

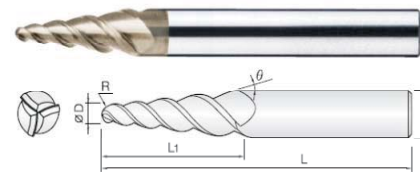
800 Series TAPER



Tool Selection Index

Hardness	EDP. NO	Appearance	Flutes	Types	Page
~HRc 50	830		3F	Taper Ball End Mills for Impeller	162
	831		2F	Taper Ball End Mills	166
	850		2F	Taper End Mills	167
	851		4F	Taper End Mills	170
	820		4F	Rib Taper End Mills	171

3 Flutes Taper Ball End Mills for Impellers



Non Coating: For AL alloy, NI-CR alloy, Inconel
Coating : For Pre-hardened steel, Cast iron, Non-metallic materials
 Suitable for special components with 3 axes and 5 axes sector such as impellers, blisks, tire profiles, turbine blades.
 Available for simultaneous machining of roughing and finishing with only one tool.

Size	D Tolerance
D ≤ Φ6	+0~ -0.02mm

Type	Part Number	Dimensions in mm				Angle θ	Coating (Y/N)	
		R X D	L1	L	d			
3	830010010120Z3-TIN	R0.5 X 1	12	50	6	1°	Yes	
	830010010200Z3-TIN	R0.5 X 1	20	60	6	1°	Yes	
	830010020150Z3-TIN	R0.5 X 1	15	55	6	2°	Yes	
	830010020200Z3-TIN	R0.5 X 1	20	60	6	2°	Yes	
	830010030150Z3-TIN	R0.5 X 1	15	55	6	3°	Yes	
	830010030200Z3-TIN	R0.5 X 1	20	60	6	3°	Yes	
	830010040200Z3-TIN	R0.5 X 1	20	60	6	4°	Yes	
	830010050200Z3-TIN	R0.5 X 1	20	60	6	5°	Yes	
	830010060200Z3-TIN	R0.5 X 1	20	60	6	6°	Yes	
	830010070200Z3-TIN	R0.5 X 1	20	60	6	7°	Yes	
830010080180Z3-TIN	R0.5 X 1	18	60	6	8°	Yes		
UWC	830020010120Z3-TIN	R1 X 2	12	50	6	1°	Yes	
	830020010200Z3-TIN	R1 X 2	20	60	6	1°	Yes	
	830020020150Z3-TIN	R1 X 2	15	55	6	2°	Yes	
	830020020200Z3-TIN	R1 X 2	20	60	6	2°	Yes	
	830020030150Z3-TIN	R1 X 2	15	55	6	3°	Yes	
	830020030200Z3-TIN	R1 X 2	20	60	6	3°	Yes	
	830020030300Z3-TIN	R1 X 2	30	70	6	3°	Yes	
	830020040200Z3-TIN	R1 X 2	20	60	6	4°	Yes	
	830020050200Z3-TIN	R1 X 2	20	60	6	5°	Yes	
	830020050300Z3-TIN	R1 X 2	30	75	8	5°	Yes	
TISIN Coating	830020060190Z3-TIN	R1 X 2	19	60	6	6°	Yes	
	830020060290Z3-TIN	R1 X 2	29	75	8	6°	Yes	
	830020070160Z3-TIN	R1 X 2	16	60	6	7°	Yes	
	830020070250Z3-TIN	R1 X 2	25	70	8	7°	Yes	
	830020080150Z3-TIN	R1 X 2	15	60	6	8°	Yes	
	830020080220Z3-TIN	R1 X 2	22	70	8	8°	Yes	
	830030010200Z3-TIN	R1.5 X 3	20	60	6	1°	Yes	
	830030010320Z3-TIN	R1.5 X 3	32	75	6	1°	Yes	
	830030020200Z3-TIN	R1.5 X 3	20	60	6	2°	Yes	
	830030030200Z3-TIN	R1.5 X 3	20	60	6	3°	Yes	
±0.01 0.5R - 1R	830030030300Z3-TIN	R1.5 X 3	30	70	6	3°	Yes	
	830030030390Z3-TIN	R1.5 X 3	39	80	6	3°	Yes	
	830030040200Z3-TIN	R1.5 X 3	20	65	6	4°	Yes	
	830030050180Z3-TIN	R1.5 X 3	18	60	6	5°	Yes	
	830030050300Z3-TIN	R1.5 X 3	30	75	8	5°	Yes	
	830030060150Z3-TIN	R1.5 X 3	15	60	6	6°	Yes	
	830030060250Z3-TIN	R1.5 X 3	25	70	8	6°	Yes	
	830030070190Z3-TIN	R1.5 X 3	19	70	8	7°	Yes	
	830030070300Z3-TIN	R1.5 X 3	30	80	10	7°	Yes	
	830030080190Z3-TIN	R1.5 X 3	19	70	8	8°	Yes	
±0.02 1.5R - 3R	830030080260Z3-TIN	R1.5 X 3	26	75	10	8°	Yes	
	830040010200Z3-TIN	R2 X 4	20	60	6	1°	Yes	
	830040010320Z3-TIN	R2 X 4	32	75	6	1°	Yes	
	830040020200Z3-TIN	R2 X 4	20	60	6	2°	Yes	
	830040020300Z3-TIN	R2 X 4	30	70	6	2°	Yes	
	830040030210Z3-TIN	R2 X 4	21	70	6	3°	Yes	
	830040030320Z3-TIN	R2 X 4	32	80	8	3°	Yes	
	35° Helix Angle	830040030320Z3-TIN	R2 X 4	32	80	8	3°	Yes



Type	Part Number	Dimensions in mm				Angle θ	Coating (Y/N)
		R X D	L1	L	d		
	830060010320Z3-NON	R3 X 6	32	75	8	1°	No
	830060020300Z3-NON	R3 X 6	30	75	8	2°	No
	830060030220Z3-NON	R3 X 6	22	75	8	3°	No
	830060030320Z3-NON	R3 X 6	32	80	10	3°	No
	830060030400Z3-NON	R3 X 6	40	90	10	3°	No
	830060040250Z3-NON	R3 X 6	25	75	10	4°	No
	830060040310Z3-NON	R3 X 6	31	80	10	4°	No
	830060050210Z3-NON	R3 X 6	21	75	10	5°	No
	830060050320Z3-NON	R3 X 6	32	80	12	5°	No
	830060060210Z3-NON	R3 X 6	21	75	10	6°	No
	830060060310Z3-NON	R3 X 6	31	80	12	6°	No
	830060070190Z3-NON	R3 X 6	19	75	10	7°	No
	830060070270Z3-NON	R3 X 6	27	80	12	7°	No



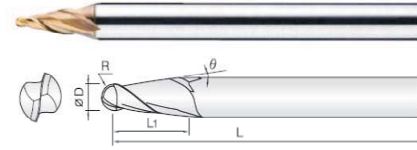
0.5R - 1R



1.5R - 3R



2 Flutes Taper Ball End Mills



Endmills for pre-hardened and hardened steel (HRc50~)
 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
P173

Size	D Tolerance
D ≤ φ6	+0~ -0.01mm

Type	Part Number	Dimensions in mm					Angle θ
		R X D	L1	L2	L	d	
2	831004020030Z2-TIN	0.2R X 0.4	3		40	4	2°
	831004030030Z2-TIN	0.2R X 0.4	3		40	4	3°
	831004040030Z2-TIN	0.2R X 0.4	3		40	4	4°
	831004050030Z2-TIN	0.2R X 0.4	3		40	4	5°
	831004070030Z2-TIN	0.2R X 0.4	3		40	4	7°
	831004100030Z2-TIN	0.2R X 0.4	3		40	4	10°
	831005020030Z2-TIN	0.25R X 0.5	3		40	4	2°
	831005030030Z2-TIN	0.25R X 0.5	3		40	4	3°
	831005040035Z2-TIN	0.25R X 0.5	3.5		40	4	4°
	831005050035Z2-TIN	0.25R X 0.5	3.5		40	4	5°
UWC	831005070035Z2-TIN	0.25R X 0.5	3.5		40	4	7°
	831005100035Z2-TIN	0.25R X 0.5	3.5		40	4	10°
	831006020030Z2-TIN	0.3R X 0.6	3		40	4	2°
	831006030030Z2-TIN	0.3R X 0.6	3		40	4	3°
	831006040035Z2-TIN	0.3R X 0.6	3.5		40	4	4°
	831006050035Z2-TIN	0.3R X 0.6	3.5		40	4	5°
	831006070035Z2-TIN	0.3R X 0.6	3.5		40	4	7°
	831006100035Z2-TIN	0.3R X 0.6	3.5		40	4	10°
	831008020030Z2-TIN	0.4R X 0.8	3		40	4	2°
	831008030030Z2-TIN	0.4R X 0.8	3		40	4	3°
TISIN Coating	831008040040Z2-TIN	0.4R X 0.8	4		40	4	4°
	831008050040Z2-TIN	0.4R X 0.8	4		40	4	5°
	831008070040Z2-TIN	0.4R X 0.8	4		40	4	7°
	831008100040Z2-TIN	0.4R X 0.8	4		40	4	10°
	831010003030Z2-TIN	0.5R X 1	3		40	4	0°30
	831010010030Z2-TIN	0.5R X 1	3		40	4	1°
	831010013040Z2-TIN	0.5R X 1	4		40	4	1°30
	831010020040Z2-TIN	0.5R X 1	4		40	4	2°
	831010030040Z2-TIN	0.5R X 1	4		40	4	3°
	831010040060Z2-TIN	0.5R X 1	6		45	4	4°
R ±0.005 0.2R - 1R	831010050060Z2-TIN	0.5R X 1	6		45	4	5°
	831010070060Z2-TIN	0.5R X 1	6		45	4	7°
	831010100060Z2-TIN	0.5R X 1	6		45	4	10°
	831015003060Z2-TIN	0.75R X 1.5	6		45	4	0°30
	831015010060Z2-TIN	0.75R X 1.5	6		45	4	1°
	831015013060Z2-TIN	0.75R X 1.5	6		45	4	1°30
	831015020060Z2-TIN	0.75R X 1.5	6		45	4	2°
	831015030060Z2-TIN	0.75R X 1.5	6		45	4	3°
	831015040060Z2-TIN	0.75R X 1.5	6		45	4	4°
	831015050060Z2-TIN	0.75R X 1.5	6		45	4	5°
30° Helix Angle	831015070060Z2-TIN	0.75R X 1.5	6		45	4	7°
	831020003080Z2-TIN	1R X 2	8		45	4	0°30
	831020010080Z2-TIN	1R X 2	8		45	4	1°
	831020013080Z2-TIN	1R X 2	8		45	4	1°30
	831020020080Z2-TIN	1R X 2	8		45	4	2°
	831020030080Z2-TIN	1R X 2	8		45	4	3°
	831020040080Z2-TIN	1R X 2	8		45	4	4°
	831020050080Z2-TIN	1R X 2	8		45	4	5°
	831020070080Z2-TIN	1R X 2	8		45	4	7°



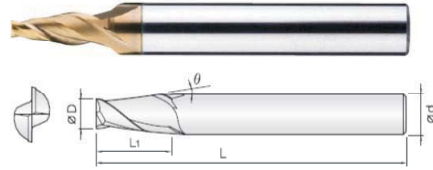
0.2R - 1R



800 Series

800 Series

2 Flutes Taper End Mills



Endmills for pre-hardened and hardened steel (HRc50~)
 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
P173

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

Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
2	850003003012Z2-TIN	0.3	1.2		40	4	0°30
	850003010012Z2-TIN	0.3	1.2		40	4	1°
	850003013012Z2-TIN	0.3	1.2		40	4	1°30
	850003020012Z2-TIN	0.3	1.2		40	4	2°
	850003030012Z2-TIN	0.3	1.2		40	4	3°
	850003050012Z2-TIN	0.3	1.2		40	4	5°
	850003070015Z2-TIN	0.3	1.5		40	4	7°
	850003100015Z2-TIN	0.3	1.5		40	4	10°
	850004003016Z2-TIN	0.4	1.6		40	4	0°30
	850004010016Z2-TIN	0.4	1.6		40	4	1°
850004013016Z2-TIN	0.4	1.6		40	4	1°30	
850004020016Z2-TIN	0.4	1.6		40	4	2°	
850004030016Z2-TIN	0.4	1.6		40	4	3°	
850004050016Z2-TIN	0.4	1.6		40	4	5°	
850004070020Z2-TIN	0.4	2		40	4	7°	
850004100020Z2-TIN	0.4	2		40	4	10°	
850005003020Z2-TIN	0.5	2		40	4	0°30	
850005010020Z2-TIN	0.5	2		40	4	1°	
850005013020Z2-TIN	0.5	2		40	4	1°30	
850005020020Z2-TIN	0.5	2		40	4	2°	
850005030020Z2-TIN	0.5	2		40	4	3°	
850005050020Z2-TIN	0.5	2		40	4	5°	
850005070025Z2-TIN	0.5	2.5		40	4	7°	
850005100025Z2-TIN	0.5	2.5		40	4	10°	
850006003020Z2-TIN	0.6	2		40	4	0°30	
850006010020Z2-TIN	0.6	2		40	4	1°	
850006013020Z2-TIN	0.6	2		40	4	1°30	
850006020020Z2-TIN	0.6	2		40	4	2°	
850006030020Z2-TIN	0.6	2		40	4	3°	
850006050020Z2-TIN	0.6	2		40	4	5°	
850006070025Z2-TIN	0.6	2.5		40	4	7°	
850006100025Z2-TIN	0.6	2.5		40	4	10°	
850007010025Z2-TIN	0.7	2.5		40	4	1°	
850007013025Z2-TIN	0.7	2.5		40	4	1°30	
850007020025Z2-TIN	0.7	2.5		40	4	2°	
850007030025Z2-TIN	0.7	2.5		40	4	3°	
850007050025Z2-TIN	0.7	2.5		40	4	5°	
850007070030Z2-TIN	0.7	3		40	4	7°	
850007100030Z2-TIN	0.7	3		40	4	10°	
850008003030Z2-TIN	0.8	3		40	4	0°30	
850008010030Z2-TIN	0.8	3		40	4	1°	
850008013030Z2-TIN	0.8	3		40	4	1°30	
850008020030Z2-TIN	0.8	3		40	4	2°	
850008030030Z2-TIN	0.8	3		40	4	3°	
850008050030Z2-TIN	0.8	3		40	4	5°	
850008070030Z2-TIN	0.8	3		40	4	7°	
850008100030Z2-TIN	0.8	3		40	4	10°	
850010003040Z2-TIN	1	4		45	4	0°30	



UWC

TISIN Coating

D
+0~-0.01
Φ0.3 - Φ4

D
+0~-0.015
Φ6 - Φ8

30°
Helix Angle



Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
2	850010010040Z2-TIN	1	4		45	4	1°
	850010013040Z2-TIN	1	4		45	4	1°30
	850010020040Z2-TIN	1	4		45	4	2°
	850010030040Z2-TIN	1	4		45	4	3°
	850010050040Z2-TIN	1	4		45	4	5°
	850010070040Z2-TIN	1	4		45	4	7°
	850010100040Z2-TIN	1	4		45	4	10°
	850015003050Z2-TIN	1.5	5		45	4	0°30
	850015010050Z2-TIN	1.5	5		45	4	1°
	850015013060Z2-TIN	1.5	6		45	4	1°30
850015020070Z2-TIN	1.5	7		45	4	2°	
850015030080Z2-TIN	1.5	8		45	4	3°	
850015050100Z2-TIN	1.5	10		50	4	5°	
850015070100Z2-TIN	1.5	10		50	4	7°	
850015100100Z2-TIN	1.5	10		50	6	10°	
850020003060Z2-TIN	2	6		45	4	0°30	
850020010060Z2-TIN	2	6		45	4	1°	
850020013060Z2-TIN	2	6		45	4	1°30	
850020020080Z2-TIN	2	8		45	4	2°	
850020030100Z2-TIN	2	10		50	4	3°	
850020050100Z2-TIN	2	10		50	4	5°	
850020070100Z2-TIN	2	10		50	6	7°	
850020100110Z2-TIN	2	11		50	6	10°	
850025003080Z2-TIN	2.5	8		45	6	0°30	
850025010100Z2-TIN	2.5	10		50	6	1°	
850025013100Z2-TIN	2.5	10		50	6	1°30	
850025020120Z2-TIN	2.5	12		50	6	2°	
850025030120Z2-TIN	2.5	12		50	6	3°	
850025050120Z2-TIN	2.5	12		50	6	5°	
850025070120Z2-TIN	2.5	12		50	6	7°	
850025100100Z2-TIN	2.5	10		50	6	10°	
850030003120Z2-TIN	3	12		50	6	0°30	
850030010120Z2-TIN	3	12		50	6	1°	
850030013120Z2-TIN	3	12		50	6	1°30	
850030020120Z2-TIN	3	12		50	6	2°	
850030030120Z2-TIN	3	12		50	6	3°	
850030050120Z2-TIN	3	12		50	6	5°	
850030070120Z2-TIN	3	12		50	6	7°	
850030100080Z2-TIN	3	8		50	6	10°	
850040003150Z2-TIN	4	15		60	6	0°30	
850040010150Z2-TIN	4	15		60	6	1°	
850040013150Z2-TIN	4	15		60	6	1°30	
850040020150Z2-TIN	4	15		60	6	2°	
850040030180Z2-TIN	4	18		60	6	3°	
850040050230Z2-TIN	4	23		65	8	5°	
850060003200Z2-TIN	6	20		65	8	0°30	
850060010200Z2-TIN	6	20		65	8	1°	
850060013200Z2-TIN	6	20		65	8	1°30	
850060020200Z2-TIN	6	20		65	8	2°	
850060030190Z2-TIN	6	19		65	8	3°	
850060050230Z2-TIN	6	23		75	10	5°	
850060070240Z2-TIN	6	24		75	12	7°	
850060100170Z2-TIN	6	17		75	12	10°	
850070003250Z2-TIN	7	25		70	8	0°30	
850070010250Z2-TIN	7	25		70	8	1°	
850070013250Z2-TIN	7	25		70	10	1°30	
850070030280Z2-TIN	7	28		80	10	3°	
850070050280Z2-TIN	7	28		80	12	5°	



UWC

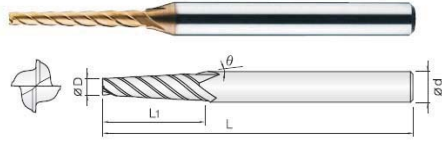
TISIN Coating

D
+0~-0.01
Φ0.3 - Φ4

D
+0~-0.015
Φ6 - Φ8

30°
Helix Angle

4 Flutes Rib Taper End Mills



Endmills for pre-hardened and hardened steel (HRc50~)
 Good wear resistance by Si-based PVD coating.
 Optimum for deep grooving by 2bottom edge with 4flutes.
 High precise edge tolerance.
 Very nice work surface finish.
 Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

Cutting Data
P174

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm

Type	Part Number	Dimensions in mm					Angle θ	
		D	L1	L2	L	d		
4	820005030040Z4-TIN	0.5	4		45	4	0°30	
	820005030060Z4-TIN	0.5	6		45	4	0°30	
	820005045040Z4-TIN	0.5	4		45	4	0°45	
	820005045060Z4-TIN	0.5	6		45	4	0°45	
UWC	820005100040Z4-TIN	0.5	4		45	4	1°	
	820005100060Z4-TIN	0.5	6		45	4	1°	
	820006030040Z4-TIN	0.6	4		45	4	0°30	
	820006030060Z4-TIN	0.6	6		45	4	0°30	
	820006045040Z4-TIN	0.6	4		45	4	0°45	
	820006045060Z4-TIN	0.6	6		45	4	0°45	
	820006100040Z4-TIN	0.6	4		45	4	1°	
	820006100060Z4-TIN	0.6	6		45	4	1°	
	820007030060Z4-TIN	0.7	6		45	4	0°30	
	820007030080Z4-TIN	0.7	8		45	4	0°30	
	820007045060Z4-TIN	0.7	6		45	4	0°45	
	820007045080Z4-TIN	0.7	8		45	4	0°45	
TISIN Coating	820007100060Z4-TIN	0.7	6		45	4	1°	
	820007100080Z4-TIN	0.7	8		45	4	1°	
	820008030060Z4-TIN	0.8	6		45	4	0°30	
	820008030080Z4-TIN	0.8	8		45	4	0°30	
	820008030100Z4-TIN	0.8	10		45	4	0°30	
	820008045060Z4-TIN	0.8	6		45	4	0°45	
	820008045080Z4-TIN	0.8	8		45	4	0°45	
	820008045100Z4-TIN	0.8	10		45	4	0°45	
	820008100060Z4-TIN	0.8	6		45	4	1°	
	820008100080Z4-TIN	0.8	8		45	4	1°	
	820008100100Z4-TIN	0.8	10		45	4	1°	
	D +0~0.01 Φ0.5 - Φ2.5	820009030060Z4-TIN	0.9	6		45	4	0°30
820009030080Z4-TIN		0.9	8		45	4	0°30	
820009030100Z4-TIN		0.9	10		45	4	0°30	
820009045060Z4-TIN		0.9	6		45	4	0°45	
820009045080Z4-TIN		0.9	8		45	4	0°45	
820009045100Z4-TIN		0.9	10		45	4	0°45	
820009100060Z4-TIN		0.9	6		45	4	1°	
820009100080Z4-TIN		0.9	8		45	4	1°	
820009100100Z4-TIN		0.9	10		45	4	1°	
30° Helix Angle		820010030080Z4-TIN	1	8		45	4	0°30
		820010030100Z4-TIN	1	10		45	4	0°30
		820010030120Z4-TIN	1	12		45	4	0°30
	820010045080Z4-TIN	1	8		45	4	0°45	
	820010045100Z4-TIN	1	10		45	4	0°45	
	820010045120Z4-TIN	1	12		45	4	0°45	
	820010100080Z4-TIN	1	8		45	4	1°	
	820010100100Z4-TIN	1	10		45	4	1°	
	820010100120Z4-TIN	1	12		45	4	1°	
	820012030080Z4-TIN	1.2	8		45	4	0°30	
	820012030100Z4-TIN	1.2	10		45	4	0°30	
	820012030120Z4-TIN	1.2	12		45	4	0°30	



Type	Part Number	Dimensions in mm					Angle θ
		D	L1	L2	L	d	
4	820012030160Z4-TIN	1.2	16		50	4	0°30
	820012045080Z4-TIN	1.2	8		45	4	0°45
	820012045100Z4-TIN	1.2	10		45	4	0°45
	820012045120Z4-TIN	1.2	12		45	4	0°45
UWC	820012045160Z4-TIN	1.2	16		50	4	0°45
	820012100080Z4-TIN	1.2	8		45	4	1°
	820012100100Z4-TIN	1.2	10		45	4	1°
	820012100120Z4-TIN	1.2	12		45	4	1°
	820012100160Z4-TIN	1.2	16		50	4	1°
	820015030060Z4-TIN	1.5	6		45	4	0°30
	820015030100Z4-TIN	1.5	10		45	4	0°30
	820015030160Z4-TIN	1.5	16		50	4	0°30
	820015030200Z4-TIN	1.5	20		60	4	0°30
	820015100060Z4-TIN	1.5	6		45	4	1°
	820015100100Z4-TIN	1.5	10		45	4	1°
	820015100160Z4-TIN	1.5	16		50	4	1°
TISIN Coating	820015100200Z4-TIN	1.5	20		60	4	1°
	820015100250Z4-TIN	1.5	25		60	4	1°
	820015130060Z4-TIN	1.5	6		45	4	1°30
	820015130100Z4-TIN	1.5	10		45	4	1°30
	820015130160Z4-TIN	1.5	16		50	4	1°30
	820015130200Z4-TIN	1.5	20		60	4	1°30
	820015130250Z4-TIN	1.5	25		60	4	1°30
	820020030100Z4-TIN	2	10		45	4	0°30
	820020030160Z4-TIN	2	16		50	4	0°30
	820020030200Z4-TIN	2	20		60	4	0°30
	820020030250Z4-TIN	2	25		60	4	0°30
	D +0~0.01 Φ0.5 - Φ2.5	820020100100Z4-TIN	2	10		45	4
820020100160Z4-TIN		2	16		50	4	1°
820020100200Z4-TIN		2	20		60	4	1°
820020100250Z4-TIN		2	25		60	4	1°
820020130100Z4-TIN		2	10		45	4	1°30
820020130160Z4-TIN		2	16		50	4	1°30
820020130200Z4-TIN		2	20		60	4	1°30
820020130250Z4-TIN		2	25		60	4	1°30
820025030100Z4-TIN		2.5	10		45	4	0°30
820025030160Z4-TIN		2.5	16		50	4	0°30
820025030200Z4-TIN		2.5	20		60	4	0°30
820025030250Z4-TIN		2.5	25		60	4	0°30
30° Helix Angle	820025100100Z4-TIN	2.5	10		45	4	1°
	820025100160Z4-TIN	2.5	16		50	4	1°
	820025100200Z4-TIN	2.5	20		60	4	1°
	820025100250Z4-TIN	2.5	25		60	4	1°
	820025130100Z4-TIN	2.5	10		45	4	1°30
	820025130160Z4-TIN	2.5	16		50	4	1°30
	820025130200Z4-TIN	2.5	20		60	4	1°30
	820025130250Z4-TIN	2.5	25		60	4	1°30

831

• RPM : rev./min • Feed : mm/min

Material	Alloy Steels / Tool Steels / Prehardened Steels SKD61 / NAK				Hardened Steels SKD61			
	~ 45HRc							
	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$	
Hardness	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.2	32,000	480	32,000	360	32,000	400	32,000	300
R0.25	32,000	640	32,000	480	32,000	550	32,000	400
R0.3	32,000	800	32,000	600	32,000	680	32,000	500
R0.4	32,000	1,200	32,000	880	32,000	1,040	28,000	680
R0.5	32,000	1,600	28,000	1,100	28,000	1,200	24,000	720
R0.75	32,000	1,800	24,000	1,100	24,000	1,200	20,000	720
R1	28,000	2,000	20,000	1,200	20,000	1,200	16,000	720

$\leq 0.1R$
 $\leq 0.06R$

850

RPM : rev./min Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		Hardened Steels / Stainless Steels SUS304 / SKD		Hardened Steels	
	~ 750HN/mm ²									
	~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc			
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	14,000	140	14,000	117	11,700	80	10,800	80	9,500	35
1.5mm	9,500	140	9,500	117	8,000	80	7,400	80	6,300	35
2mm	7,200	140	7,200	117	6,000	80	5,600	80	4,700	35
2.5mm	5,600	130	5,600	113	4,800	80	4,500	80	3,800	35
3mm	4,700	130	4,700	113	4,000	80	3,700	80	3,200	35
4mm	3,500	130	3,500	113	3,000	80	2,800	75	2,300	35
5mm	2,800	130	2,800	113	2,400	80	2,200	75	1,900	35
6mm	2,300	130	2,300	113	2,000	80	1,800	75	1,600	35
8mm	1,800	130	1,800	113	1,500	80	1,400	75	1,200	35
10mm	1,400	130	1,400	108	1,200	80	1,100	75	950	35

$\frac{A_p}{2.5D}$ $\frac{A_e}{0.02D}$

851

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C		Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		Hardened Steels / Stainless Steels SUS304 / SKD		Hardened Steels	
	~ 750HN/mm ²									
	~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc			
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	4,800	200	4,000	200	4,800	160	3,700	120	3,150	120
4mm	3,600	220	3,000	220	3,000	180	2,800	135	2,340	145
5mm	2,800	250	2,400	250	2,400	200	2,200	145	1,890	145
6mm	2,400	250	2,000	340	2,000	200	1,800	160	1,575	160
8mm	1,800	240	1,500	240	1,500	200	1,400	170	1,170	170
10mm	1,400	240	1,200	240	1,200	200	1,100	160	945	160

$\frac{A_p}{2.5D}$ $\frac{A_e}{0.02D}$

820

• RPM : rev./min • Feed : mm/min

Material	Mild Steels / Carbon Steels SS400 / S55C			Alloy Steels / Tool Steels SCM / SKT / SKS / SKD			Prehardened Steels / Hardened Steels SKT / SKD / NAK55 / HPM1			Hardened Steels / Stainless Steels SUS304 / SKD			Hardened Steels SUS304 / SKD		
	~ 750HN/mm ²														
	~ 30HRc			30HRc ~ 38HRc			38HRc ~ 45HRc			45HRc ~ 55HRc					
Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
0.5mm	25,200	500	0.01~0.020	25,200	450	0.01~0.020	25,200	380	0.01~0.020	25,200	350	0.01~0.020	15,200	200	0.005~0.01
0.6mm	25,200	600	0.012~0.025	25,200	545	0.012~0.025	23,600	420	0.012~0.025	21,200	355	0.012~0.025	12,400	210	0.006~0.012
0.7mm	23,200	750	0.014~0.030	21,600	545	0.014~0.030	20,000	420	0.014~0.030	18,000	355	0.014~0.030	10,800	210	0.007~0.014
0.8mm	20,000	750	0.016~0.035	18,800	545	0.016~0.035	17,600	420	0.016~0.035	15,600	355	0.016~0.035	9,200	210	0.008~0.016
0.9mm	18,000	750	0.018~0.040	16,800	545	0.018~0.040	15,600	420	0.018~0.040	14,000	355	0.018~0.040	8,400	210	0.009~0.018
1mm	16,000	745	0.02~0.045	15,200	545	0.02~0.045	14,000	420	0.02~0.045	12,400	355	0.02~0.045	7,600	210	0.01~0.02
1.2mm	13,200	745	0.024~0.055	12,400	545	0.024~0.055	11,600	420	0.024~0.055	10,400	355	0.024~0.055	6,400	210	0.012~0.024
1.5mm	10,800	745	0.03~0.07	10,000	545	0.03~0.07	9,200	420	0.03~0.07	8,400	355	0.03~0.07	5,100	210	0.015~0.03
2mm	8,000	745	0.04~0.1	7,600	545	0.04~0.1	7,100	420	0.04~0.1	6,400	355	0.04~0.1	3,800	210	0.02~0.04
2.5mm	6,500	745	0.05~0.12	6,100	545	0.05~0.12	5,700	420	0.05~0.12	5,100	355	0.05~0.12	3,000	210	0.025~0.05

$\frac{A_p}{2.5D}$