

ESRB712 SERIES

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	240	0.009	50,000	215	0.007	50,000	190	0.005
	0.5	50,000	240	0.006	50,000	215	0.005	50,000	190	0.004
	1	45,000	195	0.002	45,000	175	0.002	45,000	155	0.001
0.2	0.5	50,000	335	0.018	50,000	310	0.014	43,200	260	0.01
	1	50,000	335	0.013	50,000	310	0.01	43,200	260	0.007
	1.5	45,000	270	0.007	45,000	250	0.006	38,880	210	0.004
	2	45,000	270	0.005	45,000	250	0.004	38,880	210	0.003
	3	45,000	270	0.003	45,000	250	0.003	38,880	210	0.002
0.3	1	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	1.5	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	2	45,000	385	0.011	45,000	350	0.008	38,520	295	0.006
	2.5	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	3	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	4	40,000	305	0.004	40,000	275	0.003	34,240	235	0.002
	5	30,000	200	0.003	30,000	180	0.002	25,680	155	0.002
0.4	1	41,000	490	0.036	38,800	425	0.028	34,200	340	0.02
	1.5	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2.5	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	3	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	4	36,900	395	0.009	34,920	345	0.007	30,780	275	0.005
	5	32,800	315	0.009	31,040	270	0.007	27,360	220	0.005
	6	32,800	315	0.005	31,040	270	0.004	27,360	220	0.003
	8	24,600	205	0.004	23,280	180	0.003	20,520	145	0.002
	10	12,300	90	0.004	11,640	75	0.003	10,260	60	0.002
0.5	1	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	1.5	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	2	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	2.5	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	3	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	4	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	5	30,780	555	0.011	29,070	470	0.009	25,650	415	0.006
	6	27,360	440	0.011	25,840	370	0.009	22,800	330	0.006
	8	20,520	290	0.007	19,380	245	0.005	17,100	215	0.004
	10	20,520	290	0.005	19,380	245	0.004	17,100	215	0.003
	12	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	14	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
16	3,420	35	0.005	3,230	30	0.004	2,850	25	0.003	
0.6	1	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	2	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	3	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	4	30,780	830	0.022	29,070	680	0.017	25,650	555	0.012
	5	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008

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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)
0.6	6	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
	8	27,360	655	0.008	25,840	540	0.006	22,800	440	0.005
	10	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	12	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	14	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
	16	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
0.7	2	34,200	1,130	0.063	32,300	930	0.049	28,500	765	0.035
	4	30,780	915	0.025	29,070	755	0.02	25,650	620	0.014
	6	30,780	915	0.016	29,070	755	0.012	25,650	620	0.009
	8	27,360	725	0.016	25,840	595	0.012	22,800	490	0.009
	10	27,360	725	0.009	25,840	595	0.007	22,800	490	0.005
	12	20,520	475	0.006	19,380	390	0.005	17,100	320	0.004
0.8	2	34,200	1,230	0.072	32,300	1,035	0.056	28,500	855	0.04
	3	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	4	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	5	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	6	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	8	30,780	995	0.018	29,070	840	0.014	25,650	695	0.01
	10	27,360	785	0.018	25,840	660	0.014	22,800	545	0.01
	12	27,360	785	0.011	25,840	660	0.008	22,800	545	0.006
	14	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	16	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
20	10,260	220	0.007	9,690	185	0.006	8,550	155	0.004	
0.9	4	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	6	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	8	29,250	1,120	0.02	27,630	935	0.016	24,390	775	0.011
	10	26,000	885	0.02	24,560	740	0.016	21,680	610	0.011
1	2	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	3	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	4	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	5	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	6	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	7	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	8	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	10	27,720	1,245	0.023	26,190	1,060	0.018	23,130	870	0.013
	12	24,640	985	0.023	23,280	840	0.018	20,560	690	0.013
	14	24,640	985	0.014	23,280	840	0.011	20,560	690	0.008
	16	18,480	645	0.014	17,460	550	0.011	15,420	450	0.008
	18	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	20	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	22	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	26	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
30	9,240	275	0.009	8,730	235	0.007	7,710	195	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/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1	40	3,080	75	0.009	2,910	65	0.007	2,570	55	0.005
	50	3,080	75	0.006	2,910	65	0.005	2,570	55	0.003
1.2	4	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	6	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	8	23,670	1,115	0.043	22,320	930	0.034	19,710	770	0.024
	10	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	12	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	16	21,040	880	0.016	19,840	735	0.013	17,520	610	0.009
	20	15,780	580	0.011	14,880	485	0.008	13,140	400	0.006
	26	7,890	245	0.011	7,440	205	0.008	6,570	170	0.006
1.4	6	21,500	1,295	0.088	20,300	1,100	0.069	18,000	935	0.049
	8	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	10	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	16	17,200	830	0.032	16,240	705	0.025	14,400	600	0.018
1.5	4	23,900	1,580	0.135	22,600	1,355	0.105	20,000	1,075	0.075
	5	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	6	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	7	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	8	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	10	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	12	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	14	21,510	1,280	0.034	20,340	1,100	0.026	18,000	870	0.019
	16	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	18	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	20	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	22	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	26	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	30	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
35	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005	
40	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005	
1.6	4	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	6	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	8	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	10	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	12	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	16	19,980	1,260	0.036	18,900	1,055	0.028	16,650	900	0.02
	20	17,760	995	0.036	16,800	830	0.028	14,800	710	0.02
1.8	4	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	6	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	8	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	10	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	12	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	16	19,980	1,440	0.041	18,900	1,190	0.032	16,650	990	0.023

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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)
1.8	20	17,760	1,140	0.041	16,800	940	0.032	14,800	785	0.023
2	6	18,000	1,795	0.18	17,000	1,525	0.14	15,000	1,285	0.1
	8	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	10	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	12	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	14	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	16	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	18	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	20	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	22	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	26	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	30	14,400	1,150	0.027	13,600	975	0.021	12,000	820	0.015
	35	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	40	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	45	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
50	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01	
60	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01	
2.5	8	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	10	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	12	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	16	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	20	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	22	14,220	1,560	0.056	13,410	1,300	0.044	11,880	1,055	0.031
	26	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	30	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	35	12,640	1,230	0.034	11,920	1,025	0.026	10,560	835	0.019
	40	9,480	810	0.034	8,940	675	0.026	7,920	550	0.019
45	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013	
50	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013	
3	6	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	8	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	10	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	12	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	14	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	16	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	18	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	20	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	22	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	26	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	30	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	35	10,960	1,310	0.068	10,320	1,105	0.053	9,120	920	0.038
	40	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
45	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023	

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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)
3	50	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
	60	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
4	8	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	10	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	12	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	14	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	16	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	18	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	20	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	22	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	26	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	30	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	35	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	40	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	45	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
	50	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
60	7,840	1,260	0.054	7,440	1,070	0.042	6,560	895	0.03	
5	15	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	20	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	26	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	30	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	35	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	40	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	50	6,930	1,495	0.113	6,570	1,180	0.088	5,760	1,040	0.063
	60	6,160	1,180	0.113	5,840	930	0.088	5,120	820	0.063
6	20	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
	30	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
8	25	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
	30	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
10	30	3,850	1,650	0.9	3,680	1,400	0.7	3,200	1,200	0.5
	40	3,850	1,650	0.63	3,680	1,400	0.49	3,200	1,200	0.35
12	32	3,200	1,520	1.08	3,050	1,300	0.84	2,650	1,100	0.6
	45	3,200	1,520	0.756	3,050	1,300	0.588	2,650	1,100	0.42

RPM = rev/min
FEED = mm/min

