2 mm)	ø0.118" (ø3 mm)	ø0.157" (ø4 mm)	ø0.197" (ø5 mm)	ø0.236" (ø6 mm)	ø0.276" (ø7 mm)	ø0.315" (ø8 mm)	ø0.354" (ø9 mm)	ø0.394" (ø10 mm)	ø0.472" (ø12 mm)	ø0.551" (ø14 mm)	ø0.591" (ø15 mm)
			Feed (ipr)												
P	Low & medium carbon steels	197 - 394	0.002	0.002	0.0028	0.0035	0.0043	0.0051	0.0055	0.0059	0.0063	0.0063	0.0067	0.0071	0.0071
P	High carbon steels	197 - 295	0.0016	0.002	0.0024	0.0031	0.0035	0.0039	0.0047	0.0051	0.0055	0.0055	0.0063	0.0067	0.0071
P	Alloy steels, treated steels	164 - 262	0.0016	0.0016	0.002	0.002	0.0024	0.0028	0.0028	0.0031	0.0035	0.0039	0.0047	0.0051	0.0055
P	Cast steels	230 - 295	0.0016	0.0016	0.002	0.002	0.0024	0.0028	0.0028	0.0031	0.0035	0.0039	0.0047	0.0051	0.0055
M	Stainless steels	197 - 295	0.0012	0.0012	0.0016	0.002	0.0024	0.0024	0.0028	0.0031	0.0035	0.0039	0.0043	0.0047	0.0051
K	Cast iron	131 - 262	0.002	0.002	0.0028	0.0035	0.0043	0.0051	0.0055	0.0059	0.0063	0.0063	0.0067	0.0071	0.0071
N	Aluminum	262 - 492	0.002	0.002	0.0028	0.0035	0.0043	0.0051	0.0055	0.0059	0.0063	0.0063	0.0067	0.0071	0.0071
N	Synthetics, duroplastics, thermoplastics	164 - 656	0.0039	0.0043	0.0047	0.0055	0.0063	0.0071	0.0075	0.0075	0.0075	0.0075	0.0075	0.0079	0.0079
S	Nickel alloys, titanium alloys	66 - 131	0.0012	0.0012	0.0016	0.0016	0.002	0.0024	0.0024	0.0024	0.0028	0.0028	0.0028	0.0031	0.0031

MTECS Small Diameter, Short edge type

SolidThread MTECS is used for the production of small internal threads. These thread mills feature a short 3-tooth cutting zone with 3 flutes and a released neck between the cutting zone and the shank. This unique tool design offers very precise profiles and a high performance AH725 submicron carbide grade with PVD titanium aluminum nitride coating. The very short profile exerts a low force which minimizes tool bending. This facilitates parallel and high thread precision for the entire length.



Compared to taps, the **SOLIDTHREAD** is more accurate, thread machining is substantially faster and there is no danger of a broken tap being stuck in the hole.

SolidThread vs. Tap

Criteria	Thread mill	Taps
Thread surface quality	High	Medium
Thread geometry	Very accurate	Medium
Thread tolerance	4H, 5H, 6H with std. cutter	6H with standard tap, 4H with special tap
Machining time	Shorter or same as tap	Short
Machining load	Very low	High
Range of thread diameters	Wide range of diameters (able to thread a wide range of hole sizes)	Specific tap for each thread size
Right-/Left-hand threading	Same cutter	Specific tap for right- and left-hand

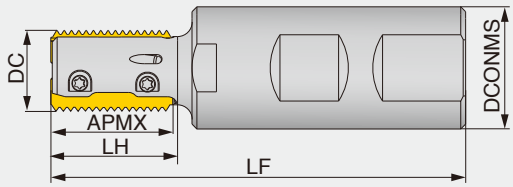
Features

- Minimum thread size of MTECS: **M1x0.25** (0.75 mm pre hole diameter) up to M20x2.50
- 2xD and 3xD threading lengths
- High cutting speeds
- Short cycle time
- Low cutting forces due to the short contact profile resulting in accurate and parallel thread
- Prevents oval threads near thin walls
- No more dealing with broken taps
- Reliable threading in blind holes
- Excellent performance on hardened steel, high temperature alloys and titanium

THREADMILLING

Thread milling cutter

Indexable thread milling cutter, long edge type



Metric	DC	APMX	CICT	DCONMS	LH	LF	Oil hole	Insert
ETTL25M017W25.0F026R02 (1)	17	25	2	25	26	85	with	TL25D...
ETTL25M017W25.0F036R02 (1)	17	25	2	25	36	95	with	TL25D...
ETTL25M019W25.0F032R02	19	25	2	25	32	92	with	TL25D...
ETTL25M019W25.0F044R02	19	25	2	25	44	104	with	TL25D...
ETTL25M021W25.0F037R03	20.5	25	3	25	37	96	with	TL25D...
ETTL25M021W25.0F044R03	20.5	25	3	25	44	103	with	TL25D...
ETTL25M022W25.0F043R03	22	25	3	25	43	102	with	TL25D...
ETTL25M022W25.0F055R03	22	25	3	25	55	114	with	TL25D...
ETTL25M030W25.0F055R05	30	25	5	25	55	115	with	TL25D...

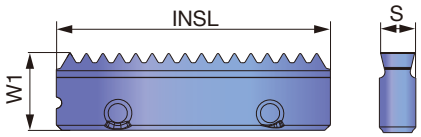
(1) Inserts with a thread pitch of ≥ 3 mm or ≥ 9TPI are not mountable.

SPARE PARTS


Designation	Clamping screw	Wrench
ETTL25...	SSTM4-3.6P	T-8D

INSERT

TL25D...



P	Steel	★	
M	Stainless	☆	
K	Cast iron	☆	
N	Non-ferrous	☆	
S	Superalloys	★	
H	Hard materials	★	

★ : First choice
☆ : Second choice

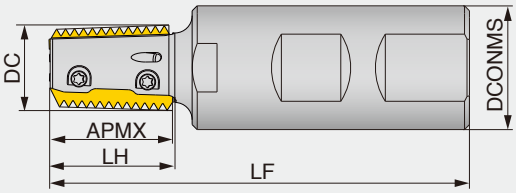
Thread type	Application	Designation	Pitch (mm)	Threads per inch	Number of threads per edge	Coated AH725	INSL	W1	S	Applicable thread sizes for the given cutter diameters: DC (mm) ø17	ø19	ø20.5	ø22	ø30
ISO Metric	Internal	TL25DIR1.5ISO	1.5	-	16	●	0.984	0.276	0.122	≥ M19	≥ M21	≥ M23	≥ M24	≥ M32
		TL25DIR2.0ISO	2	-	12	●	0.984	0.276	0.122	≥ M20	≥ M22	≥ M23	≥ M25	≥ M33
		TL25DIR3.0ISO (2)	3	-	8	●	0.984	0.276	0.122	-	≥ M23	≥ M25	≥ M26	≥ M34
Unified	Internal	TL25DIR20UN	-	20	19	●	0.984	0.276	0.122	≥ 3/4	≥ 7/8	≥ 7/8	≥ 15/16	≥ 1 5/16
		TL25DIR12UN	-	12	11	●	0.984	0.276	0.122	≥ 13/16	≥ 7/8	≥ 15/16	≥ 1	≥ 1 5/16
		TL25DIR9UN (2)	-	9	8	●	0.984	0.276	0.122	-	≥ 7/8	≥ 15/16	≥ 1	≥ 1 3/8
		TL25DIR8UN (2)	-	8	7	●	0.984	0.276	0.122	-	≥ 15/16	≥ 1	≥ 1 1/16	≥ 1 3/8
Whitworth (parallel pipe)	Internal and external	TL25DEIR14W	-	14	13	●	0.984	0.276	0.122	≥ G1/2	≥ G5/8	≥ G3/4	≥ G3/4	-
		TL25DEIR11W	-	11	10	●	0.984	0.276	0.122	≥ G1	≥ G1	≥ G1	≥ G1	≥ G1

Do not use this tool when the hole depth to be threaded exceeds the cutter's LH value.
(2) Does not fit the DC = 17 mm holder

●: Line up

Reference pages: Standard cutting conditions → I077

Indexable thread milling cutter, long edge type

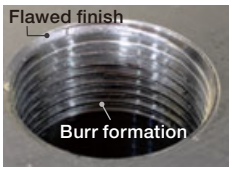


Metric	DC	APMX	CICT	DCONMS	LH	LF	Oil hole	Insert
ETTL25M017W25.0F026R02-PT	17.47	25	2	25	25.5	85	with	TL25SEIR...
ETTL25M022W25.0F043R03-PT	22.2	25	3	25	43	102	with	TL25SEIR...

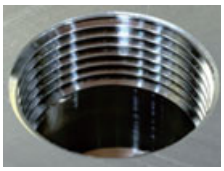
SPARE PARTS

Designation	Clamping screw	Wrench
ETTL...-PT	SSTM4-3.6P	T-8D

Excellent surface finish



Helical tap
(of HSS)

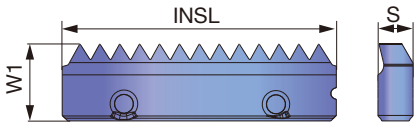


THREADMILLING
ETTL25M017W25.0F026R02-PT,
TL25SEIR11BSPT

Machine: BT50
Thread: Rc1

INSERT

TL25SEIR...



P	Steel	★	
M	Stainless	☆	
K	Cast iron	☆	
N	Non-ferrous	☆	
S	Superalloys	★	
H	Hard materials	★	

★ : First choice
☆ : Second choice

Thread type	Application	Designation	Pitch (mm)	Threads per inch	Number of threads per edge	Coated AH725	INSL	W1	S	Applicable thread sizes for the given cutter diameters: DC (mm) ø17.47	ø22.2
BSPT	Internal and external	TL25SEIR14BSPT	-	14	13	●	0.984	0.276	0.122	1/2, 3/4	3/4
		TL25SEIR11BSPT	-	11	10	●	0.984	0.276	0.122	≥ 1 (1)	≥ 1 (1)
NPT	Internal and external	TL25SEIR14NPT	-	14	13	●	0.984	0.276	0.122	1/2, 3/4	3/4
		TL25SEIR11.5NPT	-	11.5	11	●	0.984	0.276	0.122	1, 1 1/4, 1 1/2, 2 (1)	1, 1 1/4, 1 1/2, 2 (1)
NPTF	Internal and external	TL25SEIR14NPTF	-	14	13	●	0.984	0.276	0.122	1/2, 3/4	3/4

(1) Do not use this insert when the hole depth to be threaded exceeds the cutter's LH.

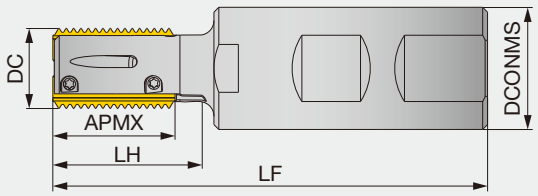
●: Line up

Reference pages: Standard cutting conditions → I077

THREADMILLING

Thread milling cutter

Indexable thread milling cutter, long edge type



Metric	DC	APMX	CICT	DCONMS	LH	LF	Coolant hole	Insert
ETLN25M017W25.0F026R02 (1)	17	25	2	25	26	85	With	LN25....
ETLN25M017W25.0F036R02 (1)	17	25	2	25	36	95	With	LN25....
ETLN25M019W25.0F032R02	19	25	2	25	32	92	With	LN25....
ETLN25M019W25.0F044R02	19	25	2	25	44	104	With	LN25....
ETLN25M021W25.0F037R03	20.5	25	3	25	37	96	With	LN25....
ETLN25M021W25.0F044R03	20.5	25	3	25	44	103	With	LN25....
ETLN25M022W25.0F043R03	22	25	3	25	43	102	With	LN25....
ETLN25M022W25.0F055R03	22	25	3	25	55	114	With	LN25....
ETLN25M030W25.0F055R05	30	25	5	25	55	115	With	LN25....

(1) Inserts with a thread pitch of ≥ 3 mm or ≥ 8TPI do not fit.

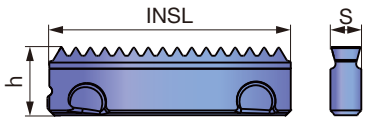
SPARE PARTS


Designation	Clamping screw	Wrench
ETLN25...	SSTM3-3	T-6F

Recommended clamping torque: 1 N·m

INSERT

LN25...



P	Steel	★
M	Stainless	☆
K	Cast iron	☆
N	Non-ferrous	☆
S	Superalloys	★
H	Hard materials	★

★ : First choice
☆ : Second choice

Thread type	Application	Designation	Pitch (mm)	Threads per inch	Coated AH725	INSL	h	S
ISO Metric	Internal	LN25DIR1.5ISO	1.5	-	●	0.984	0.276	0.122
		LN25DIR2.0ISO	2	-	●	0.984	0.276	0.122
		LN25DIR3.0ISO (2)	3	-	●	0.984	0.276	0.122
Unified	Internal	LN25DIR20UN	-	20	●	0.984	0.276	0.122
		LN25DIR12UN	-	12	●	0.984	0.276	0.122
		LN25DIR8UN (2)	-	8	●	0.984	0.276	0.122
Whitworth	Internal and external	LN25DEIR14W	-	14	●	0.984	0.276	0.122
		LN25DEIR11W	-	11	●	0.984	0.276	0.122

(2) Does not fit the DC 17 holder

●: Line up

Reference pages: Standard cutting conditions → I077

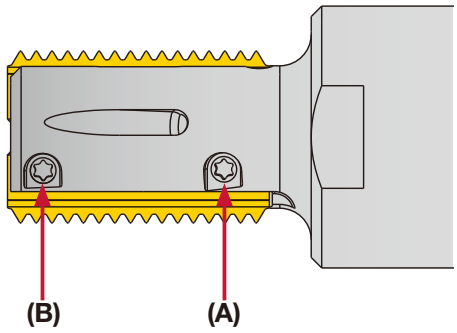
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Low carbon steel	AH725	328 - 656	0.004 - 0.012
	High carbon steel	AH725	230 - 492	0.004 - 0.012
	High carbon steel	AH725	230 - 558	0.004 - 0.012
	Cast steel	AH725	230 - 558	0.004 - 0.012
M	Stainless steel	AH725	295 - 459	0.004 - 0.012
K	Cast iron	AH725	197 - 427	0.002 - 0.012
N	Aluminum	AH725	262 - 1312	0.004 - 0.016
S	Heat-resistant alloys	AH725	33 - 98	0.001 - 0.004
	Titanium alloy	AH725	66 - 295	0.001 - 0.004

Climb milling is recommended.

Insert installation

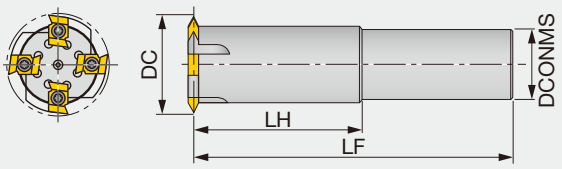
1. Use airgun or rag to thoroughly clean all the insert pockets free from dust or chips.
2. Lightly tighten Screw "A" first, then Screw "B" until the insert becomes stationary.
3. Lightly tighten the screws for other insert(s) in the same matter as mentioned in #1 and #2 above.
4. Firmly tighten Screw "A", then Screw "B".
   Use the recommended torque strengths when tightening the screws.
5. Firmly tighten the screws for other insert(s) in the same manner as mentioned in #4 above.
6. Inspect to make sure there is no gap between the insert and the insert seat. Measure the radial runout before use.



THREADMILLING

Thread milling cutter

Indexable thread milling cutter, single tooth



Right hand, 4 inserts

Metric	DC	CICT	DCONMS	LH	LF	Range of internal thread	Insert
D23-D25-45R	23	1	25	45	115	M28 - M30	T1-R...
D25-D25-45R	25	1	25	45	115	M32 - M42	T1-R...
D38-D32-85R	38	2	32	85	165	M45 - M56	T1-R...
D50-D42-100R	50	4	42	100	190	M58 - M68	T1-R...
D55-D42-100R	55	4	42	100	190	M64 - M85	T2-R...
D60-D42-100R	60	4	42	100	190	M70 - M85	T2-R...
D80-D42-100R	80	6	42	100	190	M90 -	T2-R...

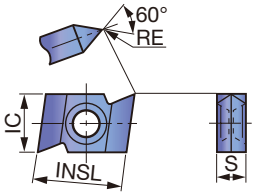
SPARE PARTS


Designation	Clamping screw	Wrench
D23-D25... - D50-D42...	CSTB-4	T-15F
D55-D42... - D80-D42...	CSTB-5	T-20F

Recommended clamping torque: CSTB-4 = 3.5 N·m, CSTB-5 = 5 N·m

INSERT

T*-R...



P	Steel	★	
M	Stainless	★	
K	Cast iron		
N	Non-ferrous		
S	Superalloys		
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	RE	Coated											INSL	IC	S
		GH330													
T1-R14	0.006	●											0.567	0.375	0.187
T1-R28	0.011	●											0.567	0.375	0.187
T2-R14	0.006	●											0.701	0.500	0.250
T2-R28	0.011	●											0.701	0.500	0.250

●: Line up

Reference pages: Standard cutting conditions → I079

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Grade	Cutting speed *Vc* (sfm)	Feed per tooth *fz* (ipt)
P	Mild steels , Unhardened steels	≥ 200 HB	GH330	490 - 660	0.012 - 0.016
P	Carbon steels, Alloy steels	≥ 300 HB	GH330	490 - 660	0.007 - 0.010
P	Die steels	≥ 50 HRC	GH330	100 - 160	0.006 - 0.008
M	Stainless steels	≥ 300 HB	GH330	490 - 660	0.002 - 0.005

Climb milling is recommended.
When threading a blind hole, use a right hand cutter in right-hand rotation. Cut up from the bottom to prevent chip recutting.
When machining internal threads from the mouth, use the left-hand cutter in left-hand rotation.

THREADING MILLS AND APPLICABLE THREADS

Internal threading - Metric threads (M)

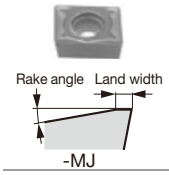
Designation	Insert	Pitch (mm)										
		1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
D23-D25-45R	T1-R14	M28	M28	M29	M29	M30	M30	-	-	-	-	-
	T1-R28	-	-	-	-	M30	M30	-	-	-	-	-
D25-D25-45R	T1-R14	M30	M30	M31	M31	M32	M32	M36	M36	-	-	-
	T1-R28	-	-	-	-	M32	M32	M36	M36	-	-	-
D38-D32-85R	T1-R14	M43	M43	M44	M44	M45	M45	M46	M46	M48	M56	-
	T1-R28	-	-	-	-	M45	M45	M46	M46	M48	M56	-
D50-D42-100R	T1-R14	M55	M55	M56	M56	M57	M57	M58	M58	M59	M59	-
	T1-R28	-	-	-	-	M57	M57	M58	M58	M59	M59	-
D55-D42-100R	T2-R14	M60	M60	M61	M61	M62	M62	M63	M63	M64	M64	M65
	T2-R28	-	-	-	-	M62	M62	M63	M63	M64	M64	M65
D60-D42-100R	T2-R14	M65	M65	M66	M66	M67	M67	M68	M68	M69	M69	M70
	T2-R28	-	-	-	-	M67	M67	M68	M68	M69	M69	M70
D80-D42-100R	T2-R14	M85	M85	M86	M86	M87	M87	M88	M88	M89	M89	M90
	T2-R28	-	-	-	-	M87	M87	M88	M88	M89	M89	M90

Internal threading - Unified threads (UN, UNC, UNF, UNEF)

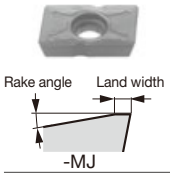
Designation	Insert	TPI												
		16	14	13	12	11	10	9	8	7	6	5	4.5	4
D23-D25-45R	T1-R14	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/16	1 3/16	1 3/16	1 3/16	-	-	-	-
	T1-R28	-	-	-	-	-	1 3/16	1 3/16	1 3/16	1 3/16	-	-	-	-
D25-D25-45R	T1-R14	1 3/16	1 3/16	1 3/16	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 5/16	1 3/8	1 3/4	-	-
	T1-R28	-	-	-	-	-	1 1/4	1 1/4	1 1/4	1 5/16	1 3/8	1 3/4	-	-
D38-D32-85R	T1-R14	1 11/16	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 13/16	1 13/16	1 7/8	2	-
	T1-R28	-	-	-	-	-	1 3/4	1 3/4	1 3/4	1 13/16	1 13/16	1 7/8	2	-
D50-D42-100R	T1-R14	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 3/8	2 3/8	2 3/8	-
	T1-R28	-	-	-	-	-	2 1/4	2 1/4	2 1/4	2 1/4	2 3/8	2 3/8	2 3/8	-
D55-D42-100R	T2-R14	2 3/8	2 3/8	2 3/8	2 3/8	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 5/8	2 5/8	2 3/4
	T2-R28	-	-	-	-	-	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 5/8	2 5/8	2 3/4
D60-D42-100R	T2-R14	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 3/4	2 3/4	2 3/4	2 7/8	3
	T2-R28	-	-	-	-	-	2 5/8	2 5/8	2 5/8	2 3/4	2 3/4	2 3/4	2 7/8	3
D80-D42-100R	T2-R14	3 3/8	3 3/8	3 3/8	3 3/8	3 3/8	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 5/8	3 3/4
	T2-R28	-	-	-	-	-	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 5/8	3 3/4

Milling Insert (Old item)

● ACMT**PR-MJ

Shape	Designation	Coated				Applicable mill
		AH120	AH140	GH330	T3130	
	ACMT060308PR-MJ	●	●	●	●	ELP07/09/12...
	ACMT07T308PR-MJ	●	●	●	●	
	ACMT100408PR-MJ	●	●	●	●	

● ADMT**PR-MJ

Shape	Designation	Coated			Applicable mill
		AH120	AH140	T3130	
	ADMT130308PR-MJ	●	●	●	ELP13/17/21...
	ADMT17T308PR-MJ	●	●	●	
	ADMT210408PR-MJ	●	●	●	

● AECW**PEFR, AECW**PESR, AEMW**PEFR, AEMW**PETR

Shape	Designation	Coated		Cermet	Uncoated		Applicable mill
		AH120	GH330	NS740	UX30	TH10	
	AECW1403PEFR					●	EPE4000/5000/ 6000...
	AECW1403PESR	●	●	●	●		
	AECW16T3PEFR					●	
	AECW16T3PESR	●	●	●	●		
	AECW1804PEFR					●	
	AECW1804PESR	●	●	●	●		
	AEMW1403PEFR					●	
	AEMW1403PETR		●	●	●		
	AEMW16T3PEFR					●	
	AEMW16T3PETR		●	●	●		
	AEMW1804PEFR					●	
	AEMW1804PETR		●	●	●		

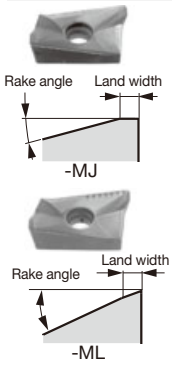
● ANEA542TN, ANEA642TN

Shape	Designation	Uncoated	Applicable mill
		UX30	
	ANEA542TN	●	VSN...
	ANEA642TN	●	

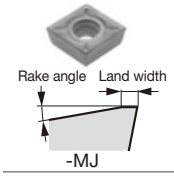
●: Line up

Milling Insert (Old item)

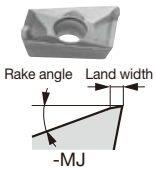
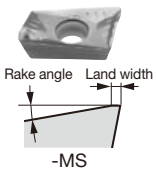
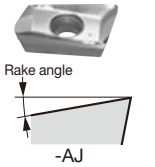
● ANMT**PPPR-MJ, ANMT**PPPR-ML

Shape	Designation	Coated										Applicable mill
		AH120	GH330	T3130								
	ANMT09T3PPPR-MJ	●	●	●								EPN09 EPN14... TPN14...
	ANMT09T3PPPR-ML	●										
	ANMT1404PPPR-MJ	●	●	●								
	ANMT1404PPPR-ML	●										

● APMT**PN-MJ

Shape	Designation	Coated										Applicable mill
		AH120	AH140	GH330	T3130							
	APMT070308PN-MJ	●	●	●	●							ELP07/09/12...
	APMT09T308PN-MJ	●	●	●	●							
	APMT120408PN-MJ	●	●	●	●							

● ASMT17**PDPR-MJ, ASGT17**PDFR-AJ, ASMT170508PDPR-MS

Shape	Designation	Coated						Cermet		Uncoated			Applicable mill
		AH120	AH130	AH140	T1115	T3130	DS1100	NS740		KS05F			
	ASMT170504PDPR-MJ	●			●	●		●					TPS17... EPS17...
	ASMT170508PDPR-MJ	●			●	●		●					
	ASMT170512PDPR-MJ	●				●							
	ASMT170516PDPR-MJ	●				●		●					
	ASMT170520PDPR-MJ	●											
	ASMT170530PDPR-MJ	●											
	ASMT170532PDPR-MJ	●				●		●					
	ASMT170508PDPR-MS		●	●									
	ASGT170504PDFR-AJ						●			●			
	ASGT170508PDFR-AJ						●			●			
													

●: Line up

Milling Insert (Old item)

● CPMW**-EN, CPMT**-EN

Shape	Designation	Coated						Uncoated							Applicable mill
		GH330						UX30							
	CPMW050208EN	●						●							EVP1000
	CPMW06T208EN	●						●							
	CPMT080308EN	●						●							

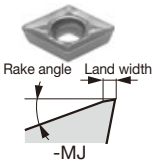
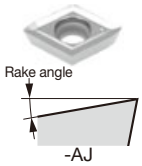
● EDKW53ZTR

Shape	Designation	Coated						Uncoated							Applicable mill
		GH330						UX30							
	EDKW53ZTR	●						●							ESD5000

● ENEQ**TN-T

Shape	Designation	Coated													Applicable mill
		AH120													
	ENEQ090508TN-T	●													VSNE09...
	ENEQ100508TN-T	●													VSNE10...
	ENEQ130608TN-T	●													VSNE13...
	ENEQ160608TN-T	●													VSNE16...

● GDMT**PDPR-MJ, GDGT**PDFR-AJ

Shape	Designation	Coated						Uncoated							Applicable mill
		AH120	AH140	AH330	T3130	DS1100		UX30	TH10						
	GDMT10H3PDPR-MJ	●	●	●	●			●							TSD10/17...
	GDMT17X6PDPR-MJ	●	●	●	●			●							ESD10/17...
	GDGT10H3PDFR-AJ					●			●						HSD10/17...
	GDGT17X6PDFR-AJ					●			●						
															

● HEHN532FN

Shape	Designation	Uncoated													Applicable mill
		TH10													
	HEHN532FN	●													QYE5300

●: Line up

Milling Insert (Old item)

● HPKN532FN

Shape	Designation	Uncoated	Applicable mill
		TH10	
	HPKN532FN	●	QYP5300

● LNCA64ZTR

Shape	Designation	Coated	Uncoated	Applicable mill
		T3130	UX30	
	LNCA64ZTR	●	●	VSN6000I

● RDCA2004TN, RDCN2004TN, RDKN2004...

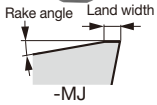
Shape	Designation	Coated	Uncoated		Applicable mill
		AH120	UX30	TH10	
	RDCA2004TN		●		TRD6000 ERD6000
	RDCN2004TN		●		
	RDKN2004FN			●	
	RDKN2004TN	●	●		

● RDCM1203TN, RDMA1203TN

Shape	Designation	Uncoated	Applicable mill
		UX30	
	RDCM1203TN	●	ERD4000
	RDMA1203TN	●	

● RDMT**ZDPN-MJ, RDMW**ZDSN

Shape	Designation	Coated				Uncoated		Applicable mill
		AH120	AH130	AH140	AH330	T3130	UX30	
	RDMT1204ZDPN-MJ	●		●	●	●	●	TRD12/16... ERD12/16...
	RDMW1204ZDSN	●		●		●		
	RDMT1606ZDPN-MJ	●	●	●	●	●	●	
	RDMW1606ZDSN	●		●		●		



●: Line up

Milling Insert (Old item)

● RFEN2004ZFTN, RFEN2004M0TN

Shape	Designation	Coated			Uncoated							Applicable mill
		AH120	GH330		UX30	KS20						
	RFEN2004ZFTN	●	●		●	●						TRF6000 ERF6000
	RFEN2004M0TN		●		●	●						

● SDCN1504ZDSR, SDEN1504ZDSR, SDNN1504ZDSR

Shape	Designation	Coated										Applicable mill
		AH120	AH140	T1115	T3130							
	SDCN1504ZDSR	●	●		●							MILLFEED TXD15...
	SDEN1504ZDSR	●	●	●	●							
	SDNN1504ZDSR	●	●	●	●							

● SDKN42EF..., SDEN42EFTR24

Shape	Designation	Coated			Cermet		Uncoated					Applicable mill
		T3130			NS740		TH10	UX30				
	SDKN42EFTR	●			●							TMD4100I
	SDKN42EFFR						●					
	SDEN42EFTR24				●			●				

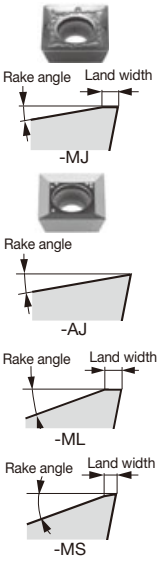
● SDMT1204AFPN-MJ, SDMT1204AFTN-MJ, SDMT1204AFPN-ML, SDMT1204AFPN-MS, SDGT1204AFTN-MJ, SDGT1204AFFN-AJ

Shape	Designation	Coated					Cermet		Uncoated				Applicable mill
		AH120	AH140	AH330	GH330	T3130	NS740		TH10				
 Rake angle Land width -MJ	SDMT1204AFPN-MJ	●	●	●	●	●							TAD12... EAD12...
	SDMT1204AFTN-MJ						●						
	SDMT1204AFPN-ML	●		●									
	SDMT1204AFPN-MS		●										
	SDGT1204AFTN-MJ	●		●			●						
	SDGT1204AFFN-AJ								●				
 Rake angle -AJ													
Rake angle Land width -ML													
Rake angle Land width -MS													

●: Line up

Milling Insert (Old item)

● SDMT1204PDSR-MJ, SDMT1204PDTR-MJ, SDMT1204PDPR-ML, SDMT1204PDPR-MS SDGT1204PDTR-MJ, SDGT1204PDFR-AJ

Shape	Designation	Coated					Cermet		Uncoated			Applicable mill
		AH120	AH140	AH330	GH330	T3130	NS740		TH10			
	SDMT1204PDSR-MJ	●	●	●	●	●						TPD12... EPD12...
	SDMT1204PDTR-MJ						●					
	SDMT1204PDPR-ML	●		●								
	SDMT1204PDPR-MS		●									
	SDGT1204PDTR-MJ	●		●			●					
	SDGT1204PDFR-AJ								●			

● SDMW090308TN, SDMW120408TN

Shape	Designation	Uncoated										Applicable mill
		UX30										
	SDMW090308TN	●										ELD3000 ELD4000
	SDMW120408TN	●										

● SECN422TN, SECN422FN, SEEN422TN, SEEN422FN, SECN422FN-DIA

Shape	Designation	ISO Designation (Metric)	Cermet				Uncoated				PCD				Applicable mill
			NS740	N308			UX30	TH10			DX140				
	SECN422TN	SECN120308TN	●	●			●								EGE4000 QHE4000
	SECN422FN	SECN120308FN						●							
	SEEN422TN	SEEN120308TN	●	●			●								
	SEEN422FN	SEEN120308FN						●							
	SECN422FN-DIA	SECN120308FN-D									●				

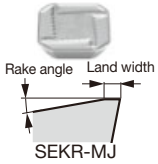
DX140: Packing quantity = 1pc.

●: Line up

Milling Insert (Old item)

● SEEN1203AFTNCR-14, SEKN42AFTN, SEKN42AFFN, SEKN42AFTN16, SEKR42AFSR-MJ, SEKR1203AFPN-MS, SEKR1203AFTN-MJ, SEMR1203AFTN-MJ

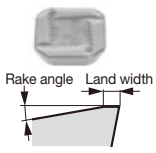
Shape	Designation	ISO Designation (Metric)	Coated					Cermet	Uncoated		Applicable mill
			AH120	AH130	AH140	GH330	T3130	NS740	TH10	UX30	
	SEEN1203AFTNCR-14							●			TGE4400I
	SEKN42AFTN	SEKN1203AFTN	●	●	●	●				●	EGE4400
	SEKN42AFFN	SEKN1203AFFN							●		
	SEKN42AFTN16	SEKN1203AFTN-16					●	●			
	SEKR42AFSR-MJ	SEKR1203AFSR-MJ				●	●				
	SEKR1203AFPN-MS				●						
	SEKR1203AFTN-MJ							●			
	SEMR1203AFTN-MJ							●			



● SECN42EFTRCR, SEEN42EFTRCR, SEKN42EFTR, SEKN42EFFR

Shape	Designation	ISO Designation (Metric)	Coated		Cermet	Uncoated			Applicable mill
			GH330	T3130	NS740	UX30	TH10		
	SECN42EFTRCR	SECN1203EFTR			●				EGE4100
	SEEN42EFTRCR	SEEN1203EFTR			●				
	SEKN42EFTR	SEKN1203EFTR	●	●	●				
	SEKN42EFFR	SEKN1203EFFR					●		

●SEKR1504AFSR-MJ

Shape	Designation	Coated	Applicable mill
		T3130	
	SEKR1504AFSR-MJ	●	

●: Line up

Milling Insert (Old item)

● SF*N42ZFN, SFCN42ZFN-DIA

Shape	Designation	Uncoated			PCD						Applicable mill
		TH10			DX140						
 -DIA	SFCN42ZFN	●									THF4400RIA
	SFEN42ZFN	●									
	SFCN42ZFN-DIA				●						

DX140: Packing quantity = 1pc.

● SF*N53ZFN, SFCN53ZFN-DIA

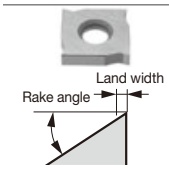
Shape	Designation	Uncoated			PCD						Applicable mill
		TH10			DX140						
 -DIA	SFCN53ZFN	●									THF5400RIA
	SFEN53ZFN	●									
	SFCN53ZFN-DIA				●						

DX140: Packing quantity = 1pc.

● SNCN43Z..., SNKF43Z..., SNKN43ZTN

Shape	Designation	Coated			Cermet		Ceramic	Uncoated			Applicable mill
		T1115	T3130		NS740	N308	FX105	UX30	TH10		
	SNCN43ZFN								●		TGN4200R-A
	SNCN43ZTN				●	●		●			
	SNKF43ZFN								●		
	SNKF43ZTN	●						●			
	SNKN43ZTN	●	●		●		●	●			

● SNEN12**Z...

Shape	Designation	Uncoated									Applicable mill
		UX30	TH10								
	SNEN12T2ZFN		●								SVN4000
	SNEN12T2ZTN	●									
	SNEN1233ZFN		●								
	SNEN1233ZTN	●									

● SNMN1204**TN

Shape	Designation	Coated			Cermic		Uncoated				Applicable mill
		AH120	T1115	T3130	FX105		UX30				
	SNMN120408TN				●						TGN4200R-A
	SNMN120412TN	●	●	●	●		●				
	SNMN120416TN				●						
	SNMN120420TN				●						
	SNMN120424TN				●						

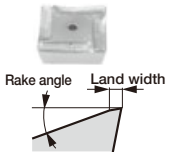
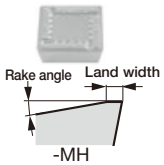
●: Line up

Milling Insert (Old item)

● SPGN120412TN

Shape	Designation	Coated			Ceramic						Applicable mill
		T1115			FX105						
	SPGN120412TN	●			●						QFP4000

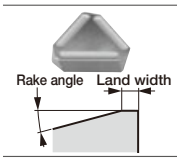
● SPMR1605PPTR-MJ, SPMR1605PPPR-ML, SPMR1605PPTR-MH

Shape	Designation	Coated			Uncoated						Applicable mill
		GH330	T1115	T3130	UX30						
 -MJ	SPMR1605PPTR-MJ	●	●	●	●						TPP16...
	SPMR1605PPPR-ML	●									
 -ML	SPMR1605PPTR-MH	●		●	●						
 -MH											

●TDMN**N

Shape	Designation	Cermet			Uncoated						Applicable mill
		NS740			TH10	UX30					
	TDMN110304TN	●				●					ESD2000
	TDMN110304FN				●						
	TDMN110308TN	●				●					

●TNKF64ZTR

Shape	Designation	Uncoated									Applicable mill
		UX30									
	TNKF64ZTR	●									TPN6400I

●: Line up

Milling Insert (Old item)

●TNMN43ZENS

Shape	Designation	Uncoated	Applicable mill
		UX30	
	TNMN43ZENS	●	TSN4000 ESN4000

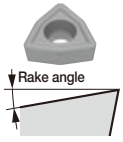
● TPCA43ZTRW1, TPMA432TNW1

Shape	Designation	Cermet	Uncoated		Applicable mill
		NS740	UX30	TH10	
	TPCA43ZTRW1			●	PES1500...
	TPMA432TNW1	●	●	●	

●TPMN**TN

Shape	Designation	Cermet	Applicable mill
		NS740	
	TPMN110304TN	●	
	TPMN110308TN	●	
	TPMN160308TN	●	
	TPMN160312TN	●	
	TPMN220408TN	●	
	TPMN220412TN	●	

● WCMT**-D4

Shape	Designation	Coated		Applicable mill
		AH120	AH140	
	WCMT050308-D4	●	●	EVX... HVX...
	WCMT06T308-D4	●	●	

● WFCN**ZFR-DIA

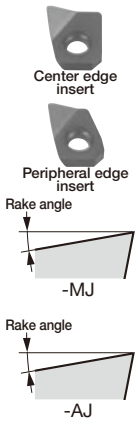
Shape	Designation	PCD	Applicable mill
		DX140	
	WFCN42ZFR-DIA	●	THF4400RIA THF5400RIA
	WFCN53ZFR-DIA	●	

DX140: Packing quantity = 1pc.

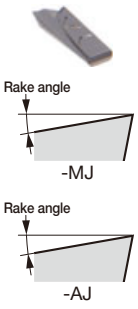
●: Line up

Milling Insert (Old item)

● XVGT**EC-MJ, XVGT**EP-MJ, XVGT**FC-AJ, XVGT**FP-AJ

Shape	Designation	Coated AH730	Coated DS1200	Applicable mill
	XVGT06H205EC-MJ	●		HYBRIDTACMILL EVH...
	XVGT07X305EC-MJ	●		
	XVGT09X405EC-MJ	●		
	XVGT06H205EP-MJ	●		
	XVGT07X305EP-MJ	●		
	XVGT09X405EP-MJ	●		
	XVGT06H205FC-AJ		●	
	XVGT07X305FC-AJ		●	
	XVGT09X405FC-AJ		●	
	XVGT06H205FP-AJ		●	
	XVGT07X305FP-AJ		●	
	XVGT09X405FP-AJ		●	

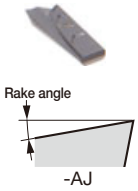
● XHGR**ER-MJ, XHGR**FR-AJ

Shape	Designation	Coated AH730	Coated DS1200	Applicable mill
	XHGR110202ER-MJ	●		HYBRIDTACMILL EPH11/13/18...
	XHGR110204ER-MJ	●		
	XHGR110205ER-MJ	●		
	XHGR110208ER-MJ	●		
	XHGR110210ER-MJ	●		
	XHGR110212ER-MJ	●		
	XHGR110215ER-MJ	●		
	XHGR110216ER-MJ	●		
	XHGR110220ER-MJ	●		
	XHGR130202ER-MJ	●		
	XHGR130204ER-MJ	●		
	XHGR130205ER-MJ	●		
	XHGR130208ER-MJ	●		
	XHGR130210ER-MJ	●		
	XHGR130212ER-MJ	●		
	XHGR130215ER-MJ	●		
	XHGR130216ER-MJ	●		
	XHGR130220ER-MJ	●		
	XHGR18T202ER-MJ	●		
	XHGR18T204ER-MJ	●		
	XHGR18T205ER-MJ	●		
	XHGR18T208ER-MJ	●		
	XHGR18T210ER-MJ	●		
	XHGR18T212ER-MJ	●		
	XHGR18T215ER-MJ	●		
	XHGR18T216ER-MJ	●		
	XHGR18T220ER-MJ	●		
	XHGR110200FR-AJ		●	
	XHGR110202FR-AJ		●	
	XHGR110204FR-AJ		●	
	XHGR110205FR-AJ		●	
	XHGR110208FR-AJ		●	
	XHGR110210FR-AJ		●	

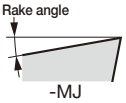
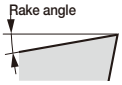
●: Line up

Milling Insert (Old item)

● XHGR**ER-MJ, XHGR**FR-AJ

Shape	Designation	Coated		Applicable mill
		AH730	DS1200	
	XHGR130212FR-AJ		●	HYBRIDTACMILL EPH11/13/18...
	XHGR130215FR-AJ		●	
	XHGR130216FR-AJ		●	
	XHGR130220FR-AJ		●	
	XHGR18T200FR-AJ		●	
	XHGR18T202FR-AJ		●	
	XHGR18T204FR-AJ		●	
	XHGR18T205FR-AJ		●	
	XHGR18T208FR-AJ		●	
	XHGR18T210FR-AJ		●	
	XHGR18T212FR-AJ		●	
	XHGR18T215FR-AJ		●	
	XHGR18T216FR-AJ		●	
	XHGR18T220FR-AJ		●	

● XXGT**EC-MJ, XXGT**FC-AJ, XXGT**EP-MJ, XXGT**FP-AJ

Shape	Designation	Coated		Applicable mill
		AH730	DS1200	
 Center edge insert	XXGT06H205EC-MJ	●		HYBRIDTACMILL EXH...
	XXGT07X305EC-MJ	●		
	XXGT09X408EC-MJ	●		
 Peripheral edge insert	XXGT06H205FC-AJ		●	
	XXGT07X305FC-AJ		●	
	XXGT09X408FC-AJ		●	
 Rake angle -MJ	XXGT06H205EP-MJ	●		
	XXGT07X305EP-MJ	●		
	XXGT09X408EP-MJ	●		
 Rake angle -AJ	XXGT06H205FP-AJ		●	
	XXGT07X305FP-AJ		●	
	XXGT09X408FP-AJ		●	

● YDEN1505ADFR-D, YDEN1505ADFR-WD

Shape	Designation	PCD	Applicable mill
		DX140	
 Regular edge	YDEN1505ADFR-D	●	DAD15...
 Wiper edge	YDEN1505ADFR-WD	●	

DX140: Packing quantity = 1pc.

●: Line up

Milling Insert (Old item)

● YDEN1505PDFR-D, YDEN1505PDFR-WD

Shape	Designation	PCD	Applicable mill
		DX140	
 Regular edge	YDEN1505PDFR-D	●	DPD15... EDPD15...
	YDEN1505PDFR-WD	●	
 Wiper edge			

DX140: Packing quantity = 1pc.

● YDEN2405PDFR-D, YDEN2405PDFR-WD, YDEN2405PDFR-BD

Shape	Designation	PCD	Applicable mill
		DX140	
 Regular edge	YDEN2405PDFR-D	●	DPD24...
	YDEN2405PDFR-WD	●	
	YDEN2405PDFR-BD	●	
 Wiper edge			
 Wiper for burr removal			

DX140: Packing quantity = 1pc.

● ZDCA**TN

Shape	Designation	Uncoated	Applicable mill
		UX30	
	ZDCA0804TN	●	TBF1000
	ZDCA1105TN	●	

●: Line up

Milling Insert (Old item) CBN

● 2QP-SNGN..

Shape	Designation	CBN								Applicable mill
		BX910								
	2QP-SNGN090308	●								
	2QP-SNGN090312	●								

● 2QP-SPGW..., 2QP-SPGN...

Shape	Designation	CBN								Applicable mill
		BX910								
 2QP-SPGW	2QP-SPGW09T308	●								
	2QP-SPGW09T312	●								
	2QP-SPGW120408	●								
	2QP-SPGW120412	●								
 2QP-SPGN	2QP-SPGW120416	●								
	2QP-SPGN090308	●								
	2QP-SPGN090312	●								

● 3QP-TPGW..., 3QP-TPGN...

Shape	Designation	CBN								Applicable mill
		BX910								
 3QP-TPGW	3QP-TPGW110308	●								
	3QP-TPGN110308	●								
	3QP-TPGN110312	●								
 3QP-TPGN										

● S-CNGN..., S-RNGN..., S-SNGN..., S-TNGN...

Shape	Designation	CBN								Applicable mill
		BXC90								
 S-CNGN	S-CNGN090308	●								
	S-CNGN090312	●								
	S-CNGN120408	●								
	S-CNGN120412	●								
 S-RNGN	S-RNGN090300	●								
	S-RNGN120400	●								
 S-SNGN	S-SNGN090308	●								
	S-SNGN090312	●								
	S-SNGN120308	●								
	S-SNGN120312	●								
	S-SNGN120408	●								
	S-SNGN120412	●								
 S-TNGN	S-TNGN110308	●								
	S-TNGN110312	●								
	S-TNGN160408	●								
	S-TNGN160412	●								

●: Line up