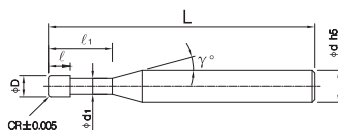


HSXR4L 4-Flute Long Neck Corner Radius End Mill



φD	D Tol. [mm]
D < 3	0 ~ -0.010
3 < D < 6	0 ~ -0.012

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4008R0.05L2 0450	0.8	R0.05	0.6	2	0.76	12	50	4
HSXR4008R0.05L4 0450	0.8	R0.05	0.6	4	0.76	12	50	4
HSXR4008R0.05L6 0450	0.8	R0.05	0.6	6	0.76	12	50	4
HSXR4008R0.05L8 0450	0.8	R0.05	0.6	8	0.76	12	50	4
HSXR4008R0.05L10 0450	0.8	R0.05	0.6	10	0.76	12	50	4
HSXR4008R0.05L12 0450	0.8	R0.05	0.6	12	0.76	12	50	4
HSXR4008R0.1L2 0450	0.8	R0.1	0.6	2	0.76	12	50	4
HSXR4008R0.1L4 0450	0.8	R0.1	0.6	4	0.76	12	50	4
HSXR4008R0.1L6 0450	0.8	R0.1	0.6	6	0.76	12	50	4
HSXR4008R0.1L8 0450	0.8	R0.1	0.6	8	0.76	12	50	4
HSXR4008R0.1L10 0450	0.8	R0.1	0.6	10	0.76	12	50	4
HSXR4008R0.1L12 0450	0.8	R0.1	0.6	12	0.76	12	50	4
HSXR4010R0.05L4 0450	1	R0.05	0.75	4	0.95	12	50	4
HSXR4010R0.05L6 0450	1	R0.05	0.75	6	0.95	12	50	4
HSXR4010R0.05L8 0450	1	R0.05	0.75	8	0.95	12	50	4
HSXR4010R0.05L10 0450	1	R0.05	0.75	10	0.95	12	50	4
HSXR4010R0.05L12 0450	1	R0.05	0.75	12	0.95	12	50	4
HSXR4010R0.05L16 0450	1	R0.05	0.75	16	0.95	12	50	4
HSXR4010R0.05L20 0460	1	R0.05	0.75	20	0.95	12	60	4
HSXR4010R0.1L4 0450	1	R0.1	0.75	4	0.95	12	50	4
HSXR4010R0.1L6 0450	1	R0.1	0.75	6	0.95	12	50	4
HSXR4010R0.1L8 0450	1	R0.1	0.75	8	0.95	12	50	4
HSXR4010R0.1L10 0450	1	R0.1	0.75	10	0.95	12	50	4
HSXR4010R0.1L12 0450	1	R0.1	0.75	12	0.95	12	50	4
HSXR4010R0.1L16 0450	1	R0.1	0.75	16	0.95	12	50	4
HSXR4010R0.1L20 0460	1	R0.1	0.75	20	0.95	12	60	4



HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4010R0.2L4 0450	1	R0.2	0.75	4	0.95	12	50	4
HSXR4010R0.2L6 0450	1	R0.2	0.75	6	0.95	12	50	4
HSXR4010R0.2L8 0450	1	R0.2	0.75	8	0.95	12	50	4
HSXR4010R0.2L10 0450	1	R0.2	0.75	10	0.95	12	50	4
HSXR4010R0.2L12 0450	1	R0.2	0.75	12	0.95	12	50	4
HSXR4010R0.2L16 0450	1	R0.2	0.75	16	0.95	12	50	4
HSXR4010R0.2L20 0460	1	R0.2	0.75	20	0.95	12	60	4
HSXR4010R0.3L4 0450	1	R0.3	0.75	4	0.95	12	50	4
HSXR4010R0.3L6 0450	1	R0.3	0.75	6	0.95	12	50	4
HSXR4010R0.3L8 0450	1	R0.3	0.75	8	0.95	12	50	4
HSXR4010R0.3L10 0450	1	R0.3	0.75	10	0.95	12	50	4
HSXR4010R0.3L12 0450	1	R0.3	0.75	12	0.95	12	50	4
HSXR4010R0.3L16 0450	1	R0.3	0.75	16	0.95	12	50	4
HSXR4010R0.3L20 0460	1	R0.3	0.75	20	0.95	12	60	4
HSXR4012R0.05L5 0450	1.2	R0.05	1	5	1.14	11	50	4
HSXR4012R0.05L10 0450	1.2	R0.05	1	10	1.14	11	50	4
HSXR4012R0.1L5 0450	1.2	R0.1	1	5	1.14	11	50	4
HSXR4012R0.1L10 0450	1.2	R0.1	1	10	1.14	11	50	4
HSXR4012R0.2L5 0450	1.2	R0.2	1	5	1.14	11	50	4
HSXR4012R0.2L10 0450	1.2	R0.2	1	10	1.14	11	50	4
HSXR4012R0.3L5 0450	1.2	R0.3	1	5	1.14	11	50	4
HSXR4012R0.3L10 0450	1.2	R0.3	1	10	1.14	11	50	4
HSXR4015R0.05L6 0450	1.5	R0.05	1.2	6	1.42	11	50	4
HSXR4015R0.05L8 0450	1.5	R0.05	1.2	8	1.42	11	50	4
HSXR4015R0.05L10 0450	1.5	R0.05	1.2	10	1.42	11	50	4
HSXR4015R0.05L12 0450	1.5	R0.05	1.2	12	1.42	11	50	4
HSXR4015R0.05L16 0450	1.5	R0.05	1.2	16	1.42	11	50	4
HSXR4015R0.05L20 0460	1.5	R0.05	1.2	20	1.42	11	60	4
HSXR4015R0.1L4 0450	1.5	R0.1	1.2	4	1.42	11	50	4
HSXR4015R0.1L6 0450	1.5	R0.1	1.2	6	1.42	11	50	4
HSXR4015R0.1L8 0450	1.5	R0.1	1.2	8	1.42	11	50	4
HSXR4015R0.1L10 0450	1.5	R0.1	1.2	10	1.42	11	50	4
HSXR4015R0.1L12 0450	1.5	R0.1	1.2	12	1.42	11	50	4
HSXR4015R0.1L16 0450	1.5	R0.1	1.2	16	1.42	11	50	4



HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4015R0.1L20 0460	1.5	R0.1	1.2	20	1.42	11	60	4
HSXR4015R0.2L4 0450	1.5	R0.2	1.2	4	1.42	11	50	4
HSXR4015R0.2L6 0450	1.5	R0.2	1.2	6	1.42	11	50	4
HSXR4015R0.2L8 0450	1.5	R0.2	1.2	8	1.42	11	50	4
HSXR4015R0.2L10 0450	1.5	R0.2	1.2	10	1.42	11	50	4
HSXR4015R0.2L12 0450	1.5	R0.2	1.2	12	1.42	11	50	4
HSXR4015R0.2L16 0450	1.5	R0.2	1.2	16	1.42	11	50	4
HSXR4015R0.2L20 0460	1.5	R0.2	1.2	20	1.42	11	60	4
HSXR4015R0.3L4 0450	1.5	R0.3	1.2	4	1.42	11	50	4
HSXR4015R0.3L6 0450	1.5	R0.3	1.2	6	1.42	11	50	4
HSXR4015R0.3L8 0450	1.5	R0.3	1.2	8	1.42	11	50	4
HSXR4015R0.3L10 0450	1.5	R0.3	1.2	10	1.42	11	50	4
HSXR4015R0.3L12 0450	1.5	R0.3	1.2	12	1.42	11	50	4
HSXR4015R0.3L16 0450	1.5	R0.3	1.2	16	1.42	11	50	4
HSXR4015R0.3L20 0460	1.5	R0.3	1.2	20	1.42	11	60	4
HSXR4020R0.05L8 0450	2	R0.05	1.6	8	1.9	11	50	4
HSXR4020R0.05L10 0450	2	R0.05	1.6	10	1.9	11	50	4
HSXR4020R0.05L12 0450	2	R0.05	1.6	12	1.9	11	50	4
HSXR4020R0.05L16 0450	2	R0.05	1.6	16	1.9	11	50	4
HSXR4020R0.05L20 0460	2	R0.05	1.6	20	1.9	11	60	4
HSXR4020R0.05L25 0460	2	R0.05	1.6	25	1.9	11	60	4
HSXR4020R0.05L30 0475	2	R0.05	1.6	30	1.9	11	75	4
HSXR4020R0.1L4 0450	2	R0.1	1.6	4	1.9	11	50	4
HSXR4020R0.1L6 0450	2	R0.1	1.6	6	1.9	11	50	4
HSXR4020R0.1L8 0450	2	R0.1	1.6	8	1.9	11	50	4
HSXR4020R0.1L10 0450	2	R0.1	1.6	10	1.9	11	50	4
HSXR4020R0.1L12 0450	2	R0.1	1.6	12	1.9	11	50	4
HSXR4020R0.1L16 0450	2	R0.1	1.6	16	1.9	11	50	4
HSXR4020R0.1L20 0460	2	R0.1	1.6	20	1.9	11	60	4
HSXR4020R0.1L25 0460	2	R0.1	1.6	25	1.9	11	60	4
HSXR4020R0.1L30 0475	2	R0.1	1.6	30	1.9	11	75	4
HSXR4020R0.2L4 0450	2	R0.2	1.6	4	1.9	11	50	4
HSXR4020R0.2L6 0450	2	R0.2	1.6	6	1.9	11	50	4
HSXR4020R0.2L8 0450	2	R0.2	1.6	8	1.9	11	50	4



HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4020R0.2L10 0450	2	R0.2	1.6	10	1.9	11	50	4
HSXR4020R0.2L12 0450	2	R0.2	1.6	12	1.9	11	50	4
HSXR4020R0.2L16 0450	2	R0.2	1.6	16	1.9	11	50	4
HSXR4020R0.2L20 0460	2	R0.2	1.6	20	1.9	11	60	4
HSXR4020R0.2L25 0460	2	R0.2	1.6	25	1.9	11	60	4
HSXR4020R0.2L30 0475	2	R0.2	1.6	30	1.9	11	75	4
HSXR4020R0.3L6 0450	2	R0.3	1.6	6	1.9	11	50	4
HSXR4020R0.3L8 0450	2	R0.3	1.6	8	1.9	11	50	4
HSXR4020R0.3L10 0450	2	R0.3	1.6	10	1.9	11	50	4
HSXR4020R0.3L12 0450	2	R0.3	1.6	12	1.9	11	50	4
HSXR4020R0.3L16 0450	2	R0.3	1.6	16	1.9	11	50	4
HSXR4020R0.3L20 0460	2	R0.3	1.6	20	1.9	11	60	4
HSXR4020R0.3L25 0460	2	R0.3	1.6	25	1.9	11	60	4
HSXR4020R0.3L30 0475	2	R0.3	1.6	30	1.9	11	75	4
HSXR4020R0.5L6 0450	2	R0.5	1.6	6	1.9	11	50	4
HSXR4020R0.5L8 0450	2	R0.5	1.6	8	1.9	11	50	4
HSXR4020R0.5L10 0450	2	R0.5	1.6	10	1.9	11	50	4
HSXR4020R0.5L12 0450	2	R0.5	1.6	12	1.9	11	50	4
HSXR4020R0.5L16 0450	2	R0.5	1.6	16	1.9	11	50	4
HSXR4020R0.5L20 0460	2	R0.5	1.6	20	1.9	11	60	4
HSXR4020R0.5L25 0460	2	R0.5	1.6	25	1.9	11	60	4
HSXR4020R0.5L30 0475	2	R0.5	1.6	30	1.9	11	75	4
HSXR4025R0.1L10 0450	2.5	R0.1	2	10	2.4	11	50	4
HSXR4025R0.1L20 0460	2.5	R0.1	2	20	2.4	11	60	4
HSXR4025R0.1L30 0475	2.5	R0.1	2	30	2.4	11	75	4
HSXR4025R0.2L10 0450	2.5	R0.2	2	10	2.4	11	50	4
HSXR4025R0.2L20 0460	2.5	R0.2	2	20	2.4	11	60	4
HSXR4025R0.2L30 0475	2.5	R0.2	2	30	2.4	11	75	4
HSXR4025R0.3L10 0450	2.5	R0.3	2	10	2.4	11	50	4
HSXR4025R0.3L20 0460	2.5	R0.3	2	20	2.4	11	60	4
HSXR4025R0.3L30 0475	2.5	R0.3	2	30	2.4	11	75	4
HSXR4025R0.5L10 0450	2.5	R0.5	2	10	2.4	11	50	4
HSXR4025R0.5L20 0460	2.5	R0.5	2	20	2.4	11	60	4
HSXR4025R0.5L30 0475	2.5	R0.5	2	30	2.4	11	75	4



HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4030R0.1L10 0450	3	R0.1	2.4	10	2.9	11	50	4
HSXR4030R0.1L10 0660	3	R0.1	2.4	10	2.9	11	60	6
HSXR4030R0.1L12 0450	3	R0.1	2.4	12	2.9	11	50	4
HSXR4030R0.1L12 0660	3	R0.1	2.4	12	2.9	11	60	6
HSXR4030R0.1L16 0450	3	R0.1	2.4	16	2.9	11	50	4
HSXR4030R0.1L16 0660	3	R0.1	2.4	16	2.9	11	60	6
HSXR4030R0.1L20 0660	3	R0.1	2.4	20	2.9	11	60	6
HSXR4030R0.1L25 0675	3	R0.1	2.4	25	2.9	11	75	6
HSXR4030R0.1L30 0675	3	R0.1	2.4	30	2.9	11	75	6
HSXR4030R0.1L35 0675	3	R0.1	2.4	35	2.9	11	75	6
HSXR4030R0.1L40 06100	3	R0.1	2.4	40	2.9	11	100	6
HSXR4030R0.2L8 0450	3	R0.2	2.4	8	2.9	11	50	4
HSXR4030R0.2L10 0450	3	R0.2	2.4	10	2.9	11	50	4
HSXR4030R0.2L10 0660	3	R0.2	2.4	10	2.9	11	60	6
HSXR4030R0.2L12 0450	3	R0.2	2.4	12	2.9	11	50	4
HSXR4030R0.2L12 0660	3	R0.2	2.4	12	2.9	11	60	6
HSXR4030R0.2L16 0450	3	R0.2	2.4	16	2.9	11	50	4
HSXR4030R0.2L16 0660	3	R0.2	2.4	16	2.9	11	60	6
HSXR4030R0.2L20 0660	3	R0.2	2.4	20	2.9	11	60	6
HSXR4030R0.2L25 0675	3	R0.2	2.4	25	2.9	11	75	6
HSXR4030R0.2L30 0675	3	R0.2	2.4	30	2.9	11	75	6
HSXR4030R0.2L35 0675	3	R0.2	2.4	35	2.9	11	75	6
HSXR4030R0.2L40 06100	3	R0.2	2.4	40	2.9	11	100	6
HSXR4030R0.3L10 0450	3	R0.3	2.4	10	2.9	11	50	4
HSXR4030R0.3L10 0660	3	R0.3	2.4	10	2.9	11	60	6
HSXR4030R0.3L12 0450	3	R0.3	2.4	12	2.9	11	50	4
HSXR4030R0.3L12 0660	3	R0.3	2.4	12	2.9	11	60	6
HSXR4030R0.3L16 0450	3	R0.3	2.4	16	2.9	11	50	4
HSXR4030R0.3L16 0660	3	R0.3	2.4	16	2.9	11	60	6
HSXR4030R0.3L20 0660	3	R0.3	2.4	20	2.9	11	60	6
HSXR4030R0.3L25 0675	3	R0.3	2.4	25	2.9	11	75	6
HSXR4030R0.3L30 0675	3	R0.3	2.4	30	2.9	11	75	6
HSXR4030R0.3L35 0675	3	R0.3	2.4	35	2.9	11	75	6
HSXR4030R0.3L40 06100	3	R0.3	2.4	40	2.9	11	100	6



HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4030R0.5L8 0450	3	R0.5	2.4	8	2.9	11	50	4
HSXR4030R0.5L10 0450	3	R0.5	2.4	10	2.9	11	50	4
HSXR4030R0.5L10 0660	3	R0.5	2.4	10	2.9	11	60	6
HSXR4030R0.5L12 0450	3	R0.5	2.4	12	2.9	11	50	4
HSXR4030R0.5L12 0660	3	R0.5	2.4	12	2.9	11	60	6
HSXR4030R0.5L16 0450	3	R0.5	2.4	16	2.9	11	50	4
HSXR4030R0.5L16 0660	3	R0.5	2.4	16	2.9	11	60	6
HSXR4030R0.5L20 0660	3	R0.5	2.4	20	2.9	11	60	6
HSXR4030R0.5L25 0675	3	R0.5	2.4	25	2.9	11	75	6
HSXR4030R0.5L30 0675	3	R0.5	2.4	30	2.9	11	75	6
HSXR4030R0.5L35 0675	3	R0.5	2.4	35	2.9	11	75	6
HSXR4030R0.5L40 06100	3	R0.5	2.4	40	2.9	11	100	6
HSXR4040R0.1L12 0660	4	R0.1	3.2	12	3.9	11	60	6
HSXR4040R0.1L16 0660	4	R0.1	3.2	16	3.9	11	60	6
HSXR4040R0.1L20 0660	4	R0.1	3.2	20	3.9	11	60	6
HSXR4040R0.1L25 0675	4	R0.1	3.2	25	3.9	11	75	6
HSXR4040R0.1L30 0675	4	R0.1	3.2	30	3.9	11	75	6
HSXR4040R0.1L35 0675	4	R0.1	3.2	35	3.9	11	75	6
HSXR4040R0.1L40 06100	4	R0.1	3.2	40	3.9	11	100	6
HSXR4040R0.1L45 06100	4	R0.1	3.2	45	3.9	11	100	6
HSXR4040R0.1L50 06100	4	R0.1	3.2	50	3.9	11	100	6
HSXR4040R0.2L12 0660	4	R0.2	3.2	12	3.9	11	60	6
HSXR4040R0.2L16 0660	4	R0.2	3.2	16	3.9	11	60	6
HSXR4040R0.2L20 0660	4	R0.2	3.2	20	3.9	11	60	6
HSXR4040R0.2L25 0675	4	R0.2	3.2	25	3.9	11	75	6
HSXR4040R0.2L30 0675	4	R0.2	3.2	30	3.9	11	75	6
HSXR4040R0.2L35 0675	4	R0.2	3.2	35	3.9	11	75	6
HSXR4040R0.2L40 06100	4	R0.2	3.2	40	3.9	11	100	6
HSXR4040R0.2L45 06100	4	R0.2	3.2	45	3.9	11	100	6
HSXR4040R0.2L50 06100	4	R0.2	3.2	50	3.9	11	100	6
HSXR4040R0.3L12 0660	4	R0.3	3.2	12	3.9	11	60	6
HSXR4040R0.3L16 0660	4	R0.3	3.2	16	3.9	11	60	6
HSXR4040R0.3L20 0660	4	R0.3	3.2	20	3.9	11	60	6
HSXR4040R0.3L25 0675	4	R0.3	3.2	25	3.9	11	75	6

HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXR4040R0.3L30 0675	4	R0.3	3.2	30	3.9	11	75	6
HSXR4040R0.3L35 0675	4	R0.3	3.2	35	3.9	11	75	6
HSXR4040R0.3L40 06100	4	R0.3	3.2	40	3.9	11	100	6
HSXR4040R0.3L45 06100	4	R0.3	3.2	45	3.9	11	100	6
HSXR4040R0.3L50 06100	4	R0.3	3.2	50	3.9	11	100	6
HSXR4040R0.5L12 0660	4	R0.5	3.2	12	3.9	11	60	6
HSXR4040R0.5L16 0660	4	R0.5	3.2	16	3.9	11	60	6
HSXR4040R0.5L20 0660	4	R0.5	3.2	20	3.9	11	60	6
HSXR4040R0.5L25 0675	4	R0.5	3.2	25	3.9	11	75	6
HSXR4040R0.5L30 0675	4	R0.5	3.2	30	3.9	11	75	6
HSXR4040R0.5L35 0675	4	R0.5	3.2	35	3.9	11	75	6
HSXR4040R0.5L40 06100	4	R0.5	3.2	40	3.9	11	100	6
HSXR4040R0.5L45 06100	4	R0.5	3.2	45	3.9	11	100	6
HSXR4040R0.5L50 06100	4	R0.5	3.2	50	3.9	11	100	6
HSXR4040R1.0L12 0660	4	R1	3.2	12	3.9	11	60	6
HSXR4040R1.0L16 0660	4	R1	3.2	16	3.9	11	60	6
HSXR4040R1.0L20 0660	4	R1	3.2	20	3.9	11	60	6
HSXR4040R1.0L25 0675	4	R1	3.2	25	3.9	11	75	6
HSXR4040R1.0L30 0675	4	R1	3.2	30	3.9	11	75	6
HSXR4040R1.0L35 0675	4	R1	3.2	35	3.9	11	75	6
HSXR4040R1.0L40 06100	4	R1	3.2	40	3.9	11	100	6
HSXR4040R1.0L45 06100	4	R1	3.2	45	3.9	11	100	6
HSXR4040R1.0L50 06100	4	R1	3.2	50	3.9	11	100	6

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CARBON CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
		~40HRC	~45HRC	~55HRC	~60HRC	~65HRC	~35HRC						
		○	○	○	○	○	○	○			○	○	





Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill Z-Level Milling

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Diameter mm	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
0.5	R0.02	1	30000	1200	0.006	0.14	25000	1000	0.006	0.15	23000	800	0.006	0.1
		1.5	30000	1100	0.006	0.14	25000	920	0.006	0.15	23000	740	0.006	0.1
		2	30000	1000	0.005	0.14	25000	840	0.005	0.15	23000	670	0.005	0.1
		2.5	30000	910	0.005	0.14	25000	760	0.005	0.15	23000	610	0.005	0.1
		3	30000	840	0.004	0.14	25000	700	0.004	0.15	23000	560	0.004	0.1
		4	25000	720	0.003	0.14	25000	600	0.003	0.15	23000	480	0.002	0.1
		5	25000	480	0.003	0.14	20000	400	0.003	0.15	18000	320	0.002	0.1
		6	25000	280	0.003	0.14	20000	230	0.003	0.15	18000	180	0.001	0.1
	R0.05 R0.1	1	30000	1440	0.03	0.14	25000	1200	0.01	0.15	23000	960	0.007	0.1
		1.5	30000	1300	0.03	0.14	25000	1100	0.01	0.15	23000	880	0.007	0.1
		2	30000	1150	0.025	0.14	25000	960	0.01	0.15	23000	770	0.007	0.1
		2.5	30000	1100	0.025	0.14	25000	900	0.01	0.15	23000	720	0.007	0.1
		3	30000	960	0.02	0.14	25000	800	0.008	0.15	23000	640	0.005	0.1
		4	25000	840	0.015	0.14	25000	700	0.005	0.15	23000	560	0.003	0.1
		5	25000	600	0.01	0.14	20000	500	0.004	0.15	18000	400	0.003	0.1
		6	25000	480	0.008	0.14	20000	400	0.003	0.15	18000	320	0.002	0.1
0.6	R0.02	2	30000	1200	0.006	0.2	25000	1000	0.006	0.2	23000	800	0.006	0.15
		3	28000	1080	0.006	0.2	24000	900	0.006	0.2	21000	720	0.005	0.15
		4	25000	960	0.005	0.2	23000	800	0.005	0.2	20000	640	0.004	0.15
		6	23000	480	0.005	0.2	20000	400	0.004	0.2	18000	320	0.003	0.15
		8	18000	360	0.004	0.2	16000	300	0.004	0.2	14000	240	0.001	0.15
		10	16000	240	0.004	0.2	14000	200	0.003	0.2	12000	160	0.001	0.15
	R0.05 R0.1	2	30000	1440	0.035	0.2	25000	1200	0.02	0.2	23000	960	0.01	0.15
		3	28000	1200	0.030	0.2	24000	1000	0.02	0.2	21000	800	0.008	0.15
		4	25000	960	0.025	0.2	23000	800	0.015	0.2	20000	640	0.007	0.15
		6	23000	530	0.015	0.2	20000	440	0.008	0.2	18000	350	0.005	0.15
0.7	R0.02	2	30000	1680	0.006	0.25	25000	1400	0.006	0.25	23000	1120	0.006	0.15
		3	30000	1680	0.006	0.25	25000	1400	0.006	0.25	23000	1120	0.006	0.15
		4	28000	1440	0.005	0.25	25000	1200	0.005	0.25	23000	960	0.005	0.15
		6	25000	960	0.004	0.25	20000	800	0.004	0.25	18000	640	0.004	0.15
		8	18000	720	0.003	0.25	16000	600	0.003	0.25	14000	480	0.003	0.15
		10	16000	480	0.003	0.25	14000	400	0.003	0.25	12000	320	0.003	0.15

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill Z-Level Milling

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Diameter mm	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
0.7	R0.02	8	18000	480	0.004	0.2	16000	400	0.004	0.2	14000	320	0.004	0.15
		10	16000	430	0.003	0.2	14000	360	0.003	0.2	12000	290	0.003	0.15
	R0.05 R0.1	2	30000	1680	0.05	0.25	25000	1400	0.03	0.25	23000	1120	0.02	0.15
		3	30000	1560	0.04	0.25	25000	1300	0.03	0.25	23000	1040	0.015	0.15
		4	28000	1440	0.03	0.25	25000	1200	0.02	0.25	23000	960	0.01	0.15
		6	25000	960	0.02	0.25	20000	800	0.01	0.25	18000	640	0.01	0.15
		8	18000	720	0.02	0.25	16000	600	0.01	0.25	14000	480	0.008	0.15
		10	16000	480	0.02	0.25	14000	400	0.01	0.25	12000	320	0.006	0.15
		2	28000	2040	0.006	0.3	25000	1700	0.006	0.25	23000	1360	0.006	0.16
		4	28000	1680	0.005	0.3	25000	1400	0.005	0.25	23000	1120	0.005	0.16
0.8	R0.02	6	23000	1320	0.005	0.3	20000	1100	0.005	0.25	18000	880	0.005	0.15
		8	18000	960	0.004	0.3	16000	800	0.004	0.25	14000	640	0.004	0.15
		10	16000	720	0.004	0.25	15000	600	0.004	0.20	13500	480	0.004	0.12
		12	14000	480	0.003	0.2	13000	400	0.003	0.15	12000	320	0.003	0.12
	R0.05 R0.1 R0.2	2	28000	2400	0.020	0.3	25000	2000	0.014	0.25	23000	1600	0.012	0.16
		4	28000	1920	0.015	0.3	25000	1600	0.012	0.25	23000	1280	0.01	0.16
		6	23000	1440	0.012	0.3	20000	1200	0.01	0.25	18000	960	0.01	0.15
		8	18000	1200	0.012	0.3	16000	1000	0.01	0.25	14000	800	0.008	0.15
		10	16000	960	0.010	0.25	15000	800	0.008	0.20	13500	640	0.006	0.12
		12	14000	720	0.010	0.2	13000	600	0.008	0.15	12000	480	0.006	0.12
0.9	R0.1	4	25000	2200	0.05	0.3	25000	1700	0.03	0.3	20000	1400	0.02	0.2
		8	18000	1000	0.03	0.3	16000	800	0.01	0.3	14000	700	0.008	0.2
1	R0.02	4	30000	2880	0.030	0.35	25000	2400	0.025	0.3	21000	1920	0.02	0.25
		5	28000	2400	0.030	0.35	23000	2000	0.025	0.3	20000	1600	0.02	0.25
		6	25000	2160	0.020	0.35	21000	1800	0.02	0.3	18000	1440	0.015	0.25
		8	23000	1920	0.020	0.35	19000	1600	0.020	0.3	16000	1280	0.015	0.25
		10	20000	1680	0.02	0.35	16000	1400	0.015	0.3	14000	1120	0.010	0.25
		12	18000	1440	0.015	0.35	15000	1200	0.015	0.3	13000	960	0.010	0.25
		16	16000	960	0.015	0.35	13000	800	0.010	0.3	11000	640	0.008	0.25
		20	14000	720	0.015	0.35	13000	600	0.010	0.3	11000	480	0.008	0.25
	R0.05 R0.1 R0.2 R0.3	4	30000	2880	0.065	0.35	25000	2400	0.05	0.3	21000	1920	0.04	0.25
		5	28000	2400	0.06	0.35	23000	2000	0.05	0.3	20000	1600	0.04	0.25



Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill Z-Level Milling

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Diameter mm	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
1	R0.05 R0.1 R0.2 R0.3	6	25000	2160	0.055	0.35	21000	1800	0.04	0.3	18000	1440	0.03	0.25
		8	23000	1920	0.05	0.35	19000	1600	0.03	0.3	16000	1280	0.02	0.25
		10	20000	1680	0.045	0.35	16000	1400	0.02	0.3	14000	1120	0.01	0.25
		12	18000	1440	0.035	0.35	15000	1200	0.015	0.3	13000	960	0.008	0.25
		16	18000	960	0.035	0.35	15000	800	0.015	0.3	13000	640	0.008	0.25
1.2	R0.05 R0.1 R0.2 R0.3	20	14000	840	0.015	0.35	13000	700	0.010	0.3	11000	560	0.008	0.25
		5	24000	2200	0.06	0.45	20000	1800	0.045	0.4	17000	1500	0.03	0.3
		10	16000	1400	0.04	0.45	13000	1100	0.03	0.4	11000	950	0.01	0.3
1.5	R0.02	6	28000	2800	0.016	0.55	23000	2300	0.012	0.5	20000	2000	0.01	0.4
		8	25000	2400	0.016	0.55	21000	2000	0.012	0.5	18000	1700	0.01	0.4
		10	23000	2200	0.014	0.55	19000	1800	0.01	0.5	16000	1500	0.008	0.4
		12	20000	1800	0.014	0.55	16000	1500	0.01	0.5	14000	1300	0.008	0.4
		16	16000	1400	0.012	0.55	13000	1100	0.008	0.5	11000	950	0.005	0.4
	R0.05 R0.1 R0.2 R0.3 R0.5	20	14000	1000	0.008	0.55	11000	800	0.005	0.5	9000	700	0.003	0.4
		6	28000	2800	0.1	0.55	23000	2300	0.05	0.5	20000	2000	0.04	0.4
		8	25000	2400	0.08	0.55	21000	2000	0.05	0.5	18000	1700	0.04	0.4
		10	23000	2200	0.08	0.55	19000	1800	0.045	0.5	16000	1500	0.03	0.4
		12	20000	1800	0.06	0.55	16000	1500	0.04	0.5	14000	1300	0.025	0.4
2	R0.02	16	16000	1400	0.06	0.55	13000	1100	0.03	0.5	11000	950	0.02	0.4
		20	14000	1000	0.03	0.55	11000	800	0.02	0.5	9000	700	0.007	0.4
		8	24000	2800	0.02	0.7	20000	2300	0.015	0.6	17000	2000	0.012	0.5
		10	22000	2500	0.018	0.7	18000	2100	0.015	0.6	15000	1800	0.012	0.5
		12	20000	2200	0.016	0.7	16000	1800	0.012	0.6	14000	1500	0.01	0.5
		16	16000	1700	0.014	0.7	13000	1400	0.01	0.6	11000	1200	0.008	0.5
	R0.05 R0.1 R0.2 R0.3 R0.5	20	14000	1400	0.012	0.7	11000	1100	0.008	0.6	9500	950	0.005	0.5
		25	10000	800	0.01	0.7	8000	650	0.005	0.6	7000	550	0.003	0.5
		30	10000	480	0.005	0.7	8000	400	0.002	0.6	7000	320	0.002	0.5
		8	24000	2800	0.13	0.7	20000	2300	0.06	0.6	17000	2000	0.05	0.5
		10	22000	2500	0.12	0.7	18000	2100	0.06	0.6	15000	1800	0.05	0.5
		12	20000	2200	0.11	0.7	16000	1800	0.05	0.6	14000	1500	0.04	0.5
	R0.05 R0.1 R0.2 R0.3 R0.5	16	16000	1700	0.09	0.7	13000	1400	0.04	0.6	11000	1200	0.03	0.5
		20	14000	1400	0.07	0.7	11000	1100	0.03	0.6	9500	950	0.02	0.5

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill Z-Level Milling

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Diameter mm	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
2	R0.05 R0.1 R0.2 R0.3 R0.5	25	12000	960	0.06	0.7	9000	800	0.03	0.6	8000	640	0.02	0.5
		30	10000	800	0.05	0.7	8000	650	0.02	0.6	7000	550	0.01	0.5
2.5	R0.05 R0.1 R0.2 R0.3 R0.5	10	16000	2200	0.14	0.85	13000	1800	0.07	0.7	11000	1500	0.05	0.5
		20	11000	1400	0.08	0.85	9000	1100	0.04	0.7	7500	950	0.02	0.5
		30	7000	800	0.03	0.85	5500	650	0.01	0.7	4500	550	0.01	0.5
3	R0.05	10	18000	2800	0.18	1	15000	2300	0.1	0.8	13000	2000	0.07	0.7
		12	16000	2500	0.17	1	13000	2100	0.1	0.8	11000	1800	0.07	0.7
		16	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		20	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		25	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		30	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		35	9000	1200	0.08	1	7500	1000	0.04	0.8	6500	800	0.02	0.7
		40	8000	960	0.06	1	6500	800	0.03	0.8	5500	640	0.02	0.7
	R0.1 R0.2 R0.3 R0.5	10	18000	2800	0.18	1	15000	2300	0.1	0.8	13000	2000	0.07	0.7
		12	16000	2500	0.17	1	13000	2100	0.1	0.8	11000	1800	0.07	0.7
		16	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		20	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		25	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		30	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		35	9000	1200	0.08	1	7500	1050	0.04	0.8	6500	850	0.02	0.7
		40	8000	1000	0.06	1	6500	800	0.03	0.8	5500	700	0.02	0.7
	R1	10	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		12	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		16	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		20	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		25	9000	1200	0.08	1	7500	1100	0.04	0.8	6500	850	0.02	0.7
		30	9000	1200	0.08	1	7500	1100	0.04	0.8	6500	800	0.02	0.7
		35	9000	1200	0.08	1	7500	1050	0.04	0.8	6500	750	0.02	0.7
		40	8000	1000	0.06	1	6500	800	0.03	0.8	5500	700	0.02	0.7
4	R0.1 R0.2 R0.3 R0.5 R1	16	12000	2650	0.25	1.4	10000	2200	0.15	1.2	8500	1760	0.1	1
		20	12000	2400	0.25	1.4	10000	2000	0.15	1.2	8500	1600	0.1	1
		25	10000	2160	0.17	1.4	8000	1800	0.1	1.2	7000	1440	0.08	1



Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill Z-Level Milling

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Diameter mm	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
4	R0.1	30	8000	1900	0.14	1.4	6500	1600	0.08	1.2	5500	1280	0.08	1
	R0.2	35	6500	1680	0.08	1.4	5500	1400	0.06	1.2	4500	1100	0.05	1
	R0.3	40	5800	1440	0.06	1.2	5200	1200	0.05	1	4000	960	0.05	0.8
	R0.5	45	5200	1200	0.05	1.2	4800	1000	0.04	1	3800	800	0.04	0.8
	R1	50	4800	960	0.04	1.2	4500	800	0.03	1	3200	640	0.04	0.8
5	R0.1	16	9500	2400	0.25	2.2	8000	2000	0.15	2	7000	1700	0.08	1.6
	R0.2	20	8000	2000	0.18	2.2	6500	1600	0.1	2	5500	1400	0.07	1.6
	R0.3 R0.5 R1	40	5000	1200	0.09	2.2	4000	1000	0.05	2	3500	850	0.02	1.6

- For Z-level and face milling, the recommended axial depth of cut (ap) is $0.3 \times CR$.