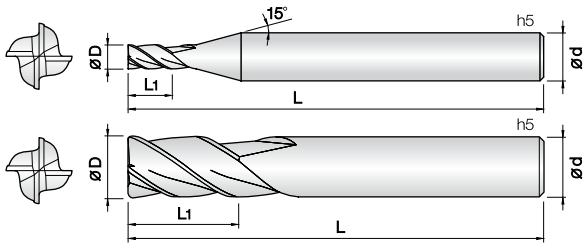


# 4LEM 4Flutes Long Length End Mills



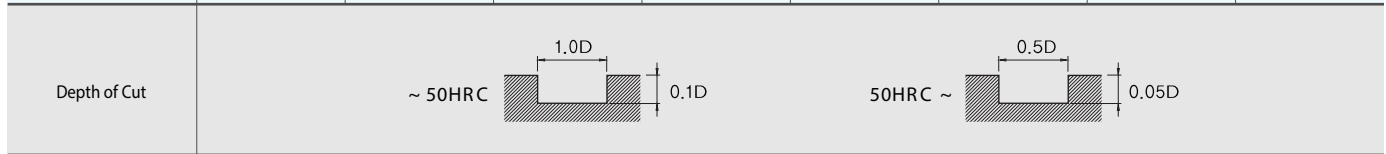
- Endmill for various work materials, hardened steel (HRC~55), pre-hardened steel, tool steel and cast iron
- Good wear resistance by Si-based PVD coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.

			ø0.5 ~ 5	ø6 ~ 12	ø14 ~ 25		Shield Edge

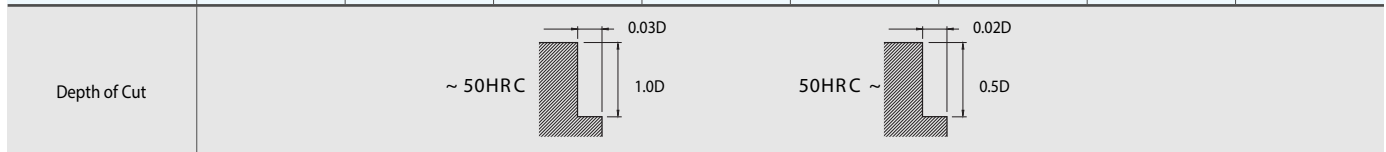
D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01 mm
ø6 ~ 12	-0.01 ~ -0.025 mm
ø14 ~ 25	-0.015 ~ -0.03 mm

mm

Slotting								
Material	Alloy Steel/ Tool Steel		Prehardened Steel / Hardened Steel		Hardened Steels		Hardened Steels	
Hardness	30 ~ 40HRC		40 ~ 50HRC		50 ~ 55HRC		55 ~ 62HRC	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
∅ 1	13,000	60	9,000	35	5,700	15	6,500	20
∅ 1.5	10,000	60	6,000	45	4,500	15	4,500	35
∅ 2	6,400	60	4,800	45	3,000	15	3,500	30
∅ 3	4,200	60	3,400	55	2,100	20	2,600	40
∅ 4	3,400	60	2,700	30	1,700	20	1,600	20
∅ 5	2,900	60	2,300	40	1,500	20	1,350	25
∅ 6	2,500	60	2,000	50	1,300	25	1,100	30
∅ 8	1,900	60	1,500	50	1,000	25	900	35
∅ 10	1,600	60	1,300	50	800	25	710	30
∅ 12	1,300	60	1,100	45	670	20	600	25
∅ 16	1,000	40	820	30	500	15	450	20
∅ 20	800	30	650	25	400	13	360	15
∅ 25	650	25	520	20	320	10	280	12



Side Cutting								
Material	Alloy Steel/ Tool Steel		Prehardened Steel / Hardened Steel		Hardened Steels		Hardened Steels	
Hardness	30 ~ 40HRC		40 ~ 50HRC		50 ~ 55HRC		55 ~ 62HRC	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
∅ 1	13,000	60	9,000	35	6,500	20	6,500	20
∅ 1.5	10,000	60	6,000	45	5,000	35	4,500	25
∅ 2	6,400	60	4,800	45	3,500	30	3,500	25
∅ 3	4,200	65	3,400	55	2,600	40	2,600	30
∅ 4	3,400	80	2,700	65	2,100	50	1,600	35
∅ 5	2,900	100	2,300	80	1,800	60	1,350	40
∅ 6	2,500	120	2,000	100	1,500	75	1,100	50
∅ 8	1,900	130	1,500	100	1,200	85	900	50
∅ 10	1,600	130	1,300	100	950	75	710	50
∅ 12	1,300	120	1,100	90	800	60	600	40
∅ 16	1,000	80	820	65	600	45	450	30
∅ 20	800	65	650	50	480	40	360	25
∅ 25	650	50	520	40	380	30	280	20



The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method. The parameters on the table is based on 2 flutes. For using 4 flutes, use the same RPM and raise up the feed up to 50% in stable milling condition.

- When milling workpiece, HRC over 60 hardened steel, reduce 20% of the RPM and feed compared to the same diameter.
- When milling workpiece, HRC over 60 hardened steel, reduce 20% of the RPM and feed compared to the same diameter.

Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC. Use a machine with low vibration and good rigidity (∅1 or less, the vibration tolerance management should be within 5 μm). Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.