

ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	315	0.009	46,200	230	0.007	40,600	170	0.005
	0.5	50,000	315	0.006	46,200	230	0.005	40,600	170	0.004
	1	45,000	255	0.002	41,580	185	0.002	36,540	140	0.001
0.2	0.5	38,500	380	0.018	36,300	270	0.014	32,100	200	0.01
	1	38,500	380	0.013	36,300	270	0.01	32,100	200	0.007
	1.5	34,650	310	0.007	32,670	220	0.006	28,890	160	0.004
	2	34,650	310	0.005	32,670	220	0.004	28,890	160	0.003
0.3	1	34,200	390	0.019	32,300	270	0.015	28,500	230	0.011
	1.5	34,200	390	0.019	32,300	270	0.015	25,800	230	0.011
	2	30,780	315	0.011	29,070	220	0.008	25,650	185	0.006
	2.5	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	3	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	4	27,360	250	0.004	25,840	175	0.003	22,800	145	0.002
	5	20,520	165	0.003	19,380	115	0.002	17,100	95	0.002
0.4	1	27,400	540	0.036	25,800	380	0.028	22,800	280	0.02
	1.5	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2.5	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	3	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	4	24,660	435	0.009	23,220	310	0.007	20,520	225	0.005
	5	21,920	345	0.009	20,640	245	0.007	18,240	180	0.005
	6	21,920	345	0.005	20,640	245	0.004	18,240	180	0.003
	8	16,440	225	0.004	15,480	160	0.003	13,680	120	0.002
	10	8,220	95	0.004	7,740	70	0.003	6,840	50	0.002
0.5	1	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	1.5	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	2	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	2.5	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	3	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	4	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	5	24,660	435	0.011	23,220	345	0.009	20,520	230	0.006
	6	21,920	345	0.011	20,640	270	0.009	18,240	180	0.006
	8	16,440	225	0.007	15,480	180	0.005	13,680	120	0.004
	10	16,440	225	0.005	15,480	180	0.004	13,680	120	0.003
	12	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	14	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	16	2,740	25	0.005	2,580	20	0.004	2,280	15	0.003
0.6	2	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	3	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	4	24,660	630	0.022	23,220	440	0.017	20,520	330	0.012
	5	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	6	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	8	21,920	495	0.008	20,640	350	0.006	18,240	260	0.005

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Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm ²			1100~1500N/mm ²			1500~2000N/mm ²		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	10	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	12	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	14	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
	16	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
0.7	2	27,400	775	0.063	25,800	545	0.049	22,800	405	0.035
	4	24,660	630	0.025	23,220	440	0.02	20,520	330	0.014
	6	24,660	630	0.016	23,220	440	0.012	20,520	330	0.009
	8	21,920	495	0.016	20,640	350	0.012	18,240	260	0.009
	10	21,920	495	0.009	20,640	350	0.007	18,240	260	0.005
	12	16,440	325	0.009	15,480	230	0.005	13,680	170	0.004
0.8	2	27,400	775	0.072	25,800	605	0.056	22,800	450	0.04
	3	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	4	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	5	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	6	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	8	24,660	630	0.018	23,220	490	0.014	20,520	365	0.01
	10	21,920	495	0.018	20,640	385	0.014	18,240	290	0.01
	12	21,920	495	0.011	20,640	385	0.008	18,240	290	0.006
	14	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
	16	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
0.9	20	8,220	140	0.007	7,740	110	0.006	6,840	80	0.004
	6	22,140	575	0.032	20,970	440	0.025	18,450	330	0.018
	8	22,140	575	0.02	20,970	440	0.016	18,450	330	0.011
1	10	19,680	455	0.02	18,640	350	0.016	16,400	260	0.011
	2	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	3	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	4	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	5	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	6	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	7	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	8	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	10	22,140	845	0.023	20,970	720	0.018	18,450	540	0.013
	12	19,680	670	0.023	18,640	570	0.018	16,400	425	0.013
	14	19,680	670	0.014	18,640	570	0.011	16,400	425	0.008
	16	14,760	440	0.014	13,980	375	0.011	12,300	280	0.008
	18	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	20	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	22	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	26	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	30	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
40	2,460	50	0.009	2,330	45	0.007	2,050	35	0.005	
50	2,460	50	0.006	2,330	45	0.005	2,050	35	0.003	
1.2	4	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042

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Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	6	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042
	8	19,710	755	0.043	18,630	585	0.034	16,380	395	0.024
	10	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	12	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	14	17,520	595	0.027	16,560	460	0.021	14,560	310	0.015
	16	17,520	595	0.016	16,560	460	0.013	14,560	310	0.009
	20	13,140	390	0.011	12,420	300	0.008	10,920	205	0.006
	26	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
	30	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.4	6	19,200	815	0.088	18,100	570	0.069	16,000	425	0.049
	8	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	10	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	14	17,280	660	0.032	16,290	460	0.025	14,400	345	0.018
	16	15,360	520	0.032	14,480	365	0.025	12,800	270	0.018
	20	15,360	520	0.019	14,480	365	0.015	12,800	270	0.011
1.5	4	19,200	905	0.135	18,100	635	0.105	16,000	475	0.075
	5	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	6	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	7	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	8	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	10	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	12	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	14	17,280	735	0.034	16,290	515	0.026	14,400	385	0.019
	16	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	18	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	20	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	22	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	26	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
30	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008	
1.6	8	17,800	840	0.101	16,800	655	0.078	14,800	490	0.056
	10	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	12	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	16	16,020	680	0.036	15,120	530	0.028	13,320	395	0.02
	20	14,240	540	0.036	13,440	420	0.028	11,840	315	0.02
1.8	8	17,800	840	0.113	16,800	655	0.088	14,800	490	0.063
	10	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	12	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	16	16,020	680	0.041	15,120	530	0.032	13,320	395	0.023
	20	14,240	540	0.041	13,440	420	0.032	11,840	315	0.023
2	6	14,400	820	0.18	13,600	620	0.14	12,000	475	0.1
	8	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	10	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	12	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04

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Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2	14	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	16	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	18	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	20	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	22	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	26	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	30	11,520	525	0.027	10,880	395	0.021	9,600	305	0.015
	35	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	40	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	45	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	50	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	60	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
2.5	8	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	10	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	12	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	14	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	16	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	18	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	20	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	22	11,070	785	0.056	10,440	550	0.044	9,270	415	0.031
	26	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	30	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	35	9,840	620	0.034	9,280	435	0.026	8,240	325	0.019
	40	7,380	405	0.034	6,960	285	0.026	6,180	215	0.019
	45	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
	50	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
3	6	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	8	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	10	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	12	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	14	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	16	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	18	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	20	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	22	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	26	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	30	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	35	8,720	550	0.068	8,240	385	0.053	5,280	290	0.038
	40	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	45	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	50	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
	60	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
4	8	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2

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Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm ²			1100~1500N/mm ²			1500~2000N/mm ²		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4	10	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	12	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	14	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	16	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	18	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	20	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	22	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	26	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	30	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	35	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	40	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	45	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	50	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	60	6,400	830	0.054	6,080	740	0.042	5,360	495	0.03
5	16	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	20	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	26	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	30	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	35	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	40	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	50	5,760	935	0.113	5,490	730	0.088	4,860	490	0.063
	60	5,120	740	0.113	4,880	575	0.088	4,320	385	0.063
6	15	5,300	1,055	0.54	5,000	820	0.42	4,400	550	0.3
	20	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
	30	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
	32	4,770	855	0.216	4,500	665	0.168	3,960	445	0.12
8	25	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
	30	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
	42	3,600	770	0.288	3,400	605	0.224	2,950	405	0.16
10	30	3,200	900	0.9	3,050	680	0.7	2,630	400	0.5
	35	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
	45	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
12	35	2,650	800	1.08	2,520	600	0.84	2,180	350	0.6
	40	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42
	50	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42

RPM = rev/min
FEED = mm/min

