



Exchangeable head endmill

TUNGMEISTER

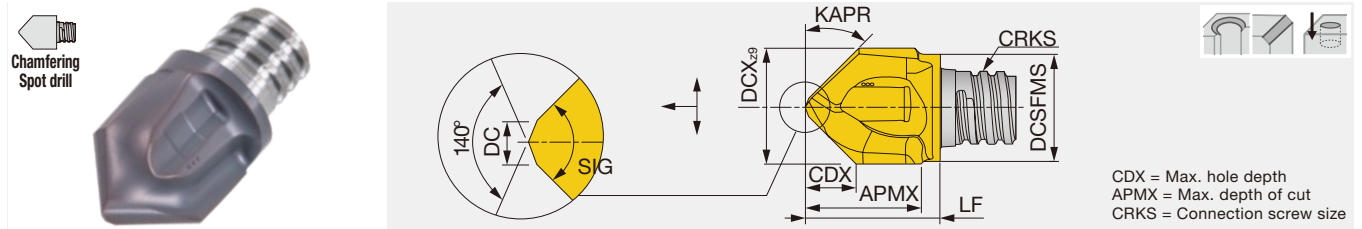
Tungaloy Report No. 381S7-US

Expansion of **AH715** grade to chamfering and square heads



VCP**-02...

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



Metric Designation	AH715	AH725	SIG	NOF	FHA	DCX	DCSFMS	APMX	CDX	CRKS	LF	DC	KAPR	Wrench	Torque*
VCP100L09.5A30-02S06	●	●	60°	2	0°	10	9.5	8.5	7.5	S06	11.75	1.5	60°	KEYV-S06	10
VCP120L12.0A30-02S08	●	●	60°	2	0°	12	11.5	11	9.2	S08	15.4	1.5	60°	KEYV-S08	15
VCP160L15.0A30-02S10	●	●	60°	2	0°	16	15.2	16	12	S10	20.2	2.5	60°	KEYV-S10	28
VCP200L18.2A30-02S12	●	●	60°	2	0°	20	18.3	18.2	15.5	S12	24.7	2.5	60°	KEYV-S12	28
VCP080L07.7A45-02S05	●	●	90°	2	0°	8	7.6	7.5	3.7	S05	9.75	1	45°	KEYV-S05	7
VCP083L07.9A45-02S05	●	●	90°	2	0°	8.3	7.6	7.5	3.8	S05	10	1	45°	KEYV-S05	7
VCP100L09.0A45-02S06	●	●	90°	2	0°	10	9.5	9.5	4.4	S06	11.75	1.5	45°	KEYV-S06	10
VCP104L09.0A45-02S06	●	●	90°	2	0°	10.4	9.5	9.5	4.6	S06	11.75	1.5	45°	KEYV-S06	10
VCP120L12.0A45-02S08	●	●	90°	2	0°	12	11.5	11.5	5.4	S08	15.4	1.5	45°	KEYV-S08	15
VCP124L12.0A45-02S08	●	●	90°	2	0°	12.4	11.5	11.5	5.6	S08	15.4	1.5	45°	KEYV-S08	15
VCP160L15.0A45-02S10	●	●	90°	2	0°	16	15.2	15	7.1	S10	18.8	1.5	45°	KEYV-S10	28
VCP165L15.0A45-02S10	●	●	90°	2	0°	16.5	15.2	15	7.1	S10	18.8	1.5	45°	KEYV-S10	28
VCP200L18.2A45-02S12	●	●	90°	2	0°	20	18.3	19.5	9.5	S12	24.7	1.5	45°	KEYV-S12	28
VCP100L09.5A60-02S06	●	●	120°	2	0°	10	9.5	9.5	2.7	S06	12.7	1.5	30°	KEYV-S06	10
VCP120L12.0A60-02S08	●	●	120°	2	0°	12	11.5	11.5	3.3	S08	15.2	1.5	30°	KEYV-S08	15
VCP160L15.5A60-02S10	●	●	120°	2	0°	16	15.2	16	4.4	S10	19.9	1.5	30°	KEYV-S10	28
VCP200L14.6A60-02S12	●	●	120°	2	0°	20	18.3	14.65	5.55	S12	21.15	1.5	30°	KEYV-S12	28

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

● : New product
● : Line up

STANDARD CUTTING CONDITIONS

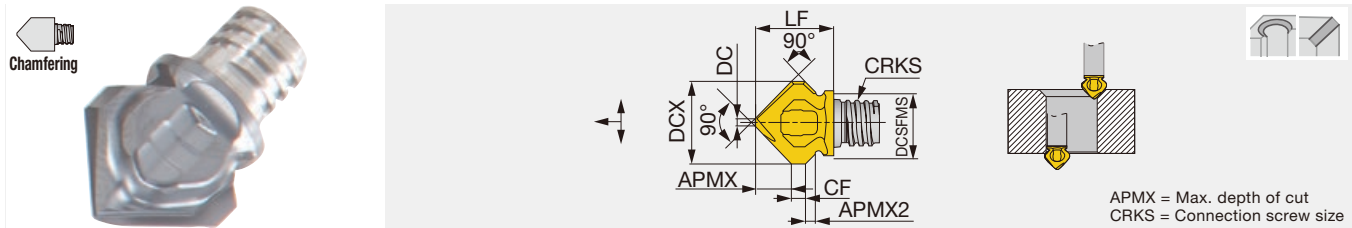
VCP

Spot drill

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed f (ipr)
P	Carbon steel S45C, S55C, etc. C45, C55, etc.	- 300 HB	197 - 328	0.002 - 0.005
	Alloy steel SCM440, SCr420, etc. 42CrMo4, 20Cr4, etc.	- 300 HB	164 - 262	0.002 - 0.005
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	131 - 230	0.002 - 0.005
M	Stainless steel SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	98 - 164	0.002 - 0.005
K	Grey cast iron FC250, FC300, etc. 250, 300, etc., GG250, GG300, etc.	150 - 250 HB	262 - 394	0.002 - 0.005
	Ductile cast iron FCD450, etc. 450-10S, etc., GGG450, etc.	150 - 250 HB	262 - 394	0.002 - 0.005
N	Aluminium alloys	-	328 - 656	0.003 - 0.006
S	Titanium alloys Ti-6Al-4V, etc.	-	98 - 164	0.002 - 0.004
	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.0016 - 0.003
H	Hardened steel SKD6, SKT4, etc. 55NiCrMoV7, etc.	40 - 50 HRC	98 - 164	0.002 - 0.004
	Hardened steel SKD11, SKH51, etc. HS6-5-2, etc.	50 - 60 HRC	66 - 131	0.0016 - 0.003

VCW**-02...

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



Metric Designation	AH715	AH725	NOF	FHA	DCX	DCSFMS	APMX	APMX2	CF	DC	CRKS	LF	Wrench	Torque*
VCW098L04.3A45-02S05	●		2	0°	9.8	7.6	4.3	0.9	2.5	1.2	S05	10.8	KEYV-S05	7
VCW118L05.0A45-02S06	●	●	2	0°	11.8	9.3	5	1.2	2	1.2	S06	11.2	KEYV-S08	10
VCW157L07.1A45-02S08	●		2	0°	15.7	11.5	7.1	2.2	2	1.5	S08	14	KEYV-S10	15

Available for chamfering of reverse side.

* Recommended clamping torque (N·m)

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

2 pieces per package

● : New product

● : Line up

STANDARD CUTTING CONDITIONS

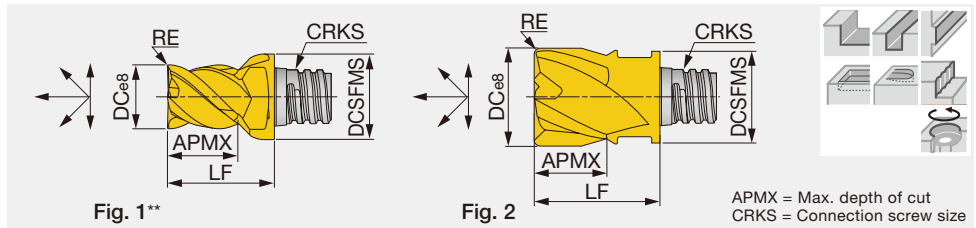
VCW

Chamfering and countersinking (Milling, Z-feed chamfering)

ISO	Workpiece material	Hardness	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
P	Carbon steel S45C, S55C, etc. C45, C55, etc.	- 300 HB	197 - 328	0.0012 - 0.0024
	Alloy steel SCM440, SCr420, etc. 42CrMo4, 20Cr4, etc.	- 300 HB	164 - 262	0.0012 - 0.0024
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	131 - 230	0.0012 - 0.0024
M	Stainless steel SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	98 - 164	0.0012 - 0.0024
K	Grey cast iron FC250, FC300, etc. 250, 300, etc., GG250, GG300, etc.	150 - 250 HB	262 - 394	0.0012 - 0.0024
	Ductile cast iron FCD450, etc. 450-10S, etc., GGG450, etc.	150 - 250 HB	262 - 394	0.0012 - 0.0024
N	Aluminium alloys	-	328 - 656	0.0016 - 0.003
S	Titanium alloys Ti-6Al-4V, etc.	-	98 - 164	0.001 - 0.002
	Heat-resistant alloys Inconel 718, etc.	-	66 - 131	0.0008 - 0.0016
H	Hardened steel SKD6, SKT4, etc. 55NiCrMoV7, etc.	40 - 50 HRC	98 - 164	0.001 - 0.002
	Hardened steel SKD11, SKH51, etc. HS6-5-2, etc.	50 - 60 HRC	66 - 131	0.0008 - 0.0016

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

4 flute, roughing - finishing, general



Inch Designation	AH715	AH725	NOF	FHA	DC	DCSFMS	APMX	RE	CRKS	LF	Wrench	Torque*	Fig.
VEE025L20R000-U04S05	●	●	4	45°	0.250	0.300	0.200	-	S05	0.390	KEYV-S05	5.16	1
VED031L20R015-U04S05	●	●	4	30°	0.312	0.300	0.200	0.015	S05	0.390	KEYV-S05	5.16	2
VED031L20R031-U04S05	●	●	4	30°	0.312	0.300	0.200	0.031	S05	0.390	KEYV-S05	5.16	2
VED031L20R060-U04S05	●	●	4	30°	0.312	0.300	0.200	0.060	S05	0.390	KEYV-S05	5.16	2
VEE031L20R000-U04S05	●	●	4	45°	0.312	0.300	0.200	-	S05	0.390	KEYV-S05	5.16	2
VEE031L20R015-U04S05	●	●	4	45°	0.312	0.300	0.200	0.015	S05	0.390	KEYV-S05	5.16	2
VEE031L20R031-U04S05	●	●	4	45°	0.312	0.300	0.200	0.031	S05	0.390	KEYV-S05	5.16	2
VEE031L20R060-U04S05	●	●	4	45°	0.312	0.300	0.200	0.060	S05	0.390	KEYV-S05	5.16	2
VED037L27R015-U04S06	●	●	4	30°	0.375	0.370	0.275	0.015	S06	0.512	KEYV-S06	7.38	2
VED037L27R031-U04S06	●	●	4	30°	0.375	0.370	0.275	0.031	S06	0.512	KEYV-S06	7.38	2
VEE037L27R000-U04S06	●	●	4	45°	0.375	0.370	0.275	-	S06	0.512	KEYV-S06	7.38	2
VEE037L27R015-U04S06	●	●	4	45°	0.375	0.370	0.275	0.015	S06	0.512	KEYV-S06	7.38	2
VEE037L27R030-U04S06	●	●	4	45°	0.375	0.370	0.275	0.031	S06	0.512	KEYV-S06	7.38	2
VEE037L27R062-U04S06	●	●	4	45°	0.375	0.370	0.275	0.062	S06	0.512	KEYV-S06	7.38	2
VEE037L47R000-U04S06	●	●	4	45°	0.375	0.370	0.470	-	S06	0.748	KEYV-S06	7.38	2
VED050L37R015-U04S08	●	●	4	30°	0.500	0.488	0.374	0.015	S08	0.650	KEYV-S08	11.06	2
VED050L37R031-U04S08	●	●	4	30°	0.500	0.488	0.374	0.031	S08	0.650	KEYV-S08	11.06	2
VEE050L37R000-U04S08	●	●	4	45°	0.500	0.488	0.374	-	S08	0.650	KEYV-S08	11.06	2
VEE050L37R015-U04S08	●	●	4	45°	0.500	0.488	0.374	0.015	S08	0.650	KEYV-S08	11.06	2
VEE050L37R031-U04S08	●	●	4	45°	0.500	0.488	0.374	0.031	S08	0.650	KEYV-S08	11.06	2
VEE050L37R062-U04S08	●	●	4	45°	0.500	0.488	0.374	0.062	S08	0.650	KEYV-S08	11.06	2
VED062L47R015-U04S10	●	●	4	30°	0.625	0.600	0.470	0.015	S10	0.810	KEYV-S10	20.65	2
VED062L47R031-U04S10	●	●	4	30°	0.625	0.600	0.470	0.031	S10	0.810	KEYV-S10	20.65	2
VED062L47R060-U04S10	●	●	4	30°	0.625	0.600	0.470	0.060	S10	0.810	KEYV-S10	20.65	2
VEE062L47R000-U04S10	●	●	4	45°	0.625	0.600	0.470	-	S10	0.810	KEYV-S10	20.65	2
VEE062L47R031-U04S10	●	●	4	45°	0.625	0.600	0.470	0.031	S10	0.810	KEYV-S10	20.65	2
VED075L62R015-U04S12	●	●	4	30°	0.750	0.720	0.620	0.015	S12	1.000	KEYV-S12	20.65	2
VED075L62R031-U04S12	●	●	4	30°	0.750	0.720	0.620	0.031	S12	1.000	KEYV-S12	20.65	2
VED075L62R060-U04S12	●	●	4	30°	0.750	0.720	0.620	0.060	S12	1.000	KEYV-S12	20.65	2
VEE075L62R000-U04S12	●	●	4	45°	0.750	0.720	0.620	-	S12	1.000	KEYV-S12	20.65	2
VEE075L62R031-U04S12	●	●	4	45°	0.750	0.720	0.620	0.031	S12	1.000	KEYV-S12	20.65	2

* Torque: Recommended clamping torque: lbs-ft

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

2 pieces per package

STANDARD CUTTING CONDITIONS

VEE Shoulder Milling

ISO	Workpiece material	Hardness	Cutting speed V _c (sfm)	Feed per tooth: fz (ipt)						Depth of cut ap (in)	Width of cut ae (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	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
	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	0.25 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	0.25 x DC
H	Hardened steel H13, etc.	40 - 50 HRC	130 - 260	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC
	Hardened steel D2, etc.	50 - 60 HRC	66 - 200	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.004 - 0.007	0.6 x DC	0.25 x DC

STANDARD CUTTING CONDITIONS

VEE
Slotting

ISO	Workpiece material	Hardness	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	Grey cast irons No.250B, No.300B, etc.	150 - 250 HB	260 - 660	0.001 - 0.003	0.001 - 0.004	0.003 - 0.005	0.003 - 0.005	0.004 - 0.006	0.004 - 0.007	0.003 - 0.004	0.5 x DC
	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	0.5 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	0.5 x DC



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