

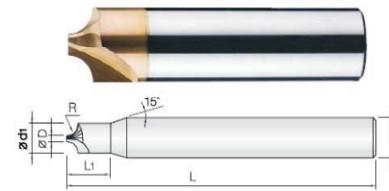
# 900 Series GENERAL PURPOSE



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### 2 Flutes Corner Rounding Cutter



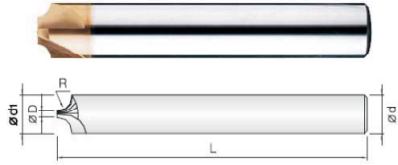
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 High precise edge tolerance.  
 Very nice work surface finish.  
 Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

Cutting Data	Size	D Tolerance
	D ≤ Φ0.9	+0~ -0.01mm
	D > Φ0.9	+0~ -0.02mm

P191

Type	Part Number	Dimensions in mm					d
		D X R	d1	L1	L		
2	990005001H04Z2-TIN	0.5 X R0.1	0.8	2.5	45	4	
	990005D15H04Z2-TIN	0.5 X R0.15	0.9	2.5	45	4	
	990005002H04Z2-TIN	0.5 X R0.2	1	2.5	45	4	
	990005D25H04Z2-TIN	0.5 X R0.25	1.1	2.5	45	4	
	990005003H04Z2-TIN	0.5 X R0.3	1.2	2.5	45	4	
	990005D35H04Z2-TIN	0.5 X R0.35	1.3	2.5	45	4	
	990005004H04Z2-TIN	0.5 X R0.4	1.4	2.5	45	4	
	990005D45H04Z2-TIN	0.5 X R0.45	1.5	2.5	45	4	
	990005005H04Z2-TIN	0.5 X R0.5	1.6	2.5	45	4	
	990009005H04Z2-TIN	0.9 X R0.5	2	3	45	4	
UWC	990049005H06Z2-TIN	4.9 X R0.5	6	-	50	6	
	990005D55H04Z2-TIN	0.5 X R0.55	1.7	3	45	4	
	990005006H04Z2-TIN	0.5 X R0.6	1.8	3	45	4	
	990005D65H04Z2-TIN	0.5 X R0.65	1.9	3	45	4	
	990005007H04Z2-TIN	0.5 X R0.7	2	3	45	4	
	990009D75H04Z2-TIN	0.9 X R0.75	2.5	4	45	4	
	990009008H04Z2-TIN	0.9 X R0.8	2.6	4	45	4	
	990009D85H04Z2-TIN	0.9 X R0.85	2.7	4	45	4	
	990009009H04Z2-TIN	0.9 X R0.9	2.8	4	45	4	
	990009D95H04Z2-TIN	0.9 X R0.95	2.9	4	45	4	
TISIN Coating	990009010H06Z2-TIN	0.9 X R1	3	5	50	6	
	990039010H06Z2-TIN	3.9 X R1	6	-	50	6	
	990059010H08Z2-TIN	5.9 X R1	8	-	60	8	
	99000901FH06Z2-TIN	0.9 X R1.25	3.5	5	50	6	
	99003401FH06Z2-TIN	3.4 X R1.25	6	-	50	6	
	990014015H06Z2-TIN	1.4 X R1.5	4.5	8	50	6	
	990049015H08Z2-TIN	4.9 X R1.5	8	-	60	8	
	990014020H06Z2-TIN	1.4 X R2	5.5	10	50	6	
	990039020H08Z2-TIN	3.9 X R2	8	-	60	8	
	990019025H08Z2-TIN	1.9 X R2.5	7	13	60	8	
R ±0.02 0.1R - 8R	990019030H08Z2-TIN	1.9 X R3	8	-	60	8	
	990019035H10Z2-TIN	1.9 X R3.5	9	13	70	10	
	990019040H10Z2-TIN	1.9 X R4	10	-	70	10	
	990019045H12Z2-TIN	1.9 X R4.5	11	13	80	12	
	990019050H12Z2-TIN	1.9 X R5	12	-	80	12	
	990039060H16Z2-TIN	3.9 X R6	16	-	85	16	
	990059070H20Z2-TIN	5.9 X R7	20	-	85	20	
	990039080H20Z2-TIN	3.9 X R8	20	-	85	20	
	0° Helix Angle						

**4 Flutes Corner Rounding Cutter**



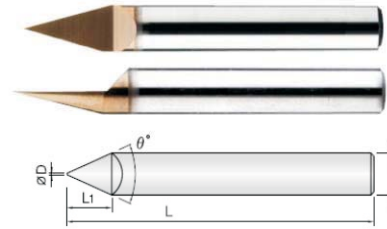
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 High precise edge tolerance.  
 Very nice work surface finish.  
 Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P191

Size	D Tolerance
D ≤ Φ1.9	+0~ -0.01mm
D > Φ1.9	+0~ -0.03mm

Type	Part Number	Dimensions in mm					d
		D X R	d1	L2	L		
4	991029005H04Z4-TIN	2.9 X R0.5	4		50	4	
	991019010H04Z4-TIN	1.9 X R1	4		50	4	
	991049005H06Z4-TIN	4.9 X R0.5	6		50	6	
	991039010H06Z4-TIN	3.9 X R1	6		50	6	
	991059010H08Z4-TIN	5.9 X R1	8		60	8	
	991049015H08Z4-TIN	4.9 X R1.5	8		60	8	
	991059020H10Z4-TIN	5.9 X R2	10		70	10	
	991049025H10Z4-TIN	4.9 X R2.5	10		70	10	
	991059030H12Z4-TIN	5.9 X R3	12		75	12	
	991039040H12Z4-TIN	3.9 X R4	12		75	12	
UWC	991059050H16Z4-TIN	5.9 X R5	16		80	16	
	991039060H16Z4-TIN	3.9 X R6	16		80	16	
TISIN Coating							
R ±0.02 0.5R - 6R							
0° Helix Angle							

**1 Flutes Straight Flute Taper End Mills**



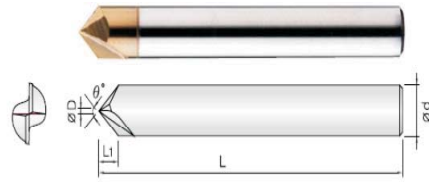
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Optimum for NC engraving by straight type one edge.  
 Maximize engraving efficiency by various edge diameter.

**Cutting Data**  
P191

Size	D Tolerance
D=Φ0	+0.05~ -0mm
D ≥ Φ0.1	+0~ -0.02mm

Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
1	950000200H04Z1-TIN	0	7		40	4	20°
	950000300H04Z1-TIN	0	7		40	4	30°
	950000200H06Z1-TIN	0	10		50	6	20°
	950000300H06Z1-TIN	0	10		50	6	30°
	950001200H04Z1-TIN	0.1	7		40	4	20°
	950001300H04Z1-TIN	0.1	7		40	4	30°
	950001200H06Z1-TIN	0.1	10		50	6	20°
	950001300H06Z1-TIN	0.1	10		50	6	30°
	950D15200H04Z1-TIN	0.15	7		40	4	20°
	950D15300H04Z1-TIN	0.15	7		40	4	30°
UWC	950D15200H06Z1-TIN	0.15	10		50	6	20°
	950D15300H06Z1-TIN	0.15	10		50	6	30°
TISIN Coating	950002200H04Z1-TIN	0.2	7		40	4	20°
	950002300H04Z1-TIN	0.2	7		40	4	30°
	950002200H06Z1-TIN	0.2	10		50	6	20°
D +0~-0.02	950002300H06Z1-TIN	0.2	10		50	6	30°
0° Helix Angle							

**2 Flutes Straight Flute Taper End Mills**



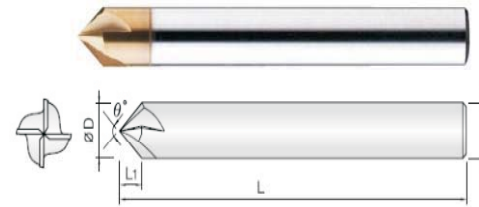
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Optimum for NC engraving, chamfering and centering with straight 2flutes.  
 Resin, plastic machining applicable with coated or non coated endmill.

**Cutting Data**  
P191

Size	D Tolerance
D=φ0	+0.05~ -0mm

Type	Part Number	Dimensions in mm				Angle θ	Coating (Y/N)
		D	L1	L	d		
<b>2</b>	951000300H03Z2-TIN	0	5.5	60	3	30°	Yes
	951000600H03Z2-TIN	0	2.5	60	3	60°	Yes
	951000900H03Z2-TIN	0	1.5	60	3	90°	Yes
	951000300H04Z2-TIN	0	7.4	60	4	30°	Yes
	951000600H04Z2-TIN	0	3.4	60	4	60°	Yes
	951000900H04Z2-TIN	0	2	60	4	90°	Yes
	951000300H06Z2-TIN	0	11.1	60	6	30°	Yes
	951000600H06Z2-TIN	0	5.1	60	6	60°	Yes
	951000900H06Z2-TIN	0	3	60	6	90°	Yes
	951000600H08Z2-TIN	0	6.9	65	8	60°	Yes
	951000900H08Z2-TIN	0	4	65	8	90°	Yes
	951000600H10Z2-TIN	0	8.6	70	10	60°	Yes
951000900H10Z2-TIN	0	5	70	10	90°	Yes	
951000600H12Z2-TIN	0	10.3	75	12	60°	Yes	
951000900H12Z2-TIN	0	6	75	12	90°	Yes	
<b>UWC</b>	951000300H03Z2-NON	0	5.5	60	3	30°	No
	951000600H03Z2-NON	0	2.5	60	3	60°	No
	951000900H03Z2-NON	0	1.5	60	3	90°	No
	951000300H04Z2-NON	0	7.4	60	4	30°	No
	951000600H04Z2-NON	0	3.4	60	4	60°	No
	951000900H04Z2-NON	0	2	60	4	90°	No
	951000300H06Z2-NON	0	11.1	60	6	30°	No
	951000600H06Z2-NON	0	5.1	60	6	60°	No
	951000900H06Z2-NON	0	3	60	6	90°	No
	951000600H08Z2-NON	0	6.9	65	8	60°	No
	951000900H08Z2-NON	0	4	65	8	90°	No
	951000600H10Z2-NON	0	8.6	70	10	60°	No
951000900H10Z2-NON	0	5	70	10	90°	No	
951000600H12Z2-NON	0	10.3	75	12	60°	No	
951000900H12Z2-NON	0	6	75	12	90°	No	
<b>TISIN Coating</b>							
<b>D +0.05~0</b>							
<b>0° Helix Angle</b>							

**4 Flutes Straight Flute Taper End Mills**



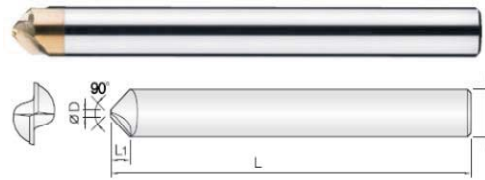
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Optimum for chamfering with straight 4flutes.  
 Minimize fracturing at high feed by high TRS ultra fine WC grade.

**Cutting Data**  
P191

Size	D Tolerance
D=φ0	+0.05~ -0mm

Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
<b>4</b>	952000600H03Z4-TIN	0	2.5		50	3	60°
	952000900H03Z4-TIN	0	1.5		50	3	90°
	952000600H04Z4-TIN	0	3.4		50	4	60°
	952000900H04Z4-TIN	0	2		50	4	90°
	952000600H06Z4-TIN	0	5.1		60	6	60°
	952000900H06Z4-TIN	0	3		60	6	90°
	952000600H08Z4-TIN	0	6.9		65	8	60°
	952000900H08Z4-TIN	0	4		65	8	90°
	952000600H10Z4-TIN	0	8.6		75	10	60°
	952000900H10Z4-TIN	0	5		75	10	90°
	952000600H12Z4-TIN	0	10.3		80	12	60°
	952000900H12Z4-TIN	0	6		80	12	90°
<b>UWC</b>							
<b>TISIN Coating</b>							
<b>D +0.05~0</b>							
<b>0° Helix Angle</b>							

**2 Flutes 45° Chamfering Cutter**



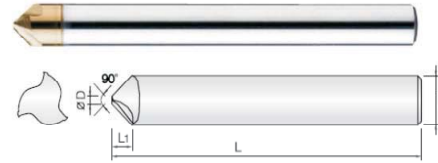
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Applied helix 2flutes design for better performance in corner chamfering.  
 Minimize fracturing at high feed by high TRS ultra fine WC grade.

**Cutting Data**  
P192

Size	D Tolerance
D ≥ Φ0.8	+0~ -0.02mm

Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
2	992008450011Z2-TIN	0.8	1.1		50	3	45°
	992008450016Z2-TIN	0.8	1.6		50	4	45°
	992010450025Z2-TIN	1	2.5		60	6	45°
	992010450035Z2-TIN	1	3.5		70	8	45°
	992010450045Z2-TIN	1	4.5		80	10	45°
	992010450055Z2-TIN	1	5.5		90	12	45°
UWC							
TISIN Coating							
D +0~-0.02							
30° Helix Angle							

**3 Flutes 45° Chamfering Cutter**



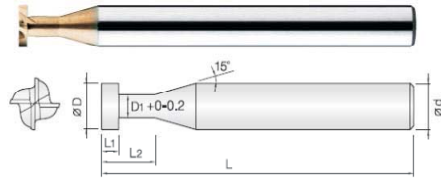
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Applied helix 3flutes design for better performance in corner chamfering.  
 Minimize fracturing at high feed by high TRS ultra fine WC grade.

**Cutting Data**  
P192

Size	D Tolerance
D ≥ Φ0.8	+0~ -0.02mm

Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
3	993008450011Z3-TIN	0.8	1.1		50	3	45°
	993008450016Z3-TIN	0.8	1.6		50	4	45°
	993010450025Z3-TIN	1	2.5		60	6	45°
	993010450035Z3-TIN	1	3.5		65	8	45°
	993020450045Z3-TIN	2	4.5		75	10	45°
	993020450055Z3-TIN	2	5.5		80	12	45°
UWC							
TISIN Coating							
D +0~-0.02							
30° Helix Angle							

**4 Flutes T-Slot Cutter**



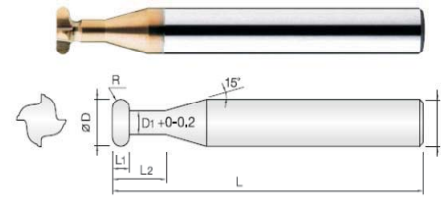
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. Minimize edge chipping by applying 4flutes design. Various shapes and length provides optimum efficiency. Resin, plastic machining applicable with coated or non coated endmill.

**Cutting Data**  
P192

Size	D Tolerance
D ≤ Φ6	±0.03mm
D > Φ6	±0.05mm

Type	Part Number	Dimensions in mm						Coating (Y/N)	
		D	L1	L2	D1	L	d		
4	994020003040Z4-TIN	2	0.3	4	1	50	6	Yes	
	994020005040Z4-TIN	2	0.5	4	1	50	6	Yes	
	994030003045Z4-TIN	3	0.3	4.5	1.5	50	6	Yes	
	994030005045Z4-TIN	3	0.5	4.5	1.5	50	6	Yes	
	994030010045Z4-TIN	3	1	4.5	1.5	50	6	Yes	
	994040003050Z4-TIN	4	0.3	5	2	50	6	Yes	
	994040005050Z4-TIN	4	0.5	5	2	50	6	Yes	
	994040010050Z4-TIN	4	1	5	2	50	6	Yes	
	994050005045Z4-TIN	5	0.5	4.5	2.5	50	6	Yes	
	994050010050Z4-TIN	5	1	5	2.5	50	6	Yes	
UWC	994050015055Z4-TIN	5	1.5	5.5	2.5	50	6	Yes	
	994050020060Z4-TIN	5	2	6	2.5	50	6	Yes	
	994060005045Z4-TIN	6	0.5	4.5	3	60	6	Yes	
	994060010050Z4-TIN	6	1	5	3	60	6	Yes	
	994060015055Z4-TIN	6	1.5	5.5	3	60	6	Yes	
	994060020060Z4-TIN	6	2	6	3	60	6	Yes	
	994080005045Z4-TIN	8	0.5	4.5	4	60	8	Yes	
	994080010050Z4-TIN	8	1	5	4	60	8	Yes	
	994080015055Z4-TIN	8	1.5	5.5	4	60	8	Yes	
	994080020060Z4-TIN	8	2	6	4	60	8	Yes	
TISIN Coating	994080030070Z4-TIN	8	3	7	4	60	8	Yes	
	994100010070Z4-TIN	10	1	7	5	70	10	Yes	
	994100020080Z4-TIN	10	2	8	5	70	10	Yes	
	994100030090Z4-TIN	10	3	9	5	70	10	Yes	
	D ±0.02 Φ2 - Φ5	994020003040Z4-NON	2	0.3	4	1	50	6	No
		994020005040Z4-NON	2	0.5	4	1	50	6	No
		994030003045Z4-NON	3	0.3	4.5	1.5	50	6	No
		994030005045Z4-NON	3	0.5	4.5	1.5	50	6	No
		994030010045Z4-NON	3	1	4.5	1.5	50	6	No
		994040003050Z4-NON	4	0.3	5	2	50	6	No
994040005050Z4-NON		4	0.5	5	2	50	6	No	
994040010050Z4-NON		4	1	5	2	50	6	No	
994050005045Z4-NON		5	0.5	4.5	2.5	50	6	No	
994050010050Z4-NON		5	1	5	2.5	50	6	No	
D ±0.01-0.03 Φ6 - Φ10	994050015055Z4-NON	5	1.5	5.5	2.5	50	6	No	
	994050020060Z4-NON	5	2	6	2.5	50	6	No	
	994060005045Z4-NON	6	0.5	4.5	3	60	6	No	
	994060010050Z4-NON	6	1	5	3	60	6	No	
	994060015055Z4-NON	6	1.5	5.5	3	60	6	No	
	994060020060Z4-NON	6	2	6	3	60	6	No	
	994080005045Z4-NON	8	0.5	4.5	4	60	8	No	
	994080010050Z4-NON	8	1	5	4	60	8	No	
	994080015055Z4-NON	8	1.5	5.5	4	60	8	No	
	994080020060Z4-NON	8	2	6	4	60	8	No	
15° Helix Angle	994080030070Z4-NON	8	3	7	4	60	8	No	
	994100010070Z4-NON	10	1	7	5	70	10	No	
	994100020080Z4-NON	10	2	8	5	70	10	No	
	994100030090Z4-NON	10	3	9	5	70	10	No	

**4 Flutes T-R Slot Cutter**



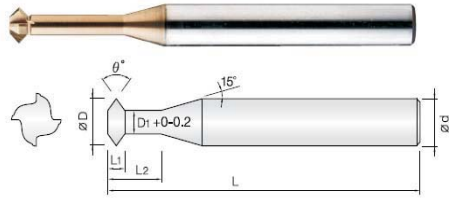
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. Minimize edge chipping by applying straight 4flutes design. Various shapes and length provides optimum efficiency.

**Cutting Data**  
P192

Size	D Tolerance
D ≤ Φ6	±0.03mm
D > Φ6	±0.05mm

Type	Part Number	Dimensions in mm						
		D X R	L1	L2	D1	L	d	
4	995050010045Z4-TIN	5 X 0.5R	1	4.5	2.5	50	6	
	995050020055Z4-TIN	5 X 1R	2	5.5	2.5	50	6	
	995060010050Z4-TIN	6 X 0.5R	1	5	3	50	6	
	995060015055Z4-TIN	6 X 0.75R	1.5	5.5	3	50	6	
	995060020060Z4-TIN	6 X 1R	2	6	3	50	6	
	995080020070Z4-TIN	8 X 1R	2	7	4	60	8	
	995080030080Z4-TIN	8 X 1.5R	3	8	4	60	8	
	995100040100Z4-TIN	10 X 2R	4	10	4.5	70	10	
	UWC							
TISIN Coating								
R ±0.02 0.5R - 2R								
0° Helix Angle								

**4&6 Flutes T-Double Angular Cutter**

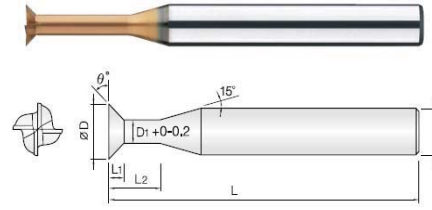


Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. Minimize edge chipping by applying straight 4flutes design. Various shapes and length provides optimum efficiency.

Cutting Data P192	Size	D Tolerance
	D ≤ Φ6	±0.03mm
	D > Φ6	±0.05mm

Type	Part Number	Dimensions in mm						Angle θ
		D	L1	L2	D1	L	d	
4	996015600030Z4-TIN	1.5	0.43	3	0.75	45	4	60°
	996015900030Z4-TIN	1.5	0.75	3	0.75	45	4	90°
	996020600050Z4-TIN	2	0.57	5	1	50	4	60°
	996020900050Z4-TIN	2	1	5	1	50	4	90°
	996025600060Z4-TIN	2.5	0.75	6	1.2	50	4	60°
	996025900060Z4-TIN	2.5	1.3	6	1.2	50	4	90°
6	996030600075Z4-TIN	3	0.86	7.5	1.5	50	4	60°
	996030900075Z4-TIN	3	1.5	7.5	1.5	50	4	90°
	996040600100Z4-TIN	4	1.15	10	2	50	4	60°
	996040900100Z4-TIN	4	2	10	2	50	4	90°
	996050600125Z4-TIN	5	1.44	12.5	2.5	60	6	60°
	996050900125Z4-TIN	5	2.4	12.5	2.5	60	6	90°
UWC	996060600150Z4-TIN	6	1.73	15	3	60	6	60°
	996060900150Z4-TIN	6	2.8	15	3	60	6	90°
	996080600200Z6-TIN	8	2.3	20	4	70	8	60°
	996080900200Z6-TIN	8	3.8	20	4	70	8	90°
	996100600250Z6-TIN	10	2.8	25	5	75	10	60°
	996100900250Z6-TIN	10	4.8	25	5	75	10	90°
TISIN Coating	996120600300Z6-TIN	12	3.4	30	6	80	12	60°
	996120900300Z6-TIN	12	5.8	30	6	80	12	90°
D +0~-0.02 Φ1.5 - Φ5								
D -0.01~-0.03 Φ6 - Φ12								
0° Helix Angle								

**4&6 Flutes T-Angular Cutter**



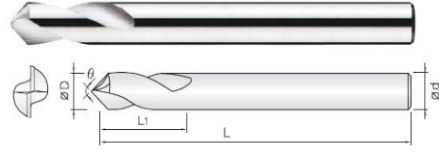
Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. Minimize edge chipping by applying straight 4flutes design. Various shapes and length provides optimum efficiency.

Cutting Data P192	Size	D Tolerance
	D ≤ Φ6	±0.03mm
	D > Φ6	±0.05mm

Type	Part Number	Dimensions in mm						Angle θ
		D	L1	L2	D1	L	d	
4	997015300030Z4-TIN	1.5	0.21	3	0.75	45	4	30°
	997015450030Z4-TIN	1.5	0.37	3	0.75	45	4	45°
	997020300050Z4-TIN	2	0.28	5	1	50	4	30°
	997020450050Z4-TIN	2	0.5	5	1	50	4	45°
	997025300060Z4-TIN	2.5	0.37	6	1.2	50	4	30°
	997025450060Z4-TIN	2.5	0.65	6	1.2	50	4	45°
6	997030300075Z4-TIN	3	0.43	7.5	1.5	50	4	30°
	997030450075Z4-TIN	3	0.75	7.5	1.5	50	4	45°
	997040300100Z4-TIN	4	0.57	10	2	50	4	30°
	997040450100Z4-TIN	4	1	10	2	50	4	45°
	997050300125Z4-TIN	5	0.72	12.5	2.5	60	6	30°
	997050450125Z4-TIN	5	1.25	12.5	2.5	60	6	45°
UWC	997060300150Z4-TIN	6	0.86	15	3	60	6	30°
	997060450150Z4-TIN	6	1.5	15	3	60	6	45°
	997080300200Z6-TIN	8	1.15	20	4	70	8	30°
	997080450200Z6-TIN	8	2	20	4	70	8	45°
	997100300250Z6-TIN	10	1.44	25	5	75	10	30°
	997100450250Z6-TIN	10	2.5	25	5	75	10	45°
TISIN Coating	997120300300Z6-TIN	12	1.73	30	6	80	12	30°
	997120450300Z6-TIN	12	3	30	6	80	12	45°
D +0~-0.02 Φ1.5 - Φ5								
D -0.01~-0.03 Φ6 - Φ12								
0° Helix Angle								



**2 Flutes NC Spotting Drill**



Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.  
 Good wear resistance by Si-based PVD coating.  
 Optimum for chamfering and centering with helix 2flutes.  
 Resin, plastic machining applicable with coated or non coated endmill.  
 Applied ultra fine WC grade optimized for various non-ferrous and non-metallic work materials.

**Cutting Data**  
P193

Size	D Tolerance
D ≤ Φ4	+0~ -0.01mm
D > Φ4	+0~ -0.015mm

Type	Part Number	Dimensions in mm				Angle θ	Coating (Y/N)
		D	L1	L	d		
2	901020090050Z2-TIN	2	6	50	3	90°	Yes
	901020120050Z2-TIN	2	6	50	3	120°	Yes
	901030090050Z2-TIN	3	10	50	3	90°	Yes
	901030120050Z2-TIN	3	10	50	3	120°	Yes
	901030090100Z2-TIN	3	10	100	3	90°	Yes
	901030120100Z2-TIN	3	10	100	3	120°	Yes
	901040090050Z2-TIN	4	12	50	4	90°	Yes
	901040120050Z2-TIN	4	12	50	4	120°	Yes
	901040090100Z2-TIN	4	12	100	4	90°	Yes
	901040120100Z2-TIN	4	12	100	4	120°	Yes
UWC	901060090070Z2-TIN	6	15	70	6	90°	Yes
	901060120070Z2-TIN	6	15	70	6	120°	Yes
	901060090110Z2-TIN	6	15	110	6	90°	Yes
	901060120110Z2-TIN	6	15	110	6	120°	Yes
	901080090080Z2-TIN	8	25	80	8	90°	Yes
	901080120080Z2-TIN	8	25	80	8	120°	Yes
	901100090090Z2-TIN	10	25	90	10	90°	Yes
	901100120090Z2-TIN	10	25	90	10	120°	Yes
	901100090150Z2-TIN	10	25	150	10	90°	Yes
	901100120150Z2-TIN	10	25	150	10	120°	Yes
TISIN Coating	901120090090Z2-TIN	12	30	90	12	90°	Yes
	901120120090Z2-TIN	12	30	90	12	120°	Yes
	901120090150Z2-TIN	12	30	150	12	90°	Yes
	901120120150Z2-TIN	12	30	150	12	120°	Yes
	901160090110Z2-TIN	16	35	110	16	90°	Yes
	901160120110Z2-TIN	16	35	110	16	120°	Yes
D +0~-0.01 Φ2 - Φ4							
D +0~-0.015 Φ6 - Φ16							
30° Helix Angle							



Type	Part Number	Dimensions in mm				Angle θ	Coating (Y/N)
		D	L1	L	d		
2	901020090050Z2-NON	2	6	50	3	90°	No
	901020120050Z2-NON	2	6	50	3	120°	No
	901030090050Z2-NON	3	10	50	3	90°	No
	901030120050Z2-NON	3	10	50	3	120°	No
	901030090100Z2-NON	3	10	100	3	90°	No
	901030120100Z2-NON	3	10	100	3	120°	No
	901040090050Z2-NON	4	12	50	4	90°	No
	901040120050Z2-NON	4	12	50	4	120°	No
	901040090100Z2-NON	4	12	100	4	90°	No
	901040120100Z2-NON	4	12	100	4	120°	No
	901060090070Z2-NON	6	15	70	6	90°	No
	901060120070Z2-NON	6	15	70	6	120°	No
	901060090110Z2-NON	6	15	110	6	90°	No
	901060120110Z2-NON	6	15	110	6	120°	No
	901080090080Z2-NON	8	25	80	8	90°	No
	901080120080Z2-NON	8	25	80	8	120°	No
	901100090090Z2-NON	10	25	90	10	90°	No
	901100120090Z2-NON	10	25	90	10	120°	No
	901100090150Z2-NON	10	25	150	10	90°	No
	901100120150Z2-NON	10	25	150	10	120°	No
UWC	901120090090Z2-NON	12	30	90	12	90°	No
	901120120090Z2-NON	12	30	90	12	120°	No
	901120090150Z2-NON	12	30	150	12	90°	No
	901120120150Z2-NON	12	30	150	12	120°	No
	901160090110Z2-NON	16	35	110	16	90°	No
	901160120110Z2-NON	16	35	110	16	120°	No
D +0~-0.01 Φ2 - Φ4							
D +0~-0.015 Φ6 - Φ16							
30° Helix Angle							



**990 / 991**

■ Apply 20% up values of below condition for 991

• RPM : rev./min • Feed : mm/min

Material	Carbon Steels S50C			Alloy steels SCM / SKD / SUS			Prehardened Steels / Hardened Steels NAK / SKD		
	30~40m/min			20~30m/min			15~25m/min		
	Radius	RPM	FEED		RPM	FEED		RPM	FEED
Roughing			Finishing	Roughing		Finishing	Roughing		Finishing
R0.1	14,800	50	80	11,000	40	55	8,500	30	50
R0.2	12,800	50	80	9,100	40	55	7,300	30	50
R0.3	11,200	50	80	8,000	40	55	6,400	30	50
R0.4	10,000	50	80	7,000	40	55	5,700	30	50
R0.5	8,800	50	80	6,400	40	55	5,100	30	50
R0.75	7,200	50	80	5,100	40	55	4,100	30	50
R0.8	5,600	50	80	4,000	40	55	3,900	30	50
R1	5,000	50	80	3,500	40	55	3,400	30	50
R1.25	4,300	50	80	3,100	40	55	2,900	30	50
R1.5	3,000	50	80	2,200	40	55	2,600	30	50
R2	2,600	50	80	1,900	40	55	2,200	30	50
R2.5	2,200	50	80	1,800	40	55	2,000	30	50
R3	2,000	50	80	1,600	40	55	1,700	30	50
R3.5	1,600	50	80	1,400	40	55	1,400	30	50
R4	1,500	50	80	1,200	40	55	1,300	30	50
R4.5	1,400	50	80	1,040	40	55	1,100	30	50
R5	1,300	50	80	960	40	55	1,000	30	50
R6	1,200	50	80	880	40	55	900	30	50
R7	1,100	50	80	720	40	55	800	30	50
R8	1,000	50	80	560	40	55	640	30	50

Depth of Cut

$a=0.02 : R < 0.5$   
 $a=0.05 : R \geq 0.5$

**950 / 951 / 952**

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels SKD / SUS / SCM		Prehardened Steels NAK / HPM	
	Outside Diameter	RPM	RPM	FEED	RPM	FEED
2mm	3,400 ~ 7,000	70 ~ 100	2,600 ~ 5,200	50 ~ 90	2,000 ~ 4,000	40 ~ 60
3mm	2,700 ~ 5,300	60 ~ 85	2,100 ~ 4,200	45 ~ 70	1,600 ~ 3,200	35 ~ 50
4mm	2,000 ~ 4,000	50 ~ 70	1,600 ~ 3,200	40 ~ 55	1,200 ~ 2,400	30 ~ 40
5mm	1,700 ~ 3,400	45 ~ 60	1,400 ~ 2,600	35 ~ 50	1,000 ~ 2,000	26 ~ 35
6mm	1,300 ~ 2,700	40 ~ 50	1,100 ~ 2,100	30 ~ 40	800 ~ 1,600	22 ~ 30
7mm	1,150 ~ 2,400	35 ~ 45	950 ~ 1,900	28 ~ 37	700 ~ 1,400	21 ~ 28
8mm	1,000 ~ 2,000	30 ~ 40	800 ~ 1,600	26 ~ 34	600 ~ 1,200	20 ~ 25
9mm	900 ~ 1,800	30 ~ 40	700 ~ 1,450	24 ~ 32	550 ~ 1,100	18 ~ 23
10mm	800 ~ 1,600	30 ~ 37	600 ~ 1,300	23 ~ 29	500 ~ 1,000	17 ~ 22
11mm	750 ~ 1,450	30 ~ 37	550 ~ 1,200	22 ~ 28	450 ~ 900	16 ~ 21
12mm	700 ~ 1,300	28 ~ 35	500 ~ 1,100	21 ~ 27	400 ~ 800	16 ~ 20

Depth of Cut

Ad : 0.05D 이하

**992 / 993**

■ Apply 20% up values of below condition for 993

• RPM : rev./min • Feed : mm/min

Material	Carbon Steels S45C / S50C		Alloy steels SK / SCM / SUS		Prehardened Steels / Hardened Steels NAK / SKD	
	~ 225HB		225 ~ 325HB		30 ~ 45HRC	
	Vc = 25 ~ 50m/min		Vc = 20 ~ 40m/min		Vc = 15 ~ 40m/min	
Shank Diameter	RPM	FEED	RPM	FEED	RPM	FEED
4mm	1,600 ~ 3,200	38 ~ 54	1,300 ~ 2,600	30 ~ 43	1,000 ~ 2,000	23 ~ 33
6mm	1,100 ~ 2,200	29 ~ 39	900 ~ 1,700	25 ~ 34	650 ~ 1,300	18 ~ 24
8mm	800 ~ 1,600	26 ~ 34	650 ~ 1,280	21 ~ 27	500 ~ 1,000	18 ~ 24
10mm	640 ~ 1,300	24 ~ 30	510 ~ 1,050	18 ~ 23	500 ~ 1,000	14 ~ 18
12mm	560 ~ 1,050	22 ~ 28	420 ~ 880	17 ~ 22	320 ~ 640	14 ~ 18

Depth of Cut

$A_p : 0.1d$   
 $d = \text{Shank diameter}$

**994 / 995 / 996 / 997**

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels SKD / SUS / SCM		Prehardened Steels NAK / HPM	
	Outside Diameter	RPM	RPM	FEED	RPM	FEED
	1.5mm	3,050	162	1,890	94	1,530
2mm	2,850	149	1,790	88	1,440	70
2.5mm	2,680	135	1,700	83	1,350	65
3mm	2,500	122	1,610	79	1,260	59
4mm	2,150	108	1,430	72	1,080	54
5mm	1,800	95	1,200	65	900	49
6mm	1,430	86	950	58	720	43
8mm	1,070	64	720	43	540	32
10mm	860	52	580	34	430	26
12mm	720	43	480	29	360	22

Depth of Cut

RD = 0.1D

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels SKD / SUS / SCM		Prehardened Steels NAK / HPM	
	Outside Diameter	RPM	RPM	FEED	RPM	FEED
	1.5mm	3,050	117	1,890	77	1,530
2mm	2,850	110	1,790	72	1,440	55
2.5mm	2,680	99	1,700	66	1,350	50
3mm	2,500	92	1,610	60	1,260	45
4mm	2,150	81	1,430	54	1,080	41
5mm	1,800	70	1,200	47	900	35
6mm	1,430	59	950	39	720	30
8mm	1,070	44	720	30	540	22
10mm	860	35	580	23	430	17
12mm	720	30	480	20	360	14


Depth of Cut

**953**

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels / Tools Steels SKD / SUS / SCM		Prehardened Steels HPM / NAK (30~45HRC)		Aluminum Alloys	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2mm	1,400	100	800	50	650	40	4,800	280
3mm	1,400	100	800	50	650	40	4,800	280
4mm	1,280	100	690	50	580	40	4,200	280
5mm	1,300	100	640	50	520	40	3,300	280
6mm	1,150	100	600	50	480	40	2,900	280
8mm	1,000	100	530	50	420	40	2,600	280
10mm	850	90	490	40	390	30	2,400	260
12mm	720	90	410	40	310	30	1,900	260
14mm	610	90	340	40	270	30	1,700	240
16mm	550	90	310	40	250	30	1,500	230

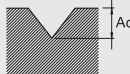
Depth of Cut	<p>Ad : 0.5D~1.0D</p> 							
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**901**

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels / Tools Steels SKD / SUS / SCM		Aluminum Alloys	
	RPM	FEED	RPM	FEED	RPM	FEED
2mm	900	11,000	530	8,600	1,300	2,000
3mm	860	9,600	480	8,000	1,150	1,800
4mm	650	7,200	360	6,000	860	9,600
6mm	430	4,800	240	4,000	580	6,400
8mm	430	3,600	180	3,000	580	4,800
10mm	410	2,900	140	2,400	530	3,800
12mm	380	2,400	120	2,000	510	3,200
16mm	300	1,800	100	1,500	400	2,400

Depth of Cut	<p>Ad : 0.3D</p> 					
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