

Endmill



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

Method 1.

1

Indrabrass
Internal

2

R

3

2

4

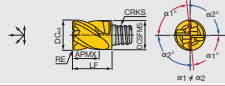
1

5

6

TUNGMEISTER VER...

4 flute square head, for general purpose (TungMeister)

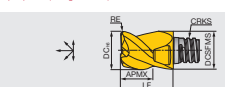



Metric		MH75	NOF	FHA	DC	DCSMS	APMX	RE	CRKS	LF
VERH0010L01.0R100A005	●	4	30°	39°	8	7.7	5	1	508	16
VERH0010L01.0R100A005	●	4	30°	39°	8	7.7	5	1	508	16
VERH0010L01.0R100A008	●	4	30°	39°	10	9.7	7	0.5	506	13
VERH0010L01.0R100A008	●	4	30°	39°	10	9.7	7	1	508	13
VERH0010L01.0R100A010	●	4	30°	39°	12	11.7	9	0.5	508	16.5
VERH0010L01.0R100A010	●	4	30°	39°	12	11.7	9	1	508	16.5
VERH0010L01.0R100A015	●	4	30°	39°	16	15.3	12	0.5	510	25.5
VERH0010L01.0R100A015	●	4	30°	39°	16	15.3	12	1	510	25.5
VERH0010L01.0R100A012	●	4	30°	39°	20	18.3	15	0.5	512	25.5
VERH0010L01.0R100A012	●	4	30°	39°	20	18.3	15	1	512	25.5

* Torque: R₁ Recommended clamping torque: N.m
2 pieces per package

TUNGMEISTER VEE**...03...

3 flute square head, for general purpose (TungMeister)

Inch		AH725	NOF	FHA	DC	DCSMS	APMX	CRKS	LF
VEE001L7R000-U03505	●	3	45°	0.312	0.300	0.290	505	0.390	VEE
VEE001L7R000-U03505	●	3	45°	0.375	0.370	0.275	505	0.512	KEY
VEE001L7R000-U03508	●	3	45°	0.500	0.488	0.374	508	0.660	KEY

* Torque: Recommended clamping torque: lbs ft
2 pieces per package

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

Select the application and the cutting edge shape from Quick Guide on **I006 - I007**, and see the details on each page.

Quick Guide **TUNGALOY**

★ First choice
☆ Second choice

Edge shape	Designation	Appearance	Operation	Feature	Edge shape	Tool material	Tool size	CRKs	Helix angle	Workpiece material	Page
										M N S H	
Square	VEH**		Spur finishing	All-around / Variable helix, variable pitch	Corner radius	4	ø8 - 400	505 - 512	19°/21°	★ ★ ☆ ☆ ☆ ☆	I010
	VEE**G3...		Finishing	All-around	Corner radius 0	3	ø8 - 412	505 - 508	45	★ ★ ★ ☆ ☆ ☆	I010
	VEE**G4... VED**G4...		Finishing	All-around	Corner radius	3	ø8 - 412	505 - 512	30/45°	★ ★ ☆ ☆ ☆ ☆	I011
	VEE**G3...		Finishing	For key way / all-around	Corner radius	3	ø7.7 - ø17.7	505 - 512	38°	★ ★ ☆ ☆ ☆ ☆	I011
	VEE**L...		Finishing	All-around / Corner radius Chamfered	Chamfered	4	ø8 - 405	505 - 510	38°	★ ★ ☆ ☆ ☆ ☆	I012
	VEE**R...		Roughing	All-around / Semi-rolled cutting edges	Chamfered	4, 6, 8	ø8 - 405	505 - 510	45	★ ★ ☆ ☆ ☆ ☆	I012
	VEE**C...		Spur finishing	All-around / Edge combination	Chamfered	4	ø8 - 405	505 - 510	45	★ ★ ☆ ☆ ☆ ☆	I013
	VEE**A02...		Finishing	All-around	Corner radius	2	ø10 - 412	508 - 509	45	☆ ☆ ☆ ☆ ☆ ☆	I013
	VEE**A03...		Finishing	All-around	Corner radius	3	ø8 - 400	505 - 510	45	☆ ☆ ☆ ☆ ☆ ☆	I014
	VED**G6... VEE**G6... VED**G6S... VED**G6L...		Finishing	All-around	Corner radius Chamfered	4	ø8 - 412	505 - 508	30/45/ 50°	☆ ☆ ☆ ☆ ☆ ☆	I014
Radius	VED**G6S...		Finishing	All-around	Corner radius Chamfered	6, 10	ø16 - 410	510 - 511	30/50°	☆ ☆ ☆ ☆ ☆ ☆	I015
	VRS**G2...		Finishing	All-around	Corner radius	2	ø10 - 402	508 - 512	0/15°	★ ★ ☆ ☆ ☆ ☆	I015
High feed	VRO**G6...		Finishing	All-around	Corner radius	6	ø8 - 416	505 - 510	30°	★ ★ ☆ ☆ ☆ ☆	I016
	VRS**G2...		Roughing	All-around High feed	High feed	2	ø10 - 402	508 - 510	0°	★ ★ ☆ ☆ ☆ ☆	I018
	VFX**G2...		Roughing	All-around High feed	High feed	4	ø12 - 416	508 - 510	0°	★ ★ ☆ ☆ ☆ ☆	I018
	VBS**BM...		Roughing	All-around	Ball	2	ø8 - 416	505 - 510	0°	★ ★ ☆ ☆ ☆ ☆	I019
Ball	VBS**BG...		Spur finishing	All-around	Ball	2	ø8 - 416	505 - 510	0°	★ ★ ☆ ☆ ☆ ☆	I019
	VBO**BG...		Finishing	All-around	Ball	2	ø8 - 416	505 - 510	30°	★ ★ ☆ ☆ ☆ ☆	I019
	VBO**BG.../ VEE**BG...		Finishing	All-around	Ball	4	ø8 - 405	505 - 510	30/38°	★ ★ ☆ ☆ ☆ ☆	I020

1006 www.tungaloy.com/us

Edge shape

Edge shape	No. of cutting edges	Application		
 Square	 2	 Shoulder milling	 Side slotting	 Hole enlarging
 Radius	 3	 Deep shoulder milling	 Side milling	 Holemaking
 High feed	 4	 Shoulder milling (with radius)	 Pocketing	 Counterboring
 Ball	 5	 Face milling	 Ramping	 Hole chamfering
 Chamfering	 6 or more	 Slotting	 Profiling	 Chamfering
 Slotting		 Slotting (with radius)	 Plunging	 Cutting-off

[illegible]

- 1 : Application
- 2 : Cutting edge shape
- 3 : Number of cutting edges
- 4 : Endmill series name
- 5 : Dimension table
- 6 : Endmill designation
- 7 : Dimension drawing (conforming to ISO13399)
- 8 : Spare parts
- 9 : Standard cutting conditions
- 10 : Reference page

Machining accuracy

	Finishing
	Medium cutting
	Roughing
	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. **VEE08L05.0R00-3S05** ... 2 (two heads per package)
- Please specify the designation and quantity for TungMeister shanks.
e.g. **VSSD08L060805-S** ... 1 (one shank per package)

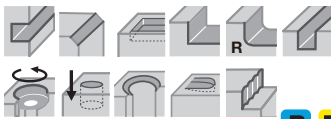
*Wrenches for TungMeister are sold separately.

Indexable Endmill



TUNGMEISTER

Endmills with exchangeable heads
for reduced tool change time
ø0.250" - ø1.000" (ø6 mm - ø25 mm)



I005 - I037

P M K N S H

Inch ☒ Metric ☒

Choose the best head-shank combination **for more efficiency!**
Minimize setup time while **maximizing productivity!**



1 Wide range of cutting heads
23 kinds of cutting heads are available.
The head exchange is easy and highly accurate with the precision thread.

Flexible combinations

TungMeister can be applied to all kinds of endmill machining applications.

2 Three kinds of shank material

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



ER collet



Straight shank & neck



Straight shank & neck (carbide)



Adaptor for TungFlex



Straight shank & taper neck



Straight (for grooving)

Steel: For general purpose

Carbide: For highly accurate machining due to excellent rigidity

Tungsten: Reduced chattering due to high vibration damping capacity

Reduces tool changeover times drastically!!

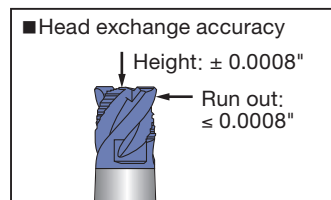
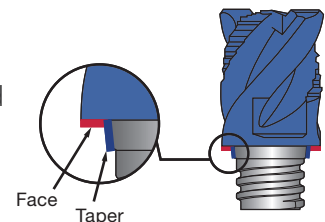
- Machine downtime is decreased considerably.
- Enables users to only change cutting head, simplifying set-ups.

Increases productivity by 90%



Highly accurate repeatability

- Accuracy can be maintained by touching the taper and face.
- Repeatability is guaranteed and is not a concern for machine operators.



Edge shape	Designation	Appearance	Application	Feature	Edge shape	No. of cutting edges	Tool diameter	Slot width	CRKS	Helix angle	Workpiece material						Page
											P	M	K	N	S	H	
 Square	VEH***		Semi-finishing	All-around / Variable helix, Variable pitch	Corner radius	4	ø8 - ø20	-	S05 - S12	Irregular	★	★	★	☆	★	☆	I010
	VEE**-03...		Finishing	All-around	Corner radius 0	3	ø8 - ø12	-	S05 - S08	45	★	★	★	☆	★	☆	I010
	VEE**-04..., VED**-04...		Finishing	All-around	Corner radius	4	ø6 - ø20	-	S05 - S12	30/45	★	★	★	☆	★	☆	I011
	VEE**-03...		Finishing	For key way / All-around	Corner radius	3	ø7.7 - ø19.7	-	S05 - S12	38	★	★	★	☆	★	☆	I011
	VEE**I...		Finishing	All-around / Variable pitch	Corner radius / Chamfered	4	ø8 - ø25	-	S05 - S15	38	★	★	★	☆	★	☆	I012
	VEE**R...		Roughing	All-around / Serrated cutting edge	Chamfered	4, 5, 6	ø8 - ø25	-	S05 - S15	45	★	★	★	☆	★	☆	I012
	VEE**C...		Semi-finishing	All-around / Edge combination	Chamfered	4	ø8 - ø25	-	S05 - S15	45	★	★	★	☆	★	☆	I013
	VEE**A02...		Finishing	All-around	Corner radius	2	ø10 - ø12	-	S06 - S08	45				☆	★		I013
	VEE**A03...		Finishing	All-around	Corner radius	3	ø8 - ø20	-	S05 - S12	45				☆	★		I014
	VED**-06..., VEE**-06...		Finishing	All-around	Corner radius / Chamfered	6	ø8 - ø12	-	S05 - S08	30/45/50	☆	☆	☆		★	★	I014
	VED**-08/10..., VEE**-08/10...		Finishing	All-around	Corner radius / Chamfered	8, 10	ø16 - ø25	-	S10 - S15	30/50	☆	☆	☆		★	★	I015
 Radius	VRB**-02...		Finishing	All-around	Corner radius	2	ø10 - ø20	-	S06 - S12	0/15	★	★	★	☆	★	☆	I015
	VRD**-06...		Finishing	All-around	Corner radius	6	ø8 - ø16	-	S05 - S10	30	★	★	★	☆	★	☆	I016
 High feed	VFX**-02...		Roughing	All-around/ High feed	High feed	2	ø10 - ø20	-	S06 - S12	-	★	★	★	☆	★	★	I018
	VFX**-04...		Roughing	All-around/ High feed	High feed	4	ø12, ø16	-	S08, S10	-	★	★	★	☆	★	★	I018
 Ball	VBB**-BM...		Roughing	All-around	Ball	2	ø8 - ø16	-	S05 - S10	0	★	★	★	☆	★	☆	I019
	VBB**-BG...		Semi-finishing	All-around	Ball	2	ø8 - ø16	-	S05 - S10	0	★	★	★	☆	★	☆	I019
	VBD**-BG...		Finishing	All-around	Ball	2	ø8 - ø16	-	S05 - S10	30	★	★	★	☆	★	☆	I019
	VBD**-BG.../ VBE**-BG...		Finishing	All-around	Ball	4	ø6 - ø25	-	S05 - S15	30/38	★	★	★	☆	★	☆	I020

★ : First choice
☆ : Second choice

Edge shape	Designation	Appearance	Application	Feature	Edge shape	No. of cutting edges	Tool diameter	Slot width	CRKS	Helix angle	Workpiece material						Page
											P	M	K	N	S	H	
 Ball	VBB**-SG...		Finishing	All-around / Sphere	Ball	2	ø10 - ø20	-	S05 - S15	0	★	★	★	☆	★	☆	I020
	VBE**-BGA...		Finishing	All-around	Ball	2	ø8 - ø20	-	S05 - S12	45				☆	★		I020
 Spot drilling and chamfering	VCP**-02...		Finishing	For chamfering / 30°, 45°, 60°	Chamfered (with center cutting edge)	2	ø8 - ø16.5	-	S05 - S10	0	★	★	★	☆	★	☆	I022
 Chamfering	VCA**-04/06...		Finishing	For chamfering / 45°	Chamfered (without center cutting edge)	4, 6	ø10 - ø20	-	S06 - S12	0	★	★	★	☆	★	☆	I026
	VCW**-02...		Finishing	For chamfering / with back chamfering edge	Chamfered (with center cutting edge)	2	ø11.8	-	S06	0	★	★	★	☆	★	☆	I026
	VCR**-02...		Finishing	For chamfering / R chamfering	Chamfered (without center cutting edge)	2	ø8 - ø20	-	S05 - S12	0	★	★	★	☆	★	☆	I026
 Spot drilling	VDP**-02...		Finishing	For Spot drilling	Holemaking	2	ø3.28 - ø6.46	-	S05 - S10	0	★	★	★	☆	★	☆	I022
 Counter-boring	VGC**-02...		Finishing	For Counterboring	Corner radius	2	ø7.8 - ø16	-	S05 - S10	10	★	★	★	☆	★	☆	I024
 Threading	VST**-3...		Finishing	For slotting	Corner radius	3	ø15.7 - ø17.7	1.2-3.17	S06	0	★	★	★	☆	★	☆	I028
	VST**-4/6...		Finishing	For slotting	Corner radius	4, 6	ø21.7 - ø27.7	0.76-10	S08, S10	0	★	★	★	☆	☆	☆	I029
	VTB**-06...		Finishing	For slotting	Corner radius	6	ø13.5 - ø25	2-8	S05 - S10	0	★	★	★	☆	★	☆	I030
	VTB** C15-06...		Finishing	For slotting	Chamfered	6	ø13.5	2	S05	0	★	★	★	☆	★	☆	I029
 Chamfering	VST**A45...		Finishing	For chamfering / 45°	Chamfered	3, 4	ø17.7 - ø21.7	3.4-5.5	S06, S08	0	★	★	★	☆	★	☆	I029
 Threading	VMT***IS / UN / W		Finishing	Threading	Full profile	3 - 6	ø10 - ø16	-	S05, S06 S08	-	★	★	★	☆	★	☆	H204 - H205
 Threading	VTR***IS / W		Finishing	Threading	Partial profile	3, 4	ø15.7 - ø21.7	-	S06, S08	-	★	★	★	☆	★	☆	H205

Shank

V **SS** **037** **L300** **S** **06** **U** **S**

1 2 3 4 5 6 7 8

1 Series	
V	TungMeister

2 Shank type	
SS	Straight neck
TS	Taper neck
SC	Slotting
ST	for T-Slotting
AD	TungFlex adapter

3 Shank diameter (in)	
031	ø0.315
037	ø0.375
050	ø0.500
062	ø0.625
075	ø0.750
100	ø1.000

4 Length (in)	
L300	3.000

5 Shape of shank	
S	Cylindrical
W	Weldon

7 Additional feature	
U	Inch

8 Shank material	
S	Steel
C	Carbide
W	Tungsten

6 Connection screw size	
05	S05
06	S06
08	S08
10	S10
12	S12
15	S15

Head

● Square endmill

V **E** **E** **031** **L20** **R000** **-U** **03** **S05**

1 2 3 4 5 6 7 8 9 10

● Ball nose endmill

V **B** **D** **075** **L62** **-BG** **-U** **04** **S12**

1 2 3 4 5 6 7 8 9 10

1 Series	
V	TungMeister

2 Cutting edge	
E	Square
B	Ball
R	Radius
FX	for high feed
CA	for chamfering
CP	Spot drilling
CW	for chamfering (front and back)
CR	for R chamfering
GC	for counter boring
DP	for center drilling
S	for slotting
T	for T-slot milling

3 Helix angle / Rake face	
B	0°
C	15°
D	30°
E	38° ~ 50°
F	60°
T	Land
H	Variable helix

4 Diameter (in)	
050	ø0.500
100	ø1.000

5 Cutting edge length (in)	
Length	
L37	0.375
L87	0.875

6 Corner shape / Angle	
Chamfer type	
C006	0.006 x 45°
C012	0.012 x 45°
C024	0.024 x 45°
Chamfering head	
A30	30°
A60	60°
Ball nose	
SG	Sphere / high precision
BM	Ball / general purpose
BG	Ball / high precision

7 Additional feature	
I	Irregular pitch
A	for aluminum
R	for roughing
C	Combined edge

8 Additional feature	
U	Inch

9 The number of flutes	General
02	2
06	6

10 Connection screw size	
S05	S05
S06	S06
S08	S08
S10	S10
S12	S12
S15	S15

DESIGNATION SYSTEM (Metric)

Shank

V	SS	D10	L070	S	06	-	W	-	A
1	2	3	4	5	6	7	8		
1 Series		3 Shank diameter (mm)			4 Length (mm)		7 Shank material		
V	TungMeister	D08 ø8			L070 70		S	Steel	
2 Shank type		D10 ø10			5 Shape of shank		C	Carbide	
SS	Straight neck	D12 ø12			S Cylindrical		W	Tungsten	
TS	Taper neck	D16 ø16			W Weldon				
SC	Slotting	D20 ø20					8 Additional feature		
ST	for T-Slotting	D25 ø25					A	with coolant hole	
AD	TungFlex adapter	D32 ø32			6 Connection screw size		M	Thread size (TungFlex adapters)	
		VSC, VAD type			05 S05				
		100 ø10			06 S06				
		120 ø12			08 S08				
		130 ø13			10 S10				
		180 ø18			12 S12				
		210 ø21			15 S15				

Head

• Square endmill

V	E	E	080	L05.0	R00	-03	S05
1	2	3	4	5	6	7	8

• Ball nose endmill

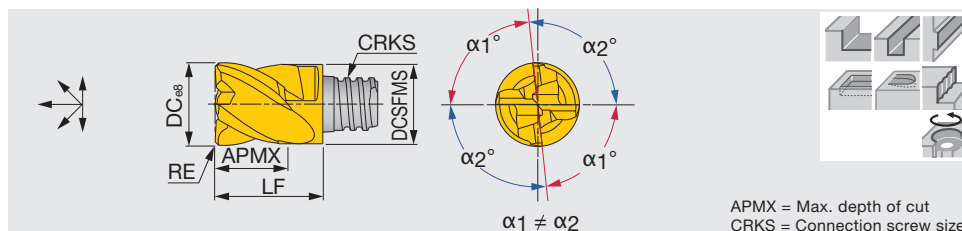
V	B	D	200	L15.0	-BG	-04	S12
1	2	3	4	5	6	7	8

1 Series		3 Helix angle / Rake face		6 Corner shape / Angle		7 Additional feature	
V	TungMeister	B	0°	Nose radius		I	Irregular pitch
2 Cutting edge		C	15°	R00	Sharp edge	A	for aluminum
E	Square	D	30°	R005	R0.05	R	for roughing
B	Ball	E	38° - 50°	R01	R0.1	C	Combined edge
R	Radius	F	60°	R05	R0.5	8 The number of flutes	
FX	for high feed	T	Land	R10	R1.0	General	
CA	for chamfering	H	Variable helix	Chamfer type		02	2
CP	Spot drilling	4 Diameter (mm)		C15	0.15 x 45°	06	6
CW	for chamfering (front and back)	060	ø6	C30	0.3 x 45°	Grooving head VST type	
CR	for R chamfering	200	ø20	C60	0.6 x 45°	3	3
GC	for counter boring	5 Cutting edge length (mm)		Chamfering head		4	4
DP	for center drilling	Length		A30	30°	9 Connection screw size	
S	for slotting	L07.0	7	A60	60°	S05	S05
T	for T-slot milling	L15.0	15	R chamfering head		S06	S06
		Groove width		R10	R1.0	S08	S08
		W1.50	1.5	R16	R1.6	S10	S10
		W1.57	1.57	Ball nose		S12	S12
		W10.0	10	SG	Sphere / high precision	S15	S15
				BM	Ball / general purpose		
				BG	Ball / high precision		

TUNGMEISTER

VEH...

4 flute square head, for general purpose (TungMeister)



Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VEH080L05.0R05I04S05	●	4	35° - 39°	8	7.7	5	0.5	S05	10	KEYV-S05	7
VEH080L05.0R10I04S05	●	4	35° - 39°	8	7.7	5	1	S05	10	KEYV-S05	7
VEH100L07.0R05I04S06	●	4	35° - 39°	10	9.7	7	0.5	S06	13	KEYV-S06	10
VEH100L07.0R10I04S06	●	4	35° - 39°	10	9.7	7	1	S06	13	KEYV-S06	10
VEH120L09.0R05I04S08	●	4	35° - 39°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15
VEH120L09.0R10I04S08	●	4	35° - 39°	12	11.7	9	1	S08	16.5	KEYV-S08	15
VEH160L12.0R05I04S10	●	4	35° - 39°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28
VEH160L12.0R10I04S10	●	4	35° - 39°	16	15.3	12	1	S10	20.5	KEYV-S10	28
VEH200L15.0R05I04S12	●	4	35° - 39°	20	18.3	15	0.5	S12	25.5	KEYV-S12	28
VEH200L15.0R10I04S12	●	4	35° - 39°	20	18.3	15	1	S12	25.5	KEYV-S12	28

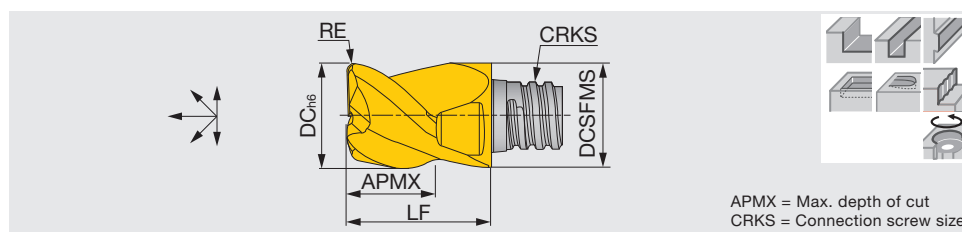
* Torque: Recommended clamping torque: N·m
2 pieces per package

●: Line up

TUNGMEISTER

VEE**-03...

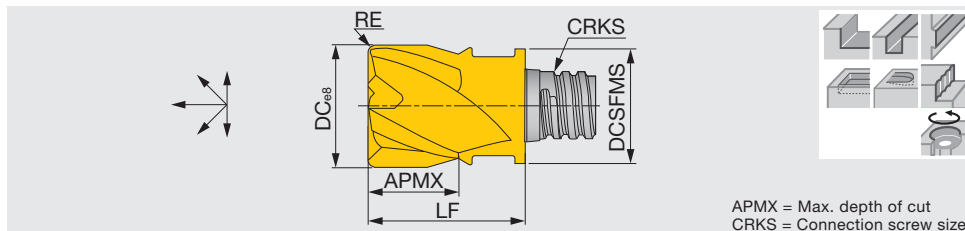
3 flute square head, for general purpose (TungMeister)



Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	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

* Torque: Recommended clamping torque: lbs·ft
2 pieces per package

●: Line up



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

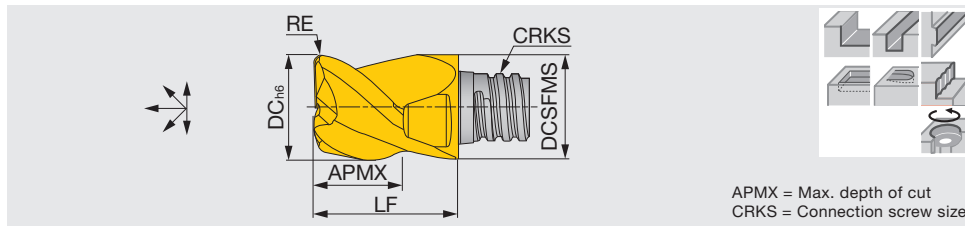
* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

TUNGMEISTER

VEE**-03...

3 flute square head, for keyway (TungMeister)



Metric	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
VEE097L05.0R03-03S06	●	3	38°	9.7	9.7	5	0.3	S06	13	KEYV-S06	10
VEE117L07.0R03-03S08	●	3	38°	11.7	11.7	7	0.3	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: N·m
2 pieces per package

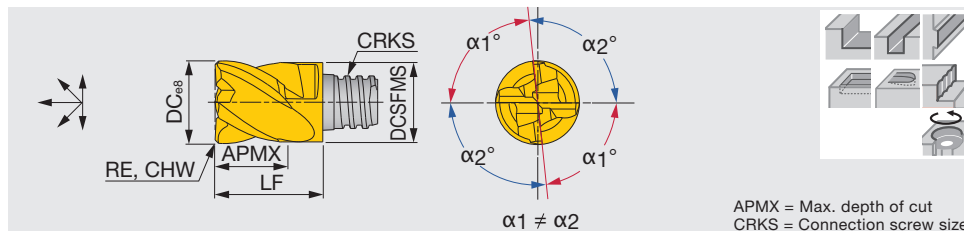
●: Line up

Reference pages: Standard cutting conditions → I016 - I017

TUNGMEISTER

VEE**I...

4 flute square head, variable pitch, for chatter damping (TungMeister)



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	29.50
VEE100L86R000IU04S15	●	4	38°	1.000	0.941	0.866	-	-	S15	1.457	KEYV-W20	29.50
VEE100L86R015IU04S15	●	4	38°	1.000	0.941	0.866	0.015	-	S15	1.457	KEYV-W20	29.50
VEE100L86R031IU04S15	●	4	38°	1.000	0.941	0.866	0.031	-	S15	1.457	KEYV-W20	29.50
VEE100L86R062IU04S15	●	4	38°	1.000	0.941	0.866	0.062	-	S15	1.457	KEYV-W20	29.50
VEE100L86R125IU04S15	●	4	38°	1.000	0.941	0.866	0.125	-	S15	1.457	KEYV-W20	29.50

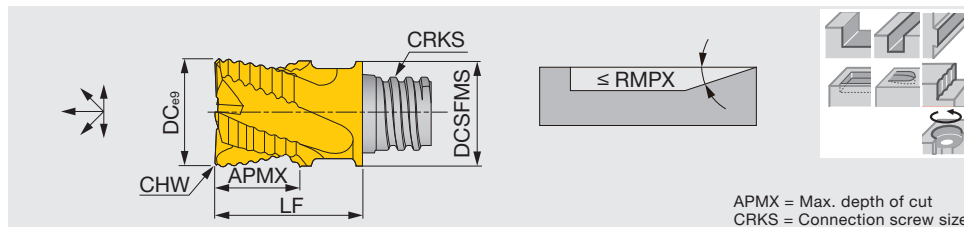
* Torque: Recommended clamping torque: lbs-ft
VEE031 ~ VEE075: 2 pieces per package
VEE100: 1 piece per package

●: Line up

TUNGMEISTER

VEE**R...

4 flute square head, for chatter damping (TungMeister)

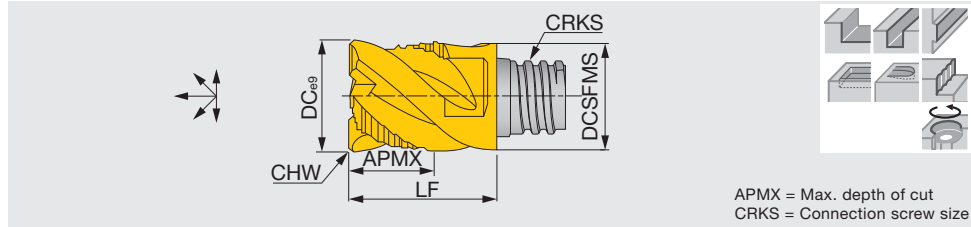


Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	CHW	CRKS	LF	RMPX	Wrench	Torque*
VEE031L20C012RU04S05	●	4	45°	0.312	0.300	0.200	0.010	S05	0.390	-	KEYV-S05	5.16
VEE037L27C012RU04S06	●	4	45°	0.375	0.360	0.270	0.012	S06	0.512	-	KEYV-S06	7.38
VEE050L37C016RU04S08	●	4	45°	0.500	0.488	0.374	0.014	S08	0.650	-	KEYV-S08	11.06
VEE062L47C024RU05S10	●	5	45°	0.625	0.600	0.470	0.016	S10	0.800	-	KEYV-S10	20.65
VEE075L59C024RU06S12	●	6	45°	0.750	0.720	0.590	0.016	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

* Torque: Recommended clamping torque: lbs-ft
VEE031 ~ VEE075: 2 pieces per package
VEE100: 1 piece per package

●: Line up

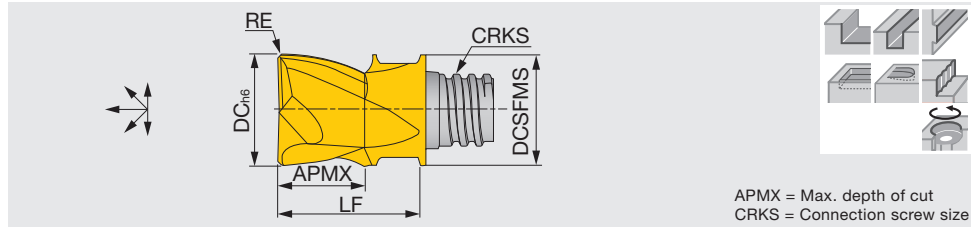
Reference pages: Standard cutting conditions → **I016 - I017**



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

* Torque: Recommended clamping torque: lbs-ft
VEE031 ~ VEE075: 2 pieces per package
VEE100: 1 piece per package

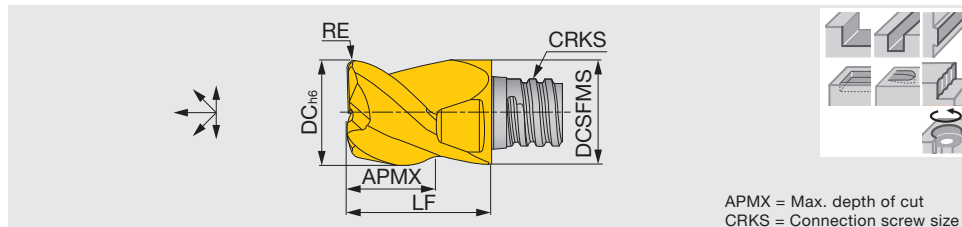
●: Line up



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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

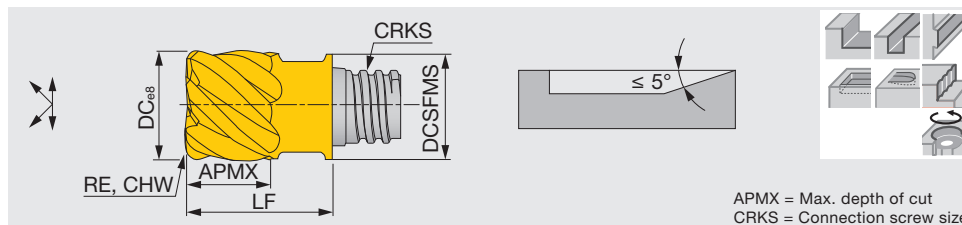
●: Line up



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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

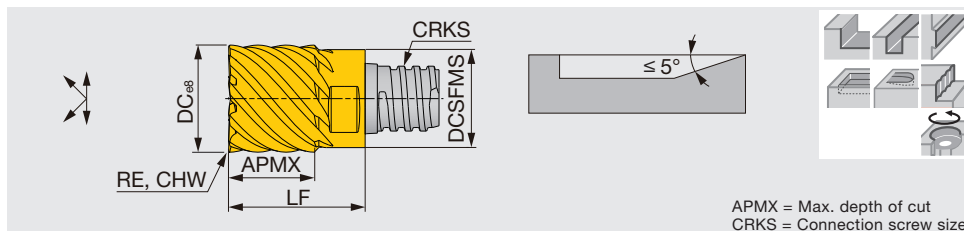


Inch	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque*
VED031L20R015-U06S05	●		6	30°	0.312	0.300	0.200	0.015	-	S05	0.390	KEYV-S05	5.16
VEE031L20R000-U06S05	●		6	45°	0.312	0.300	0.200	-	-	S05	0.390	KEYV-S05	5.16
VEE031L20R031-U06S05	●		6	45°	0.312	0.300	0.200	0.031	-	S05	0.390	KEYV-S05	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	0.016	-	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	0.016	-	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	0.059	-	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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

8 and 10 flute square head, for difficult-to-cut material (TungMeister)

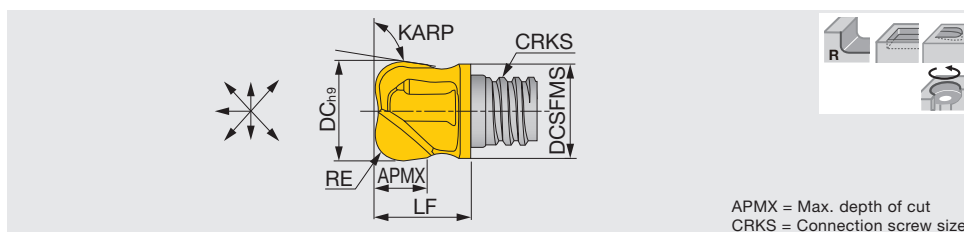


Inch	AH725	AH750	NOF	FHA	DC	DCSFMS	APMX	RE	CHW	CRKS	LF	Wrench	Torque*
VED062L47R000-U08S10	●		8	30°	0.625	0.600	0.470	-	-	S10	0.810	KEYV-S10	20.65
VED062L47R015-U08S10	●		8	30°	0.625	0.600	0.470	0.015	-	S10	0.810	KEYV-S10	20.65
VED062L47R031-U08S10	●		8	30°	0.625	0.600	0.470	0.031	-	S10	0.810	KEYV-S10	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

* Torque: Recommended clamping torque: lbs-ft
VED/VEE062- VED/VEE075: 2 pieces per package
VED100: 1 piece per package

●: Line up

2 flute radius head (TungMeister)



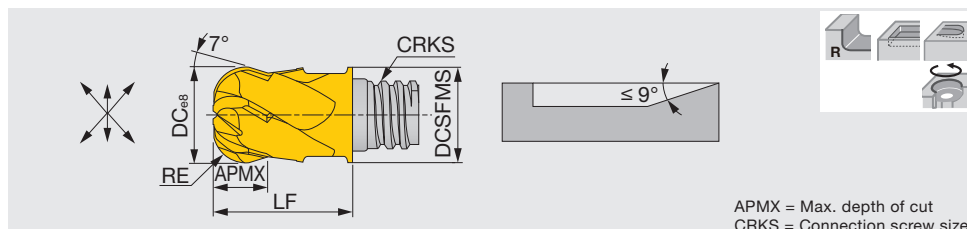
Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	KARP	CRKS	LF	Wrench	Torque*
VRB062L31R187-U02S10	●	2	-	0.625	0.600	0.310	0.190	97°	S10	0.580	KEYV-S10	20.65
VRB075L45R250-U02S12	●	2	-	0.750	0.720	0.450	0.250	97°	S12	0.680	KEYV-S12	20.65
VRB075L45R312-U02S12	●	2	-	0.750	0.720	0.450	0.312	97°	S12	0.680	KEYV-S12	20.65

Note: Suitable for contouring operation.

** The wrench size for these heads is different from the ones for the other head types.

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up



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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

STANDARD CUTTING CONDITIONS

Shoulder milling (VEH, VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C, VRB, VRC, VRD)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)							Depth of cut ap (in)	Pick feed Pf (in)
				Tool diameter: DC (in)								
				0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"		
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
	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
	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	Gray 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
	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
	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	0.05 x DC
	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	0.05 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	0.05 x DC
	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	0.05 x DC

Slot milling (VEH, VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C, VRB, VRC, VRD)

ISO	Workpiece material	Hard-ness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)							Depth of cut ap (in)
				Tool diameter: DC (in)							
				0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"	
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
	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
	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	Gray 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
	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
	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
	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	0.2 x DC
	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	0.2 x DC

Shoulder milling (VED / VEE: 6 flutes, VED / VEE: 8, 10 flutes)

ISO	Workpiece material	Hard- ness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)						Depth of cut ap (in)	Pick feed Pf (in)
				Tool diameter: DC (in)							
				0.312"	0.375"	0.500"	0.625"	0.750"	1.000"		
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
	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, H19, 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
	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

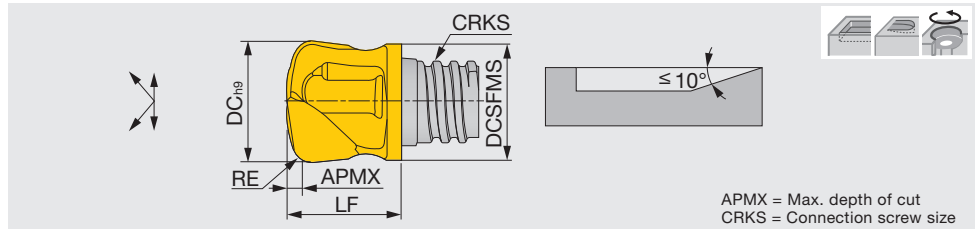
Grade
Insert
Ext. Toolholder
Int. Toolholder
Threading
Grooving
Tool
Miniature Tool
Milling Cutter
Endmill
Drilling Tool
System
User's Guide
Index



TUNGMEISTER

VFX**-02...

2 flute head for high feed milling (TungMeister)



Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE ⁽¹⁾	CRKS	LF	Wrench Torque*	fz (ipt)	
VFX037L02R060-U02S06	●	2	0°	0.375	0.360	0.020	0.059	S06	0.490	KEYV-S06	7.38	0.012 - 0.024
VFX050L03R080-U02S08	●	2	0°	0.500	0.480	0.039	0.079	S08	0.590	KEYV-S08	11.06	0.020 - 0.039
VFX075L05R080-U02S12	●	2	0°	0.750	0.720	0.059	0.079	S12	0.685	KEYV-S12	20.65	0.022 - 0.043

(1) Corner radius for CAM programming

Note: Please use tapered neck shank or tungsten shank for VFX head.

* Torque: Recommended clamping torque: lbs-ft

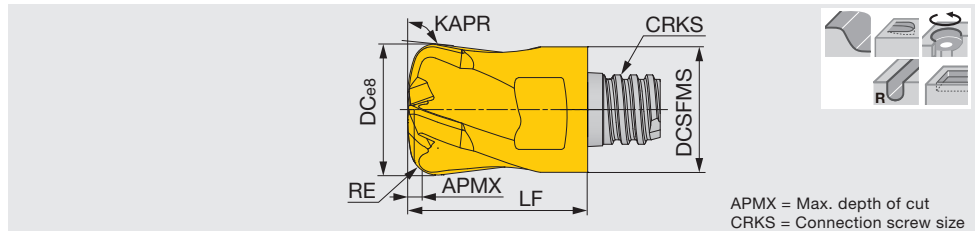
2 pieces per package

●: Line up

TUNGMEISTER

VFX**-04...

4 flute head for high feed milling (TungMeister)



Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	KAPR	CRKS	LF	Wrench Torque*	fz (mm/t)	
VFX120L0.60R18H04S08	●	4	20°	12	11.5	0.6	1.8	97°	S08	16.5	KEYV-S08	15	0.16-0.67
VFX160L0.80R22H04S10	●	4	20°	16	15.4	0.8	2.2	97°	S10	20.5	KEYV-S10	28	0.2-0.75

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

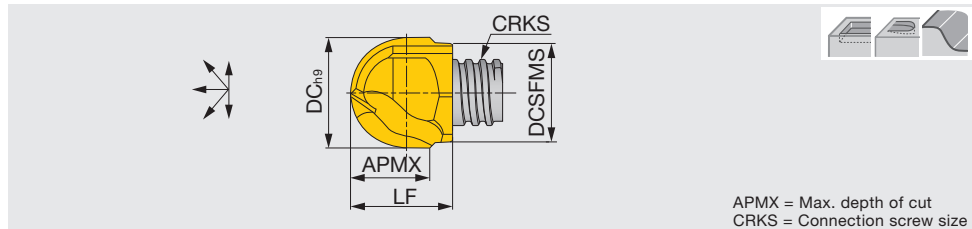
●: Line up

STANDARD CUTTING CONDITIONS

High feed milling (VFX)

ISO	Workpiece material	Hardness	Cutting speed V _c (sfm)	Feed per tooth: fz (ipt)				Width of cut ae (in)
				ø0.375"	ø0.500"	ø0.630"	ø0.750"	
P	Low carbon steels 1045, 1055, etc.	- 300 HB	330 - 660	0.012 - 0.028	0.016 - 0.031	0.020 - 0.035	0.024 - 0.040	0.6 x DC
	High carbon steels 4140, 5120, etc.	- 300 HB	260 - 590	0.008 - 0.024	0.012 - 0.028	0.016 - 0.031	0.020 - 0.035	0.6 x DC
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	260 - 530	0.008 - 0.020	0.008 - 0.02	0.012 - 0.024	0.012 - 0.024	0.6 x DC
M	Stainless steels S30400, S31600, etc.	- 200 HB	200 - 330	0.008 - 0.024	0.008 - 0.024	0.012 - 0.028	0.012 - 0.028	0.6 x DC
K	Gray cast irons No.250B, No.300B, etc.	150 - 250 HB	330 - 720	0.012 - 0.028	0.016 - 0.031	0.020 - 0.035	0.024 - 0.040	0.6 x DC
	Ductile cast irons 60-40-18, etc.	150 - 250 HB	330 - 720	0.008 - 0.024	0.012 - 0.028	0.016 - 0.031	0.020 - 0.035	0.6 x DC
S	Titanium alloys Ti-6Al-4V, etc.	-	130 - 260	0.008 - 0.020	0.008 - 0.020	0.008 - 0.024	0.008 - 0.024	0.25 x DC
	Heat-resistant alloys Inconel 718, etc.	-	66 - 130	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.25 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	130 - 260	0.008 - 0.016	0.008 - 0.016	0.012 - 0.020	0.012 - 0.020	0.45 x DC
	Hardened steel D2, etc.	50 - 60 HRC	66 - 200	0.004 - 0.008	0.004 - 0.008	0.004 - 0.012	0.004 - 0.012	0.25 x DC

Feed per tooth should not exceed the maximum value for each product.

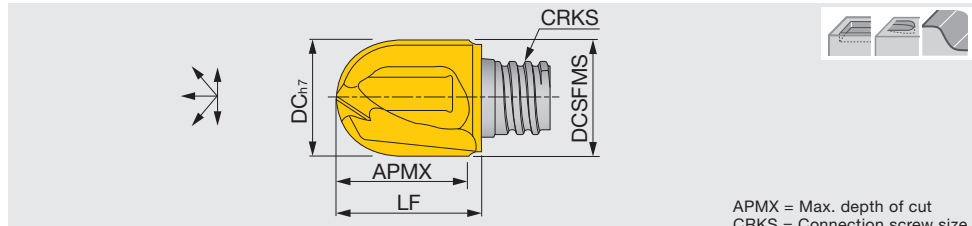


APMX = Max. depth of cut
CRKS = Connection screw size

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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

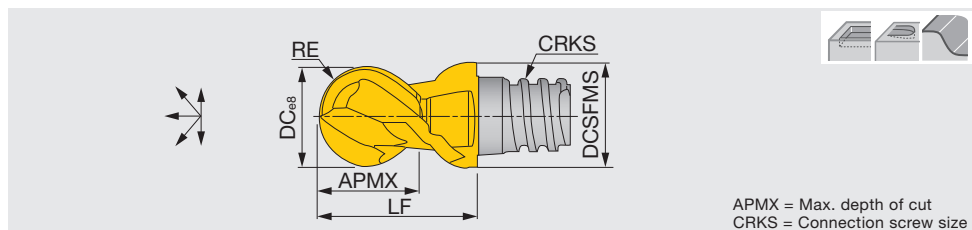


APMX = Max. depth of cut
CRKS = Connection screw size

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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up



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

RE tolerance: (1) ± 0.0004" (2) ± 0.0005"

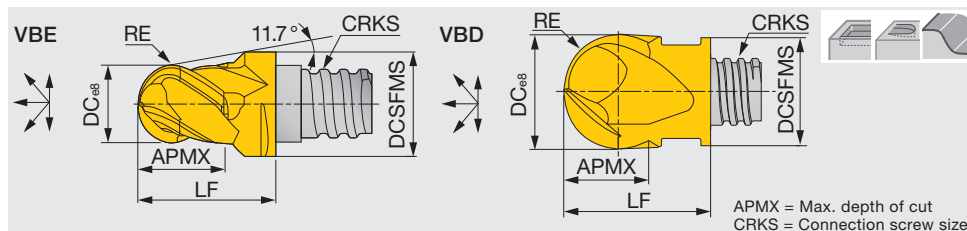
* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

TUNGMEISTER

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

Ball nose head with 4 ground flutes for finishing (TungMeister)



Inch	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*
VBE0250L20-BG-U04S05	●	4	38°	0.250	0.300	0.200	0.124 ⁽¹⁾	S05	0.390	KEYV-S05	5.16
VBE0312L20-BG-U04S05	●	4	30°	0.312	0.300	0.200	0.156 ⁽¹⁾	S05	0.350	KEYV-S05	5.16
VBD0375L27-BG-U04S06	●	4	30°	0.375	0.360	0.275	0.188 ⁽¹⁾	S06	0.512	KEYV-S06	7.38
VBD0500L37-BG-U04S08	●	4	30°	0.500	0.488	0.374	0.249 ⁽²⁾	S08	0.650	KEYV-S08	11.06
VBD0625L47-BG-U04S10	●	4	30°	0.625	0.600	0.470	0.313 ⁽²⁾	S10	0.800	KEYV-S10	20.65
VBD0750L62-BG-U04S12	●	4	30°	0.750	0.720	0.620	0.374 ⁽²⁾	S12	1.000	KEYV-S12	20.65
VBD100L86-BG-U04S15	●	4	30°	1.000	0.940	0.860	0.500 ⁽³⁾	S15	1.450	KEYV-W20	29.50

RE tolerance: (1) ± 0.0004" (2) ± 0.0005" (3) ± 0.0008"

* Torque: Recommended clamping torque: lbs-ft

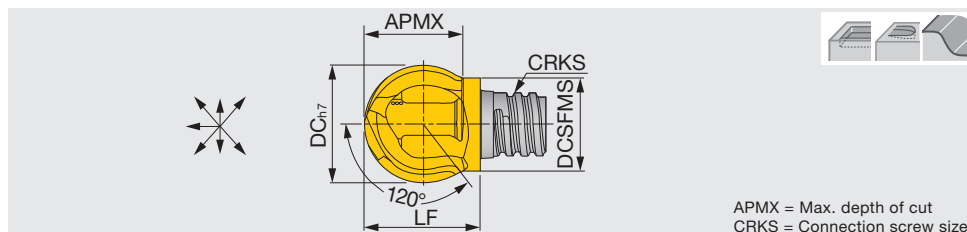
VBE250, 0312 / VBD0375 ~ 0750: 2 pieces per package, VBD: 1 piece per package

●: Line up

TUNGMEISTER

VBB**-SG...

2 flute ball nose head, with spherical designed edge (TungMeister)



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

Also capable of pull cutting on the vertical wall

** The wrench size for these heads is different from the ones for the other head types.

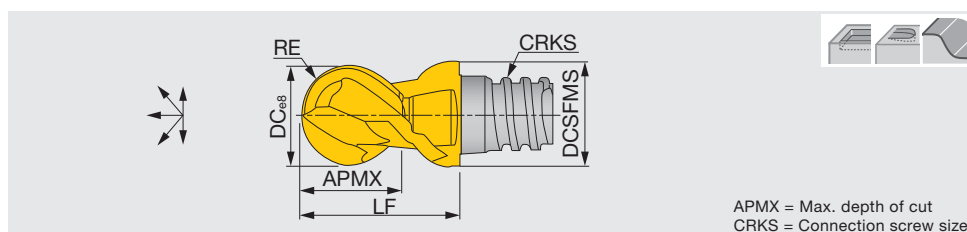
* Torque: Recommended clamping torque: lbs-ft. 2 pieces per package

●: Line up

TUNGMEISTER

VBE**-BGA...

Ball nose head with 2 ground flutes for aluminium machining (TungMeister)



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

RE tolerance: (1) ± 0.0004" (2) ± 0.0005" * Torque: Recommended clamping torque: lbs-ft. 2 pieces per package

●: Line up

STANDARD CUTTING CONDITIONS

Standard cutting conditions: Roughing (VBB-BM / BG / SG, VBD-BG, VBE-BGA)

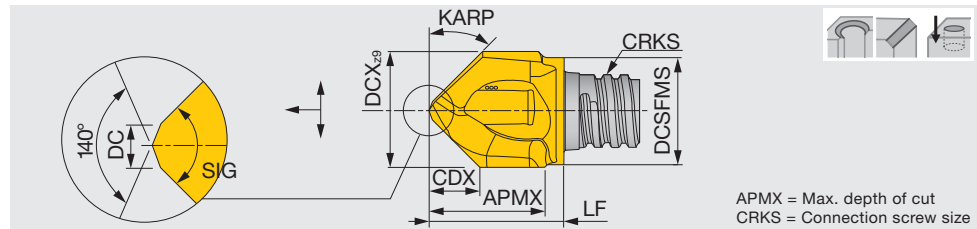
ISO	Workpiece material	Hard- ness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)							Depth of cut ap (in)	Pick feed Pf (in)
				Tool diameter: DC (in)								
				0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"		
P	Low carbon steels 1045, 1055, etc.	- 300 HB	328 - 656	0.001 - 0.003	0.002 - 0.003	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	Gray 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

Standard cutting conditions: Profiling for semi-finishing and finishing (VBB-BM / BG / SG, VBD-BG, VBE-BGA)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)							Depth of cut ap (in)	Pick feed Pf (in)
				Tool diameter: DC (in)								
				0.250"	0.312"	0.375"	0.500"	0.625"	0.750"	1.000"		
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	Gray 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**VCP**-02...**

2 flute head, for spot drilling and chamfering (TungMeister)

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

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

Minimum hole diameter $\phi 1.5$ mm* Torque: Recommended clamping torque: N·m
2 pieces per package

●: Line up

Square

Radius

High feed

Ball

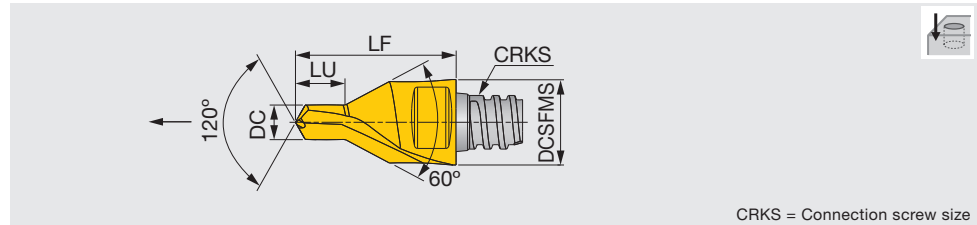
Chamfering

Slotting

Others

TUNGMEISTER**VDP**-02...**

2 flute head, with chamfered edge, for spot drilling (TungMeister)



CRKS = Connection screw size

Metric	AH725	NOF	FHA	DC ± 0.02	DCSFMS	LU	CRKS	LF	Wrench	Torque*
VDP328L04.6A30-02S05	●	2	0°	3.28	8	4.6	S05	15	KEYV-S05	7
VDP412L05.9A30-02S06	●	2	0°	4.12	10	5.9	S06	19	KEYV-S06	10
VDP513L07.2A30-02S08	●	2	0°	5.13	12	7.2	S08	23	KEYV-S08	15
VDP646L08.9A30-02S10	●	2	0°	6.46	16	8.9	S10	28	KEYV-S10	28

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

●: Line up

Reference pages: Standard cutting conditions → **I023**

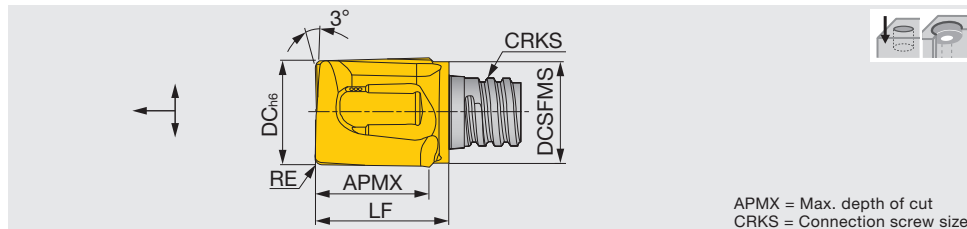
STANDARD CUTTING CONDITIONS

Drilling (VCP, VDP)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed: f (ipr)				
				VDP328	VDP412	VDP513	VDP646	VCP
P	Low carbon steels 1045, 1055, etc.	- 300 HB	131 - 262	0.0016 - 0.0031	0.0020 - 0.0039	0.0020 - 0.0039	0.0024 - 0.0047	0.0024 - 0.0047
	High carbon steels 4140, etc.	- 300 HB	98 - 164	0.0016 - 0.0031	0.0020 - 0.0039	0.0020 - 0.0039	0.0024 - 0.0047	0.0024 - 0.0047
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	66 - 98	0.0016 - 0.0031	0.0020 - 0.0039	0.0020 - 0.0039	0.0024 - 0.0047	0.0024 - 0.0047
M	Stainless steels 304, 316, etc.	- 200 HB	49 - 82	0.0016 - 0.0031	0.0020 - 0.0039	0.0020 - 0.0039	0.0024 - 0.0047	0.0024 - 0.0047
K	Gray cast irons 250, 300, etc.	150 - 250 HB	197 - 328	0.0020 - 0.0035	0.0028 - 0.0047	0.0028 - 0.0047	0.0047 - 0.0071	0.0047 - 0.0071
	Ductile cast irons 400-15S, etc.	150 - 250 HB	197 - 328	0.0016 - 0.0031	0.0020 - 0.0039	0.0020 - 0.0039	0.0039 - 0.0059	0.0039 - 0.0059
S	Titanium alloys Ti-6Al-4V, etc.	-	49 - 82	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028
	Heat-resistant alloys Inconel 718, etc.	-	33 - 66	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024
H	Hardened steel	H13, etc.	40 - 50 HRC	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028	0.0016 - 0.0028
		D2, etc.	50 - 60 HRC	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024	0.0012 - 0.0024

Grade
Insert
Toolholder
Ext. Toolholder
Int. Toolholder
Threading
Grooving
Miniature Tool
Milling Cutter
Endmill
Drilling Tool
Tooling System
User's Guide
Index





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

Also capable of drilling with step feed (Max. depth = ap x 0.020")

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

Square

Radius

High feed

Ball

Chamfering

Slotting

Others

2

3

4

5

 6
or more

STANDARD CUTTING CONDITIONS

Counter boring (VGC)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	131 - 262	0.002 - 0.003
	High carbon steels 4140, etc.	- 300 HB	98 - 164	0.002 - 0.003
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	66 - 98	0.002 - 0.003
M	Stainless steels 304, 316, etc.	- 200 HB	49 - 82	0.002 - 0.003
K	Gray cast irons 250, 300, etc.	150 - 250 HB	197 - 328	0.002 - 0.004
	Ductile cast irons 400-15S, etc.	150 - 250 HB	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	H13, etc.	49 - 82	0.002 - 0.003
		D2, etc.	33 - 66	0.001 - 0.002

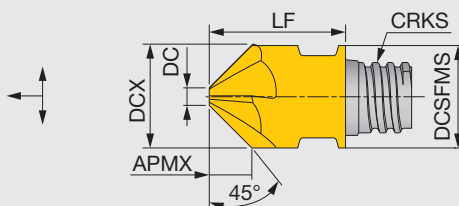
- When drilling, the step feed (pecking) operation should be applied with the depth of 0.011" - 0.019" per step.
- Apply the same cutting conditions as the VEE type head when conducting shoulder milling or slotting operations.

Grade
Insert
Toolholder
Ext. Toolholder
Int. Toolholder
Threading
Grooving
Miniature Tool
Milling Cutter
Endmill
Drilling Tool
Tooling System
User's Guide
Index

A
B
C
D
E
F
G
H
I
J
K
L
M

TUNGMEISTER**VCA**-04,06...**

4 or 6 flute head, without center cutting edge, for countersinking and chamfering (TungMeister)

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

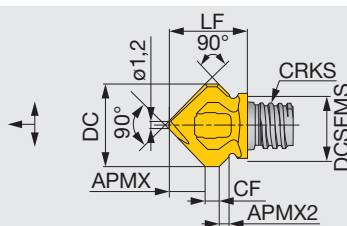
Inch	AH725	NOF	FHA	DCX	DCSFMS	APMX	DC	CRKS	LF	Wrench	Torque
VCA0375L16A45-U04S06	●	4	0°	0.375	0.375	0.150	0.073	S06	0.512	KEYV-S06	7.38
Metric	AH725	NOF	FHA	DCX	DCSFMS	APMX	DC	CRKS	LF	Wrench	Torque*
VCA100L04.0A45-04S06	●	4	0°	10	10	4	1.95	S06	13	KEYV-S06	10
VCA120L05.0A45-04S08	●	4	0°	12	12	5	1.95	S08	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

TUNGMEISTER**VCW**-02...**

2 flute head, for front and back chamfering (TungMeister)

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

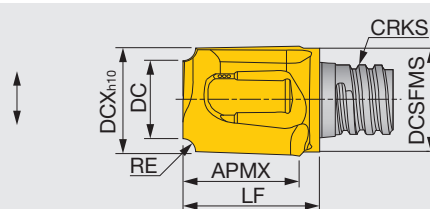
Metric	AH725	NOF	FHA	DC	DCSFMS	APMX	APMX2	CF	CRKS	LF	Wrench	Torque*
VCW118L05.0A45-02S06	●	2	0°	11.8	9.3	5	1.2	2	S06	11.2	KEYV-S08	10

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

●: Line up

TUNGMEISTER**VCR**-02...**

2 flute head, for concave radius chamfering (TungMeister)

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

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 → **I027**

STANDARD CUTTING CONDITIONS

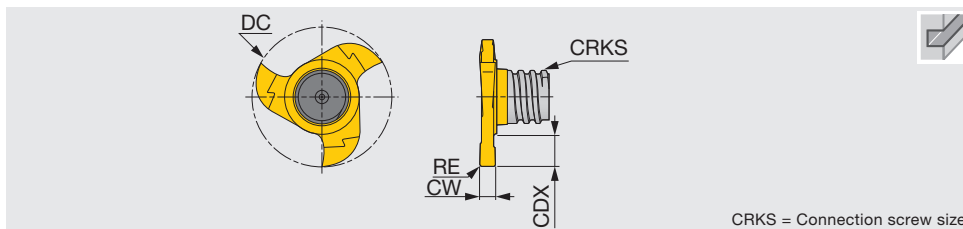
Chamfering and countersinking (VCA, VCW, VCR)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed f (ipr)
P	Low carbon steels 1045, 1055, etc.	- 300 HB	197 - 328	0.0024 - 0.0047
	High carbon steels 4140, 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 SUS304, SUS316, etc. 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 - 0.0059
S	Titanium alloys Ti-6Al-4V, etc.	-	98 - 164	0.0020 - 0.0039
	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.0016 - 0.0031
H	Hardened steel	H13, etc.	98 - 164	0.0020 - 0.0039
		D2, etc.	66 - 131	0.0016 - 0.0031

TOLERANCE OF TOOL DIAMETER

Basic dimensions (in)		Permissible dimensional deviations (μm)						
>	≤	e8	e9	h6	h7	h9	h10	z9
0.236	0.394	-25 -47	-25 -61	0 -9	0 -15	0 -36	0 -58	+78 +42
0.394	0.551	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+93 +50
0.551	0.709	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+103 +60
0.709	1.181	-40 -73	-40 -92	0 -13	0 -21	0 -52	0 -84	-

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



CRKS = Connection screw size

Metric	GH130	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	10
VST157W1.57R020-3S06	●	3	0°	15.7	1.57	0.2	S06	2.8	KEYV-177	10
VST157W2.00R020-3S06	●	3	0°	15.7	2	0.2	S06	2.8	KEYV-177	10
VST157W2.39R020-3S06	●	3	0°	15.7	2.39	0.2	S06	2.8	KEYV-177	10
VST157W2.50R020-3S06	●	3	0°	15.7	2.5	0.2	S06	2.8	KEYV-177	10
VST157W3.00R020-3S06	●	3	0°	15.7	3	0.2	S06	2.8	KEYV-177	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	10
VST177W1.40R005-3S06	●	3	0°	17.7	1.4 ⁽¹⁾	0.05	S06	3.8	KEYV-177	10
VST177W1.50R010-3S06	●	3	0°	17.7	1.5	0.1	S06	3.8	KEYV-177	10
VST177W1.57R020-3S06	●	3	0°	17.7	1.57	0.2	S06	3.8	KEYV-177	10
VST177W1.70R005-3S06	●	3	0°	17.7	1.7 ⁽¹⁾	0.05	S06	3.8	KEYV-177	10
VST177W2.00R020-3S06	●	3	0°	17.7	2	0.2	S06	3.8	KEYV-177	10
VST177W2.20R110-3S06	●	3	0°	17.7	2.2	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	10
VST177W3.00R020-3S06	●	3	0°	17.7	3	0.2	S06	3.8	KEYV-177	10
VST177W3.17R020-3S06	●	3	0°	17.7	3.17	0.2	S06	3.8	KEYV-177	10

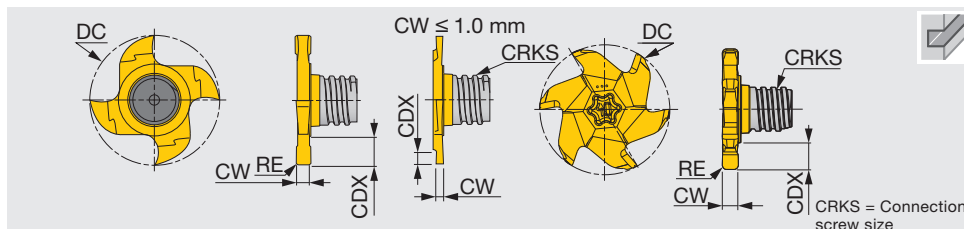
(1) CW is based on DIN471/472.

* Torque: Recommended clamping torque: N·m

2 pieces per package

●: Line up



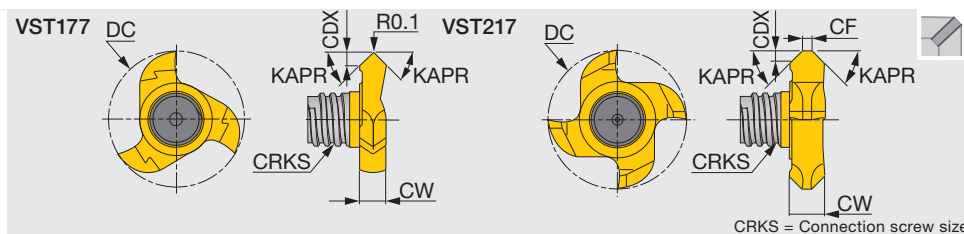


Metric	GH130	NOF	FHA	DC	CW ^{0.02}	RE	CRKS	CDX	Wrench	Torque*
VST217W0.76R000-4S08	●	4	0°	21.7	0.76 ⁽¹⁾	-	S08	1.5	KEYV-217	15
VST217W0.86R000-4S08	●	4	0°	21.7	0.86 ⁽¹⁾	-	S08	1.7	KEYV-217	15
VST217W0.96R000-4S08	●	4	0°	21.7	0.96 ⁽¹⁾	-	S08	1.9	KEYV-217	15
VST217W1.00R005-4S08	●	4	0°	21.7	1	0.05	S08	2	KEYV-217	15
VST217W1.20R005-4S08	●	4	0°	21.7	1.2 ⁽¹⁾	0.05	S08	4.5	KEYV-217	15
VST217W1.40R005-4S08	●	4	0°	21.7	1.4 ⁽¹⁾	0.05	S08	4.5	KEYV-217	15
VST217W1.57R000-4S08	●	4	0°	21.7	1.57	-	S08	4.5	KEYV-217	15
VST217W1.70R010-4S08	●	4	0°	21.7	1.7 ⁽¹⁾	0.1	S08	4.5	KEYV-217	15
VST217W1.95R020-4S08	●	4	0°	21.7	1.95 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST217W2.00R020-4S08	●	4	0°	21.7	2	0.2	S08	4.5	KEYV-217	15
VST217W2.25R020-4S08	●	4	0°	21.7	2.25 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST217W2.39R020-4S08	●	4	0°	21.7	2.39	0.2	S08	4.5	KEYV-217	15
VST217W2.50R020-4S08	●	4	0°	21.7	2.5	0.2	S08	4.5	KEYV-217	15
VST217W2.75R020-4S08	●	4	0°	21.7	2.75 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST217W3.00R020-4S08	●	4	0°	21.7	3	0.2	S08	4.5	KEYV-217	15
VST217W3.17R020-4S08	●	4	0°	21.7	3.17	0.2	S08	4.5	KEYV-217	15
VST217W3.25R020-4S08	●	4	0°	21.7	3.25 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST217W4.00R020-4S08	●	4	0°	21.7	4	0.2	S08	4.5	KEYV-217	15
VST217W4.25R020-4S08	●	4	0°	21.7	4.25 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST217W4.75R020-4S08	●	4	0°	21.7	4.75	0.2	S08	4.5	KEYV-217	15
VST217W5.25R020-4S08	●	4	0°	21.7	5.25 ⁽¹⁾	0.2	S08	4.5	KEYV-217	15
VST277W5.25R020-6S10	●	6	0°	27.7	2.5	0.2	S10	6	KEYV-T40L	28
VST277W5.25R020-6S10	●	6	0°	27.7	5.25	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.

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

●: Line up



Metric	GH130	NOF	FHA	DC	CW	KAPR	CRKS	CDX	CF	Wrench	Torque*
VST177L01.40A45-3S06	●	3	0°	17.7	3.4	45°	S06	1.4	-	KEYV-177	10
VST217L01.70A45-4S08	●	4	0°	21.7	5.5	45°	S08	1.7	1.5	KEYV-217	15

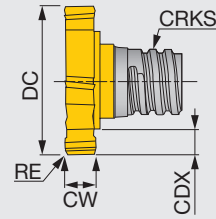
* Torque: Recommended clamping torque: N·m
2 pieces per package

●: Line up

TUNGMEISTER

VTB**-06...

6 tooth T-slotting head, 0.125" - 0.312" slot width (TungMeister)



CRKS = Connection screw size

Inch	GH130	NOF	FHA	DC - 0.002"	CW ± 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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

Square

Radius

High feed

Ball

Chamfering

Slotting

Others

2

3

4

5

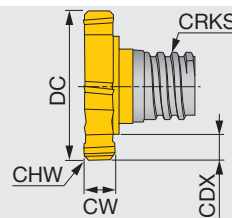
6

or more

TUNGMEISTER

VTB**C006...

6 tooth T-slotting head, with chamfered edge, 0.062" - 0.078" slot width (TungMeister)



CRKS = Connection screw size

Inch	GH130	NOF	FHA	DC - 0.002"	CW ± 0.002"	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

* Torque: Recommended clamping torque: lbs-ft
2 pieces per package

●: Line up

Reference pages: Standard cutting conditions → **I031**

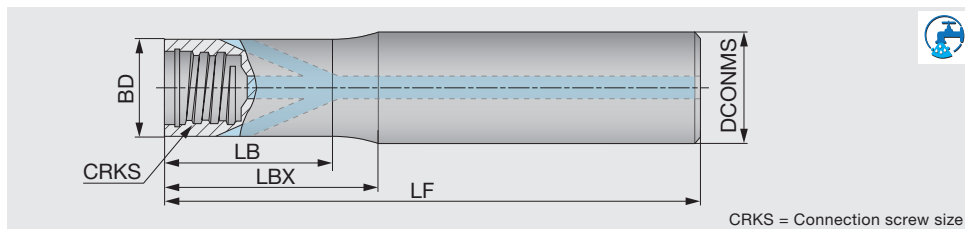
STANDARD CUTTING CONDITIONS

Slotting (VST, VTB)

ISO	Workpiece material	Hardness HB	VST type		VTB type	
			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	262 - 591	0.002 - 0.006	262 - 591	0.003 - 0.007
	High carbon steels 4140, etc.	- 300	197 - 394	0.002 - 0.005	197 - 394	0.002 - 0.006
M	Stainless steels 304, 316, etc.	- 200	164 - 394	0.002 - 0.005	164 - 394	0.002 - 0.006
K	Gray cast irons 250, 300, etc.	150 - 250	328 - 656	0.002 - 0.006	328 - 656	0.003 - 0.007
	Ductile cast irons 400-15S, etc.	150 - 250	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
	Aluminium 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
	Heat-resistant alloys Inconel 718, etc.	-	49 - 115	0.001 - 0.004	49 - 115	0.001 - 0.004

Grade
Insert
Toolholder
Ext. Toolholder
Int. Toolholder
Threading
Grooving
Miniature Tool
Milling Cutter
Endmill
Drilling Tool
Tooling System
User's Guide
Index

A
B
C
D
E
F
G
H
I
J
K
L
M



CRKS = Connection screw size

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

Square

Radius

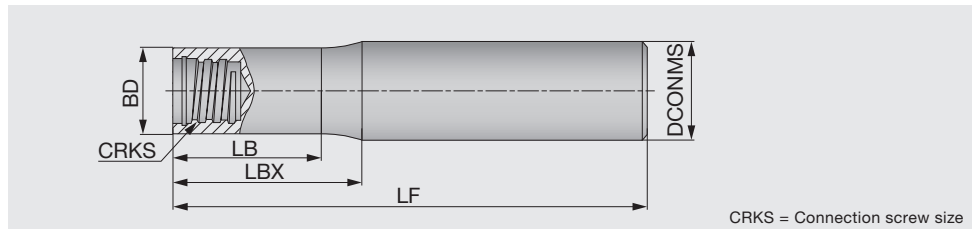
High feed

Ball

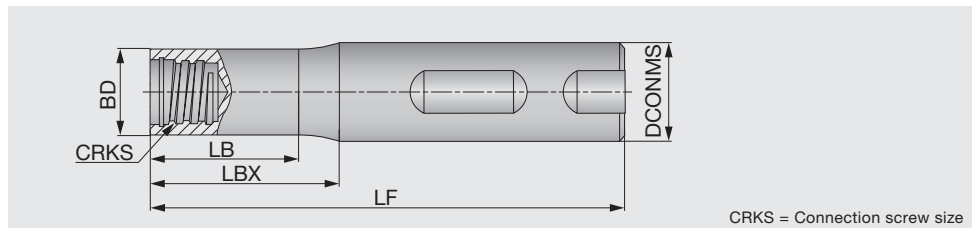
Chamfering

Slotting

Others

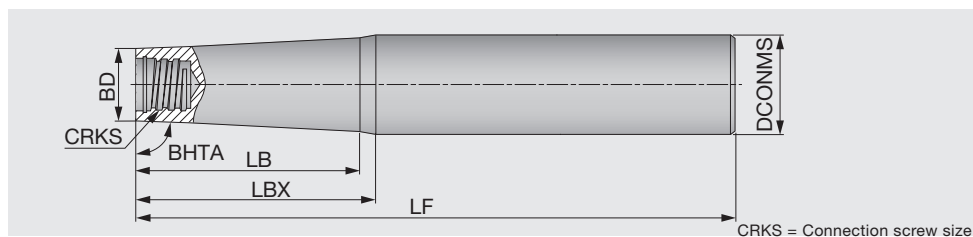


Inch	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material
VSS031L250S05US	0.312	0.300	2.500	0.590	0.510	S05	Cylindrical	Steel
VSS031L300S05UC	0.312	0.300	3.000	1.000	0.950	S05	Cylindrical	Carbide
VSS031L350S05UC	0.312	0.300	3.500	1.500	1.450	S05	Cylindrical	Carbide
VSS031L400S05UC	0.312	0.300	4.000	2.000	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	4.250	0.630	0.530	S08	Cylindrical	Tungsten
VSS062L400S10US	0.625	0.598	4.000	0.780	0.680	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



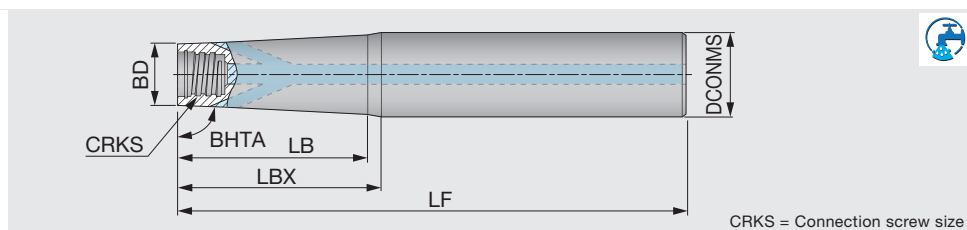
Inch	DCONMS	BD	LF	LBX	LB	CRKS	Shank shape	Shank material
VSS050L218W05US	0.500	0.299	2.185	0.150	-	S05	Weldon	Steel
VSS062L258W06US	0.625	0.366	2.580	0.236	-	S06	Weldon	Steel
VSS062L258W08US	0.625	0.480	2.580	0.157	-	S08	Weldon	Steel
VSS075L275W10US	0.750	0.598	2.750	0.157	-	S10	Weldon	Steel
VSS100L300W12US	1.000	0.720	3.000	0.283	-	S12	Weldon	Steel

Metric	DCONMS	BD	LF	LBX	LB	CRKS	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



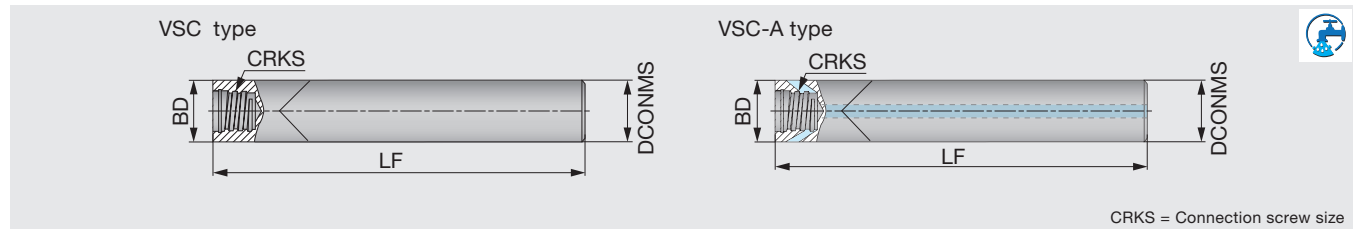
CRKS = Connection screw size

Inch	BHTA	DCONMS	BD	LF	LBX	LB	CRKS	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	3.673	S05	Carbide
VTS050L550S06UC	89°	0.500	0.364	5.500	2.500	2.406	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	3.811	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



CRKS = Connection screw size

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



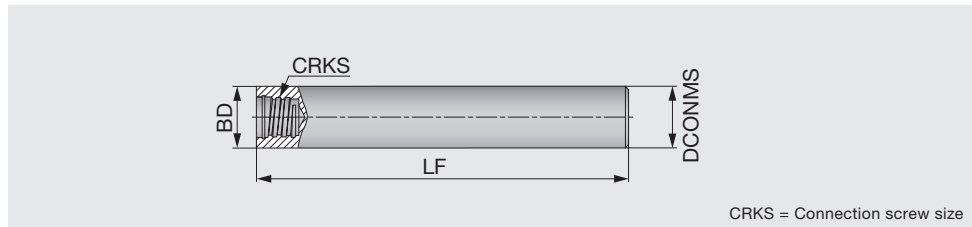
CRKS = Connection screw size

Inch	DCONMS	BD	LF	CRKS	Coolant hole	Shank shape	Shank material
VSC095L080S06-C	0.375	0.375	3.150	S06	Without	Cylindrical	Carbide
VSC127L120S08-C-A	0.500	0.500	4.724	S08	With	Cylindrical	Carbide
Metric	DCONMS	BD	LF	CRKS	Coolant hole	Shank shape	Shank material
VSC100L100S06-C	10	10	100	S06	Without	Cylindrical	Carbide
VSC120L100S08-C-A	12	12	100	S08	With	Cylindrical	Carbide

VSC shank should be used with VST slotting head.

If other types of heads are used, please be sure not to exceed the maximum depth of cut for each head (See ap for each head).

VSC shank does not have external clearance, and it may interfere with the workpiece during machining.



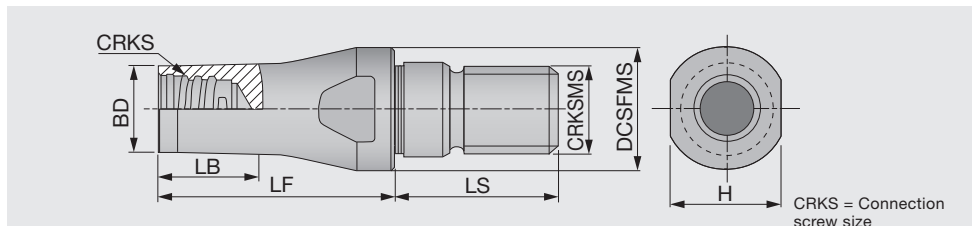
CRKS = Connection screw size

Inch	DCONMS	BD	LF	CRKS	Shank shape	Shank material
VST031L275S05US	0.312	0.312	2.750	S05	Cylindrical	Steel
VST037L325S06US	0.375	0.375	3.250	S06	Cylindrical	Steel
VST050L375S08US	0.500	0.500	3.750	S08	Cylindrical	Steel
VST062L400S10US	0.625	0.625	4.000	S10	Cylindrical	Steel
Metric	DCONMS	BD	LF	CRKS	Shank shape	Shank material
VSTD08L070S05-S	8	8	70	S05	Cylindrical	Steel
VSTD10L080S06-S	10	10	80	S06	Cylindrical	Steel
VSTD12L090S08-S	12	12	90	S08	Cylindrical	Steel
VSTD16L100S10-S	16	16	100	S10	Cylindrical	Steel

VSTD shank should be used with VTB slotting head.

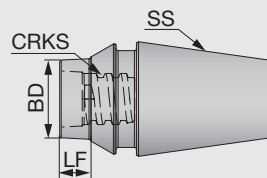
If other types of heads are used, please be sure not to exceed the maximum depth of cut for each head (See ap for each head).

VSTD shank does not have external clearance, and it may interfere with the workpiece during machining.



CRKS = Connection screw size

Metric	BD	DCSFMS	LF	LS	LB	CRKS	CRKSMS	H
VAD130L016S08-S-M8	11.7	13	16	17.5	6	S08	M8	11
VAD130L025S08-S-M8	11.7	13	25	17.5	20	S08	M8	11
VAD180L020S08-S-M10	11.7	18	20	20	12	S08	M10	13
VAD180L025S08-S-M10	11.7	18	25	20	15	S08	M10	11
VAD210L020S08-S-M12	11.7	21	20	22	10	S08	M12	12.75
VAD210L025S08-S-M12	11.7	21	25	22	13	S08	M12	12.75



CRKS = Connection screw size

Inch	SS	BD	LF	CRKS
VER11CL006S05-S	ER11	0.312	0.236	S05
VER11CL020S05-S	ER11	0.312	0.787	S05
VER16CL012S05-S	ER16	0.312	0.472	S05
VER16CL020S05-S	ER16	0.312	0.787	S05
VER16CL010S06-S	ER16	0.391	0.394	S06
VER16CL020S06-S	ER16	0.391	0.787	S06
VER16CL006S08-S	ER16	0.457	0.236	S08
VER16CL020S08-S	ER16	0.457	0.787	S08

TORQUE WRENCHES

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

WRENCH

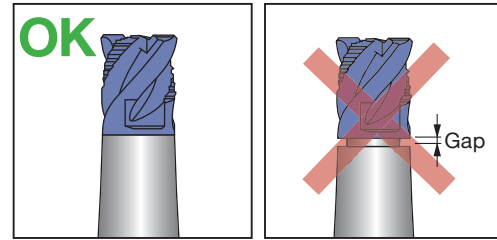
KEYV-..., KEYV-S..., KEYV-T..., KEYV-T**L, KEYV-W20

Appearance	Designation	Connection screw size	Torque (lbf-ft)	Applicable head
	KEYV-S05	S05	5.16	Square Ball Radius Drilling Chamfering Counter boring
	KEYV-S06	S06	7.38	
	KEYV-S08	S08	11.06	
	KEYV-S10	S10	20.65	
	KEYV-S12	S12	20.65	
	KEYV-W20	S15	29.50	
	KEYV-177	S06	7.38	Slotting VST type
	KEYV-217	S08	11.06	
	KEYV-T40L	S08	11.06	Slotting VST, VTB type
		S10	20.65	
	KEYV-T20	S05	5.16	Slotting VTB type
		S06	7.38	
	KEYV-T25	S06	7.38	
	KEYV-T30L	S08	11.06	
	KEYV-T50L	S08	11.06	
		S10	20.65	

Note: Wrenches are sold separately.

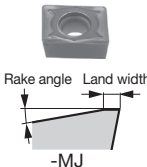
CAUTIONARY POINTS IN USE

- 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-tighten or over-tighten. SW Excessive tightening may cause the cutting head to break.
- Do not apply excessive force or a hammer when tightening or exchanging the cutting heads.

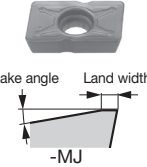


Milling Insert

● ACMT**PR-MJ

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

● ADMT**PR-MJ

Shape	Designation	Coated									Applicable mill
		AH120	AH140	T3130							
 -MJ	ADMT130308PR-MJ	●	●	●							ELP13/17/21... (old item)
	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... (old item)
	AECW1403PESR	●	●	●		●					
	AECW16T3PEFR						●				
	AECW16T3PESR	●	●	●		●					
	AECW1804PEFR						●				
	AECW1804PESR	●	●	●		●					
	AEMW1403PEFR						●				
	AEMW1403PETR		●	●		●					
	AEMW16T3PEFR						●				
	AEMW16T3PETR		●	●		●					
	AEMW1804PEFR						●				
	AEMW1804PETR		●	●		●					

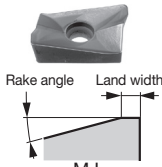
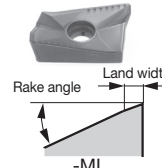
● ANEA542TN, ANEA642TN

Shape	Designation	Uncoated								Applicable mill
		UX30								
	ANEA542TN	●								VSN... (old item)
	ANEA642TN	●								

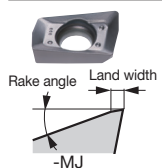
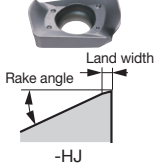
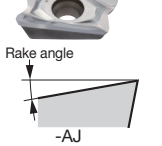
● : Line up

Milling Insert

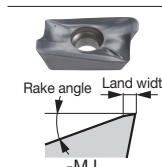
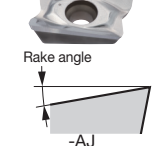
● ANMT**PPPR-MJ, ANMT**PPPR-ML

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

● AOMT**PDPR-MJ, AOGT**PDFR-AJ, AOMT070208PDPR-HJ

Shape	Designation	Coated		Uncoated						Applicable mill
		AH140	AH725	KS15F						
 -MJ	AOMT070202PDPR-MJ	●	●							TUNGREC TPO07... Page H116 EPO07... Page H116 HPO07... Page H117
	AOMT070204PDPR-MJ	●	●							
	AOMT070208PDPR-MJ	●	●							
	AOMT070216PDPR-MJ	●	●							
	AOMT070208PDPR-HJ	●	●							
	AOGT070204PDFR-AJ			●						
 -HJ										
 -AJ										

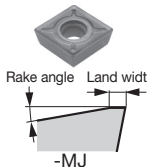
● AOMT**PDPR-MJ, AOGT**PDFR-AJ

Shape	Designation	Coated		Uncoated						Applicable mill
		AH140	AH725	KS15F						
 -MJ	AOMT180508PDPR-MJ	●	●							TUNGREC TPO18... Page H126 EPO18... Page H126
	AOMT180516PDPR-MJ	●	●							
	AOMT180524PDPR-MJ	●	●							
	AOMT180532PDPR-MJ	●	●							
	AOGT180504PDFR-AJ			●						
	AOGT180508PDFR-AJ			●						
 -AJ										

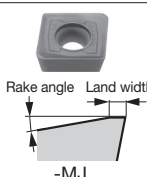
● : Line up

Milling Insert

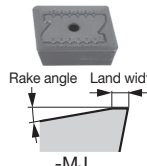
● APMT**PN-MJ

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

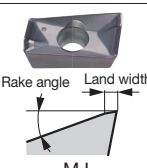
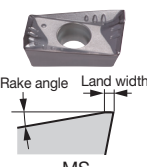
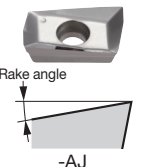
● APMT120416PR-MJ

Shape	Designation	Coated									Applicable mill
		AH120	T3130								
 -MJ	APMT120416PR-MJ	●	●								TZP12... HZP12... (old item)

● APMR190616PR-MJ

Shape	Designation	Coated									Applicable mill
		AH120	T3130								
 -MJ	APMR190616PR-MJ	●	●								TZP19... (old item)

● ASMT**PDPR-MJ, ASGT11**PDFR-AJ, ASMT304PDPR-MS

Shape	Designation	Coated								Cermet	Uncoated	Applicable mill
		AH120	AH130	AH140	AH725	T1115	T1215	T3130	DS1100	NS740	KS05F	
 -MJ	ASMT11T304PDPR-MJ	●	●		●	●		●		●		TUNGREC TPS11... Page H119 TPO11... Page H119 TLS11... Page H120
	ASMT11T308PDPR-MJ	●	●	●	●	●	●	●		●		
	ASMT11T312PDPR-MJ	●			●			●		●		
	ASMT11T316PDPR-MJ	●			●			●		●		
	ASMT11T320PDPR-MJ	●						●		●		
 -MS	ASMT11T330PDPR-MJ	●	●									EPS11... Page H120 EPO11... Page H121 HPO11... Page H122 ELS11... Page H122
	ASMT11T304PDPR-MS		●	●								
	ASGT11T304PDFR-AJ								●		●	
 -AJ	ASGT11T308PDFR-AJ								●		●	

● : Line up

Milling Insert

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

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

● AVGT**PBER-MJ, AVGT**PBFR-AJ

Shape	Designation	Coated			Uncoated	Applicable mill
		AH120	AH130	AH3135	KS05F	
 Rake angle -MJ	AVGT060300PBER-MJ			●		TUNG F REC EPAV... Page H111 HPAV06-M Page H112 HPAV06-S Page H113
	AVGT060302PBER-MJ	●	●	●		
	AVGT060304PBER-MJ	●	●	●		
	AVGT060308PBER-MJ	●	●	●		
 Rake angle -AJ	AVGT060300PBFR-AJ				●	
	AVGT060302PBFR-AJ				●	
	AVGT060304PBFR-AJ				●	
	AVGT060308PBFR-AJ				●	

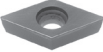
● CPMW**-EN, CPMT**-EN

Shape	Designation	Coated	Uncoated	Applicable mill
		GH330	UX30	
	CPMW050208EN	●	●	EVP1000 (old item)
	CPMW06T208EN	●	●	
	CPMT080308EN	●	●	

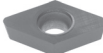
● : Line up

Milling Insert

● DCMW**TN

Shape	Designation	Coated								Applicable mill
		AH120	AH330							
	DCMW070204TN	●	●							EBP... Page H184
	DCMW11T304TN	●	●							HBP... (old item)

● DPCW11T3ZFR

Shape	Designation	Coated		Cermet						Applicable mill
		AH740		NS740						
	DPCW11T3ZFR	●		●						TZF11... HZF11... (old item)

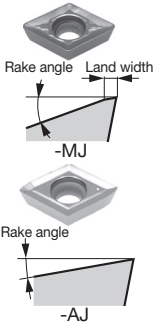
● EDKW53ZTR

Shape	Designation	Coated		Uncoated						Applicable mill
		GH330		UX30						
	EDKW53ZTR	●		●						ESD5000 (old item)

● ENEQ**TN-T

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

● GDMT**PDPR-MJ, GDGT**PDPR-AJ

Shape	Designation	Coated					Uncoated					Applicable mill
		AH120	AH140	AH330	T3130	DS1100	UX30	TH10				
 Rake angle Land width -MJ Rake angle -AJ	GDMT10H3PDPR-MJ	●	●	●	●		●					TSD10/17...
	GDMT17X6PDPR-MJ	●	●	●	●		●					ESD10/17...
	GDGT10H3PDPR-AJ					●		●				HSD10/17...
	GDGT17X6PDPR-AJ					●		●				(old item)

● : Line up

Milling Insert

● HEHN532FN

Shape	Designation	Uncoated								Applicable mill
		TH10								
	HEHN532FN	●								QYE5300 (old item)

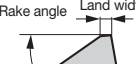
● HPKN532FN

Shape	Designation	Uncoated								Applicable mill
		TH10								
	HPKN532FN	●								QYP5300 (old item)

● LMEU**ZNEN-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH140	AH725	AH3135					
 Rake angle  -MJ	LMEU100808ZNEN-MJ	●	●	●	●					TEC SLOT ASN 10/12/15... Page H159 TSN 10/12/15... Page H159
	LMEU100810ZNEN-MJ	●			●					
	LMEU100816ZNEN-MJ	●	●	●	●					
	LMEU100820ZNEN-MJ	●			●					
	LMEU100824ZNEN-MJ	●	●	●	●					
	LMEU100830ZNEN-MJ	●			●					
	LMEU100832ZNEN-MJ	●	●	●	●					
	LMEU120808ZNEN-MJ	●	●	●	●					
	LMEU120816ZNEN-MJ	●	●	●	●					
	LMEU120820ZNEN-MJ	●			●					
	LMEU120824ZNEN-MJ	●	●	●	●					
	LMEU120830ZNEN-MJ	●			●					
	LMEU120832ZNEN-MJ	●	●	●	●					
	LMEU150908ZNEN-MJ	●	●	●	●					
	LMEU150916ZNEN-MJ	●	●	●	●					
	LMEU150920ZNEN-MJ	●			●					
	LMEU150924ZNEN-MJ	●	●	●	●					
	LMEU150930ZNEN-MJ	●			●					
	LMEU150932ZNEN-MJ	●	●	●	●					
	LMEU150940ZNEN-MJ	●			●					
	LMEU150950ZNEN-MJ	●			●					

● LMMU**PNER-MJ

Shape	Designation	Coated										Applicable mill
		AH3135	AH120	AH140	AH725	T1215	T3225					
 Rake angle  Land width  -MJ	LMMU110708PNER-MJ	●	●	●	●	●	●					TEC MILL TPM11/16... Page H140 TLM11... Page H140 EPM11... Page H141
	LMMU110716PNER-MJ	●	●	●	●	●	●					
	LMMU110724PNER-MJ		●	●	●							
	LMMU110732PNER-MJ		●	●	●							
	LMMU160908PNER-MJ	●	●	●	●	●	●					
	LMMU160916PNER-MJ	●	●	●	●							
	LMMU160924PNER-MJ		●	●	●							
	LMMU160932PNER-MJ		●	●	●							

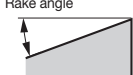
● : Line up

Milling Insert

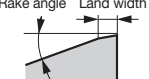
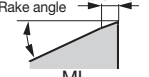
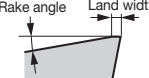
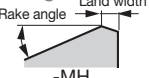
● LNCA64ZTR

Shape	Designation	Coated		Uncoated						Applicable mill
		T3130		UX30						
	LNCA64ZTR	●		●						VSN6000I (old item)

● LNCQ0906N-**L, LNCQ0906R-50S

Shape	Designation	Coated		Cermet						Applicable mill
		AH120	GH110	NS740						
 	LNCQ0906N-100L	●	●	●						NMS09... EMS09... (old item)
	LNCQ0906N-50L	●	●	●						
	LNCQ0906R-50S	●	●	●						

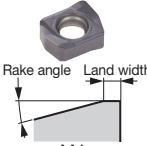
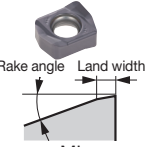
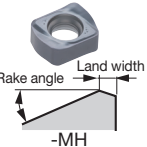
● LNMU0303ZER-MJ, LNMU0303ZER-ML, LNMU0303ZER-MS, LNMU0303ZER-MH

Shape	Designation	Coated										Applicable mill
		AH130	AH3225	AH3035	AH725	AH8015	AH8005					
 	LNMU0303ZER-MJ	●	●	●	●	●						DOFED TXN03... Page H026 EXN03... Page H026, H027 HXN03... Page H028
	LNMU0303ZER-ML	●	●	●	●	●						
	LNMU0303ZER-MS	●	●									
	LNMU0303ZER-MH					●	●					
 												
 												
 												

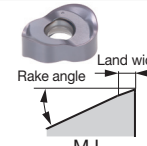
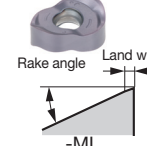
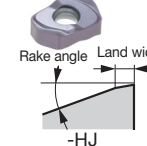
● : Line up

Milling Insert

● LNMU06X5ZER-MJ, LNMU06X5ZER-ML, LNGU06X5ZER-MH, LNGU06X5ZER-W

Shape	Designation	Coated							Applicable mill
		AH130	AH3225	AH3035	AH725	AH120	AH8015	AH8005	
 -MJ	LNMU06X5ZER-MJ	●	●	●	●	●	●	●	DOFEED TXN06... Page H032 EXN06... Page H032
	LNMU06X5ZER-ML	●	●	●	●	●	●	●	
	LNGU06X5ZER-MH						●	●	
	LNGU06X5ZER-W				●				
 -ML									
 -MH									
 -W									

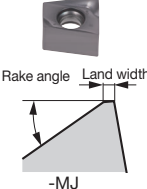
● LNMX040*R*-MJ, LNMX0405R4-ML, LNMX0405R4-HJ, LNMX0607ZER-HJ

Shape	Designation	Coated							Applicable mill
		AH120	AH3135						
 -MJ	LNMX0405R4-MJ	●	●						DO TBALL TXLN... Page H036 EXLN... Page H037 HXLN... Page H038
	LNMX0405R4-ML	●	●						
	LNMX0405ZER-HJ	●	●						
	LNMX0506R5-MJ	●	●						
	LNMX0607R6-MJ	●	●						
	LNMX0607ZER-HJ	●	●						
 -ML									
 -HJ									

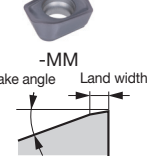
● : Line up

Milling Insert

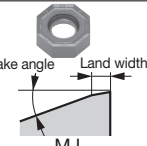
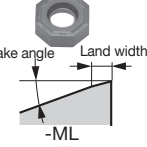
● LQMU**PNER-MJ, LQMU110708PXER-MJ

Shape	Designation	Coated										Applicable mill
		AH120	AH140	AH725	AH3135							
 -MJ	LQMU110704PNER-MJ	●	●	●								DOREC TPQ11/18... Page H136 EPQ11... Page H137
	LQMU110708PNER-MJ	●	●	●								
	LQMU110708PXER-MJ	●			●							
	LQMU110716PNER-MJ	●	●	●								
	LQMU110720PNER-MJ	●										
	LQMU180804PNER-MJ	●	●	●								
	LQMU180808PNER-MJ	●	●	●								
	LQMU180816PNER-MJ	●	●	●								
	LQMU180824PNER-MJ	●	●	●								

● LSMT0202ZER-HM, LSMT0202R2-MM

Shape	Designation	Coated									Applicable mill
		AH3225	AH8015								
 -HM	LSMT0202ZER-HM	●	●								TUNG FFEED EXLS... Page H022 HXLS... Page H022
	LSMT0202R2-MM	●	●								
 -MM											

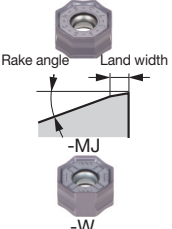
● ONMU0705ANPN-MJ, ONHU0705ANPN-MJ, ONMU0705ANPN-ML, ONHU0705ANTN-ML, ONHU0705ANPR-W

Shape	Designation	Coated										Applicable mill
		AH120	AH140	AH725	AH3135	T1115	T1215	T3225				
 -MJ	ONMU0705ANPN-MJ		●	●	●	●	●	●				DOOCTO TAN07... Page H063, H064
	ONHU0705ANPN-MJ		●	●								
	ONMU0705ANPN-ML	●			●							
	ONHU0705ANTN-ML	●	●	●								
	ONHU0705ANPR-W	●										
 -ML												
 -W												

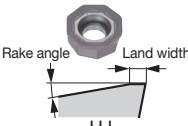
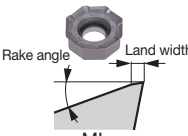
● : Line up

Milling Insert

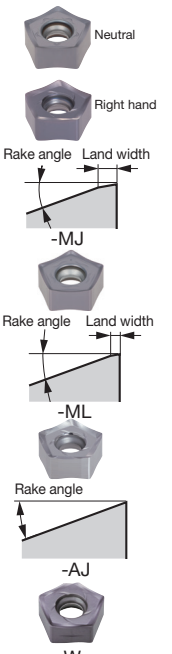
● ONGU0507ANEN-MJ, ONGU0507ANEN-W, ONMU0507ANEN-MJ

Shape	Designation	Coated										Applicable mill
		AH120	AH3135	T3225	T1215							
	ONGU0507ANEN-MJ	●	●	●	●							DO T MILL TASN13... Page H060
	ONGU0507ANEN-W	●	●									
	ONMU0507ANEN-MJ	●	●	●	●							

● OWMT0807ZNER-HJ, OWMT0807AAER-ML

Shape	Designation	Coated									Applicable mill
		AH130	AH3135								
	OWMT0807ZNER-HJ		●								DO OCTO TAN07... Page H063, H064
	OWMT0807AAER-ML	●	●								
											

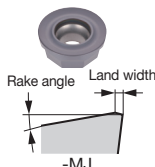
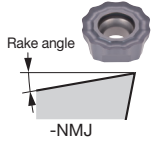
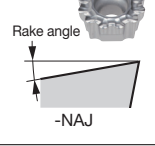
● PNMU0905GNEN-MJ, PNCU0905GNEN-MJ, PNCU0905GNER-MJ, PNCU0905GNEN-ML, PNCU0905GNFR-AJ, PNCU0905GNER-W

Shape	Designation	Coated								Cermet	Uncoated	Applicable mill
		AH120	AH140	AH725	AH3135	T1115	T1215	T3130	T3225	NS740	TH10	
	PNMU0905GNEN-MJ	●			●		●		●			DO PENT TEN09R... Page H069 EEN09... Page H070
	PNCU0905GNEN-MJ	●			●		●		●			
	PNCU0905GNER-MJ	●	●	●		●		●		●		
	PNCU0905GNEN-ML				●							
	PNCU0905GNFR-AJ										●	
	PNCU0905GNER-W			●								

● : Line up

Milling Insert

● RCMT**EN-MJ, RCMT**EN-NMJ, RCMT**FN-NAJ

Shape	Designation	Coated			Uncoated						Applicable mill
		AH120	AH140	AH725	KS15F						
 -MJ  -NMJ  -NAJ	RCMT1204EN-MJ	●	●	●							ROUND SPLIT TRC12/16... Page H177 ERC12/16... Page H178
	RCMT1204EN-NMJ	●	●	●							
	RCMT1204FN-NAJ				●						
	RCMT1606EN-MJ	●	●	●							
	RCMT1606EN-NMJ	●	●	●							
	RCMT1606FN-NAJ				●						

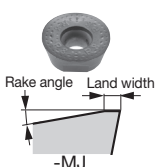
● RDCA2004TN, RDCN2004TN, RDKN2004...

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

● RDCM1203TN, RDMA1203TN

Shape	Designation	Uncoated						Applicable mill
		UX30						
	RDCM1203TN	●						ERD4000 (old item)
	RDMA1203TN	●						

● RDMT**ZDPN-MJ, RDMW**ZDSN

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

Milling Insert

● RDMW**M0

Shape	Designation	Coated							Applicable mill
		AH120							
	RDMW0501M0	●							EWD05/07/10...
	RDMW0702M0	●							Page H182
	RDMW1003M0	●							HWD07...
									Page H182

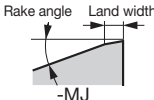
● RFEN2004ZFTN, RFEN2004M0TN

Shape	Designation	Coated		Uncoated						Applicable mill
		AH120	GH330	UX30	KS20					
	RFEN2004ZFTN	●	●	●	●					TRF6000
	RFEN2004M0TN		●	●	●					ERF6000
										(old item)

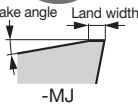
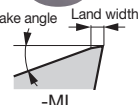
● RNGN**-E/T1

Shape	Designation	Ceramic								Applicable mill
		TS200	TS300							
	RNGN120700-E	●	●							CERAMICSMILL
	RNGN120700-T1	●	●							TFMRN...
										Page H072

● RNMU1307ZNER-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH3135	T1215	T3225					
  Rake angle Land width -MJ	RNMU1307ZNER-MJ	●	●	●	●					DOTMILL
										TASN13...
										Page H060

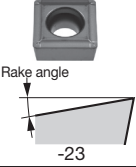
● RPMT**EN-MJ, RPMT**EN-ML

Shape	Designation	Coated								Applicable mill
		AH130	AH725	AH4035						
   Rake angle Land width -MJ  Rake angle Land width -ML	RPMT10T3EN-MJ	●	●	●						FIXRMILL
	RPMT10T3EN-ML	●	●	●						TRP12/16...
	RPMT1204EN-MJ	●	●	●						Page H172
	RPMT1204EN-ML	●	●	●						ERP10/12/16...
	RPMT1606EN-MJ	●	●	●						Page H172
	RPMT1606EN-ML	●	●	●						HRP10/12...
										Page H173

● : Line up

Milling Insert

● SCMT**-23

Shape	Designation	Coated							Applicable mill
		AH120							
	SCMT09T308-23	●							EBD... Page H186
	SCMT120408-23	●							HBD... (old item)

● SDCN1504ZDSR, SDEN1504ZDSR, SDNN1504ZDSR

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

● SDCN42HTR, SDKN42HTR

Shape	Designation	Coated							Applicable mill
		GH330							
	SDCN42HTR	●							EUD4600 (old item)
	SDKN42HTR	●							

● SDKN42EF..., SDEN42EFTR24

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

● : Line up

Milling Insert

- SDCN42Z..., SDEN42Z..., SDKN42Z..., SDCN42ZFN-DIA, SDKR42ZSR-MJ, SDMR1203AETN-MJ, SDKR1203AETN-MJ, SDKR42ZPN-MS

Shape	Designation	Coated										Cermet		Uncoated		PCD	Applicable mill
		AH3135	AH120	AH130	AH140	AH330	GH330	T1115	T1215	T3130	T3225	NS740	N308	UX30	TH10	DX140	
  Rake angle Land width -MJ Rake angle Land width -MS	SDCN42ZFN																TMD4400RI-U Page H087 EMD4400RI TGD4400-A EGD4400 TFD4400-A (old item)
	SDCN42ZTN											●	●	●			
	SDCN42ZTN20											●		●			
	SDEN42ZFN														●		
	SDEN42ZTN	●	●		●		●	●	●			●	●	●			
	SDEN42ZTNCR	●	●		●	●						●					
	SDEN42ZTN20									●	●						
	SDKN42ZFN														●		
	SDKN42ZTN	●	●	●	●	●	●	●	●			●	●	●			
	SDKN42ZTNCR											●					
	SDKN42ZTN16									●	●						
	SDCN42ZFN-DIA															●	
	SDKR42ZSR-MJ	●	●			●	●			●	●						
	SDMR1203AETN-MJ											●					
	SDKR1203AETN-MJ											●					
	SDKR42ZPN-MS	●		●	●												

DX140: Packing quantity = 1pc.

- SDCN53HTR, SDKN53HTR

Shape	Designation	Coated								Applicable mill
		GH330								
	SDCN53HTR	●								TUD5600 (old item)
	SDKN53HTR	●								

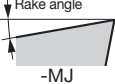
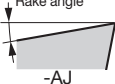
- SDCN53ZTN, SDEN53Z..., SDKN53Z..., SDKR53ZSR-MJ

Shape	Designation	Coated					Cermet		Uncoated			Applicable mill
		AH120	AH130	AH140	GH330	T3130	NS740	N308	UX30	TH10		
  Rake angle Land width -MJ	SDCN53ZTN						●	●				TMD5400RI Page H090
	SDEN53ZFN									●		
	SDEN53ZTN				●		●		●			
	SDEN53ZTNCR						●					
	SDEN53ZTN20					●						
	SDKN53ZFN									●		
	SDKN53ZTN	●	●	●	●		●	●	●			
	SDKN53ZTNCR						●					
	SDKN53ZTN16					●						
	SDKR53ZSR-MJ				●	●						

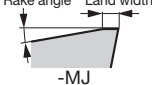
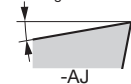
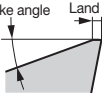
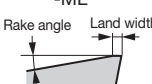
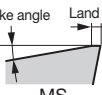
● : Line up

Milling Insert

● SDMT050204PN-MJ, SDHT050204FN-AJ

Shape	Designation	Coated		Uncoated						Applicable mill
		AH140	AH725	TH10						
 Rake angle  -MJ  Rake angle  -AJ	SDMT050204PN-MJ	●	●							TUNGQUAD TPD05... Page H129 EPD05... Page H129 ELD05... Page H130 EASD05... Page H221
	SDHT050204FN-AJ			●						

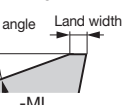
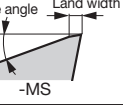
● SDMT1204AFPN-MJ, SDMT1204AFTN-MJ, SDMT1204AFPN-ML, SDMT1204AFPN-MS, SDGT1204AFTN-MJ, SDGT1204AFFN-AJ

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

● : Line up

Milling Insert

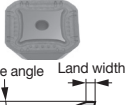
- SDMT1204PDSR-MJ, SDMT1204PDTR-MJ, SDMT1204PDPR-ML, SDMT1204PDPR-MS
SDGT1204PDTR-MJ, SDGT1204PDFR-AJ

Shape	Designation	Coated					Cermet		Uncoated		Applicable mill
		AH120	AH140	AH330	GH330	T3130	NS740		TH10		
 Rake angle Land width -MJ  Rake angle -AJ  Rake angle Land width -ML  Rake angle Land width -MS	SDMT1204PDSR-MJ	●	●	●	●	●					TPD12... EPD12... (old item)
	SDMT1204PDTR-MJ						●				
	SDMT1204PDPR-ML	●		●							
	SDMT1204PDPR-MS		●								
	SDGT1204PDTR-MJ	●		●			●				
	SDGT1204PDFR-AJ								●		

- SDMW090308TN, SDMW120408TN

Shape	Designation	Uncoated								Applicable mill
		UX30								
	SDMW090308TN	●								ELD3000 ELD4000 (old item)
	SDMW120408TN	●								

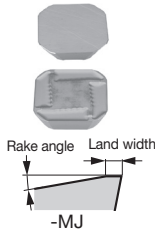
- SECN1203AGFN, SEEN1203AG..., SEKN1203AG..., SEKR1203AGSR-MJ, SEKR1203AGPN-MS

Shape	Designation	Coated							Cermet		Uncoated		Applicable mill
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740		UX30	TH10	
  Rake angle Land width -MJ  Rake angle Land width -MS	SECN1203AGFN											●	TME4400R/LI TME4400RB EME4400 (old item)
	SEEN1203AGFN											●	
	SEEN1203AGTN	●	●	●		●	●		●		●		
	SEEN1203AGTN-T							●	●		●		
	SEEN1203AGTNCR	●	●	●	●			●					
	SEEN1203AGTNCR-14								●				
	SEKN1203AGFN-T											●	
	SEKN1203AGTN	●	●	●	●	●		●	●		●		
	SEKN1203AGTN-T					●	●	●	●		●		
	SEKN1203AGTNCR								●				
	SEKR1203AGSR-MJ	●			●	●		●					
	SEKR1203AGPN-MS		●	●									

● : Line up

Milling Insert

● SE*N1504AG..., SEKR1504AGSR-MJ

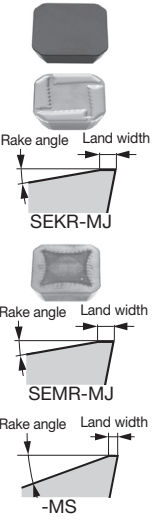
Shape	Designation	Coated				Cermet		Uncoated		Applicable mill
		AH120	AH140	GH330	T3130	NS740		TH10	UX30	
 Rake angle Land width -MJ	SEEN1504AGTN					●			●	TME5400RI (old item)
	SEKN1504AGFN							●		
	SEKN1504AGTN	●	●	●	●	●			●	
	SEKN1504AGTN-T				●	●				
	SEKR1504AGSR-MJ			●	●					

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

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

DX140: Packing quantity = 1pc.

● 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	
 Rake angle Land width SEKR-MJ SEMR-MJ -MS	SEEN1203AFTNCR-14							●			TGE4400I EGE4400 (old item)
	SEKN42AFTN	SEKN1203AFTN	●	●	●	●				●	
	SEKN42AFFN	SEKN1203AFFN							●		
	SEKN42AFTN16	SEKN1203AFTN-16					●	●			
	SEKR42AFSR-MJ	SEKR1203AFSR-MJ				●	●				
	SEKR1203AFPN-MS				●						
	SEKR1203AFTN-MJ							●			
	SEMR1203AFTN-MJ							●			

● : Line up

Milling Insert

● SECN42EFTRCR, SEEN42EFTRCR, SEKN42EFTR, SEKN42EFFR

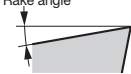
Shape	Designation	ISO Designation (Metric)	Coated		Cermet		Uncoated		Applicable mill
			GH330	T3130	NS740		UX30	TH10	
	SECN42EFTRCR	SECN1203EFTR			●				EGE4100 (old item)
	SEEN42EFTRCR	SEEN1203EFTR			●				
	SEKN42EFTR	SEKN1203EFTR	●	●	●				
	SEKN42EFFR	SEKN1203EFFR						●	

● SE*N42ZFR, SECN42ZFR-DIA

Shape	Designation	Uncoated		PCD		Applicable mill
		TH10		DX140		
  -DIA	SECN42ZFR-DIA			●		THE4000RIA (old item)
	SECN42ZFR	●				
	SEEN42ZFR	●				

DX140: Packing quantity = 1pc.

● SEGW12X4ZE*R, SEGT12X4ZEFR-AJ, SEGW12X4ZEFR-*, 2QP-SECW12X412ZETR, 1QP-SECW12X4ZETR-*

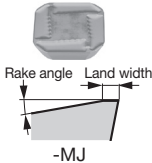
Shape	Designation	Coated			Cermet		Uncoated		PCD	CBN	Applicable mill
		AH120	AH140	DS1100	NS740		KS05F		DX140	BX480	
         Rake angle  -AJ -D Regular edge -WD Wiper edge -BD Wiper for burr removal	SEGW12X4ZEFR						●				TFE12R...-...A Page H082 TFE12R... Page H081 EFE12R... Page H081
	SEGW12X4ZEPR	●	●		●		●				
	SEGT12X4ZEFR-AJ			●			●				
	SEGW12X4ZEFR-D								●		
	SEGW12X4ZEFR-WD								●		
	SEGW12X4ZEFR-BD								●		
	2QP-SECW12X412ZETR									●	
	1QP-SECW12X4ZETR-W									●	
	1QP-SECW12X4ZETR-B									●	

DX140: Packing quantity = 1pc.

● : Line up

Milling Insert

● SEKR1504AFSR-MJ

Shape	Designation	Coated						Applicable mill
		T3130						
 -MJ	SEKR1504AFSR-MJ	●						(old item)

● SF*N42ZFN, SFCN42ZFN-DIA

Shape	Designation	Uncoated		PCD					Applicable mill
		TH10		DX140					
 -DIA	SFCN42ZFN	●							THF4400RIA (old item)
	SFEN42ZFN	●							
	SFCN42ZFN-DIA			●					

DX140: Packing quantity = 1pc.

● SF*N53ZFN, SFCN53ZFN-DIA

Shape	Designation	Uncoated		PCD					Applicable mill
		TH10		DX140					
 -DIA	SFCN53ZFN	●							THF5400RIA (old item)
	SFEN53ZFN	●							
	SFCN53ZFN-DIA			●					

DX140: Packing quantity = 1pc.

● SN**56FTR

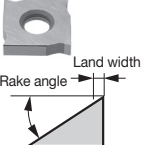
Shape	Designation	Cermet						Applicable mill
		X407						
	SNAA56FTR	●						MS... (old item)
	SNAG56FTR							
	SNCC56FTR							
	SNCJ56FTR							

● SNCN43Z..., SNKF43Z..., SNKN43ZTN

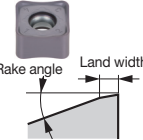
Shape	Designation	Coated		Cermet		Ceramic	Uncoated		Applicable mill
		T1115	T3130	NS740	N308	FX105	UX30	TH10	
	SNCN43ZFN							●	TGN4200R-A (old item)
	SNCN43ZTN			●	●		●	●	
	SNKF43ZFN							●	
	SNKF43ZTN	●					●		
	SNKN43ZTN	●	●	●		●	●		

Milling Insert

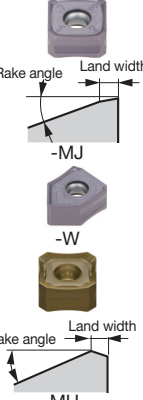
● SNEN12**Z...

Shape	Designation	Uncoated								Applicable mill
		UX30	TH10							
	SNEN12T2ZFN	●	●							SVN4000 (old item)
	SNEN12T2ZTN	●	●							
	SNEN1233ZFN	●	●							
	SNEN1233ZTN	●	●							

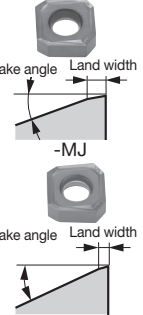
● SNMU120608HNEN-MM, SNMU1206**EN-MM

Shape	Designation	Coated								Applicable mill
		AH120	AH3135	T1215	T3225					
	SNMU120608HNEN-MM	●	●	●	●					DOQ TM MILL THSN12... Page H067
	SNMU120612EN-MM		●	●						
	SNMU120620EN-MM		●	●						

● SNGU1307ANEN-MJ, SNGU1307ANEN-W, SNGU1307ANEN-MH, SNMU1307ANEN-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH3135	T3225	T1215					
	SNGU1307ANEN-MJ	●	●	●	●					DOT TM MILL TASN13... Page H060
	SNGU1307ANEN-W	●	●							
	SNGU1307ANEN-MH			●						
	SNMU1307ANEN-MJ	●	●	●	●					

● SNMU1706ANPR-MJ, SNHU1706ANPR-MJ, SNMU1706ANTR-ML, SNHU1706ANTR-ML, SNHU1706ANFN-W

Shape	Designation	Coated								Applicable mill
		AH120	AH140	AH725	AH3135	T1215	T3225			
	SNMU1706ANPR-MJ		●	●	●	●	●			DOOCTO TAN07... Page H063, H064
	SNMU1706ANTR-ML	●			●					
	SNHU1706ANPR-MJ		●	●						
	SNHU1706ANTR-ML	●								
	SNHU1706ANFN-W	●								

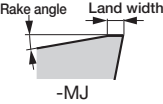
● : Line up

Milling Insert

● SNMN1204**TN

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

● SPCN42..., SPEN42..., SPKN42..., SPKR42SSR-MJ, SPGN120312TN

Shape	Designation	Coated					Cermet		Ceramic	Uncoated			Applicable mill
		AH120	AH140	GH330	T1115	T3130	NS740	N308	FX105	UX30	TH10		
  	SPCN42STR						●	●		●			TGP4100RIA/ RBA/RBAE (Old item)
	SPCN42SFR										●		
	SPEN42STR						●						
	SPKN42STR	●	●	●	●	●	●	●	●	●			
	SPKN42STL						●			●			
	SPKN42SFR										●		
	SPKN42SFL										●		
	SPKR42SSR-MJ			●	●	●							
	SPGN120312TN								●				
	SPEN423TN					●	●			●			
	SPEN423FN										●		

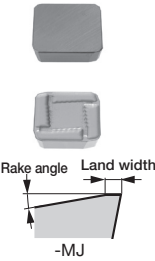
● SP*N42...

Shape	Designation	Coated		Cermet			Uncoated					Applicable mill
		T1115	T3130	NS740	X407	N308	UX30	TH10				
	SPAN42ZFR							●				TGP4200R-A (Old item)
	SPCN42ZFL							●				
	SPCN42ZFR							●				
	SPCN42ZTR			●	●	●						
	SPEN423TN		●	●			●					
	SPEN423FN							●				
	SPEN42ZTR			●								
	SPKN42ZFL							●				
	SPKN42ZFR							●				
	SPKN42ZTR	●	●	●	●	●	●					

● : Line up

Milling Insert

● SP*N53S..., SPKR53SSR-MJ

Shape	Designation	Coated			Cermet		Uncoated		Applicable mill
		GH330	T1115	T3130	NS740	N308	UX30	TH10	
	SPCN53SFR							●	TGP5100RIA (Old item)
	SPCN53STR					●	●		
	SPKN53SFR							●	
	SPKN53STL						●		
	SPKN53STR	●	●		●		●		
	SPKN53STR20			●					
	SPKR53SSR-MJ	●		●					

● SPGN120412TN

Shape	Designation	Coated			Ceramic		Applicable mill
		T1115			FX105		
	SPGN120412TN	●			●		QFP4000 (Old item)

● SPHA**FNW

Shape	Designation	Cermet			Uncoated		Applicable mill
		N308			TH10		
	SPHA431FNW	●			●		TSP4000RIA-U Page H148 TFP4000IA TFD4400-A SFP4000R EFP4000R (Old item)
	SPHA435FNW	●			●		

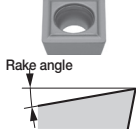
● SPMA422...

Shape	Designation	Cermet		Uncoated		Applicable mill
		NS740	N308	UX30	TH10	
	SPMA422TN	●	●	●		ECP4400R Page H220
	SPMA422FN				●	

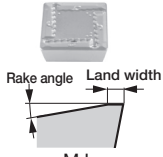
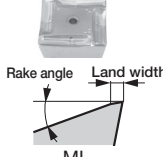
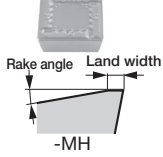
● : Line up

Milling Insert

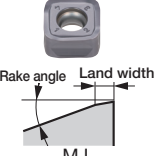
● SPMP..., SPMM**ERD

Shape	Designation	Coated								Applicable mill
		T313W	AH6030							
	SPMP771-CG		●							TCB... Page H223
	SPMP831-CG		●							
	SPMP042ER-CG		●							
	SPMP322ER-CG		●							
	SPMP432ER-CG		●							
	SPMP831DS	●								
	SPMP042ERD	●								
	SPMM322ERD	●								
	SPMM432ERD	●								

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

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

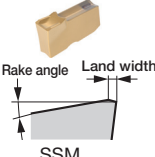
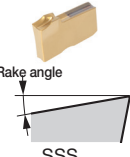
● SQMU1206ZSR-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH130	AH725	T3130					
 -MJ	SQMU1206ZSR-MJ	●	●	●	●					DOFED QUAD TXQ... Page H043

● : Line up

Milling Insert

● SSM..., SSS...

Shape	Designation	Coated							Applicable mill
		GH130							
 SSM	SSM22N	●							TUNG MILL S/ASG... Page H151
	SSM31N	●							
	SSM41N	●							
	SSS16N	●							
	SSS22N	●							
	SSS31N	●							
	SSS41N	●							
 SSS									

● SWMT13T3AFPR-MJ, SWMT13T3AFER-ML, SWMW13T3AFTR, SWMT13T3AFPR-HJ, SWMT13T3AFPR-MS, SWGT13T3AFPR-MJ, SWGT13T3AFPR-AJ

Shape	Designation	Coated								Cermet	Uncoated	Applicable mill
		AH120	AH130	AH140	AH3135	T1115	T1215	T3130	T3225	DS1100	NS740	
 Rake angle Land width -MJ	SWMT13T3AFPR-MJ	●	●	●	●	●	●	●	●	●		TUNG MILL TAW13... Page H074 EAW13... Page H075
	SWMT13T3AFER-ML	●			●					●		
	SWMW13T3AFTR	●			●	●	●	●		●		
	SWMT13T3AFPR-HJ	●	●	●	●	●	●	●				
	SWMT13T3AFPR-MS		●	●	●							
	SWGT13T3AFPR-MJ	●			●					●		
	SWGT13T3AFPR-AJ								●		●	
 Rake angle Land width -ML												
 -FL												
 Rake angle Land width -HJ												
 Rake angle Land width -MS												
 Rake angle -AJ												

● : Line up

Milling Insert

● SWMT1304PDPR-MJ, SWMT1304PDER-ML, SWMT1304PDPR-MS, SWGT1304PDPR-MJ, SWGT1304PDFR-AJ

Shape	Designation	Coated								Cermet	Uncoated		Applicable mill
		AH120	AH130	AH140	AH3135	T1115	T1215	T3130	T3225	DS1100	NS740	KS05F	
 Rake angle Land width -MJ	SWMT1304PDPR-MJ	●	●	●	●	●	●	●	●	●			TUNG MILL TPW13... Page H132 EPW13... Page H133
	SWMT1304PDER-ML	●			●								
	SWMT1304PDPR-MS		●	●									
	SWGT1304PDPR-MJ	●	●								●		
	SWGT1304PDFR-AJ	●	●							●		●	
 Rake angle Land width -ML													
 Rake angle Land width -MS													
 Rake angle -AJ													

● SWMT0904ZER-MM, SWMT0904UER-MM, SWMT1506ZER-MM, SWMT1506UER-MM, SWMT1506ZER-MT

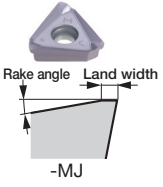
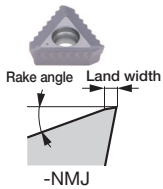
Shape	Designation	Coated										Applicable mill
		AH120	AH3135									
 Rake angle Land width -MT	SWMT0904ZER-MM		●									MILLQ ^{UAP} FEED TXSW09... Page H046 EXSW09... Page H046 TXSW15... Page H047
	SWMT0904UER-MM		●									
	SWMT1506ZER-MM	●	●									
	SWMT1506UER-MM		●									
	SWMT1506ZER-MT	●	●									
 Rake angle Land width -MM												

● T*-R...

Shape	Designation	Coated								Applicable mill
		GH330								
	T1-R14	●								Thread milling cutter Page H214
	T1-R28	●								
	T2-R14	●								
	T2-R28	●								

Milling Insert

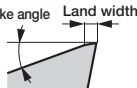
● TCGT160608PDER-MJ, TCMT160620PDER-NMJ

Shape	Designation	Coated				Applicable mill
		AH120	AH3135	T1215	T3225	
 -MJ	TCGT160608PDER-MJ	●	●			TUNG-TRISHRED LPTC16... Page H108 TPTC16... Page H108 EPTC16... Page H109
	TCMT160620PDER-NMJ	●	●	●	●	
 -NMJ						

● TDMN**N

Shape	Designation	Cermet	Uncoated	Applicable mill
		NS740	TH10 UX30	
	TDMN110304TN	●	●	ESD2000 (Old item)
	TDMN110304FN		●	
	TDMN110308TN	●	●	

● TECN32..., TEEN32..., TECN32ZFR-DIA, TEKR1603PEPR-MS

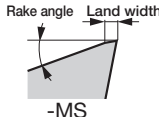
Shape	Designation	Coated										Cermet		Uncoated		PCD	Applicable mill
		AH120	AH130	AH140	AH330	AH3135	GH330	T1115	T3130	T1215	T3225	NS740	N308	UX30	TH10	DX140	
 -DIA  -DIA  Rake angle Land width  -MS	TECN32ZFR														●		TSE3000R ESE3000R (Old item)
	TECN32ZTR										●	●	●				
	TEEN32ZFR														●		
	TEEN32ZTR	●	●	●	●	●	●	●	●	●	●	●	●	●			
	TECN32ZFR-DIA															●	
	TEKR1603PEPR-MS			●													

DX140: Packing quantity = 1pc.

● : Line up

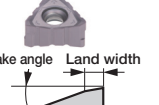
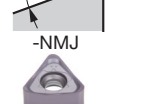
Milling Insert

● TECN43..., TEEN43..., TECN43ZFR-DIA, TEKR2204PEPR-MS

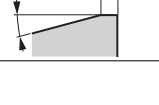
Shape	Designation	Coated								Cermet	Uncoated		PCD	Applicable mill			
		AH120	AH130	AH140	AH330	AH3135	GH330	T1115	T3130	T1215	T3225	NS740	N308		UX30	TH10	DX140
 -DIA  -MS 	TECN43ZFR																TSE4000RIA Page H146 ESE4000R (Old item)
	TECN43ZTR											●	●	●	●		
	TEEN43ZFR														●		
	TEEN43ZTR	●	●	●	●	●	●	●	●	●	●	●	●	●			
	TECN43ZFR-DIA															●	
	TEKR2204PEPR-MS			●													

DX140: Packing quantity = 1pc.

● TNGU120708PER-MJ, TNMU1207R16PER-MJ, TNMU120708PER-MJ, TNMU120708PER-NMJ

Shape	Designation	Coated														Applicable mill
		AH120	AH3135	T1215	T3225											
 TNGU-MJ  -NMJ  -NMJ  TNMU-MJ	TNMU070304PER-MJ	●	●													DOFTRI TPTN12... Page H094 EPTN12... Page H095
	TNMU070308PER-MJ	●	●													
	TNGU120708PER-MJ	●	●	●												
	TNMU1207R16PER-MJ	●	●													
	TNMU120708PER-MJ	●	●	●	●											
	TNMU120708PER-NMJ	●	●													

● TNKF64ZTR

Shape	Designation	Uncoated												Applicable mill
		UX30												
 TNKF64ZTR 	TNKF64ZTR	●												TPN6400I (Old item)

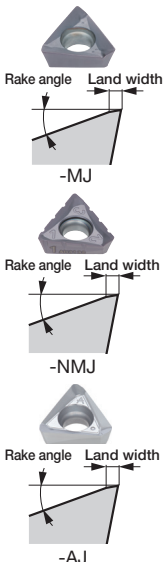
● : Line up

Milling Insert

● TNMN43ZENS

Shape	Designation	Uncoated						Applicable mill
		UX30						
	TNMN43ZENS	●						TSN4000 ESN4000 (Old item)

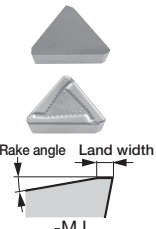
● TOMT**PDER-MJ, TOMT150608PDER-NMJ, TOGT**PDFR-AJ

Shape	Designation	Coated				Uncoated		Applicable mill
		AH120	AH3135	T1215	T3225	KS05F		
 Rake angle Land width -MJ Rake angle Land width -NMJ Rake angle Land width -AJ	TOMT060302PDER-MJ	●	●					TUNG-TRI TPA06... Page H097 EPA06... Page H097 HPA06... Page H098 TPA10... Page H098 TLA10... Page H099 EPA10... Page H099 HPA10... Page H100 TPA15... Page H100 TLA15... Page H101 EPA15... Page H103
	TOMT060304PDER-MJ	●	●					
	TOMT060308PDER-MJ	●	●	●	●			
	TOMT100404PDER-MJ	●	●		●			
	TOMT100408PDER-MJ	●	●	●	●			
	TOMT100416PDER-MJ	●	●					
	TOMT150604PDER-MJ	●	●		●			
	TOMT150608PDER-MJ	●	●	●	●			
	TOMT150616PDER-MJ	●	●					
	TOMT150620PDER-MJ	●	●					
	TOMT150608PDER-NMJ	●	●		●			
	TOGT100404PDFR-AJ					●		
	TOGT100408PDFR-AJ					●		
	TOGT150604PDFR-AJ					●		
	TOGT150608PDFR-AJ					●		

● TPCA43ZTRW1, TPMA432TNW1

Shape	Designation	Cermet		Uncoated		Applicable mill
		NS740		UX30	TH10	
	TPCA43ZTRW1				●	PES1500... (Old item)
	TPMA432TNW1	●		●	●	

● TP*N43Z..., TPKR43ZSR-MJ, TPMR2204PDSR-MJ

Shape	Designation	Coated					Cermet		Uncoated		Applicable mill	
		AH120	AH130	AH140	GH330	T1115	T3130	NS740	N308	UX30		TH10
 Rake angle Land width -MJ	TPCN43ZFR									●	TSP4000RIA-U Page H148 TFP4000IA (Old item)	
	TPCN43ZTR							●	●	●		
	TPEN43ZTR							●				
	TPEN43ZTRCR						●					
	TPKN43ZFR									●		
	TPKN43ZFL									●		
	TPKN43ZTR	●	●	●	●	●	●	●	●	●		
	TPKR43ZSR-MJ				●	●	●					
	TPMR2204PDSR-MJ				●	●	●					

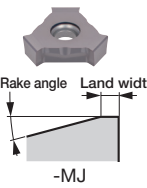
● : Line up

Milling Insert

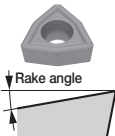
● TPMN**TN

Shape	Designation	Cermet					Applicable mill
		NS740					
	TPMN110304TN	●					(Old item)
	TPMN110308TN	●					
	TPMN160308TN	●					
	TPMN160312TN	●					
	TPMN220408TN	●					
	TPMN220412TN	●					

● TVKX**TN-MJ

Shape	Designation	Coated							Applicable mill
		AH120	AH130	AH725					
 -MJ	TVKX020202TN-MJ	●		●					TUNGALLOY ASV 02/03/04/05... Page H155
	TVKX020204TN-MJ	●		●					
	TVKX03X302TN-MJ	●		●					
	TVKX03X304TN-MJ	●		●					
	TVKX04H304TN-MJ	●	●	●					
	TVKX04H308TN-MJ	●	●	●					
	TVKX050404TN-MJ	●	●	●					
	TVKX050408TN-MJ	●	●	●					

● WCMT**-D4

Shape	Designation	Coated							Applicable mill
		AH120	AH140						
 -D4	WCMT050308-D4	●	●						EVX... HVX... (Old item)
	WCMT06T308-D4	●	●						

● WDCN42ZFR-DIA

Shape	Designation	PCD							Applicable mill
		DX140							
 Wiper edge -DIA	WDCN42ZFR-DIA	●							TMD4400RI-U Page H087 EMD4400RI TGD4400-A EGD4400 (Old item)

DX140: Packing quantity = 1pc.

● : Line up

Milling Insert

● WECN42ZFR-DIA

Shape	Designation	PCD						Applicable mill
		DX140						
 Wiper edge -DIA	WECN42ZFR-DIA	●						THE4000RIA (Old item)

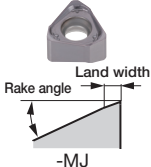
DX140: Packing quantity = 1pc.

● WFCN**ZFR-DIA

Shape	Designation	PCD						Applicable mill
		DX140						
 Wiper edge -DIA	WFCN42ZFR-DIA	●						THF4400RIA
	WFCN53ZFR-DIA	●						THF5400RIA (Old item)

DX140: Packing quantity = 1pc.

● WNGU**TN-MJ

Shape	Designation	Coated									Applicable mill
		AH120	AH130	AH725	AH3135						
 Land width Rake angle -MJ	WNGU060304TN-MJ	●			●						TUNGALLOY ASW 06/07/09... Page H157 TSW 06/07/09... Page H157
	WNGU060308TN-MJ	●	●	●	●						
	WNGU060310TN-MJ	●			●						
	WNGU060316TN-MJ	●	●	●							
	WNGU060320TN-MJ	●			●						
	WNGU07T304TN-MJ	●			●						
	WNGU07T308TN-MJ	●	●	●							
	WNGU07T310TN-MJ	●			●						
	WNGU07T316TN-MJ	●	●	●							
	WNGU07T320TN-MJ	●			●						
	WNGU090404TN-MJ	●			●						
	WNGU090408TN-MJ	●	●	●							
	WNGU090410TN-MJ	●			●						
	WNGU090416TN-MJ	●	●	●							
	WNGU090420TN-MJ	●			●						

● WPAN42SFR

Shape	Designation	Cermet		Uncoated						Applicable mill
		N308		TH10						
 Wiper edge (2-corner type)	WPAN42SFR	●		●						TGP4100RIA/ RBA/RBAE (Old item)

● : Line up

Milling Insert

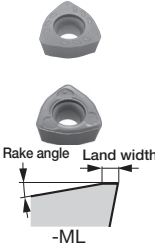
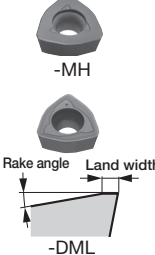
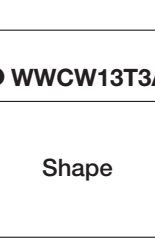
● WPAN42SFRS

Shape	Designation	Uncoated							Applicable mill
		TH10							
 Wiper edge (1-corner type)	WPAN42SFRS	●							TGP4100RIA/ RBA/RBAE (Old item)

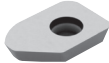
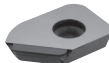
● WPAN42ZFR

Shape	Designation	Uncoated							Applicable mill
		TH10							
 Wiper edge (2-corner type)	WPAN42ZFR	●							TGP4200R-A (Old item)

● WPMT**ZPR..., WPMT**ZPR-ML, WPMT**-MH, WPMT**-DML, WPMW**ZSR

Shape	Designation	Coated						Applicable mill
		AH120	AH130	AH140	AH730	T3130	AH3135	
 Rake angle Land width -ML  Rake angle Land width -MH  Rake angle Land width -DML	WPMW05H315ZPR	●		●		●	●	MILLFEED TXP05/06/08/09... Page H051 EXP05/06/08/09... Page H052 HXP... (Old item)
	WPMT05H315ZPR-ML	●		●		●	●	
	WPMT05H315ZPR-MH	●		●			●	
	WPMT05H315ZPR-DML				●			
	WPMW06X415ZPR	●		●		●	●	
	WPMT06X415ZPR-ML	●	●	●		●	●	
	WPMT06X415ZPR-MH	●		●			●	
	WPMT06X415ZPR-DML				●			
	WPMT080615ZSR	●	●	●		●	●	
	WPMT080615ZPR-ML	●	●	●		●	●	
	WPMT080615ZSR-MH	●		●			●	
	WPMT080615ZPR-DML				●			
	WPMT090725ZSR	●		●		●	●	
	WPMT090725ZPR-ML	●	●	●		●	●	
	WPMT090725ZSR-MH	●	●	●			●	
	WPMT090725ZPR-DML				●			

● WWCW13T3AFER-WS, WWCW13T3AFFR-WS, WWCW13T3AFFR-WD

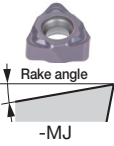
Shape	Designation	Coated		Cermet	Uncoated	PCD	Applicable mill
		GH110	DS1100	NS740	KS05F	DX140	
   -WD	WWCW13T3AFER-WS	●		●			TUNG MILL TAW13... Page H074 EAW13... Page H075
	WWCW13T3AFFR-WS		●		●		
	WWCW13T3AFFR-WD					●	

DX140: Packing quantity = 1pc.

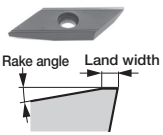
● : Line up

Milling Insert

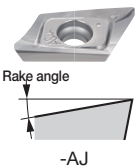
● WXHU**R-MJ

Shape	Designation	Coated						Applicable mill
		AH110						
	WXHU040305R-MJ	●						DOMMILL HFWX04... Page H171
	WXHU040310R-MJ	●						

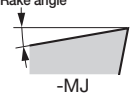
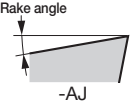
● XCET310404ER

Shape	Designation	Coated		Cermet	Uncoated		Applicable mill
		AH330	AH120	NS740	UX30		
	XCET310404ER	●	●	●	●		ECC31... Page H218

● XVCT16**R-AJ

Shape	Designation	Uncoated						Applicable mill
		TH10						
	XVCT160504R-AJ	●						TUNG-ALUMILL TPV16... Page H143 EPV16... Page H143
	XVCT160508R-AJ	●						
	XVCT160512R-AJ	●						
	XVCT160516R-AJ	●						
	XVCT160520R-AJ	●						
	XVCT160524R-AJ	●						
	XVCT160525R-AJ	●						
	XVCT160530R-AJ	●						
	XVCT160532R-AJ	●						
	XVCT160540R-AJ	●						
	XVCT160550R-AJ	●						

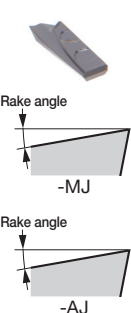
● XVGT**EC-MJ, XVGT**EP-MJ, XVGT**FC-AJ, XVGT**FP-AJ

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

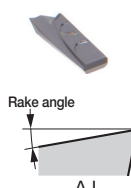
● : Line up

Milling Insert

● XHGR**ER-MJ, XHGR**FR-AJ

Shape	Designation	Coated								Applicable mill
		AH730	DS1200							
	XHGR110202ER-MJ	●								HYBRIDTACMILL EPH11/13/18... (Old item)
	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	●								
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	XHGR18T215ER-MJ	●								
	XHGR18T216ER-MJ	●								
	XHGR18T220ER-MJ	●								
	XHGR110200FR-AJ		●							
	XHGR110202FR-AJ		●							
	XHGR110204FR-AJ		●							
	XHGR110205FR-AJ		●							
	XHGR110208FR-AJ		●							
	XHGR110210FR-AJ		●							

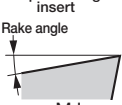
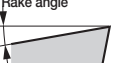
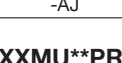
● XHGR**ER-MJ, XHGR**FR-AJ

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

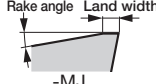
● : Line up

Milling Insert

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

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

● XXMU**PR-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH140	AH3135						
  Rake angle Land width -MJ	XXMU08T204PR-MJ	●	●	●						EVX... Page H216 HVX... (Old item)
	XXMU10H308PR-MJ	●	●	●						
	XXMU12X408PR-MJ	●	●	●						
	XXMU16X508PR-MJ	●	●	●						

● YDEN0905PDFR-D, YDEN0905PDFR-WD, YDEN0905PDFR-BD

Shape	Designation	PCD								Applicable mill
		DX140								
 Regular edge  Wiper edge  Wiper for burr removal	YDEN0905PDFR-D	●								DPD09... Page H085 EDPD09... Page H085
	YDEN0905PDFR-WD	●								
	YDEN0905PDFR-BD	●								

DX140: Packing quantity = 1pc.

● YDEN1505ADFR-D, YDEN1505ADFR-WD

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

DX140: Packing quantity = 1pc.

● : Line up

Milling Insert

● YDEN1505PDFR-D, YDEN1505PDFR-WD

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

DX140: Packing quantity = 1pc.

● YDEN0603PDF/SR-D, YDEN0603PDFR-WD, YDEN0603PDFR-BD

Shape	Designation	PCD						Applicable mill
		DX110						
 _D  _WD  _BD	YDEN0603PDFR-D	●						TUNGSMILL TPYD06... Page H079 EPYD06... Page H079
	YDEN0603PDSR-D	●						
	YDEN0603PDFR-WD	●						
	YDEN0603PDFR-BD	●						

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

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

DX140: Packing quantity = 1pc.

● YPEB12X3-1A**-D, YPEB12X3-1P**-D, YPEB12X3-2A**-D, YPEB12X3-FP**-D, YPEB12X3-2P07R-D

Shape	Designation	PCD						Applicable mill
		DX160						
 -1A/P  -FP  -2A/P	YPEB12X3-1A01R-D	●						TUNGSMILL TPYP12... EPYP12...
	YPEB12X3-1A02R-D	●						
	YPEB12X3-1A07R-D	●						
	YPEB12X3-1P02R-D	●						
	YPEB12X3-1P07R-D	●						
	YPEB12X3-FP02R-D	●						
	YPEB12X3-FP07R-D	●						
	YPEB12X3-2A01R-D	●						
	YPEB12X3-2A02R-D	●						
	YPEB12X3-2A07R-D	●						
	YPEB12X3-2P07R-D	●						

DX160: Packing quantity = 2pcs.

● : Line up

Milling Insert

● YPEN1505PPTR-Q

Shape	Designation	T-CBN						Applicable mill
		BX950						
	YPEN1505PPTR-Q	●						QPP15... (Old item)

BX950: Packing quantity = 1pc.

● ZDCA**TN

Shape	Designation	Uncoated						Applicable mill
		UX30						
	ZDCA0804TN	●						TBF1000 (Old item)
	ZDCA1105TN	●						

● ZDMT**-MJ

Shape	Designation	Coated						Applicable mill
		AH120						
 Rake angle Land width -MJ	ZDMT4005-MJ	●						EBD... Page H186
	ZDMT5006-MJ	●						HBD... (Old item)

● ZFBM**-MJ, ZFRM**-MJ

Shape	Designation	Coated							Applicable mill
		AH710	AH725						
 Rake angle ZFBM-MJ  Rake angle ZFRM-MJ	ZFBM080R00-MJ	●	●						BALL F NOSE EBFU... Page H166 HBFM... Page H167
	ZFBM100R00-MJ	●	●						
	ZFBM120R00-MJ	●	●						
	ZFBM160R00-MJ	●	●						
	ZFBM200R00-MJ	●	●						
	ZFBM250R00-MJ	●	●						
	ZFBM300R00-MJ	●	●						
	ZFBM320R00-MJ	●	●						
	ZFRM120R05-MJ	●	●						
	ZFRM120R10-MJ	●	●						
	ZFRM160R05-MJ	●	●						
	ZFRM160R10-MJ	●	●						
	ZFRM160R15-MJ	●	●						
	ZFRM200R10-MJ	●	●						
	ZFRM200R15-MJ	●	●						

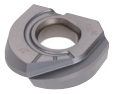
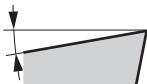
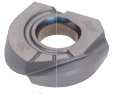
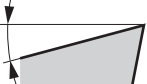
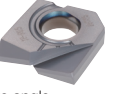
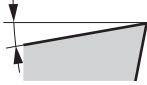
● : Line up

Grade
Insert
Toolholder
Ext. Toolholder
Int. Toolholder
Threading
Grooving
Miniature Tool
Milling Cutter
Endmill
Drilling Tool
Tooling System
User's Guide
Index

A
B
C
D
E
F
G
H
I
J
K
L
M

Milling Insert

● ZFBU**-MJ, ZFBU**-ML, ZFRU**-MJ

Shape	Designation	Coated						Applicable mills
		AH725						
 Rake angle  ZFBU-MJ	ZFBU037R00-MJ	●						BALL NOSE EBFU... Page H166
	ZFBU050R00-MJ	●						
	ZFBU062R00-MJ	●						
	ZFBU075R00-MJ	●						
	ZFBU062R00-MJ	●						
	ZFBU100R00-MJ	●						
	ZFBU075R00-MJ	●						
	ZFBU125R00-MJ	●						
	ZFBU037R00-ML	●						
	ZFBU050R00-ML	●						
 Rake angle  ZFBU-ML	ZFBU062R00-ML	●						
	ZFBU075R00-ML	●						
	ZFBU100R00-ML	●						
	ZFBU125R00-ML	●						
	ZFRU037R003-MJ	●						
	ZFRU050R003-MJ	●						
	ZFRU050R006-MJ	●						
	ZFRU050R012-MJ	●						
	ZFRU062R003-MJ	●						
	ZFRU062R006-MJ	●						
 Rake angle  ZFRU-MJ	ZFRU062R012-MJ	●						
	ZFRU075R003-MJ	●						
	ZFRU075R006-MJ	●						
	ZFRU075R012-MJ	●						
	ZFRU100R003-MJ	●						
	ZFRU100R006-MJ	●						
	ZFRU100R012-MJ	●						
	ZFRU125R003-MJ	●						
	ZFRU125R006-MJ	●						
	ZFRU125R012-MJ	●						

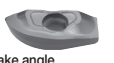
● : Line up

Milling Insert

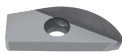
● ZNCA**FN, ZNMM**EN

Shape	Designation	Uncoated								Applicable mill
		UX30	TH10							
	ZNCA1002FN2	●	●							TBN1000 (Old item)
	ZNCA1203FN	●	●							
	ZNCA1603FN	●	●							
	ZNCA2004FN	●	●							
	ZNCA2505FN	●	●							
	ZNCA3005FN	●	●							
	ZNMM2004EN	●								
	ZNMM2505EN	●								
	ZNMM3005EN	●								

● ZPET**-MJ

Shape	Designation	Coated								Applicable mill
		AH120	AH330							
 Rake angle -MJ	ZPET2004-MJ	●	●							EBP... Page H184 HBP... (Old item)
	ZPET2505-MJ	●	●							
	ZPET3006-MJ	●	●							
	ZPET3206-MJ	●	●							

● ZPCW**-QBN

Shape	Designation	T-CBN								Applicable mill
		BX950								
	ZPCW2003-QBN	●								EBB... (Old item)
	ZPCW25H3-QBN	●								
	ZPCW30T3-QBN	●								
	ZPCW4004-QBN	●								
	ZPCW5004-QBN	●								

BX950: Packing quantity = 1pc.

● ZRBM**-MM

Shape	Designation	Coated								Applicable mill
		APH730								
	ZRBM160-MM	●								BALL NOSE EBRU... Page H164 HBRM... Page H164
	ZRBM200-MM	●								
	ZRBM250-MM	●								
	ZRBU062-MM	●								
	ZRBU075-MM	●								
	ZRBU100-MM	●								

● : Line up

Milling Insert

● 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-SNGN090308	●						
	S-SNGN090312	●						
 S-SNGN	S-SNGN120308	●						
	S-SNGN120312	●						
	S-SNGN120408	●						
	S-SNGN120412	●						
 S-TNGN	S-TNGN110308	●						
	S-TNGN110312	●						
	S-TNGN160408	●						
	S-TNGN160412	●						

● : Line up