



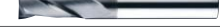



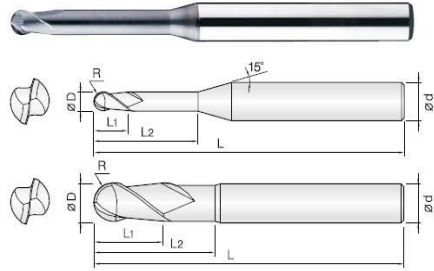
## 600 Series DIAMOND LIKE CARBON



### Tool Selection Index

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**2 Flutes DLC Coated Rib Ball End Mills for Non-Ferrous Metal**



Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.  
 Super DLC coating provides excellent work surface finish by high hardness and low friction.  
 High precise edge tolerance.  
 Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P146

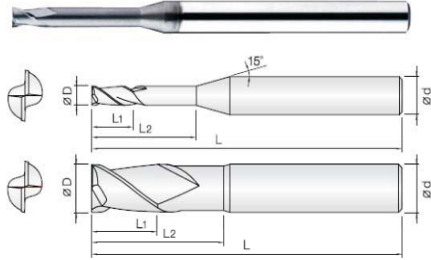
Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm					d
		R X D	L1	L2	L		
2	610001003H04Z2-DLC	0.05R X 0.1	0.3	-	45	4	
	610002005H04Z2-DLC	0.1R X 0.2	0.5	-	45	4	
UWC	610002010H04Z2-DLC	0.1R X 0.2	0.2	1	45	4	
	610002015H04Z2-DLC	0.1R X 0.2	0.2	1.5	45	4	
DLC Coating	610002020H04Z2-DLC	0.1R X 0.2	0.2	2	45	4	
	610003010H04Z2-DLC	0.15R X 0.3	0.3	1	45	4	
R ±0.005	610003015H04Z2-DLC	0.15R X 0.3	0.3	1.5	45	4	
	610003020H04Z2-DLC	0.15R X 0.3	0.3	2	45	4	
R ±0.01	610004010H04Z2-DLC	0.2R X 0.4	0.4	1	45	4	
	610004020H04Z2-DLC	0.2R X 0.4	0.4	2	45	4	
30° Helix Angle	610004030H04Z2-DLC	0.2R X 0.4	0.4	3	45	4	
	610004040H04Z2-DLC	0.2R X 0.4	0.4	4	45	4	
R ±0.005	610004050H04Z2-DLC	0.2R X 0.4	0.4	5	45	4	
	610005020H04Z2-DLC	0.25R X 0.5	0.5	2	45	4	
R ±0.01	610005040H04Z2-DLC	0.25R X 0.5	0.5	4	45	4	
	610005060H04Z2-DLC	0.25R X 0.5	0.5	6	45	4	
30° Helix Angle	610005080H04Z2-DLC	0.25R X 0.5	0.5	8	45	4	
	610005100H04Z2-DLC	0.25R X 0.5	0.5	10	45	4	
R ±0.005	610006020H04Z2-DLC	0.3R X 0.6	0.6	2	45	4	
	610006040H04Z2-DLC	0.3R X 0.6	0.6	4	45	4	
R ±0.01	610006060H04Z2-DLC	0.3R X 0.6	0.6	6	45	4	
	610006080H04Z2-DLC	0.3R X 0.6	0.6	8	45	4	
30° Helix Angle	610006100H04Z2-DLC	0.3R X 0.6	0.6	10	45	4	
	610008020H04Z2-DLC	0.4R X 0.8	0.8	2	45	4	
R ±0.005	610008040H04Z2-DLC	0.4R X 0.8	0.8	4	45	4	
	610008060H04Z2-DLC	0.4R X 0.8	0.8	6	45	4	
R ±0.01	610008080H04Z2-DLC	0.4R X 0.8	0.8	8	45	4	
	610008100H04Z2-DLC	0.4R X 0.8	0.8	10	45	4	
30° Helix Angle	610008120H04Z2-DLC	0.4R X 0.8	0.8	12	45	4	
	610010040H04Z2-DLC	0.5R X 1	1	4	45	4	
R ±0.005	610010060H04Z2-DLC	0.5R X 1	1	6	45	4	
	610010080H04Z2-DLC	0.5R X 1	1	8	45	4	
R ±0.01	610010100H04Z2-DLC	0.5R X 1	1	10	45	4	
	610010120H04Z2-DLC	0.5R X 1	1	12	45	4	
30° Helix Angle	610010160H04Z2-DLC	0.5R X 1	1	16	50	4	
	610015060H04Z2-DLC	0.75R X 1.5	1.5	6	45	4	
R ±0.005	610015080H04Z2-DLC	0.75R X 1.5	1.5	8	45	4	
	610015100H04Z2-DLC	0.75R X 1.5	1.5	10	45	4	
R ±0.01	610015120H04Z2-DLC	0.75R X 1.5	1.5	12	45	4	
	610015160H04Z2-DLC	0.75R X 1.5	1.5	16	50	4	
30° Helix Angle	610015200H04Z2-DLC	0.75R X 1.5	1.5	20	50	4	
	610020060H04Z2-DLC	1R X 2	3	6	45	4	
R ±0.005	610020080H04Z2-DLC	1R X 2	3	8	45	4	
	610020100H04Z2-DLC	1R X 2	3	10	45	4	
R ±0.01	610020120H04Z2-DLC	1R X 2	3	12	45	4	
	610020160H04Z2-DLC	1R X 2	3	16	50	4	
30° Helix Angle	610020200H04Z2-DLC	1R X 2	3	20	50	4	
	610020250H04Z2-DLC	1R X 2	3	25	60	4	



Type	Part Number	Dimensions in mm					d
		R X D	L1	L2	L		
2	610020300H04Z2-DLC	1R X 2	3	30	70	4	
	610030120H06Z2-DLC	1.5R X 3	4	12	50	6	
UWC	610030160H06Z2-DLC	1.5R X 3	4	16	60	6	
	610030200H06Z2-DLC	1.5R X 3	4	20	60	6	
DLC Coating	610030250H06Z2-DLC	1.5R X 3	4	25	65	6	
	610030300H06Z2-DLC	1.5R X 3	4	30	70	6	
R ±0.005	610030400H06Z2-DLC	1.5R X 3	4	40	80	6	
	610040120H06Z2-DLC	2R X 4	5	12	50	6	
R ±0.01	610040160H06Z2-DLC	2R X 4	5	16	60	6	
	610040200H06Z2-DLC	2R X 4	5	20	60	6	
30° Helix Angle	610040250H06Z2-DLC	2R X 4	5	25	65	6	
	610040300H06Z2-DLC	2R X 4	5	30	70	6	
R ±0.005	610050200H06Z2-DLC	2.5R X 5	6	20	60	6	
	610050400H06Z2-DLC	2.5R X 5	6	40	80	6	
R ±0.01	610060200H06Z2-DLC	3R X 6	8	20	60	6	
	610060300H06Z2-DLC	3R X 6	8	30	90	6	
30° Helix Angle	610080200H08Z2-DLC	4R X 8	10	20	70	8	
	610100250H10Z2-DLC	5R X 10	12	25	80	10	
R ±0.005	610120250H12Z2-DLC	6R X 12	14	25	80	12	

**2 Flutes DLC Coated Rib End Mills for Non-Ferrous Metal**



Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.  
 Super DLC coating provides excellent work surface finish by high hardness and low friction.  
 Reinforced edge design for preventing edge chipping.  
 High precise edge tolerance.  
 Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P146

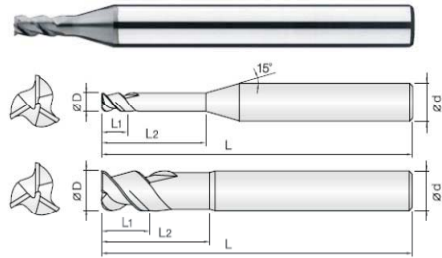
Size	D Tolerance
D ≤ Φ5	+0~ -0.01mm
D > Φ5	+0~ -0.02mm

Type	Part Number	Dimensions in mm					d
		D	L1	L2	L		
2	620001003H04Z2-DLC	0.1	0.3	-	45	4	
	620001005H04Z2-DLC	0.1	0.5	-	45	4	
UWC	620002005H04Z2-DLC	0.2	0.5	-	45	4	
	620002010H04Z2-DLC	0.2	0.3	1	45	4	
DLC Coating	620002015H04Z2-DLC	0.2	0.3	1.5	45	4	
	620002020H04Z2-DLC	0.2	0.3	2	45	4	
D +0~-0.01 Φ0.1 - Φ5	620003010H04Z2-DLC	0.3	0.5	1	45	4	
	620003015H04Z2-DLC	0.3	0.5	1.5	45	4	
D +0~-0.015 Φ6 - Φ12	620003020H04Z2-DLC	0.3	0.5	2	45	4	
	620004010H04Z2-DLC	0.4	0.6	1	45	4	
30° Helix Angle	620004020H04Z2-DLC	0.4	0.6	2	45	4	
	620004030H04Z2-DLC	0.4	0.6	3	45	4	
	620004040H04Z2-DLC	0.4	0.6	4	45	4	
	620004050H04Z2-DLC	0.4	0.6	5	45	4	
	620005020H04Z2-DLC	0.5	0.7	2	45	4	
	620005040H04Z2-DLC	0.5	0.7	4	45	4	
	620005060H04Z2-DLC	0.5	0.7	6	45	4	
	620005080H04Z2-DLC	0.5	0.7	8	45	4	
	620005100H04Z2-DLC	0.5	0.7	10	45	4	
	620006020H04Z2-DLC	0.6	0.9	2	45	4	
	620006040H04Z2-DLC	0.6	0.9	4	45	4	
	620006060H04Z2-DLC	0.6	0.9	6	45	4	
	620006080H04Z2-DLC	0.6	0.9	8	45	4	
	620006100H04Z2-DLC	0.6	0.9	10	45	4	
	620008020H04Z2-DLC	0.8	1.2	2	45	4	
	620008040H04Z2-DLC	0.8	1.2	4	45	4	
	620008060H04Z2-DLC	0.8	1.2	6	45	4	
	620008080H04Z2-DLC	0.8	1.2	8	45	4	
	620008100H04Z2-DLC	0.8	1.2	10	45	4	
	620008120H04Z2-DLC	0.8	1.2	12	45	4	
	620010040H04Z2-DLC	1	1.5	4	45	4	
	620010060H04Z2-DLC	1	1.5	6	45	4	
	620010080H04Z2-DLC	1	1.5	8	45	4	
	620010100H04Z2-DLC	1	1.5	10	45	4	
	620010120H04Z2-DLC	1	1.5	12	45	4	
	620010160H04Z2-DLC	1	1.5	16	50	4	
	620015060H04Z2-DLC	1.5	2.3	6	45	4	
	620015080H04Z2-DLC	1.5	2.3	8	45	4	
	620015100H04Z2-DLC	1.5	2.3	10	45	4	
	620015120H04Z2-DLC	1.5	2.3	12	45	4	
	620015160H04Z2-DLC	1.5	2.3	16	50	4	
	620015200H04Z2-DLC	1.5	2.3	20	50	4	
	620020060H04Z2-DLC	2	3	6	45	4	
	620020080H04Z2-DLC	2	3	8	45	4	
	620020100H04Z2-DLC	2	3	10	45	4	
	620020120H04Z2-DLC	2	3	12	45	4	
	620020160H04Z2-DLC	2	3	16	50	4	
	620020200H04Z2-DLC	2	3	20	50	4	



Type	Part Number	Dimensions in mm				
		D	L1	L2	L	d
2	620030120H06Z2-DLC	3	4.5	12	50	6
	620030160H06Z2-DLC	3	4.5	16	60	6
UWC	620030200H06Z2-DLC	3	4.5	20	60	6
	620030250H06Z2-DLC	3	4.5	25	65	6
DLC Coating	620030300H06Z2-DLC	3	4.5	30	70	6
	620030400H06Z2-DLC	3	4.5	40	80	6
D +0~-0.01 Φ0.1 - Φ5	620040120H06Z2-DLC	4	6	12	50	6
	620040160H06Z2-DLC	4	6	16	60	6
D +0~-0.015 Φ6 - Φ12	620040200H06Z2-DLC	4	6	20	60	6
	620040250H06Z2-DLC	4	6	25	65	6
30° Helix Angle	620040300H06Z2-DLC	4	6	30	70	6
	620040400H06Z2-DLC	4	6	40	80	6
	620050200H06Z2-DLC	5	6	20	60	6
	620050400H06Z2-DLC	5	6	40	80	6
	620060200H06Z2-DLC	6	8	20	60	6
	620060300H06Z2-DLC	6	8	30	90	6
	620080200H08Z2-DLC	8	12	20	70	8
	620100250H10Z2-DLC	10	15	25	80	10
	620120300H12Z2-DLC	12	18	30	80	12

**3 Flutes 45° Helix DLC Coated Rib End Mills for Non-Ferrous Metal**



Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.

Super DLC coating provides excellent work surface finish by high hardness and low friction.

High speed, feed applicable by 3 flute 45° degree helix and deep chip pocket design.

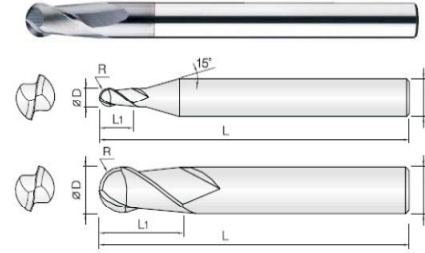
Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P146

Size	D Tolerance
D ≤ Φ5	+0~ -0.01mm
D > Φ5	+0~ -0.02mm

Type	Part Number	Dimensions in mm					d
		D	L1	L2	L	d	
     	621010030H04Z3-DLC	1	2	3	50	4	
	621015045H04Z3-DLC	1.5	3	4.5	50	4	
	621020060H04Z3-DLC	2	4	6	50	4	
	621025075H04Z3-DLC	2.5	5	7.5	50	4	
	621030090H06Z3-DLC	3	6	9	60	6	
	621040120H06Z3-DLC	4	9	12	60	6	
	621050150H06Z3-DLC	5	10	15	70	6	
	621060180H06Z3-DLC	6	12	18	70	6	
	621080240H08Z3-DLC	8	16	24	80	8	
	621100300H10Z3-DLC	10	20	30	90	10	
	621120360H12Z3-DLC	12	24	36	100	12	

**2 Flutes DLC Coated Ball End Mills for Non-Ferrous Metal**



Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.

Super DLC coating provides excellent work surface finish by high hardness and low friction.

High precise edge tolerance.

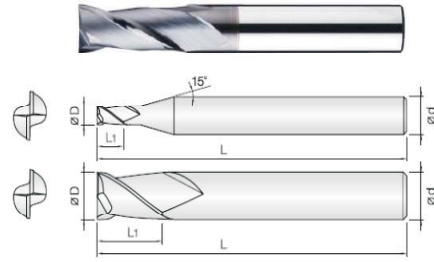
Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P147

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm					d
		R X D	L1	L2	L	d	
     	630002004H04Z2-DLC	0.1R X 0.2	0.4		45	4	
	630003006H04Z2-DLC	0.15R X 0.3	0.6		45	4	
	630004008H04Z2-DLC	0.2R X 0.4	0.8		45	4	
	630005010H04Z2-DLC	0.25R X 0.5	1		45	4	
	630006012H04Z2-DLC	0.3R X 0.6	1.2		45	4	
	630008020H04Z2-DLC	0.4R X 0.8	2		50	4	
	630010025H04Z2-DLC	0.5R X 1	2.5		50	4	
	630012030H04Z2-DLC	0.6R X 1.2	3		50	4	
	630015040H04Z2-DLC	0.75R X 1.5	4		50	4	
	630020050H04Z2-DLC	1R X 2	5		50	4	
	630025060H04Z2-DLC	1.25R X 2.5	6		50	4	
	630030080H06Z2-DLC	1.5R X 3	8		60	6	
630040080H06Z2-DLC	2R X 4	8		70	6		
630050100H06Z2-DLC	2.5R X 5	10		80	6		
630060120090Z2-DLC	3R X 6	12		90	6		
630080140100Z2-DLC	4R X 8	14		100	8		
630100180100Z2-DLC	5R X 10	18		100	10		
630120220110Z2-DLC	6R X 12	22		110	12		

**2 Flutes DLC Coated End Mills for Non-Ferrous Metal**



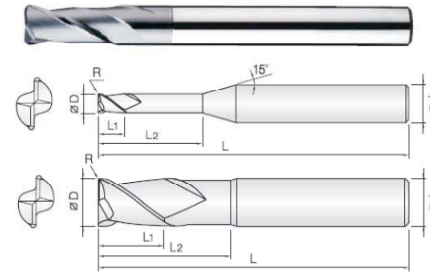
Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials. Super DLC coating provides excellent work surface finish by high hardness and low friction. Reinforced edge design for preventing edge chipping. High precise edge tolerance. Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P147

Size	D Tolerance
D ≤ Φ5	+0~ -0.01mm
D > Φ5	+0~ -0.02mm

Type	Part Number	Dimensions in mm					d
		D	L1	L2	L		
2	650004008H04Z2-DLC	0.4	0.8		45	4	
	650005010H04Z2-DLC	0.5	1		45	4	
	650006012H04Z2-DLC	0.6	1.2		45	4	
	650007014H04Z2-DLC	0.7	1.4		45	4	
	650008016H04Z2-DLC	0.8	1.6		45	4	
	650010025H04Z2-DLC	1	2.5		45	4	
	650010040H04Z2-DLC	1	4		45	4	
	650012040H04Z2-DLC	1.2	4		45	4	
	650015040H04Z2-DLC	1.5	4		45	4	
	650020060H04Z2-DLC	2	6		45	4	
UWC	650020080H04Z2-DLC	2	8		45	4	
	650025080H04Z2-DLC	2.5	8		50	4	
	650030100H06Z2-DLC	3	10		50	6	
	650030120H06Z2-DLC	3	12		50	6	
	650035100H06Z2-DLC	3.5	10		50	6	
	650040120H06Z2-DLC	4	12		60	6	
	650050150H06Z2-DLC	5	15		60	6	
	650060150H06Z2-DLC	6	15		60	6	
	650060240H06Z2-DLC	6	24		60	6	
	650080200H08Z2-DLC	8	20		65	8	
DLC Coating	650100250H10Z2-DLC	10	25		70	10	
	650120300H10Z2-DLC	12	30		80	12	
D ±0~0.01 Φ0.4 - Φ5							
D ±0~0.02 Φ6 - Φ12							
30° Helix Angle							

**2 Flutes DLC Coated Coner Radius End Mills for Non-Ferrous Metal**



Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials. Super DLC coating provides excellent work surface finish by high hardness and low friction. Reinforced edge design for preventing edge chipping. High precise edge tolerance. Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

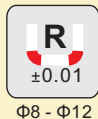
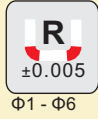
**Cutting Data**  
P147

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm					d
		D X R	L1	L2	L		
2	680010001040Z2-DLC	1 X R0.1	1.5	4	45	4	
	680010001060Z2-DLC	1 X R0.1	1.5	6	45	4	
	680010001080Z2-DLC	1 X R0.1	1.5	8	45	4	
	680010001100Z2-DLC	1 X R0.1	1.5	10	45	4	
	680010002040Z2-DLC	1 X R0.2	1.5	4	45	4	
	680010002060Z2-DLC	1 X R0.2	1.5	6	45	4	
	680010002080Z2-DLC	1 X R0.2	1.5	8	45	4	
	680010002100Z2-DLC	1 X R0.2	1.5	10	45	4	
	680015001060Z2-DLC	1.5 X R0.1	2.3	6	45	4	
	680015001080Z2-DLC	1.5 X R0.1	2.3	8	45	4	
UWC	680015001100Z2-DLC	1.5 X R0.1	2.3	10	45	4	
	680015001120Z2-DLC	1.5 X R0.1	2.3	12	50	4	
	680015002060Z2-DLC	1.5 X R0.2	2.3	6	45	4	
	680015002080Z2-DLC	1.5 X R0.2	2.3	8	45	4	
	680015002100Z2-DLC	1.5 X R0.2	2.3	10	45	4	
	680015002120Z2-DLC	1.5 X R0.2	2.3	12	50	4	
	680020002080Z2-DLC	2 X R0.2	3	8	45	4	
	680020002100Z2-DLC	2 X R0.2	3	10	45	4	
	680020002120Z2-DLC	2 X R0.2	3	12	50	4	
	680020002160Z2-DLC	2 X R0.2	3	16	50	4	
R ±0.005 Φ1 - Φ6	680020005080Z2-DLC	2 X R0.5	3	8	45	4	
	680020005100Z2-DLC	2 X R0.5	3	10	45	4	
	680020005120Z2-DLC	2 X R0.5	3	12	50	4	
	680020005160Z2-DLC	2 X R0.5	3	16	50	4	
	680030002100Z2-DLC	3 X R0.2	4.5	10	50	6	
	680030002120Z2-DLC	3 X R0.2	4.5	12	50	6	
	680030002160Z2-DLC	3 X R0.2	4.5	16	60	6	
	680030002200Z2-DLC	3 X R0.2	4.5	20	60	6	
	680030002250Z2-DLC	3 X R0.2	4.5	25	65	6	
	680030002300Z2-DLC	3 X R0.2	4.5	30	70	6	
R ±0.01 Φ8 - Φ12	680030003100Z2-DLC	3 X R0.3	4.5	10	50	6	
	680030003120Z2-DLC	3 X R0.3	4.5	12	50	6	
	680030003160Z2-DLC	3 X R0.3	4.5	16	60	6	
	680030003200Z2-DLC	3 X R0.3	4.5	20	60	6	
	680030003250Z2-DLC	3 X R0.3	4.5	25	65	6	
	680030003300Z2-DLC	3 X R0.3	4.5	30	70	6	
	680030005100Z2-DLC	3 X R0.5	4.5	10	50	6	
	680030005120Z2-DLC	3 X R0.5	4.5	12	50	6	
	680030005160Z2-DLC	3 X R0.5	4.5	16	60	6	
	680030005200Z2-DLC	3 X R0.5	4.5	20	60	6	
30° Helix Angle	680030005250Z2-DLC	3 X R0.5	4.5	25	65	6	
	680030005300Z2-DLC	3 X R0.5	4.5	30	70	6	
	680040002120Z2-DLC	4 X R0.2	6	12	50	6	
	680040002160Z2-DLC	4 X R0.2	6	16	60	6	
	680040002200Z2-DLC	4 X R0.2	6	20	60	6	
	680040005120Z2-DLC	4 X R0.5	6	12	50	6	
	680040005160Z2-DLC	4 X R0.5	6	16	60	6	
	680040005200Z2-DLC	4 X R0.5	6	20	60	6	



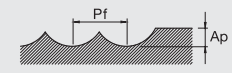
Type	Part Number	Dimensions in mm					d
		D X R	L1	L2	L		
	680040005250Z2-DLC	4 X R0.5	6	25	65	6	
	680040005300Z2-DLC	4 X R0.5	6	30	70	6	
	680040010120Z2-DLC	4 X R1	6	12	50	6	
	680040010160Z2-DLC	4 X R1	6	16	60	6	
	680040010200Z2-DLC	4 X R1	6	20	60	6	
	680040010250Z2-DLC	4 X R1	6	25	65	6	
	680040010300Z2-DLC	4 X R1	6	30	70	6	
	680060003200Z2-DLC	6 X R0.3	9	20	60	6	
	680060005200Z2-DLC	6 X R0.5	9	20	60	6	
	680060010200Z2-DLC	6 X R1	9	20	60	6	
	680080003250Z2-DLC	8 X R0.3	12	25	65	8	
	680080005250Z2-DLC	8 X R0.5	12	25	65	8	
	680080010250Z2-DLC	8 X R1	12	25	65	8	
	680100005300Z2-DLC	10 X R0.5	15	30	70	10	
	680100010300Z2-DLC	10 X R1	15	30	70	10	
	680120005320Z2-DLC	12 X R0.5	18	32	80	12	
	680120010320Z2-DLC	12 X R1	18	32	80	12	



**610**

• RPM : rev./min • Feed : mm/min

Material	Aluminum Alloy Expanding Material A7075				Aluminum Alloys Casting / Die Casting Si1 3%				Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		Copper Alloy C1100	
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling	
Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	32,000	220	45,000	290	32,000	220	45,000	290	32,000	220	45,000	290
R0.3	32,000	480	45,000	660	32,000	480	45,000	660	32,000	480	45,000	660
R0.5	28,800	760	45,000	1,100	28,800	760	45,000	1,100	28,800	760	45,000	1,100
R0.8	28,800	850	45,000	1,400	28,800	850	45,000	1,400	25,200	850	35,900	1,300
R1	28,600	1,400	45,000	2,000	28,600	1,400	43,000	1,900	21,500	1,000	35,900	1,600
R1.5	19,100	1,400	45,000	3,000	19,100	1,400	28,600	1,900	14,300	1,000	23,900	1,600
R2	14,300	1,400	35,900	3,200	14,300	1,400	21,400	1,900	10,700	1,000	17,900	1,600
R3	9,500	1,400	23,900	3,200	9,500	1,400	14,300	1,900	7,200	1,000	12,000	1,600
R4	7,200	1,800	17,600	4,100	7,200	1,800	10,700	2,400	5,400	1,300	8,900	2,000
R5	5,700	1,600	14,000	3,600	5,700	1,600	8,600	2,200	4,300	1,200	7,200	1,800
R6	4,800	1,500	11,700	3,400	4,800	1,500	7,200	2,000	3,600	1,100	5,900	1,700
	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D

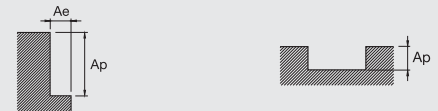


**620 / 621**

■ Apply 20% up values of below condition for 621

• RPM : rev./min • Feed : mm/min

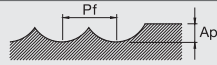
Material	Aluminum Alloy Expanding Material A7075				Aluminum Alloys Casting / Die Casting Si1 3%				Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		Copper Alloy C1100							
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling							
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED						
0.5mm	28,800	160	45,000	500	28,800	160	45,000	450	28,800	140	45,000	410						
0.6mm	28,800	180	45,000	590	28,800	180	45,000	540	28,800	160	45,000	500						
0.8mm	28,800	200	45,000	770	28,800	200	45,000	720	26,100	180	45,000	590						
1mm	28,800	200	45,000	900	28,800	200	45,000	960	20,700	200	37,800	630						
1.2mm	28,800	210	45,000	1,100	28,800	210	45,000	1,000	17,100	200	32,400	630						
1.5mm	28,800	250	45,000	1,400	28,800	250	45,000	1,100	14,000	200	26,600	630						
2mm	28,800	400	45,000	1,800	28,800	380	45,000	1,100	13,000	200	25,200	680						
2.5mm	22,500	540	43,200	1,900	22,500	540	27,900	1,100	8,600	230	18,000	680						
3mm	18,900	630	36,000	1,900	18,900	630	23,400	1,100	7,200	230	15,300	680						
4mm	14,000	650	29,700	2,000	14,000	650	18,000	1,200	5,400	250	12,600	720						
5mm	11,300	680	27,900	2,500	11,300	680	17,280	1,500	4,300	270	11,300	860						
6mm	9,500	750	23,400	2,500	9,500	750	14,310	1,500	3,600	280	9,500	900						
8mm	7,200	800	17,550	2,600	7,200	800	10,800	1,600	2,600	270	7,100	900						
10mm	5,700	900	13,950	2,900	5,700	900	8,640	1,700	2,100	330	5,700	1,000						
12mm	4,800	950	11,700	2,900	4,800	950	7,200	1,700	1,800	350	4,800	1,000						
	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae						
	1.5D	0.1D	0.3D ϕ0.5 ≤ Dc ≤ ϕ0.8 0.5D ϕ1 ≤ Dc	1D	0.1D	0.15D	1.5D	0.1D	0.3D ϕ0.5 ≤ Dc ≤ ϕ0.8 0.5D ϕ1 ≤ Dc	1D	0.1D	0.15D	1.5D	0.1D	0.3D ϕ0.5 ≤ Dc ≤ ϕ0.8 0.5D ϕ1 ≤ Dc	1D	0.05D	0.1D



**630**

• RPM : rev./min • Feed : mm/min

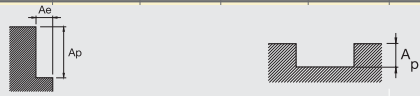
Material	Aluminum Alloy Expanding Material				Aluminum Alloys Casting / Die Casting				Magnesium Alloy / Copper Alloy / CFRP		Copper Alloy	
	A7075				Si1 3%				AZ91 / AZ80A / C1100		C1100	
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling	
Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	28,800	180	40,000	240	28,800	180	36,100	230	28,800	180	31,600	200
R0.3	28,800	350	40,000	490	28,800	350	36,100	480	28,800	350	31,600	420
R0.5	23,400	720	31,500	950	23,400	720	25,200	900	23,400	720	20,700	800
R0.8	23,400	760	35,900	1,120	23,400	760	25,200	1,000	22,500	720	20,700	800
R1	22,500	950	31,500	1,260	22,500	950	25,200	1,100	17,100	720	20,700	800
R1.5	15,300	950	20,700	1,260	15,300	950	16,700	1,100	11,300	720	13,500	800
R2	11,300	950	15,800	1,260	11,300	950	12,600	1,100	8,600	720	10,400	800
R3	9,000	950	13,200	1,260	9,000	950	12,600	1,100	5,900	720	8,900	800
R4	6,400	1,150	11,600	1,260	6,400	1,150	9,800	1,000	4,800	880	6,400	950
R5	5,200	1,050	9,400	1,120	5,200	1,050	7,800	860	3,900	760	5,300	880
R6	4,100	1,000	6,700	950	4,100	1,000	5,400	520	3,000	740	4,600	840
	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D



**650**

• RPM : rev./min • Feed : mm/min

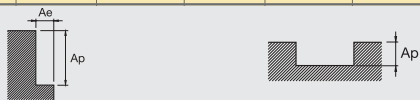
Material	Aluminum Alloy Expanding Material				Aluminum Alloys Casting / Die Casting				Magnesium Alloy / Copper Alloy / CFRP		Copper Alloy	
	A7075				Si1 3%				AZ91 / AZ80A / C1100		C1100	
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.1mm	32,000	35	45,000	120	32,000	35	45,000	120	32,000	35	45,000	100
0.3mm	32,000	60	45,000	300	32,000	60	45,000	300	32,000	60	45,000	210
0.5mm	28,800	90	45,000	500	28,800	90	45,000	500	28,800	90	45,000	390
0.8mm	28,800	120	45,000	700	28,800	130	45,000	700	23,000	110	45,000	500
1mm	28,800	170	45,000	900	28,800	170	45,000	900	20,700	125	37,800	630
1.5mm	28,800	230	40,500	1,100	28,800	230	40,500	1,100	14,000	130	26,700	630
2mm	23,000	270	30,600	1,100	23,000	270	30,600	1,100	10,400	135	21,600	675
3mm	15,300	460	20,700	1,100	15,300	460	20,700	1,100	7,200	200	15,300	675
4mm	11,300	470	15,300	1,100	11,300	470	15,300	1,100	5,400	210	11,700	675
5mm	9,000	490	12,200	1,100	9,000	490	12,200	1,100	4,300	225	9,000	675
6mm	7,700	540	10,000	1,100	7,700	540	10,000	1,100	3,600	225	7,200	675
8mm	6,000	600	8,200	1,200	6,000	600	8,200	1,200	2,600	300	5,900	720
10mm	4,500	650	6,000	1,400	4,500	650	6,000	1,400	2,100	300	4,300	800
12mm	3,100	690	4,500	1,500	3,100	690	4,500	1,500	1,600	320	3,200	850
	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae
	1.2D	0.1D	0.3D	1D	0.1D	0.15D	1.2D	0.1D	0.3D	1D	0.1D	0.3D



**680**

• RPM : rev./min • Feed : mm/min

Material	Aluminum Alloy Expanding Material				Aluminum Alloys Casting / Die Casting				Magnesium Alloy / Copper Alloy / CFRP		Copper Alloy	
	A7075				Si1 3%				AZ91 / AZ80A / C1100		C1100	
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	37,500	220	50,000	1,170	37,400	220	50,000	1,170	27,000	160	49,000	820
1.5mm	37,500	300	50,000	1,430	37,400	300	50,000	1,430	18,000	170	34,700	820
2mm	30,000	350	40,000	1,430	30,000	350	40,000	1,430	13,500	180	28,000	880
3mm	20,000	600	27,000	1,430	20,000	600	27,000	1,430	9,400	260	20,000	880
4mm	15,000	610	20,000	1,430	14,700	610	20,000	1,430	7,000	270	15,200	880
6mm	10,000	700	13,000	1,430	10,000	700	13,000	1,430	4,700	290	9,400	880
8mm	7,800	780	11,000	1,560	7,800	780	10,700	1,560	3,400	390	7,700	940
10mm	5,900	850	7,800	1,820	5,900	850	7,800	1,820	2,700	390	5,600	1,000
12mm	4,000	900	5,900	1,950	4,000	900	5,900	1,950	2,100	410	4,200	1,100
	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae
	1.2D	0.1D	0.3D	1D	0.1D	0.15D	1.2D	0.1D	0.3D	1D	0.1D	0.3D



600 Series