

RECOMMENDED CUTTING CONDITIONS

High feed conditions

Work material			Carbon Steel, Cast Iron, Alloy Steel (–30HRC) AISI 1049, AISI 30, AISI P20				Alloy steel, Tool steel, Pre-haedened steel AIAI H13, AISI W1-10, AISI P21				Hardened Steel (45–55HRC) AISI H13				Hardened Steel (55–62HRC) AISI D2							
DC (inch)	RE (inch)	LU (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)					
0.1250	0.03	0.375	16000	11000	433.1	.009	.039	13000	7800	307.1	.007	.039	11000	6300	248	.006	.039	8000	2800	110.2	.003	.039
0.1250	0.03	0.625	16000	9000	354.3	.009	.039	13000	6400	252	.007	.039	11000	5100	200.8	.006	.039	8000	2300	90.6	.003	.039
0.1875	0.05	0.563	12000	12000	472.4	.012	.059	10000	8500	334.6	.009	.059	8000	6800	267.7	.007	.059	6000	3000	118.1	.004	.059
0.1875	0.05	0.938	12000	12000	472.4	.011	.059	10000	8500	334.6	.008	.059	8000	6800	267.7	.006	.059	6000	3000	118.1	.003	.059
0.2500	0.06	0.750	8000	13000	511.8	.020	.078	6600	9200	362.2	.016	.078	5400	7400	291.3	.012	.078	4000	3300	129.9	.006	.078
0.2500	0.06	1.250	8000	13000	511.8	.018	.078	6600	9200	362.2	.014	.078	5400	7400	291.3	.011	.078	4000	3300	129.9	.006	.078
0.3125	0.08	0.938	6000	13000	511.8	.024	.118	5000	9200	362.2	.018	.118	4000	7400	291.3	.014	.118	3000	3300	129.9	.007	.118
0.3125	0.08	1.563	6000	13000	511.8	.021	.118	5000	9200	362.2	.017	.118	4000	7400	291.3	.013	.118	3000	3300	129.9	.006	.118
0.3750	0.08	1.125	4800	13000	511.8	.024	.177	4000	9200	362.2	.018	.177	3200	7400	291.3	.014	.177	2400	3300	129.9	.007	.177
0.3750	0.08	1.875	4800	13000	511.8	.021	.177	4000	9200	362.2	.017	.177	3200	7400	291.3	.013	.177	2400	3300	129.9	.006	.177
0.5000	0.12	1.500	4000	12000	472.4	.035	.177	3300	8500	334.6	.028	.177	2700	6800	267.7	.018	.177	2000	3000	118.1	.009	.177
0.5000	0.12	2.500	4000	12000	472.4	.031	.177	3300	8500	334.6	.024	.177	2700	6800	267.7	.016	.177	2000	3000	118.1	.008	.177

The diagram illustrates a cutting tool engaged in a cutting process. It shows the depth of cut (ap) as the vertical distance from the original surface to the new surface, and the width of cut (ae) as the horizontal distance across the cutting edge.

High depth of cut conditions

Work material			Carbon Steel, Cast Iron, Alloy Steel (–30HRC) AISI 1049, AISI 30, AISI P20				Alloy steel, Tool steel, Pre-haedened steel AIAI H13, AISI W1-10, AISI P21				Hardened Steel (45–55HRC) AISI H13				Hardened Steel (55–62HRC) AISI D2							
DC (inch)	RE (inch)	LU (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)	Revolution (min ⁻¹)	Table feed (mm/min) (IPM)		Depth of cut ap (inch)	Width of cut ae (inch)					
0.1250	0.03	0.375	9600	3300	129.9	.020	.039	8000	2300	90.6	.016	.039	6400	1800	70.9	.012	.039	4800	830	32.7	.006	.039
0.1250	0.03	0.625	9600	2700	106.3	.020	.039	8000	1900	74.8	.014	.039	6400	1500	59.1	.010	.039	4800	680	26.8	.005	.039
0.1875	0.05	0.563	7200	3600	141.7	.024	.059	6000	2500	98.4	.020	.059	4800	2000	78.7	.014	.059	3600	900	35.4	.005	.059
0.1875	0.05	0.938	7200	3600	141.7	.024	.059	6000	2500	98.4	.016	.059	4800	2000	78.7	.013	.059	3600	900	35.4	.004	.059
0.2500	0.06	0.750	4000	3300	129.9	.020	.118	3300	2300	90.6	.016	.118	2700	1800	70.9	.012	.118	2000	830	32.7	.004	.118
0.2500	0.06	1.250	4800	3900	153.5	.040	.079	4000	2700	106.3	.031	.079	3200	2200	86.6	.024	.079	2400	980	38.6	.008	.079
0.3125	0.08	0.938	3600	3900	153.5	.047	.118	3000	2700	106.3	.040	.118	2400	2200	86.6	.028	.118	1800	980	38.6	.009	.118
0.3125	0.08	1.563	3600	3900	153.5	.043	.118	3000	2700	106.3	.035	.118	2400	2200	86.6	.028	.118	1800	980	38.6	.009	.118
0.3750	0.08	1.125	2900	3900	153.5	.047	.177	2400	2700	106.3	.040	.177	1900	2200	86.6	.028	.177	1500	980	38.6	.009	.177
0.3750	0.08	1.875	2900	3900	153.5	.043	.177	2400	2700	106.3	.035	.177	1900	2200	86.6	.028	.177	1500	980	38.6	.009	.177
0.5000	0.12	1.500	2400	3600	141.7	.071	.177	2000	2500	98.4	.055	.177	1600	2000	78.7	.043	.177	1200	900	35.4	.016	.177
0.5000	0.12	2.500	2400	3600	141.7	.063	.177	2000	2500	98.4	.051	.177	1600	2000	78.7	.040	.177	1200	900	35.4	.012	.177

The diagram illustrates a cutting tool engaged in a cutting process. It shows the depth of cut (ap) as the vertical distance from the original surface to the new surface, and the width of cut (ae) as the horizontal distance across the cutting edge.

- 1) If the depth of cut is smaller than this table, feed rate can be increased.
- 2) Using air blow or mist is recommended.
- 3) When contour milling, cutting conditions can vary greatly due to the geometry of the workpiece and depth of cut.
- 4) The irregular helix flute end mill has a large effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is very low, then vibration can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.