



HGXB2L 2-Flute Long Neck Ball End Mill



Ø D	D Tol. [mm]	Ø D	R Tol. [mm]
D<3	0~-0.010	D<1	±0.003
3<D<6	0~-0.012	1<D<6	±0.005

Unit : mm

Type No.	Dia.	Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2001L0.2 0450	0.1	R0.05	0.07	0.2	0.085	12	50	4
HGXB2001L0.3 0450	0.1	R0.05	0.07	0.3	0.085	12	50	4
HGXB2001L0.5 0450	0.1	R0.05	0.07	0.5	0.085	12	50	4
HGXB2001L0.75 0450	0.1	R0.05	0.07	0.75	0.085	12	50	4
HGXB2001L1 0450	0.1	R0.05	0.07	1	0.085	12	50	4
HGXB20015L0.3 0450	0.15	R0.075	0.1	0.3	0.13	12	50	4
HGXB20015L0.5 0450	0.15	R0.075	0.1	0.5	0.13	12	50	4
HGXB20015L0.75 0450	0.15	R0.075	0.1	0.75	0.13	12	50	4
HGXB20015L1 0450	0.15	R0.075	0.1	1	0.13	12	50	4
HGXB20015L1.5 0450	0.15	R0.075	0.1	1.5	0.13	12	50	4
HGXB2002L0.3 0450	0.2	R0.1	0.15	0.3	0.18	12	50	4
HGXB2002L0.5 0450	0.2	R0.1	0.15	0.5	0.18	12	50	4
HGXB2002L0.75 0450	0.2	R0.1	0.15	0.75	0.18	12	50	4
HGXB2002L1 0450	0.2	R0.1	0.15	1	0.18	12	50	4
HGXB2002L1.25 0450	0.2	R0.1	0.15	1.25	0.18	12	50	4
HGXB2002L1.5 0450	0.2	R0.1	0.15	1.5	0.18	12	50	4
HGXB2002L1.75 0450	0.2	R0.1	0.15	1.75	0.18	12	50	4
HGXB2002L2 0450	0.2	R0.1	0.15	2	0.18	12	50	4
HGXB2003L0.5 0450	0.3	R0.15	0.2	0.5	0.28	12	50	4
HGXB2003L0.6 0450	0.3	R0.15	0.2	0.6	0.28	12	50	4
HGXB2003L0.75 0450	0.3	R0.15	0.2	0.75	0.28	12	50	4
HGXB2003L1 0450	0.3	R0.15	0.2	1	0.28	12	50	4
HGXB2003L1.25 0450	0.3	R0.15	0.2	1.25	0.28	12	50	4
HGXB2003L1.5 0450	0.3	R0.15	0.2	1.5	0.28	12	50	4
HGXB2003L1.75 0450	0.3	R0.15	0.2	1.75	0.28	12	50	4
HGXB2003L2 0450	0.3	R0.15	0.2	2	0.28	12	50	4

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	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2003L2.25 0450	0.3	R0.15	0.2	2.25	0.28	12	50	4
HGXB2003L2.5 0450	0.3	R0.15	0.2	2.5	0.28	12	50	4
HGXB2003L3 0450	0.3	R0.15	0.2	3	0.28	12	50	4
HGXB2004L0.5 0450	0.4	R0.2	0.3	0.5	0.37	12	50	4
HGXB2004L0.8 0450	0.4	R0.2	0.3	0.8	0.37	12	50	4
HGXB2004L1 0450	0.4	R0.2	0.3	1	0.37	12	50	4
HGXB2004L1.5 0450	0.4	R0.2	0.3	1.5	0.37	12	50	4
HGXB2004L2 0450	0.4	R0.2	0.3	2	0.37	12	50	4
HGXB2004L2.5 0450	0.4	R0.2	0.3	2.5	0.37	12	50	4
HGXB2004L3 0450	0.4	R0.2	0.3	3	0.37	12	50	4
HGXB2004L3.5 0450	0.4	R0.2	0.3	3.5	0.37	12	50	4
HGXB2004L4 0450	0.4	R0.2	0.3	4	0.37	12	50	4
HGXB2004L4.5 0450	0.4	R0.2	0.3	4.5	0.37	12	50	4
HGXB2005L1 0450	0.5	R0.25	0.35	1	0.46	12	50	4
HGXB2005L1.5 0450	0.5	R0.25	0.35	1.5	0.46	12	50	4
HGXB2005L2 0450	0.5	R0.25	0.35	2	0.46	12	50	4
HGXB2005L2.5 0450	0.5	R0.25	0.35	2.5	0.46	12	50	4
HGXB2005L3 0450	0.5	R0.25	0.35	3	0.46	12	50	4
HGXB2005L3.5 0450	0.5	R0.25	0.35	3.5	0.46	12	50	4
HGXB2005L4 0450	0.5	R0.25	0.35	4	0.46	12	50	4
HGXB2005L4.5 0450	0.5	R0.25	0.35	4.5	0.46	12	50	4
HGXB2005L5 0450	0.5	R0.25	0.35	5	0.46	12	50	4
HGXB2005L5.5 0450	0.5	R0.25	0.35	5.5	0.46	12	50	4
HGXB2005L6 0450	0.5	R0.25	0.35	6	0.46	12	50	4
HGXB2006L1 0450	0.6	R0.3	0.45	1	0.56	12	50	4
HGXB2006L1.5 0450	0.6	R0.3	0.45	1.5	0.56	12	50	4
HGXB2006L2 0450	0.6	R0.3	0.45	2	0.56	12	50	4
HGXB2006L3 0450	0.6	R0.3	0.45	3	0.56	12	50	4
HGXB2006L4 0450	0.6	R0.3	0.45	4	0.56	12	50	4
HGXB2006L5 0450	0.6	R0.3	0.45	5	0.56	12	50	4
HGXB2006L6 0450	0.6	R0.3	0.45	6	0.56	12	50	4
HGXB2006L7 0450	0.6	R0.3	0.45	7	0.56	12	50	4
HGXB2006L8 0450	0.6	R0.3	0.45	8	0.56	12	50	4
HGXB2007L2 0450	0.7	R0.35	0.5	2	0.66	12	50	4





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Ball End Mill

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Type No.	Dia.	Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2007L3 0450	0.7	R0.35	0.5	3	0.66	12	50	4
HGXB2007L4 0450	0.7	R0.35	0.5	4	0.66	12	50	4
HGXB2007L6 0450	0.7	R0.35	0.5	6	0.66	12	50	4
HGXB2007L8 0450	0.7	R0.35	0.5	8	0.66	12	50	4
HGXB2008L2 0450	0.8	R0.4	0.6	2	0.76	12	50	4
HGXB2008L2.5 0450	0.8	R0.4	0.6	2.5	0.76	12	50	4
HGXB2008L3 0450	0.8	R0.4	0.6	3	0.76	12	50	4
HGXB2008L4 0450	0.8	R0.4	0.6	4	0.76	12	50	4
HGXB2008L5 0450	0.8	R0.4	0.6	5	0.76	12	50	4
HGXB2008L6 0450	0.8	R0.4	0.6	6	0.76	12	50	4
HGXB2008L7 0450	0.8	R0.4	0.6	7	0.76	12	50	4
HGXB2008L8 0450	0.8	R0.4	0.6	8	0.76	12	50	4
HGXB2008L10 0450	0.8	R0.4	0.6	10	0.76	12	50	4
HGXB2008L12 0450	0.8	R0.4	0.6	12	0.76	12	50	4
HGXB2008L16 0450	0.8	R0.4	0.6	16	0.76	12	50	4
HGXB2009L2 0450	0.9	R0.45	0.65	2	0.86	12	50	4
HGXB2009L4 0450	0.9	R0.45	0.65	4	0.86	12	50	4
HGXB2009L6 0450	0.9	R0.45	0.65	6	0.86	12	50	4
HGXB2009L8 0450	0.9	R0.45	0.65	8	0.86	12	50	4
HGXB2010L2.5 0450	1	R0.5	0.75	2.5	0.95	12	50	4
HGXB2010L3 0450	1	R0.5	0.75	3	0.95	12	50	4
HGXB2010L4 0450	1	R0.5	0.75	4	0.95	12	50	4
HGXB2010L4 0660	1	R0.5	0.75	4	0.95	12	60	6
HGXB2010L5 0450	1	R0.5	0.75	5	0.95	12	50	4
HGXB2010L6 0450	1	R0.5	0.75	6	0.95	12	50	4
HGXB2010L6 0660	1	R0.5	0.75	6	0.95	12	60	6
HGXB2010L7 0450	1	R0.5	0.75	7	0.95	12	50	4
HGXB2010L8 0450	1	R0.5	0.75	8	0.95	12	50	4
HGXB2010L8 0660	1	R0.5	0.75	8	0.95	12	60	6
HGXB2010L9 0450	1	R0.5	0.75	9	0.95	12	50	4

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	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2010L10 0450	1	R0.5	0.75	10	0.95	12	50	4
HGXB2010L10 0660	1	R0.5	0.75	10	0.95	12	60	6
HGXB2010L12 0450	1	R0.5	0.75	12	0.95	12	50	4
HGXB2010L13 0450	1	R0.5	0.75	13	0.95	12	50	4
HGXB2010L14 0450	1	R0.5	0.75	14	0.95	12	50	4
HGXB2010L16 0450	1	R0.5	0.75	16	0.95	12	50	4
HGXB2010L18 0460	1	R0.5	0.75	18	0.95	12	60	4
HGXB2010L20 0460	1	R0.5	0.75	20	0.95	12	60	4
HGXB2010L22 0460	1	R0.5	0.75	22	0.95	12	60	4
HGXB2012L4 0450	1.2	R0.6	1	4	1.14	11	50	4
HGXB2012L6 0450	1.2	R0.6	1	6	1.14	11	50	4
HGXB2012L8 0450	1.2	R0.6	1	8	1.14	11	50	4
HGXB2012L10 0450	1.2	R0.6	1	10	1.14	11	50	4
HGXB2012L12 0450	1.2	R0.6	1	12	1.14	11	50	4
HGXB2012L14 0450	1.2	R0.6	1	14	1.14	11	50	4
HGXB2014L8 0450	1.4	R0.7	1.1	8	1.34	11	50	4
HGXB2014L12 0450	1.4	R0.7	1.1	12	1.34	11	50	4
HGXB2014L16 0450	1.4	R0.7	1.1	16	1.34	11	50	4
HGXB2015L4 0450	1.5	R0.75	1.2	4	1.42	11	50	4
HGXB2015L6 0450	1.5	R0.75	1.2	6	1.42	11	50	4
HGXB2015L6 0660	1.5	R0.75	1.2	6	1.42	11	60	6
HGXB2015L8 0450	1.5	R0.75	1.2	8	1.42	11	50	4
HGXB2015L8 0660	1.5	R0.75	1.2	8	1.42	11	60	6
HGXB2015L10 0450	1.5	R0.75	1.2	10	1.42	11	50	4
HGXB2015L10 0660	1.5	R0.75	1.2	10	1.42	11	60	6
HGXB2015L12 0450	1.5	R0.75	1.2	12	1.42	11	50	4
HGXB2015L12 0660	1.5	R0.75	1.2	12	1.42	11	60	6
HGXB2015L14 0450	1.5	R0.75	1.2	14	1.42	11	50	4
HGXB2015L16 0450	1.5	R0.75	1.2	16	1.42	11	50	4
HGXB2015L18 0460	1.5	R0.75	1.2	18	1.42	11	60	4





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	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2015L20 0460	1.5	R0.75	1.2	20	1.42	11	60	4
HGXB2016L8 0450	1.6	R0.8	1.3	8	1.52	11	50	4
HGXB2016L12 0450	1.6	R0.8	1.3	12	1.52	11	50	4
HGXB2016L16 0450	1.6	R0.8	1.3	16	1.52	11	50	4
HGXB2020L6 0450	2	R1	1.6	6	1.9	11	50	4
HGXB2020L8 0450	2	R1	1.6	8	1.9	11	50	4
HGXB2020L8 0660	2	R1	1.6	8	1.9	11	60	6
HGXB2020L10 0450	2	R1	1.6	10	1.9	11	50	4
HGXB2020L10 0660	2	R1	1.6	10	1.9	11	60	6
HGXB2020L12 0450	2	R1	1.6	12	1.9	11	50	4
HGXB2020L12 0660	2	R1	1.6	12	1.9	11	60	6
HGXB2020L14 0450	2	R1	1.6	14	1.9	11	50	4
HGXB2020L16 0450	2	R1	1.6	16	1.9	11	50	4
HGXB2020L16 0660	2	R1	1.6	16	1.9	11	60	6
HGXB2020L18 0460	2	R1	1.6	18	1.9	11	60	4
HGXB2020L20 0460	2	R1	1.6	20	1.9	11	60	4
HGXB2020L22 0460	2	R1	1.6	22	1.9	11	60	4
HGXB2020L25 0460	2	R1	1.6	25	1.9	11	60	4
HGXB2020L30 0475	2	R1	1.6	30	1.9	11	75	4
HGXB2020L35 0475	2	R1	1.6	35	1.9	11	75	4
HGXB2020L40 0475	2	R1	1.6	40	1.9	11	75	4
HGXB2025L6 0450	2.5	R1.25	2	6	2.4	11	50	4
HGXB2025L8 0450	2.5	R1.25	2	8	2.4	11	50	4
HGXB2025L10 0450	2.5	R1.25	2	10	2.4	11	50	4
HGXB2025L12 0450	2.5	R1.25	2	12	2.4	11	50	4
HGXB2025L16 0450	2.5	R1.25	2	16	2.4	11	50	4
HGXB2025L20 0460	2.5	R1.25	2	20	2.4	11	60	4
HGXB2025L25 0460	2.5	R1.25	2	25	2.4	11	60	4
HGXB2025L30 0475	2.5	R1.25	2	30	2.4	11	75	4
HGXB2025L35 0475	2.5	R1.25	2	35	2.4	11	75	4

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	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2030L8 0450	3	R1.5	2.4	8	2.9	11	50	4
HGXB2030L10 0450	3	R1.5	2.4	10	2.9	11	50	4
HGXB2030L10 0660	3	R1.5	2.4	10	2.9	11	60	6
HGXB2030L12 0450	3	R1.5	2.4	12	2.9	11	50	4
HGXB2030L12 0660	3	R1.5	2.4	12	2.9	11	60	6
HGXB2030L14 0450	3	R1.5	2.4	14	2.9	11	50	4
HGXB2030L14 0660	3	R1.5	2.4	14	2.9	11	60	6
HGXB2030L16 0450	3	R1.5	2.4	16	2.9	11	50	4
HGXB2030L16 0660	3	R1.5	2.4	16	2.9	11	60	6
HGXB2030L20 0660	3	R1.5	2.4	20	2.9	11	60	6
HGXB2030L25 0675	3	R1.5	2.4	25	2.9	11	75	6
HGXB2030L30 0675	3	R1.5	2.4	30	2.9	11	75	6
HGXB2030L35 0675	3	R1.5	2.4	35	2.9	11	75	6
HGXB2030L40 06100	3	R1.5	2.4	40	2.9	11	100	6
HGXB2035L16 0660	3.5	R1.75	2.8	16	3.4	11	60	6
HGXB2035L20 0660	3.5	R1.75	2.8	20	3.4	11	60	6
HGXB2035L25 0675	3.5	R1.75	2.8	25	3.4	11	75	6
HGXB2035L30 0675	3.5	R1.75	2.8	30	3.4	11	75	6
HGXB2035L35 0675	3.5	R1.75	2.8	35	3.4	11	75	6
HGXB2040L12 0660	4	R2	3.2	12	3.9	11	60	6
HGXB2040L14 0660	4	R2	3.2	14	3.9	11	60	6
HGXB2040L16 0660	4	R2	3.2	16	3.9	11	60	6
HGXB2040L20 0660	4	R2	3.2	20	3.9	11	60	6
HGXB2040L20 0675	4	R2	3.2	20	3.9	11	75	6
HGXB2040L25 0675	4	R2	3.2	25	3.9	11	75	6
HGXB2040L30 0675	4	R2	3.2	30	3.9	11	75	6
HGXB2040L35 0675	4	R2	3.2	35	3.9	11	75	6
HGXB2040L40 06100	4	R2	3.2	40	3.9	11	100	6
HGXB2040L45 06100	4	R2	3.2	45	3.9	11	100	6
HGXB2040L50 06100	4	R2	3.2	50	3.9	11	100	6





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	φD	R	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HGXB2050L16 0660	5	R2.5	4	16	4.85	11	60	6
HGXB2050L20 0660	5	R2.5	4	20	4.85	11	60	6
HGXB2050L25 0675	5	R2.5	4	25	4.85	11	75	6
HGXB2050L30 0675	5	R2.5	4	30	4.85	11	75	6
HGXB2050L35 0675	5	R2.5	4	35	4.85	11	75	6
HGXB2050L40 06100	5	R2.5	4	40	4.85	11	100	6
HGXB2050L45 06100	5	R2.5	4	45	4.85	11	100	6
HGXB2050L50 06100	5	R2.5	4	50	4.85	11	100	6
HGXB2060L12 0660	6	R3	4.8	12	5.85	-	60	6
HGXB2060L20 0675	6	R3	4.8	20	5.85	-	75	6
HGXB2060L30 0675	6	R3	4.8	30	5.85	-	75	6
HGXB2060L40 06100	6	R3	4.8	40	5.85	-	100	6

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						DUCTILE CAST IRON						
~40HRC	~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○			○	○	○	○			○	○	

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels, Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45~55HRC)			
Radius mm	Underneck mm	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
R0.05	0.2	40000	120	0.003	0.005	40000	100	0.002	0.005	40000	70	0.002	0.003
	0.3	40000	100	0.003	0.005	40000	70	0.002	0.005	40000	50	0.002	0.003
	0.5	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.075	0.3	40000	180	0.003	0.005	40000	150	0.002	0.005	40000	100	0.002	0.003
	0.5	40000	150	0.003	0.005	40000	120	0.002	0.005	40000	70	0.002	0.003
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1.5	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.1	0.3	40000	350	0.01	0.01	40000	300	0.006	0.005	36000	200	0.003	0.003
	0.5	40000	320	0.008	0.01	39600	280	0.005	0.005	36000	180	0.003	0.003
	0.75	40000	280	0.005	0.01	39600	200	0.003	0.005	36000	150	0.002	0.003
	1	40000	250	0.003	0.005	39600	160	0.002	0.003	36000	120	0.001	0.002
	1.25	40000	180	0.003	0.005	39600	140	0.002	0.003	36000	100	0.001	0.002
	1.5	40000	150	0.003	0.005	39600	120	0.002	0.003	36000	80	0.001	0.002
	1.75	40000	120	0.002	0.003	39600	100	0.001	0.002	36000	60	0.001	0.002
	2	40000	100	0.002	0.003	39600	80	0.001	0.002	36000	50	0.001	0.001
	2.5	40000	70	0.001	0.002	39600	60	0.001	0.001	36000	40	0.001	0.001
	3	40000	50	0.001	0.001	39600	40	0.001	0.001	36000	30	0.001	0.001
R0.15	0.5	36300	350	0.01	0.015	33000	300	0.007	0.01	30000	280	0.003	0.005
	0.6	36300	350	0.007	0.01	33000	300	0.005	0.007	30000	250	0.003	0.005
	0.75	36300	330	0.007	0.01	33000	280	0.005	0.007	30000	230	0.003	0.005
	1	36300	320	0.007	0.01	33000	250	0.005	0.007	30000	200	0.003	0.005
	1.25	36300	280	0.005	0.007	33000	200	0.003	0.005	30000	160	0.002	0.003
	1.5	36300	230	0.005	0.007	33000	180	0.003	0.005	30000	120	0.002	0.003
	1.75	36300	180	0.003	0.005	33000	150	0.002	0.003	30000	100	0.002	0.002
	2	36300	150	0.003	0.005	33000	120	0.002	0.003	30000	90	0.002	0.002
	2.25	36300	120	0.002	0.003	33000	100	0.001	0.002	30000	80	0.001	0.001
	2.5	36300	100	0.002	0.003	33000	80	0.001	0.002	30000	70	0.001	0.001
	3	36300	80	0.001	0.003	33000	70	0.001	0.002	30000	60	0.001	0.001
	3.5	36300	70	0.001	0.002	33000	60	0.001	0.001	30000	50	0.001	0.001





Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Radius mm	Underneck mm	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
R0.15	4	36300	60	0.001	0.002	33000	50	0.001	0.001	30000	40	0.001	0.001
	0.5	36300	800	0.03	0.05	33000	720	0.03	0.03	30000	580	0.009	0.02
	0.8	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1.5	36300	620	0.01	0.03	33000	500	0.01	0.02	30000	400	0.005	0.01
R0.2	2	36300	500	0.01	0.02	33000	380	0.01	0.01	30000	300	0.005	0.007
	2.5	36300	420	0.007	0.01	33000	300	0.005	0.007	30000	260	0.003	0.005
	3	36300	300	0.007	0.01	33000	240	0.005	0.007	30000	200	0.003	0.005
	3.5	36300	230	0.005	0.007	33000	160	0.003	0.005	30000	120	0.002	0.003
	4	33000	160	0.005	0.005	30000	120	0.003	0.003	30000	90	0.002	0.003
	4.5	33000	100	0.003	0.005	30000	80	0.002	0.003	30000	60	0.001	0.002
	5	32000	70	0.002	0.003	30000	50	0.001	0.002	30000	40	0.001	0.002
	6	32000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	8	30000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	1	35500	650	0.01	0.025	32000	590	0.01	0.025	30000	500	0.01	0.025
R0.25	1.5	35500	650	0.009	0.02	32000	590	0.009	0.02	30000	500	0.009	0.02
	2	35500	520	0.008	0.02	32000	470	0.008	0.02	30000	400	0.008	0.02
	2.5	33000	520	0.007	0.015	31800	470	0.007	0.015	28000	400	0.007	0.015
	3	33000	468	0.007	0.01	31800	420	0.007	0.01	28000	360	0.007	0.01
	3.5	31250	468	0.006	0.01	29000	420	0.006	0.01	25000	360	0.006	0.01
	4	31250	390	0.005	0.008	29000	350	0.005	0.008	25000	300	0.005	0.008
	4.5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5.5	31250	312	0.004	0.006	29000	280	0.004	0.006	25000	240	0.004	0.006
	6	27500	156	0.003	0.005	25520	140	0.003	0.005	22000	120	0.003	0.005
R0.3	8	25000	104	0.003	0.003	23200	90	0.003	0.003	20000	80	0.003	0.003
	10	25000	65	0.003	0.003	23200	60	0.003	0.003	20000	50	0.003	0.003
	1	33000	975	0.02	0.03	31320	700	0.02	0.03	26000	600	0.02	0.03
	1.5	33000	975	0.02	0.03	31320	700	0.02	0.03	26000	600	0.02	0.03
	2	33000	780	0.02	0.03	31320	560	0.02	0.03	25000	480	0.02	0.03
	2.5	30800	780	0.015	0.02	29232	560	0.015	0.02	25000	480	0.015	0.02
	3	30800	702	0.015	0.02	29232	500	0.015	0.02	24000	432	0.015	0.02

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Radius mm	Underneck mm	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
R0.3	3.5	27500	702	0.01	0.02	26100	500	0.01	0.02	24000	432	0.01	0.02
	4	27500	585	0.01	0.02	26100	420	0.01	0.02	24000	360	0.01	0.02
	4.5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5.5	27500	468	0.008	0.01	26100	336	0.008	0.01	24000	288	0.008	0.01
	6	24200	234	0.008	0.01	22968	168	0.008	0.01	21120	144	0.008	0.01
	7	22000	156	0.006	0.008	20880	108	0.006	0.008	19200	96	0.006	0.008
	8	22000	97.5	0.005	0.008	20880	70	0.005	0.008	19200	60	0.005	0.008
	9	19040	85	0.005	0.008	18188	65	0.005	0.008	18048	50	0.005	0.008
	10	19040	80	0.003	0.005	18188	60	0.003	0.005	18000	40	0.003	0.005
	12	19040	60	0.003	0.005	18188	50	0.003	0.005	18000	30	0.003	0.005
	2	32500	1025	0.02	0.035	31200	820	0.02	0.035	26000	480	0.02	0.035
R0.35	3	30000	1000	0.02	0.03	30000	800	0.02	0.03	25000	432	0.02	0.03
	4	30000	625	0.015	0.02	30000	500	0.015	0.02	24000	360	0.015	0.02
	6	25000	325	0.006	0.01	25000	260	0.006	0.01	22000	144	0.006	0.01
	8	22000	125	0.005	0.008	22000	100	0.004	0.006	20000	80	0.004	0.006
R0.4	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	2.5	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	3	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	5	24200	1600	0.02	0.03	22000	1000	0.02	0.03	20000	620	0.02	0.03
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	7	21780	1000	0.02	0.03	19800	680	0.02	0.03	18000	520	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
	10	19360	450	0.008	0.015	17600	380	0.008	0.015	16000	320	0.008	0.015
	12	18150	320	0.006	0.012	16500	260	0.006	0.012	15000	200	0.006	0.012
	16	18150	320	0.005	0.01	16500	260	0.005	0.01	15000	200	0.005	0.01
	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
R0.45	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
	2.5	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
R0.5													





Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Radius mm	Underneck mm	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
R0.5	3	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	5	24000	2000	0.03	0.05	22000	1600	0.03	0.05	20000	920	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.03	0.05	18000	740	0.02	0.05
	7	21600	1200	0.04	0.05	19800	950	0.03	0.04	18000	680	0.02	0.03
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	9	19200	820	0.03	0.05	17600	750	0.02	0.03	16000	500	0.01	0.02
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	18	16800	180	0.003	0.005	15400	120	0.002	0.005	14000	85	0.002	0.002
	20	14400	100	0.003	0.003	13200	75	0.002	0.003	12000	60	0.002	0.002
	22	12000	50	0.002	0.003	11000	40	0.002	0.002	10000	35	0.001	0.002
R0.6	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.04	0.05	18000	740	0.02	0.05
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
R0.7	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
R0.75	4	21600	2500	0.03	0.05	19800	2000	0.03	0.05	18000	1600	0.03	0.05
	6	21600	2500	0.03	0.05	19800	2000	0.03	0.05	18000	1600	0.03	0.05
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	10	21600	2500	0.02	0.05	19800	1200	0.02	0.05	18000	860	0.02	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	14	18000	1800	0.02	0.03	16500	820	0.02	0.03	15000	650	0.02	0.03
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	18	16800	550	0.008	0.015	15400	400	0.008	0.015	14000	400	0.008	0.015

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Radius mm	Underneck mm	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
R0.75	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
	25	14400	330	0.007	0.007	13200	250	0.007	0.007	12000	200	0.007	0.007
	30	9600	80	0.003	0.003	8800	60	0.003	0.003	8000	40	0.003	0.003
R0.8	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
R1	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	14400	1128	0.02	0.05	13200	1034	0.02	0.05	12000	940	0.02	0.05
	14	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	18	12000	1020	0.01	0.03	11000	935	0.01	0.03	10000	850	0.01	0.03
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	22	12000	720	0.008	0.02	11000	660	0.008	0.02	10000	600	0.008	0.02
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
	40	8160	60	0.002	0.005	7480	55	0.002	0.005	6800	50	0.002	0.005
	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
R1.25	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	15000	1320	0.02	0.05	13800	1180	0.02	0.04	13000	1080	0.02	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
R1.5	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
	8	16800	2500	0.04	0.08	15400	2200	0.04	0.08	14000	2000	0.04	0.08
	10	16800	1875	0.03	0.07	15400	1650	0.03	0.07	14000	1500	0.03	0.07
	12	14400	1875	0.03	0.07	13200	1650	0.03	0.07	12000	1500	0.03	0.07





Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill 3D Milling

Workpiece		Carbon Steels、 Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Radius mm	Underneck mm	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
R1.5	14	14400	1500	0.03	0.07	13200	1320	0.03	0.07	12000	1200	0.03	0.07
	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
R1.75	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
	45	6800	300	0.01	0.03	6500	264	0.01	0.03	6000	200	0.01	0.03
R2	12	13200	3000	0.04	0.08	12100	2500	0.04	0.08	11000	2000	0.04	0.08
	14	13200	3000	0.04	0.08	12100	2000	0.04	0.08	11000	1600	0.04	0.08
	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	9000	1200	0.03	0.05	8250	1000	0.03	0.05	7500	820	0.03	0.05
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03
R2.5	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	8500	1450	0.025	0.045	8000	1100	0.025	0.045	7500	950	0.025	0.045
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03