

AL

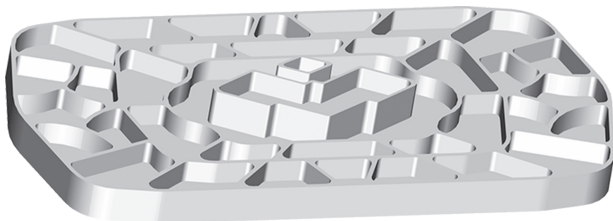
series end mills for Al machining

● Chip pocket with unique shape exerts excellent performances even in slot and cavity machining.

● Sharp cutting edge and large helical angle design effectively prevent built-up edge.

● Anti-vibration design of whole edge can suppress the chattering during machining and improve surface quality.

Tool type: AL-3E-D6.0
Dimensions: Ø6.0mm
Workpiece material: LC4
Rotating speed: 13000r/min (250m/min)
Feed speed: 1950mm/min (0.15mm/r)
Axial cutting depth: $a_p=9.0\text{mm}$
Radial cutting depth: $a_e=1.0\text{mm}$
Cutting style: Complicated cavity machining
Cooling system: air blow
Machine tool: MIKRON UCP 1000



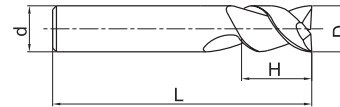
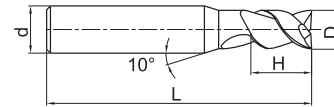
Even the complicated machining of thin-wall cavity parts can be achieved easily.



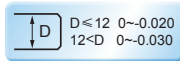
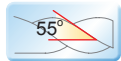
2-flute flattened end mills with straight shank



AL-2E



- Good chip removal performance, high machining efficiency.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	D	d	H	L			
AL-2E-D1.0	1.0	4	3	50	2	Picture 1	●
AL-2E-D1.5	1.5	4	4	50	2	Picture 1	●
AL-2E-D2.0	2.0	4	6	50	2	Picture 1	●
AL-2E-D2.5	2.5	4	7	50	2	Picture 1	●
AL-2E-D3.0	3.0	6	9	50	2	Picture 1	●
AL-2E-D4.0	4.0	6	12	50	2	Picture 1	●
AL-2E-D5.0	5.0	6	15	50	2	Picture 1	●
AL-2E-D6.0	6.0	6	18	60	2	Picture 2	●
AL-2E-D8.0	8.0	8	20	60	2	Picture 2	●
AL-2E-D10.0	10.0	10	30	75	2	Picture 2	●
AL-2E-D12.0	12.0	12	32	75	2	Picture 2	●
AL-2E-D16.0	16.0	16	45	100	2	Picture 2	●
AL-2E-D20.0	20.0	20	45	100	2	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools
Solid carbide end mills
AL series

➤ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
								○			

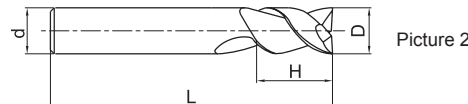
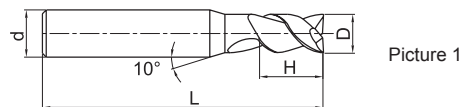


AL/ALG series for machining aluminum

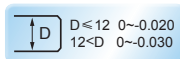
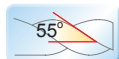
2-flute flattened end mills with straight shank and long cutting edge



AL-2EL



● AL-2E series with long cutting edge.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	D	d	H	L			
AL-2EL-D3.0	3.0	6	12	60	2	Picture 1	●
AL-2EL-D4.0	4.0	6	16	60	2	Picture 1	●
AL-2EL-D5.0	5.0	6	20	60	2	Picture 1	●
AL-2EL-D6.0	6.0	6	25	75	2	Picture 2	●
AL-2EL-D8.0	8.0	8	32	75	2	Picture 2	●
AL-2EL-D10.0	10.0	10	45	100	2	Picture 2	●
AL-2EL-D12.0	12.0	12	45	100	2	Picture 2	●
AL-2EL-D16.0	16.0	16	65	150	2	Picture 2	●
AL-2EL-D20.0	20.0	20	75	150	2	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

AL series

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
								○			

Code key

B258

Graphics category and identification

B259

Cutting parameters

B549

Non-standard customization

B570-B571

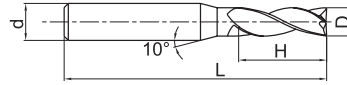
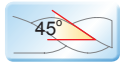
3-flute flattened end mills with straight shank



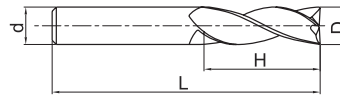
AL-3E



- Outstanding cutting performance with no chattering, achieving high-precision machining.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	D	d	H	L			
AL-3E-D1.0	1.0	4	3	50	3	Picture 1	●
AL-3E-D1.5	1.5	4	4	50	3	Picture 1	●
AL-3E-D2.0	2.0	4	6	50	3	Picture 1	●
AL-3E-D2.5	2.5	4	7	50	3	Picture 1	●
AL-3E-D3.0	3.0	6	9	50	3	Picture 1	●
AL-3E-D4.0	4.0	6	12	50	3	Picture 1	●
AL-3E-D5.0	5.0	6	15	50	3	Picture 1	●
AL-3E-D6.0	6.0	6	18	60	3	Picture 2	●
AL-3E-D8.0	8.0	8	20	60	3	Picture 2	●
AL-3E-D10.0	10.0	10	30	75	3	Picture 2	●
AL-3E-D12.0	12.0	12	32	75	3	Picture 2	●
AL-3E-D16.0	16.0	16	45	100	3	Picture 2	●
AL-3E-D20.0	20.0	20	45	100	3	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools
Solid carbide end mills
AL series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
								○			

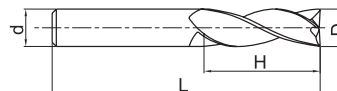
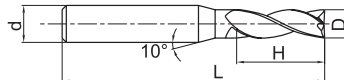


AL/ALG series for machining aluminum

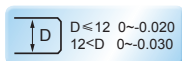
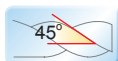
3-flute flattened end mills with straight shank and long cutting edge



AL-3EL



● AL-3E series with long cutting edge.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	D	d	H	L			
AL-3EL-D3.0	3.0	6	12	60	3	Picture 1	●
AL-3EL-D4.0	4.0	6	16	60	3	Picture 1	●
AL-3EL-D5.0	5.0	6	20	60	3	Picture 1	●
AL-3EL-D6.0	6.0	6	25	75	3	Picture 2	●
AL-3EL-D8.0	8.0	8	32	75	3	Picture 2	●
AL-3EL-D10.0	10.0	10	45	100	3	Picture 2	●
AL-3EL-D12.0	12.0	12	45	100	3	Picture 2	●
AL-3EL-D16.0	16.0	16	65	150	3	Picture 2	●
AL-3EL-D20.0	20.0	20	75	150	3	Picture 2	●

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

AL series

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
								○			

Code key

B258

Graphics category and identification

B259

Cutting parameters

B550

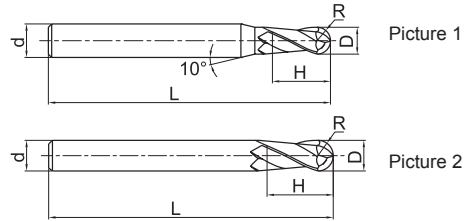
Non-standard customization

B570-B571

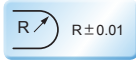
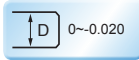
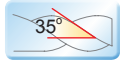
2-flute ball nose end mills with straight shank



AL-2B



● Suitable for profile milling aluminum alloy.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	D	R	d	H	L			
AL-2B-R1.0	2.0	1.0	6	4	60	2	Picture 1	●
AL-2B-R1.5	3.0	1.5	6	6	60	2	Picture 1	●
AL-2B-R2.0	4.0	2.0	6	8	60	2	Picture 1	●
AL-2B-R2.5	5.0	2.5	6	10	60	2	Picture 1	●
AL-2B-R3.0	6.0	3.0	6	12	60	2	Picture 2	●
AL-2B-R4.0	8.0	4.0	8	16	75	2	Picture 2	●
AL-2B-R5.0	10.0	5.0	10	20	75	2	Picture 2	●
AL-2B-R6.0	12.0	6.0	12	24	75	2	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

AL series

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
								○			

Code key B258

Graphics category and identification B259

Cutting parameters B551

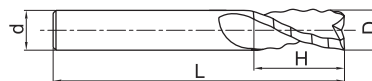
Non-standard customization B570-B571

AL/ALG series for machining aluminum

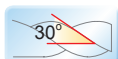
3-flute flattened end mills with straight shank and corrugated edges



AL-3W



● For rough machining of Al alloy.



D ≤ 6	0 ~ -0.048	6 < D ≤ 10	0 ~ -0.058
10 < D ≤ 18	0 ~ -0.07	18 < D	0 ~ -0.084



Type	Basic dimension(mm)				Number of teeth Z	Stock
	D	d	H	L		
AL-3W-D6.0	6.0	6	16	50	3	●
AL-3W-D8.0	8.0	8	20	60	3	●
AL-3W-D10.0	10.0	10	25	75	3	●
AL-3W-D12.0	12.0	12	30	75	3	●
AL-3W-D16.0	16.0	16	45	100	3	●
AL-3W-D20.0	20.0	20	45	100	3	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

AL series



Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
									●		

Code key

B258

Graphics category and identification

B259

Cutting parameters

B552

Non-standard customization

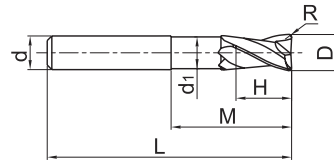
B570-B571

2-flute R end mills with straight shank

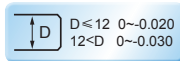
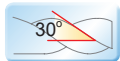


super high speed

AL-2R-AIR



Very suitable for super high speed milling of Al workpiece.



Type	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	d	d ₁	H	M	L		
AL-2R-D6.0R1.0- AIR	6.0	1.0	6	5.5	7	20	57	2	○
AL-2R-D8.0R1.0- AIR	8.0	1.0	8	7.4	9	26	63	2	○
AL-2R-D10.0R1.0- AIR	10.0	1.0	10	9.2	11	31	72	2	○
AL-2R-D10.0R2.0- AIR	10.0	2.0	10	9.2	11	31	72	2	○
AL-2R-D12.0R1.0- AIR	12.0	1.0	12	11.0	12	37	83	2	○
AL-2R-D12.0R2.0- AIR	12.0	2.0	12	11.0	12	37	83	2	○
AL-2R-D12.0R3.0- AIR	12.0	3.0	12	11.0	12	37	83	2	○
AL-2R-D16.0R1.0- AIR	16.0	1.0	16	15.0	16	43	92	2	○
AL-2R-D16.0R2.0- AIR	16.0	2.0	16	15.0	16	43	92	2	○
AL-2R-D16.0R3.0- AIR	16.0	3.0	16	15.0	16	43	92	2	○
AL-2R-D16.0R4.0- AIR	16.0	4.0	16	15.0	16	43	92	2	○
AL-2R-D20.0R1.0- AIR	20.0	1.0	20	19.0	20	53	104	2	○
AL-2R-D20.0R2.0- AIR	20.0	2.0	20	19.0	20	53	104	2	○
AL-2R-D20.0R3.0- AIR	20.0	3.0	20	19.0	20	53	104	2	○
AL-2R-D20.0R4.0- AIR	20.0	4.0	20	19.0	20	53	104	2	○
AL-2R-D20.0R5.0- AIR	20.0	5.0	20	19.0	20	53	104	2	○
AL-2R-D20.0R6.0- AIR	20.0	6.0	20	19.0	20	53	104	2	○

● Stock available ○ Make-to-order

Indexable milling tools
Solid carbide end mills
AL series

Applicable workpiece material table ● Very suitable ○ Suitable

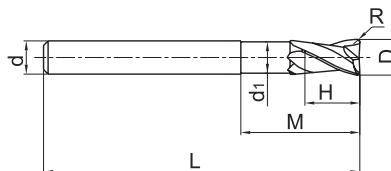
Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
									●		



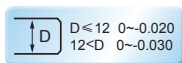
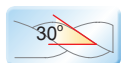
2-flute R end mills with straight and long shank



super high speed AL-2RL-AIR



- Very suitable for super high speed milling of Al workpiece.



Type	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	d	d ₁	H	M	L		
AL-2RL-D6.0R1.0- AIR	6.0	1.0	6	5.5	7	43	80	2	○
AL-2RL-D8.0R1.0- AIR	8.0	1.0	8	7.4	9	53	90	2	○
AL-2RL-D10.0R1.0- AIR	10.0	1.0	10	9.2	11	59	100	2	○
AL-2RL-D10.0R2.0- AIR	10.0	2.0	10	9.2	11	59	100	2	○
AL-2RL-D12.0R1.0- AIR	12.0	1.0	12	11.0	12	74	120	2	○
AL-2RL-D12.0R2.0- AIR	12.0	2.0	12	11.0	12	74	120	2	○
AL-2RL-D12.0R3.0- AIR	12.0	3.0	12	11.0	12	74	120	2	○
AL-2RL-D16.0R1.0- AIR	16.0	1.0	16	15.0	16	84	140	2	○
AL-2RL-D16.0R2.0- AIR	16.0	2.0	16	15.0	16	84	140	2	○
AL-2RL-D16.0R3.0- AIR	16.0	3.0	16	15.0	16	84	140	2	○
AL-2RL-D16.0R4.0- AIR	16.0	4.0	16	15.0	16	84	140	2	○
AL-2RL-D20.0R1.0- AIR	20.0	1.0	20	19.0	20	89	140	2	○
AL-2RL-D20.0R2.0- AIR	20.0	2.0	20	19.0	20	89	140	2	○
AL-2RL-D20.0R3.0- AIR	20.0	3.0	20	19.0	20	89	140	2	○
AL-2RL-D20.0R4.0- AIR	20.0	4.0	20	19.0	20	89	140	2	○
AL-2RL-D20.0R5.0- AIR	20.0	5.0	20	19.0	20	89	140	2	○
AL-2RL-D20.0R6.0- AIR	20.0	6.0	20	19.0	20	89	140	2	○

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

AL series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
									○		

Code key

B258

Graphics category and identification

B259

Cutting parameters

B553

Non-standard customization

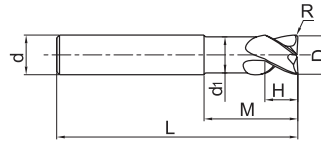
B570-B571

3-flute R end mills with straight shank

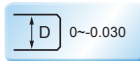
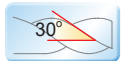


super high speed

AL-3R-AIR



● Very suitable for super high speed milling of Al workpiece.



Type	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	d	d ₁	H	M	L		
AL-3R-D12.0R1.0- AIR	12.0	1.0	12	11.0	12	37	83	3	○
AL-3R-D12.0R2.0- AIR	12.0	2.0	12	11.0	12	37	83	3	○
AL-3R-D12.0R3.0- AIR	12.0	3.0	12	11.0	12	37	83	3	○
AL-3R-D16.0R1.0- AIR	16.0	1.0	16	15.0	16	43	92	3	○
AL-3R-D16.0R2.0- AIR	16.0	2.0	16	15.0	16	43	92	3	○
AL-3R-D16.0R3.0- AIR	16.0	3.0	16	15.0	16	43	92	3	○
AL-3R-D16.0R4.0- AIR	16.0	4.0	16	15.0	16	43	92	3	○
AL-3R-D20.0R1.0- AIR	20.0	1.0	20	19.0	20	53	104	3	○
AL-3R-D20.0R2.0- AIR	20.0	2.0	20	19.0	20	53	104	3	○
AL-3R-D20.0R3.0- AIR	20.0	3.0	20	19.0	20	53	104	3	○
AL-3R-D20.0R4.0- AIR	20.0	4.0	20	19.0	20	53	104	3	○
AL-3R-D20.0R5.0- AIR	20.0	5.0	20	19.0	20	53	104	3	○
AL-3R-D20.0R6.0- AIR	20.0	6.0	20	19.0	20	53	104	3	○

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

AL series

Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
									●		

Code key
B258

Graphics category and identification
B259

Cutting parameters
B554

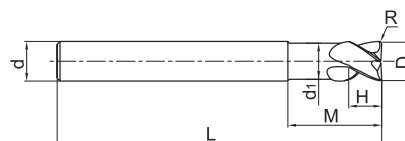
Non-standard customization
B570-B571

AL/ALG series for machining aluminum

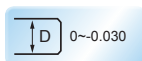
3-flute R end mills with straight and long shank



super high speed AL-3RL-AIR



● Very suitable for super high speed milling of Al workpiece.



Type	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	d	d ₁	H	M	L		
AL-3RL-D12.0R1.0- AIR	12.0	1.0	12	11.0	12	74	120	3	○
AL-3RL-D12.0R2.0- AIR	12.0	2.0	12	11.0	12	74	120	3	○
AL-3RL-D12.0R3.0- AIR	12.0	3.0	12	11.0	12	74	120	3	○
AL-3RL-D16.0R1.0- AIR	16.0	1.0	16	15.0	16	84	140	3	○
AL-3RL-D16.0R2.0- AIR	16.0	2.0	16	15.0	16	84	140	3	○
AL-3RL-D16.0R3.0- AIR	16.0	3.0	16	15.0	16	84	140	3	○
AL-3RL-D16.0R4.0- AIR	16.0	4.0	16	15.0	16	84	140	3	○
AL-3RL-D20.0R1.0- AIR	20.0	1.0	20	19.0	20	89	140	3	○
AL-3RL-D20.0R2.0- AIR	20.0	2.0	20	19.0	20	89	140	3	○
AL-3RL-D20.0R3.0- AIR	20.0	3.0	20	19.0	20	89	140	3	○
AL-3RL-D20.0R4.0- AIR	20.0	4.0	20	19.0	20	89	140	3	○
AL-3RL-D20.0R5.0- AIR	20.0	5.0	20	19.0	20	89	140	3	○
AL-3RL-D20.0R6.0- AIR	20.0	6.0	20	19.0	20	89	140	3	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

AL series

Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
									●		

Code key

B258

Graphics category and identification

B259

Cutting parameters

B554

Non-standard customization

B570-B571