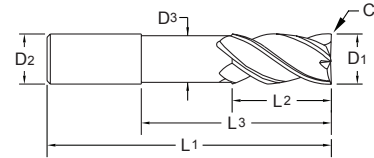
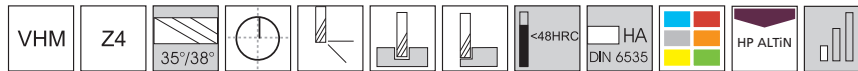


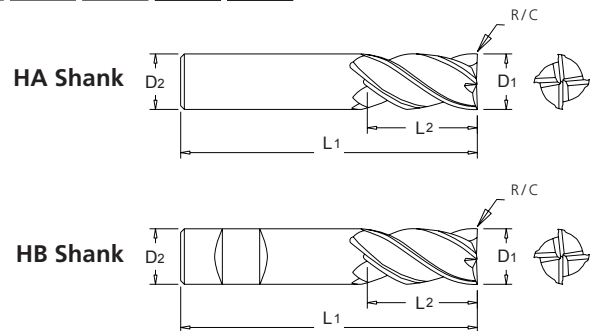
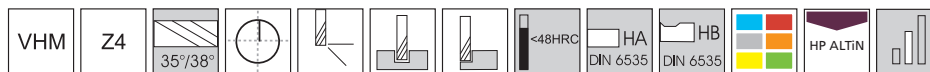
TuffCut® GP Series V4S with Corner Chamfer



Series V4S	Tool Dimensions						
Tool No.	Ø D ¹	Ø D ²	L ¹	L ²	L ³	Ø D ³	C x 45°
V4S 0300A	3.0	6.0	45.0	6.0	-	-	0.1
V4S 0400A	4.0	6.0	45.0	8.0	-	-	0.1
V4S 0500A	5.0	6.0	45.0	10.0	-	-	0.1
V4S 0600A	6.0	6.0	55.0	9.0	14.0	5.7	0.25
V4S 0800A	8.0	8.0	58.0	12.0	18.0	7.7	0.25
V4S 1000A	10.0	10.0	66.0	15.0	22.0	9.7	0.25
V4S 1200A	12.0	12.0	73.0	18.0	26.0	11.7	0.5
V4S 1600A	16.0	16.0	82.0	24.0	34.0	15.7	0.5
V4S 2000A	20.0	20.0	93.0	30.0	42.0	19.7	0.5



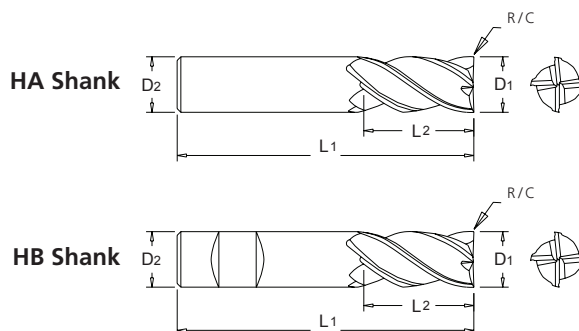
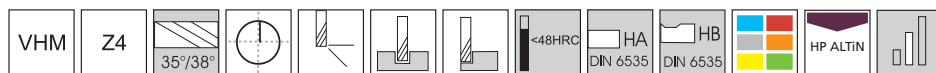
TuffCut® GP Series MV4 with Corner Chamfer or Corner Radius



Series MV4	Tool Dimensions						
Tool No.	Ø D ¹	Ø D ²	L ¹	L ²	R	C x 45°	Shank
MV4 03HX	3.0	3.0	51.0	6.0	-	0.1	HA
MV4 03-0.25RHX	3.0	3.0	51.0	6.0	0.25	-	HA
MV4 04HX	4.0	6.0	64.0	11.0	-	0.1	HA
MV4 04-0.25RHX	4.0	6.0	64.0	11.0	0.25	-	HA
MV4 04-0.5RHX	4.0	6.0	64.0	11.0	0.5	-	HA
MV4 04-1.0RHX	4.0	6.0	64.0	11.0	1.0	-	HA
MV4 05HX	5.0	6.0	64.0	12.0	-	0.1	HA
MV4 05-0.25RHX	5.0	6.0	64.0	12.0	0.25	-	HA
MV4 05-0.5RHX	5.0	6.0	64.0	12.0	0.5	-	HA
MV4 05-1.0RHX	5.0	6.0	64.0	12.0	1.0	-	HA

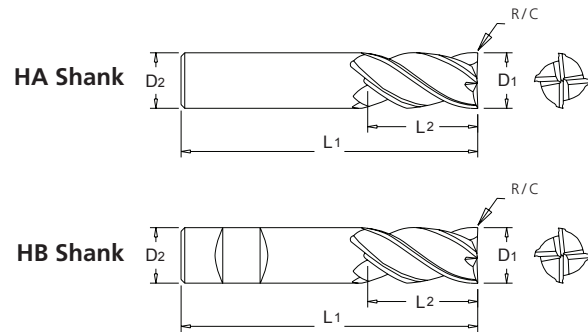
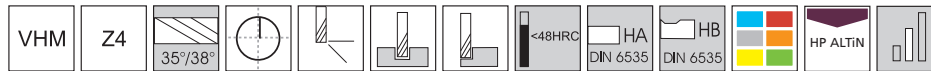


TuffCut® GP Series MV4 & MV4-W with Corner Chamfer or Corner Radius



Series MV4	Tool Dimensions						
Tool No.	Ø D ¹	Ø D ²	L ¹	L ²	R	C x 45°	Shank
MV4 06HX	6.0	6.0	64.0	15.0	-	0.1	HA
MV4 06HXW	6.0	6.0	64.0	15.0	-	0.1	HB
MV4 06-0.25RHX	6.0	6.0	64.0	15.0	0.25	-	HA
MV4 06-0.25RHXW	6.0	6.0	64.0	15.0	0.25	-	HB
MV4 06-0.5RHX	6.0	6.0	64.0	15.0	0.5	-	HA
MV4 06-0.5RHXW	6.0	6.0	64.0	15.0	0.5	-	HB
MV4 06-1.0RHX	6.0	6.0	64.0	15.0	1.0	-	HA
MV4 06-1.0RHXW	6.0	6.0	64.0	15.0	1.0	-	HB
MV4 08HX	8.0	8.0	64.0	22.0	-	0.15	HA
MV4 08HXW	8.0	8.0	64.0	22.0	-	0.15	HB
MV4 08-0.25RHX	8.0	8.0	64.0	22.0	0.25	-	HA
MV4 08-0.25RHXW	8.0	8.0	64.0	22.0	0.25	-	HB
MV4 08-0.5RHX	8.0	8.0	64.0	22.0	0.5	-	HA
MV4 08-0.5RHXW	8.0	8.0	64.0	22.0	0.5	-	HB
MV4 08-1.0RHX	8.0	8.0	64.0	22.0	1.0	-	HA
MV4 08-1.0RHXW	8.0	8.0	64.0	22.0	1.0	-	HB
MV4 08-1.5RHX	8.0	8.0	64.0	22.0	1.5	-	HA
MV4 08-1.5RHXW	8.0	8.0	64.0	22.0	1.5	-	HB
MV4 08-2.0RHX	8.0	8.0	64.0	22.0	2.0	-	HA
MV4 08-2.0RHXW	8.0	8.0	64.0	22.0	2.0	-	HB
MV4 10HX	10.0	10.0	72.0	22.0	-	0.15	HA
MV4 10HXW	10.0	10.0	72.0	22.0	-	0.15	HB
MV4 10-0.5RHX	10.0	10.0	72.0	22.0	0.5	-	HA
MV4 10-0.5RHXW	10.0	10.0	72.0	22.0	0.5	-	HB
MV4 10-1.0RHX	10.0	10.0	72.0	22.0	1.0	-	HA
MV4 10-1.0RHXW	10.0	10.0	72.0	22.0	1.0	-	HB
MV4 10-1.5RHX	10.0	10.0	72.0	22.0	1.5	-	HA
MV4 10-1.5RHXW	10.0	10.0	72.0	22.0	1.5	-	HB
MV4 10-2.0RHX	10.0	10.0	72.0	22.0	2.0	-	HA
MV4 10-2.0RHXW	10.0	10.0	72.0	22.0	2.0	-	HB
MV4 10-2.5RHX	10.0	10.0	73.0	22.0	2.5	-	HA
MV4 10-2.5RHXW	10.0	10.0	73.0	22.0	2.5	-	HB
MV4 10-3.0RHX	10.0	10.0	73.0	22.0	3.0	-	HA
MV4 10-3.0RHXW	10.0	10.0	73.0	22.0	3.0	-	HB
MV4 12HX	12.0	12.0	73.0	27.0	-	0.15	HA
MV4 12HXW	12.0	12.0	73.0	27.0	-	0.15	HB
MV4 12-0.5RHX	12.0	12.0	73.0	27.0	0.5	-	HA
MV4 12-0.5RHXW	12.0	12.0	73.0	27.0	0.5	-	HB
MV4 12-1.0RHX	12.0	12.0	73.0	27.0	1.0	-	HA

TuffCut® GP Series MV4 & MV4-W with Corner Chamfer or Corner Radius



Series MV4	Tool Dimensions						
Tool No.	Ø D ¹	Ø D ²	L ¹	L ²	R	C x 45°	Shank
MV4 12-1.0RHXXW	12.0	12.0	83.0	27.0	1.0	-	HB
MV4 12-1.5RHXX	12.0	12.0	73.0	27.0	1.5	-	HA
MV4 12-1.5RHXXW	12.0	12.0	83.0	27.0	1.5	-	HB
MV4 12-2.0RHXX	12.0	12.0	73.0	27.0	2.0	-	HA
MV4 12-2.0RHXXW	12.0	12.0	83.0	27.0	2.0	-	HB
MV4 12-2.5RHXX	12.0	12.0	73.0	27.0	2.5	-	HA
MV4 12-2.5RHXXW	12.0	12.0	83.0	27.0	2.5	-	HB
MV4 12-3.0RHXX	12.0	12.0	73.0	27.0	3.0	-	HA
MV4 12-3.0RHXXW	12.0	12.0	83.0	27.0	3.0	-	HB
MV4 16HX	16.0	16.0	92.0	33.0	-	0.3	HA
MV4 16HXW	16.0	16.0	92.0	33.0	-	0.3	HB
MV4 16-0.5RHXX	16.0	16.0	92.0	33.0	0.5	-	HA
MV4 16-0.5RHXXW	16.0	16.0	92.0	33.0	0.5	-	HB
MV4 16-1.0RHXX	16.0	16.0	92.0	33.0	1.0	-	HA
MV4 16-1.0RHXXW	16.0	16.0	92.0	33.0	1.0	-	HB
MV4 16-1.5RHXX	16.0	16.0	92.0	33.0	1.5	-	HA
MV4 16-1.5RHXXW	16.0	16.0	92.0	33.0	1.5	-	HB
MV4 16-2.0RHXX	16.0	16.0	92.0	33.0	2.0	-	HA
MV4 16-2.0RHXXW	16.0	16.0	92.0	33.0	2.0	-	HB
MV4 16-2.5RHXX	16.0	16.0	92.0	33.0	2.5	-	HA
MV4 16-2.5RHXXW	16.0	16.0	92.0	33.0	2.5	-	HB
MV4 16-3.0RHXX	16.0	16.0	93.0	33.0	3.0	-	HA
MV4 16-3.0RHXXW	16.0	16.0	93.0	33.0	3.0	-	HB
MV4 20HX	20.0	20.0	104.0	40.0	-	0.3	HA
MV4 20HXW	20.0	20.0	104.0	40.0	-	0.3	HB
MV4 20-1.0RHXX	20.0	20.0	104.0	40.0	1.0	-	HA
MV4 20-1.0RHXXW	20.0	20.0	104.0	40.0	1.0	-	HB
MV4 20-1.5RHXX	20.0	20.0	104.0	40.0	1.5	-	HA
MV4 20-1.5RHXXW	20.0	20.0	104.0	40.0	1.5	-	HB
MV4 20-2.0RHXX	20.0	20.0	104.0	40.0	2.0	-	HA
MV4 20-2.0RHXXW	20.0	20.0	104.0	40.0	2.0	-	HB
MV4 20-3.0RHXX	20.0	20.0	104.0	40.0	3.0	-	HA
MV4 20-3.0RHXXW	20.0	20.0	104.0	40.0	3.0	-	HB
MV4 20-4.0RHXX	20.0	20.0	104.0	40.0	4.0	-	HA
MV4 20-4.0RHXXW	20.0	20.0	104.0	40.0	4.0	-	HB
MV4 20-5.0RHXX	20.0	20.0	104.0	40.0	5.0	-	HA
MV4 20-5.0RHXXW	20.0	20.0	104.0	40.0	5.0	-	HB
MV4 20-6.0RHXX	20.0	20.0	104.0	40.0	6.0	-	HA
MV4 20-6.0RHXXW	20.0	20.0	104.0	40.0	6.0	-	HB

TuffCut® FORDMAX Carbide Endmills

Series V4S, MV4, ASV4, VMH - Recommended cutting data

Workpiece Material Group		Material Type	Coolant									
			Max	Air	MMS	Vc-M/Min						
Steels	P	Low Carbon	●	●	●	230	220	480	385	330	275	220
		Medium Carbon	●	●	●	200	185	345	275	255	220	185
		Alloy Steels	●	●	●	175	165	315	255	230	200	165
		Die/Tool Steels	●	●	●	145	130	275	220	187	145	130
Stainless Steels	M	Free Machining	●	X	○	120	110	205	165	130	115	110
		Austenitic	●	X	○	110	100	160	130	120	110	100
		Difficult Stainless	●	X	○	75	65	125	100	90	75	65
		PH Stainless	●	X	○	110	100	160	130	120	110	100
		Cobalt Chrome Alloys	●	X	○	75	65	125	100	90	75	65
		Duplex (22%)	●	X	○	75	65	125	100	90	75	65
		Super Duplex (25%)	●	X	○	55	45	75	60	55	50	45
Cast Irons	K	Gray Cast Iron	●	○	○	200	175	495	395	265	210	175
		Ductile Cast Iron	●	○	○	185	165	370	300	210	185	165
		Malleable Iron	●	○	○	145	132	205	165	155	145	130
Special Alloys	S	High Temp Alloys	●	X	X	35	28	55	45	40	35	28
			●	X	X	35	28	55	45	40	35	28
		Titanium Alloys	●	X	X	75	66	160	130	100	85	65
Hardened Steels	H	Hardened Steels 35 - 45 Rc	●	○	○	60	50	185	150	100	55	50
		Hardened Steels 45 - 55 Rc	●	○	○	50	45	155	125	85	50	45

● Preferred ○ Possible X Not Possible

Workpiece Material Group		Type of Machining	Tool Diameter							
			3mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm
			Vc-M/Min							
Steels	P	Profiling	0.030	0.050	0.060	0.080	0.100	0.120	0.160	0.200
		Slotting	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100
Stainless Steels	M	Profiling	0.030	0.050	0.060	0.080	0.100	0.120	0.160	0.200
		Slotting	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100
Cast Irons	K	Profiling	0.030	0.050	0.060	0.080	0.100	0.120	0.160	0.200
		Slotting	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100
High Temp Alloys	S	Profiling	0.009	0.013	0.032	0.038	0.044	0.064	0.076	0.089
		Slotting	0.005	0.007	0.016	0.019	0.022	0.032	0.038	0.045
Titanium	S	Profiling	0.030	0.050	0.060	0.080	0.100	0.120	0.160	0.200
		Slotting	0.015	0.025	0.030	0.040	0.050	0.060	0.080	0.100
Hardened Steels	H	Profiling 35 - 45 Rc	0.016	0.023	0.057	0.069	0.080	0.114	0.137	0.160
		Slotting 35 - 45 Rc	0.010	0.015	0.025	0.035	0.045	0.065	0.070	0.075
		Profiling 45 - 55 Rc	0.010	0.015	0.041	0.051	0.058	0.084	0.102	0.119
		Slotting 45 - 55 Rc	0.008	0.011	0.020	0.030	0.040	0.050	0.055	0.080

RPM Formula For Metric Endmills - $RPM = (Vc \times 318.0) \div \text{Endmill } \varnothing$

Feedrate Formula For Metric Endmills - $\text{Feedrate} = RPM \times fz \times \text{Number Of Cutting Teeth}$