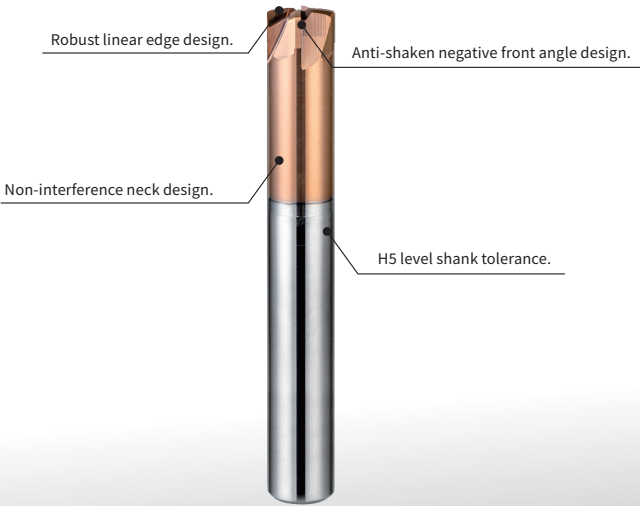


HSHFR SERIES

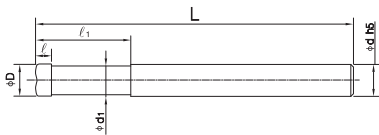
High Efficiency Roughing Endmills.

- Robust linear cutting edge.
- TiSiN multilayer coatings with Chrome concentration > 13%.
- Wide range of shank diameters for different machining purposes.
- Specially designed for hardened materials (1.2379, 1.2083, 1.2343).

≤ 65HRC



HSHFR 4-Flute High Feed End Mill



ϕD	D Tol. (mm)
6 ≤ D ≤ 12	0 ~ -0.02

Unit : mm

Type No.	Dia.	CAM-R	Length of Cut	Under Neck Length	Neck Dia.	Overall Length	Shank Dia.
	ϕD	R	ℓ	ℓ_1	ϕd_1	L	ϕd
HSHFR4060R0.55 0660	6	R0.55	3	18	5.8	60	6
HSHFR4080R0.75 0875	8	R0.75	4	24	7.8	75	8
HSHFR4100R0.95 1075	10	R0.95	5	30	9.6	75	10
HSHFR4120R1.15 1275	12	R1.15	6	36	11.6	75	12

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS	~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	DUCTILE CAST IRON ~350HB						
		○	○	○	○	○							



Cutting Parameter

HSHFR 4-Flute High Feed End Mill Z-Level Milling Roughing

Workpiece Type No.	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm
HSHFR4060R0.55 0660	6000	4000	0.2	3	6000	4000	0.2	2.5	4200	2500	0.1	2
HSHFR4080R0.75 0875	4500	5000	0.3	4	4500	5000	0.3	3	4000	3000	0.1	2.5
HSHFR4100R0.95 1075	4000	4500	0.35	5	4000	4500	0.35	4	3600	3000	0.1	3
HSHFR4120R1.0 1275	4000	4000	0.42	6	4000	4000	0.42	5	3200	3000	0.1	4