



Size  $\phi 1 \sim \phi 12$

# DLC-AZS

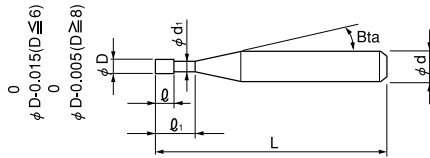


Material Applications (☆ Highly Recommended ● Recommended ○ Suggested)

Work Material															
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels			Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
			~55HRC	~60HRC	~70HRC										
							☆		○	○					

**Features**

- Capable of vertical milling directly into a plane surface.
- Achieves shorter processing time by removing pre-drilling or ramping cycle.
- 45° helix angle offers better chip evacuation.
- DLC COAT offers excellent resistance to wear and clogging.
- A flute shape that is specifically designed for reducing burrs on Aluminum Alloys.
- The Flatland design helps control chipping and chattering.
- Diameter Tolerance : 0/-0.015 ( $D \leq 6$ ) 0/-0.005 ( $D \geq 8$ )



The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.

Total 13 models

Unit (mm)

Model Number	Outside Diameter $\phi D$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Price (¥)
DLC-AZS 3010-030	1	3	2	0.95	16°	60	4	6,200
DLC-AZS 3015-045	1.5	4.5	3	1.43	16°	60	4	6,200
DLC-AZS 3020-060	2	6	4	1.93	16°	60	4	6,200
DLC-AZS 3025-075	2.5	7.5	5	2.4	16°	60	4	7,400
DLC-AZS 3030-090	3	9	6	2.9	16°	70	6	7,400
DLC-AZS 3035-105	3.5	10.5	7	3.4	16°	70	6	7,700
DLC-AZS 3040-120	4	12	8	3.9	16°	70	6	7,700
DLC-AZS 3045-135	4.5	13.5	9	4.4	16°	70	6	8,300
DLC-AZS 3050-150	5	15	10	4.9	16°	70	6	8,300
DLC-AZS 3060-180	6	18	12	5.8	—	70	6	8,700
DLC-AZS 3080-240	8	24	16	7.82	—	80	8	11,600
DLC-AZS 3100-300	10	30	20	9.82	—	90	10	14,600
DLC-AZS 3120-360	12	36	24	11.82	—	110	12	20,500

Milling Condition for AZS/DLC-AZS

◆ High efficient milling

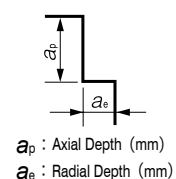
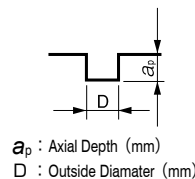
\* 5D effective length is only available on AZS series.

WORK MATERIAL			A5052				A7075			
Model Number	Outside Diameter (mm)	Length of Cut (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)			Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)		
				Vertical	Slotting	Side Milling		Vertical	Slotting	Side Milling
3010-030	1	3	30,000	150	900	1,100	30,000	150	540	860
3010-050		5	22,500	100	600	800	22,500	100	400	600
3015-045	1.5	4.5	30,000	180	1,350	1,630	30,000	180	820	1,230
3020-060		6	30,000	225	1,800	2,150	30,000	225	1,100	1,600
3020-100	2	10	22,500	150	1,300	1,500	22,500	150	800	1,100
3025-075		7.5	25,000	225	1,900	2,300	23,400	220	1,070	1,550
3030-090	3	9	21,600	225	2,000	2,400	20,200	225	1,100	1,600
3030-150		15	16,200	150	1,400	1,700	15,200	150	800	1,100
3035-105	3.5	10.5	18,500	270	2,000	2,400	17,300	270	1,100	1,600
3040-120		12	16,200	300	2,000	2,400	15,200	300	1,100	1,600
3040-200	4	20	12,200	200	1,400	1,700	11,400	200	800	1,100
3045-135		13.5	14,400	300	2,000	2,400	13,500	300	1,100	1,600
3050-150	5	15	12,960	300	2,000	2,400	12,200	300	1,100	1,600
3050-250		25	9,700	200	1,400	1,700	9,200	200	800	1,100
3060-180	6	18	10,800	300	2,000	2,400	10,100	300	1,100	1,600
3060-300		30	8,100	200	1,400	1,700	7,600	200	800	1,100
3080-240	8	24	11,400	300	2,200	2,600	12,000	250	1,800	2,400
3080-400		40	8,600	200	1,500	1,800	9,000	160	1,300	1,700
3100-300	10	30	9,100	250	2,200	2,600	9,600	250	1,800	2,400
3100-500		50	6,800	160	1,500	1,800	7,200	160	1,300	1,700
3120-360	12	36	7,600	200	2,200	2,600	8,000	250	1,800	2,400
3120-600		60	5,700	130	1,500	1,800	6,000	160	1,300	1,700
Milling Amount (mm)				$a_p=0.75D$	$a_p=0.75D$	$a_p=0.75D$ $a_e=0.3D$		$a_p=0.75D$	$a_p=0.75D$	$a_p=0.75D$ $a_e=0.3D$

◆ Low efficient milling (Assumed maximum spindle speed: 10,000 min<sup>-1</sup> or less)

WORK MATERIAL			A5052				A7075			
Model Number	Outside Diameter (mm)	Length of Cut (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)			Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)		
				Vertical	Slotting	Side Milling		Vertical	Slotting	Side Milling
3010-030	1	3	10,000	50	400	900	10,000	50	400	750
3015-045	1.5	4.5	10,000	80	600	1,250	10,000	80	600	1,130
3020-060	2	6	10,000	100	800	1,600	10,000	100	800	1,500
3025-075	2.5	7.5	10,000	130	1,000	2,050	10,000	130	1,000	1,880
3030-090	3	9	10,000	150	1,200	2,500	10,000	150	1,200	2,250
3035-105	3.5	10.5	10,000	180	1,400	2,600	10,000	180	1,400	2,380
3040-120	4	12	10,000	200	1,600	2,700	10,000	200	1,600	2,500
3045-135	4.5	13.5	10,000	230	1,800	3,050	10,000	230	1,800	2,750
3050-150	5	15	10,000	250	2,000	3,400	9,600	250	2,000	3,000
3060-180	6	18	10,000	300	2,400	4,000	8,000	250	2,000	3,000
3080-240	8	24	8,100	300	3,000	4,800	10,000	200	2,400	4,100
3100-300	10	30	6,480	250	3,000	4,800	8,100	200	2,400	4,200
3120-360	12	36	5,400	200	3,000	4,800	6,800	200	2,400	4,200
Milling Amount (mm)				$a_p=0.3D$	$a_p=0.3D$	$a_p=1.0D$ $a_e=0.15D$		$a_p=0.3D$	$a_p=0.3D$	$a_p=1.0D$ $a_e=0.15D$

- Note:
- Recommend using a non-contact measuring device to avoid damaging the sharp bottom corner.
  - Decrease both spindle speed and feed rate proportionally in case of chattering.
  - These milling parameters are calculated based on the shortest overhang length. Longer overhangs may require an adjustment to the milling parameters.
  - Reduce the milling amount and feed rate in accordance with required milling precision.
  - Spindle rigidity should be considered when setting milling parameters, especially for Z-Axis drilling.
  - When slotting, using Z-Axis drilling, the milling parameters should promote good chip evacuation.
  - Reduce the milling amount when chips clog on the tool during Z-Axis drilling.
  - Set axial depth ( $a_p$ ) to 1/3 ( $a_p=0.25D$ ) in the area closest to a vertical wall with more than 2D work depth.
  - These are milling parameters under the work material is firmly fixed. Decrease spindle speed and feed rate according to the condition.
  - Recommend water soluble coolant.



3-6 Flutes

Square

Long Neck Square

Radius

Long Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data