VHLRS

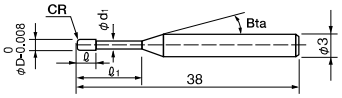
Value Series HARDMAX Longneck Radius

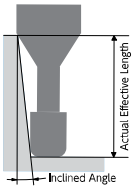
HARDMAX
2 Flutes Short Shank Long Neck Radius End Mills

2 Flutes

NEW

Super MG | HARD MAX | 30° | R | R ±0.005 | Shank Dia 0/-0.003





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.

Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

CARBON STEELS S45C S55C	ALLOY STEELS SK / SCM SUS	PREHARDENED STEELS NAK HPM	HARDENED STEELS ~ 50HRC	~ 55HRC	~ 60HRC	~ 65HRC	~ 70HRC	CAST IRON	ALUMINUM ALLOYS	GRAPHITE	COPPER	PLASTICS	GLASS FILLED PLASTICS	TITANIUM ALLOYS	HEAT RESISTANT ALLOYS	CEMENTED CARBIDE	HARD BRITTLE (NON-METALLIC) MATERIALS
○	○	●	●	●	●	○		○			●			○	○		

Total 24 models

Unit (mm)

Model Number	Outside Diameter φ	Corner Radius CR	Effective Length ℓ1	Length of Cut ℓ	Neck Diameter φd1	Shank Taper Angle Bta	Effective Length by Inclined Angles 30′	1°	1° 30′	2°	3°	Suggested Retail Price ¥
VHLRS 2002-005-010	0.2	0.05	1	0.2	0.18	16°	1.21	1.26	1.32	1.37	1.47	6,160
VHLRS 2003-005-010	0.3	0.05	1	0.3	0.28	16°	1.25	1.32	1.38	1.44	1.55	5,940
VHLRS 2004-005-020	0.4	0.05	2	0.4	0.38	16°	2.38	2.52	2.63	2.74	2.94	3,960
VHLRS 2004-01-020	0.4	0.1	2	0.4	0.38	16°	2.38	2.51	2.63	2.73	2.93	3,960
VHLRS 2005-005-020	0.5	0.05	2	0.5	0.49	16°	2.45	2.62	2.76	2.88	3.12	3,220
VHLRS 2005-01-020	0.5	0.1	2	0.5	0.49	16°	2.45	2.61	2.75	2.88	3.11	3,220
VHLRS 2006-005-020	0.6	0.05	2	0.6	0.59	16°	2.52	2.71	2.87	3.02	3.29	3,220
VHLRS 2006-005-030	0.6	0.05	3	0.6	0.59	16°	3.59	3.82	4.02	4.19	4.51	3,220
VHLRS 2006-005-040	0.6	0.05	4	0.6	0.59	16°	4.66	4.93	5.14	5.34	5.74	3,220
VHLRS 2006-01-020	0.6	0.1	2	0.6	0.59	16°	2.51	2.70	2.86	3.01	3.28	3,220
VHLRS 2006-01-030	0.6	0.1	3	0.6	0.59	16°	3.59	3.82	4.01	4.18	4.50	3,220
VHLRS 2006-01-040	0.6	0.1	4	0.6	0.59	16°	4.66	4.92	5.14	5.33	5.72	3,220
VHLRS 2008-005-040	0.8	0.05	4	0.8	0.79	16°	4.66	4.93	5.14	5.34	5.74	3,670
VHLRS 2008-01-040	0.8	0.1	4	0.8	0.79	16°	4.66	4.92	5.14	5.33	5.72	3,670
VHLRS 2008-02-040	0.8	0.2	4	0.8	0.79	16°	4.65	4.91	5.13	5.32	5.70	3,670
VHLRS 2010-01-020	1	0.1	2	1	0.96	16°	2.64	2.80	2.95	3.09	3.34	3,120
VHLRS 2010-01-040	1	0.1	4	1	0.96	16°	4.76	5.00	5.20	5.39	5.79	3,120
VHLRS 2010-01-060	1	0.1	6	1	0.96	16°	6.87	7.16	7.41	7.67	8.24	3,390
VHLRS 2010-02-020	1	0.2	2	1	0.96	16°	2.63	2.79	2.94	3.07	3.32	3,120
VHLRS 2010-02-040	1	0.2	4	1	0.96	16°	4.76	4.99	5.19	5.38	5.77	3,120
VHLRS 2010-02-060	1	0.2	6	1	0.96	16°	6.86	7.15	7.40	7.65	8.21	3,390
VHLRS 2015-02-060	1.5	0.2	6	1.5	1.46	16°	6.23	6.43	6.64	6.86	7.36	3,330
VHLRS 2020-01-060	2	0.1	6	2	1.93	16°	6.28	6.49	6.70	6.93	7.45	3,330
VHLRS 2020-02-060	2	0.2	6	2	1.93	16°	6.28	6.48	6.69	6.92	7.43	3,330

VHLRS Milling Conditions

WORK MATERIAL			COPPER OFC / TPC				CARBON STEELS S45C / S50C (~225HB)				ALLOY STEELS SK / SCM / SUS (225~325HB)			
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
2002-005-010	0.2	1	55,000	200	0.027	0.02	55,000	200	0.009	0.02	55,000	200	0.009	0.02
2003-005-010	0.3	1	60,000	500	0.03	0.02	60,000	500	0.011	0.02	60,000	500	0.011	0.02
2004-005-020	0.4	2	40,400	540	0.042	0.054	40,400	450	0.017	0.045	40,400	450	0.017	0.045
2004-01-020	0.4	2	40,400	540	0.042	0.054	40,400	450	0.017	0.045	40,400	450	0.017	0.045
2005-005-020	0.5	2	39,900	1,000	0.075	0.108	39,900	830	0.044	0.117	39,900	830	0.044	0.117
2005-01-020	0.5	2	39,900	1,000	0.075	0.108	39,900	830	0.044	0.117	39,900	830	0.044	0.117
2006-005-020	0.6	2	28,600	610	0.114	0.162	28,600	510	0.015	0.219	28,600	510	0.015	0.219
2006-005-030	0.6	3	23,800	480	0.09	0.135	23,800	400	0.012	0.108	23,800	400	0.012	0.108
2006-005-040	0.6	4	20,400	400	0.063	0.108	20,400	330	0.008	0.104	20,400	330	0.008	0.104
2006-01-020	0.6	2	28,600	610	0.114	0.162	28,600	510	0.015	0.219	28,600	510	0.015	0.219
2006-01-030	0.6	3	23,800	480	0.09	0.135	23,800	400	0.012	0.108	23,800	400	0.012	0.108
2006-01-040	0.6	4	20,400	400	0.063	0.108	20,400	330	0.008	0.104	20,400	330	0.008	0.104
2008-005-040	0.8	4	17,500	540	0.132	0.198	17,500	450	0.021	0.117	17,500	450	0.021	0.117
2008-01-040	0.8	4	17,500	540	0.132	0.198	17,500	450	0.021	0.117	17,500	450	0.021	0.117
2008-02-040	0.8	4	17,500	540	0.132	0.198	17,500	450	0.021	0.117	17,500	450	0.021	0.117
2010-01-020	1	2	17,600	1,100	0.21	0.45	17,600	920	0.053	0.27	17,600	920	0.053	0.27
2010-01-040	1	4	13,800	980	0.201	0.405	13,800	820	0.045	0.27	13,800	820	0.045	0.27
2010-01-060	1	6	11,300	790	0.117	0.387	11,300	650	0.032	0.216	11,300	650	0.032	0.216
2010-02-020	1	2	17,600	1,100	0.21	0.45	17,600	920	0.053	0.27	17,600	920	0.053	0.27
2010-02-040	1	4	13,800	980	0.201	0.405	13,800	820	0.045	0.27	13,800	820	0.045	0.27
2010-02-060	1	6	11,300	790	0.117	0.387	11,300	650	0.032	0.216	11,300	650	0.032	0.216
2015-02-060	1.5	6	10,600	1,240	0.282	0.63	10,600	1,030	0.062	0.405	10,600	1,030	0.062	0.405
2020-01-060	2	6	12,800	1,220	0.321	0.855	12,800	1,020	0.065	0.81	12,800	1,020	0.065	0.81
2020-02-060	2	6	12,800	1,220	0.321	0.855	12,800	1,020	0.065	0.81	12,800	1,020	0.065	0.81

VHLRS Milling Conditions

2 Flutes

WORK MATERIAL			PREHARDENED STEELS / HARDENED STEELS NAK / SKD (30~45HRC)				HARDENED STEELS SKD / SKT (45~55HRC)				HARDENED STEELS SKD / SKH (55~65HRC)			
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
2002-005-010	0.2	1	55,000	200	0.006	0.02	35,000	150	0.004	0.02	15,000	25	0.002	0.015
2003-005-010	0.3	1	60,000	500	0.007	0.02	35,000	350	0.005	0.02	22,000	35	0.004	0.015
2004-005-020	0.4	2	40,400	450	0.011	0.045	32,300	330	0.009	0.045	19,200	35	0.004	0.045
2004-01-020	0.4	2	40,400	450	0.011	0.045	32,300	330	0.009	0.045	19,200	35	0.004	0.045
2005-005-020	0.5	2	39,900	830	0.029	0.117	32,500	630	0.026	0.117	20,100	68	0.011	0.117
2005-01-020	0.5	2	39,900	830	0.029	0.117	32,500	630	0.026	0.117	20,100	68	0.011	0.117
2006-005-020	0.6	2	28,600	510	0.01	0.219	23,700	390	0.01	0.219	15,200	43	0.004	0.219
2006-005-030	0.6	3	23,800	400	0.008	0.108	19,700	300	0.007	0.108	12,600	33	0.003	0.108
2006-005-040	0.6	4	20,400	330	0.005	0.104	16,800	250	0.005	0.104	10,800	28	0.002	0.104
2006-01-020	0.6	2	28,600	510	0.01	0.219	23,700	390	0.01	0.219	15,200	43	0.004	0.219
2006-01-030	0.6	3	23,800	400	0.008	0.108	19,700	300	0.007	0.108	12,600	33	0.003	0.108
2006-01-040	0.6	4	20,400	330	0.005	0.104	16,800	250	0.005	0.104	10,800	28	0.002	0.104
2008-005-040	0.8	4	17,500	450	0.014	0.117	15,000	360	0.015	0.117	10,200	41	0.007	0.117
2008-01-040	0.8	4	17,500	450	0.014	0.117	15,000	360	0.015	0.117	10,200	41	0.007	0.117
2008-02-040	0.8	4	17,500	450	0.014	0.117	15,000	360	0.015	0.117	10,200	41	0.007	0.117
2010-01-020	1	2	17,600	920	0.035	0.27	15,300	750	0.04	0.27	10,900	89	0.02	0.27
2010-01-040	1	4	13,800	820	0.03	0.27	12,000	670	0.035	0.27	8,500	80	0.017	0.27
2010-01-060	1	6	11,300	650	0.021	0.216	9,800	540	0.024	0.216	7,000	64	0.012	0.216
2010-02-020	1	2	17,600	920	0.035	0.27	15,300	750	0.04	0.27	10,900	89	0.02	0.27
2010-02-040	1	4	13,800	820	0.03	0.27	12,000	670	0.035	0.27	8,500	80	0.017	0.27
2010-02-060	1	6	11,300	650	0.021	0.216	9,800	540	0.024	0.216	7,000	64	0.012	0.216
2015-02-060	1.5	6	10,600	1,030	0.041	0.405	9,700	900	0.055	0.405	7,400	117	0.03	0.405
2020-01-060	2	6	12,800	1,020	0.043	0.81	12,000	930	0.06	0.81	9,700	133	0.036	0.81
2020-02-060	2	6	12,800	1,020	0.043	0.81	12,000	930	0.06	0.81	9,700	133	0.036	0.81

Note:
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Every coolant offers stable milling.
- Recommend oil coolant for Stainless Steels and Heat Resistant Alloys.
- Recommend wet coolant for Copper.