KC SUL TOOLS

FRESAS EM METAL DURO

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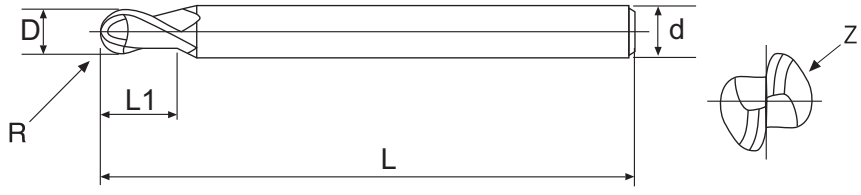
TIPOS DE COBERTURAS

	GREEN	TISIN	ALCRONA	TIALN	ALTIN
ESPESSURA DA CAMADA DE REVESTIMENTO	4µm	4µm	4µm	1 - 4µm	1 - 4µm
COEFICIENTE DE FRICÇÃO	0.5	0.5	0.4	0.5	0.45
HRC (Hv0.05)	4000	3600	2800	3300	3300
TEMPERATURA DE OXIDAÇÃO	1100	1100	1000	800	900
COR	VERDE	ACOBREADA	CINZA	VIOLETA	VIOLETA ESCURO

2EST

FRESA TOPO ESFÉRICO 2 CORTES



Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EST 0032 H04	0.3	0.6	50	4	2
2EST 0042 H04	0.4	0.8	50	4	2
2EST 0052 H04	0.5	1	50	4	2
2EST 0062 H04	0.6	1.2	50	4	2
2EST 0072 H04	0.7	1.4	50	4	2
2EST 0082 H04	0.8	1.6	50	4	2
2EST 0092 H04	0.9	1.8	50	4	2
2EST 0102 H03	1	2	50	3	2
2EST 0102 H04	1	2	50	4	2
2EST 0102 H06	1	2	50	6	2
2EST 0152 H03	1.5	3	50	3	2
2EST 0152 H04	1.5	3	50	4	2
2EST 0152 H06	1.5	3	50	6	2
2EST 0202 H03	2	4	50	3	2
2EST 0202 H04	2	4	50	4	2
2EST 0202 H06	2	4	50	6	2
2EST 0252 H03	2.5	5	50	3	2
2EST 0252 H04	2.5	5	50	4	2
2EST 0252 H06	2.5	5	50	6	2
2EST 0302 H03	3	6	50	3	2
2EST 0302 H04	3	6	50	4	2
2EST 0302 H06	3	6	50	6	2
2EST 0352 H04	3.5	7	50	4	2
2EST 0352 H06	3.5	7	50	6	2
2EST 0402 H04	4	8	50	4	2
2EST 0402 H06	4	8	50	6	2
2EST 0452 H06	4.5	9	50	6	2
2EST 0502 H05	5	10	50	5	2
2EST 0502 H06	5	10	50	6	2
2EST 0552 H06	5.5	11	50	6	2
2EST 0602 H06	6	12	50	6	2
2EST 0702 H08	7	14	60	8	2
2EST 0802 H08	8	16	60	8	2
2EST 0902 H10	9	18	75	10	2
2EST 1002 H10	10	20	75	10	2
2EST 1102 H12	11	22	75	12	2
2EST 1202 H12	12	24	75	12	2
2EST 1402 H16	14	28	100	16	2
2EST 1602 H16	16	32	100	16	2
2EST 1802 H20	18	36	100	20	2
2EST 2002 H20	20	40	100	20	2

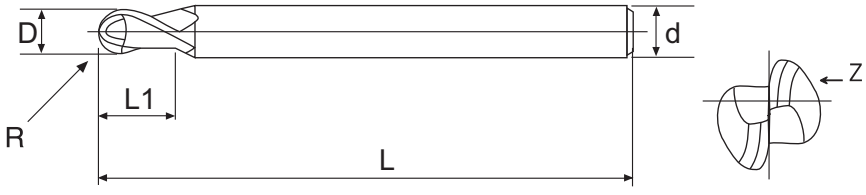
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Raio	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
0.50	20.480	768	16.640	512	13.440	486
0.75	19.500	820	15.700	680	12.700	560
1.00	18.944	896	14.272	742	11.520	640
1.25	17.000	1.060	12.800	950	10.500	640
1.50	15.360	1.408	11.520	1.024	9.984	640
2.00	14.720	2.048	10.880	960	8.960	870
2.50	13.800	2.560	9.984	1.280	7.040	768
3.00	12.800	2.560	9.728	1.216	6.400	704
3.50	9.300	2.680	6.800	1.420	4.500	780
4.00	8.320	2.816	5.120	1.536	3.200	832
4.50	6.590	2.600	4.100	1.380	2.800	750
5.00	4.864	2.432	2.560	1.152	2.048	640
6.00	3.800	2.300	2.560	1.280	1.536	576
7.00	2.200	1.250	1.580	690	980	420
8.00	1.650	780	1.050	520	700	360
10.00	1.100	600	680	410	490	245
Profundidade de Corte	≦ 0.02D ≦ 1D		D 0.02D			

2ELST

FRESA TOPO ESFÉRICO 2 CORTES LONGA



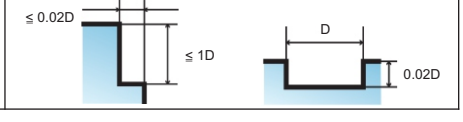
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELST 0102 075	1	2	75	6	2
2ELST 0102 100	1	2	100	6	2
2ELST 0152 075	1.5	3	75	6	2
2ELST 0152 100	1.5	3	100	6	2
2ELST 0202 075	2	4	75	6	2
2ELST 0202 100	2	4	100	6	2
2ELST 0252 075	2.5	5	75	6	2
2ELST 0252 100	2.5	5	100	6	2
2ELST 0302 075	3	6	75	6	2
2ELST 0302 100	3	6	100	6	2
2ELST 0352 100	3.5	7	100	6	2
2ELST 0402 075	4	8	75	6	2
2ELST 0402 100	4	8	100	6	2
2ELST 0502 075	5	10	75	6	2
2ELST 0502 100	5	10	100	6	2
2ELST 0602 075	6	12	75	6	2
2ELST 0602 100	6	12	100	6	2
2ELST 0602 150	6	12	150	6	2
2ELST 0802 075	8	16	75	8	2
2ELST 0802 100	8	16	100	8	2
2ELST 0802 150	8	16	150	8	2
2ELST 1002 100	10	20	100	10	2
2ELST 1002 150	10	20	150	10	2
2ELST 1002 200	10	20	200	10	2
2ELST 1202 100	12	24	100	12	2
2ELST 1202 150	12	24	150	12	2
2ELST 1202 200	12	24	200	12	2
2ELST 1602 150	16	32	150	16	2
2ELST 1602 200	16	32	200	16	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

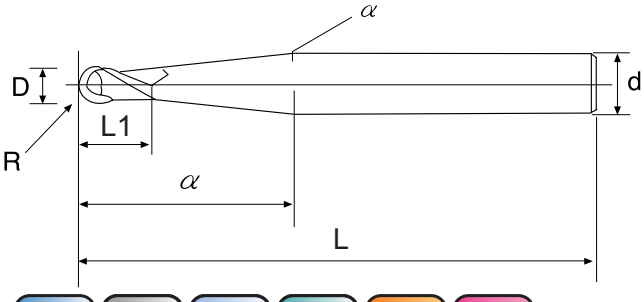
Raio	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
0.50	20.480	768	16.640	512	13.440	486
0.75	19.500	820	15.700	680	12.700	560
1.00	18.944	896	14.272	742	11.520	640
1.25	17.000	1.060	12.800	950	10.500	640
1.50	15.360	1.408	11.520	1.024	9.984	640
2.00	14.720	2.048	10.880	960	8.960	870
2.50	13.800	2.560	9.984	1.280	7.040	768
3.00	12.800	2.560	9.728	1.216	6.400	704
3.50	9.300	2.680	6.800	1.420	4.500	780
4.00	8.320	2.816	5.120	1.536	3.200	832
4.50	6.590	2.600	4.100	1.380	2.800	750
5.00	4.864	2.432	2.560	1.152	2.048	640
6.00	3.800	2.300	2.560	1.280	1.536	576
7.00	2.200	1.250	1.580	690	980	420
8.00	1.650	780	1.050	520	700	360

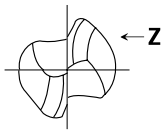
Profundidade de Corte



2EPNST

FRESA TOPO ESFÉRICO 2 CORTES ÂNGULO E HASTE REFORÇADA





Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Ângulo α	Cortes Z
2EPNST 0101 H06	1	2	75	6	1º	2
2EPNST 0151 H06	1.5	3	75	6	1º	2
2EPNST 0201 H06	2	4	75	6	1º	2
2EPNST 0205 H08	2	12	100	8	5º	2
2EPNST 0301 H06	3	6	75	6	1º	2
2EPNST 0305 H08	3	8	100	8	5º	2
2EPNST 0401 H06	4	8	75	6	1º	2
2EPNST 0405 H08	4	10	100	8	5º	2
2EPNST 0605 H10	6	12	100	10	5º	2
2EPNST 0603 H12	6	16	150	12	3º	2
2EPNST 0805 H12	8	16	100	12	5º	2
2EPNST 0803 H12	8	20	150	12	3º	2

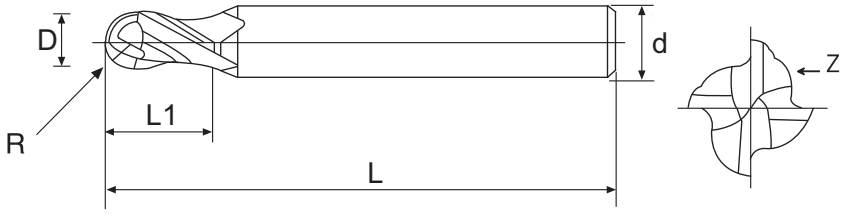
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Raio	HRC 45 ~ 52		HRC 52 ~ 55	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.50	8.800	260	7.920	234
0.75	6.900	190	4.950	171
1.00	5.600	420	5.040	378
1.50	7.200	380	6.480	342
2.00	7.200	380	6.480	342
3.00	9.728	1.216	6.400	704
4.00	5.120	1.536	3.200	832

4EST

FRESA TOPO ESFÉRICO 4 CORTES



Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4EST 0104 H04	1	2	50	4	4
4EST 0104 H06	1	2	50	6	4
4EST 0154 H04	1.5	3	50	4	4
4EST 0154 H06	1.5	3	50	6	4
4EST 0204 H04	2	4	50	4	4
4EST 0204 H06	2	4	50	6	4
4EST 0254 H04	2.5	5	50	4	4
4EST 0254 H06	2.5	5	50	6	4
4EST 0304 H03	3	6	50	3	4
4EST 0304 H04	3	6	50	4	4
4EST 0304 H06	3	6	50	6	4
4EST 0354 H04	3.5	7	50	4	4
4EST 0354 H06	3.5	7	50	6	4
4EST 0404 H04	4	8	50	4	4
4EST 0404 H06	4	8	50	6	4
4EST 0454 H06	4.5	9	50	6	4
4EST 0504 H06	5	10	50	6	4
4EST 0554 H06	5.5	11	50	6	4
4EST 0604 H06	6	12	50	6	4
4EST 0704 H08	7	14	60	8	4
4EST 0804 H08	8	16	60	8	4
4EST 0904 H10	9	18	75	10	4
4EST 1004 H10	10	20	75	10	4
4EST 1104 H12	11	22	75	12	4
4EST 1204 H12	12	24	75	12	4
4EST 1404 H16	14	28	100	16	4
4EST 1604 H16	16	32	100	16	4
4EST 1804 H20	18	36	100	20	4
4EST 2004 H20	20	40	100	20	4

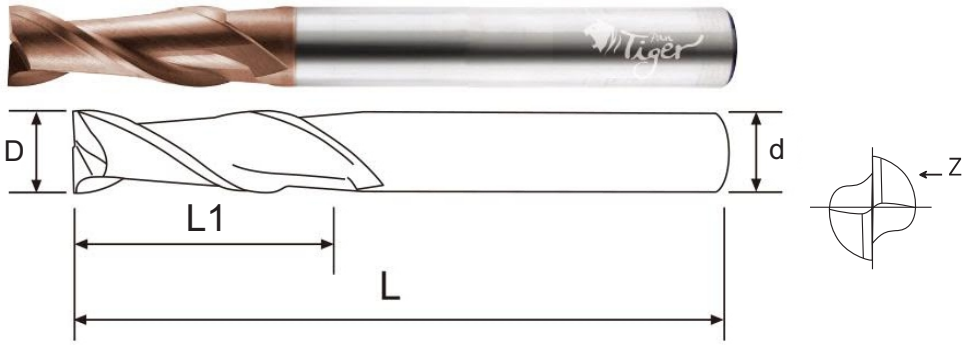
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Raio	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
0.50	18.432	691	14.976	461	12.096	438
0.75	17.550	738	14.130	612	11.430	504
1.00	17.050	806	12.845	668	10.368	576
1.25	15.300	954	11.520	855	9.450	576
1.50	13.824	1.267	10.368	922	8.986	576
2.00	13.248	1.843	9.792	864	8.064	783
2.50	12.420	2.304	8.986	1.152	6.336	691
3.00	11.520	2.304	8.755	1.094	5.760	634
3.50	8.370	2.412	6.120	1.278	4.050	702
4.00	7.488	2.534	4.608	1.382	2.880	749
4.50	5.931	2.340	3.690	1.241	2.520	675
5.00	4.378	2.189	2.304	1.037	1.843	576
6.00	3.420	2.070	2.304	1.152	1.382	518
7.00	1.980	1.125	1.422	621	882	378
8.00	1.485	702	945	468	630	324
10.00	990	540	612	369	441	221
Profundidade de Corte	≤ 0.02D ≤ 1D					

2RST

FRESA TOPO RETO 2 CORTES



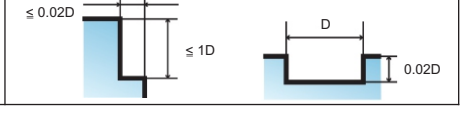
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RST 0022 H04	0.2	0.4	50	4	2
2RST 0032 H04	0.3	0.6	50	4	2
2RST 0042 H04	0.4	0.8	50	4	2
2RST 0052 H04	0.5	1	50	4	2
2RST 0062 H04	0.6	1.2	50	4	2
2RST 0072 H04	0.7	1.4	50	4	2
2RST 0082 H04	0.8	1.6	50	4	2
2RST 0092 H04	0.9	1.8	50	4	2
2RST 0102 H03	1	3	50	3	2
2RST 0102 H04	1	3	50	4	2
2RST 0102 H06	1	3	50	6	2
2RST 0152 H03	1.5	4	50	3	2
2RST 0152 H04	1.5	4	50	4	2
2RST 0152 H06	1.5	4	50	6	2
2RST 0202 H03	2	6	50	3	2
2RST 0202 H04	2	6	50	4	2
2RST 0202 H06	2	6	50	6	2
2RST 0252 H03	2.5	8	50	3	2
2RST 0252 H04	2.5	8	50	4	2
2RST 0252 H06	2.5	8	50	6	2
2RST 0302 H03	3	8	50	3	2
2RST 0302 H04	3	8	50	4	2
2RST 0302 H06	3	8	50	6	2
2RST 0352 H04	3.5	10	50	4	2
2RST 0352 H06	3.5	10	50	6	2
2RST 0402 H04	4	11	50	4	2
2RST 0402 H06	4	11	50	6	2
2RST 0452 H06	4.5	13	50	6	2
2RST 0502 H06	5	13	50	6	2
2RST 0552 H05	5	13	50	6	2
2RST 0552 H06	5.5	13	50	6	2
2RST 0602 H06	6	16	50	6	2
2RST 0652 H08	6.5	16	60	8	2
2RST 0702 H08	7	16	60	8	2
2RST 0752 H08	7.5	19	60	8	2
2RST 0802 H08	8	20	60	8	2
2RST 0852 H10	8.5	20	75	10	2
2RST 0902 H10	9	20	75	10	2
2RST 0952 H10	9.5	25	75	10	2
2RST 1002 H10	10	25	75	10	2
2RST 1052 H12	10.5	25	75	12	2
2RST 1102 H12	11	30	75	12	2
2RST 1152 H12	11.5	30	75	12	2
2RST 1202 H12	12	32	75	12	2
2RST 1402 H16	14	40	100	16	2
2RST 1602 H16	16	40	100	16	2
2RST 1802 H20	18	45	100	20	2
2RST 2002 H20	20	45	100	20	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

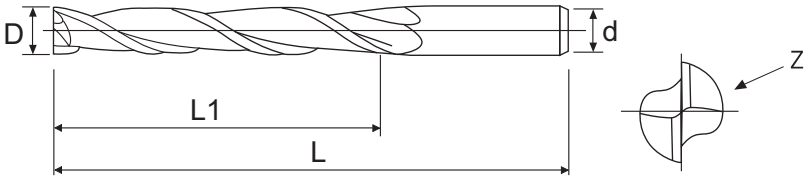
D	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
1	11.500	384	8.896	288	6.720	243
1.5	10.800	480	8.250	380	6.400	290
2	9.472	448	8.192	384	5.760	320
2.5	9.100	500	8.050	420	5.600	320
3	7.680	550	7.150	480	4.992	320
3.5	7.200	610	6.850	520	4.680	350
4	6.950	680	6.350	580	4.480	350
4.5	6.660	700	6.100	600	4.500	360
5	6.400	700	5.850	600	4.310	360
5.5	6.200	750	5.900	650	4.100	380
6	6.200	750	5.900	650	3.900	380
6.5	6.200	800	5.700	710	3.800	410
7	5.900	850	5.000	760	3.700	420
7.5	5.900	850	4.600	760	3.600	420
8	4.500	950	2.880	800	1.850	470
8.5	4.100	1.020	2.450	900	1.750	500
10	2.900	1.400	1.500	750	1.100	380
10.5	2.800	1.400	1.350	680	1.000	350
11	2.700	1.300	1.250	500	950	300
11.5	2.600	1.300	1.100	450	850	250
12	2.450	1.000	1.020	420	790	210
12.5	2.100	900	950	380	680	200
13	1.800	700	870	350	620	180
14	1.680	650	740	320	570	170
15	1.500	600	700	320	520	170
16	1.400	600	670	300	490	170
17	1.300	600	630	290	450	170
18	1.190	600	580	270	430	160
19	1.050	550	490	250	395	150
20	920	550	440	210	310	120
25	780	550	380	165	280	120

Profundidade de Corte



2RLST

FRESA TOPO RETO 2 CORTES LONGA



Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLST 0102 H04	1	7	50	4	2
2RLST 0152 H04	1.5	9	50	4	2
2RLST 0202 H04	2	12	50	4	2
2RLST 0252 H04	2.5	12	50	4	2
2RLST 0302 H06	3	15	60	6	2
2RLST 0352 H06	3.5	15	60	6	2
2RLST 0402 H06	4	20	75	6	2
2RLST 0452 H06	4.5	20	75	6	2
2RLST 0502 H06	5	25	75	6	2
2RLST 0552 H05	5.5	25	75	5	2
2RLST 0552 H06	5.5	25	75	6	2
2RLST 0602 H06	6	30	75	6	2
2RLST 0602 075	6	16	75	6	2
2RLST 0602 100	6	16	100	6	2
2RLST 0702 H08	7	30	100	8	2
2RLST 0802 H08	8	40	100	8	2
2RLST 0802 075	8	20	75	8	2
2RLST 0802 100	8	20	100	8	2
2RLST 0902 H10	9	40	100	10	2
2RLST 1002 H10	10	40	100	10	2
2RLST 1002 100	10	25	100	10	2
2RLST 1002 150	10	25	150	10	2
2RLST 1102 H12	11	40	100	12	2
2RLST 1202 H12	12	50	100	12	2
2RLST 1202 100	12	32	100	12	2
2RLST 1202 150	12	32	150	12	2
2RLST 1402 H16	14	50	150	16	2
2RLST 1602 H16	16	60	150	16	2
2RLST 2002 H20	20	90	200	20	2

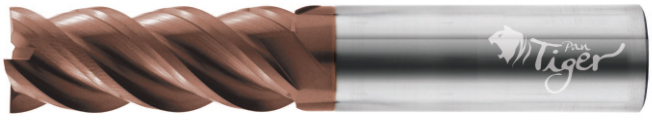
▪ Parâmetros de Corte

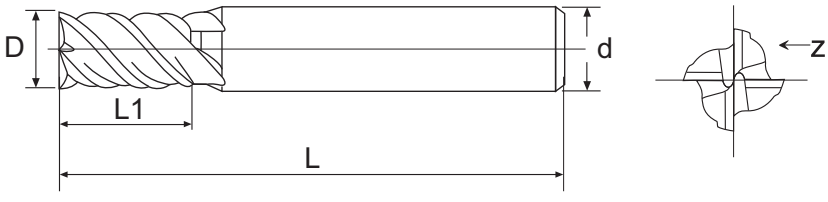
▪ RPM : rev./min ▪ FEED : mm/min

D	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
1	6.900	307	5.338	230	4.032	195
1.5	6.480	684	4.950	304	3.840	232
2	5.683	358	4.915	307	3.456	256
2.5	5.460	400	4.830	336	3.360	256
3	4.608	440	4.290	384	2.995	256
3.5	4.320	488	4.110	416	2.808	280
4	4.170	544	3.810	464	2.688	280
4.5	3.996	560	3.660	480	2.700	288
5	3.840	560	3.510	480	2.586	288
5.5	3.720	600	3.540	520	2.460	304
6	3.720	600	3.540	520	2.340	304
6.5	3.720	640	3.420	568	2.280	328
7	3.600	680	3.000	608	2.220	336
7.5	3.540	680	2.760	608	2.160	336
8	3.540	760	1.728	640	1.110	376
8.5	2.700	816	1.470	720	1.050	400
10	2.460	1.120	900	600	660	304
10.5	1.740	1.120	810	544	600	280
11	1.680	1.040	750	400	570	240
11.5	1.620	1.040	660	360	510	200
12	1.560	800	612	336	474	168
12.5	1.470	720	570	304	408	160
13	1.260	560	522	280	372	144
14	1.080	520	444	256	342	136
15	1.008	480	420	256	312	136
16	900	480	402	240	294	136
17	840	480	378	232	270	136
18	780	440	348	216	258	136
19	714	440	294	200	237	120
20	630	400	264	168	186	96
Profundidade de Corte	≤ 0.02D ≤ 1D		D 0.02D			

4RST

FRESA TOPO RETO 4 CORTES



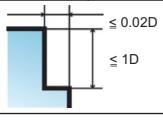


Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RST 0104 H03	1	3	50	3	4
4RST 0104 H04	1	3	50	4	4
4RST 0104 H06	1	3	50	6	4
4RST 0154 H03	1.5	4	50	3	4
4RST 0154 H04	1.5	4	50	4	4
4RST 0154 H06	1.5	4	50	6	4
4RST 0204 H03	2	6	50	3	4
4RST 0204 H04	2	6	50	4	4
4RST 0204 H06	2	6	50	6	4
4RST 0254 H03	2.5	8	50	3	4
4RST 0254 H04	2.5	8	50	4	4
4RST 0254 H06	2.5	8	50	6	4
4RST 0304 H03	3	8	50	3	4
4RST 0304 H04	3	8	50	4	4
4RST 0304 H06	3	8	50	6	4
4RST 0354 H04	3.5	10	50	4	4
4RST 0354 H06	3.5	10	50	6	4
4RST 0404 H04	4	11	50	4	4
4RST 0404 H06	4	11	50	6	4
4RST 0454 H06	4.5	13	50	6	4
4RST 0504 H06	5	13	50	6	4
4RST 0554 H05	5	13	50	6	4
4RST 0554 H06	5.5	13	50	6	4
4RST 0604 H06	6	16	50	6	4
4RST 0654 H08	6.5	16	60	8	4
4RST 0704 H08	7	16	60	8	4
4RST 0754 H08	7.5	19	60	8	4
4RST 0804 H08	8	20	60	8	4
4RST 0854 H10	8.5	20	75	10	4
4RST 0904 H10	9	20	75	10	4
4RST 0954 H10	9.5	25	75	10	4
4RST 1004 H10	10	30	75	10	4
4RST 1054 H12	10.5	30	75	12	4
4RST 1104 H12	11	30	75	12	4
4RST 1154 H12	11.5	30	75	12	4
4RST 1204 H12	12	32	75	12	4
4RST 1404 H13	13	25	75	13	4
4RST 1404 H16	14	40	100	16	4
4RST 1604 H16	16	40	100	16	4
4RST 1804 H20	18	45	100	20	4
4RST 2004 H20	20	45	100	20	4

▪ Parâmetros de Corte

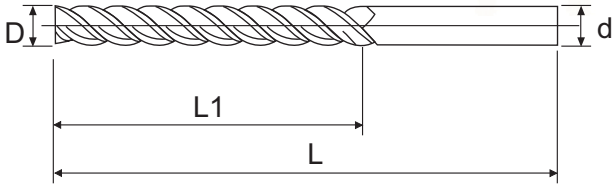
▪ RPM : rev./min ▪ FEED : mm/min

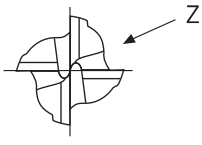
D	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
1	8.280	369	6.405	276	4.838	233
1.5	7.776	461	5.940	365	4.608	278
2	6.820	430	5.898	369	4.147	307
2.5	6.552	480	5.796	403	4.032	307
3	5.530	528	5.148	461	3.594	307154
3.5	5.184	586	4.932	499	3.370	336
4	5.004	653	4.572	557	3.226	336
4.5	4.795	672	4.382	576	3.240	346
5	4.608	672	4.212	576	3.103	346
5.5	4.464	720	4.248	624	2.952	365
6	4.464	720	4.248	624	2.808	365
6.5	4.320	768	4.104	682	2.736	394
7	4.248	816	3.600	730	2.664	403
7.5	4.248	816	3.312	730	2.592	403
8	3.240	912	2.074	768	1.332	451
8.5	2.952	979	1.764	864	1.260	480
10	2.088	1.344	1.080	720	792	365
10.5	2.016	1.344	972	653	720	336
11	1.944	1.248	900	480	684	288
11.5	1.872	1.248	792	432	612	240
12	1.764	960	734	403	569	202
12.5	1.512	864	684	365	490	192
13	1.296	672	626	336	446	173
14	1.210	624	533	307	410	163
15	1.080	476	504	307	374	163
16	1.080	576	482	288	353	163
17	936	576	454	278	324	163
18	857	528	418	259	310	154
19	756	528	353	240	284	144
20	662	528	317	202	223	115
25	562	384	274	158	202	115
Profundidade de Corte						



4RLST

FRESA TOPO RETO 4 CORTES LONGA

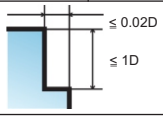




Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLST 0104 H04	1	6	50	4	4
4RLST 0154 H04	1.5	9	50	4	4
4RLST 0204 H04	2	12	50	4	4
4RLST 0254 H04	2.5	12	50	4	4
4RLST 0304 H06	3	15	60	6	4
4RLST 0354 H06	3.5	15	60	6	4
4RLST 0404 H06	4	20	75	6	4
4RLST 0454 H06	4.5	20	75	6	4
4RLST 0504 H05	5	25	75	5	4
4RLST 0504 H06	5	25	75	6	4
4RLST 0554 H06	5.5	25	75	6	4
4RLST 0602 H06	6	16	100	6	4
4RLST 0604 H06	6	16	75	6	4
4RLST 0604 075	6	30	75	6	4
4RLST 0704 H08	7	30	100	8	4
4RLST 0804 H08	8	40	100	8	4
4RLST 0804 075	8	20	75	8	4
4RLST 0804 100	8	20	100	8	4
4RLST 0904 H10	9	40	100	10	4
4RLST 1004 H10	10	40	100	10	4
4RLST 1004 100	10	30	100	10	4
4RLST 1004 150	10	30	150	10	4
4RLST 1104 H12	11	40	100	12	4
4RLST 1204 H12	12	50	100	12	4
4RLST 1204 100	12	32	100	12	4
4RLST 1204 150	12	32	150	12	4
4RLST 1404 H16	14	50	150	16	4
4RLST 1604 H16	16	60	150	16	4
4RLST 2004 H20	20	90	200	20	4

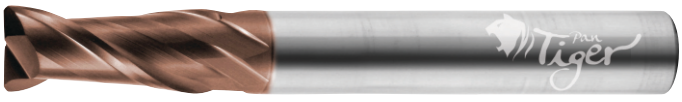
▪ Parâmetros de Corte

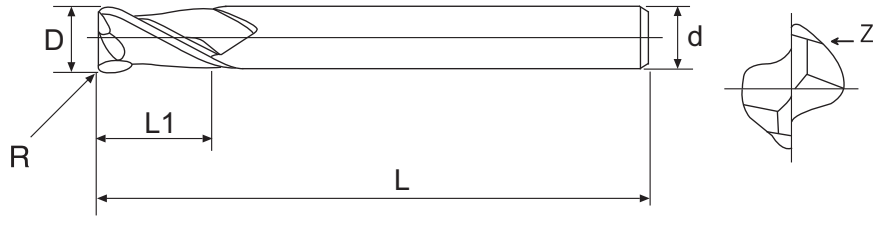
▪ RPM : rev./min ▪ FEED : mm/min

D	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
1	13.800	461	10.675	346	8.064	292
1.5	12.960	576	9.900	456	7.680	348
2	11.366	538	9.830	461	6.912	384
2.5	10.920	600	9.660	504	6.720	384
3	9.216	660	8.580	576	5.990	384
3.5	8.640	732	8.22	624	5.616	420
4	8.340	816	7.620	696	5.376	420
4.5	7.992	840	7.320	720	5.400	432
5	7.680	840	7.020	720	5.172	432
5.5	7.440	900	7.080	780	4.920	456
6	7.440	900	7.080	780	4.680	456
6.5	7.200	960	6.840	852	4.560	492
7	7.080	1.020	6.000	912	4.440	504
7.5	7.080	1.020	5.520	912	4.320	504
8	5.400	1.140	3.456	960	2.220	564
8.5	4.920	1.224	2.940	1.080	2.100	600
10	3.480	1.680	1.800	900	1.320	456
10.5	3.360	1.680	1.620	816	1.200	420
11	3.240	1.560	1.500	600	1.140	360
11.5	3.120	1.560	1.320	540	1.020	300
12	2.940	1.200	1.224	504	948	252
12.5	2.520	1.080	1.140	456	816	240
13	2.160	840	1.044	420	744	216
14	2.016	780	888	384	684	204
15	1.800	720	840	384	624	204
16	1.680	720	804	360	588	204
17	1.560	720	756	348	540	204
18	1.428	660	696	324	516	192
19	1.260	660	588	300	474	180
20	1.104	660	528	252	372	144
25	936	480	456	198	336	144
Profundidade de Corte	 ≤ 0.02D ≤ 1D					

2TRST

FRESA TOROIDAL 2 CORTES





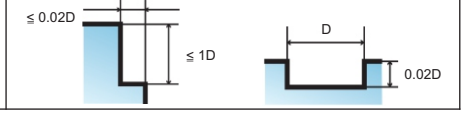
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRST 010022 H04	1	0.2	3	50	4	2
2TRST 015022 H04	1.5	0.2	4	50	4	2
2TRST 020052 H04	2	0.5	6	50	4	2
2TRST 025022 H04	2.5	0.5	8	50	4	2
2TRST 030052 H03	3	0.5	8	50	3	2
2TRST 030102 H03	3	1	8	50	3	2
2TRST 430052 H04	3	0.5	8	50	4	2
2TRST 430102 H04	3	1	8	50	4	2
2TRST 040052 H04	4	0.5	10	50	4	2
2TRST 040102 H04	4	1	10	50	4	2
2TRST 050052 H05	5	0.5	13	50	5	2
2TRST 050052 H06	5	0.5	13	50	6	2
2TRST 050102 H06	5	1	13	50	6	2
2TRST 060052 H06	6	0.5	15	50	6	2
2TRST 060102 H06	6	1	15	50	6	2
2TRST 080052 H08	8	0.5	20	60	8	2
2TRST 080102 H08	8	1	20	60	8	2
2TRST 100052 H10	10	0.5	25	75	10	2
2TRST 100102 H10	10	1	25	75	10	2
2TRST 120052 H12	12	0.5	30	75	12	2
2TRST 120102 H12	12	1	30	75	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

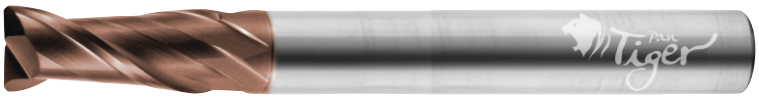
Raio	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
D1.0 X 0.2R	11.088	549	8.120	364	5.488	252
D1.5 X 0.2R	9.800	672	7.728	392	4.760	280
D2.0 X 0.5R	7.840	588	6.370	441	4.508	294
D3.0 X 0.5R	6.370	980	4.802	735	3.675	245
D3.0 X 1R	7.326	1.127	5.522	845	4.226	282
D4.0 X 0.5R	6.125	980	4.557	515	3.332	245
D4.0 X 1R	7.044	1.127	5.241	592	3.832	282
D6.0 X 0.5R	5.635	1.470	4.312	980	2.254	368
D6.0 X 1R	6.480	1.691	4.959	1.127	2.592	423
D8.0 X 0.5R	4.239	1.666	2.622	833	1.887	402
D8.0 X 1R	4.875	1.916	3.015	958	2.170	462
D10.0 X 0.5R	2.695	1.372	1.568	539	809	284
D10.0 X 1R	3.099	1.568	1.803	620	930	327
D12.0 X 0.5R	2.279	1.421	1.078	466	637	260
D12.0 X 1R	2.621	1.634	1.240	698	733	299

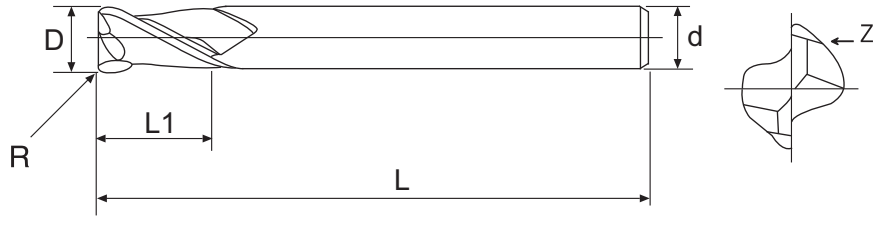
Profundidade de Corte



2TRLST

FRESA TOROIDAL 2 CORTES LONGA





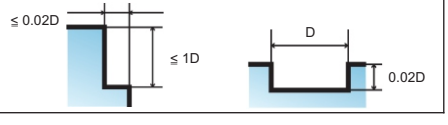
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLST 030052 H03	3	0.5	8	75	3	2
2TRLST 030102 H03	3	1	8	75	3	2
2TRLST 040052 H04	4	0.5	10	75	4	2
2TRLST 040102 H04	4	1	10	75	4	2
2TRLST 060052 H05	5	0.5	10	75	5	2
2TRLST 060052 H06	6	0.5	15	100	6	2
2TRLST 060102 H06	6	0.5	15	75	6	2
2TRLST 060102 075	6	1	15	75	6	2
2TRLST 060102 100	6	1	15	100	6	2
2TRLST 080052 H08	8	0.5	20	100	8	2
2TRLST 080102 H08	8	1	20	100	8	2
2TRLST 100052 H10	10	0.5	25	100	10	2
2TRLST 100102 H10	10	1	25	100	10	2
2TRLST 120052 H12	12	0.5	30	100	12	2
2TRLST 120102 H12	12	1	30	100	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

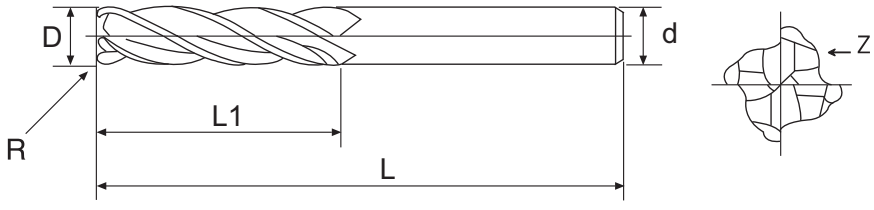
Raio	HRC 30		HRC 40		HRC 50	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
D3.0 X 0.5R	7.280	1.120	5.488	840	4.200	280
D3.0 X 1R	3.872	1.288	6.311	966	4.830	322
D4.0 X 0.5R	7.000	1.120	5.208	588	3.808	280
D4.0 X 1R	8.050	1.588	5.989	676	4.379	322
D6.0 X 0.5R	6.440	1.680	4.928	1.120	2.576	420
D6.0 X 1R	7.406	1.932	5.667	1.288	2.962	483
D8.0 X 0.5R	4.844	1.904	2.996	952	2.156	459
D8.0 X 1R	5.571	2.190	3.446	1.095	2.480	528
D10.0 X 1R	3.080	1.568	1.792	616	924	325
D10.0 X 1R	3.541	1.792	2.016	708	1.063	374
D12.0 X 1R	2.604	1.624	1.323	532	728	297
D12.0 X 1R	2.995	1.868	1.417	798	837	342

Profundidade de Corte



4TRST

FRESA TOROIDAL 4 CORTES



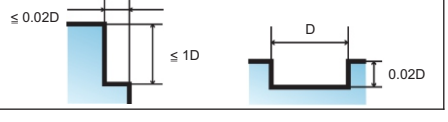
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRST 020054 H04	2	0.5	6	50	4	4
4TRST 025024 H04	2.5	0.2	8	50	4	4
4TRST 030054 H03	3	0.5	8	50	3	4
4TRST 030104 H03	3	1	8	50	3	4
4TRST 430054 H04	3	0.5	8	50	4	4
4TRST 430104 H04	3	1	8	50	4	4
4TRST 040054 H04	4	0.5	10	50	4	4
4TRST 040104 H04	4	1	10	50	4	4
4TRST 050054 H05	5	0.5	13	50	5	4
4TRST 050054 H06	5	0.5	13	50	6	4
4TRST 050104 H06	5	1	13	50	6	4
4TRST 060054 H06	6	0.5	15	50	6	4
4TRST 060104 H06	6	1	15	50	6	4
4TRST 080054 H08	8	0.5	20	60	8	4
4TRST 080104 H08	8	1	20	60	8	4
4TRST 100054 H10	10	0.5	25	75	10	4
4TRST 100104 H10	10	1	25	75	10	4
4TRST 120054 H12	12	0.5	30	75	12	4
4TRST 120104 H12	12	1	30	75	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

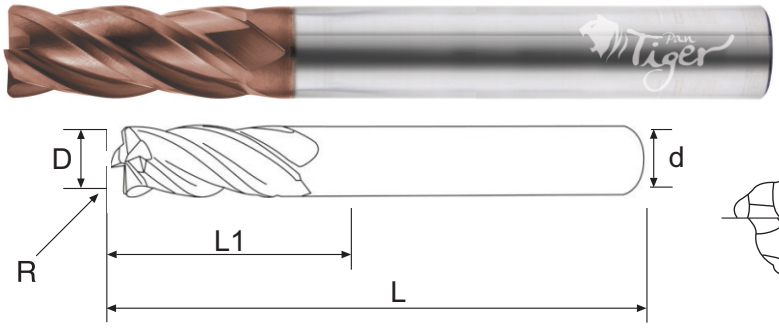
Raio	HRC 30 Rotação (RPM)	HRC 30 Avanço (mm/min)	HRC 40 Rotação (RPM)	HRC 40 Avanço (mm/min)	HRC 50 Rotação (RPM)	HRC 50 Avanço (mm/min)
D2.0 X 0.5R	7.840	588	6.370	441	4.508	294
D3.0 X 0.5R	6.370	980	4.802	735	3.675	245
D3.0 X 1R	7.326	1.127	5.522	845	4.226	282
D4.0 X 0.5R	6.125	980	4.557	515	3.332	245
D4.0 X 1R	7.044	1.127	5.241	592	3.832	282
D6.0 X 0.5R	5.635	1.470	4.312	980	2.254	368
D6.0 X 1R	6.480	1.691	4.959	1.127	2.592	423
D8.0 X 0.5R	4.239	1.666	2.622	833	1.887	402
D8.0 X 1R	4.875	1.916	3.015	958	2.170	462
D10.0 X 0.5R	2.695	1.372	1.568	539	809	284
D10.0 X 1R	3.099	1.568	1.803	620	930	327
D12.0 X 0.5R	2.279	1.421	1.078	466	637	260
D12.0 X 1R	2.621	1.634	1.240	698	733	299

Profundidade de Corte



4TRLST

FRESA TOROIDAL 4 CORTES LONGA



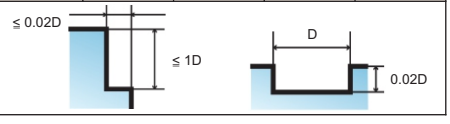
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLST 030054 H03	3	0.5	8	75	3	4
4TRLST 030104 H03	3	1	8	75	3	4
4TRLST 040054 H04	4	0.5	10	75	4	4
4TRLST 040104 H04	4	1	10	75	4	4
4TRLST 060054 H05	5	0.5	10	75	5	4
4TRLST 060054 075	5	1	10	75	5	4
4TRLST 060054 100	6	0.5	15	100	6	4
4TRLST 060104 H06	6	0.5	15	75	6	4
4TRLST 060104 075	6	1	15	75	6	4
4TRLST 060104 100	6	1	15	100	6	4
4TRLST 080054 H08	8	0.5	20	100	8	4
4TRLST 080104 H08	8	0.5	15	75	6	4
4TRLST 080104 075	8	1	15	75	8	4
4TRLST 080104 100	8	1	20	100	8	4
4TRLST 100054 H10	10	0.5	25	100	10	4
4TRLST 100104 H10	10	1	25	100	10	4
4TRLST 120054 H12	12	0.5	30	100	12	4
4TRLST 120104 H12	12	1	30	100	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

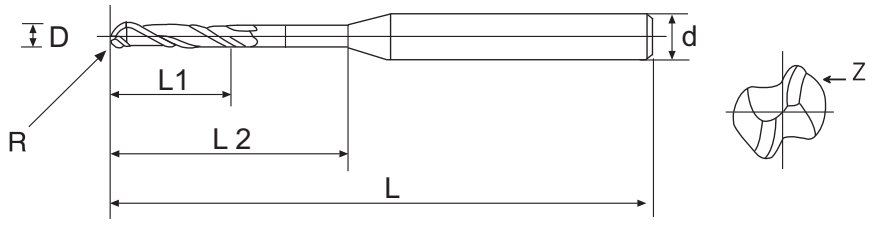
Raio	HRC 30		HRC 40		HRC 50	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
D3.0 X 0.5R	7.280	1.120	5.488	840	4.200	280
D3.0 X 1R	3.872	1.288	6.311	966	4.830	322
D4.0 X 0.5R	7.000	1.120	5.208	588	3.808	280
D4.0 X 1R	8.050	1.588	5.989	676	4.379	322
D6.0 X 0.5R	6.440	1.680	4.928	1.120	2.576	420
D6.0 X 1R	7.406	1.932	5.667	1.288	2.962	483
D8.0 X 0.5R	4.844	1.904	2.996	952	2.156	459
D8.0 X 1R	5.571	2.190	3.446	1.095	2.480	528
D10.0 X 1R	3.080	1.568	1.792	616	924	325
D10.0 X 1R	3.541	1.792	2.016	708	1.063	374
D12.0 X 1R	2.604	1.624	1.323	532	728	297
D12.0 X 1R	2.995	1.868	1.417	798	837	342

Profundidade de Corte



2ELNST

FRESA LONG NECK TOPO ESFÉRICO 2 CORTES



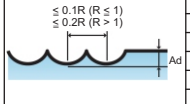
Código	Diâmetro D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNST 05022 H04	0.5	0.75	2	50	4	2
2ELNST 05042 H04	0.5	0.75	4	50	4	2
2ELNST 05062 H04	0.5	0.75	6	50	4	2
2ELNST 06022 H04	0.6	0.9	2	50	4	2
2ELNST 06042 H04	0.6	0.9	4	50	4	2
2ELNST 06062 H04	0.6	0.9	6	50	4	2
2ELNST 08042 H04	0.8	1.2	4	50	4	2
2ELNST 08062 H04	0.8	1.2	6	50	4	2
2ELNST 08082 H04	0.8	1.2	8	50	4	2
2ELNST 10062 H04	1	1.5	6	50	4	2
2ELNST 10082 H04	1	1.5	8	50	4	2
2ELNST 10102 H04	1	1.5	10	50	4	2
2ELNST 10122 H04	1	1.5	12	50	4	2
2ELNST 10162 H04	1	1.5	16	50	4	2
2ELNST 10202 H04	1	1.5	20	50	4	2
2ELNST 10252 H04	1	1.5	25	50	4	2
2ELNST 15062 H04	1.5	2.3	6	50	4	2
2ELNST 15082 H04	1.5	2.3	8	50	4	2
2ELNST 15102 H04	1.5	2.3	10	50	4	2
2ELNST 15122 H04	1.5	2.3	12	50	4	2
2ELNST 15142 H04	1.5	2.3	14	50	4	2
2ELNST 15162 H04	1.5	2.3	16	50	4	2
2ELNST 15182 H04	1.5	2.3	18	50	4	2
2ELNST 15202 H04	1.5	2.3	20	50	4	2
2ELNST 20082 H04	2	3	8	50	4	2
2ELNST 20102 H04	2	3	10	50	4	2
2ELNST 20122 H04	2	3	12	50	4	2
2ELNST 20142 H04	2	3	14	50	4	2
2ELNST 20162 H04	2	3	16	50	4	2
2ELNST 20182 H04	2	3	18	50	4	2
2ELNST 20202 H04	2	3	20	50	4	2
2ELNST 25082 H04	2.5	4	8	50	4	2
2ELNST 25122 H04	2.5	4	12	50	4	2
2ELNST 25162 H04	2.5	4	16	50	4	2
2ELNST 25202 H04	2.5	4	20	50	4	2
2ELNST 30102 H06	3	4.5	10	50	6	2
2ELNST 30122 H06	3	4.5	12	50	6	2
2ELNST 30162 H06	3	4.5	16	60	6	2
2ELNST 30202 H06	3	4.5	20	60	6	2
2ELNST 30252 H06	3	4.5	25	75	6	2
2ELNST 40122 H06	4	6	12	50	6	2
2ELNST 40162 H06	4	6	16	60	6	2
2ELNST 40202 H06	4	6	20	75	6	2
2ELNST 40252 H06	4	6	25	75	6	2
2ELNST 40302 H06	4	6	30	75	6	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Raio	Pescoço	HRC 30 ~ 40 Rotação (RPM)	HRC 30 ~ 40 Avanço (mm/min)	HRC 40 ~ 50 Rotação (RPM)	HRC 40 ~ 50 Avanço (mm/min)
0.25	2	25.000	250	22.500	225
0.25	4	23.000	220	20.700	198
0.25	6	17.500	200	15.750	180
0.30	2	25.000	320	22.500	288
0.30	4	23.000	250	20.700	252
0.30	6	17.500	220	15.750	198
0.40	4	18.000	400	16.200	360
0.40	6	17.000	380	15.300	342
0.40	8	16.000	300	14.400	270
0.50	6	12.000	420	10.800	378
0.50	8	10.500	330	9.450	297
0.50	10	9.300	300	8.370	270
0.50	12	8.800	260	7.920	234
0.75	6	13.000	600	11.700	540
0.75	8	11.000	550	9.900	495
0.75	10	9.900	470	8.910	423
0.75	12	8.800	390	7.920	351
0.75	14	8.100	280	7.290	252
0.75	16	7.800	200	7.020	180
0.75	18	6.900	190	6.210	171
0.75	20	5.500	190	4.950	171
1.00	8	11.000	800	9.900	720
1.00	10	8.500	730	7.650	657
1.00	12	7.900	680	7.110	412
1.00	14	6.600	650	5.940	585
1.00	16	6.100	520	5.490	468
1.00	18	5.600	420	5.040	378
1.00	20	4.800	300	4.320	270
1.25	8	11.000	850	9.900	765
1.25	12	7.900	710	7.100	639
1.25	16	6.100	640	5.490	576
1.25	20	4.800	420	4.320	378
1.50	10	13.000	850	11.700	765
1.50	12	12.000	650	10.800	585
1.50	16	10.600	480	9.540	441
1.50	20	9.700	040	8.730	396
1.50	25	72.000	380	6.480	342
2.00	12	12.000	650	10.800	585
2.00	16	10.600	490	9.540	441
2.00	20	9.700	440	8.730	396
2.00	25	7.200	380	6.480	342
2.00	30	5.400	300	4.860	270

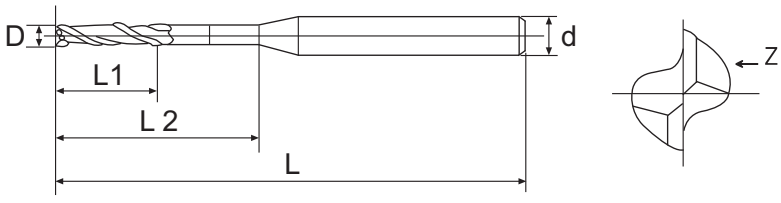
Profundidade de Corte



R	Ad Profundidade de Corte (mm)
D0.25R	0.003 ~ 0.01
D0.3R	0.006 ~ 0.03
D0.5R	0.005 ~ 0.08
D0.75R	0.06 ~ 0.12
D1R	0.03 ~ 0.21
D1.5R	0.03 ~ 0.23
D2R	0.01 ~ 0.28

2RLNST

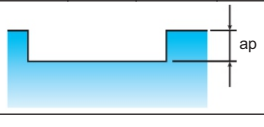
FRESA LONG NECK TOPO RETO 2 CORTES



Código	Diâmetro D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNST 05022 H04	0.5	0.75	2	50	4	2
2RLNST 05042 H04	0.5	0.75	4	50	4	2
2RLNST 05062 H04	0.5	0.75	6	50	4	2
2RLNST 10062 H04	1	1.5	6	50	4	2
2RLNST 10082 H04	1	1.5	8	50	4	2
2RLNST 10102 H04	1	1.5	10	50	4	2
2RLNST 10122 H04	1	1.5	12	50	4	2
2RLNST 10162 H04	1	1.5	16	50	4	2
2RLNST 15062 H04	1.5	2.3	6	50	4	2
2RLNST 15082 H04	1.5	2.3	8	50	4	2
2RLNST 15102 H04	1.5	2.3	10	50	4	2
2RLNST 15122 H04	1.5	2.3	12	50	4	2
2RLNST 15142 H04	1.5	2.3	14	50	4	2
2RLNST 15162 H04	1.5	2.3	16	50	4	2
2RLNST 15182 H04	1.5	2.3	18	50	4	2
2RLNST 15202 H04	1.5	2.3	20	50	4	2
2RLNST 20062 H04	2	3	6	50	4	2
2RLNST 20082 H04	2	3	8	50	4	2
2RLNST 20102 H04	2	3	10	50	4	2
2RLNST 20122 H04	2	3	12	50	4	2
2RLNST 20142 H04	2	3	14	50	4	2
2RLNST 20162 H04	2	3	16	50	4	2
2RLNST 20182 H04	2	3	18	50	4	2
2RLNST 20202 H04	2	3	20	50	4	2
2RLNST 25082 H04	2.5	4	8	50	4	2
2RLNST 25102 H04	2.5	4	10	50	4	2
2RLNST 25122 H04	2.5	4	12	50	4	2
2RLNST 25142 H04	2.5	4	14	50	4	2
2RLNST 25162 H04	2.5	4	16	50	4	2
2RLNST 25202 H04	2.5	4	20	50	4	2
2RLNST 30082 H06	3	4.5	8	50	6	2
2RLNST 30102 H06	3	4.5	10	50	6	2
2RLNST 30122 H06	3	4.5	12	50	6	2
2RLNST 30162 H06	3	4.5	16	60	6	2
2RLNST 30202 H06	3	4.5	20	60	6	2
2RLNST 30252 H06	3	4.5	25	75	6	2
2RLNST 35122 H06	3.5	6	12	50	6	2
2RLNST 35162 H06	3.5	6	16	60	6	2
2RLNST 35202 H06	3.5	6	20	75	6	2
2RLNST 35252 H06	3.5	6	25	75	6	2
2RLNST 35302 H06	3.5	6	30	75	6	2
2RLNST 40122 H06	4	6	12	50	6	2
2RLNST 40162 H06	4	6	16	60	6	2
2RLNST 40202 H06	4	6	20	75	6	2
2RLNST 40252 H06	4	6	25	75	6	2
2RLNST 40302 H06	4	6	30	75	6	2
2RLNST 40352 H06	4	6	35	75	6	2
2RLNST 40402 H06	4	6	40	75	6	2

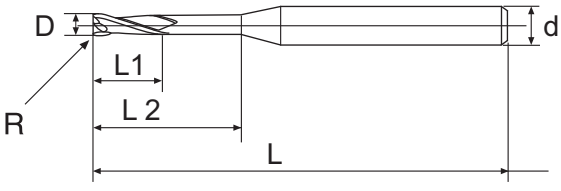
▪ Parâmetros de Corte

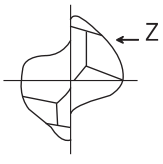
▪ RPM : rev./min ▪ FEED : mm/min

Material		AÇOS DOCES, AÇOS DE CARBONO, SS400 / S55C / FC250 / NAK55			AÇOS ENDURECIDOS, AÇOS PRÉ-ENDURECIDOS, AÇOS INÓXIDÁVEIS SSKT / SKD61 / NAK80 / HPM1 / DH		
		HRC 32 ~ 40			HRC 40 ~ 50		
Diâmetro D (mm)	Compr. do Corte L1	Rotação (RPM)	Avanço (mm/min)	ap	Rotação (RPM)	Avanço (mm/min)	ap
0.5	2	32.000	400	0.045	29.000	240	0.030
	4	28.000	320	0.021	25.000	200	0.014
	6	22.000	280	0.006	20.000	144	0.004
1.0	6	27.000	800	0.070	20.000	480	0.040
	8	23.000	640	0.040	18.000	320	0.030
	10	19.000	480	0.030	15.000	240	0.020
	12	19.000	480	0.020	15.000	240	0.010
	16	15.000	240	0.008	12.000	160	0.006
1.5	6	18.000	800	0.014	14.000	480	0.090
	8	16.000	640	0.010	12.000	320	0.070
	10	16.000	640	0.080	12.000	320	0.050
	12	16.000	640	0.060	12.000	320	0.040
	14	16.000	640	0.050	12.000	320	0.035
	16	14.000	480	0.050	10.000	240	0.030
	18	14.000	480	0.030	10.000	240	0.020
	20	12.000	336	0.020	10.000	240	0.010
2.0	6	15.000	880	0.310	11.000	560	0.210
	8	15.000	880	0.260	11.000	560	0.180
	10	13.000	640	0.240	9.000	400	0.160
	12	13.000	640	0.130	9.000	400	0.090
	14	13.000	640	0.110	9.000	400	0.070
	16	13.000	640	0.080	9.000	400	0.060
	18	13.000	640	0.070	9.000	400	0.050
	20	11.000	480	0.050	7.000	320	0.040
2.5	8	12.000	880	0.039	9.000	560	0.260
	10	12.000	880	0.033	9.000	560	0.220
	12	12.000	880	0.230	9.000	560	0.150
	14	12.000	640	0.170	7.000	400	0.110
	16	12.000	640	0.120	7.000	400	0.080
	20	12.000	640	0.090	7.000	400	0.060
3.0	8	10.000	880	0.360	8.000	560	0.240
	10	10.000	880	0.290	8.000	560	0.190
	12	10.000	880	0.270	8.000	560	0.180
	16	10.000	640	0.200	6.000	400	0.130
	20	10.000	640	0.130	6.000	400	0.080
	25	10.000	640	0.110	6.000	400	0.070
4.0	12	7.000	880	0.380	6.000	560	0.260
	16	7.000	880	0.360	6.000	560	0.240
	20	7.000	640	0.340	5.000	400	0.220
	25	7.000	640	0.260	5.000	400	0.180
	30	7.000	640	0.190	5.000	400	0.130
	35	7.000	640	0.170	5.000	400	0.110
Profundidade de Corte							

2TRLNST

FRESA LONG NECK TOROIDAL TOPO RETO 2 CORTES

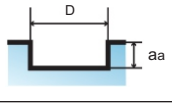




Código	Diâm. D	Raio R	Compr. Corte L1	Compr. Eficiente L2	Compr. Total L	Diâm. Haste d	Cortes Z
2TRLNST 01042 H04	1	0.2	1.5	4	50	4	2
2TRLNST 01062 H04	1	0.2	1.5	6	50	4	2
2TRLNST 01082 H04	1	0.2	1.5	8	50	4	2
2TRLNST 01102 H04	1	0.2	1.5	10	50	4	2
2TRLNST 01122 H04	1	0.2	1.5	12	50	4	2
2TRLNST 01162 H04	1	0.2	1.5	16	50	4	2
2TRLNST 15062 H04	1.5	0.5	2.3	6	50	4	2
2TRLNST 15082 H04	1.5	0.5	2.3	8	50	4	2
2TRLNST 15102 H04	1.5	0.5	2.3	10	50	4	2
2TRLNST 15122 H04	1.5	0.5	2.3	12	50	4	2
2TRLNST 15142 H04	1.5	0.5	2.3	14	50	4	2
2TRLNST 15162 H04	1.5	0.5	2.3	16	50	4	2
2TRLNST 15182 H04	1.5	0.5	2.3	18	50	4	2
2TRLNST 15202 H04	1.5	0.5	2.3	20	50	4	2
2TRLNST 20062 H04	2	0.5	3	6	50	4	2
2TRLNST 20082 H04	2	0.5	3	8	50	4	2
2TRLNST 20102 H04	2	0.5	3	10	50	4	2
2TRLNST 20122 H04	2	0.5	3	12	50	4	2
2TRLNST 20142 H04	2	0.5	3	14	50	4	2
2TRLNST 20162 H04	2	0.5	3	16	50	4	2
2TRLNST 20182 H04	2	0.5	3	18	50	4	2
2TRLNST 20202 H04	2	0.5	3	20	50	4	2
2TRLNST 25052 008	2.5	0.5	4	8	50	4	2
2TRLNST 25102 008	2.5	1	4	8	50	4	2
2TRLNST 25052 010	2.5	0.5	4	10	50	4	2
2TRLNST 25102 010	2.5	1	4	10	50	4	2
2TRLNST 25052 012	2.5	0.5	4	12	50	4	2
2TRLNST 25102 012	2.5	1	4	12	50	4	2
2TRLNST 25052 014	2.5	0.5	4	14	50	4	2
2TRLNST 25102 014	2.5	1	4	14	50	4	2
2TRLNST 25052 016	2.5	0.5	4	16	50	4	2
2TRLNST 25102 016	2.5	1	4	16	50	4	2
2TRLNST 25052 018	2.5	0.5	4	18	50	4	2
2TRLNST 30052 010	3	0.5	4.5	10	50	6	2
2TRLNST 30102 010	3	1	4.5	10	50	6	2
2TRLNST 30052 012	3	0.5	4.5	12	50	6	2
2TRLNST 30102 012	3	1	4.5	12	50	6	2
2TRLNST 30052 014	3	0.5	4.5	14	50	6	2
2TRLNST 30052 016	3	0.5	4.5	16	50	6	2
2TRLNST 30052 018	3	0.5	4.5	18	50	6	2
2TRLNST 30052 050	3	0.5	4.5	20	50	6	2
2TRLNST 30052 075	3	0.5	3.2	20	75	4	2
2TRLNST 30052 025	3	0.5	4.5	25	75	6	2
2TRLNST 40052 012	4	0.5	6.0	12	50	6	2
2TRLNST 40052 016	4	0.5	6.0	16	60	6	2
2TRLNST 40052 020	4	0.5	6.0	20	60	6	2
2TRLNST 40102 012	4	1.0	6.0	12	50	6	2
2TRLNST 40102 016	4	1.0	6.0	16	60	6	2

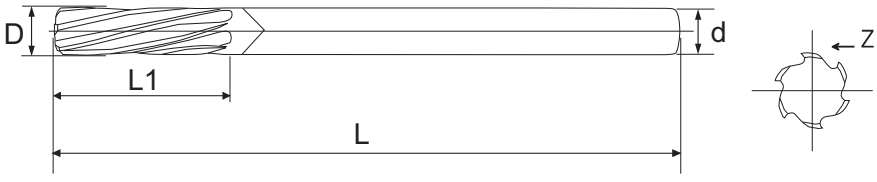
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		AÇOS DOCES, AÇOS DE CARBONO, SS400 / S55C / FC250 / NAK55			AÇOS ENDURECIDOS, AÇOS PRÉ-ENDURECIDOS, AÇOS INOXIDÁVEIS SSKT / SKD61 / NAK80 / HPM1 / DH			AÇOS ENDURECIDOS, SKD / SKT / STAVAX		
		HRC 35			HRC 35 ~ 45			HRC 45 ~ 55		
Diâm. D (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	aa	Rotação (RPM)	Avanço (mm/min)	aa	Rotação (RPM)	Avanço (mm/min)	aa
1.0	4	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
	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
1.5	4	19.200	905	0.135	18.100	635	0.105	16.000	475	0.075
	6	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
2.0	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
	14	12.960	665	0.072	12.240	500	0.056	10.800	385	0.04
	20	12.960	665	0.045	12.240	500	0.035	10.800	385	0.025
3.0	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
	20	9.810	695	0.108	9.270	490	0.084	5.940	365	0.06
	25	9.810	695	0.068	9.270	490	0.053	5.940	365	0.038
4.0	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
	20	8.000	1.300	0.252	7.600	1.160	0.196	6.700	770	0.14
	25	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
Profundidade de Corte										

AL010

ALARGADOR HELICOIDAL DE METAL DURO



• RPM : rev./min • FEED : mm/min

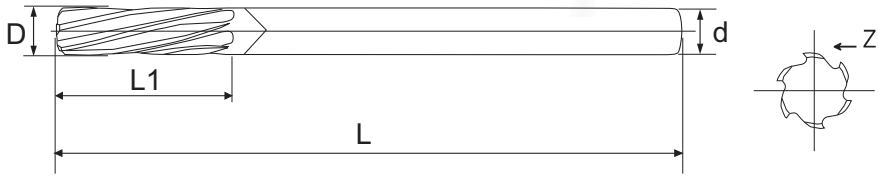
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Cortes Z
AL010 010	1	6	34	4
AL010 011	1.1	7	36	4
AL010 012	1.2	7	38	4
AL010 013	1.3	7	38	4
AL010 014	1.4	8	40	4
AL010 015	1.5	8	40	4
AL010 016	1.6	9	43	4
AL010 017	1.7	9	43	4
AL010 018	1.8	10	46	4
AL010 019	1.9	10	46	4
AL010 020	2	11	49	4
AL010 021	2.1	11	49	4
AL010 022	2.2	12	53	4
AL010 023	2.3	12	53	4
AL010 024	2.4	14	57	4
AL010 025	2.5	14	57	4
AL010 026	2.6	14	57	4
AL010 027	2.7	15	61	4
AL010 028	2.8	15	61	4
AL010 029	2.9	15	61	4
AL010 030	3	15	61	4
AL010 031	3.1	16	65	4
AL010 032	3.2	16	65	4
AL010 033	3.3	16	65	4
AL010 034	3.4	18	70	4
AL010 035	3.5	18	70	4
AL010 036	3.6	18	70	4
AL010 037	3.7	18	70	4
AL010 038	3.8	19	75	4
AL010 039	3.9	19	75	4
AL010 040	4	19	75	6
AL010 041	4.1	19	75	6
AL010 042	4.2	19	75	6
AL010 043	4.3	21	80	6
AL010 044	4.4	21	80	6
AL010 045	4.5	21	80	6
AL010 046	4.6	21	80	6

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Cortes Z
AL010 047	4.7	21	80	6
AL010 048	4.8	23	86	6
AL010 049	4.9	23	86	6
AL010 050	5	23	86	6
AL010 051	5.1	23	86	6
AL010 052	5.2	23	86	6
AL010 053	5.3	23	86	6
AL010 054	5.4	26	93	6
AL010 055	5.5	26	93	6
AL010 056	5.6	26	93	6
AL010 057	5.7	26	93	6
AL010 058	5.8	26	93	6
AL010 059	5.9	26	93	6
AL010 060	6	26	93	6
AL010 061	6.1	28	101	6
AL010 062	6.2	28	101	6
AL010 063	6.3	28	101	6
AL010 064	6.4	28	101	6
AL010 065	6.5	28	101	6
AL010 066	6.6	28	101	6
AL010 067	6.7	31	101	6
AL010 068	6.8	31	109	6
AL010 069	6.9	31	109	6
AL010 070	7	31	109	6
AL010 071	7.1	31	109	6
AL010 072	7.2	31	109	6
AL010 073	7.3	31	109	6
AL010 074	7.4	31	109	6
AL010 075	7.5	31	109	6
AL010 076	7.6	33	117	6
AL010 077	7.7	33	117	6
AL010 078	7.8	33	117	6
AL010 079	7.9	33	117	6
AL010 080	8	33	117	6
AL010 081	8.1	33	117	6
AL010 082	8.2	33	117	6
AL010 083	8.3	33	117	6

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Cortes Z
AL010 084	8.4	33	117	6
AL010 085	8.5	33	117	6
AL010 086	8.6	36	125	6
AL010 087	8.7	36	125	6
AL010 088	8.8	36	125	6
AL010 089	8.9	36	125	6
AL010 090	9	36	125	6
AL010 091	9.1	36	125	6
AL010 092	9.2	36	125	6
AL010 093	9.3	36	125	6
AL010 094	9.4	36	125	6
AL010 095	9.5	36	125	6
AL010 096	9.6	38	133	6
AL100 097	9.7	38	133	6
AL010 098	9.8	38	133	6
AL010 099	9.9	38	133	6
AL010 100	10	38	133	6
AL010 101	10.1	38	133	6
AL010 102	10.2	38	133	6
AL010 103	10.3	38	133	6
AL010 104	10.4	38	133	6
AL010 105	10.5	38	133	6
AL010 106	10.6	38	133	6
AL010 107	10.7	41	142	6
AL010 108	10.8	41	142	6
AL010 109	10.9	41	142	6
AL010 110	11	41	142	6
AL010 111	11.1	41	142	6
AL010 112	11.2	41	142	6
AL010 113	11.3	41	142	6
AL010 114	11.4	41	142	6
AL010 115	11.5	41	142	6
AL010 116	11.6	41	142	6
AL010 117	11.7	41	142	6
AL010 118	11.8	41	142	6
AL010 119	11.9	44	151	6
AL010 120	12	44	151	6

ALS085

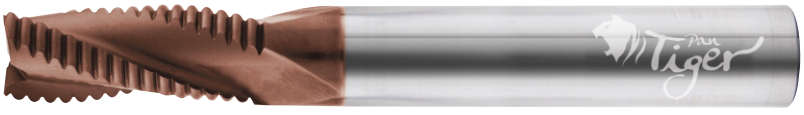
ALARGADOR HELICOIDAL COM PONTA DE METAL DURO - SOLDADA

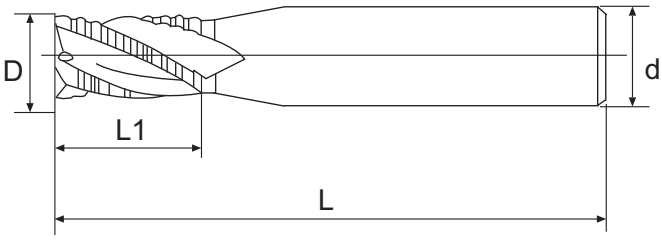


Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
ALS085 085 H08	8.5	33	117	8	6
ALS085 090 H10	9	36	125	10	6
ALS085 095 H10	9.5	36	125	10	6
ALS085 100 H10	10	38	133	10	6
ALS085 110 H10	11	41	142	10	6
ALS085 115 H10	11.5	41	142	10	6
ALS085 120H12	12	44	151	12	6
ALS085 125H12	12.5	44	151	12	6
ALS085 130H12	13	44	151	12	6
ALS085 135H12	13.5	47	160	12	8
ALS085 140H12	14	47	160	12	8
ALS085 145H12	14.5	50	162	12	8
ALS085 150H12	15	50	162	12	8
ALS085 155H12	15.5	52	170	12	8
ALS085 160H12	16	52	170	12	8

4FD

FRESA DE DESBASTE 4 CORTES





Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4FD 0404 H06	4	8	50	6	4
4FD 0504 H06	5	13	50	6	4
4FD 0604 H06	6	16	50	6	4
4FD 0704 H08	7	16	60	8	4
4FD 0804 H08	8	19	60	8	4
4FD 0904 H10	9	25	75	10	4
4FD 1004 H10	10	25	75	10	4
4FD 1104 H12	11	30	75	12	4
4FD 1204 H12	12	30	75	12	4
4FD 1404 H16	14	35	100	16	4
4FD 1504 H16	15	35	100	16	4
4FD 1604 H16	16	35	100	16	4
4FD 2004 H20	20	45	100	20	4

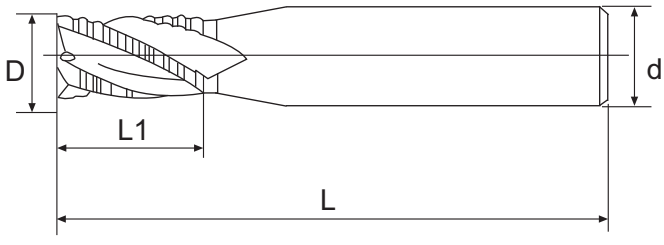
▪ Parâmetros de Corte = Corte Lateral

▪ RPM : rev./min ▪ FEED : mm/min

Material	SS400, AISI 1050, SCM, FC250		AISI H13, AISI D2		AISI 304, AISI 316		SKD61	
D (mm)	HRC ~ 30		HRC 30 ~ 35		HRC 35 ~ 45		HRC 45 ~ 50	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
5	7.600	740	4.500	380	3.800	260	3.200	100
6	6.400	750	3.700	390	3.200	290	2.700	110
8	4.800	780	2.800	420	2.400	340	2.000	140
10	3.800	790	2.200	420	1.900	340	1.600	150
12	3.200	790	1.900	420	1.600	320	1.300	150
16	2.400	770	1.400	390	1.200	300	1.000	150
20	1.900	760	1.100	370	1.000	300	800	140
Profundidade de Corte	≤ 0.5D ≤ 1.5D				≤ 0.3D ≤ 1D			

4FDF

FRESA DE DESBASTE 4 CORTES PASSO FINO

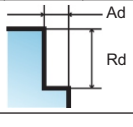


Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4FDF 0404 H06	4	8	50	6	4
4FDF 0504 H06	5	13	50	6	4
4FDF 0604 H06	6	16	50	6	4
4FDF 0704 H08	7	16	60	8	4
4FDF 0804 H08	8	19	60	8	4
4FDF 0904 H10	9	25	75	10	4
4FDF 1004 H10	10	25	75	10	4
4FDF 1104 H12	11	30	75	12	4
4FDF 1204 H12	12	30	75	12	4
4FDF 1604 H16	16	35	100	16	4
4FDF 2004 H20	20	45	100	20	4

▪ Parâmetros de Corte = Corte Lateral

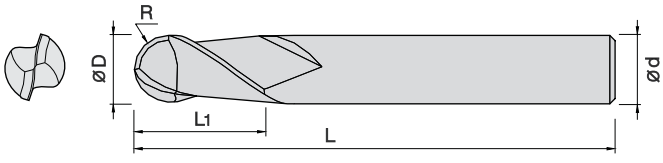
▪ RPM : rev./min ▪ FEED : mm/min

Material	Cast Iron FC FCD		Mild Steels, Carbon Steels SS400 SS55C(~750N/mm)		Alloy Steels, Tool Steels SCM SKT SKS SKD (~30HRC)		Hardened Steels Prehardened Steels (Free-cutting) SKT SKD NAK55 HPM1 (~30HRC)		Hardened Steels Stainless Steels SUS304 SKD (38~45HRC)	
Veloc. Corte	100 ~ 140m/min		80 ~ 120m/min		70 ~ 100m/min		50 ~ 80m/min		35 ~ 65m/min	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
6	6.350	760	5.300	640	4.500	360	3.450	280	2.650	210
8	4.750	760	4.000	640	3.400	410	2.600	310	2.000	240
10	3.800	760	3.200	640	2.700	430	2.050	330	1.600	260
12	3.200	770	2.650	640	2.250	450	1.700	340	1.350	270
14	2.750	770	2.250	650	1.950	470	1.500	360	1.150	280
16	2.400	770	2.000	640	1.700	480	1.300	360	1.000	280
18	2.100	760	1.750	630	1.500	480	1.150	350	900	270
20	1.900	760	1.600	610	1.350	470	1.050	350	800	260
Profundidade de Corte	Ad: 1.5D, Rd: 0.4D						Ad: 1.5D, Rd: 0.3D			

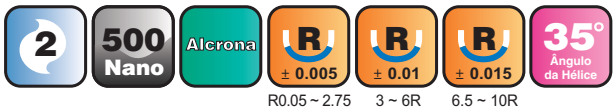


2EJJ

FRESA TOPO ESFÉRICO 2 CORTES



Diâmetro	Tolerância
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm



R0.05 ~ 2.75 3 ~ 6R 6.5 ~ 10R

Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EJJ 001 002 H04	0.1	0.05	0.2	40	4	2
2EJJ 002 004 H04	0.2	0.1	0.4	40	4	2
2EJJ 003 006 H04	0.3	0.15	0.6	40	4	2
2EJJ 004 008 H04	0.4	0.2	0.8	40	4	2
2EJJ 005 010 H04	0.5	0.25	1	45	4	2
2EJJ 006 012 H04	0.6	0.3	1.2	45	4	2
2EJJ 007 015 H04	0.7	0.35	1.5	45	4	2
2EJJ 008 020 H04	0.8	0.4	2	45	4	2
2EJJ 009 020 H04	0.9	0.45	2	45	4	2
2EJJ 010 025 H04	1	0.5	2.5	50	4	2
2EJJ 010 025 H06	1	0.5	2.5	50	6	2
2EJJ 010 025 070	1	0.5	2.5	70	6	2
2EJJ 010 025 100	1	0.5	2.5	100	6	2
2EJJ 015 040 H04	1.5	0.75	4	50	4	2
2EJJ 015 040 H06	1.5	0.75	4	50	6	2
2EJJ 015 040 070	1.5	0.75	4	70	6	2
2EJJ 015 040 100	1.5	0.75	4	100	6	2
2EJJ 020 050 H04	2	1	5	50	4	2
2EJJ 020 050 H06	2	1	5	50	6	2
2EJJ 020 050 075	2	1	5	75	6	2
2EJJ 020 050 100	2	1	5	100	6	2
2EJJ 025 060 H04	2.5	1.25	6	50	4	2
2EJJ 025 060 H06	2.5	1.25	6	60	6	2
2EJJ 025 060 075	2.5	1.25	6	75	6	2
2EJJ 025 060 100	2.5	1.25	6	100	6	2
2EJJ 030 080 H03	3	1.5	8	60	3	2
2EJJ 030 080 H04	3	1.5	8	50	4	2
2EJJ 030 080 H06	3	1.5	8	60	6	2
2EJJ 030 080 080	3	1.5	8	80	6	2
2EJJ 030 080 100	3	1.5	8	100	6	2
2EJJ 035 080 H06	3.5	1.75	8	60	6	2
2EJJ 040 080 060	4	2	8	60	4	2
2EJJ 040 080 080	4	2	8	80	4	2
2EJJ 040 080 H06	4	2	8	70	6	2
2EJJ 040 080 090	4	2	8	90	6	2
2EJJ 040 080 120	4	2	8	120	6	2
2EJJ 045 080 H06	4.5	2.25	8	70	6	2
2EJJ 050 080 H05	5	2.5	8	80	5	2
2EJJ 050 100 H06	5	2.5	10	75	6	2
2EJJ 055 100 H06	5.5	2.75	10	75	6	2
2EJJ 060 100 060	6	3	10	60	6	2
2EJJ 060 120 080	6	3	12	80	6	2
2EJJ 060 120 100	6	3	12	100	6	2
2EJJ 060 120 120	6	3	12	120	6	2
2EJJ 070 140 H08	7	3.5	14	80	8	2
2EJJ 080 120 060	8	4	12	60	8	2
2EJJ 080 140 090	8	4	14	90	8	2
2EJJ 080 140 110	8	4	14	110	8	2

Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EJJ 080 140 150	8	4	14	150	8	2
2EJJ 090 160 H10	9	4.5	16	100	10	2
2EJJ 100 150 070	10	5	15	70	10	2
2EJJ 100 180 100	10	5	18	100	10	2
2EJJ 100 180 150	10	5	18	150	10	2
2EJJ 100 180 180	10	5	18	180	10	2
2EJJ 110 200 H12	11	5.5	20	110	12	2
2EJJ 120 180 070	12	6	18	70	12	2
2EJJ 120 220 110	12	6	22	110	12	2
2EJJ 120 220 150	12	6	22	150	12	2
2EJJ 120 220 200	12	6	22	200	12	2
2EJJ 130 240 H14	13	6.5	24	110	14	2
2EJJ 140 240 H14	14	7	24	110	14	2
2EJJ 160 300 130	16	8	30	130	16	2
2EJJ 160 300 160	16	8	30	160	16	2
2EJJ 160 300 200	16	8	30	200	16	2
2EJJ 200 380 160	20	10	38	160	20	2
2EJJ 200 380 200	20	10	38	200	20	2

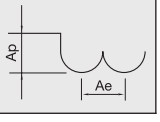
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Prehardened Steels / Hardened Steels NAK / SKD 30 ~ 45HRC				Hardened Steels SKD / SKT 45 ~ 55HRC			
R (mm)	Rotação (RPM)	Avanço (mm/min)	Ap	Ae	Rotação (RPM)	Avanço (mm/min)	Ap	Ae
0.05	40.000	300	0.005	0.040	30.000	200	0.004	0.040
0.1	54.000	410	0.020	0.049	44.300	320	0.016	0.038
0.15	54.000	700	0.030	0.065	44.300	570	0.020	0.058
0.2	54.000	1.000	0.040	0.120	44.300	800	0.032	0.096
0.25	53.000	1.250	0.050	0.150	43.500	1.000	0.040	0.120
0.3	52.000	1.380	0.060	0.180	42.650	1.100	0.048	0.144
0.35	50.000	1.440	0.070	0.210	41.075	1.150	0.056	0.168
0.4	48.000	1.500	0.080	0.240	39.500	1.200	0.064	0.192
0.5	40.000	1.000	0.100	0.200	31.500	800	0.080	0.160
0.75	34.500	1.000	0.145	0.325	26.000	800	0.120	0.260
1	30.000	1.850	0.200	0.600	24.600	1.480	0.160	0.480
1.25	25.500	1.600	0.250	0.542	21.000	1.280	0.200	0.430
1.5	25.500	2.520	0.300	0.957	21.000	2.050	0.240	0.766
1.75	23.000	2.400	0.350	1.073	19.150	10.380	0.280	0.856
2	21.000	2.450	0.400	1.380	17.300	1.960	0.320	1.100
2.5	18.000	2.560	0.500	1.660	14.800	2.050	0.400	1.330
3	16.000	2.700	0.600	2.340	13.000	2.160	0.480	1.870
3.5	14.500	2.350	0.700	2.315	11.625	1.880	0.560	1.853
4	12.500	2.300	0.800	3.100	10.250	1.840	0.640	2.480
4.5	11.000	2.100	0.900	2.900	9.450	1.690	0.720	2.320
5.5	10.000	1.700	1.100	3.075	8.015	1.360	0.880	2.460
6	9.000	1.700	1.200	3.600	7.380	1.360	0.960	2.880
6.5	9.000	1.825	1.098	3.938	7.193	1.540	0.878	3.152
7	7.000	1.800	0.996	3.456	7.007	1.600	0.797	2.765
8	7.000	1.700	0.827	3.318	5.675	1.360	0.661	2.654
10	7.000	1.600	0.551	3.015	4.617	816	0.441	2.412

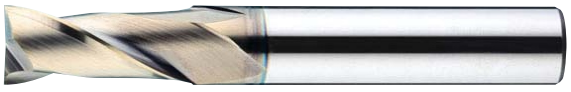
Profundidade de Corte

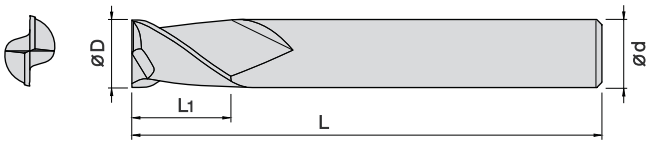
- Ap: Profundidade axial
- Ae: Profundidade radial
- D: Diâmetro
- n: Velocidade
- Vf: Avanço



2RJJ

FRESA TOPO RETO 2 CORTES





Diâmetro	Tolerância
Ø0.1 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 20	-0.015 ~ -0.03mm

Ø0.1~0.15 Ø0.2~5.5 Ø6~12 Ø14~20 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RJJ 001 002 H04	0.1	0.2	38	4	2
2RJJ 002 004 H04	0.2	0.4	38	4	2
2RJJ 003 006 H04	0.3	0.6	38	4	2
2RJJ 004 008 H04	0.4	0.8	38	4	2
2RJJ 005 010 H04	0.5	1	38	4	2
2RJJ 006 012 H04	0.6	1.2	38	4	2
2RJJ 007 014 H04	0.7	1.4	38	4	2
2RJJ 008 016 H04	0.8	1.6	38	4	2
2RJJ 009 020 H04	0.9	2	38	4	2
2RJJ 010 025 H04	1	2.5	40	4	2
2RJJ 010 025 H06	1	2.5	40	6	2
2RJJ 010 025 060	1	2.5	60	6	2
2RJJ 010 040 H06	1	4	50	6	2
2RJJ 015 040 H04	1.5	4	40	4	2
2RJJ 015 040 H06	1.5	4	40	6	2
2RJJ 015 040 060	1.5	4	60	6	2
2RJJ 020 060 H04	2	6	40	4	2
2RJJ 020 060 H06	2	6	40	6	2
2RJJ 020 060 060	2	6	60	6	2
2RJJ 025 080 H04	2.5	8	45	4	2
2RJJ 025 080 H06	2.5	8	45	6	2
2RJJ 025 080 070	2.5	8	70	6	2
2RJJ 030 080 H04	3	8	45	4	2
2RJJ 030 080 H06	3	8	45	6	2
2RJJ 030 080 070	3	8	70	6	2
2RJJ 035 100 H06	3.5	10	45	6	2
2RJJ 040 100 H04	4	10	45	4	2
2RJJ 040 110 H06	4	11	45	6	2
2RJJ 040 110 070	4	11	70	6	2
2RJJ 045 110 H06	4.5	11	45	6	2
2RJJ 050 130 H06	5	13	50	6	2
2RJJ 050 130 080	5	13	80	6	2
2RJJ 055 130 H06	5.5	13	50	6	2
2RJJ 060 130 H06	6	13	50	6	2
2RJJ 060 130 080	6	13	80	6	2
2RJJ 060 150 H06	6	15	60	6	2
2RJJ 065 160 H08	6.5	16	60	8	2
2RJJ 070 160 H08	7	16	60	8	2
2RJJ 075 160 H08	7.5	16	60	8	2
2RJJ 080 190 H08	8	19	60	8	2
2RJJ 080 200 H08	8	20	70	8	2
2RJJ 085 190 H10	8.5	19	70	10	2
2RJJ 090 190 H10	9	19	70	10	2
2RJJ 095 190 H10	9.5	19	70	10	2
2RJJ 100 220 H10	10	22	70	10	2
2RJJ 100 250 H10	10	25	75	10	2
2RJJ 105 220 H12	10.5	22	75	12	2
2RJJ 110 220 H12	11	22	75	12	2

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RJJ 120 220 H12	11.5	22	75	12	2
2RJJ 120 260 H12	12	26	75	12	2
2RJJ 120 300 H12	12	30	80	12	2
2RJJ 140 260 H14	14	26	80	14	2
2RJJ 140 260 H16	14	26	85	16	2
2RJJ 160 350 H16	16	35	100	16	2
2RJJ 160 400 H16	16	40	100	16	2
2RJJ 180 350 H18	18	35	100	18	2
2RJJ 200 400 H20	20	40	100	20	2
2RJJ 200 450 H20	20	50	110	20	2

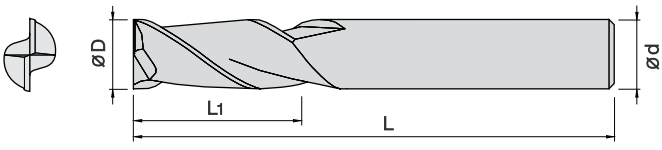
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 35HRC ~1,100N/mm²		35 ~ 45HRC 1,100~1,500N/mm²		Aço Inox		45 ~ 55HRC 1,500~2,000N/mm²	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	13.020	170	9.000	100	8.100	70	7.020	30
1.5	12.300	180	8.880	110	7.360	80	5.940	30
2	11.560	190	7.560	120	6.300	90	5.040	35
2.5	10.300	200	6.620	130	5.480	110	4.320	35
3	8.920	210	5.560	140	4.620	120	3.360	40
4	7.560	300	4.620	180	3.880	150	2.940	40
5	6.300	320	3.780	190	3.160	160	2.320	50
6	5.560	350	3.360	220	2.840	180	2.000	55
8	4.200	380	2.520	200	2.100	180	1.680	75
10	3.260	330	2.000	160	1.680	160	1.360	60
12	2.740	280	1.680	130	1.360	130	1.160	55
16	2.200	220	1.360	110	1.060	110	900	40
20	1.680	170	1.060	80	840	80	680	30
Profundidade de Corte								

2RLJJ

FRESA TOPO RETO 2 CORTES LONGA



Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 25	-0.015 ~ -0.03mm

Ø 1~5 Ø 6~12 Ø 14~25 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLJJ 010 070 H06	1	7	60	6	2
2RLJJ 010 100 H06	1	10	60	6	2
2RLJJ 010 150 H06	1	15	60	6	2
2RLJJ 015 100 H06	1.5	10	60	6	2
2RLJJ 015 150 H06	1.5	15	60	6	2
2RLJJ 015 200 H06	1.5	20	60	6	2
2RLJJ 020 100 H06	2	10	60	6	2
2RLJJ 020 150 H06	2	15	60	6	2
2RLJJ 020 200 H06	2	20	60	6	2
2RLJJ 030 120 H06	3	12	70	6	2
2RLJJ 030 150 H06	3	15	70	6	2
2RLJJ 030 250 H06	3	25	70	6	2
2RLJJ 040 150 H06	4	15	70	6	2
2RLJJ 040 200 H06	4	20	70	6	2
2RLJJ 040 300 H06	4	30	75	6	2
2RLJJ 050 200 H06	5	20	70	6	2
2RLJJ 050 250 H06	5	25	75	6	2
2RLJJ 050 300 H06	5	30	80	6	2
2RLJJ 060 200 H06	6	20	75	6	2
2RLJJ 060 200 100	6	20	100	6	2
2RLJJ 060 250 H06	6	25	75	6	2
2RLJJ 060 300 H06	6	30	80	6	2
2RLJJ 080 250 H08	8	25	75	8	2
2RLJJ 080 250 100	8	25	100	8	2
2RLJJ 080 300 H08	8	30	80	8	2
2RLJJ 080 350 H08	8	35	80	8	2
2RLJJ 080 400 H08	8	40	90	8	2
2RLJJ 100 300 H10	10	30	80	10	2
2RLJJ 100 300 110	10	30	110	10	2
2RLJJ 100 350 H10	10	35	90	10	2
2RLJJ 100 400 H10	10	40	90	10	2
2RLJJ 100 500 H10	10	50	100	10	2
2RLJJ 100 600 H10	10	60	110	10	2
2RLJJ 120 300 H12	12	30	90	12	2
2RLJJ 120 350 110	12	35	110	12	2
2RLJJ 120 400 H12	12	40	100	12	2
2RLJJ 120 500 H12	12	50	100	12	2
2RLJJ 120 600 H12	12	60	110	12	2
2RLJJ 120 700 H12	12	70	130	12	2
2RLJJ 140 500 H14	14	50	110	14	2
2RLJJ 160 400 160	16	40	160	16	2
2RLJJ 160 550 H16	16	55	120	16	2
2RLJJ 160 700 H16	16	70	130	16	2
2RLJJ 160 800 H16	16	80	160	16	2
2RLJJ 200 500 160	20	50	160	20	2
2RLJJ 200 600 H20	20	60	130	20	2
2RLJJ 200 1000 H20	20	100	200	20	2
2RLJJ 250 750 H25	25	75	160	25	2

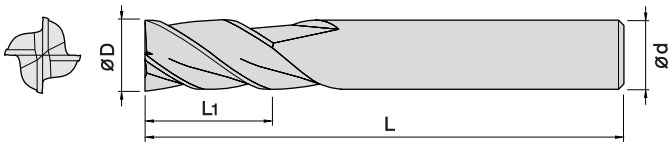
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 30HRC		30 ~ 45HRC		45 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	8.570	45	6.570	40	4.200	15
1.5	7.800	50	6.000	45	3.700	20
2	6.300	60	5.040	50	3.150	25
3	4.410	70	3.570	60	2.200	30
4	3.570	85	2.840	70	1.790	35
5	3.050	105	2.420	85	1.580	40
6	2.630	125	2.100	105	1.370	50
8	2.000	135	1.580	105	1.050	50
10	1.680	135	1.370	105	840	50
12	1.370	105	1.160	95	700	40
16	1.160	95	890	75	560	35
20	840	70	680	50	420	25
25	600	55	510	35	300	15
Profundidade de Corte	D 0.3D (Máx. Ø3:0.4mm)		D 0.05D			

4RJJ

FRESA TOPO RETO 4 CORTES



Diâmetro	Tolerância
Ø0.8 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 20	-0.015 ~ -0.03mm

Ø 0.8~5.5 Ø 6~12 Ø 14~20 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RJJ 008 020 H04	0.8	2	40	4	4
4RJJ 010 025 H04	1	2.5	40	4	4
4RJJ 010 025 H06	1	2.5	40	6	4
4RJJ 010 025 060	1	2.5	60	6	4
4RJJ 010 025 080	1	2.5	80	6	4
4RJJ 010 040 H06	1	4	50	6	4
4RJJ 012 060 H06	1.5	6	50	6	4
4RJJ 015 040 H04	1.5	4	40	4	4
4RJJ 015 040 H06	1.5	4	40	6	4
4RJJ 015 040 060	1.5	4	60	6	4
4RJJ 015 040 080	1.5	4	80	6	4
4RJJ 020 060 H04	2	6	40	4	4
4RJJ 020 060 H06	2	6	40	6	4
4RJJ 020 060 060	2	6	60	6	4
4RJJ 020 060 100	2	6	100	6	4
4RJJ 025 080 H04	2.5	8	45	4	4
4RJJ 025 080 H06	2.5	8	45	6	4
4RJJ 025 080 070	2.5	8	70	6	4
4RJJ 025 080 100	2.5	8	100	6	4
4RJJ 030 080 H03	3	8	45	3	4
4RJJ 030 080 H04	3	8	45	4	4
4RJJ 030 080 H06	3	8	45	6	4
4RJJ 030 080 070	3	8	70	6	4
4RJJ 030 080 100	3	8	100	6	4
4RJJ 035 100 H06	3.5	10	45	6	4
4RJJ 040 110 H04	4	11	45	4	4
4RJJ 040 110 H06	4	11	45	6	4
4RJJ 040 110 070	4	11	70	6	4
4RJJ 040 110 100	4	11	100	6	4
4RJJ 045 110 H06	4.5	11	45	6	4
4RJJ 050 130 H06	5	13	50	6	4
4RJJ 050 130 080	5	13	80	6	4
4RJJ 050 130 100	5	13	100	6	4
4RJJ 055 130 H06	5.5	13	50	6	4
4RJJ 060 130 H06	6	13	50	6	4
4RJJ 060 130 080	6	13	80	6	4
4RJJ 060 130 100	6	13	100	6	4
4RJJ 060 150 H06	6	15	60	6	4
4RJJ 065 160 H08	6.5	16	60	8	4
4RJJ 070 160 H08	7	16	60	8	4
4RJJ 075 160 H08	7.5	16	60	8	4
4RJJ 080 190 H08	8	19	60	8	4
4RJJ 080 200 H08	8	20	70	8	4
4RJJ 085 190 H10	8.5	19	70	10	4
4RJJ 090 190 H10	9	19	70	10	4
4RJJ 095 190 H10	9.5	19	70	10	4
4RJJ 100 220 H10	10	22	70	10	4
4RJJ 100 250 H10	10	25	75	10	4

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RJJ 105 220 H12	10.5	22	75	12	4
4RJJ 110 220 H12	11	22	75	12	4
4RJJ 115 220 H12	11.5	22	75	12	4
4RJJ 120 260 H12	12	26	75	12	4
4RJJ 120 300 H12	12	30	80	12	4
4RJJ 140 260 H14	14	26	80	14	4
4RJJ 140 260 H16	14	26	85	16	4
4RJJ 160 350 H16	16	35	100	16	4
4RJJ 160 400 H16	16	40	100	16	4
4RJJ 180 350 H18	18	35	100	18	4
4RJJ 200 400 H20	20	40	100	20	4
4RJJ 200 450 H20	20	45	100	20	4

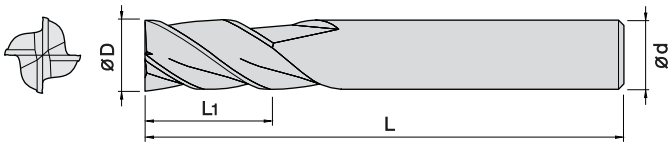
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 35HRC ~1,100N/mm²		35 ~ 45HRC 1,100~1,500N/mm²		Aço Inox		45 ~ 55HRC 1,500~2,000N/mm²	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	11.560	280	7.560	170	6.300	140	5.040	50
3	8.920	320	5.560	200	4.620	170	3.360	60
4	7.560	570	4.620	350	3.880	280	2.940	60
5	6.300	600	3.780	360	3.160	300	2.320	70
6	5.560	660	3.360	410	2.840	330	2.000	80
8	4.200	710	2.520	380	2.100	350	1.680	110
10	3.260	610	2.000	300	1.680	300	1.360	90
12	2.740	520	1.680	250	1.360	240	1.160	80
14	2.420	510	1.460	225	1.210	220	960	70
16	2.200	410	1.360	200	1.100	200	900	60
18	1.820	350	1.210	180	950	175	820	50
20	1.680	320	1.060	160	840	150	680	40
Profundidade de Corte	0.05D 1.0D							

4RLJJ

FRESA TOPO RETO 4 CORTES LONGA



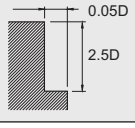
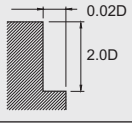
Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 25	-0.015 ~ -0.03mm

Ø 1~5 Ø 6~12 Ø 14~25 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLJJ 010 050 H06	1	5	60	6	4
4RLJJ 015 080 H06	1.5	8	60	6	4
4RLJJ 020 100 H06	2	10	60	6	4
4RLJJ 030 150 H06	3	15	70	6	4
4RLJJ 030 200 H06	3	20	70	6	4
4RLJJ 030 250 H06	3	25	70	6	4
4RLJJ 040 150 H04	4	15	70	4	4
4RLJJ 040 150 H06	4	15	70	6	4
4RLJJ 040 200 H04	4	20	70	4	4
4RLJJ 040 200 H06	4	20	70	6	4
4RLJJ 040 250 H06	4	25	70	6	4
4RLJJ 040 300 H06	4	30	75	6	4
4RLJJ 050 200 H06	5	20	70	6	4
4RLJJ 050 250 H06	5	25	75	6	4
4RLJJ 050 300 H06	5	30	80	6	4
4RLJJ 060 200 H06	6	20	75	6	4
4RLJJ 060 200 100	6	20	100	6	4
4RLJJ 060 250 H06	6	25	75	6	4
4RLJJ 060 300 H06	6	30	80	6	4
4RLJJ 060 350 H06	6	35	80	6	4
4RLJJ 080 250 H08	8	25	75	8	4
4RLJJ 080 250 100	8	25	100	8	4
4RLJJ 080 300 H08	8	30	80	8	4
4RLJJ 080 350 H08	8	35	90	8	4
4RLJJ 080 400 H08	8	40	90	8	4
4RLJJ 080 450 H08	8	45	100	8	4
4RLJJ 100 300 H10	10	30	80	10	4
4RLJJ 100 300 110	10	30	110	10	4
4RLJJ 100 350 H10	10	35	90	10	4
4RLJJ 100 400 H10	10	40	90	10	4
4RLJJ 100 500 H10	10	50	100	10	4
4RLJJ 100 600 H10	10	60	110	10	4
4RLJJ 120 300 H12	12	30	90	12	4
4RLJJ 120 350 110	12	35	110	12	4
4RLJJ 120 400 H12	12	40	100	12	4
4RLJJ 120 500 H12	12	50	100	12	4
4RLJJ 120 600 H12	12	60	110	12	4
4RLJJ 120 700 H12	12	70	130	12	4
4RLJJ 140 500 H14	14	50	110	14	4
4RLJJ 160 400 160	16	40	160	16	4
4RLJJ 160 550 H16	16	55	120	16	4
4RLJJ 160 700 H16	16	70	130	16	4
4RLJJ 180 800 160	18	80	160	18	4
4RLJJ 200 500 160	20	50	160	20	4
4RLJJ 200 600 H20	20	60	130	20	4
4RLJJ 200 1000 H20	20	100	200	20	4
4RLJJ 250 750 H25	25	75	160	25	4

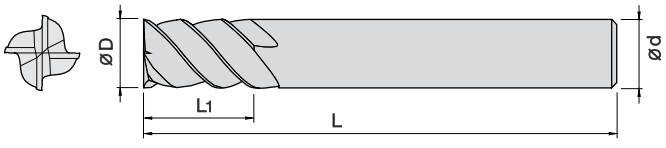
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 30HRC		30 ~ 45HRC		45 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	8.200	85	6.100	65	4.300	30
1.5	7.100	95	5.500	75	3.500	40
2	6.300	100	5.040	80	3.150	45
3	4.410	115	3.570	100	2.200	55
4	3.570	140	2.840	115	1.790	60
5	3.050	180	2.420	140	1.580	70
6	2.630	215	2.100	180	1.370	90
8	2.000	230	1.580	180	1.050	90
10	1.680	230	1.370	180	840	90
12	1.370	180	1.160	160	700	70
16	1.160	160	890	125	560	60
20	840	115	680	90	420	45
25	650	80	790	65	310	30
Profundidade de Corte						

4R45JJ

FRESA TOPO RETO 4 CORTES 45º



Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

Ø 1~5 Ø 6~12 Ø 16~20 Proteção da Aresta

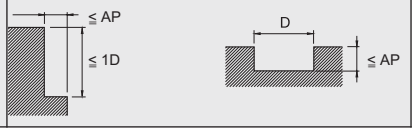
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4R45JJ 010 025 H06	1	2.5	40	6	4
4R45JJ 010 035 H06	1	3.5	40	6	4
4R45JJ 015 040 H06	1.5	4	40	6	4
4R45JJ 015 060 H06	1.5	6	40	6	4
4R45JJ 020 050 H06	2	5	40	6	4
4R45JJ 020 080 H06	2	8	45	6	4
4R45JJ 030 080 H06	3	8	45	6	4
4R45JJ 030 120 H06	3	12	50	6	4
4R45JJ 040 110 H06	4	11	45	6	4
4R45JJ 040 160 H06	4	16	55	6	4
4R45JJ 050 130 H06	5	13	50	6	4
4R45JJ 050 180 H06	5	18	60	6	4
4R45JJ 060 130 H06	6	13	50	6	4
4R45JJ 060 200 H06	6	20	60	6	4
4R45JJ 080 200 H08	8	20	60	8	4
4R45JJ 080 250 H08	8	25	70	8	4
4R45JJ 100 220 H10	10	22	70	10	4
4R45JJ 100 300 H10	10	30	80	10	4
4R45JJ 120 260 H12	12	26	75	12	4
4R45JJ 120 400 H12	12	40	90	12	4
4R45JJ 120 500 H12	12	50	100	12	4
4R45JJ 160 350 H16	16	35	90	16	4
4R45JJ 160 500 H16	16	50	110	16	4
4R45JJ 200 400 H20	20	40	100	20	4
4R45JJ 200 500 H20	20	50	110	20	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

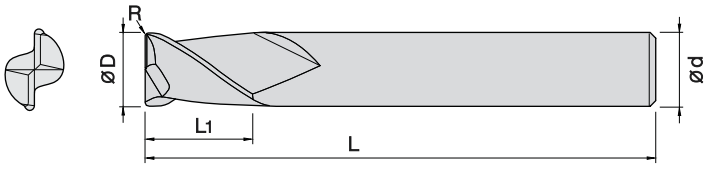
Material	~ 45HRC			45 ~ 55HRC		
D (mm)	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
1	40.000	3.000	0.06	32.000	2.400	0.06
1.5	40.000	4.500	0.12	32.000	3.600	0.08
2	30.000	4.500	0.18	24.000	3.600	0.10
2.5	24.000	3.900	0.25	19.000	3.000	0.13
3	20.000	3.500	0.30	16.000	2.700	0.15
4	15.000	3.000	0.40	12.000	2.400	0.20
5	12.000	2.400	0.50	9.000	1.800	0.25
6	10.000	2.100	0.60	7.000	1.500	0.30
8	8.000	1.500	0.80	5.600	1.100	0.40
10	6.400	1.400	1.00	4.500	950	0.50
12	5.400	1.200	1.00	3.800	860	0.50
16	2.400	550	3.00	1.200	120	0.80
20	1.900	480	4.00	1.000	100	1.00

Profundidade de Corte



2TRJJ

FRESA TOROIDAL 2 CORTES



Diâmetro	Tolerância
Ø0.4 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

R0.05 ~ 0.5 R1 ~ 1.5 R2 ~ 5

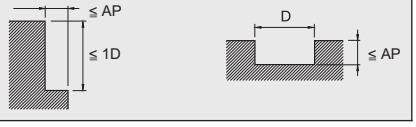
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRJJ 010 002 H04	1	0.2	2.5	45	4	2
2TRJJ 015 005 H04	1.5	0.5	4	45	4	2
2TRJJ 020 005 H04	2	0.5	6	45	4	2
2TRJJ 025 005 H04	2.5	0.5	6	50	4	2
2TRJJ 030 005 H06	3	0.5	8	60	6	2
2TRJJ 030 010 H06	3	1	8	60	6	2
2TRJJ 040 005 060	4	0.5	9	60	4	2
2TRJJ 040 005 080	4	0.5	9	80	4	2
2TRJJ 040 005 H06	4	0.5	10	70	6	2
2TRJJ 040 010 060	4	1	9	60	4	2
2TRJJ 040 010 080	4	1	9	80	4	2
2TRJJ 040 010 H06	4	1	10	70	6	2
2TRJJ 050 005 H06	5	0.5	13	75	6	2
2TRJJ 050 010 H06	5	1	13	75	6	2
2TRJJ 060 005 060	6	0.5	11	60	6	2
2TRJJ 060 005 090	6	0.5	13	90	6	2
2TRJJ 060 010 060	6	1	11	60	6	2
2TRJJ 060 010 090	6	1	13	90	6	2
2TRJJ 080 005 100	8	0.5	19	100	8	2
2TRJJ 080 005 120	8	0.5	19	120	8	2
2TRJJ 080 010 070	8	1	16	70	8	2
2TRJJ 080 010 100	8	1	19	100	8	2
2TRJJ 080 010 120	8	1	19	120	8	2
2TRJJ 100 005 075	10	0.5	19	75	10	2
2TRJJ 100 005 100	10	0.5	22	100	10	2
2TRJJ 100 005 130	10	0.5	22	130	10	2
2TRJJ 100 010 075	10	1	19	75	10	2
2TRJJ 100 010 100	10	1	22	100	10	2
2TRJJ 100 010 130	10	1	22	130	10	2
2TRJJ 120 005 080	12	0.5	22	80	12	2
2TRJJ 120 005 110	12	0.5	26	110	12	2
2TRJJ 120 005 130	12	0.5	26	130	12	2
2TRJJ 120 010 080	12	1	22	80	12	2
2TRJJ 120 010 110	12	1	26	110	12	2
2TRJJ 120 010 130	12	1	26	130	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

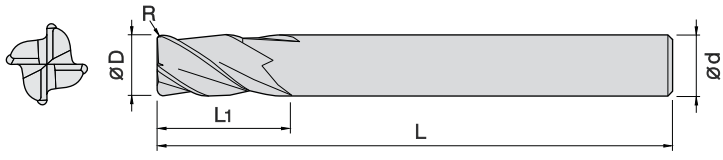
Material	General Steels			SKD61		
	~ 45HRC			45 ~ 55HRC		
D (mm)	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
1	40.000	2.000	0.060	32.000	1.600	0.060
1.5	40.000	3.000	0.120	32.000	1.900	0.080
2	30.000	3.000	0.180	24.000	1.900	0.100
2.5	24.000	2.600	0.250	19.000	1.600	0.130
3	20.000	2.300	0.300	16.000	1.400	0.150
4	15.000	2.000	0.400	12.000	1.200	0.200
5	12.000	1.600	0.500	9.000	900	0.250
6	10.000	1.400	0.600	7.000	700	0.300
8	8.000	1.000	0.800	5.600	550	0.400
10	6.400	900	1.000	4.500	500	0.500
12	5.400	820	1.000	3.800	450	0.500
16	2.400	380	3.000	1.200	100	0.800
20	1.900	320	4.000	1.000	80	1.000

Profundidade de Corte



4TRJJ

FRESA TOROIDAL 4 CORTES



Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRJJ 010 002 H04	1	0.2	2.5	45	4	4
4TRJJ 015 005 H04	1.5	0.5	4	45	4	4
4TRJJ 020 005 H04	2	0.5	6	45	4	4
4TRJJ 025 005 H04	2.5	0.5	6	50	4	4
4TRJJ 030 005 H06	3	0.5	8	60	6	4
4TRJJ 030 010 H06	3	1	8	60	6	4
4TRJJ 040 005 060	4	0.5	9	60	4	4
4TRJJ 040 005 080	4	0.5	9	80	4	4
4TRJJ 040 005 H06	4	0.5	10	70	6	4
4TRJJ 040 010 060	4	1	9	60	4	4
4TRJJ 040 010 080	4	1	9	80	4	4
4TRJJ 040 010 H06	4	1	10	70	6	4
4TRJJ 050 005 H06	5	0.5	13	75	6	4
4TRJJ 050 010 H06	5	1	13	75	6	4
4TRJJ 060 005 060	6	0.5	11	60	6	4
4TRJJ 060 005 080	6	0.5	13	80	6	4
4TRJJ 060 010 060	6	1	11	60	6	4
4TRJJ 060 010 080	6	1	13	80	6	4
4TRJJ 080 005 070	8	0.5	16	70	8	4
4TRJJ 080 005 090	8	0.5	19	90	8	4
4TRJJ 080 005 110	8	0.5	19	110	8	4
4TRJJ 080 010 070	8	1	16	70	8	4
4TRJJ 080 010 090	8	1	19	90	8	4
4TRJJ 080 010 110	8	1	19	110	8	4
4TRJJ 100 005 075	10	0.5	19	75	10	4
4TRJJ 100 005 100	10	0.5	22	100	10	4
4TRJJ 100 005 120	10	0.5	22	120	10	4
4TRJJ 100 010 075	10	1	19	75	10	4
4TRJJ 100 010 100	10	1	22	100	10	4
4TRJJ 100 010 120	10	1	22	120	10	4
4TRJJ 120 005 080	12	0.5	22	80	12	4
4TRJJ 120 005 110	12	0.5	26	110	12	4
4TRJJ 120 005 130	12	0.5	26	130	12	4
4TRJJ 120 010 080	12	1	22	80	12	4
4TRJJ 120 010 110	12	1	26	110	12	4
4TRJJ 120 010 130	12	1	26	130	12	4
4TRJJ 160 005 110	16	0.5	35	110	16	4
4TRJJ 160 005 160	16	0.5	35	160	16	4
4TRJJ 160 010 110	16	1	35	110	16	4
4TRJJ 160 010 160	16	1	35	160	16	4

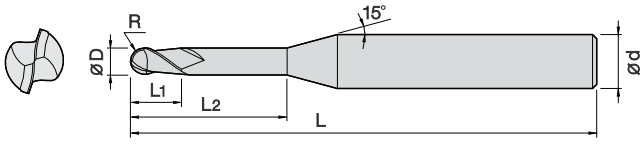
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 35HRC		35 ~ 45HRC		45 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	27.600	300	18.000	220	11.000	120
1.5	22.000	310	13.500	230	8.500	120
2	18.000	320	11.560	240	7.200	130
2.5	15.000	330	9.500	250	6.100	130
3	13.240	340	8.560	260	5.280	130
4	10.720	420	6.820	300	4.300	140
5	9.160	430	5.800	360	3.800	170
6	7.900	430	5.040	360	3.280	170
8	6.000	460	3.800	360	2.520	170
10	5.040	460	3.280	360	2.020	170
12	4.120	360	2.780	320	1.680	140
16	3.100	280	2.100	230	1.280	115
Profundidade de Corte	0.05D, 2.0D		0.02D, 2.0D			

2ELNJJ

FRESA LONG NECK TOPO ESFÉRICO 2 CORTES



Diâmetro	Tolerância
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNJJ 005 020 H04	0.5	0.25	0.6	2	45	4	2
2ELNJJ 005 040 H04	0.5	0.25	0.6	4	45	4	2
2ELNJJ 005 060 H04	0.5	0.25	0.6	6	45	4	2
2ELNJJ 005 080 H04	0.5	0.25	0.6	8	45	4	2
2ELNJJ 010 040 H04	1	0.5	1.2	4	45	4	2
2ELNJJ 010 060 H04	1	0.5	1.2	6	45	4	2
2ELNJJ 010 080 H04	1	0.5	1.2	8	45	4	2
2ELNJJ 010 100 H04	1	0.5	1.2	10	50	4	2
2ELNJJ 010 120 H04	1	0.5	1.2	12	50	4	2
2ELNJJ 010 200 H04	1	0.5	1.2	20	50	4	2
2ELNJJ 010 250 H04	1	0.5	1.2	25	60	4	2
2ELNJJ 015 040 H04	1.5	0.75	1.8	4	45	4	2
2ELNJJ 015 060 H04	1.5	0.75	1.8	6	45	4	2
2ELNJJ 015 080 H04	1.5	0.75	1.8	8	45	4	2
2ELNJJ 015 100 H04	1.5	0.75	1.8	10	50	4	2
2ELNJJ 015 120 H04	1.5	0.75	1.8	12	50	4	2
2ELNJJ 015 160 H04	1.5	0.75	1.8	16	50	4	2
2ELNJJ 015 200 H04	1.5	0.75	1.8	20	50	4	2
2ELNJJ 020 040 H04	2	1	2.4	4	45	4	2
2ELNJJ 020 060 H04	2	1	2.4	6	45	4	2
2ELNJJ 020 080 H04	2	1	2.4	8	45	4	2
2ELNJJ 020 100 H04	2	1	2.4	10	50	4	2
2ELNJJ 020 120 H04	2	1	2.4	12	50	4	2
2ELNJJ 020 160 H04	2	1	2.4	16	50	4	2
2ELNJJ 020 200 H04	2	1	2.4	20	50	4	2
2ELNJJ 020 250 H04	2	1	2.4	25	60	4	2
2ELNJJ 025 080 H04	2.5	1.25	3	8	45	4	2
2ELNJJ 025 100 H04	2.5	1.25	3	10	50	4	2
2ELNJJ 025 200 H04	2.5	1.25	3	20	50	4	2
2ELNJJ 025 250 H04	2.5	1.25	3	25	60	4	2
2ELNJJ 025 300 H04	2.5	1.25	3	30	70	4	2
2ELNJJ 030 080 H06	3	1.5	3.6	8	45	6	2
2ELNJJ 030 100 H06	3	1.5	3.6	10	50	6	2
2ELNJJ 030 120 H06	3	1.5	3.6	12	50	6	2
2ELNJJ 030 160 H06	3	1.5	3.6	16	55	6	2
2ELNJJ 030 200 H06	3	1.5	3.6	20	60	6	2
2ELNJJ 030 300 H06	3	1.5	3.6	30	70	6	2
2ELNJJ 030 400 H06	3	1.5	3.6	40	80	6	2
2ELNJJ 040 080 H06	4	2	4.8	8	45	6	2
2ELNJJ 040 100 H06	4	2	4.8	10	50	6	2
2ELNJJ 040 120 H06	4	2	4.8	12	50	6	2
2ELNJJ 040 160 H06	4	2	4.8	16	55	6	2
2ELNJJ 040 200 H06	4	2	4.8	20	60	6	2
2ELNJJ 040 300 H06	4	2	4.8	30	70	6	2
2ELNJJ 040 400 H06	4	2	4.8	40	80	6	2

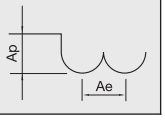
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		Prehardened Steels / Hardened Steels NAK / SKD 30 ~ 45HRC				Hardened Steels SKD / SKT 45 ~ 55HRC			
R (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap	Ae	Rotação (RPM)	Avanço (mm/min)	Ap	Ae
0.25	2	42.000	750	0.022	0.036	32.000	500	0.018	0.036
	4	38.000	580	0.017	0.024	31.000	400	0.014	0.024
	6	28.000	400	0.008	0.012	27.000	330	0.005	0.012
	8	28.000	400	0.008	0.012	27.000	330	0.005	0.012
0.5	4	32.000	770	0.057	0.240	22.000	480	0.045	0.240
	6	26.000	760	0.055	0.120	17.600	480	0.009	0.120
	8	26.000	760	0.034	0.120	17.600	480	0.027	0.120
	10	17.600	530	0.024	0.060	16.500	420	0.018	0.060
	12	17.600	530	0.024	0.060	16.500	420	0.018	0.060
	20	14.300	360	0.013	0.036	13.200	300	0.009	0.036
	25	14.300	360	0.013	0.030	13.200	300	0.009	0.030
0.75	4	21.000	1.060	0.137	0.216	14.800	660	0.110	0.216
	6	21.000	940	0.117	0.216	14.800	580	0.090	0.216
	8	16.300	700	0.084	0.180	12.100	450	0.069	0.180
	10	16.300	700	0.084	0.180	12.100	450	0.069	0.180
	12	16.300	700	0.084	0.180	12.100	450	0.069	0.180
	16	12.400	480	0.027	0.120	11.600	390	0.022	0.120
	20	12.400	480	0.016	0.060	11.600	390	0.012	0.060
1	4	18.500	12.600	0.185	0.360	13.200	960	0.150	0.360
	6	18.500	12.600	0.185	0.360	13.200	960	0.150	0.360
	8	18.500	1.120	0.147	0.240	13.200	870	0.120	0.240
	10	18.500	1.120	0.147	0.240	13.200	870	0.120	0.240
	12	16.000	990	0.133	0.240	11.700	780	0.107	0.240
	16	16.000	990	0.118	0.240	11.700	780	0.090	0.240
	20	14.700	580	0.074	0.120	11.600	580	0.061	0.120
	25	10.600	450	0.058	0.120	10.200	450	0.045	0.120
1.25	8	14.500	1.400	0.185	0.240	9.700	1.080	0.150	0.240
	10	14.500	1.400	0.185	0.240	9.700	1.080	0.150	0.240
	20	10.200	950	0.093	0.120	8.400	980	0.074	0.120
	25	8.400	540	0.074	0.120	8.400	560	0.061	0.120
	30	8.400	540	0.033	0.060	8.400	560	0.026	0.060
	8	12.900	1.680	0.222	0.360	9.200	1.300	0.180	0.360
	10	12.900	1.680	0.222	0.360	9.200	1.300	0.180	0.360
1.5	12	12.900	1.510	0.222	0.360	9.200	1.170	0.180	0.360
	16	11.300	1.330	0.166	0.360	8.100	1.040	0.135	0.360
	20	11.300	1.330	0.166	0.360	8.100	1.040	0.135	0.360
	30	8.800	780	0.111	0.180	8.100	780	0.090	0.180
	40	7.900	620	0.055	0.180	7.500	520	0.045	0.180
	8	9.700	1.560	0.297	0.600	6.800	1.210	0.241	0.600
	10	9.700	1.560	0.297	0.600	6.800	1.210	0.241	0.600
2	12	9.700	1.560	0.297	0.600	6.800	1.210	0.241	0.600
	16	9.700	1.560	0.297	0.600	6.800	1.210	0.241	0.600
	20	9.700	1.560	0.297	0.600	6.800	1.210	0.241	0.600
	30	8.400	1.250	0.223	0.360	6.000	980	0.180	0.361
	40	6.600	950	0.148	0.360	6.000	700	0.120	0.360

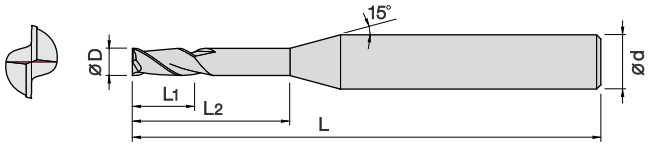
Profundidade de Corte

- Ap: Profundidade axial
- Ae: Profundidade radial
- D: Diâmetro
- n: Velocidade
- Vf: Avanço



2RLNJJ

FRESA LONG NECK TOPO RETO 2 CORTES



Diâmetro	Tolerância
Ø0.1	+0 ~ -0.05mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

Ø0.1 Ø0.2~5 Ø6~12 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNJJ 005 020 H04	0.5	0.6	2	45	4	2
2RLNJJ 005 040 H04	0.5	0.6	4	45	4	2
2RLNJJ 008 020 H04	0.8	0.9	2	45	4	2
2RLNJJ 008 040 H04	0.8	0.9	4	45	4	2
2RLNJJ 008 060 H04	0.8	0.9	6	45	4	2
2RLNJJ 008 080 H04	0.8	0.9	8	45	4	2
2RLNJJ 008 100 H04	0.8	0.9	10	45	4	2
2RLNJJ 010 040 H04	1	1.2	4	45	4	2
2RLNJJ 010 060 H04	1	1.2	6	45	4	2
2RLNJJ 010 080 H04	1	1.2	8	45	4	2
2RLNJJ 010 100 H04	1	1.2	10	50	4	2
2RLNJJ 010 120 H04	1	1.2	12	50	4	2
2RLNJJ 010 160 H04	1	1.2	16	50	4	2
2RLNJJ 010 200 H04	1	1.2	20	50	4	2
2RLNJJ 015 040 H04	1.5	1.8	4	45	4	2
2RLNJJ 015 060 H04	1.5	1.8	6	45	4	2
2RLNJJ 015 080 H04	1.5	1.8	8	45	4	2
2RLNJJ 015 100 H04	1.5	1.8	10	50	4	2
2RLNJJ 015 120 H04	1.5	1.8	12	50	4	2
2RLNJJ 015 160 H04	1.5	1.8	16	50	4	2
2RLNJJ 015 200 H04	1.5	1.8	20	50	4	2
2RLNJJ 020 040 H04	2	2.4	4	45	4	2
2RLNJJ 020 060 H04	2	2.4	6	45	4	2
2RLNJJ 020 080 H04	2	2.4	8	45	4	2
2RLNJJ 020 100 H04	2	2.4	10	50	4	2
2RLNJJ 020 120 H04	2	2.4	12	50	4	2
2RLNJJ 020 160 H04	2	2.4	16	50	4	2
2RLNJJ 020 200 H04	2	2.4	20	50	4	2
2RLNJJ 020 220 H04	2	2.4	22	60	4	2
2RLNJJ 020 250 H04	2	2.4	25	60	4	2
2RLNJJ 025 080 H04	2.5	3	8	45	4	2
2RLNJJ 025 100 H04	2.5	3	10	50	4	2
2RLNJJ 025 120 H04	2.5	3	12	50	4	2
2RLNJJ 025 160 H04	2.5	3	16	50	4	2
2RLNJJ 025 200 H04	2.5	3	20	50	4	2
2RLNJJ 030 060 H06	3	3.6	6	45	6	2
2RLNJJ 030 080 H06	3	3.6	8	45	6	2
2RLNJJ 030 100 H06	3	3.6	10	50	6	2
2RLNJJ 030 120 H06	3	3.6	12	50	6	2
2RLNJJ 030 160 H06	3	3.6	16	55	6	2
2RLNJJ 030 200 H06	3	3.6	20	60	6	2
2RLNJJ 030 300 H06	3	3.6	30	70	6	2
2RLNJJ 040 080 H06	4	4.8	8	45	6	2
2RLNJJ 040 100 H06	4	4.8	10	50	6	2
2RLNJJ 040 120 H06	4	4.8	12	50	6	2
2RLNJJ 040 160 H06	4	4.8	16	55	6	2
2RLNJJ 040 200 H06	4	4.8	20	60	6	2
2RLNJJ 040 300 H06	4	4.8	30	70	6	2

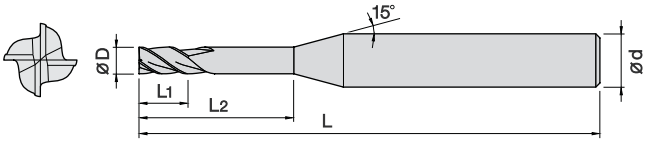
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK 30 ~ 45HRC		
D (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
0.5	2	40.000	950	0.003
	4	40.000	850	0.003
	6	40.000	700	0.003
0.8	4	40.000	1.100	0.015
	6	40.000	1.100	0.010
	8	40.000	1.000	0.010
	10	30.000	500	0.010
1	4	40.000	1.600	0.040
	6	40.000	1.600	0.040
	8	40.000	1.600	0.030
	10	38.000	1.300	0.025
	12	30.000	1.000	0.020
	16	23.000	600	0.010
	20	15.000	400	0.005
1.5	4	40.000	2.400	0.1
	6	40.000	2.400	0.1
	8	35.000	2.000	0.08
	10	30.000	1.800	0.05
	12	28.000	1.300	0.04
	16	20.000	800	0.02
	20	15.000	600	0.02
2	4	40.000	2.500	0.2
	6	40.000	2.400	0.18
	8	35.000	2.000	0.15
	10	30.000	1.800	0.1
	12	25.000	1.500	0.08
	16	20.000	1.000	0.06
	20	12.000	800	0.05
	22	10.000	700	0.05
	25	9.000	600	0.04
2.5	8	25.000	2.500	0.2
	10	22.000	2.300	0.18
	12	20.000	2.000	0.15
	16	18.000	1.700	0.1
	20	12.000	1.000	0.08
3	6	20.000	2.000	0.3
	8	20.000	2.000	0.3
	10	20.000	1.600	0.25
	12	20.000	1.500	0.18
	16	15.000	1.400	0.15
	20	10.000	800	0.1
	30	7.000	450	0.06
4	8	20.000	3.500	0.3
	10	20.000	3.200	0.3
	12	15.000	3.000	0.3
	16	13.000	2.500	0.25
	20	11.000	2.200	0.22
	30	6.400	1.200	0.12

4RLNJJ

FRESA LONG NECK TOPO RETO 4 CORTES



Diâmetro	Tolerância
Ø0.8 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

Ø 0.8~5 Ø 6~12 Proteção da Aresta

Código	Diâmetro D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLNJJ 008 040 H04	0.8	0.9	4	45	4	4
4RLNJJ 008 060 H04	0.8	0.9	6	45	4	4
4RLNJJ 008 080 H04	0.8	0.9	8	45	4	4
4RLNJJ 008 100 H04	0.8	0.9	10	45	4	4
4RLNJJ 008 120 H04	0.8	0.9	12	45	4	4
4RLNJJ 008 160 H04	0.8	0.9	16	45	4	4
4RLNJJ 010 060 H04	1	1.2	6	45	4	4
4RLNJJ 010 080 H04	1	1.2	8	45	4	4
4RLNJJ 010 100 H04	1	1.2	10	50	4	4
4RLNJJ 010 120 H04	1	1.2	12	50	4	4
4RLNJJ 010 160 H04	1	1.2	16	50	4	4
4RLNJJ 010 200 H04	1	1.2	20	50	4	4
4RLNJJ 010 250 H04	1	1.2	25	60	4	4
4RLNJJ 015 080 H04	1.5	1.8	8	45	4	4
4RLNJJ 015 100 H04	1.5	1.8	10	50	4	4
4RLNJJ 015 120 H04	1.5	1.8	12	50	4	4
4RLNJJ 015 160 H04	1.5	1.8	16	50	4	4
4RLNJJ 015 200 H04	1.5	1.8	20	50	4	4
4RLNJJ 015 250 H04	1.5	1.8	25	60	4	4
4RLNJJ 020 080 H04	2	2.4	8	45	4	4
4RLNJJ 020 100 H04	2	2.4	10	50	4	4
4RLNJJ 020 120 H04	2	2.4	12	50	4	4
4RLNJJ 020 160 H04	2	2.4	16	50	4	4
4RLNJJ 020 200 H04	2	2.4	20	50	4	4
4RLNJJ 020 250 H04	2	2.4	25	60	4	4
4RLNJJ 020 300 H04	2	2.4	30	70	4	4
4RLNJJ 025 100 H04	2.5	3	10	50	4	4
4RLNJJ 025 120 H04	2.5	3	12	50	4	4
4RLNJJ 025 160 H04	2.5	3	16	50	4	4
4RLNJJ 025 200 H04	2.5	3	20	50	4	4
4RLNJJ 025 250 H04	2.5	3	25	60	4	4
4RLNJJ 025 300 H04	2.5	3	30	70	4	4
4RLNJJ 030 100 H06	3	3.6	10	50	6	4
4RLNJJ 030 120 H06	3	3.6	12	50	6	4
4RLNJJ 030 160 H06	3	3.6	16	55	6	4
4RLNJJ 030 200 H06	3	3.6	20	60	6	4
4RLNJJ 030 250 H06	3	3.6	25	65	6	4
4RLNJJ 030 300 H06	3	3.6	30	70	6	4
4RLNJJ 030 350 H06	3	3.6	35	75	6	4
4RLNJJ 030 400 H06	3	3.6	40	80	6	4
4RLNJJ 040 100 H06	4	4.8	10	50	6	4
4RLNJJ 040 120 H06	4	4.8	12	50	6	4
4RLNJJ 040 160 H06	4	4.8	16	55	6	4
4RLNJJ 040 200 H06	4	4.8	20	60	6	4
4RLNJJ 040 250 H06	4	4.8	25	65	6	4
4RLNJJ 040 300 H06	4	4.8	30	70	6	4
4RLNJJ 040 400 H06	4	4.8	40	80	6	4
4RLNJJ 040 450 H06	4	4.8	45	90	6	4

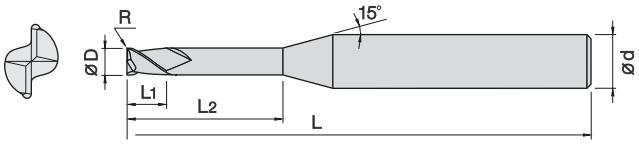
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK 30 ~ 45HRC		
D (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
0.8	4	40.000	3.000	0.020
	6	38.000	2.800	0.020
	8	36.000	2.400	0.010
	10	30.000	1.500	0.009
	12	20.000	1.000	0.009
	16	10.000	500	0.005
1	6	38.000	2.800	0.035
	8	36.000	2.400	0.030
	10	30.000	1.500	0.025
	12	20.000	1.000	0.020
	16	10.000	500	0.005
1.5	8	38.000	2.600	0.050
	10	35.000	2.500	0.050
	12	32.000	2.400	0.050
	16	16.000	1.100	0.030
	20	10.000	600	0.010
	25	9.000	500	0.009
2	8	38.000	3.600	0.090
	10	35.000	3.500	0.080
	12	32.000	3.200	0.070
	16	24.000	2.400	0.050
	20	12.000	1.200	0.030
	25	10.000	800	0.020
	30	5.000	500	0.010
2.5	10	32.000	4.000	0.200
	12	28.000	2.500	0.120
	16	23.000	1.800	0.100
	20	20.000	1.500	0.060
	25	9.000	1.100	0.040
	30	2.500	300	0.005
3	10	25.000	3.600	0.400
	12	23.000	3.000	0.300
	16	18.000	2.500	0.200
	20	15.000	2.000	0.150
	25	12.000	1.700	0.100
	30	7.000	800	0.050
	35	5.000	300	0.030
	40	4.200	250	0.030
4	10	20.000	3.200	1.200
	12	18.000	3.000	1.000
	16	15.000	2.500	1.000
	20	12.000	2.000	0.500
	25	10.000	1.800	0.400
	30	8.000	1.300	0.200
	40	4.200	700	0.080
	45	3.500	550	0.050

2TRLNJJ

FRESA LONG NECK TOROIDAL 2 CORTES



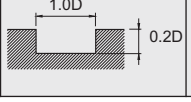
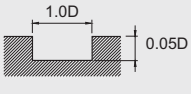
Diâmetro	Tolerância
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNJJ 010 002 060	1	0.2	1.2	6	45	4	2
2TRLNJJ 010 002 080	1	0.2	1.2	8	45	4	2
2TRLNJJ 010 002 100	1	0.2	1.2	10	50	4	2
2TRLNJJ 010 002 120	1	0.2	1.2	12	50	4	2
2TRLNJJ 010 002 160	1	0.2	1.2	16	50	4	2
2TRLNJJ 010 002 200	1	0.2	1.2	20	50	4	2
2TRLNJJ 015 005 080	1.5	0.5	1.8	8	45	4	2
2TRLNJJ 015 005 100	1.5	0.5	1.8	10	50	4	2
2TRLNJJ 015 005 120	1.5	0.5	1.8	12	50	4	2
2TRLNJJ 015 005 160	1.5	0.5	1.8	16	50	4	2
2TRLNJJ 015 005 200	1.5	0.5	1.8	20	50	4	2
2TRLNJJ 015 005 250	1.5	0.5	1.8	25	60	4	2
2TRLNJJ 020 005 080	2	0.5	2.4	8	45	4	2
2TRLNJJ 020 005 100	2	0.5	2.4	10	50	4	2
2TRLNJJ 020 005 120	2	0.5	2.4	12	50	4	2
2TRLNJJ 020 005 160	2	0.5	2.4	16	50	4	2
2TRLNJJ 020 005 200	2	0.5	2.4	20	50	4	2
2TRLNJJ 020 005 250	2	0.5	2.4	25	60	4	2
2TRLNJJ 020 005 300	2	0.5	2.4	30	70	4	2
2TRLNJJ 025 005 100	2.5	0.5	3	10	50	4	2
2TRLNJJ 025 005 160	2.5	0.5	3	16	50	4	2
2TRLNJJ 025 005 200	2.5	0.5	3	20	50	4	2
2TRLNJJ 025 005 250	2.5	0.5	3	25	60	4	2
2TRLNJJ 025 005 300	2.5	0.5	3	30	70	4	2
2TRLNJJ 030 005 100	3	0.5	3.6	10	50	6	2
2TRLNJJ 030 005 120	3	0.5	3.6	12	50	6	2
2TRLNJJ 030 005 160	3	0.5	3.6	16	55	6	2
2TRLNJJ 030 005 200	3	0.5	3.6	20	60	6	2
2TRLNJJ 030 005 250	3	0.5	3.6	25	65	6	2
2TRLNJJ 030 005 300	3	0.5	3.6	30	70	6	2
2TRLNJJ 030 005 350	3	0.5	3.6	35	75	6	2
2TRLNJJ 030 005 400	3	0.5	3.6	40	80	6	2
2TRLNJJ 030 010 100	3	1	3.6	10	50	6	2
2TRLNJJ 030 010 120	3	1	3.6	12	50	6	2
2TRLNJJ 030 010 160	3	1	3.6	16	55	6	2
2TRLNJJ 030 010 200	3	1	3.6	20	60	6	2
2TRLNJJ 030 010 250	3	1	3.6	25	65	6	2
2TRLNJJ 030 010 300	3	1	3.6	30	70	6	2
2TRLNJJ 030 010 350	3	1	3.6	35	75	6	2
2TRLNJJ 030 010 400	3	1	3.6	40	80	6	2
2TRLNJJ 040 005 120	4	0.5	4.8	12	50	6	2
2TRLNJJ 040 005 160	4	0.5	4.8	16	55	6	2
2TRLNJJ 040 005 200	4	0.5	4.8	20	60	6	2
2TRLNJJ 040 005 250	4	0.5	4.8	25	65	6	2
2TRLNJJ 040 005 300	4	0.5	4.8	30	70	6	2
2TRLNJJ 040 005 350	4	0.5	4.8	35	75	6	2
2TRLNJJ 040 005 400	4	0.5	4.8	40	80	6	2
2TRLNJJ 040 005 450	4	0.5	4.8	45	90	6	2

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNJJ 040 005 500	4	0.5	4.8	50	100	6	2
2TRLNJJ 040 010 120	4	1	4.8	12	50	6	2
2TRLNJJ 040 010 160	4	1	4.8	16	55	6	2
2TRLNJJ 040 010 200	4	1	4.8	20	60	6	2
2TRLNJJ 040 010 250	4	1	4.8	25	65	6	2
2TRLNJJ 040 010 300	4	1	4.8	30	70	6	2
2TRLNJJ 040 010 350	4	1	4.8	35	75	6	2
2TRLNJJ 040 010 400	4	1	4.8	40	80	6	2
2TRLNJJ 040 010 450	4	1	4.8	45	90	6	2
2TRLNJJ 040 010 500	4	1	4.8	50	100	6	2

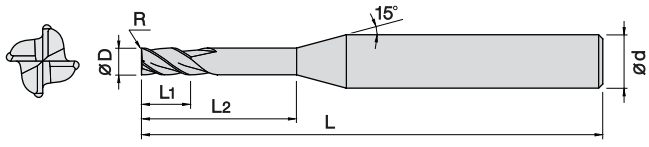
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 35HRC		35 ~ 45HRC		45 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	33.100	280	21.600	120	13.200	70
1.5	26.400	300	16.200	130	10.200	70
2	21.600	310	13.800	140	8.640	80
2.5	18.000	320	11.400	150	7.320	80
3	15.900	330	10.300	160	6.300	80
4	12.800	400	8.200	200	5.150	95
Profundidade de Corte						

4TRLNJJ

FRESA LONG NECK TOROIDAL 4 CORTES



Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

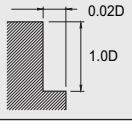
R0.05 ~ 0.5 R1 ~ 1.5 R2 ~ 3

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLNJJ 010 002 060	1	0.2	1.2	6	45	4	4
4TRLNJJ 010 002 080	1	0.2	1.2	8	45	4	4
4TRLNJJ 010 002 100	1	0.2	1.2	10	50	4	4
4TRLNJJ 010 002 120	1	0.2	1.2	12	50	4	4
4TRLNJJ 010 002 160	1	0.2	1.2	16	50	4	4
4TRLNJJ 010 002 200	1	0.2	1.2	20	50	4	4
4TRLNJJ 015 005 080	1.5	0.5	1.8	8	45	4	4
4TRLNJJ 015 005 100	1.5	0.5	1.8	10	50	4	4
4TRLNJJ 015 005 120	1.5	0.5	1.8	12	50	4	4
4TRLNJJ 015 005 160	1.5	0.5	1.8	16	50	4	4
4TRLNJJ 015 005 200	1.5	0.5	1.8	20	50	4	4
4TRLNJJ 015 005 250	1.5	0.5	1.8	25	60	4	4
4TRLNJJ 020 005 100	2	0.5	2.4	10	50	4	4
4TRLNJJ 020 005 120	2	0.5	2.4	12	50	4	4
4TRLNJJ 020 005 160	2	0.5	2.4	16	50	4	4
4TRLNJJ 020 005 200	2	0.5	2.4	20	50	4	4
4TRLNJJ 020 005 250	2	0.5	2.4	25	60	4	4
4TRLNJJ 020 005 300	2	0.5	2.4	30	70	4	4
4TRLNJJ 020 005 350	2	0.5	2.4	35	70	4	4
4TRLNJJ 025 005 100	2.5	0.5	3	10	50	4	4
4TRLNJJ 025 005 160	2.5	0.5	3	16	50	4	4
4TRLNJJ 025 005 200	2.5	0.5	3	20	50	4	4
4TRLNJJ 025 005 250	2.5	0.5	3	25	60	4	4
4TRLNJJ 025 005 300	2.5	0.5	3	30	70	4	4
4TRLNJJ 030 005 100	3	0.5	3.6	10	50	6	4
4TRLNJJ 030 005 160	3	0.5	3.6	16	55	6	4
4TRLNJJ 030 005 200	3	0.5	3.6	20	60	6	4
4TRLNJJ 030 005 250	3	0.5	3.6	25	65	6	4
4TRLNJJ 030 005 300	3	0.5	3.6	30	70	6	4
4TRLNJJ 030 005 350	3	0.5	3.6	35	75	6	4
4TRLNJJ 030 005 400	3	0.5	3.6	40	80	6	4
4TRLNJJ 030 005 500	3	0.5	3.6	50	100	6	4
4TRLNJJ 030 010 100	3	1	3.6	10	50	6	4
4TRLNJJ 030 010 160	3	1	3.6	16	55	6	4
4TRLNJJ 030 010 200	3	1	3.6	20	60	6	4
4TRLNJJ 030 010 250	3	1	3.6	25	65	6	4
4TRLNJJ 030 010 300	3	1	3.6	30	70	6	4
4TRLNJJ 030 010 350	3	1	3.6	35	75	6	4
4TRLNJJ 030 010 400	3	1	3.6	40	80	6	4
4TRLNJJ 030 010 500	3	1	3.6	50	100	6	4
4TRLNJJ 040 005 120	4	0.5	4.8	12	50	6	4
4TRLNJJ 040 005 160	4	0.5	4.8	16	55	6	4
4TRLNJJ 040 005 200	4	0.5	4.8	20	60	6	4
4TRLNJJ 040 005 250	4	0.5	4.8	25	65	6	4
4TRLNJJ 040 005 300	4	0.5	4.8	30	70	6	4
4TRLNJJ 040 005 350	4	0.5	4.8	35	75	6	4
4TRLNJJ 040 005 400	4	0.5	4.8	40	80	6	4
4TRLNJJ 040 005 450	4	0.5	4.8	45	90	6	4

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLNJJ 040 005 500	4	0.5	4.8	50	100	6	4
4TRLNJJ 040 010 120	4	1	4.8	12	50	6	4
4TRLNJJ 040 010 160	4	1	4.8	16	55	6	4
4TRLNJJ 040 010 200	4	1	4.8	20	60	6	4
4TRLNJJ 040 010 250	4	1	4.8	25	65	6	4
4TRLNJJ 040 010 300	4	1	4.8	30	70	6	4
4TRLNJJ 040 010 350	4	1	4.8	35	75	6	4
4TRLNJJ 040 010 400	4	1	4.8	40	80	6	4
4TRLNJJ 040 010 450	4	1	4.8	45	90	6	4
4TRLNJJ 040 010 500	4	1	4.8	50	100	6	4

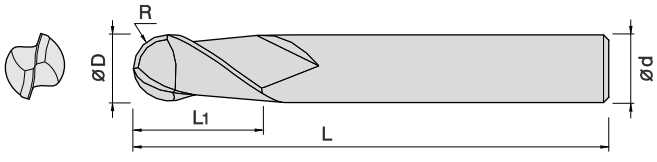
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

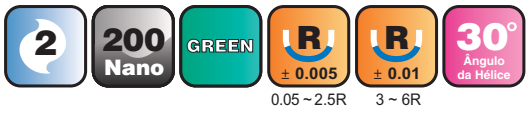
Material	~ 35HRC		35 ~ 45HRC		45 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	33.100	360	21.600	260	13.200	140
1.5	26.400	370	16.200	270	10.200	140
2	21.600	380	13.800	280	8.640	150
2.5	18.000	390	11.400	300	7.320	150
3	15.900	400	10.300	310	6.300	150
4	12.800	500	8.200	360	5.150	160
Profundidade de Corte						

2EJT

FRESA TOPO ESFÉRICO 2 CORTES



Diâmetro	Tolerância
Ø0.1 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~12	-0.005 ~ -0.015mm



Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EJT 001 002 H04	0.1	0.05	0.2	40	4	2
2EJT 0015 003 H04	0.15	0.075	0.3	40	4	2
2EJT 002 004 H04	0.2	0.1	0.4	40	4	2
2EJT 003 006 H04	0.3	0.15	0.6	40	4	2
2EJT 004 008 H04	0.4	0.2	0.8	40	4	2
2EJT 005 010 H04	0.5	0.25	1	45	4	2
2EJT 006 012 H04	0.6	0.3	1.2	45	4	2
2EJT 007 015 H04	0.7	0.35	1.5	45	4	2
2EJT 008 020 H04	0.8	0.4	2	45	4	2
2EJT 009 020 H04	0.9	0.45	2	45	4	2
2EJT 010 025 H04	1	0.5	2.5	50	4	2
2EJT 010 025 H06	1	0.5	2.5	50	6	2
2EJT 010 025 070	1	0.5	2.5	70	6	2
2EJT 012 030 H04	1.2	0.6	3	50	4	2
2EJT 015 040 H04	1.5	0.75	4	50	4	2
2EJT 015 040 H06	1.5	0.75	4	50	6	2
2EJT 015 040 070	1.5	0.75	4	70	6	2
2EJT 020 050 H04	2	1	5	50	4	2
2EJT 020 050 H06	2	1	5	50	6	2
2EJT 020 050 075	2	1	5	75	6	2
2EJT 025 060 H04	2.5	1.25	6	50	4	2
2EJT 025 060 H06	2.5	1.25	6	75	6	2
2EJT 030 080 H04	3	1.5	8	50	4	2
2EJT 030 080 H06	3	1.5	8	60	6	2
2EJT 030 080 080	3	1.5	8	80	6	2
2EJT 035 080 H06	3.5	1.75	8	60	6	2
2EJT 040 080 H04	4	2	8	60	4	2
2EJT 040 080 H06	4	2	8	70	6	2
2EJT 040 080 080	4	2	8	80	4	2
2EJT 040 080 090	4	2	8	90	6	2
2EJT 050 100 H06	5	2.5	10	75	6	2
2EJT 060 100 060	6	3	10	60	6	2
2EJT 060 120 090	6	3	12	90	6	2
2EJT 080 120 060	8	4	12	60	8	2
2EJT 080 140 100	8	4	14	100	8	2
2EJT 100 150 070	10	5	15	70	10	2
2EJT 100 180 100	10	5	18	100	10	2
2EJT 120 180 075	12	6	18	75	12	2
2EJT 120 220 110	12	6	22	110	12	2

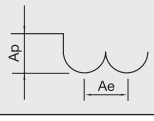
2EJT

FRESA TOPO ESFÉRICO 2 CORTES

▪ Parâmetros de Corte

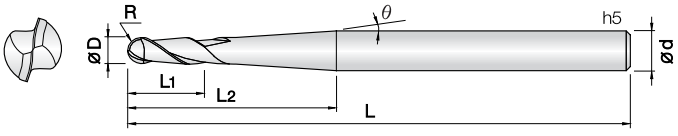
▪ RPM : rev./min ▪ FEED : mm/min

Material	~ 55HRC				55 ~ 62HRC				62 ~ 65HRC				65 ~ 68HRC			
Raio R	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial
0.05	60.000	150	0.002	0.004	60.000	150	0.002	0.003	60.000	100	0.001	0.0012	52.500	30	0.001	0.002
0.1	60.000	180	0.003	0.005	60.000	180	0.002	0.003	60.000	120	0.002	0.003	45.000	60	0.002	0.003
0.15	60.000	350	0.006	0.006	45.000	310	0.004	0.007	43.500	180	0.003	0.005	32.500	90	0.003	0.005
0.2	50.000	500	0.01	0.02	37.500	420	0.007	0.012	35.000	240	0.005	0.008	26.250	120	0.005	0.008
0.25	44.000	650	0.015	0.04	33.000	530	0.010	0.02	30.000	300	0.007	0.01	22.500	150	0.007	0.01
0.3	40.000	1.100	0.03	0.13	30.000	1.200	0.02	0.1	26.500	800	0.01	0.075	20.000	400	0.01	0.075
0.4	35.000	1.600	0.06	0.21	27.000	1.600	0.04	0.17	23.500	1.000	0.02	0.12	17.500	500	0.02	0.12
0.5	30.000	1.750	0.2	0.4	24.000	2.000	0.1	0.3	21.000	1.750	0.05	0.2	16.000	875	0.05	0.2
0.6	30.000	2.000	0.23	0.45	21.000	2.000	0.1	0.3	18.000	1.750	0.05	0.2	14.500	875	0.05	0.2
0.75	30.000	2.450	0.25	0.55	17.000	2.000	0.12	0.4	15.000	1.750	0.06	0.29	11.250	875	0.06	0.29
1	28.000	2.900	0.3	0.7	14.000	2.100	0.15	0.5	12.250	1.800	0.08	0.35	9.200	900	0.08	0.35
1.25	24.500	2.950	0.35	0.85	12.250	2.150	0.17	0.6	10.700	1.850	0.1	0.45	8.050	925	0.1	0.45
1.5	21.000	3.000	0.4	1	10.500	2.200	0.2	0.7	9.200	1.900	0.12	0.55	6.900	950	0.12	0.55
2	18.000	3.200	0.5	1.3	9.000	2.300	0.25	0.95	7.900	2.000	0.15	0.75	5.900	1.000	0.15	0.75
2.5	15.600	3.500	0.5	1.5	7.800	2.500	0.25	1.05	6.800	2.100	0.15	0.85	5.100	1.050	0.15	0.85
3	13.000	3.500	0.6	1.8	6.500	2.500	0.3	1.3	5.700	2.200	0.2	1	4.300	1.100	0.2	1
4	9.500	3.000	0.7	2.1	5.200	2.200	0.4	1.7	4.500	1.900	0.25	1.35	3.400	950	0.25	1.35
5	7.500	2.500	0.8	2.5	4.300	2.000	0.5	2.1	3.750	1.750	0.3	1.7	2.800	875	0.3	1.7
6	6.200	2.000	0.9	3	3.600	1.750	0.6	2.6	3.150	1.500	0.35	2	2.350	750	0.35	2
Profundidade de Corte	▪ Ap: Profundidade axial ▪ Ae: Profundidade radial ▪ D: Diâmetro ▪ n: Velocidade ▪ Vf: Avanço															



2EPNJT

FRESA TOPO ESFÉRICO 2 CORTES PESCOÇO EM ÂNGULO



Diâmetro	Tolerância
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~12	-0.005 ~ -0.015mm

Código	Diâm. D	Raio R	Âng. θ	Compr. Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EPNJT 010 010 350	1	0.5	1º	1	35	75	4	2
2EPNJT 010 020 300	1	0.5	2º	1	30	70	4	2
2EPNJT 010 030 400	1	0.5	3º	1	40	80	6	2
2EPNJT 010 050 230	1	0.5	5º	1	23	60	6	2
2EPNJT 015 010 300	1.5	0.75	1º	1.5	30	70	4	2
2EPNJT 015 020 300	1.5	0.75	2º	1.5	30	70	4	2
2EPNJT 015 030 420	1.5	0.75	3º	1.5	42	80	6	2
2EPNJT 015 050 250	1.5	0.75	5º	1.5	25	70	6	2
2EPNJT 020 010 350	2	1	1º	2	35	75	4	2
2EPNJT 020 010 500	2	1	1º	2	50	90	4	2
2EPNJT 020 020 400	2	1	2º	2	40	80	6	2
2EPNJT 020 020 500	2	1	2º	2	50	90	6	2
2EPNJT 020 030 300	2	1	3º	2	30	70	6	2
2EPNJT 020 030 400	2	1	3º	2	40	80	6	2
2EPNJT 020 050 250	2	1	5º	2	25	60	6	2
2EPNJT 020 050 380	2	1	5º	2	38	80	8	2
2EPNJT 030 010 400	3	1.5	1º	3	40	80	6	2
2EPNJT 030 010 500	3	1.5	1º	3	50	90	6	2
2EPNJT 030 020 300	3	1.5	2º	3	30	70	6	2
2EPNJT 030 020 480	3	1.5	2º	3	48	90	6	2
2EPNJT 030 030 300	3	1.5	3º	3	30	70	6	2
2EPNJT 030 030 500	3	1.5	3º	3	50	90	8	2
2EPNJT 030 050 330	3	1.5	5º	3	33	90	8	2
2EPNJT 040 010 500	4	2	1º	4	50	90	6	2
2EPNJT 040 010 600	4	2	1º	4	60	100	6	2
2EPNJT 040 030 250	4	2	3º	4	25	70	6	2
2EPNJT 040 050 290	4	2	5º	4	29	90	8	2
2EPNJT 050 030 400	5	2.5	3º	5	40	90	8	2
2EPNJT 060 020 600	6	3	2º	9	60	110	10	2
2EPNJT 060 030 290	6	3	3º	9	29	90	8	2
2EPNJT 060 050 320	6	3	5º	9	32	110	10	2
2EPNJT 080 030 330	8	4	3º	12	33	100	10	2
2EPNJT 100 030 370	10	5	3º	18	37	110	12	2
2EPNJT 120 030 630	12	6	3º	22	63	130	16	2

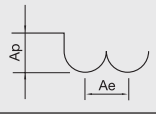
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		30HRC ~ 45HRC			45HRC ~ 55HRC			55HRC ~ 68HRC		
R (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial
0.5	8	17.850	1.365	0.037	17.850	1.050	0.032	16.800	861	0.026
	15	12.600	767	0.019	11.550	683	0.017	11.550	525	0.013
	25	10.500	683	0.011	9.450	567	0.008	9.450	462	0.008
	35	6.300	399	0.006	6.300	378	0.005	6.300	273	0.004
0.75	10	12.600	1.470	0.042	12.600	1.155	0.037	12.600	893	0.032
	20	9.450	945	0.021	9.450	735	0.016	9.450	630	0.014
	30	7.350	651	0.013	7.350	546	0.011	7.350	504	0.011
1	12	11.550	1.785	0.068	11.025	1.428	0.059	11.025	1.124	0.048
	20	8.400	1.050	0.053	9.450	1.050	0.047	9.450	924	0.037
	30	7.350	840	0.037	7.350	819	0.032	7.350	672	0.026
	40	7.035	819	0.032	6.300	735	0.026	6.300	609	0.021
1.5	20	8.400	1.365	0.074	7.350	1.260	0.063	7.350	1.155	0.053
	30	7.350	1.103	0.063	6.300	1.050	0.053	6.300	924	0.044
	40	5.250	924	0.053	5.355	840	0.042	5.355	735	0.037
	50	5.250	840	0.032	5.355	788	0.026	5.355	683	0.024
2	40	3.675	630	0.068	3.360	557	0.053	3.360	525	0.045
	60	3.150	473	0.047	2.940	420	0.042	2.940	368	0.033
3	29	7.350	1.103	0.105	6.300	998	0.084	6.300	893	0.061
	49	4.095	735	0.063	3.570	683	0.053	3.570	578	0.042
4	33	7.350	1.155	0.147	6.300	1.050	0.105	6.300	840	0.086
5	37	3.675	893	0.168	3.570	735	0.126	3.570	630	0.084
6	63	2.940	368	0.086	2.625	326	0.063	2.625	231	0.047
Fresagem Total		Desbaste	Ae ≤ 0.1D		Ae ≤ 0.08D			Ae ≤ 0.06D		
		Acabamento	Ae = Vf/n							

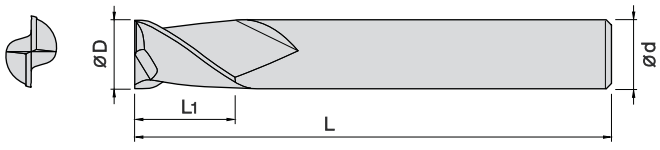
Profundidade de Corte

- Ap: Profundidade axial
- Ae: Profundidade radial
- D: Diâmetro
- n: Velocidade
- Vf: Avanço



2RJT

FRESA TOPO RETO 2 CORTES

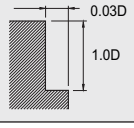


Diâmetro	Tolerância
Ø0.05 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.001 ~ -0.025mm
Ø14 ~ 20	-0.015 ~ -0.03mm

Código	Diâm. D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RJT 001 002 H04	0.1	0.2	38	4	2
2RJT 002 004 H04	0.2	0.4	38	4	2
2RJT 003 006 H04	0.3	0.6	38	4	2
2RJT 004 008 H04	0.4	0.8	38	4	2
2RJT 005 010 H04	0.5	1	38	4	2
2RJT 006 012 H04	0.6	1.2	38	4	2
2RJT 007 014 H04	0.7	1.4	38	4	2
2RJT 008 016 H04	0.8	1.6	38	4	2
2RJT 009 020 H04	0.9	2	38	4	2
2RJT 010 025 H04	1	2.5	40	4	2
2RJT 010 025 H06	1	2.5	40	6	2
2RJT 015 040 H04	1.5	4	40	4	2
2RJT 015 040 H06	1.5	4	40	6	2
2RJT 020 060 H04	2	6	40	4	2
2RJT 020 060 H06	2	6	40	6	2
2RJT 025 080 H04	2.5	8	45	4	2
2RJT 025 080 H06	2.5	8	45	6	2
2RJT 030 080 H04	3	8	45	4	2
2RJT 030 080 H06	3	8	45	6	2
2RJT 035 100 H06	3.5	10	45	6	2
2RJT 040 100 H04	4	10	45	4	2
2RJT 040 110 H06	4	11	45	6	2
2RJT 045 110 H06	4.5	11	45	6	2
2RJT 050 130 H06	5	13	50	6	2
2RJT 055 130 H06	5.5	13	50	6	2
2RJT 060 130 H06	6	13	50	6	2
2RJT 065 160 H08	6.5	16	60	8	2
2RJT 070 160 H08	7	16	60	8	2
2RJT 075 160 H08	7.5	16	60	8	2
2RJT 080 190 H08	8	19	60	8	2
2RJT 085 190 H10	8.5	19	70	10	2
2RJT 090 190 H10	9	19	70	10	2
2RJT 095 190 H10	9.5	19	70	10	2
2RJT 100 220 H10	10	22	70	10	2
2RJT 105 220 H12	10.5	22	75	12	2
2RJT 110 220 H12	11	22	75	12	2
2RJT 115 220 H12	11.5	22	75	12	2
2RJT 120 260 H12	12	26	75	12	2
2RJT 140 260 H14	14	26	80	14	2
2RJT 140 260 H16	14	26	90	16	2
2RJT 160 350 H16	16	35	100	16	2
2RJT 180 350 H18	18	35	100	18	2
2RJT 200 400 H20	20	40	100	20	2

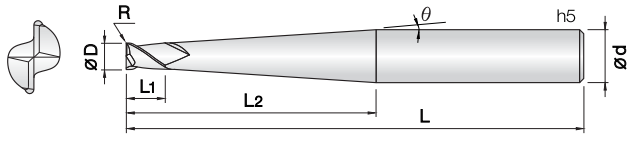
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	40 ~ 50HRC		50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		60 ~ 65HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.1	45.000	100	40.000	90	33.000	50	33.000	40	26.400	30
0.2	45.000	115	40.000	95	33.000	60	33.000	45	20.000	35
0.3	45.000	140	40.000	115	33.000	70	25.000	50	20.000	40
0.4	45.000	180	40.000	140	33.000	90	25.000	55	20.000	60
0.5	45.000	280	40.000	220	33.000	140	25.000	85	20.000	75
0.6	45.000	360	40.000	285	30.000	160	25.000	105	15.200	80
0.8	40.000	440	30.000	295	25.000	185	19.000	110	14.000	90
0.9	39.000	520	27.800	330	22.700	205	17.500	125	12.500	85
1	38.000	820	25.500	510	20.500	310	16.000	190	12.500	125
2	26.000	970	17.500	600	14.500	370	11.000	230	9.500	165
3	17.300	970	11.500	600	9.500	370	7.500	230	6.400	165
4	13.200	1.000	8.800	625	7.200	385	5.600	240	4.750	170
5	12.500	1.150	8.300	710	6.400	410	5.100	260	4.450	190
6	10.350	1.100	6.900	690	5.300	400	4.200	255	3.700	185
8	7.800	1.030	5.200	635	4.000	365	3.200	235	2.800	170
10	6.150	970	4.100	590	3.200	340	2.550	220	2.200	160
12	5.250	970	3.500	590	2.650	340	2.100	220	1.860	160
16	4.340	880	2.600	530	1.840	300	1.800	190	1.800	190
18	4.340	880	2.600	530	1.840	300	1.800	190	1.800	190
20	3.650	800	2.100	500	1.460	295	1.400	180	1.400	180
Profundidade de Corte										

2RPNJT

FRESA TOROIDAL 2 CORTES PESCOÇO EM ÂNGULO

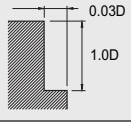


Diâmetro	Tolerância
Ø1 ~ 4	+0 ~ -0.01mm

Código	Diâm. D	Raio R	Ângulo α	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RPNJT 010 002 2001	1	0.2	1º	1	20	60	4	2
2RPNJT 010 002 3001	1	0.2	1º	1	30	70	4	2
2RPNJT 010 002 3501	1	0.2	1º	1	35	75	4	2
2RPNJT 015 005 1501	1.5	0.5	1º	1.5	15	50	4	2
2RPNJT 015 005 2501	1.5	0.5	1º	1.5	25	60	4	2
2RPNJT 015 005 3501	1.5	0.5	1º	1.5	35	75	4	2
2RPNJT 020 005 2501	2	0.5	1º	2	25	60	4	2
2RPNJT 020 005 3501	2	0.5	1º	2	35	75	4	2
2RPNJT 020 005 5001	2	0.5	1º	2	50	90	4	2
2RPNJT 030 005 2001	3	0.5	1º	3	20	60	6	2
2RPNJT 030 005 4001	3	0.5	1º	3	40	80	6	2
2RPNJT 030 005 6001	3	0.5	1º	3	60	100	6	2
2RPNJT 030 010 2001	3	1	1º	3	20	60	6	2
2RPNJT 030 010 4001	3	1	1º	3	40	80	6	2
2RPNJT 030 010 6001	3	1	1º	3	60	100	6	2
2RPNJT 040 005 2001	4	0.5	1º	4	20	60	6	2
2RPNJT 040 005 3001	4	0.5	1º	4	30	70	6	2
2RPNJT 040 005 4001	4	0.5	1º	4	40	80	6	2
2RPNJT 040 005 5001	4	0.5	1º	4	50	90	6	2
2RPNJT 040 005 6001	4	0.5	1º	4	60	100	6	2
2RPNJT 040 010 2001	4	1	1º	4	20	60	6	2
2RPNJT 040 010 3001	4	1	1º	4	30	70	6	2
2RPNJT 040 010 4001	4	1	1º	4	40	80	6	2
2RPNJT 040 010 5001	4	1	1º	4	50	90	6	2
2RPNJT 040 010 6001	4	1	1º	4	60	100	6	2

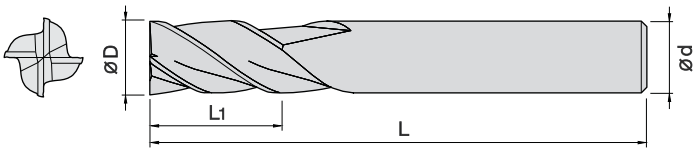
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		65 ~ 68HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	25.500	408	20.500	248	16.000	152	12.500	100
2	17.500	480	14.500	296	11.000	184	9.500	132
3	11.500	480	9.500	296	7.500	184	6.400	132
4	8.800	500	7.200	308	5.600	192	4.750	136
5	8.300	568	6.400	328	5.100	208	4.450	152
6	6.900	552	5.300	320	4.200	204	3.700	148
8	5.200	508	4.000	292	3.200	188	2.800	136
10	4.100	472	3.200	272	2.550	176	2.200	128
12	3.500	472	2.650	272	2.100	176	1.860	128
Profundidade de Corte								

4RJT

FRESA TOPO RETO 4 CORTES



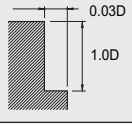
Diâmetro	Tolerância
Ø0.6 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.001 ~ -0.025mm

Ø 0.6 ~ 5.5 Ø 6 ~12 Proteção da Aresta

Código	Diâm. D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RJT 006 012 H04	0.6	1.2	40	4	4
4RJT 008 016 H04	0.8	1.6	40	4	4
4RJT 010 025 H04	1	2.5	40	4	4
4RJT 010 025 H06	1	2.5	40	6	4
4RJT 012 030 H04	1.2	3	40	4	4
4RJT 015 040 H04	1.5	4	40	4	4
4RJT 015 040 H06	1.5	4	40	6	4
4RJT 020 060 H04	2	6	40	4	4
4RJT 020 060 H06	2	6	40	6	4
4RJT 025 080 H04	2.5	8	45	4	4
4RJT 025 080 H06	2.5	8	45	6	4
4RJT 030 080 H04	3	8	45	4	4
4RJT 030 080 H06	3	8	45	6	4
4RJT 035 100 H06	3.5	10	45	6	4
4RJT 040 110 H04	4	11	45	4	4
4RJT 040 110 H06	4	11	45	6	4
4RJT 045 110 H06	4.5	11	45	6	4
4RJT 050 130 H06	5	13	50	6	4
4RJT 055 130 H06	5.5	13	50	6	4
4RJT 060 130 H06	6	13	50	6	4
4RJT 080 190 H08	8	19	60	8	4
4RJT 100 220 H10	10	22	70	10	4
4RJT 120 260 H12	12	26	75	12	4

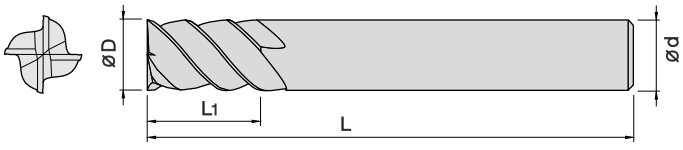
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	45 ~ 50HRC		50 ~ 55HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	38.000	1.050	25.500	710
2	26.000	1.250	17.500	840
3	17.300	1.250	11.500	840
4	13.200	1.300	8.800	880
5	12.500	1.500	8.300	1.000
6	10.350	1.400	6.900	950
7	9.000	1.380	5.200	900
8	7.800	1.350	4.100	840
9	6.150	1.260	3.500	840
10	5.250	1.260	2.800	800
11	4.300	1.150	2.500	800
12	4.300	1.150	2.300	760
Profundidade de Corte				

4R45JT

FRESA TOPO RETO 4 CORTES 45º



Diâmetro	Tolerância
Ø0.6 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

Ø0.6 ~ Ø 5.5 Ø6 ~ Ø 12 Proteção da Aresta

Código	Diâm. D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4R45JT 006 012 H04	0.6	1.2	40	4	4
4R45JT 008 016 H04	0.8	1.6	40	4	4
4R45JT 010 025 H04	1	2.5	40	4	4
4R45JT 010 025 H06	1	2.5	40	6	4
4R45JT 012 030 H04	1.2	3	40	4	4
4R45JT 015 040 H04	1.5	4	40	4	4
4R45JT 015 040 H06	1.5	4	40	6	4
4R45JT 020 060 H04	2	6	40	4	4
4R45JT 020 060 H06	2	6	40	6	4
4R45JT 025 080 H04	2.5	8	45	4	4
4R45JT 025 080 H06	2.5	8	45	6	4
4R45JT 030 080 H04	3	8	45	4	4
4R45JT 030 080 H06	3	8	45	6	4
4R45JT 035 100 H06	3.5	10	45	6	4
4R45JT 040 110 H04	4	11	45	4	4
4R45JT 040 110 H06	4	11	45	6	4
4R45JT 045 110 H06	4.5	11	45	6	4
4R45JT 050 130 H06	5	13	50	6	4
4R45JT 055 130 H06	5.5	13	50	6	4
4R45JT 060 130 H06	6	13	50	6	4
4R45JT 080 190 H08	8	19	60	8	4
4R45JT 100 220 H10	10	22	70	10	4
4R45JT 120 260 H12	12	26	75	12	4

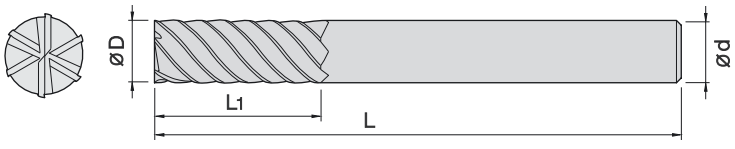
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	55 ~ 62HRC			62 ~ 68HRC		
D (mm)	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
1	40.000	800	0.03	32.000	500	0.02
1.5	40.000	900	0.04	32.000	550	0.02
2	24.000	1.000	0.05	16.000	600	0.05
3	38.400	4.560	0.1	19.200	2.280	0.05
4	28.800	5.280	0.1	14.400	2.640	0.05
5	24.000	6.000	0.1	12.000	3.000	0.05
6	19.200	6.960	0.2	9.600	3.480	0.1
8	14.400	6.960	0.2	7.200	3.480	0.1
10	11.520	6.960	0.3	5.760	3.480	0.2
12	9.600	5.760	0.3	4.800	2.880	0.2
16	7.200	4.320	0.5	3.600	2.160	0.3
20	5.760	3.480	0.5	2.880	1.680	0.3
Profundidade de Corte	≤ 0.05D ≤ 1.5D			≤ 0.03D (D< Ø3) ≤ 0.05D (D≥Ø3) (MAX. 0.5mm) ≤ 1D		

6&8RJT

FRESA TOPO RETO 6&8 CORTES



Diâmetro	Tolerância
Ø3 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.001 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

Código	Diâm. D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
6RJT 030 100 H06	3	10	50	6	6
6RJT 030 150 H06	3	15	50	6	6
6RJT 040 120 H06	4	12	50	6	6
6RJT 040 160 H06	4	16	50	6	6
6RJT 050 150 H06	5	15	50	6	6
6RJT 050 200 H06	5	20	60	6	6
6RJT 060 150 H06	6	15	50	6	6
6RJT 060 200 H06	6	20	60	6	6
6RJT 060 250 H06	6	25	65	6	6
6RJT 060 300 H06	6	30	70	6	6
6RJT 060 350 H06	6	35	75	6	6
6RJT 080 200 H08	8	20	60	8	6
6RJT 080 250 H08	8	25	65	8	6
6RJT 080 300 H08	8	30	75	8	6
6RJT 080 350 H08	8	35	80	8	6
6RJT 080 400 H08	8	40	90	8	6
6RJT 080 450 H08	8	45	100	8	6
6RJT 080 500 H08	8	50	100	8	6
6RJT 100 250 H10	10	25	70	10	6
6RJT 100 350 H10	10	35	90	10	6
6RJT 100 450 H10	10	45	100	10	6
6RJT 100 500 H10	10	50	100	10	6
6RJT 100 600 H10	10	60	110	10	6
6RJT 120 300 H12	12	30	80	12	6
6RJT 120 400 H12	12	40	90	12	6
6RJT 120 500 H12	12	50	100	12	6
6RJT 120 600 H12	12	60	110	12	6
6RJT 120 700 H12	12	70	120	12	6
6RJT 160 350 H16	16	35	90	16	6
6RJT 160 500 H16	16	50	110	16	6
6RJT 160 650 H16	16	65	120	16	6
6RJT 160 800 H16	16	80	150	16	6
6RJT 160 900 H16	16	90	160	16	6
6RJT 160 1000 H16	16	100	160	16	6
6RJT 200 450 H20	20	45	100	20	6
6RJT 200 600 H20	20	60	120	20	6
6RJT 200 800 H20	20	80	150	20	6
6RJT 200 900 H20	20	90	160	20	6
6RJT 200 1000 H20	20	100	160	20	6
6RJT 200 1100 H20	20	110	170	20	6
6RJT 200 1200 H20	20	120	180	20	6
8RJT 250 1000 H25	25	100	160	25	8
8RJT 250 1300 H25	25	130	200	25	8

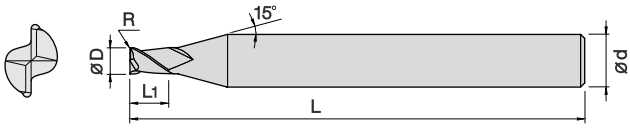
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	55 ~ 62HRC			62 ~ 68HRC		
D (mm)	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial	Rotação (RPM)	Avanço (mm/min)	Ap Profundidade axial
3	16.000	1.900	0.1	11000	1.200	0.05
4	12.000	2.200	0.1	8.000	1.300	0.05
5	10.000	2.500	0.1	6.000	1.500	0.05
6	8.000	2.900	0.2	5.300	1.800	0.1
8	6.000	2.900	0.2	4.000	1.800	0.1
10	4.800	2.900	0.3	3.200	1.800	0.2
12	4.000	2.400	0.3	2.700	1.500	0.2
16	3.000	1.800	0.5	2.000	1.100	0.3
20	2.400	1.400	0.5	1.600	880	0.3
25	2.000	1.000	0.5	1.000	700	0.4
Profundidade de Corte	≤ 0.05D ≤ 1.5D			≤ 0.03D (D< Ø3) ≤ 0.05D (D≥Ø3) (MAX. 0.5mm) ≤ 1D		

2TRJT

FRESA TOROIDAL 2 CORTES

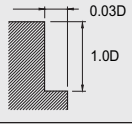


Diâmetro	Tolerância
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRJT 010 002 H04	1	0.2	2.5	45	4	2
2TRJT 015 005 H04	1.5	0.5	4	45	4	2
2TRJT 020 005 H04	2	0.5	6	45	4	2
2TRJT 030 005 H06	3	0.5	8	60	6	2
2TRJT 030 010 H06	3	1	8	60	6	2
2TRJT 040 005 H04	4	0.5	9	60	4	2
2TRJT 040 005 H06	4	0.5	10	70	6	2
2TRJT 040 010 H04	4	1	9	60	4	2
2TRJT 040 010 H06	4	1	10	70	6	2
2TRJT 050 005 H06	5	0.5	13	75	6	2
2TRJT 050 010 H06	5	1	13	75	6	2
2TRJT 060 005 060	6	0.5	11	60	6	2
2TRJT 060 005 090	6	0.5	13	90	6	2
2TRJT 060 010 060	6	1	11	60	6	2
2TRJT 060 010 090	6	1	13	90	6	2
2TRJT 080 005 070	8	0.5	16	70	8	2
2TRJT 080 005 100	8	0.5	19	100	8	2
2TRJT 080 010 070	8	1	16	70	8	2
2TRJT 080 010 100	8	1	19	100	8	2
2TRJT 100 005 075	10	0.5	19	75	10	2
2TRJT 100 005 100	10	0.5	22	100	10	2
2TRJT 100 010 075	10	1	19	75	10	2
2TRJT 100 010 100	10	1	22	100	10	2
2TRJT 120 005 080	12	0.5	22	80	12	2
2TRJT 120 005 110	12	0.5	26	110	12	2
2TRJT 120 010 080	12	1	22	80	12	2
2TRJT 120 010 110	12	1	26	110	12	2

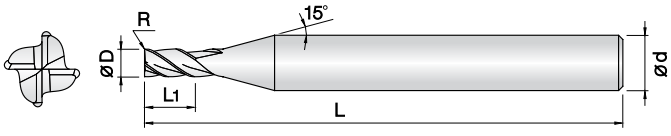
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	40 ~ 50HRC		50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		60 ~ 65HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	38.000	656	25.500	408	20.500	248	16.000	152	12.500	100
2	26.000	776	17.500	480	14.500	296	11.000	184	9.500	132
3	17.300	776	11.500	480	9.500	296	7.500	184	6.400	132
4	13.200	800	8.800	500	7.200	308	5.600	192	4.750	136
5	12.500	920	8.300	568	6.400	328	5.100	208	4.450	152
6	10.350	880	6.900	552	5.300	320	4.200	204	3.700	148
8	7.800	824	5.200	508	4.000	292	3.200	188	2.800	136
10	6.150	776	4.100	472	3.200	272	2.550	176	2.200	128
12	5.250	776	3.500	472	2.650	272	2.100	176	1.860	128
Profundidade de Corte										

4TRJT

FRESA TOROIDAL 4 CORTES

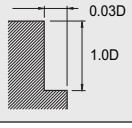


Diâmetro	Tolerância
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRJT 010 002 H04	1	0.2	2.5	45	4	4
4TRJT 015 005 H04	1.5	0.5	4	45	4	4
4TRJT 020 005 H04	2	0.5	6	45	4	4
4TRJT 025 005 H04	2.5	0.5	6	50	4	4
4TRJT 030 005 H06	3	0.5	8	60	6	4
4TRJT 030 010 H06	3	1	8	60	6	4
4TRJT 035 005 H06	3.5	0.5	9	70	6	4
4TRJT 040 005 H04	4	0.5	9	60	4	4
4TRJT 040 005 H06	4	0.5	10	70	6	4
4TRJT 040 010 H04	4	1	9	60	4	4
4TRJT 040 010 H06	4	1	10	70	6	4
4TRJT 050 005 H06	5	0.5	13	75	6	4
4TRJT 050 010 H06	5	1	13	75	6	4
4TRJT 060 005 055	6	0.5	11	55	6	4
4TRJT 060 005 080	6	0.5	13	80	6	4
4TRJT 060 010 055	6	1	11	55	6	4
4TRJT 060 010 080	6	1	13	80	6	4
4TRJT 080 005 060	8	0.5	16	60	8	4
4TRJT 080 005 090	8	0.5	19	90	8	4
4TRJT 080 010 060	8	1	16	60	8	4
4TRJT 080 010 090	8	1	19	90	8	4
4TRJT 100 005 070	10	0.5	19	70	10	4
4TRJT 100 005 100	10	0.5	22	100	10	4
4TRJT 100 010 070	10	1	19	70	10	4
4TRJT 100 010 100	10	1	22	100	10	4
4TRJT 120 005 075	12	0.5	22	75	12	4
4TRJT 120 005 110	12	0.5	26	110	12	4
4TRJT 120 010 075	12	1	22	75	12	4
4TRJT 120 010 110	12	1	26	110	12	4

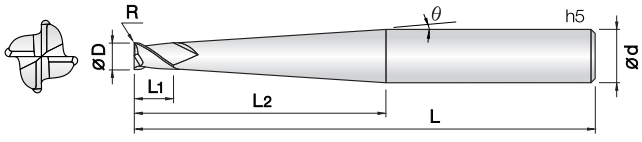
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	40 ~ 50HRC		50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		60 ~ 65HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	38.000	840	25.500	568	20.500	344	16.000	216	12.500	140
2	26.000	1.000	17.500	672	14.500	416	11.000	256	9.500	184
3	17.300	1.000	11.500	672	9.500	416	7.500	256	6.400	184
4	13.200	1.040	8.800	704	7.200	432	5.600	268	4.750	192
5	12.500	1.200	8.300	800	6.400	464	5.100	296	4.450	216
6	10.350	1.120	6.900	760	5.300	448	4.200	280	3.700	208
8	7.800	1.080	5.200	720	4.000	416	3.200	264	2.800	192
10	6.150	1.008	4.100	672	3.200	384	2.550	248	2.200	176
12	5.250	1.008	3.500	672	2.650	384	2.100	240	1.860	176
Profundidade de Corte										

4TRTNJT

FRESA TOROIDAL 4 CORTES PESCOÇO EM ÂNGULO



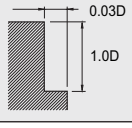
Diâmetro	Tolerância
Ø1 ~ 4	+0 ~ -0.01mm

0.1 ~ 0.5R

Código	Diâm. D	Raio R	Ângulo θ	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRTNJT 010002 1001	1	0.2	1º	1	10	50	4	4
4TRTNJT 010002 2001	1	0.2	1º	1	20	60	4	4
4TRTNJT 010002 3001	1	0.2	1º	1	30	70	4	4
4TRTNJT 010002 3501	1	0.2	1º	1	35	75	4	4
4TRTNJT 020005 2001	2	0.5	1º	2	20	60	4	4
4TRTNJT 020005 2501	2	0.5	1º	2	25	60	4	4
4TRTNJT 020005 3501	2	0.5	1º	2	35	75	4	4
4TRTNJT 020005 5001	2	0.5	1º	2	50	90	4	4
4TRTNJT 030005 2001	3	0.5	1º	3	20	60	6	4
4TRTNJT 030005 3001	3	0.5	1º	3	30	70	6	4
4TRTNJT 030005 4001	3	0.5	1º	3	40	80	6	4
4TRTNJT 030005 5001	3	0.5	1º	3	50	90	6	4
4TRTNJT 030005 6001	3	0.5	1º	3	60	100	6	4
4TRTNJT 040005 2001	4	0.5	1º	4	20	60	6	4
4TRTNJT 040005 3001	4	0.5	1º	4	30	70	6	4
4TRTNJT 040005 4001	4	0.5	1º	4	40	80	6	4
4TRTNJT 040005 5001	4	0.5	1º	4	50	90	6	4
4TRTNJT 040005 6001	4	0.5	1º	4	60	100	6	4

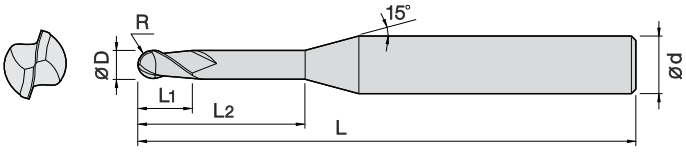
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

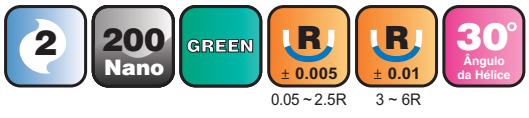
Material	50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		65 ~ 68HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	25.500	710	20.500	430	16.000	270	12.500	175
2	17.500	840	14.500	520	11.000	320	9.500	230
3	11.500	840	9.500	520	7.500	320	6.400	230
4	8.800	880	7.200	540	5.600	335	4.750	240
5	8.300	1.000	6.400	580	5.100	370	4.450	270
6	6.900	950	5.300	560	4.200	350	3.700	260
8	5.200	900	4.000	520	3.200	330	2.800	240
10	4.100	840	3.200	480	2.550	310	2.200	220
12	3.500	840	2.650	480	2.100	300	1.860	220
Profundidade de Corte								

2ELNJT

FRESA LONG NECK TOPO ESFÉRICO 2 CORTES



Diâmetro	Tolerância
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~12	-0.005 ~ -0.015mm



Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNJT 005 020 H04	0.5	0.25	0.5	2	45	4	2
2ELNJT 005 040 H04	0.5	0.25	0.5	4	45	4	2
2ELNJT 005 060 H04	0.5	0.25	0.5	6	45	4	2
2ELNJT 005 080 H04	0.5	0.25	0.5	8	45	4	2
2ELNJT 005 100 H04	0.5	0.25	0.5	10	45	4	2
2ELNJT 008 040 H04	0.8	0.4	0.8	4	45	4	2
2ELNJT 008 060 H04	0.8	0.4	0.8	6	45	4	2
2ELNJT 008 080 H04	0.8	0.4	0.8	8	45	4	2
2ELNJT 008 100 H04	0.8	0.4	0.8	10	45	4	2
2ELNJT 008 120 H04	0.8	0.4	0.8	12	45	4	2
2ELNJT 010 040 H04	1	0.5	1	4	45	4	2
2ELNJT 010 060 H04	1	0.5	1	6	45	4	2
2ELNJT 010 080 H04	1	0.5	1	8	45	4	2
2ELNJT 010 100 H04	1	0.5	1	10	50	4	2
2ELNJT 010 120 H04	1	0.5	1	12	50	4	2
2ELNJT 010 160 H04	1	0.5	1	16	50	4	2
2ELNJT 010 200 H04	1	0.5	1	20	50	4	2
2ELNJT 010 250 H04	1	0.5	1	25	60	4	2
2ELNJT 015 060 H04	1.5	0.75	1.5	6	45	4	2
2ELNJT 015 080 H04	1.5	0.75	1.5	8	45	4	2
2ELNJT 015 100 H04	1.5	0.75	1.5	10	50	4	2
2ELNJT 015 120 H04	1.5	0.75	1.5	12	50	4	2
2ELNJT 015 160 H04	1.5	0.75	1.5	16	50	4	2
2ELNJT 015 200 H04	1.5	0.75	1.5	20	50	4	2
2ELNJT 020 080 H04	2	1	2	8	45	4	2
2ELNJT 020 100 H04	2	1	2	10	50	4	2
2ELNJT 020 120 H04	2	1	2	12	50	4	2
2ELNJT 020 160 H04	2	1	2	16	50	4	2
2ELNJT 020 200 H04	2	1	2	20	50	4	2
2ELNJT 020 250 H04	2	1	2	25	60	4	2
2ELNJT 025 100 H04	2.5	1.25	2.5	10	50	4	2
2ELNJT 025 160 H04	2.5	1.25	2.5	16	50	4	2
2ELNJT 025 200 H04	2.5	1.25	2.5	20	60	4	2
2ELNJT 030 100 H06	3	1.5	3	10	50	6	2
2ELNJT 030 120 H06	3	1.5	3	12	50	6	2
2ELNJT 030 160 H06	3	1.5	3	16	60	6	2
2ELNJT 030 200 H06	3	1.5	3	20	60	6	2
2ELNJT 030 250 H06	3	1.5	3	25	65	6	2
2ELNJT 030 300 H06	3	1.5	3	30	70	6	2
2ELNJT 040 120 H06	4	2	4	12	50	6	2
2ELNJT 040 160 H06	4	2	4	16	60	6	2
2ELNJT 040 200 H06	4	2	4	20	60	6	2
2ELNJT 040 250 H06	4	2	4	25	65	6	2
2ELNJT 040 350 H06	4	2	4	35	75	6	2

2ELNJT

FRESA LONG NECK TOPO ESFÉRICO 2 CORTES

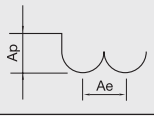
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material		Prehardened Steels / Hardened Steels NAK / STAVAX				Hardened Steels SKD11				Hardened Steels HAP10				Hardened Steels HAP72			
		~ 55HRC				55 ~ 62HRC				62 ~ 66HRC				66 ~ 70HRC			
R (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Ae Prof. radial
0.25	2	44.000	650	0.015	0.040	33.000	530	0.010	0.020	30.000	300	0.007	0.010	22.500	150	0.007	0.010
	4	32.700	180	0.005	0.015	27.150	150	0.003	0.008	25.650	100	0.002	0.005	19.900	50	0.002	0.005
	6	21.350	90	0.002	0.005	21.300	75	0.001	0.003	21.300	50	0.001	0.002	16.000	25	0.001	0.002
	8	15.900	60	0.001	0.003	15.900	40	0.001	0.002	15.900	25	0.001	0.002	11.950	12	0.001	0.002
0.4	6	28.000	600	0.020	0.120	23.000	600	0.012	0.095	20.500	400	0.006	0.065	15.500	200	0.006	0.065
	8	19.500	330	0.012	0.095	18.000	375	0.007	0.070	17.000	285	0.005	0.060	12.750	140	0.005	0.060
	10	15.000	260	0.010	0.085	14.700	340	0.005	0.060	14.650	225	0.004	0.050	11.000	110	0.004	0.050
0.5	6	30.000	1.150	0.060	0.230	21.500	1.250	0.030	0.170	19.700	1.050	0.025	0.150	14.500	525	0.025	0.150
	8	18.500	480	0.025	0.150	18.500	580	0.015	0.120	18.400	480	0.015	0.120	13.800	240	0.015	0.120
	10	14.800	360	0.018	0.130	14.800	430	0.010	0.090	14.700	360	0.010	0.090	11.100	180	0.010	0.090
	12	14.150	320	0.015	0.120	13.400	380	0.008	0.080	13.300	290	0.008	0.080	9.950	140	0.008	0.080
	18	12.350	220	0.006	0.065	9.750	200	0.004	0.035	9.750	130	0.004	0.035	7.300	85	0.004	0.035
	20	12.000	200	0.005	0.030	9.000	150	0.003	0.020	9.000	100	0.003	0.020	6.750	50	0.003	0.020
0.75	6	30.000	2.450	0.150	0.450	17.000	2.000	0.070	0.310	15.000	1.750	0.040	0.240	11.250	875	0.040	0.240
	8	23.500	1.300	0.100	0.370	15.000	1.250	0.045	0.250	14.000	1.050	0.030	0.210	10.500	525	0.030	0.210
	10	23.500	1.300	0.100	0.370	15.000	1.250	0.045	0.250	14.000	1.050	0.030	0.210	10.500	525	0.030	0.210
	12	13.100	480	0.030	0.210	13.000	580	0.020	0.170	13.000	480	0.020	0.170	9.750	240	0.020	0.170
	20	9.000	280	0.018	0.160	8.000	350	0.010	0.120	8.000	220	0.010	0.120	6.000	110	0.010	0.120
1	8	28.000	2.900	0.200	0.600	14.000	2.100	0.100	0.400	12.250	1.800	0.060	0.300	9.200	900	0.060	0.300
	10	28.000	2.900	0.200	0.600	14.000	2.100	0.100	0.400	12.250	1.800	0.060	0.300	9.200	900	0.060	0.300
	12	19.500	1.350	1.120	0.450	12.400	1.350	0.060	0.340	11.500	1.100	0.045	0.270	8.650	550	0.045	0.270
	14	19.500	1.350	1.120	0.450	12.400	1.350	0.060	0.340	11.500	1.100	0.045	0.270	8.650	550	0.045	0.270
	16	10.800	500	0.050	0.300	10.800	600	0.030	0.240	10.700	490	0.030	0.240	8.000	245	0.030	0.240
	20	8.650	375	0.035	0.250	8.650	450	0.020	0.190	8.560	370	0.020	0.190	6.400	185	0.020	0.190
	25	8.250	320	0.030	0.240	7.800	440	0.016	0.160	7.800	290	0.016	0.160	5.850	145	0.016	0.160
	30	7.850	280	0.024	0.200	7.000	350	0.014	0.160	7.000	220	0.014	0.160	5.250	110	0.014	0.160
1.25	20	9.600	520	0.060	0.380	9.600	630	0.040	0.310	9.600	510	0.040	0.310	7.200	255	0.040	0.310
1.5	10	21.000	3.000	0.300	0.900	10.500	2.200	0.150	0.650	9.200	1.900	0.100	0.500	6.900	950	0.100	0.500
	12	21.000	3.000	0.300	0.900	10.500	2.200	0.150	0.650	9.200	1.900	0.100	0.500	6.900	950	0.100	0.500
	16	21.000	3.000	0.300	0.900	10.500	2.200	0.150	0.650	9.200	1.900	0.100	0.500	6.900	950	0.100	0.500
	20	14.500	1.360	0.180	0.700	9.250	1.400	0.100	0.500	8.600	1.150	0.075	0.450	6.450	575	0.075	0.450
	30	5.750	375	0.050	0.380	5.750	450	0.030	0.290	5.700	370	0.030	0.290	4.275	185	0.030	0.290
	40	5.350	300	0.040	0.340	4.900	390	0.200	0.240	4.950	250	0.020	0.240	3.700	125	0.020	0.240
2	12	18.000	3.200	0.400	1.200	9.000	2.300	0.200	0.850	7.900	2.000	0.130	0.700	5.900	1.000	0.130	0.700
	16	18.000	3.200	0.400	1.200	9.000	2.300	0.200	0.850	7.900	2.000	0.130	0.700	5.900	1.000	0.130	0.700
	20	18.000	3.200	0.400	1.200	9.000	2.300	0.200	0.850	7.900	2.000	0.130	0.700	5.900	1.000	0.130	0.700
	25	12.500	1.500	0.250	0.950	8.000	1.450	0.130	0.700	7.450	1.250	0.090	0.550	5.600	625	0.090	0.550
	35	6.000	520	0.090	0.590	6.000	630	0.055	0.430	6.000	510	0.055	0.430	4.500	255	0.055	0.430

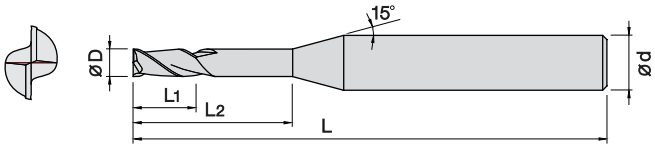
Profundidade de Corte

▪ Ap: Profundidade axial
▪ Ae: Profundidade radial
▪ D: Diâmetro
▪ n: Velocidade
▪ Vf: Avanço



2RLNJT

FRESA LONG NECK TOPO RETO 2 CORTES



Diâmetro	Tolerância
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6	-0.01 ~ -0.025mm

Ø0.1 Ø0.2~5 Ø6 Proteção da Aresta

Código	Diâm. D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNJT 005 040 H04	0.5	0.5	4	40	4	2
2RLNJT 005 060 H04	0.5	0.5	6	40	4	2
2RLNJT 005 080 H04	0.5	0.5	8	45	4	2
2RLNJT 008 040 H04	0.8	0.8	4	40	4	2
2RLNJT 008 060 H04	0.8	0.8	6	40	4	2
2RLNJT 008 080 H04	0.8	0.8	8	45	4	2
2RLNJT 008 100 H04	0.8	0.8	10	45	4	2
2RLNJT 010 040 H04	1	1	4	45	4	2
2RLNJT 010 060 H04	1	1	6	45	4	2
2RLNJT 010 080 H04	1	1	8	45	4	2
2RLNJT 010 100 H04	1	1	10	45	4	2
2RLNJT 010 120 H04	1	1	12	50	4	2
2RLNJT 010 160 H04	1	1	16	50	4	2
2RLNJT 010 200 H04	1	1	20	50	4	2
2RLNJT 010 250 H04	1	1	25	60	4	2
2RLNJT 015 080 H04	1.5	1.5	8	45	4	2
2RLNJT 015 100 H04	1.5	1.5	10	50	4	2
2RLNJT 015 120 H04	1.5	1.5	12	50	4	2
2RLNJT 015 160 H04	1.5	1.5	16	50	4	2
2RLNJT 015 200 H04	1.5	1.5	20	50	4	2
2RLNJT 015 250 H04	1.5	1.5	25	60	4	2
2RLNJT 020 100 H04	2	2	10	50	4	2
2RLNJT 020 120 H04	2	2	12	50	4	2
2RLNJT 020 160 H04	2	2	16	50	4	2
2RLNJT 020 200 H04	2	2	20	50	4	2
2RLNJT 020 250 H04	2	2	25	60	4	2
2RLNJT 020 300 H04	2	2	30	60	4	2
2RLNJT 025 100 H04	2.5	2.5	10	50	4	2
2RLNJT 025 160 H04	2.5	2.5	16	50	4	2
2RLNJT 025 200 H04	2.5	2.5	20	50	4	2
2RLNJT 025 250 H04	2.5	2.5	25	60	4	2
2RLNJT 025 350 H04	2.5	2.5	35	70	4	2
2RLNJT 030 100 H06	3	3	10	50	6	2
2RLNJT 030 120 H06	3	3	12	50	6	2
2RLNJT 030 160 H06	3	3	16	55	6	2
2RLNJT 030 200 H06	3	3	20	60	6	2
2RLNJT 030 250 H06	3	3	25	65	6	2
2RLNJT 030 300 H06	3	3	30	70	6	2
2RLNJT 030 400 H06	3	3	40	80	6	2
2RLNJT 040 120 H06	4	4	12	50	6	2
2RLNJT 040 160 H06	4	4	16	55	6	2
2RLNJT 040 200 H06	4	4	20	60	6	2
2RLNJT 040 250 H06	4	4	25	65	6	2
2RLNJT 040 300 H06	4	4	30	70	6	2
2RLNJT 040 400 H06	4	4	40	80	6	2

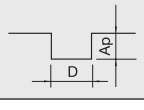
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

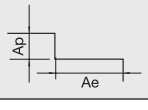
Material		35HRC ~ 45HRC			45HRC ~ 55HRC			55HRC ~ 65HRC		
R (mm)	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial	Rotação (RPM)	Avanço (mm/min)	Ap Prof. axial
1.5	8	19.040	668	0.110	16.800	499	0.110	15.680	402	0.110
	10	17.136	601	0.060	15.120	449	0.060	14.112	362	0.060
	12	17.136	601	0.060	15.120	449	0.060	14.112	362	0.060
	16	15.232	391	0.038	13.440	345	0.038	12.544	271	0.038
	20	15.232	391	0.038	13.440	345	0.038	12.544	271	0.038
	25	11.424	278	0.023	10.080	218	0.023	9.408	165	0.023
2	10	14.280	668	0.140	12.600	499	0.140	11.760	402	0.140
	12	12.852	601	0.080	11.340	449	0.080	10.584	362	0.080
	16	12.852	601	0.080	11.340	449	0.080	10.584	362	0.080
	20	12.852	601	0.050	11.340	449	0.050	10.584	362	0.050
	25	11.424	391	0.050	10.080	345	0.050	9.408	271	0.050
	30	11.424	391	0.030	10.080	345	0.030	9.408	271	0.030
2.5	12	12.240	716	0.180	10.080	535	0.180	10.080	431	0.180
	16	11.116	644	0.100	9.720	388	0.100	9.072	388	0.100
	20	11.116	644	0.100	9.720	481	0.100	9.072	388	0.100
3	12	10.880	636	0.210	9.600	475	0.210	8.960	383	0.210
	16	9.792	573	0.120	8.640	428	0.120	8.064	345	0.120
	20	9.792	573	0.12	8.640	428	0.12	8.064	345	0.12
	25	9.792	573	0.08	8.640	428	0.08	8.064	345	0.08
	30	9.792	573	0.08	8.640	428	0.08	8.064	345	0.08
	40	8.704	509	0.05	7.680	380	0.05	7.168	307	0.05
4	12	8.000	1.358	0.4	7.050	902	0.4	6.580	727	0.4
	16	8.000	1.358	0.4	7.050	902	0.4	6.580	727	0.4
	20	7.800	1.200	0.3	6.800	800	0.3	6.200	720	0.3
	25	7.800	1.200	0.3	6.800	800	0.3	6.200	720	0.3
	30	7.800	1.200	0.3	6.800	800	0.3	6.200	720	0.3
	40	7.600	1.150	0.2	6.700	780	0.2	6.000	700	0.2
	50	7.600	1.150	0.2	6.700	780	0.2	6.000	700	0.2
5	20	7.400	1.060	0.1	6.600	760	0.4	5.900	680	0.4
	30	7.200	1.000	0.09	6.200	740	0.2	5.800	650	0.2
	50	7.000	980	0.09	6.000	700	0.2	5.600	620	0.2
6	20	6.800	950	0.08	5.800	680	0.1	5.400	600	0.1
	30	6.800	950	0.08	5.800	680	0.1	5.400	600	0.1
	40	6.800	950	0.08	5.800	680	0.1	5.400	600	0.1
	50	6.500	900	0.05	5.600	650	0.09	5.000	560	0.09
	60	6.500	900	0.05	5.600	650	0.09	5.000	560	0.09

Profundidade de Corte

Encaixe
- Ap : Profundidade Axial
- D : Diâmetro

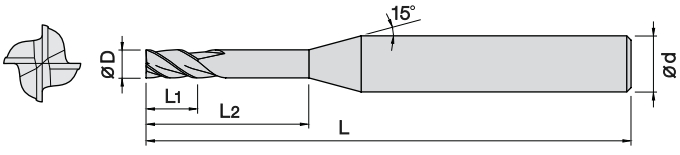


Fresagem Lateral
- Ap : Profundidade Axial
- Ae : Profundidade Radial



4RLNJT

FRESA LONG NECK TOPO RETO 4 CORTES



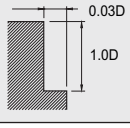
Diâmetro	Tolerância
Ø0.8 ~ 5	+0 ~ -0.01mm
Ø6	-0.01 ~ -0.025mm

Ø0.8~5 Ø6 Proteção da Aresta

Código	Diâm. D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLNJT 008 040 H04	0.8	0.8	4	40	4	4
4RLNJT 008 060 H04	0.8	0.8	6	40	4	4
4RLNJT 008 080 H04	0.8	0.8	8	40	4	4
4RLNJT 010 040 H04	1	1	4	45	4	4
4RLNJT 010 060 H04	1	1	6	45	4	4
4RLNJT 010 080 H04	1	1	8	45	4	4
4RLNJT 010 100 H04	1	1	10	50	4	4
4RLNJT 010 120 H04	1	1	12	50	4	4
4RLNJT 010 140 H04	1	1	14	50	4	4
4RLNJT 010 160 H04	1	1	16	50	4	4
4RLNJT 015 040 H04	1.5	1.5	4	45	4	4
4RLNJT 015 060 H04	1.5	1.5	6	45	4	4
4RLNJT 015 080 H04	1.5	1.5	8	45	4	4
4RLNJT 015 100 H04	1.5	1.5	10	45	4	4
4RLNJT 015 120 H04	1.5	1.5	12	50	4	4
4RLNJT 015 160 H04	1.5	1.5	16	50	4	4
4RLNJT 020 080 H04	2	2	8	45	4	4
4RLNJT 020 100 H04	2	2	10	50	4	4
4RLNJT 020 120 H04	2	2	12	50	4	4
4RLNJT 020 140 H04	2	2	14	50	4	4
4RLNJT 020 160 H04	2	2	16	50	4	4
4RLNJT 020 180 H04	2	2	18	50	4	4
4RLNJT 020 200 H04	2	2	20	50	4	4
4RLNJT 025 100 H04	2.5	2.5	10	50	4	4
4RLNJT 025 120 H04	2.5	2.5	12	50	4	4
4RLNJT 025 160 H04	2.5	2.5	16	50	4	4
4RLNJT 025 200 H04	2.5	2.5	20	50	4	4
4RLNJT 025 250 H04	2.5	2.5	25	60	4	4
4RLNJT 030 060 H06	3	3	6	45	6	4
4RLNJT 030 080 H06	3	3	8	45	6	4
4RLNJT 030 100 H06	3	3	10	50	6	4
4RLNJT 030 120 H06	3	3	12	50	6	4
4RLNJT 030 160 H06	3	3	16	55	6	4
4RLNJT 030 200 H06	3	3	20	60	6	4
4RLNJT 030 250 H06	3	3	25	65	6	4
4RLNJT 030 300 H06	3	3	30	70	6	4
4RLNJT 040 100 H06	4	4	10	50	6	4
4RLNJT 040 120 H06	4	4	12	50	6	4
4RLNJT 040 160 H06	4	4	16	55	6	4
4RLNJT 040 200 H06	4	4	20	60	6	4
4RLNJT 040 250 H06	4	4	25	65	6	4
4RLNJT 040 300 H06	4	4	30	70	6	4
4RLNJT 040 400 H06	4	4	40	80	6	4

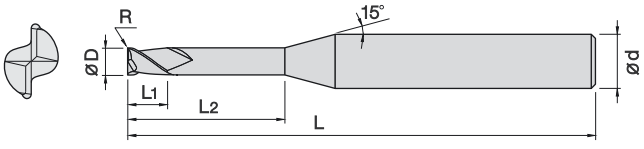
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	40 ~ 50HRC		50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		60 ~ 65HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	38.000	1.050	25.500	710	20.500	430	16.000	270	12.500	175
2	26.000	1.250	17.500	840	14.500	520	11.000	320	9.500	230
3	17.300	1.250	11.500	840	9.500	520	7.500	320	6.400	230
4	13.200	1.300	8.800	880	7.200	540	335	4.750	4.750	240
5	12.500	1.500	8.300	1.000	6.400	580	5.100	370	4.450	270
6	10.350	1.400	6.900	950	5.300	560	4.200	350	3.700	260
8	7.800	1.350	5.200	900	4.000	520	3.200	330	2.800	240
10	6.150	1.260	4.100	840	3.200	480	2.550	310	2.200	220
12	5.250	1.260	3.500	840	2.650	480	2.100	300	1.860	220
Profundidade de Corte										

2TRLNJT

FRESA LONG NECK TOROIDAL 2 CORTES

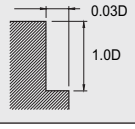


Diâmetro	Tolerância
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNJT 008 002 040	0.8	0.2	0.8	4	45	4	2
2TRLNJT 008 002 060	0.8	0.2	0.8	6	45	4	2
2TRLNJT 008 002 080	0.8	0.2	0.8	8	45	4	2
2TRLNJT 010 002 040	1	0.2	1	4	45	4	2
2TRLNJT 010 002 060	1	0.2	1	6	45	4	2
2TRLNJT 010 002 080	1	0.2	1	8	45	4	2
2TRLNJT 010 002 100	1	0.2	1	10	50	4	2
2TRLNJT 010 002 120	1	0.2	1	12	50	4	2
2TRLNJT 010 002 160	1	0.2	1	16	50	4	2
2TRLNJT 010 002 200	1	0.2	1	20	50	4	2
2TRLNJT 015 005 080	1.5	0.5	1.5	8	45	4	2
2TRLNJT 015 005 100	1.5	0.5	1.5	10	50	4	2
2TRLNJT 015 005 120	1.5	0.5	1.5	12	50	4	2
2TRLNJT 015 005 160	1.5	0.5	1.5	16	50	4	2
2TRLNJT 015 005 200	1.5	0.5	1.5	20	50	4	2
2TRLNJT 020 005 080	2	0.5	2	8	45	4	2
2TRLNJT 020 005 100	2	0.5	2	10	50	4	2
2TRLNJT 020 005 120	2	0.5	2	12	50	4	2
2TRLNJT 020 005 160	2	0.5	2	16	50	4	2
2TRLNJT 020 005 200	2	0.5	2	20	50	4	2
2TRLNJT 020 005 250	2	0.5	2	25	60	4	2
2TRLNJT 025 005 100	2.5	0.5	2.5	10	50	4	2
2TRLNJT 025 005 160	2.5	0.5	2.5	16	50	4	2
2TRLNJT 025 005 200	2.5	0.5	2.5	20	50	4	2
2TRLNJT 030 005 100	3	0.5	3	10	50	6	2
2TRLNJT 030 005 120	3	0.5	3	12	50	6	2
2TRLNJT 030 005 200	3	0.5	3	20	60	6	2
2TRLNJT 030 005 250	3	0.5	3	25	65	6	2
2TRLNJT 030 005 300	3	0.5	3	30	70	6	2
2TRLNJT 030 005 400	3	0.5	3	40	80	6	2
2TRLNJT 030 010 100	3	1	3	10	50	6	2
2TRLNJT 030 010 120	3	1	3	12	50	6	2
2TRLNJT 030 010 200	3	1	3	20	60	6	2
2TRLNJT 030 010 250	3	1	3	25	65	6	2
2TRLNJT 030 010 300	3	1	3	30	70	6	2
2TRLNJT 040 005 120	4	0.5	4	12	50	6	2
2TRLNJT 040 005 160	4	0.5	4	16	55	6	2
2TRLNJT 040 005 200	4	0.5	4	20	60	6	2
2TRLNJT 040 005 250	4	0.5	4	25	65	6	2
2TRLNJT 040 005 300	4	0.5	4	30	70	6	2
2TRLNJT 040 005 350	4	0.5	4	35	75	6	2
2TRLNJT 040 010 120	4	1	4	12	50	6	2
2TRLNJT 040 010 160	4	1	4	16	55	6	2
2TRLNJT 040 010 200	4	1	4	20	60	6	2
2TRLNJT 040 010 250	4	1	4	25	65	6	2
2TRLNJT 040 010 300	4	1	4	30	70	6	2
2TRLNJT 040 010 350	4	1	4	35	75	6	2

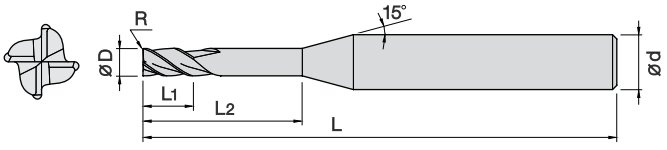
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		65 ~ 68HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.4	40.000	110	33.000	70	25.000	40	25.000	40
0.5	40.000	125	33.000	80	25.000	45	20.000	30
0.6	40.000	160	30.000	90	25.000	60	20.000	35
0.8	30.000	165	25.000	100	19.000	65	16.000	40
1	25.500	408	20.500	248	16.000	152	12.500	100
2	17.500	480	14.500	296	11.000	184	9.500	132
3	11.500	480	9.500	296	7.500	184	6.400	132
4	8.800	500	7.200	308	5.600	192	4.750	136
5	8.300	568	6.400	328	5.100	208	4.450	152
6	6.900	552	5.300	320	4.200	204	3.700	148
8	5.200	508	4.000	292	3.200	188	2.800	136
10	4.100	472	3.200	272	2.550	176	2.200	128
12	3.500	472	2.650	272	2.100	176	1.860	128
Profundidade de Corte								

4TRLNJT

FRESA LONG NECK TOROIDAL 4 CORTES



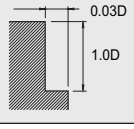
Diâmetro	Tolerância
Ø0.8 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

R0.02 ~ 0.5 R1 ~ 1.5 R2 ~ 3

Código	Diâm. D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLNJT 008 001 040	0.8	0.1	0.8	4	45	4	4
4TRLNJT 008 001 060	0.8	0.1	0.8	6	45	4	4
4TRLNJT 008 001 080	0.8	0.1	0.8	8	45	4	4
4TRLNJT 010 002 040	1	0.2	1	4	45	4	4
4TRLNJT 010 002 060	1	0.2	1	6	45	4	4
4TRLNJT 010 002 080	1	0.2	1	8	45	4	4
4TRLNJT 010 002 100	1	0.2	1	10	50	4	4
4TRLNJT 010 002 120	1	0.2	1	12	50	4	4
4TRLNJT 015 005 060	1.5	0.5	1.5	6	45	4	4
4TRLNJT 015 005 080	1.5	0.5	1.5	8	45	4	4
4TRLNJT 015 005 100	1.5	0.5	1.5	10	50	4	4
4TRLNJT 015 005 120	1.5	0.5	1.5	12	50	4	4
4TRLNJT 015 005 160	1.5	0.5	1.5	16	50	4	4
4TRLNJT 020 005 060	2	0.5	2	6	45	4	4
4TRLNJT 020 005 080	2	0.5	2	8	45	4	4
4TRLNJT 020 005 100	2	0.5	2	10	50	4	4
4TRLNJT 020 005 120	2	0.5	2	12	50	4	4
4TRLNJT 020 005 160	2	0.5	2	16	50	4	4
4TRLNJT 020 005 200	2	0.5	2	20	50	4	4
4TRLNJT 020 005 250	2	0.5	2	25	60	4	4
4TRLNJT 025 005 100	2.5	0.5	2.5	10	50	4	4
4TRLNJT 025 005 160	2.5	0.5	2.5	16	50	4	4
4TRLNJT 025 005 200	2.5	0.5	2.5	20	50	4	4
4TRLNJT 025 005 250	2.5	0.5	2.5	25	60	4	4
4TRLNJT 030 005 100	3	0.5	3	10	50	6	4
4TRLNJT 030 005 120	3	0.5	3	12	50	6	4
4TRLNJT 030 005 160	3	0.5	3	16	55	6	4
4TRLNJT 030 005 200	3	0.5	3	20	60	6	4
4TRLNJT 030 005 250	3	0.5	3	25	65	6	4
4TRLNJT 030 005 300	3	0.5	3	30	70	6	4
4TRLNJT 030 010 100	3	1	3	10	50	6	4
4TRLNJT 030 010 120	3	1	3	12	50	6	4
4TRLNJT 030 010 160	3	1	3	16	55	6	4
4TRLNJT 030 010 200	3	1	3	20	60	6	4
4TRLNJT 030 010 250	3	1	3	25	65	6	4
4TRLNJT 030 010 300	3	1	3	30	70	6	4
4TRLNJT 040 005 130	4	0.5	4	13	55	6	4
4TRLNJT 040 005 160	4	0.5	4	16	55	6	4
4TRLNJT 040 005 200	4	0.5	4	20	60	6	4
4TRLNJT 040 005 250	4	0.5	4	25	65	6	4
4TRLNJT 040 005 300	4	0.5	4	30	70	6	4
4TRLNJT 040 005 350	4	0.5	4	35	75	6	4
4TRLNJT 040 010 130	4	1	4	13	55	6	4
4TRLNJT 040 010 160	4	1	4	16	55	6	4
4TRLNJT 040 010 200	4	1	4	20	60	6	4
4TRLNJT 040 010 250	4	1	4	25	65	6	4
4TRLNJT 040 010 300	4	1	4	30	70	6	4
4TRLNJT 040 010 350	4	1	4	35	75	6	4

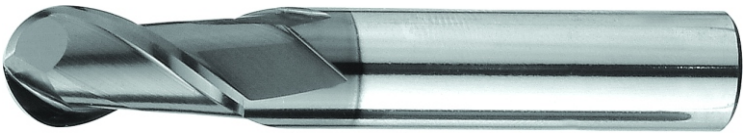
▪ Parâmetros de Corte

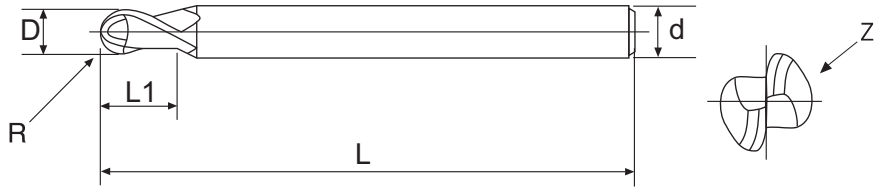
▪ RPM : rev./min ▪ FEED : mm/min

Material	50 ~ 55HRC		55 ~ 60HRC		60 ~ 65HRC		65 ~ 68HRC	
D (mm)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.4	40.000	580	33.000	350	25.000	240	20.000	150
0.5	40.000	600	33.000	365	25.000	245	20.000	140
0.6	40.000	650	30.000	380	25.000	250	20.000	150
0.8	30.000	660	25.000	400	19.000	260	16.000	155
1	25.500	710	20.500	430	16.000	270	12.500	175
2	17.500	840	14.500	520	11.000	320	9.500	230
3	11.500	840	9.500	520	7.500	320	6.400	230
4	8.800	880	7.200	540	5.600	335	4.750	240
5	8.300	1.000	6.400	580	5.100	370	4.450	270
6	6.900	950	5.300	560	4.200	350	3.700	260
8	5.200	900	4.000	520	3.200	330	2.800	240
10	4.100	840	3.200	480	2.550	310	2.200	220
12	3.500	840	2.650	480	2.100	300	1.860	220
Profundidade de Corte								

2ENM

FRESA TOPO ESFÉRICO 2 CORTES





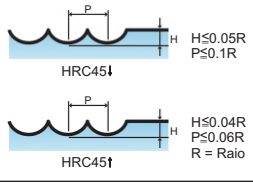
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ENM 0102 H03	1	0.5	2	50	3	2
2ENM 0102 H04	1	0.5	2	50	4	2
2ENM 0102 H06	1	0.5	2	50	6	2
2ENM 0152 H03	1.5	0.75	3	50	3	2
2ENM 0152 H04	1.5	0.75	3	50	4	2
2ENM 0152 H06	1.5	0.75	3	50	6	2
2ENM 0202 H03	2	1	4	50	3	2
2ENM 0202 H04	2	1	4	50	4	2
2ENM 0202 H06	2	1	4	50	6	2
2ENM 0252 H03	2.5	1.25	5	50	3	2
2ENM 0252 H04	2.5	1.25	5	50	4	2
2ENM 0252 H06	2.5	1.25	5	50	6	2
2ENM 0302 H03	3	1.5	6	50	3	2
2ENM 0302 H04	3	1.5	6	50	4	2
2ENM 0302 H06	3	1.5	6	50	6	2
2ENM 0352 H04	3.5	1.75	7	50	4	2
2ENM 0352 H06	3.5	1.75	7	50	6	2
2ENM 0402 H04	4	2	8	50	4	2
2ENM 0402 H06	4	2	8	50	6	2
2ENM 0452 H06	4.5	2.25	9	50	6	2
2ENM 0502 H05	5	2.5	10	50	5	2
2ENM 0502 H06	5	2.5	10	50	6	2
2ENM 0552 H06	5.5	2.75	11	50	6	2
2ENM 0602 H06	6	3	12	50	6	2
2ENM 0652 H08	6.5	3.25	13	60	8	2
2ENM 0702 H08	7	3.5	14	60	8	2
2ENM 0752 H08	7.5	3.75	15	60	8	2
2ENM 0802 H08	8	4	16	60	8	2
2ENM 0902 H10	9	4.5	18	75	10	2
2ENM 1002 H10	10	5	20	75	10	2
2ENM 1202 H12	12	6	24	75	12	2
2ENM 1402 H14	14	7	30	100	14	2
2ENM 1602 H16	16	8	32	100	16	2
2ENM 1802 H18	18	9	30	100	18	2
2ENM 2002 H20	20	10	32	100	20	2
2ENM 2502 H25	25	12.5	30	100	25	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

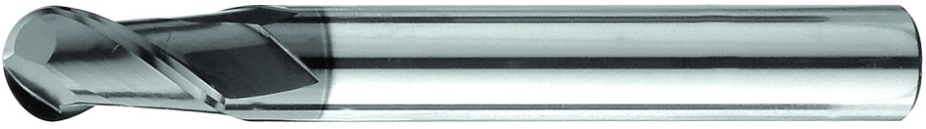
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.5	45.000	800	35.000	600	20.000	200
1	23.000	800	18.000	600	10.000	200
1.5	16.000	1.000	12.000	600	6.500	200
2	12.000	1.000	9.500	700	5.000	300
3	8.000	1.100	6.000	700	3.500	300
4	6.000	1.200	5.000	800	2.500	350
5	5.000	1.100	4.000	800	2.000	350
6	4.000	1.000	3.000	700	1.500	300
8	3.000	1.000	2.000	700	1.000	300

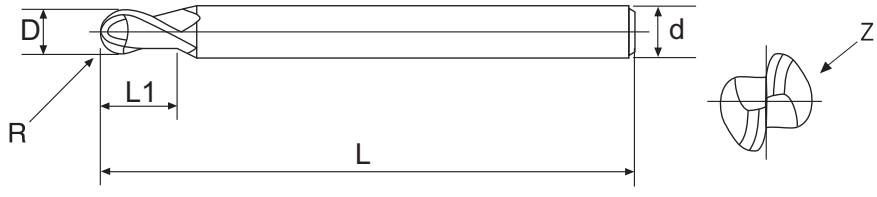
Profundidade de Corte



2ELNM

FRESA TOPO ESFÉRICO 2 CORTES LONGA





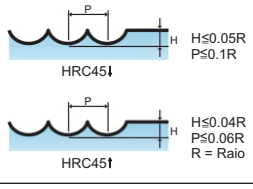
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNM 0102 H04	1	0.5	2	75	4	2
2ELNM 0102 075	1	0.5	2	75	6	2
2ELNM 0102 100	1	0.5	2	100	6	2
2ELNM 0152 H04	1.5	0.75	3	75	4	2
2ELNM 0152 075	1.5	0.75	3	75	6	2
2ELNM 0152 100	1.5	0.75	3	100	6	2
2ELNM 0202 H04	2	1	4	75	4	2
2ELNM 0202 075	2	1	4	75	6	2
2ELNM 0202 100	2	1	4	100	6	2
2ELNM 0252 H04	2.5	1.25	5	75	4	2
2ELNM 0252 H06	2.5	1.25	5	100	6	2
2ELNM 0302 H04	3	1.5	6	75	4	2
2ELNM 0302 075	3	1.5	6	75	6	2
2ELNM 0302 100	3	1.5	6	100	6	2
2ELNM 0352 H04	3.5	1.75	7	75	4	2
2ELNM 0352 H06	3.5	1.75	7	100	6	2
2ELNM 0402 H04	4	2	8	75	4	2
2ELNM 0402 075	4	2	8	75	6	2
2ELNM 0402 100	4	2	8	100	6	2
2ELNM 0452 075	4.5	2.25	9	75	6	2
2ELNM 0452 100	4.5	2.25	9	100	6	2
2ELNM 0502 075	5	2.5	10	75	6	2
2ELNM 0502 100	5	2.5	10	100	6	2
2ELNM 0552 075	5.5	2.75	11	75	6	2
2ELNM 0552 100	5.5	2.75	11	100	6	2
2ELNM 0602 H06	6	3	12	75	6	2
2ELNM 0602 100	6	3	12	100	6	2
2ELNM 0602 150	6	3	12	150	6	2
2ELNM 0802 H08	8	4	16	75	8	2
2ELNM 0802 100	8	4	16	100	8	2
2ELNM 0802 150	8	4	16	150	8	2
2ELNM 0802 200	8	4	16	200	8	2
2ELNM 1002 100	10	5	20	100	10	2
2ELNM 1002 150	10	5	20	150	10	2
2ELNM 1002 200	10	5	20	200	10	2
2ELNM 1202 100	12	6	24	100	12	2
2ELNM 1202 150	12	6	24	150	12	2
2ELNM 1202 200	12	6	24	200	12	2
2ELNM 1402 150	14	7	30	150	14	2
2ELNM 1402 200	14	7	30	200	14	2
2ELNM 1602 150	16	8	32	150	16	2
2ELNM 1602 200	16	8	30	200	16	2
2ELNM 2002 150	20	10	40	150	20	2
2ELNM 2002 200	20	10	30	200	20	2
2ELNM 2502 150	25	12.5	40	150	25	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

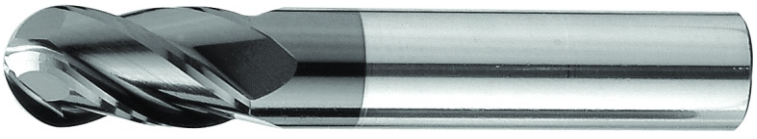
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.5	45.000	800	35.000	600	20.000	200
1	23.000	800	18.000	600	10.000	200
1.5	16.000	1.000	12.000	600	6.500	200
2	12.000	1.000	9.500	700	5.000	300
3	8.000	1.100	6.000	700	3.500	300
4	6.000	1.200	5.000	800	2.500	350
5	5.000	1.100	4.000	800	2.000	350
6	4.000	1.000	3.000	700	1.500	300
8	3.000	1.000	2.000	700	1.000	300

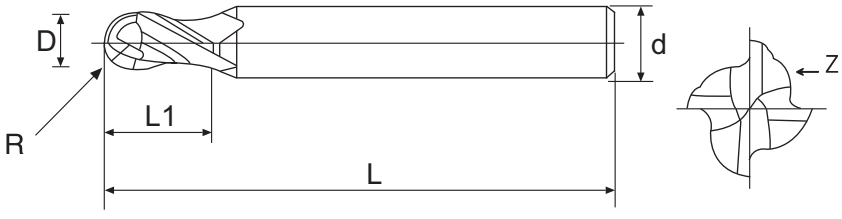
Profundidade de Corte



4ENM

FRESA TOPO ESFÉRICO 4 CORTES





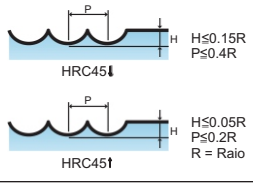
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4ENM 0104 H04	1	0.5	2	50	4	4
4ENM 0154 H04	1.5	0.75	3	50	4	4
4ENM 0254 H04	2.5	1.25	5	50	4	4
4ENM 0204 H04	2	1	4	50	4	4
4ENM 0304 H03	3	1.5	6	50	3	4
4ENM 0304 H04	3	1.5	6	50	4	4
4ENM 0354 H04	3.5	1.75	7	50	4	4
4ENM 0404 H04	4	2	8	50	4	4
4ENM 0454 H06	4.5	2.25	9	50	6	4
4ENM 0504 H06	5	2.5	10	50	6	4
4ENM 0554 H06	5.5	2.75	11	50	6	4
4ENM 0604 H06	6	3	12	50	6	4
4ENM 0654 H08	6.5	3.25	13	60	8	4
4ENM 0704 H08	7	3.5	14	60	8	4
4ENM 0754 H08	7.5	3.75	15	60	8	4
4ENM 0804 H08	8	4	16	60	8	4
4ENM 0904 H10	9	4.5	18	75	10	4
4ENM 1004 H10	10	5	20	75	10	4
4ENM 1204 H12	12	6	24	75	12	4
4ENM 1404 H14	14	7	30	100	14	4
4ENM 1604 H16	16	8	32	100	16	4
4ENM 1804 H18	18	9	30	100	18	4
4ENM 2004 H20	20	10	32	100	20	4
4ENM 2504 H25	25	12.5	30	100	25	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

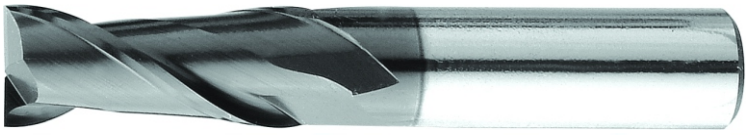
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	12.000	1.200	9.500	900	5.000	400
3	8.000	1.400	6.000	900	3.500	500
4	6.000	1.600	5.000	1.000	2.500	600
5	5.000	1.400	4.000	1.000	2.000	600
6	4.000	1.200	3.000	900	1.500	500
8	3.000	1.200	2.500	900	1.000	500
10	2.500	1.000	2.000	600	900	300

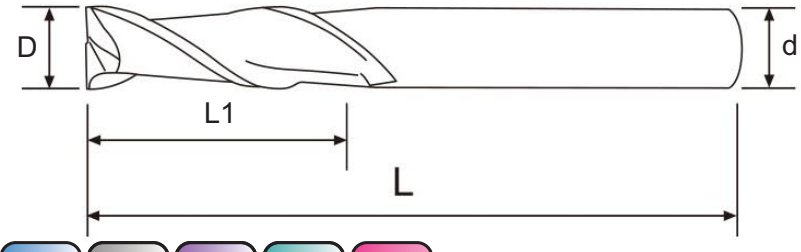
Profundidade de Corte

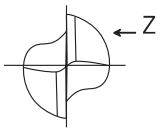


2RNM

FRESA TOPO RETO 2 CORTES







Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RNM 0102 H03	1	3	50	3	2
2RNM 0102 H04	1	3	50	4	2
2RNM 0102 H06	1	3	50	6	2
2RNM 0152 H03	1.5	4	50	3	2
2RNM 0152 H04	1.5	4	50	4	2
2RNM 0152 H06	1.5	4	50	6	2
2RNM 0202 H03	2	6	50	3	2
2RNM 0202 H04	2	6	50	4	2
2RNM 0202 H06	2	6	50	6	2
2RNM 0252 H03	2.5	7	50	3	2
2RNM 0252 H04	2.5	7	50	4	2
2RNM 0252 H06	2.5	7	50	6	2
2RNM 0302 H03	3	8	50	3	2
2RNM 0302 H04	3	8	50	4	2
2RNM 0302 H06	3	8	50	6	2
2RNM 0352 H04	3.5	10	50	4	2
2RNM 0352 H06	3.5	10	50	6	2
2RNM 0402 H04	4	11	50	4	2
2RNM 0402 H06	4	11	50	6	2
2RNM 0452 H06	4.5	13	50	6	2
2RNM 0502 H05	5	13	50	5	2
2RNM 0502 H06	5	13	50	6	2
2RNM 0552 H06	5.5	13	50	6	2
2RNM 0602 H06	6	15	50	6	2
2RNM 0652 H08	6.5	17	60	8	2
2RNM 0702 H08	7	17	60	8	2
2RNM 0752 H08	7.5	17	60	8	2
2RNM 0802 H08	8	20	60	8	2
2RNM 0852 H10	8.5	23	75	10	2
2RNM 0902 H10	9	23	75	10	2
2RNM 0952 H10	9.5	25	75	10	2
2RNM 1002 H10	10	25	75	10	2
2RNM 1052 H12	10.5	25	75	12	2
2RNM 1102 H12	11	28	75	12	2
2RNM 1202 H12	12	30	75	12	2
2RNM 1302 H14	13	40	100	14	2
2RNM 1402 H14	14	40	100	14	2
2RNM 1402 H16	14	35	100	16	2
2RNM 1502 H16	15	40	100	16	2
2RNM 1602 H16	16	40	100	16	2
2RNM 1702 H18	17	40	100	18	2
2RNM 1802 H20	18	40	100	18	2
2RNM 1902 H20	19	40	100	20	2
2RNM 2002 H20	20	40	100	20	2
2RNM 2202 H25	22	40	100	25	2
2RNM 2502 H25	25	40	100	25	2

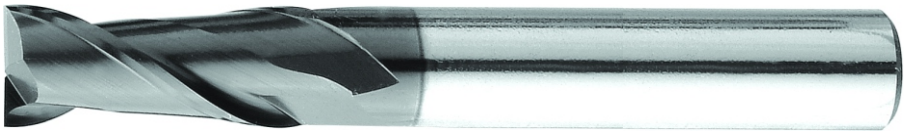
▪ Parâmetros de Corte

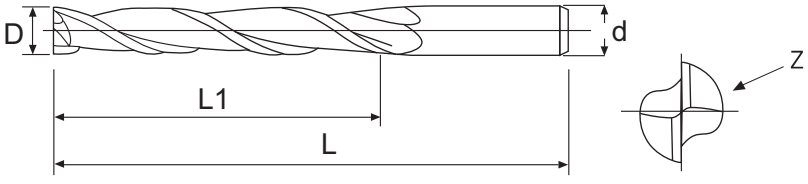
▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	20.000	80	15.000	45	11.000	30
1.5	13.600	135	10.000	60	9.000	40
2	9.600	150	8.500	50	6.000	45
3	6.500	200	5.800	75	4.000	60
4	5.500	250	4.000	80	3.200	60
5	4.500	300	3.000	80	2.500	70
6	4.000	300	2.500	80	2.200	70
8	3.500	350	2.200	90	1.700	70
10	3.000	400	2.000	90	1.500	70
12	2.500	400	1.500	100	1.000	70
16	2.000	400	1.200	100	800	70
Profundidade de Corte	D H HRC45↓		D H HRC45↑		D<3 H=0.15D D>3 H=0.25D D<3 H=0.05D D>3 H=0.1D	

2RLNM

FRESA TOPO RETO 2 CORTES LONGA



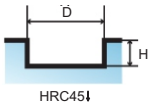
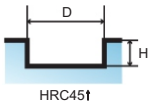


Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNM 0102 H04	1	3	75	4	2
2RLNM 0152 H04	1.5	4.5	75	4	2
2RLNM 0202 H04	2	6	75	4	2
2RLNM 0202 H04	2	15	75	4	2
2RLNM 0252 H04	2.5	7	75	4	2
2RLNM 0302 H04	3	8	75	4	2
2RLNM 0302 075	3	15	75	4	2
2RLNM 0302 100	3	8	100	4	2
2RLNM 0302 H06	3	8	100	6	2
2RLNM 0352 H04	3.5	10	75	4	2
2RLNM 0402 H04	4	10	75	4	2
2RLNM 0402 075	4	20	75	4	2
2RLNM 0402 H06	4	10	100	6	2
2RLNM 0452 H04	4.5	13	75	6	2
2RLNM 0502 H05	5	13	75	5	2
2RLNM 0502 075	5	13	75	6	2
2RLNM 0502 H06	5	25	75	6	2
2RLNM 0502 100	5	25	100	6	2
2RLNM 0552 H06	5.5	13	75	6	2
2RLNM 0602 H06	6	15	75	6	2
2RLNM 0602 100	6	15	100	6	2
2RLNM 0602 150	6	15	150	6	2
2RLNM 0602 025	6	25	75	6	2
2RLNM 0602 030	6	30	100	6	2
2RLNM 0652 H08	6.5	17	75	8	2
2RLNM 0702 H08	7	17	75	8	2
2RLNM 0752 H08	7.5	17	75	8	2
2RLNM 0802 H08	8	20	75	8	2
2RLNM 0802 025	8	25	75	8	2
2RLNM 0802 100	8	20	100	8	2
2RLNM 0802 035	8	35	100	8	2
2RLNM 0802 150	8	20	150	8	2
2RLNM 0902 H10	9	23	100	10	2
2RLNM 1002 H10	10	25	100	10	2
2RLNM 1002 025	10	25	150	10	2
2RLNM 1002 100	10	40	100	10	2
2RLNM 1002 150	10	40	150	10	2
2RLNM 1102 H12	11	28	100	12	2
2RLNM 1202 H12	12	45	100	12	2
2RLNM 1202 045	12	45	150	12	2
2RLNM 1202 100	12	30	100	12	2
2RLNM 1402 H16	14	40	150	16	2
2RLNM 1602 150	16	40	150	16	2
2RLNM 1602 H16	16	60	150	16	2
2RLNM 1602 200	16	40	200	16	2
2RLNM 1802 H20	18	50	150	20	2

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNM 1802 150	18	60	150	20	2
2RLNM 2002 H20	20	60	150	20	2
2RLNM 2002 150	20	50	150	20	2
2RLNM 2002 200	20	40	200	20	2

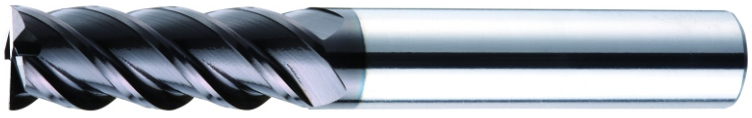
▪ Parâmetros de Corte

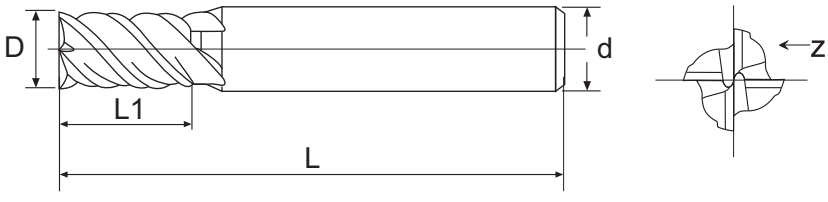
▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	3.000	50	2.500	40	1.000	15
3	2.500	60	2.000	50	800	20
4	2.000	80	1.700	70	700	30
5	1.800	110	1.500	85	600	40
6	1.500	110	1.400	75	550	50
8	1.300	110	1.100	75	450	50
10	1.000	110	800	75	300	50
12	900	110	700	75	250	40
16	800	95	500	70	150	20
20	500	80	400	60	120	20
Profundidade de Corte	 HRC45↓				D<3 H=0.15D D>3 H=0.25D	
	 HRC45↑				D<3 H=0.05D D>3 H=0.1D	

4RNM

FRESA TOPO RETO 4 CORTES





Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RNM 0104 H03	1	3	50	3	4
4RNM 0104 H04	1	3	50	4	4
4RNM 0104 H06	1	3	50	6	4
4RNM 0154 H03	1.5	4	50	3	4
4RNM 0154 H04	1.5	4	50	4	4
4RNM 0154 H06	1.5	4	50	6	4
4RNM 0204 H03	2	6	50	3	4
4RNM 0204 H04	2	6	50	4	4
4RNM 0204 H06	2	6	50	6	4
4RNM 0254 H03	2.5	7	50	3	4
4RNM 0254 H04	2.5	7	50	4	4
4RNM 0254 H06	2.5	7	50	6	4
4RNM 0304 H03	3	8	50	3	4
4RNM 0304 H04	3	8	50	4	4
4RNM 0304 H06	3	8	50	6	4
4RNM 0354 H04	3.5	10	50	4	4
4RNM 0404 H04	4	11	50	4	4
4RNM 0404 H06	4	11	50	6	4
4RNM 0454 H06	4.5	13	50	6	4
4RNM 0504 H05	5	13	50	5	4
4RNM 0504 H06	5	13	50	6	4
4RNM 0554 H06	5.5	13	50	6	4
4RNM 0604 H06	6	15	50	6	4
4RNM 0654 H08	6.5	17	60	8	4
4RNM 0704 H08	7	17	60	8	4
4RNM 0754 H08	7.5	17	60	8	4
4RNM 0804 H08	8	20	60	8	4
4RNM 0854 H10	8.5	23	75	10	4
4RNM 0904 H10	9	23	75	10	4
4RNM 0954 H10	9.5	25	75	10	4
4RNM 1004 H10	10	25	75	10	4
4RNM 1054 H12	10.5	25	75	12	4
4RNM 1104 H12	11	28	75	12	4
4RNM 1204 H12	12	30	75	12	4
4RNM 1304 H14	13	33	100	14	4
4RNM 1404 H14	14	35	100	14	4
4RNM 1404 H16	14	35	100	16	4
4RNM 1504 H16	15	38	100	16	4
4RNM 1604 H16	16	40	100	16	4
4RNM 1704 H18	17	40	100	18	4
4RNM 1804 H20	18	40	100	20	4
4RNM 1904 H20	19	40	100	20	4
4RNM 2004 H20	20	40	100	20	4
4RNM 2204 H25	22	40	100	25	4
4RNM 2504 H25	25	40	100	25	4

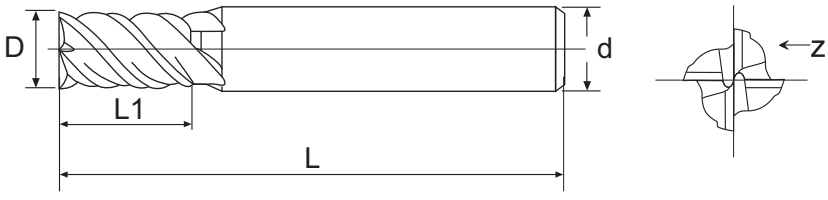
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	20.000	80	15.000	45	11.000	30
1.5	13.600	135	10.000	60	9.000	40
2	9.600	150	8.500	50	6.000	45
3	6.500	200	5.800	75	4.000	60
4	5.500	250	4.000	80	3.200	60
5	4.500	300	3.000	80	2.500	70
6	4.000	300	2.500	80	2.200	70
8	3.500	350	2.200	90	1.700	70
10	3.000	400	2.000	90	1.500	70
12	2.500	400	1.500	100	1.000	70
16	2.000	400	1.200	100	800	70
Profundidade de Corte	D H HRC45↓		D H HRC45↑		D<3 H=0.15D D>3 H=0.25D D<3 H=0.05D D>3 H=0.1D	

4RLNM

FRESA TOPO RETO 4 CORTES LONGA



Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLNM 0104 H04	1	3	75	4	4
4RLNM 0104 H06	1	3	100	6	4
4RLNM 0154 H04	1.5	4.5	75	4	4
4RLNM 0154 H06	1.5	4.5	100	6	4
4RLNM 0204 H04	2	6	75	4	4
4RLNM 0204 015	2	15	75	4	4
4RLNM 0204 H06	2	6	100	6	4
4RLNM 0254 H04	2.5	7	75	4	4
4RLNM 0304 H04	3	8	75	4	4
4RLNM 0304 H06	3	8	100	6	4
4RLNM 0304 015	3	15	75	6	4
4RLNM 0354 H04	3.5	10	75	4	4
4RLNM 0404 H04	4	10	75	4	4
4RLNM 0404 H05	4	10	75	6	4
4RLNM 0404 H06	4	10	100	6	4
4RLNM 0404 020	4	20	75	6	4
4RLNM 0454 H06	4.5	13	75	6	4
4RLNM 0504 075	5	13	75	6	4
4RLNM 0504 100	5	13	100	6	4
4RLNM 0504 025	5	25	75	6	4
4RLNM 0554 H06	5.5	13	75	6	4
4RLNM 0604 075	6	15	75	6	4
4RLNM 0604 100	6	15	100	6	4
4RLNM 0604 150	6	15	150	6	4
4RLNM 0604 025	6	25	75	6	4
4RLNM 0604 030	6	30	100	6	4
4RLNM 0804 075	8	20	75	8	4
4RLNM 0804 100	8	20	100	8	4
4RLNM 0804 150	8	20	150	8	4
4RLNM 0804 025	8	25	75	8	4
4RLNM 0804 035	8	35	100	8	4
4RLNM 0904 H10	9	23	100	10	4
4RLNM 1004 100	10	30	100	10	4
4RLNM 1004 150	10	30	150	10	4
4RLNM 1004 045	10	45	100	10	4
4RLNM 1004 050	10	50	150	10	4
4RLNM 1104 H04	11	28	100	12	4
4RLNM 1204 H04	12	30	100	12	4
4RLNM 1204 100	12	45	100	12	4
4RLNM 1204 150	12	50	150	12	4
4RLNM 1204 030	12	30	150	12	4
4RLNM 1404 060	14	60	150	16	4
4RLNM 1604 150	16	40	150	16	4
4RLNM 1604 200	16	40	200	16	4
4RLNM 1804 H18	18	40	150	18	4
4RLNM 1804 H20	18	60	150	20	4

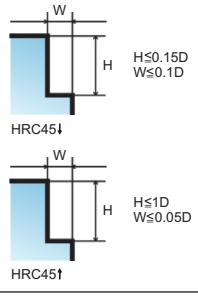
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLNM 2004 150	20	40	150	20	4
4RLNM 2004 200	20	40	200	20	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

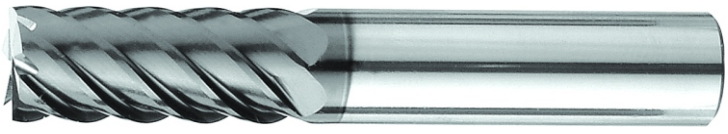
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	20.000	80	15.000	45	11.000	30
1.5	13.600	135	10.000	60	9.000	40
2	9.600	150	8.500	50	6.000	45
3	6.500	200	5.800	75	4.000	60
4	5.500	250	4.000	80	3.200	60
5	4.500	300	3.000	80	2.500	70
6	4.000	300	2.500	80	2.200	70
8	3.500	350	2.200	90	1.700	70
10	3.000	400	2.000	90	1.500	70
12	2.500	400	1.500	100	1.000	70
16	2.000	400	1.200	100	800	70

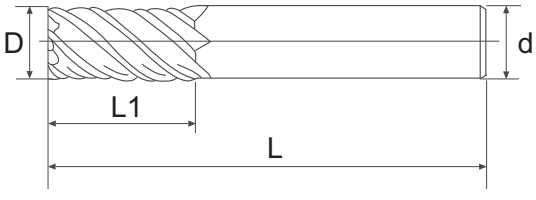
Profundidade de Corte

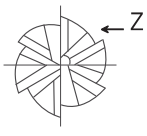


6RNM

FRESA TOPO RETO 6 CORTES







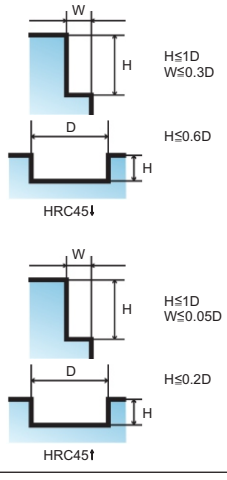
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
6RNM 0606 H06	6	15	50	6	6
6RNM 0606 075	6	25	75	6	6
6RNM 0606 0100	6	30	100	6	6
6RNM 0806 H08	8	20	60	8	6
6RNM 0806 075	8	35	75	8	6
6RNM 0806 0100	8	35	100	8	6
6RNM 1006 H10	10	25	75	10	6
6RNM 1006 100	10	40	100	10	6
6RNM 1006 150	10	40	150	10	6
6RNM 1206 H12	12	30	75	12	6
6RNM 1206 100	12	45	100	12	6
6RNM 1206 150	12	45	150	12	6
6RNM 1606 H16	16	40	100	16	6
6RNM 1606 150	16	60	150	16	6
6RNM 1606 200	16	100	200	16	6
6RNM 2006 H20	20	40	100	20	6
6RNM 2006 150	20	80	150	20	6
6RNM 2006 200	20	100	200	20	6
6RNM 2506 H25	25	40	100	25	6

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

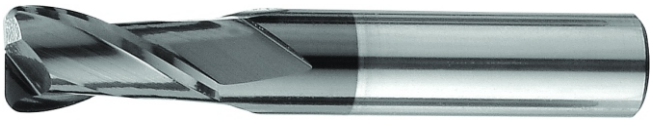
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
6	5.500	1.000	4.500	850	3.800	650
8	4.000	1.000	3.500	850	3.000	650
10	3.300	1.000	3.100	850	2.400	650
12	3.000	900	2.500	700	2.000	600
16	2.500	700	2.000	550	1.500	450
20	1.800	550	1.500	420	1.200	380

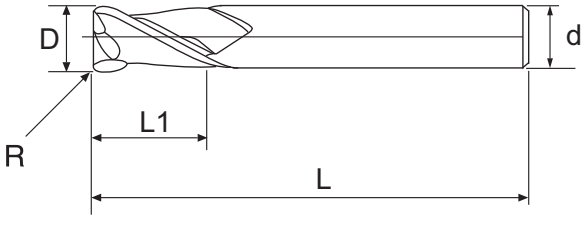
Profundidade de Corte

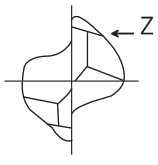


2TRNM

FRESA TOROIDAL TOPO RETO 2 CORTES







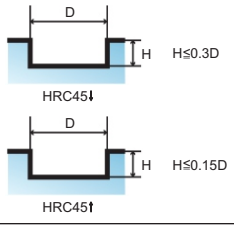
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRNM 0102 H04	1	0.2	2	50	4	2
2TRNM 0152 H04	1.5	0.5	4	50	4	2
2TRNM 0205 H04	2	0.5	4	50	4	2
2TRNM 0255 H04	2.5	0.5	8	50	4	2
2TRNM 0305 H04	3	0.5	6	50	4	2
2TRNM 0310 H04	3	1	6	50	4	2
2TRNM 0405 H04	4	0.5	8	50	4	2
2TRNM 0410 H04	4	1	8	50	4	2
2TRNM 0505 H05	5	0.5	13	50	5	2
2TRNM 0505 H06	5	0.5	13	50	6	2
2TRNM 0505 001	5	1	13	50	6	2
2TRNM 0605 H06	6	0.5	12	50	6	2
2TRNM 0610 H06	6	1	12	50	6	2
2TRNM 0805 H08	8	0.5	16	60	8	2
2TRNM 0810 H08	8	1	16	60	8	2
2TRNM 1005 H10	10	0.5	20	75	10	2
2TRNM 1010 H10	10	1	20	75	10	2
2TRNM 1205 H12	12	0.5	24	75	12	2
2TRNM 1210 H12	12	1	24	75	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

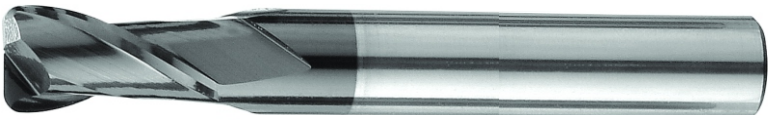
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	7.600	180	4.800	120	2.900	50
4	6.500	260	4.000	160	2.500	55
5	5.500	270	3.200	160	2.000	60
6	4.800	300	2.900	170	1.800	70
8	3.700	350	2.200	170	1.500	85
10	2.900	280	1.700	140	1.100	70
12	2.400	230	1.400	120	1.000	65
16	1.800	170	1.100	90	700	45

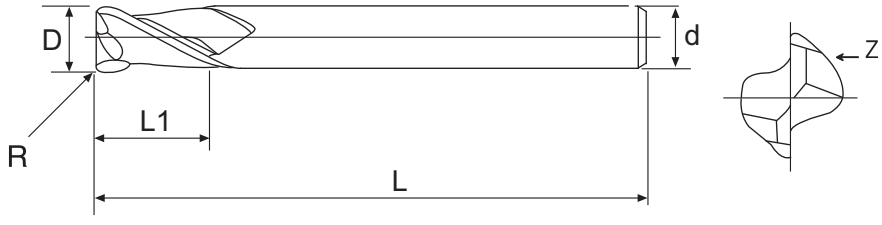
Profundidade de Corte



2TRLNM

FRESA TOROIDAL TOPO RETO 2 CORTES LONGA





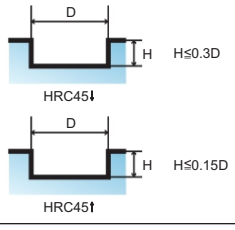
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNM 0102 H04	1	0.2	3	75	4	2
2TRLNM 0155 H04	1.5	0.5	4	75	4	2
2TRLNM 0205 H04	2	0.5	6	75	4	2
2TRLNM 0255 H04	2.5	0.5	8	75	4	2
2TRLNM 0305 H04	3	0.5	8	75	4	2
2TRLNM 0310 H04	3	1	8	75	4	2
2TRLNM 0405 075	4	0.5	11	75	4	2
2TRLNM 0410 075	4	1	11	75	4	2
2TRLNM 0405 100	4	0.5	11	100	6	2
2TRLNM 0410 100	4	1	11	100	6	2
2TRLNM 0505 075	5	0.5	13	75	6	2
2TRLNM 0510 075	5	1	13	75	6	2
2TRLNM 0505 100	5	0.5	13	100	6	2
2TRLNM 0505 100	5	1	13	100	6	2
2TRLNM 0605 075	6	0.5	15	75	6	2
2TRLNM 0605 100	6	0.5	15	100	6	2
2TRLNM 0610 075	6	1	15	75	6	2
2TRLNM 0610 100	6	1	15	100	6	2
2TRLNM 0805 075	8	0.5	20	75	8	2
2TRLNM 0805 100	8	0.5	20	100	8	2
2TRLNM 0810 075	8	1	20	75	8	2
2TRLNM 0810 100	8	1	20	100	8	2
2TRLNM 1005 H10	10	0.5	20	100	10	2
2TRLNM 1010 H10	10	1	20	100	10	2
2TRLNM 1205 H12	12	0.5	24	100	12	2
2TRLNM 1210 H12	12	1	24	100	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

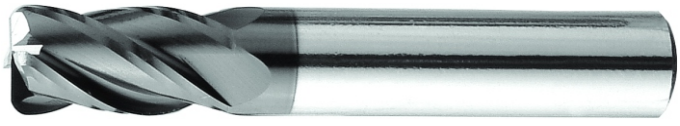
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	7.600	180	4.800	120	2.900	50
4	6.500	260	4.000	160	2.500	55
5	5.500	270	3.200	160	2.000	60
6	4.800	300	2.900	170	1.800	70
8	3.700	350	2.200	170	1.500	85
10	2.900	280	1.700	140	1.100	70
12	2.400	230	1.400	120	1.000	65
16	1.800	170	1.100	90	700	45

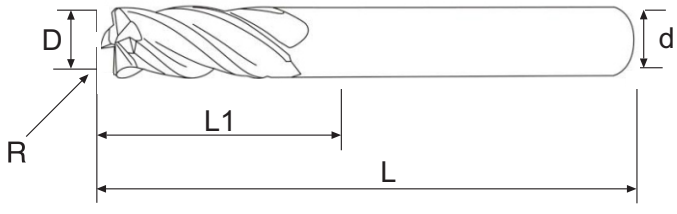
Profundidade de Corte

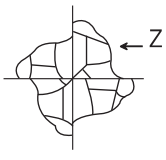


4TRNM

FRESA TOROIDAL TOPO RETO 4 CORTES







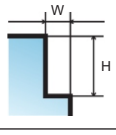
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRNM 0102 H04	1	0.2	2	50	4	4
4TRNM 0155 H04	1.5	0.5	4	50	4	4
4TRNM 0205 H04	2	0.5	4	50	4	4
4TRNM 0255 H04	2.5	0.5	5	50	4	4
4TRNM 0305 H04	3	0.5	6	50	4	4
4TRNM 0310 H04	3	1	6	50	4	4
4TRNM 0405 H04	4	0.5	8	50	4	4
4TRNM 0410 H04	4	1	8	50	4	4
4TRNM 0505 H05	5	0.5	10	50	5	4
4TRNM 0505 H06	5	0.5	10	50	6	4
4TRNM 0510 H06	5	1	10	50	6	4
4TRNM 0605 H06	6	0.5	12	50	6	4
4TRNM 0610 H06	6	1	12	50	6	4
4TRNM 0805 H08	8	0.5	16	60	8	4
4TRNM 0810 H08	8	1	16	60	8	4
4TRNM 1005 H10	10	0.5	20	75	10	4
4TRNM 1010 H10	10	1	20	75	10	4
4TRNM 1205 H12	12	0.5	24	75	12	4
4TRNM 1210 H12	12	1	24	75	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	9.500	450	6.000	290	3.600	120
4	8.000	800	5.000	480	3.200	160
5	6.800	820	4.000	500	2.500	170
6	6.000	900	3.600	530	2.300	220
8	4.600	1.000	2.800	530	1.800	250
10	3.500	850	2.200	420	1.400	220
12	3.000	720	1.800	350	1.200	200
16	2.300	520	1.400	250	900	150

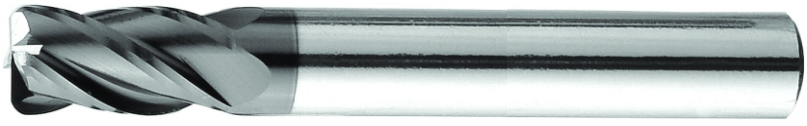
Profundidade de Corte

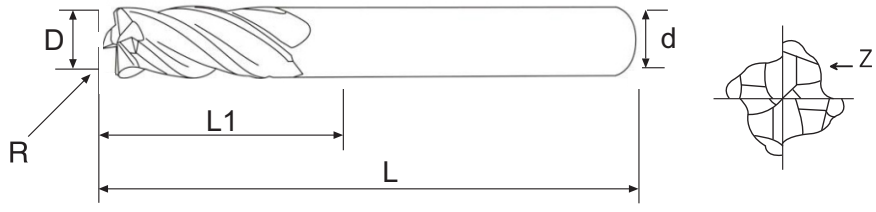


H≤1D
W≤0.02D

4TRLNM

FRESA TOROIDAL TOPO RETO 4 CORTES LONGA





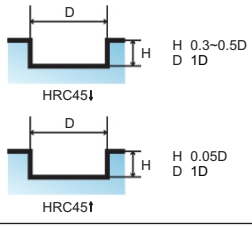
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLNM 0102 H04	1	0.2	3	75	4	4
4TRLNM 0155 H04	1.5	0.5	4	75	4	4
4TRLNM 0205 H04	2	0.5	6	75	4	4
4TRLNM 0255 H04	2.5	0.5	8	75	4	4
4TRLNM 0305 H03	3	0.5	6	75	3	4
4TRLNM 0305 H04	3	0.5	8	75	4	4
4TRLNM 0310 H04	3	1	8	75	4	4
4TRLNM 0405 075	4	0.5	11	75	4	4
4TRLNM 0405 100	4	0.5	11	100	6	4
4TRLNM 0410 075	4	1	11	75	4	4
4TRLNM 0410 100	4	1	11	100	6	4
4TRLNM 0505 075	5	0.5	13	75	6	4
4TRLNM 0505 100	5	0.5	13	100	6	4
4TRLNM 0510 075	5	1	13	75	6	4
4TRLNM 0510 100	5	1	13	100	6	4
4TRLNM 0605 075	6	0.5	12	75	6	4
4TRLNM 0605 100	6	0.5	12	100	6	4
4TRLNM 0610 075	6	1	12	75	6	4
4TRLNM 0610 100	6	1	12	100	6	4
4TRLNM 0805 075	8	0.5	16	75	8	4
4TRLNM 0805 100	8	0.5	16	100	8	4
4TRLNM 0810 075	8	1	16	75	8	4
4TRLNM 0810 100	8	1	16	100	8	4
4TRLNM 1005 100	10	0.5	20	100	10	4
4TRLNM 1005 150	10	0.5	20	150	10	4
4TRLNM 1010 100	10	1	20	100	10	4
4TRLNM 1010 150	10	1	20	150	10	4
4TRLNM 1020 100	10	2	20	100	10	4
4TRLNM 1020 150	10	2	20	150	10	4
4TRLNM 1030 100	10	3	20	100	10	4
4TRLNM 1030 150	10	3	20	150	10	4
4TRLNM 1205 100	12	0.5	24	100	12	4
4TRLNM 1205 150	12	0.5	24	150	12	4
4TRLNM 1210 100	12	1	24	100	12	4
4TRLNM 1210 150	12	1	24	150	12	4
4TRLNM 1220 100	12	2	24	100	12	4
4TRLNM 1220 150	12	2	24	150	12	4
4TRLNM 1230 100	12	3	24	100	12	4
4TRLNM 1230 150	12	3	24	150	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

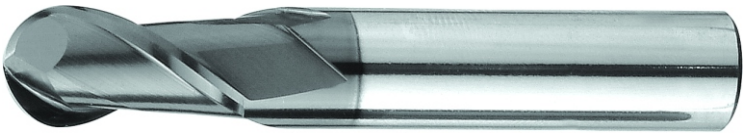
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	9.900	245	6.500	150	4.400	65
3	7.600	270	4.800	180	2.900	80
4	6.500	490	4.000	300	2.500	100
5	5.500	510	3.200	320	2.000	110
6	4.800	560	2.900	330	1.800	140
8	3.700	620	2.200	330	1.500	160
10	2.900	530	1.700	260	1.100	140
12	2.400	450	1.400	220	1.000	125
16	1.800	320	1.100	160	700	90

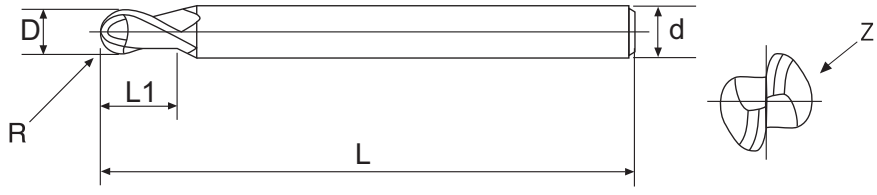
Profundidade de Corte



2ENT

FRESA TOPO ESFÉRICO 2 CORTES





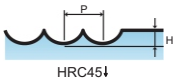
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ENT 0022 H04	0.2	0.1	0.4	50	4	2
2ENT 0032 H04	0.3	0.15	0.6	50	4	2
2ENT 0042 H04	0.4	0.20	0.8	50	4	2
2ENT 0052 H04	0.5	0.25	1	50	4	2
2ENT 0062 H04	0.6	0.3	1.2	50	4	2
2ENT 0072 H04	0.7	0.35	1.4	50	4	2
2ENT 0082 H04	0.8	0.4	1.6	50	4	2
2ENT 0092 H04	0.9	0.45	1.8	50	4	2
2ENT 0102 H04	1	0.5	2	50	4	2
2ENT 0102 H06	1	0.5	2	50	6	2
2ENT 0152 H04	1.5	0.75	3	50	4	2
2ENT 0152 H06	1.5	0.75	3	50	6	2
2ENT 0202 H04	2	1	4	50	4	2
2ENT 0202 H06	2	1	4	50	6	2
2ENT 0252 H04	2.5	1.25	5	50	4	2
2ENT 0252 H06	2.5	1.25	5	50	6	2
2ENT 0302 H03	3	1.5	6	50	3	2
2ENT 0302 H04	3	1.5	6	50	4	2
2ENT 0302 H06	3	1.5	6	50	6	2
2ENT 0402 H04	4	2	8	50	4	2
2ENT 0402 H06	4	2	8	50	6	2
2ENT 0502 H06	5	2.5	10	50	6	2
2ENT 0602 H06	6	3	12	50	6	2
2ENT 0802 H08	8	4	16	60	8	2
2ENT 1002 H10	10	5	20	75	10	2
2ENT 1202 H12	12	6	24	75	12	2
2ENT 1602 H16	16	8	32	100	16	2
2ENT 2002 H20	20	10	32	100	20	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

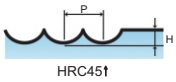
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.1	32.000	500-600	32.000	400-500	25.000	300-400
0.15	32.000	500-600	32.000	400-500	25.000	300-400
0.2	32.000	500-600	32.000	400-500	25.000	300-400
0.25	32.000	600-700	32.000	500-600	25.000	400-500
0.3	32.000	600-700	32.000	500-600	25.000	400-500
0.35	32.000	700-800	32.000	600-700	25.000	500-600
0.4	32.000	900-1.000	32.000	800-900	25.000	600-700
0.45	32.000	1.000-1.100	32.000	900-1.000	25.000	600-700
0.5	45.000	2.000	45.000	1.800	28.000	1.000
0.5	20.000	700	15.000	2.000	10.000	1.500
0.75	18.500	800	14.500	680	12.000	5.000
1	23.000	2.000	22.000	1.800	16.000	900
1	18.000	830	14.000	740	11.000	640
1.25	17.000	1.060	12.800	950	9.900	640
1.5	16.000	2.000	15.000	1.800	11.000	900
1.5	15.360	1.400	11.500	1.020	9.900	640
2	15.000	2.400	14.000	2.000	10.000	1.300
2	14.700	2.050	10.800	960	8.900	870
3	13.000	3.200	11.000	2.000	9.000	1.500
4	9.000	2.300	8.000	1.500	6.200	1.400
5	7.500	1.900	6.500	1.200	5.200	900
6	6.300	1.600	5.500	1.000	4.300	800
8	4.500	1.200	3.800	800	3.300	700

Profundidade de Corte



HRC45↓

H≤0.04R
P≤0.06R

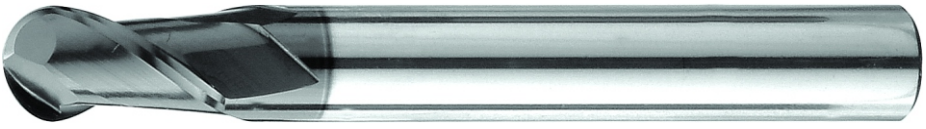


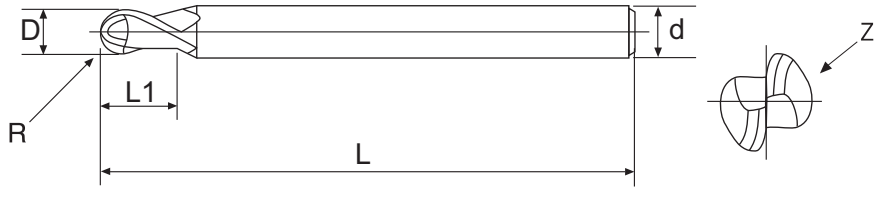
HRC45↑

H≤0.02R
P≤0.03R
R = Raio

2ELNT

FRESA TOPO ESFÉRICO 2 CORTES LONGA





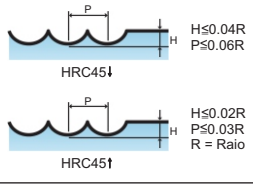
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNT 0102 H04	1	0.5	2	75	4	2
2ELNT 0102 H06	1	0.5	2	75	6	2
2ELNT 0152 H04	1.5	0.75	3	75	4	2
2ELNT 0152 H06	1.5	0.75	3	75	6	2
2ELNT 0202 H04	2	1	4	75	4	2
2ELNT 0202 075	2	1	4	75	6	2
2ELNT 0202 100	2	1	4	100	6	2
2ELNT 0302 H04	3	1.5	6	75	4	2
2ELNT 0302 075	3	1.5	6	75	6	2
2ELNT 0302 100	3	1.5	6	100	6	2
2ELNT 0402 H04	4	2	8	75	4	2
2ELNT 0402 075	4	2	8	75	6	2
2ELNT 0402 100	4	2	8	100	6	2
2ELNT 0502 H06	5	2.5	10	75	6	2
2ELNT 0602 H06	6	3	12	75	6	2
2ELNT 0602 100	6	3	12	100	6	2
2ELNT 0602 150	6	3	12	150	6	2
2ELNT 0802 H08	8	4	16	75	6	2
2ELNT 0802 100	8	4	16	100	8	2
2ELNT 0802 150	8	4	16	150	8	2
2ELNT 1002 100	10	5	20	100	10	2
2ELNT 1002 150	10	5	20	150	10	2
2ELNT 1202 100	12	6	24	100	12	2
2ELNT 1202 150	12	6	24	150	12	2
2ELNT 1602 H16	16	8	32	150	16	2
2ELNT 2002 H20	20	10	40	150	20	2
2ELNT 2502 H25	25	12.5	40	150	25	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

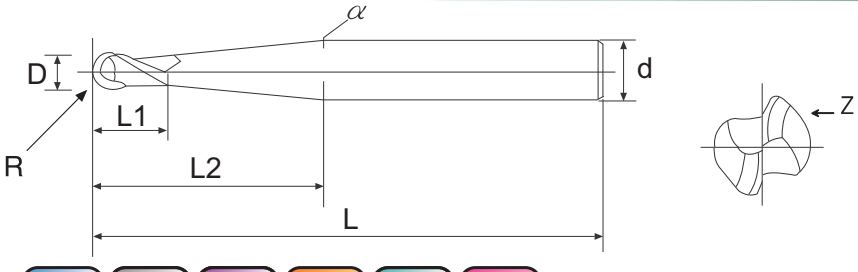
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	23.000	2.000	22.000	1.800	16.000	900
1.5	16.000	2.000	15.000	1.800	11.000	900
2	15.000	2.400	14.000	2.000	10.000	1.300
3	13.000	3.200	11.000	2.000	9.000	1.500
4	9.000	2.300	8.000	1.500	6.200	1.400
5	7.500	1.900	6.500	1.200	5.200	900
6	6.300	1.600	5.500	1.000	4.300	800
8	4.500	1.200	3.800	800	3.300	700

Profundidade de Corte



2EPNNT

FRESA TOPO ESFÉRICO 2 CORTES ÂNGULO E HASTE REFORÇADA



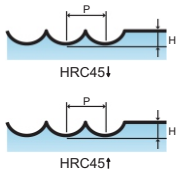
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Ângulo α	Cortes Z
2EPNNT 0103 H06	1	0.5	2	32	75	6	3º	2
2EPNNT 0105 H06	1	0.5	2	32	75	6	5º	2
2EPNNT 0203 H06	2	1	4	27	100	6	3º	2
2EPNNT 0205 H06	2	1	4	27	100	6	5º	2
2EPNNT 0315 H06	3	1.5	6	35	100	6	1.5º	2
2EPNNT 0303 H06	3	1.5	6	35	100	6	3º	2
2EPNNT 0415 H06	4	2	8	28	100	6	1.5º	2
2EPNNT 0403 H06	4	2	8	28	100	6	3º	2
2EPNNT 0603 100	6	3	12	32	100	8	3º	2
2EPNNT 0603 150	6	3	12	35	100	10	3º	2
2EPNNT 0605 100	6	3	12	32	150	8	5º	2
2EPNNT 0605 150	6	3	12	35	150	10	5º	2
2EPNNT 0803 100	8	4	16	36	100	10	3º	2
2EPNNT 0803 150	8	4	16	39	100	12	3º	2
2EPNNT 0805 100	8	4	16	36	150	10	5º	2
2EPNNT 0805 150	8	4	16	39	150	12	5º	2
2EPNNT 1003 100	10	5	20	40	100	12	3º	2
2EPNNT 1003 150	10	5	20	40	150	12	3º	2
2EPNNT 1205 H16	12	6	24	47	100	16	5º	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

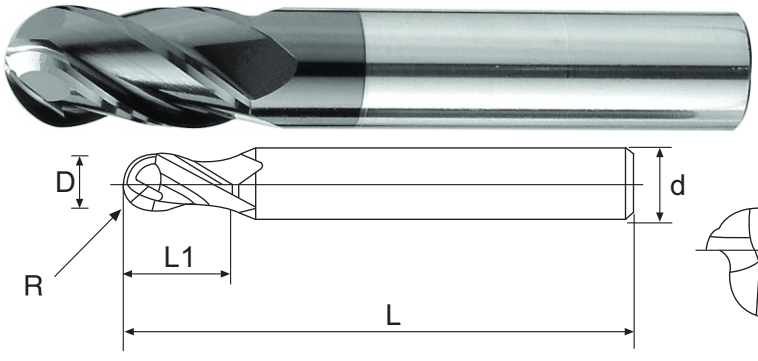
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	23.000	2.000	22.000	1.800	16.000	900
1.5	16.000	2.000	15.000	1.800	11.000	900
2	15.000	2.400	14.000	2.000	10.000	1.300
3	13.000	3.200	11.000	2.000	9.000	1.500

Profundidade de Corte



4ENT

FRESA TOPO ESFÉRICO 4 CORTES



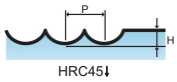
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4ENT 0104 H04	1	0.5	2	50	4	4
4ENT 0154 H04	1.5	0.75	3	50	4	4
4ENT 0204 H04	2	1	4	50	4	4
4ENT 0304 H03	3	1.5	6	50	3	4
4ENT 0304 H04	3	1.5	6	50	4	4
4ENT 0404 H04	4	2	8	50	4	4
4ENT 0504 H04	5	2.5	10	50	6	4
4ENT 0604 H04	6	3	12	50	6	4
4ENT 0804 H04	8	4	16	60	8	4
4ENT 1004 H06	10	5	20	75	10	4
4ENT 1204 H04	12	6	24	75	12	4
4ENT 1604 H06	16	8	32	100	16	4
4ENT 2004 H04	20	10	32	100	20	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

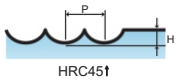
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	15.000	3.000	14.000	2.600	10.000	1.700
3	13.000	4.000	11.000	2.600	9.000	1.900
4	9.000	2.900	8.000	1.900	6.200	1.800
5	7.500	2.400	6.500	1.500	5.200	1.100
6	6.300	2.100	5.500	1.300	4.300	1.000
8	4.500	1.500	3.800	1.000	3.300	900
10	3.700	1.200	3.200	750	2.600	600

Profundidade de Corte



H≤0.04R
P≤0.06R

HRC45↓

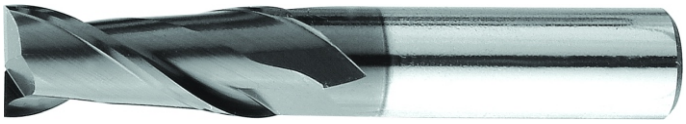


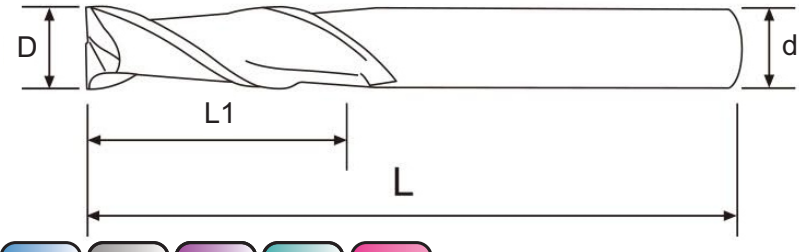
H≤0.02R
P≤0.03R
R = Raio

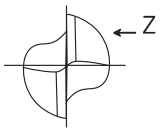
HRC45↑

2RNT

FRESA TOPO RETO 2 CORTES







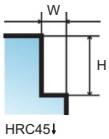
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RNT 0022 H04	0.2	0.4	50	4	2
2RNT 0032 H04	0.3	0.6	50	4	2
2RNT 0042 H04	0.4	0.8	50	4	2
2RNT 0052 H04	0.5	1	50	4	2
2RNT 0062 H04	0.6	1.2	50	4	2
2RNT 0072 H04	0.7	1.4	50	4	2
2RNT 0082 H04	0.8	1.6	50	4	2
2RNT 0092 H04	0.9	1.8	50	4	2
2RNT 0102 H04	1	3	50	4	2
2RNT 0152 H04	1.5	4	50	4	2
2RNT 0202 H04	2	6	50	4	2
2RNT 0252 H04	2.5	7	50	4	2
2RNT 0302 H03	3	8	50	3	2
2RNT 0302 H04	3	8	50	4	2
2RNT 0402 H04	4	11	50	4	2
2RNT 0502 H06	5	13	50	6	2
2RNT 0602 H06	6	15	50	6	2
2RNT 0802 H08	8	20	60	8	2
2RNT 1002 H10	10	30	75	10	2
2RNT 1202 H12	12	30	75	12	2
2RNT 1402 H16	14	45	100	16	2
2RNT 1602 H16	16	45	100	16	2
2RNT 1802 H20	18	45	100	20	2
2RNT 2002 H20	20	50	100	20	2
2RNT 2502 H25	25	50	100	25	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

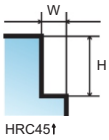
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
0.2	40.000	100-300	30.000	80-250	15.000	50-150
0.3	40.000	100-350	30.000	80-300	15.000	50-200
0.4	40.000	100-400	25.000	80-350	10.000	50-250
0.5	40.000	100-500	25.000	80-400	10.000	50-250
0.6	38.000	100-600	25.000	80-500	8.000	50-250
0.7	36.000	100-700	20.000	80-600	8000	50-250
0.8	34.000	100-800	20.000	80-700	8.000	50-250
0.9	32.000	100-1.000	20.000	80-800	8.000	50-250
1	20.000	80	15.000	45	11.000	30
1.5	13.600	135	10.000	60	9.000	40
2	9.600	150	8.500	50	6.000	45
3	6.500	200	5.800	75	4.000	60
4	5.500	250	4.000	80	3.200	60
5	4.500	300	3.000	80	2.500	70
6	4.000	300	2.500	80	2.200	70
8	3.500	350	2.200	90	1.700	70
10	3.000	400	2.000	90	1.500	70
12	2.500	400	1.500	100	1.000	70
16	200	400	1.200	100	800	70

Profundidade de Corte



H≤0.15D
W≤0.1D

HRC45↓

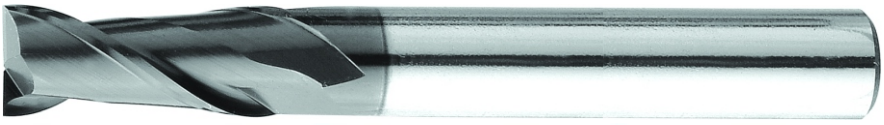


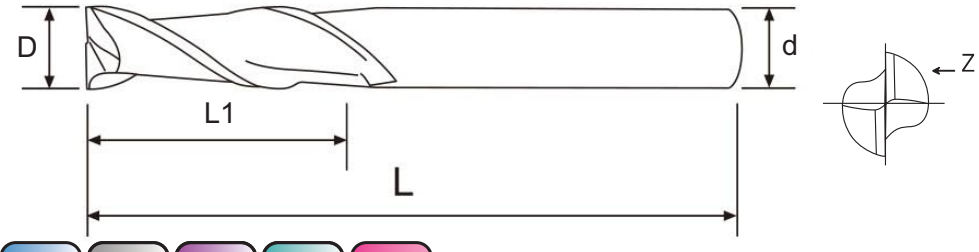
H≤1D
W≤0.05D

HRC45↑

2RLNT

FRESA TOPO RETO 2 CORTES LONGA





2 | 400 Nano | ALTIN | HRC ▶60 | 35° Ângulo da Hélice

Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNT 0102 H04	1	3	75	4	2
2RLNT 0202 006	2	6	75	4	2
2RLNT 0202 015	2	15	75	4	2
2RLNT 0302 075	3	8	75	4	2
2RLNT 0302 100	3	8	100	4	2
2RLNT 0302 H04	3	15	75	4	2
2RLNT 0302 H06	3	8	100	6	2
2RLNT 0402 075	4	10	75	4	2
2RLNT 0402 100	4	10	100	4	2
2RLNT 0402 H04	4	20	75	4	2
2RLNT 0402 H06	4	10	100	6	2
2RLNT 0502 H06	5	13	75	6	2
2RLNT 0502 013	5	13	100	6	2
2RLNT 0502 025	5	25	75	6	2
2RLNT 0602 H06	6	15	75	6	2
2RLNT 0602 100	6	15	100	6	2
2RLNT 0602 150	6	15	150	6	2
2RLNT 0602 025	6	25	75	6	2
2RLNT 0602 030	6	30	100	6	2
2RLNT 0802 H06	8	20	75	8	2
2RLNT 0802 100	8	20	100	8	2
2RLNT 0802 150	8	20	150	8	2
2RLNT 0802 025	8	25	75	8	2
2RLNT 0802 035	8	35	100	8	2
2RLNT 1002 H10	10	25	100	10	2
2RLNT 1002 025	10	25	150	10	2
2RLNT 1002 100	10	40	100	10	2
2RLNT 1002 150	10	40	150	10	2
2RLNT 1202 H12	12	30	100	12	2
2RLNT 1202 030	12	30	150	12	2
2RLNT 1202 100	12	45	100	12	2
2RLNT 1202 150	12	45	150	12	2
2RLNT 1402 H14	14	45	150	16	2
2RLNT 1402 H16	14	60	150	16	2
2RLNT 1602 045	16	45	150	16	2
2RLNT 1602 075	16	75	150	16	2
2RLNT 1802 H18	18	45	150	18	2
2RLNT 1802 H20	18	75	150	20	2
2RLNT 2002 H20	20	75	150	20	2

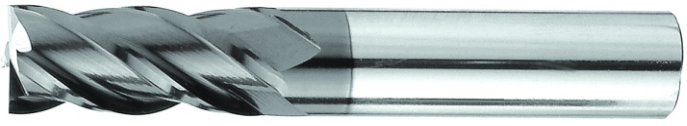
▪ Parâmetros de Corte

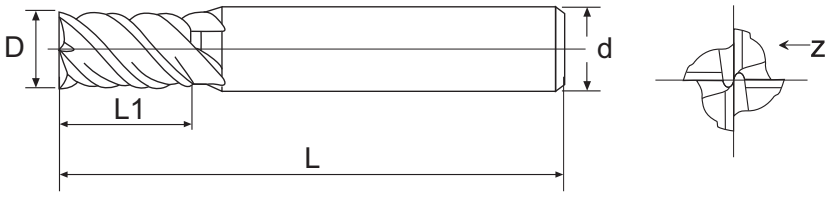
▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	20.000	80	15.000	45	11.000	30
1.5	13.600	135	10.000	60	9.000	40
2	9.600	150	8.500	50	6.000	45
3	6.500	200	5.800	75	4.000	60
4	5.500	250	4.000	80	3.200	60
5	4.500	300	3.000	80	2.500	70
6	4.000	300	2.500	80	2.200	70
8	3.500	350	2.200	90	1.700	70
10	3.000	400	2.000	90	1.500	70
12	2.500	400	1.500	100	1.000	70
16	2.000	400	1.200	100	800	70
Profundidade de Corte	D H HRC45↓				D<3 H=0.15D D>3 H=0.25D	
	D H HRC45↑				D<3 H=0.05D D>3 H=0.1D	

4RNT

FRESA TOPO RETO 4 CORTES





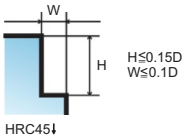
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RNT 0104 H04	1	3	50	4	4
4RNT 0154 H04	1.5	4	50	4	4
4RNT 0204 H04	2	6	50	4	4
4RNT 0254 H04	2.5	7	50	4	4
4RNT 0304 H03	3	8	50	3	4
4RNT 0304 H04	3	8	50	4	4
4RNT 0404 H04	4	11	50	4	4
4RNT 0504 H06	5	13	50	6	4
4RNT 0604 H06	6	15	50	6	4
4RNT 0804 H08	8	20	60	8	4
4RNT 1004 H10	10	30	75	10	4
4RNT 1204 H12	12	30	75	12	4
4RNT 1404 H14	14	35	100	16	4
4RNT 1604 H16	16	40	100	16	4
4RNT 1804 H18	18	40	100	20	4
4RNT 2004 H20	20	45	100	20	4
4RNT 2504 H25	25	45	100	25	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

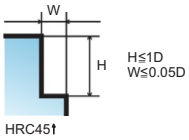
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	22.000	400	18.000	200	9.000	140
1.5	12.000	500	11.000	280	5.200	150
2	10.000	550	10.000	280	4.600	170
3	9.000	600	5.500	310	3.500	220
4	6.000	600	5.000	400	2.200	220
5	4.800	750	4.000	400	1.700	240
6	4.500	800	3.800	420	1.600	300
8	3.500	820	2.800	420	1.000	300
10	3.000	820	1.800	420	900	300
12	2.000	820	1.600	350	800	300
16	1.500	650	1.000	300	500	150
20	1.200	600	900	300	400	150

Profundidade de Corte



H≤0.15D
W≤0.1D

HRC45↓

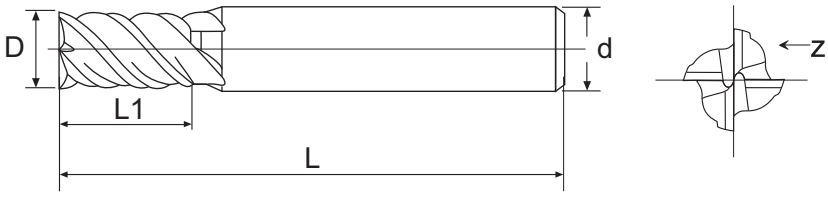


H≤1D
W≤0.05D

HRC45↑

4RLNT

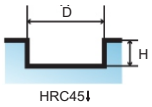
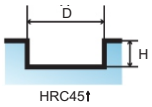
FRESA TOPO RETO 4 CORTES LONGA



Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLNT 0104 H04	1	3	75	4	4
4RLNT 0104 H06	1	3	100	6	4
4RLNT 0154 H04	1.5	4.5	75	4	4
4RLNT 0154 H06	1.5	4.5	100	6	4
4RLNT 0204 H04	2	6	75	4	4
4RLNT 0204 H06	2	6	100	6	4
4RLNT 0204 015	2	15	75	4	4
4RLNT 0304 H04	3	8	75	4	4
4RLNT 0304 H06	3	8	100	6	4
4RLNT 0304 015	3	15	75	6	4
4RLNT 0404 H04	4	10	75	4	4
4RLNT 0404 H06	4	10	100	6	4
4RLNT 0404 020	4	20	75	6	4
4RLNT 0504 H04	5	13	75	6	4
4RLNT 0504 H06	5	13	100	6	4
4RLNT 0504 025	5	25	75	6	4
4RLNT 0604 075	6	15	75	6	4
4RLNT 0604 100	6	15	100	6	4
4RLNT 0604 150	6	15	150	6	4
4RLNT 0604 025	6	25	75	6	4
4RLNT 0604 030	6	30	100	6	4
4RLNT 0804 075	8	20	75	8	4
4RLNT 0804 100	8	20	100	8	4
4RLNT 0804 150	8	20	150	8	4
4RLNT 0804 025	8	25	75	8	4
4RLNT 0804 035	8	35	100	8	4
4RLNT 1004 H10	10	25	100	10	4
4RLNT 1004 025	10	25	150	10	4
4RLNT 1004 045	10	45	100	10	4
4RLNT 1004 150	10	45	150	10	4
4RLNT 1204 H12	12	30	100	12	4
4RLNT 1204 030	12	30	150	12	4
4RLNT 1204 045	12	45	100	12	4
4RLNT 1204 150	12	45	150	12	4
4RLNT 1404 H16	14	75	150	16	4
4RLNT 1604 H16	16	40	150	16	4
4RLNT 1604 040	16	40	200	16	4
4RLNT 1604 075	16	75	150	16	4
4RLNT 1804 H20	18	75	150	20	4
4RLNT 2004 H20	20	40	150	20	4
4RLNT 2004 040	20	40	200	20	4
4RLNT 2004 075	20	75	150	20	4

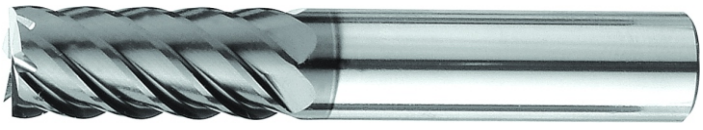
▪ Parâmetros de Corte

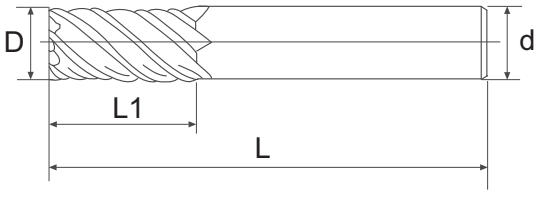
▪ RPM : rev./min ▪ FEED : mm/min

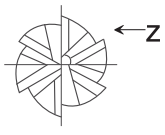
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Raio R (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
1	22.000	400	18.000	200	9.000	140
1.5	12.000	500	11.000	280	5.200	150
2	10.000	550	10.000	280	4.600	170
3	9.000	600	5.500	310	3.500	220
4	6.000	600	5.000	400	2.200	220
5	4.800	750	4.000	400	1.700	240
6	4.500	800	3.800	420	1.600	300
8	3.500	820	2.800	420	1.000	300
10	3.000	820	1.800	420	900	300
12	2.000	820	1.600	350	800	300
16	1.500	650	1.000	300	500	150
20	1.200	600	900	300	400	150
Profundidade de Corte	 HRC45↓				D<3 H=0.15D D>3 H=0.25D	
	 HRC45↑				D<3 H=0.05D D>3 H=0.1D	

6RNT

FRESA TOPO RETO 6 CORTES



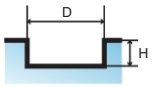
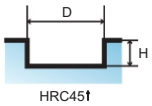




Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
6RNT 0606 H06	6	15	50	6	6
6RNT 0606 075	6	25	75	6	6
6RNT 0606 100	6	30	100	6	6
6RNT 0806 H08	8	20	60	8	6
6RNT 0806 075	8	35	75	8	6
6RNT 0806 100	8	35	100	8	6
6RNT 1006 H10	10	25	75	10	6
6RNT 1006 100	10	40	100	10	6
6RNT 1006 150	10	40	150	10	6
6RNT 1206 H12	12	30	75	12	6
6RNT 1206 100	12	45	100	12	6
6RNT 1206 150	12	45	150	12	6
6RNT 1606 H16	16	40	100	16	6
6RNT 1606 150	16	60	150	16	6
6RNT 1606 200	16	100	200	16	6
6RNT 2006 H20	20	40	100	20	6
6RNT 2006 150	20	80	150	20	6
6RNT 2006 200	20	100	200	20	6
6RNT 2506 H25	25	40	100	25	6

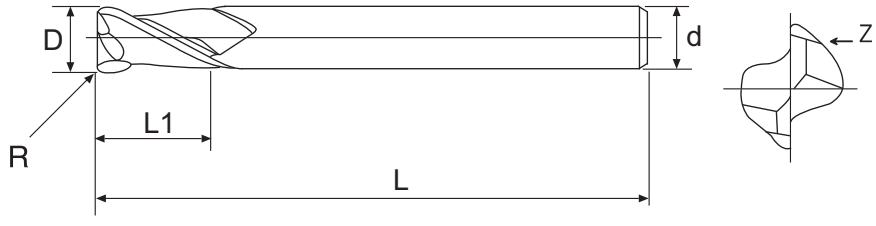
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
6	12.000	3.000	8.000	2.000	5.600	1.400
8	9.000	2.400	6.700	1.900	3.600	1.200
10	6.900	2.100	5.000	1.700	3.000	1.000
12	6.000	2.400	4.300	1.600	2.400	900
16	4.500	2.100	2.500	1.000	1.600	700
Profundidade de Corte	 HRC45↓ H≤0.1D D≤1  HRC45↑ H≤0.02D D≤1D					

2TRNT

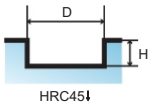
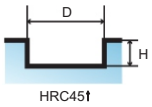
FRESA TOROIDAL 2 CORTES



Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRNT 0102 H04	1	0.2	2	50	4	2
2TRNT 0205 H04	2	0.5	4	50	4	2
2TRNT 0305 H04	3	0.5	6	50	4	2
2TRNT 0310 H04	3	1	6	50	4	2
2TRNT 0405 H04	4	0.5	8	50	4	2
2TRNT 0410 H04	4	1	8	50	4	2
2TRNT 0605 H06	6	0.5	12	50	6	2
2TRNT 0610 H06	6	1	12	50	6	2
2TRNT 0805 H08	8	0.5	16	60	8	2
2TRNT 0810 H08	8	1	16	60	8	2
2TRNT 1005 H10	10	0.5	20	75	10	2
2TRNT 1010 H10	10	1	20	75	10	2
2TRNT 1205 H12	12	0.5	24	75	12	2
2TRNT 1210 H12	12	1	24	75	12	2

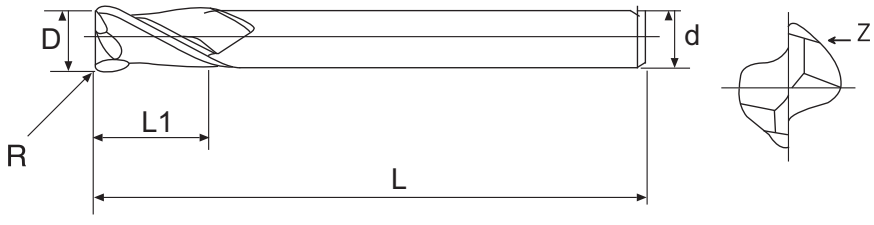
▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	7.600	180	4.800	120	2.900	50
4	6.500	260	4.000	160	2.500	55
5	5.500	270	3.200	160	2.000	60
6	4.800	300	2.900	170	1.800	70
8	3.700	325	2.200	170	1.500	85
10	2.900	280	1.700	140	1.100	70
12	2.400	230	1.400	120	1.000	65
16	1.800	170	1.100	90	700	45
Profundidade de Corte	 H≦0.3D HRC45↓  H≦0.15D HRC45↑					

2TRLNT

FRESA TOROIDAL 2 CORTES LONGA



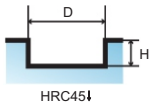
Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNT 0402 H04	4	0.2	8	75	4	2
2TRLNT 0405 H04	4	0.5	8	75	4	2
2TRLNT 0410 H04	4	1	8	75	4	2
2TRLNT 0602 H06	6	0.2	12	100	6	2
2TRLNT 0605 H06	6	0.5	12	100	6	2
2TRLNT 0610 H06	6	1	12	100	6	2
2TRLNT 0620 H06	6	2	12	100	6	2
2TRLNT 0805 H08	8	0.5	16	100	8	2
2TRLNT 0810 H08	8	1	16	100	8	2
2TRLNT 0820 H08	8	2	16	100	8	2
2TRLNT 1005 H10	10	0.5	20	100	10	2
2TRLNT 1010 H10	10	1	20	100	10	2
2TRLNT 1020 H10	10	2	20	100	10	2
2TRLNT 1030 H10	10	3	20	100	10	2
2TRLNT 1205 H12	12	0.5	24	100	12	2
2TRLNT 1210 H12	12	1	24	100	12	2
2TRLNT 1220 H12	12	2	20	100	12	2
2TRLNT 1230 H12	12	3	20	100	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

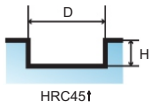
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	7.600	180	4.800	120	2.900	50
4	6.500	260	4.000	160	2.500	55
5	5.500	270	3.200	160	2.000	60
6	4.800	300	2.900	170	1.800	70
8	3.700	325	2.200	170	1.500	85
10	2.900	280	1.700	140	1.100	70
12	2.400	230	1.400	120	1.000	65
16	1.800	170	1.100	90	700	45

Profundidade de Corte



H≦0.3D

HRC45↓

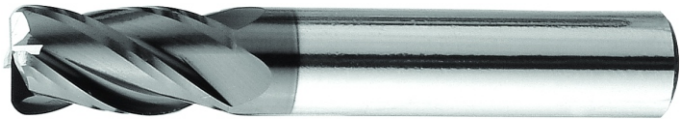


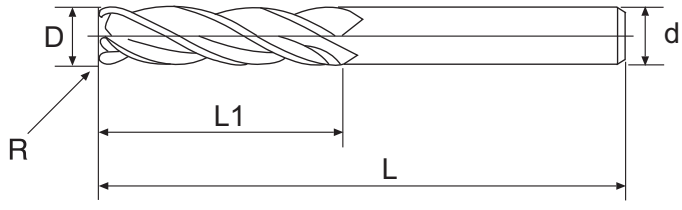
H≦0.15D

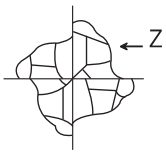
HRC45↑

4TRNT

FRESA TOROIDAL 4 CORTES



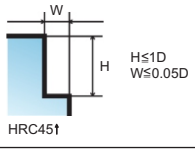




Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRNT 0102 H04	1	0.2	2	50	4	4
4TRNT 0205 H04	2	0.5	4	50	4	4
4TRNT 0255 H04	2.5	0.5	5	50	4	4
4TRNT 0305 H04	3	0.5	6	50	4	4
4TRNT 0310 H04	3	1	6	50	4	4
4TRNT 0405 H04	4	0.5	8	50	4	4
4TRNT 0410 H04	4	1	8	50	4	4
4TRNT 0505 H06	5	0.5	10	50	6	4
4TRNT 0510 H06	5	1	10	50	6	4
4TRNT 0605 H06	6	0.5	12	50	6	4
4TRNT 0610 H06	6	1	12	50	6	4
4TRNT 0805 H08	8	0.5	16	60	8	4
4TRNT 0810 H08	8	1	16	60	8	4
4TRNT 1005 H10	10	0.5	20	75	10	4
4TRNT 1010 H10	10	1	20	75	10	4
4TRNT 1205 H12	12	0.5	24	75	12	4
4TRNT 1210 H12	12	1	24	75	12	4

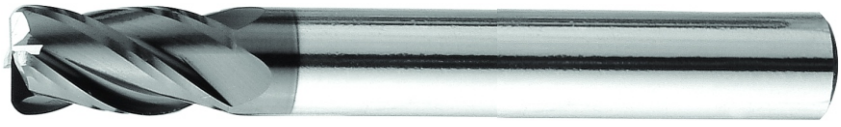
▪ Parâmetros de Corte

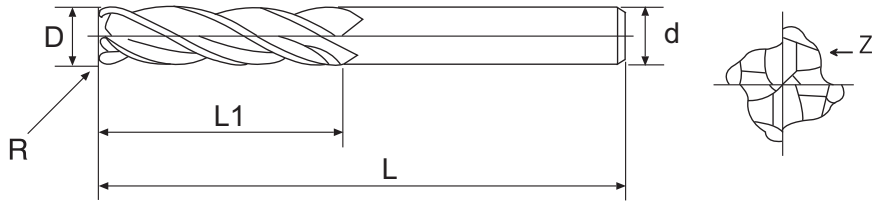
▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	26.000	1.600	16.500	1.000	7.500	300
3	19.000	1.800	12.000	1.200	5.400	380
4	16.000	3.200	10.000	1.900	4.800	480
5	14.000	3.300	8.000	2.000	3.800	500
6	12.000	3.600	7.200	2.200	3.500	650
8	9.600	4.000	5.600	2.200	2.700	750
10	7.000	3.400	4.400	1.700	2.100	650
12	6.000	2.800	3.600	1.400	1.800	600
16	4.500	2.000	2.800	1.000	1.400	450
Profundidade de Corte						

4TRLNT

FRESA TOROIDAL 4 CORTES LONGA





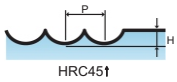
Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLNT 0305 H03	3	0.5	6	75	3	4
4TRLNT 0305 H04	3	0.5	6	75	4	4
4TRLNT 0405 H04	4	0.5	8	75	4	4
4TRLNT 0605 075	6	0.5	12	75	6	4
4TRLNT 0605 100	6	0.5	12	100	6	4
4TRLNT 0610 075	6	1	12	75	6	4
4TRLNT 0610 100	6	1	12	100	6	4
4TRLNT 0805 075	8	0.5	16	75	8	4
4TRLNT 0805 100	8	0.5	16	100	8	4
4TRLNT 0810 075	8	1	16	75	8	4
4TRLNT 0810 100	8	1	16	100	8	4
4TRLNT 1005 100	10	0.5	20	100	10	4
4TRLNT 1005 150	10	0.5	20	150	10	4
4TRLNT 1010 100	10	1	20	100	10	4
4TRLNT 1010 150	10	1	20	150	10	4
4TRLNT 1205 100	12	0.5	24	100	12	4
4TRLNT 1205 150	12	0.5	24	150	12	4
4TRLNT 1210 100	12	1	24	100	12	4
4TRLNT 1210 150	12	1	24	150	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

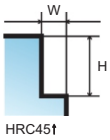
Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
2	26.000	1.600	16.500	1.000	7.500	300
3	19.000	1.800	12.000	1.200	5.400	380
4	16.000	3.200	10.000	1.900	4.800	480
5	14.000	3.300	8.000	2.000	3.800	500
6	12.000	3.600	7.200	2.200	3.500	650
8	9.600	4.000	5.600	2.200	2.700	750
10	7.000	3.400	4.400	1.700	2.100	650
12	6.000	2.800	3.600	1.400	1.800	600

Profundidade de Corte



H≤0.02R
P≤0.02R
R = Raio

HRC45↑

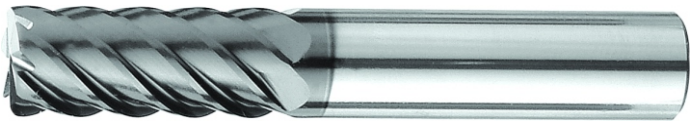


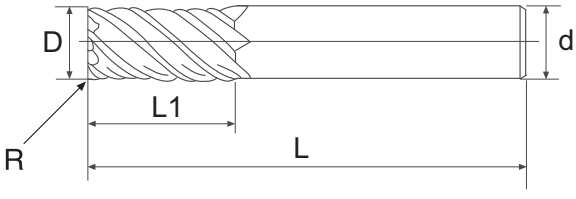
H≤1D
W≤0.02D

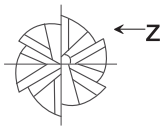
HRC45↑

6TRNT

FRESA TOROIDAL 6 CORTES







Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
6TRNT 0602 H06	6	0.2	12	50	6	6
6TRNT 0605 H06	6	0.5	12	50	6	6
6TRNT 0610 H06	6	1	12	50	6	6
6TRNT 0802 H08	8	0.2	16	60	8	6
6TRNT 0805 H08	8	0.5	16	60	8	6
6TRNT 0810 H08	8	1	16	60	8	6
6TRNT 1005 H10	10	0.5	20	75	10	6
6TRNT 1010 H10	10	1	20	75	10	6
6TRNT 1205 H12	12	0.5	24	75	12	6
6TRNT 1210 H12	12	1	24	75	12	6
6TRNT 1605 H16	16	0.5	30	100	16	6
6TRNT 1610 H16	16	1	30	100	16	6

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Material	Aço Carbono 1020, 1045,...		Aço Ferramenta P20, H13, 2711, 2738,...		Aço Temperado	
Diâmetro D (mm)	HRC ~ 30		HRC ~ 50		HRC ~ 60	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
6	15.000	4.000	9.500	2.500	6.800	1.800
8	11.000	3.000	8000	2.300	4.400	1.500
10	8.500	2.500	6.000	2.000	3.600	1.100
12	7.200	2.800	5.200	2.000	2.900	1.200
16	5.500	2.500	3.000	1.200	2.000	900

Profundidade de Corte

H≤1D
W≤0.02D

HRC30↑

H≤1D
W≤0.015D

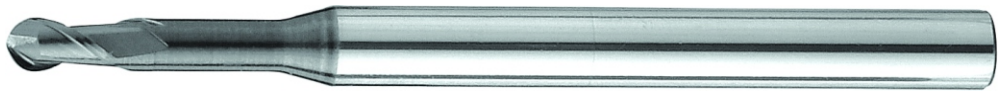
HRC50↑

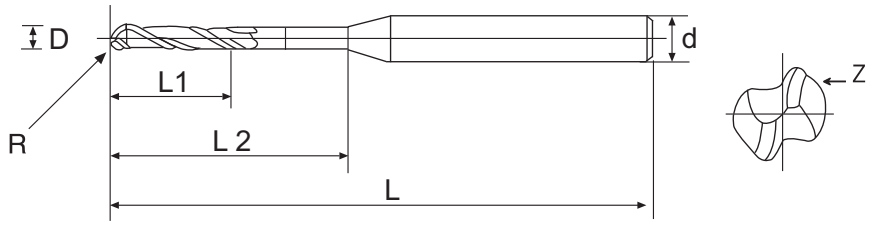
H≤1D
W≤0.01D

HRC60↑

2ELNNT

FRESA LONG NECK TOPO ESFÉRICO 2 CORTES





Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELNNT 0402 H04	0.4	0.2	0.8	2	50	4	2
2ELNNT 0404 H04	0.4	0.2	0.8	4	50	4	2
2ELNNT 0504 H04	0.5	0.25	1	4	50	4	2
2ELNNT 0506 H04	0.5	0.25	1	6	50	4	2
2ELNNT 0604 H04	0.6	0.3	1.2	4	50	4	2
2ELNNT 0606 H04	0.6	0.3	1.2	6	50	4	2
2ELNNT 0608 H04	0.6	0.3	1.2	8	50	4	2
2ELNNT 0804 H04	0.8	0.4	1.2	4	50	4	2
2ELNNT 0806 H04	0.8	0.4	1.2	6	50	4	2
2ELNNT 0808 H04	0.8	0.4	1.2	8	50	4	2
2ELNNT 0810 H04	0.8	0.4	1.2	10	50	4	2
2ELNNT 1004 H04	1	0.5	1.5	4	50	4	2
2ELNNT 1006 H04	1	0.5	1.5	6	50	4	2
2ELNNT 1008 H04	1	0.5	1.5	8	50	4	2
2ELNNT 1010 H04	1	0.5	1.5	10	50	4	2
2ELNNT 1012 H04	1	0.5	1.5	12	50	4	2
2ELNNT 1506 H04	1.5	0.75	3	6	50	4	2
2ELNNT 1508 H04	1.5	0.75	3	8	50	4	2
2ELNNT 1512 H04	1.5	0.75	3	12	50	4	2
2ELNNT 1516 H04	1.5	0.75	3	16	50	4	2
2ELNNT 1520 H04	1.5	0.75	3	20	50	4	2
2ELNNT 2006 H04	2	1	4	6	50	4	2
2ELNNT 2008 H04	2	1	4	8	50	4	2
2ELNNT 2012 H04	2	1	4	12	50	4	2
2ELNNT 2016 H04	2	1	4	16	50	4	2
2ELNNT 2020 H04	2	1	4	20	50	4	2
2ELNNT 3008 H04	3	1.5	4	8	50	4	2
2ELNNT 3012 H04	3	1.5	4	12	50	4	2
2ELNNT 3016 H04	3	1.5	4	16	50	4	2
2ELNNT 3020 H06	3	1.5	4	20	75	6	2
2ELNNT 3025 H06	3	1.5	4	25	75	6	2
2ELNNT 4010 H06	4	2	5	10	75	6	2
2ELNNT 4016 H06	4	2	5	16	75	6	2
2ELNNT 4020 H06	4	2	5	20	75	6	2
2ELNNT 4025 H06	4	2	5	25	75	6	2
2ELNNT 4030 H06	4	2	5	30	75	6	2

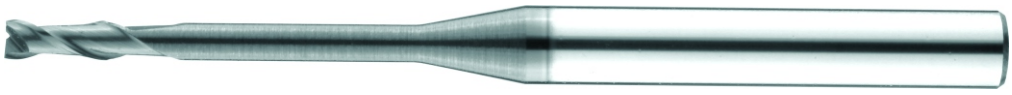
▪ Parâmetros de Corte

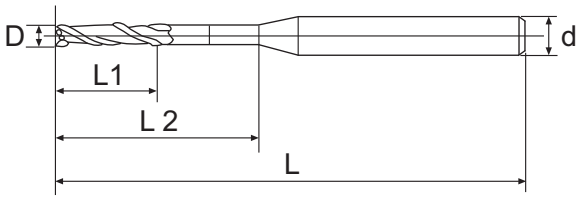
▪ RPM : rev./min ▪ FEED : mm/min

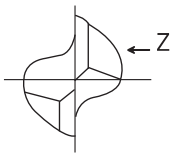
Material	LIGAS DE AÇO, AÇOS PARA FERRAMENTAS, AÇOS ENDURECIDOS S4SC, SCM, S58C, SKS, SCr, SNCM, SKD11, SKD61, NAK80			
RAIO R	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Profundidade de Corte
0.25	4	30.000 - 40.000	200-650	0.015
0.25	6	30.000 - 40.000	200-650	0.013
0.3	4	27.000 - 40.000	180-650	0.025
0.3	6	27.000 - 40.000	180-650	0.015
0.4	6	25.000 - 40.000	400-750	0.025
0.4	8	25.000 - 40.000	400-750	0.025
0.5	6	20.000 - 32.000	500-750	0.04
0.5	8	20.000 - 32.000	300-750	0.03
0.5	10	20.000 - 32.000	300-750	0.025
0.5	12	20.000 - 32.000	300-750	0.015
0.6	8	22.000 - 25.000	500-600	0.05
0.6	12	22.000 - 25.000	500-600	0.03
0.75	8	18.000 - 20.000	300-550	0.07
0.75	12	18.000 - 20.000	300-550	0.04
0.75	16	18.000 - 20.000	300-550	0.03
0.75	20	18.000 - 20.000	300-550	0.02
0.8	8	13.000 - 18.000	350-800	0.08
0.8	12	13.000 - 18.000	350-800	0.06
0.8	16	13.000 - 18.000	350-800	0.05
1	8	12.000 - 17.000	500-900	0.1
1	12	12.000 - 17.000	500-900	0.1
1	16	12.000 - 17.000	500-900	0.07
1	20	12.000 - 17.000	500-900	0.04
1.5	8	8.000 - 11.000	500-700	0.17
1.5	10	8.000 - 11.000	500-700	0.15
1.5	16	8.000 - 11.000	500-700	0.14
1.5	20	8.000 - 11.000	500-700	0.12
1.5	25	8.000 - 11.000	500-700	0.1
2	10	5.000 - 8.000	400-600	0.18
2	15	5.000 - 8.000	400-600	0.17
2	20	5.000 - 8.000	400-600	0.16
2	25	5.000 - 8.000	400-600	0.15
2	30	5.000 - 8.000	400-600	0.14
Profundidade de Corte	P H HRC45↓		R<1 P<0.1R R>1 P<0.2R R = Raio	

2RLNNT

FRESA LONG NECK TOPO RETO 2 CORTES



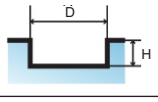




Código	Diâmetro D	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLNNT 0402 H04	0.4	0.8	2	50	4	2
2RLNNT 0404 H04	0.4	0.8	4	50	4	2
2RLNNT 0504 H04	0.5	1	4	50	4	2
2RLNNT 0506 H04	0.5	1	6	50	4	2
2RLNNT 0604 H04	0.6	1.2	4	50	4	2
2RLNNT 0606 H04	0.6	1.2	6	50	4	2
2RLNNT 0608 H04	0.6	1.2	8	50	4	2
2RLNNT 0804 H04	0.8	1.6	4	50	4	2
2RLNNT 0806 H04	0.8	1.6	6	50	4	2
2RLNNT 0808 H04	0.8	1.6	8	50	4	2
2RLNNT 1006 H04	1	3	6	50	4	2
2RLNNT 1008 H04	1	3	8	50	4	2
2RLNNT 1010 H04	1	3	10	50	4	2
2RLNNT 1012 H04	1	3	12	50	4	2
2RLNNT 1016 H04	1	3	16	50	4	2
2RLNNT 1506 H04	1.5	4	6	50	4	2
2RLNNT 1508 H04	1.5	4	8	50	4	2
2RLNNT 1510 H04	1.5	4	10	50	4	2
2RLNNT 1512 H04	1.5	4	12	50	4	2
2RLNNT 1516 H04	1.5	4	16	50	4	2
2RLNNT 2008 H04	2	6	8	50	4	2
2RLNNT 2010 H04	2	6	10	50	4	2
2RLNNT 2012 H04	2	6	12	50	4	2
2RLNNT 2014 H04	2	6	14	50	4	2
2RLNNT 2016 H04	2	6	16	50	4	2
2RLNNT 2020 H04	2	6	20	50	4	2
2RLNNT 3010 H04	3	6	10	50	4	2
2RLNNT 3012 H04	3	6	12	50	4	2
2RLNNT 3014 H04	3	6	14	50	4	2
2RLNNT 3016 H04	3	6	16	50	4	2
2RLNNT 3020 H04	3	6	20	75	4	2
2RLNNT 3025 H04	3	6	25	75	4	2
2RLNNT 4014 H06	4	10	14	75	6	2
2RLNNT 4016 H06	4	10	16	75	6	2
2RLNNT 4020 H06	4	10	20	75	6	2
2RLNNT 4025 H06	4	10	25	75	6	2
2RLNNT 4030 H06	4	10	30	75	6	2

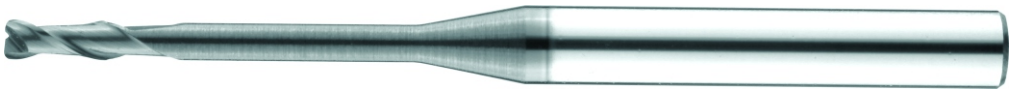
▪ Parâmetros de Corte

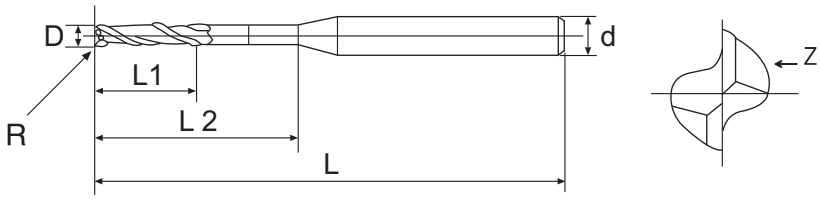
▪ RPM : rev./min ▪ FEED : mm/min

Material	LIGAS DE AÇO, AÇOS PARA FERRAMENTAS, AÇOS ENDURECIDOS S4SC, SCM, S58C, SKS, SCr, SNCM, SKD11, SKD61, NAK80			
Diâmetro D	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Profundidade de Corte
1	4	25.000	1.500	0.05
1	6	25.000	1.500	0.03
1	10	25.000	1.500	0.01
1.5	4	15.000	1.200	0.1
1.5	8	15.000	1.200	0.05
1.5	10	15.000	1.200	0.025
1.5	12	15.000	1.200	0.018
2	8	12.000	900	0.2
2	10	8.800	700	0.012
2	12	7.500	600	0.05
2	16	7.000	500	0.02
3	8	8.000	600	0.5
3	12	8.000	600	0.45
3	16	5.500	450	0.18
3	20	4.000	300	0.15
4	10	6.000	400	0.7
4	16	6.000	400	0.4
Profundidade de Corte				

2TRLNNT

FRESA LONG NECK TOROIDAL 2 CORTES

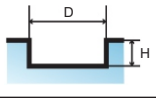




Código	Diâmetro D	Raio de Canto R	Compr. do Corte L1	Compr. Eficiente L2	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLNNT 1004 H04	1	0.2	2	4	50	4	2
2TRLNNT 1006 H04	1	0.2	2	6	50	4	2
2TRLNNT 1008 H04	1	0.2	2	8	50	4	2
2TRLNNT 1012 H04	1	0.2	2	12	50	4	2
2TRLNNT 1504 H04	1.5	0.2	2	4	50	4	2
2TRLNNT 1506 H04	1.5	0.2	2	6	50	4	2
2TRLNNT 1508 H04	1.5	0.2	2	8	50	4	2
2TRLNNT 1512 H04	1.5	0.2	2	12	50	4	2
2TRLNNT 2008 002	2	0.2	4	8	50	4	2
2TRLNNT 2008 005	2	0.5	4	8	50	4	2
2TRLNNT 2010 002	2	0.2	4	10	50	4	2
2TRLNNT 2010 005	2	0.5	4	10	50	4	2
2TRLNNT 2012 002	2	0.2	4	12	50	4	2
2TRLNNT 2012 005	2	0.5	4	12	50	4	2
2TRLNNT 2016 002	2	0.2	4	16	50	4	2
2TRLNNT 2016 005	2	0.5	4	16	50	4	2
2TRLNNT 3008 H04	3	0.5	6	8	50	4	2
2TRLNNT 3012 H04	3	0.5	6	12	50	4	2
2TRLNNT 3016 H06	3	0.5	6	16	50	6	2
2TRLNNT 3020 H06	3	0.5	6	20	50	6	2
2TRLNNT 0308 H04	3	0.2	6	8	50	4	2
2TRLNNT 0312 H04	3	0.2	6	12	50	4	2
2TRLNNT 0316 H04	3	0.2	6	16	50	4	2
2TRLNNT 0320 H04	3	0.2	6	20	50	4	2
2TRLNNT 4012 H06	4	0.5	8	12	50	6	2
2TRLNNT 4016 H06	4	0.5	8	16	75	6	2
2TRLNNT 4020 H06	4	0.5	8	20	75	6	2
2TRLNNT 4025 H06	4	0.5	8	25	75	6	2
2TRLNNT 4030 H06	4	0.5	8	30	75	6	2
2TRLNNT 0412 H06	4	0.2	8	12	50	6	2
2TRLNNT 0416 H06	4	0.2	8	16	75	6	2
2TRLNNT 0420 H06	4	0.2	8	20	75	6	2
2TRLNNT 0425 H06	4	0.2	8	25	75	6	2
2TRLNNT 0430 H06	4	0.2	8	30	75	6	2

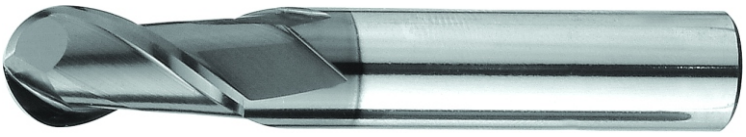
▪ Parâmetros de Corte

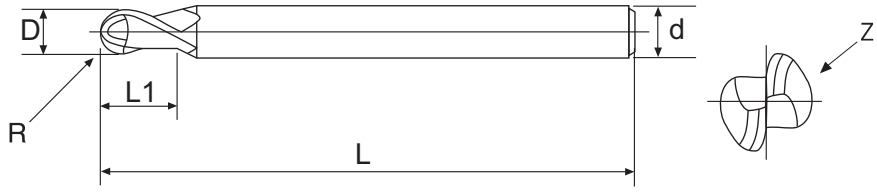
▪ RPM : rev./min ▪ FEED : mm/min

Material	LIGAS DE AÇO, AÇOS PARA FERRAMENTAS, AÇOS ENDURECIDOS S4SC, SCM, S58C, SKS, SCr, SNCM, SKD11, SKD61, NAK80			
RAIO R	Compr. Eficiente L2	Rotação (RPM)	Avanço (mm/min)	Profundidade de Corte
1	4	30.000	2.200	0.15
1	6	30.000	2.200	0.12
1	8	30.000	2.200	0.12
1	10	30.000	2.200	0.12
1.5	4	25.000	1.800	0.2
1.5	6	25.000	1.800	0.18
1.5	8	25.000	1.800	0.15
1.5	10	25.000	1.800	0.15
1.5	12	25.000	1.800	0.15
2	8	20.000	1.500	0.3
2	10	20.000	1.500	0.3
2	12	20.000	1.500	0.25
2	16	20.000	1.500	0.25
3	8	12.000	900	0.4
3	12	12.000	900	0.4
3	16	12.000	900	0.3
3	20	12.000	900	0.3
4	10	9.000	850	0.5
4	16	9.000	850	0.4
Profundidade de Corte				

2EECO

FRESA TOPO ESFÉRICO 2 CORTES





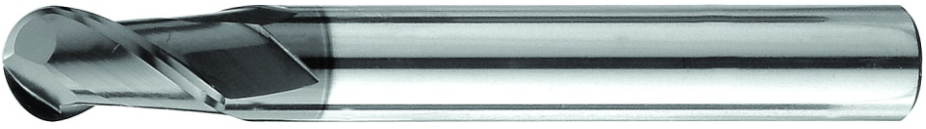
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2EECO 0102 H04	1	0.5	2	50	4	2
2EECO 0102 H06	1	0.5	2	50	6	2
2EECO 0152 H04	1.5	0.75	3	50	4	2
2EECO 0152 H06	1.5	0.75	3	50	6	2
2EECO 0202 H04	2	1	4	50	4	2
2EECO 0202 H06	2	1	4	50	6	2
2EECO 0252 H04	2.5	1.25	5	50	4	2
2EECO 0252 H06	2.5	1.25	5	50	6	2
2EECO 0302 H04	3	1.5	6	50	4	2
2EECO 0302 H06	3	1.5	6	50	6	2
2EECO 0352 H04	3.5	1.75	7	50	4	2
2EECO 0352 H06	3.5	1.75	7	50	6	2
2EECO 0402 H04	4	2	8	50	4	2
2EECO 0402 H06	4	2	8	50	6	2
2EECO 0452 H06	4.5	2.25	9	50	6	2
2EECO 0502 H04	5	2.5	10	50	6	2
2EECO 0552 H06	5.5	2.75	11	50	6	2
2EECO 0602 H06	6	3	12	50	6	2
2EECO 0652 H08	6.5	3.25	13	60	8	2
2EECO 0352 H08	7	3.5	14	60	8	2
2EECO 0372 H08	7.5	3.75	15	60	8	2
2EECO 0402 H08	8	4	16	60	8	2
2EECO 0452 H10	9	4.5	18	75	10	2
2EECO 0502 H10	10	5	20	75	10	2
2EECO 0602 H12	12	6	24	75	12	2
2EECO 0702 H14	14	7	30	100	14	2
2EECO 0802 H16	16	8	30	100	16	2
2EECO 0902 H18	18	9	30	100	18	2
2EECO 1002 H20	20	10	30	100	20	2
2EECO 1252 H25	25	12.5	30	100	25	2

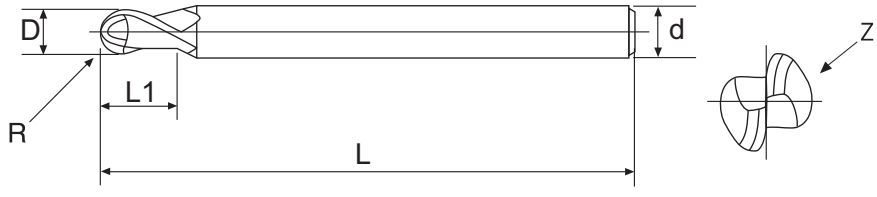
▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
R0.5	40.000	960	32.000	385
R1	24.000	1.080	16.000	480
R1.5	15.500	1.150	10.600	545
R2	11.500	1.150	8.000	665
R2.5	9.500	1.270	6.400	665
R3	8.000	1.270	5.300	700
R4	6.000	1.575	4.000	850
R5	4.800	1.455	3.200	785
R6	4.000	1.330	1.650	740
R8	3.000	1.270	2.000	725
R10	2.400	1.150	1.600	675
Profundidade de Corte	ae=0.2R ap=0.1R			

2ELECO

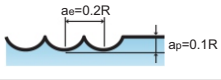
FRESA TOPO ESFÉRICO 2 CORTES LONGA





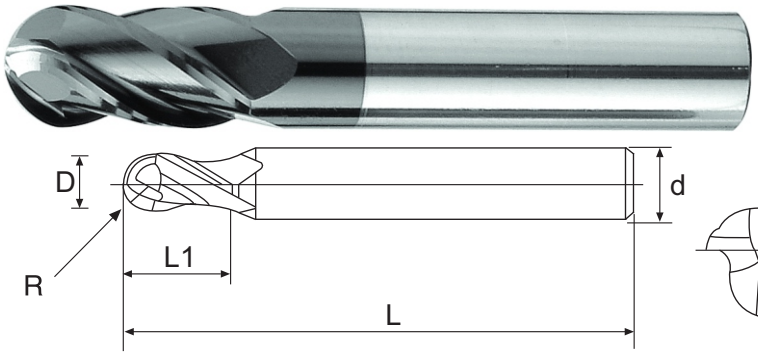
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2ELECO 0102 H04	1	0.5	2	75	4	2
2ELECO 0102 H06	1	0.5	2	100	6	2
2ELECO 0152 H04	1.5	0.75	3	75	4	2
2ELECO 0152 H06	1.5	0.75	3	100	6	2
2ELECO 0202 H04	2	1	4	75	4	2
2ELECO 0202 H06	2	1	4	100	6	2
2ELECO 0252 H04	2.5	1.25	5	75	4	2
2ELECO 0252 H06	2.5	1.25	5	100	6	2
2ELECO 0302 H04	3	1.5	6	75	4	2
2ELECO 0302 H06	3	1.5	6	100	6	2
2ELECO 0352 H04	3.5	1.75	7	75	4	2
2ELECO 0352 H06	3.5	1.75	7	100	6	2
2ELECO 0402 H04	4	2	8	75	4	2
2ELECO 0402 H06	4	2	8	100	6	2
2ELECO 0452 075	4.5	2.25	9	75	6	2
2ELECO 0452 100	4.5	2.25	9	100	6	2
2ELECO 0502 075	5	2.5	10	75	6	2
2ELECO 0502 100	5	2.5	10	100	6	2
2ELECO 0552 075	5.5	2.75	11	75	6	2
2ELECO 0552 100	5.5	2.75	11	100	6	2
2ELECO 0602 075	6	3	12	75	6	2
2ELECO 0602 100	6	3	12	100	6	2
2ELECO 0602 150	6	3	12	150	6	2
2ELECO 0802 075	8	4	16	75	8	2
2ELECO 0802 100	8	4	16	100	8	2
2ELECO 0802 105	8	4	16	150	8	2
2ELECO 1002 100	10	5	20	100	10	2
2ELECO 1002 150	10	5	20	150	10	2
2ELECO 1002 200	10	5	20	200	10	2
2ELECO 1202 100	12	6	24	100	12	2
2ELECO 1202 150	12	6	24	150	12	2
2ELECO 1202 200	12	6	24	200	12	2
2ELECO 1402 150	14	7	30	150	14	2
2ELECO 1402 200	14	7	30	200	14	2
2ELECO 1602 150	16	8	30	150	16	2
2ELECO 1602 200	16	8	30	200	16	2
2ELECO 2002 150	20	10	30	150	20	2
2ELECO 2002 200	20	10	30	200	20	2

▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
R0.5	40.000	960	32.000	385
R1	24.000	1.080	16.000	480
R1.5	15.500	1.150	10.600	545
R2	11.500	1.150	8.000	665
R2.5	9.500	1.270	6.400	665
R3	8.000	1.270	5.300	700
R4	6.000	1.575	4.000	850
R5	4.800	1.455	3.200	785
R6	4.000	1.330	1.650	740
R8	3.000	1.270	2.000	725
R10	2.400	1.150	1.600	675
Profundidade de Corte				

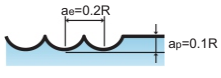
4EECO

FRESA TOPO ESFÉRICO 4 CORTES



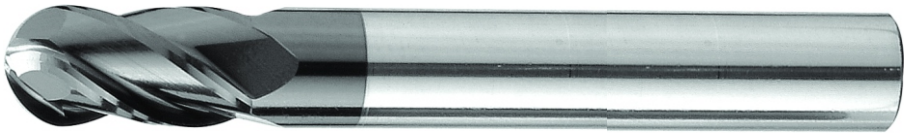
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4EECO 0104 H04	1	0.5	2	50	4	4
4EECO 0154 H04	1.5	0.75	3	50	4	4
4EECO 0204 H04	2	1	4	50	4	4
4EECO 0254 H04	2.5	1.25	5	50	4	4
4EECO 0304 H04	3	1.5	6	50	4	4
4EECO 0354 H06	3.5	1.75	7	50	4	4
4EECO 0404 H04	4	2	8	50	4	4
4EECO 0454 H06	4.5	2.25	9	50	6	4
4EECO 0504 H06	5	2.5	10	50	6	4
4EECO 0554 H06	5.5	2.75	11	50	6	4
4EECO 0604 H08	6	3	12	60	8	4
4EECO 0654 H08	6.5	3.25	13	60	8	4
4EECO 0704 H08	7	3.5	14	60	8	4
4EECO 0754 H08	7.5	3.75	15	60	8	4
4EECO 0804 H08	8	4	16	60	8	4
4EECO 0904 H10	9	4.5	18	75	10	4
4EECO 1004 H10	10	5	20	75	10	4
4EECO 1204 H12	12	6	24	75	12	4
4EECO 1404 H14	14	7	30	100	14	4
4EECO 1604 H16	16	8	30	100	16	4
4EECO 1804 H18	18	9	30	100	18	4
4EECO 2004 H20	20	10	30	100	20	4
4EECO 2504 H25	25	12.5	30	100	25	4

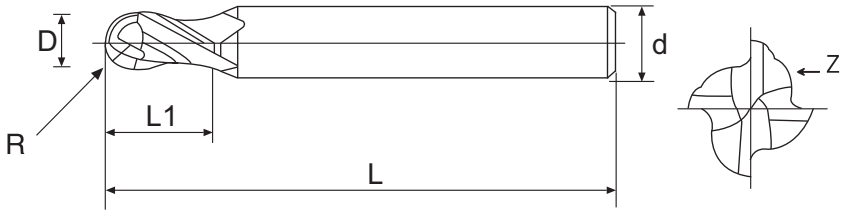
▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
R1.5	15.500	2.055	10.600	975
R2	11.500	2.055	8.000	1.190
R2.5	9.500	2.270	6.400	1.190
R3	8.000	2.270	5.300	1.245
R4	6.000	2.810	4.000	1.515
R5	4.800	2.595	3.200	1.405
R6	4.000	2.375	1.650	1.320
R8	3.000	2.270	2.000	1.295
R10	2.400	2.055	1.600	1.200
Profundidade de Corte				

4ELECO

FRESA TOPO ESFÉRICO 4 CORTES LONGA





Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4ELECO 0104 H04	1	0.5	2	75	4	4
4ELECO 0104 H06	1	0.5	2	100	6	4
4ELECO 0154 H04	1.5	0.75	3	75	4	4
4ELECO 0154 H06	1.5	0.75	3	100	6	4
4ELECO 0204 H04	2	1	4	75	4	4
4ELECO 0204 H06	2	1	4	100	6	4
4ELECO 0254 H04	2.5	1.25	5	75	4	4
4ELECO 0254 H06	2.5	1.25	5	100	6	4
4ELECO 0304 H04	3	1.5	6	75	4	4
4ELECO 0304 H06	3	1.5	6	100	6	4
4ELECO 0354 H04	3.5	1.75	7	75	4	4
4ELECO 0354 H06	3.5	1.75	7	100	6	4
4ELECO 0404 H04	4	2	8	75	4	4
4ELECO 0404 H06	4	2	8	100	6	4
4ELECO 0454 075	4.5	2.25	9	75	6	4
4ELECO 0454 100	4.5	2.25	9	100	6	4
4ELECO 0504 075	5	2.5	10	75	6	4
4ELECO 0504 100	5	2.5	10	100	6	4
4ELECO 0554 075	5.5	2.75	11	75	6	4
4ELECO 0554 100	5.5	2.75	11	100	6	4
4ELECO 0604 075	6	3	12	75	6	4
4ELECO 0604 100	6	3	12	100	6	4
4ELECO 0604 150	6	3	12	150	6	4
4ELECO 0804 075	8	4	16	75	8	4
4ELECO 0804 100	8	4	16	100	8	4
4ELECO 0804 150	8	4	16	150	8	4
4ELECO 0804 200	8	4	16	200	8	4
4ELECO 1004 100	10	5	20	100	10	4
4ELECO 1004 150	10	5	20	150	10	4
4ELECO 1004 200	10	5	20	200	10	4
4ELECO 1204 100	12	6	24	100	12	4
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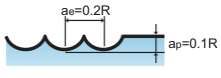
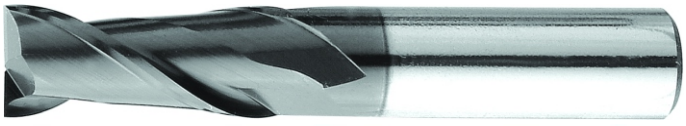
4ELECO 1404 150	14	7	30	150	14	4
4ELECO 1404 200	14	7	30	200	14	4
4ELECO 1604 150	16	8	30	150	16	4
4ELECO 1604 200	16	8	30	200	16	4
4ELECO 2004 150	20	10	30	150	20	4
4ELECO 2004 200	20	10	30	200	20	4

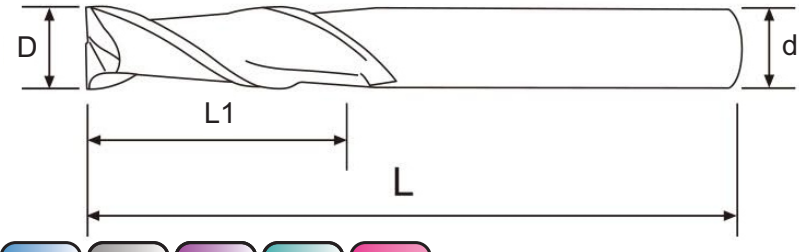
▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

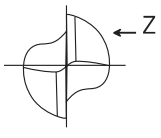
Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
R1.5	15.500	2.055	10.600	975
R2	11.500	2.055	8.000	1.190
R2.5	9.500	2.270	6.400	1.190
R3	8.000	2.270	5.300	1.245
R4	6.000	2.810	4.000	1.515
R5	4.800	2.595	3.200	1.405
R6	4.000	2.375	1.650	1.320
R8	3.000	2.270	2.000	1.295
R10	2.400	2.055	1.600	1.200
Profundidade de Corte				

2RECO

FRESA TOPO RETO 2 CORTES





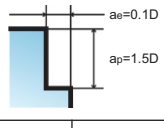


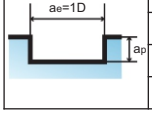
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RECO 0102 H04	1	3	50	4	2
2RECO 0102 H06	1	3	50	6	2
2RECO 0152 H04	1.5	4	50	4	2
2RECO 0152 H06	1.5	4	50	6	2
2RECO 0202 H04	2	6	50	4	2
2RECO 0202 H06	2	6	50	6	2
2RECO 0252 H04	2.5	7	50	4	2
2RECO 0252 H06	2.5	7	50	6	2
2RECO 0302 H04	3	8	50	4	2
2RECO 0302 H06	3	8	50	6	2
2RECO 0352 H04	3.5	10	50	4	2
2RECO 0352 H06	3.5	10	50	6	2
2RECO 0402 H04	4	11	50	4	2
2RECO 0402 H06	4	11	50	6	2
2RECO 0452 H06	4.5	13	50	6	2
2RECO 0502 H06	5	13	50	6	2
2RECO 0552 H06	5.5	13	50	6	2
2RECO 0602 H06	6	15	50	6	2
2RECO 0652 H08	6.5	17	60	8	2
2RECO 0702 H08	7	17	60	8	2
2RECO 0752 H08	7.5	17	60	8	2
2RECO 0802 H08	8	20	60	8	2
2RECO 0852 H10	8.5	23	75	10	2
2RECO 0902 H10	9	23	75	10	2
2RECO 0952 H10	9.5	25	75	10	2
2RECO 1002 H10	10	25	75	10	2
2RECO 1052 H12	10.5	25	75	12	2
2RECO 1102 H12	11	28	75	12	2
2RECO 1152 H12	11.5	28	75	12	2
2RECO 1202 H12	12	30	75	12	2
2RECO 1302 H14	13	40	100	14	2
2RECO 1402 H14	14	40	100	14	2
2RECO 1502 H16	15	40	100	16	2
2RECO 1602 H16	16	40	100	16	2
2RECO 1702 H18	17	40	100	18	2
2RECO 1802 H18	18	40	100	18	2
2RECO 1902 H20	19	40	100	20	2
2RECO 2002 H20	20	40	100	20	2
2RECO 2202 H25	22	40	100	25	2
2RECO 2502 H25	25	40	100	25	2

▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
1	20.000	200	20.000	165
2	15.000	320	15.000	285
3	14.000	545	10.600	420
4	10.800	560	8.000	425
5	8.200	585	6.400	445
6	7.000	600	5.300	465
8	5.200	595	4.000	455
10	4.200	585	3.200	445
12	3.500	585	2.650	445
14	3.000	545	2.300	420
16	2.600	545	2.000	420
18	2.300	535	1.800	415
20	2.050	535	1.600	415

Profundidade de Corte

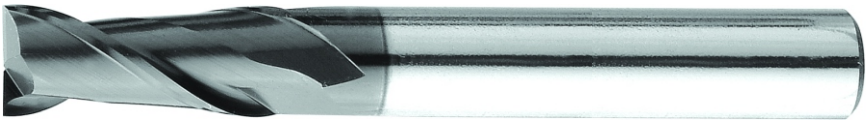


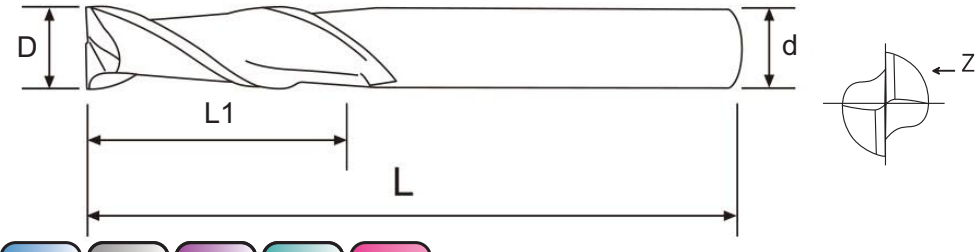


ae	ap
Ø1≤D<Ø3	0.15D
Ø3≤D<Ø6	0.3D
Ø6≤D<Ø20	0.5D

2RLECO

FRESA TOPO RETO 2 CORTES LONGA



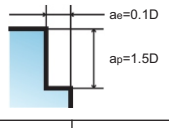


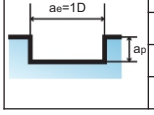
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2RLECO 0102 H04	1	3	75	4	2
2RLECO 0152 H04	1.5	4.5	75	4	2
2RLECO 0202 H04	2	6	75	4	2
2RLECO 0252 H04	2.5	7	75	4	2
2RLECO 0302 075	3	8	75	4	2
2RLECO 0302 100	3	8	100	6	2
2RLECO 0352 H04	3.5	10	75	4	2
2RLECO 0402 075	4	11	75	4	2
2RLECO 0402 100	4	11	100	6	2
2RLECO 0452 H06	4.5	13	75	6	2
2RLECO 0502 075	5	13	75	6	2
2RLECO 0502 100	5	13	100	6	2
2RLECO 0552 H06	5.5	13	75	6	2
2RLECO 0602 075	6	15	75	6	2
2RLECO 0602 100	6	15	100	6	2
2RLECO 0652 H08	6.5	17	75	8	2
2RLECO 0702 075	7	17	75	8	2
2RLECO 0702 100	7	17	100	8	2
2RLECO 0752 H08	7.5	17	75	8	2
2RLECO 0802 075	8	20	75	8	2
2RLECO 0802 100	8	20	100	8	2
2RLECO 0802 150	8	20	150	8	2
2RLECO 0902 H10	9	23	100	10	2
2RLECO 1002 100	10	25	100	10	2
2RLECO 1002 150	10	25	150	10	2
2RLECO 1102 H12	11	28	100	12	2
2RLECO 1202 100	12	30	100	12	2
2RLECO 1202 150	12	30	150	12	2
2RLECO 1602 150	16	40	150	16	2
2RLECO 1602 200	16	40	200	16	2
2RLECO 1802 H18	18	40	150	18	2
2RLECO 2002 150	20	40	150	20	2
2RLECO 2002 200	20	40	200	20	2

▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
1	20.000	200	20.000	165
2	15.000	320	15.000	285
3	14.000	545	10.600	420
4	10.800	560	8.000	425
5	8.200	585	6.400	445
6	7.000	600	5.300	465
8	5.200	595	4.000	455
10	4.200	585	3.200	445
12	3.500	585	2.650	445
14	3.000	545	2.300	420
16	2.600	545	2.000	420
18	2.300	535	1.800	415
20	2.050	535	1.600	415

Profundidade de Corte

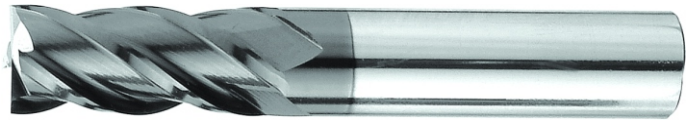


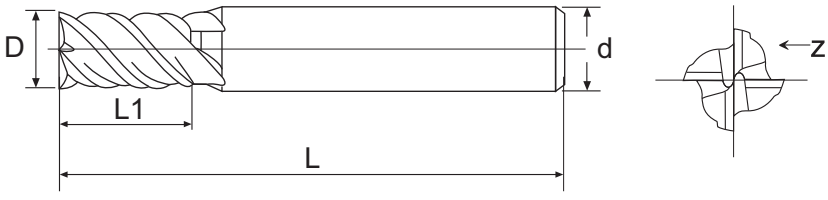


ae	ap
Ø1≤D<Ø3	0.15D
Ø3≤D<Ø6	0.3D
Ø6≤D<Ø20	0.5D

4RECO

FRESA TOPO RETO 4 CORTES



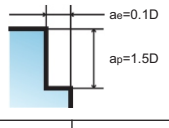


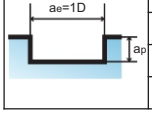
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RECO 0104 H04	1	3	50	4	4
4RECO 0154 H04	1.5	4.5	50	4	4
4RECO 0204 H04	2	6	50	4	4
4RECO 0254 H04	2.5	7	50	4	4
4RECO 0304 H04	3	8	50	4	4
4RECO 0354 H04	3.5	10	50	4	4
4RECO 0404 H04	4	11	50	4	4
4RECO 0454 H06	4.5	13	50	6	4
4RECO 0504 H06	5	13	50	6	4
4RECO 0554 H06	5.5	13	50	6	4
4RECO 0604 H06	6	15	50	6	4
4RECO 0654 H08	6.5	17	60	8	4
4RECO 0704 H08	7	17	60	8	4
4RECO 0754 H08	7.5	17	60	8	4
4RECO 0804 H08	8	20	60	8	4
4RECO 0854 H10	8.5	23	75	10	4
4RECO 0904 H10	9	23	75	10	4
4RECO 0954 H10	9.5	25	75	10	4
4RECO 1004 H10	10	25	75	10	4
4RECO 1054 H12	10.5	25	75	12	4
4RECO 1104 H12	11	28	75	12	4
4RECO 1154 H12	11.5	28	75	12	4
4RECO 1204 H12	12	30	75	12	4
4RECO 1304 H14	13	33	100	14	4
4RECO 1404 H14	14	35	100	14	4
4RECO 1504 H16	15	38	100	16	4
4RECO 1604 H16	16	40	100	16	4
4RECO 1704 H18	17	40	100	18	4
4RECO 1804 H18	18	40	100	18	4
4RECO 1904 H20	19	40	100	20	4
4RECO 2004 H20	20	40	100	20	4
4RECO 2204 H25	22	40	100	25	4
4RECO 2504 H25	25	40	100	25	4

▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
1	20.000	270	20.000	215
2	15.000	435	15.000	380
3	14.000	735	10.600	565
4	10.800	755	8.000	575
5	8.200	795	6.400	605
6	7.000	810	5.300	620
8	5.200	800	4.000	615
10	4.200	795	3.200	605
12	3.500	795	2.650	605
14	3.000	735	2.300	565
16	2.600	735	2.000	565
18	2.300	720	1.800	555
20	2.050	720	1.600	555

Profundidade de Corte

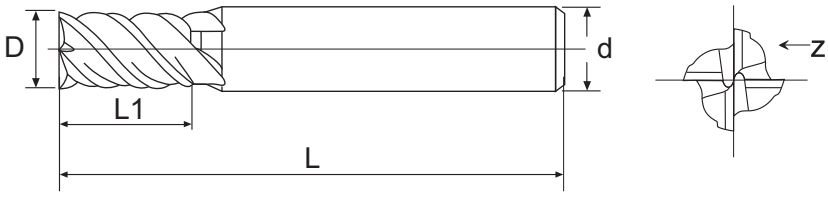




ae	ap
Ø1≤D<Ø3	0.15D
Ø3≤D<Ø6	0.3D
Ø6≤D<Ø20	0.5D

4RLECO

FRESA TOPO RETO 4 CORTES LONGA

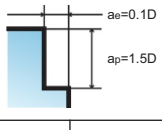


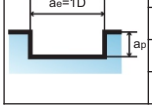
Código	Diâmetro D	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4RLECO 0104 H04	1	3	75	4	4
4RLECO 0154 H04	1.5	4.5	75	4	4
4RLECO 0204 H04	2	6	75	4	4
4RLECO 0254 H04	2.5	7	75	4	4
4RLECO 0304 075	3	8	75	4	4
4RLECO 0304 100	3	8	100	6	4
4RLECO 0354 H04	3.5	10	75	4	4
4RLECO 0404 075	4	11	75	4	4
4RLECO 0404 100	4	11	100	6	4
4RLECO 0454 H06	4.5	13	75	6	4
4RLECO 0504 075	5	13	75	6	4
4RLECO 0504 100	5	13	100	6	4
4RLECO 0554 H06	5.5	13	75	6	4
4RLECO 0604 075	6	15	75	6	4
4RLECO 0604 100	6	15	100	6	4
4RLECO 0654 H08	6.5	17	75	8	4
4RLECO 0704 075	7	17	75	8	4
4RLECO 0704 100	7	17	100	8	4
4RLECO 0704 H08	7.5	17	75	8	4
4RLECO 0804 075	8	20	75	8	4
4RLECO 0804 100	8	20	100	8	4
4RLECO 0804 150	8	20	150	8	4
4RLECO 0904 H10	9	23	100	10	4
4RLECO 1004 100	10	25	100	10	4
4RLECO 1004 150	10	25	150	10	4
4RLECO 1104 H12	11	28	100	12	4
4RLECO 1204 100	12	30	100	12	4
4RLECO 1204 150	12	30	150	12	4
4RLECO 1604 150	16	40	150	16	4
4RLECO 1604 200	16	40	200	16	4
4RLECO 1804 H18	18	40	150	18	4
4RLECO 2004 150	20	40	150	20	4
4RLECO 2004 200	20	40	200	20	4

▪ Parâmetros de Corte ▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro D (mm)	HRC ~ 30 Rotação (RPM)	HRC ~ 30 Avanço (mm/min)	HRC ~ 45 Rotação (RPM)	HRC ~ 45 Avanço (mm/min)
1	20.000	270	20.000	215
2	15.000	435	15.000	380
3	14.000	735	10.600	565
4	10.800	755	8.000	575
5	8.200	795	6.400	605
6	7.000	810	5.300	620
8	5.200	800	4.000	615
10	4.200	795	3.200	605
12	3.500	795	2.650	605
14	3.000	735	2.300	565
16	2.600	735	2.000	565
18	2.300	720	1.800	555
20	2.050	720	1.600	555

Profundidade de Corte

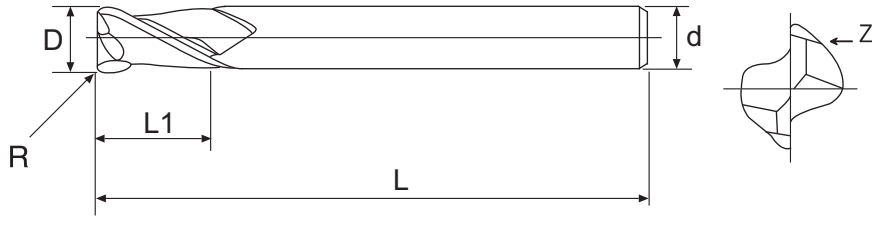




a_e	a_p
Ø1≤D<Ø3	0.15D
Ø3≤D<Ø6	0.3D
Ø6≤D<Ø20	0.5D

2TRECO

FRESA TOROIDAL 2 CORTES



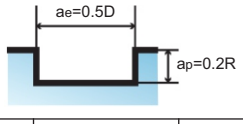
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRECO 0102 H04	1	0.2	3	50	4	2
2TRECO 0152 H04	1.5	0.2	4	50	4	2
2TRECO 0155 H04	1.5	0.5	4	50	4	2
2TRECO 0202 H04	2	0.2	6	50	4	2
2TRECO 0205 H04	2	0.5	6	50	4	2
2TRECO 0252 H04	2.5	0.2	8	50	4	2
2TRECO 0255 H04	2.5	0.5	8	50	4	2
2TRECO 0302 H04	3	0.2	8	50	4	2
2TRECO 0305 H04	3	0.5	8	50	4	2
2TRECO 0310 H04	3	1	8	50	4	2
2TRECO 0402 H04	4	0.2	11	50	4	2
2TRECO 0405 H04	4	0.5	11	50	4	2
2TRECO 0410 H04	4	1	11	50	4	2
2TRECO 0505 H06	5	0.5	13	50	6	2
2TRECO 0510 H06	5	1	13	50	6	2
2TRECO 0602 H06	6	0.2	15	50	6	2
2TRECO 0605 H06	6	0.5	15	50	6	2
2TRECO 0610 H06	6	1	15	50	6	2
2TRECO 0615 H06	6	1.5	15	50	6	2
2TRECO 0620 H06	6	2	15	50	6	2
2TRECO 0805 H08	8	0.5	20	60	8	2
2TRECO 0810 H08	8	1	20	60	8	2
2TRECO 0815 H08	8	1.5	20	60	8	2
2TRECO 0820 H08	8	2	20	60	8	2
2TRECO 1005 H10	10	0.5	25	75	10	2
2TRECO 1010 H10	10	1	25	75	10	2
2TRECO 1015 H10	10	1.5	25	75	10	2
2TRECO 1020 H10	10	2	25	75	10	2
2TRECO 1025 H10	10	2.5	25	75	10	2
2TRECO 1030 H10	10	3	25	75	10	2
2TRECO 1205 H12	12	0.5	30	75	12	2
2TRECO 1210 H12	12	1	30	75	12	2
2TRECO 1215 H12	12	1.5	30	75	12	2
2TRECO 1220 H12	12	2	30	75	12	2
2TRECO 1225 H12	12	2.5	30	75	12	2
2TRECO 1230 H12	12	3	30	75	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro (mm)	HRC ~ 30		HRC ~ 40		HRC ~ 45	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	10.500	3.750	8.500	2.780	7.450	2.340
4	7.950	3.960	6.350	2.880	5.550	2.520
5	6.350	4.200	5.100	3.060	4.450	2.670
6	5.300	4.200	4.250	3.060	3.700	2.670
8	4.550	4.200	3.200	3.060	2.800	2.670
10	3.200	4.200	2.550	3.060	2.250	2.670
12	2.650	4.200	2.100	3.060	1.850	2.670
	ap=0.5mm					

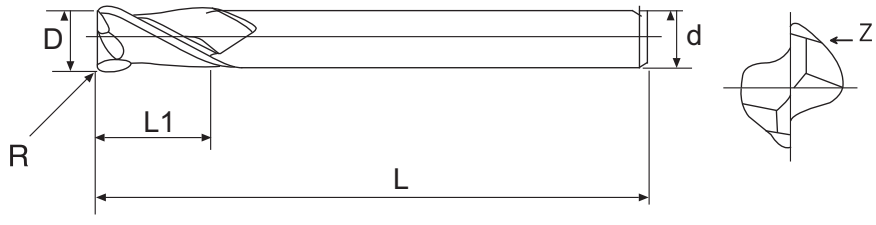
Profundidade de Corte



Saliência	Velocidade de Corte (m/min)	Profundidade Axial de Corte (mm)	Velocidade de Avanço (mm/min)
L/D≦4	100%	100%	100%
L/D=5	80% ~ 90%	70% ~ 90%	80% ~ 90%
L/D=6	60% ~ 80%	50% ~ 70%	60% ~ 80%

2TRLECO

FRESA TOROIDAL 2 CORTES LONGA



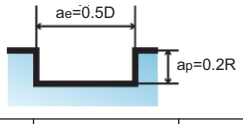
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
2TRLECO 0102 H04	1	0.2	3	75	4	2
2TRLECO 0152 H04	1.5	0.2	4	75	4	2
2TRLECO 0155 H04	1.5	0.5	4	75	4	2
2TRLECO 0202 H04	2	0.2	6	75	4	2
2TRLECO 0205 H04	2	0.5	6	75	4	2
2TRLECO 0252 H04	2.5	0.2	8	75	4	2
2TRLECO 0255 H04	2.5	0.5	8	75	4	2
2TRLECO 0302 H04	3	0.2	8	75	4	2
2TRLECO 0305 H04	3	0.5	8	75	4	2
2TRLECO 0310 H04	3	1	8	75	4	2
2TRLECO 0402 075	4	0.2	11	75	4	2
2TRLECO 0402 100	4	0.2	11	100	6	2
2TRLECO 0405 075	4	0.5	11	75	4	2
2TRLECO 0405 100	4	0.5	11	100	6	2
2TRLECO 0410 075	4	1	11	75	4	2
2TRLECO 0410 100	4	1	11	100	6	2
2TRLECO 0505 075	5	0.5	13	75	6	2
2TRLECO 0505 100	5	0.5	13	100	6	2
2TRLECO 0510 075	5	1	13	75	6	2
2TRLECO 0510 100	5	1	13	100	6	2
2TRLECO 0602 075	6	0.2	15	75	6	2
2TRLECO 0602 100	6	0.2	15	100	6	2
2TRLECO 0605 075	6	0.5	15	75	6	2
2TRLECO 0605 100	6	0.5	15	100	6	2
2TRLECO 0610 075	6	1	15	75	6	2
2TRLECO 0610 100	6	1	15	100	6	2
2TRLECO 0615 075	6	1.5	15	75	6	2
2TRLECO 0615 100	6	1.5	15	100	6	2
2TRLECO 0620 075	6	2	15	75	6	2
2TRLECO 0620 100	6	2	15	100	6	2
2TRLECO 0805 H08	8	0.5	20	100	8	2
2TRLECO 0810 H08	8	1	20	100	8	2
2TRLECO 0815 H08	8	1.5	20	100	8	2
2TRLECO 0820 H08	8	2	20	100	8	2
2TRLECO 1005 H10	10	0.5	25	100	10	2
2TRLECO 1010 H10	10	1	25	100	10	2
2TRLECO 1015 H10	10	1.5	25	100	10	2
2TRLECO 1020 H10	10	2	25	100	10	2
2TRLECO 1025 H10	10	2.5	25	100	10	2
2TRLECO 1030 H10	10	3	25	100	10	2
2TRLECO 1205 H12	12	0.5	30	100	12	2
2TRLECO 1210 H12	12	1	30	100	12	2
2TRLECO 1215 H12	12	1.5	30	100	12	2
2TRLECO 1220 H12	12	2	30	100	12	2
2TRLECO 1225 H12	12	2.5	30	100	12	2
2TRLECO 1230 H12	12	3	30	100	12	2

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro (mm)	HRC ~ 30		HRC ~ 40		HRC ~ 45	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	10.500	3.750	8.500	2.780	7.450	2.340
4	7.950	3.960	6.350	2.880	5.550	2.520
5	6.350	4.200	5.100	3.060	4.450	2.670
6	5.300	4.200	4.250	3.060	3.700	2.670
8	4.550	4.200	3.200	3.060	2.800	2.670
10	3.200	4.200	2.550	3.060	2.250	2.670
12	2.650	4.200	2.100	3.060	1.850	2.670
	ap=0.5mm					

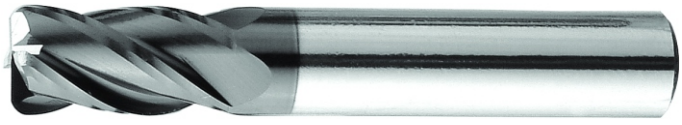
Profundidade de Corte

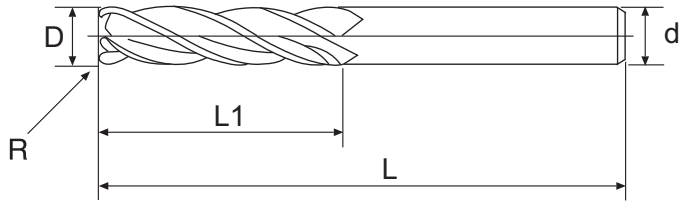


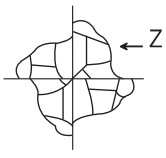
Saliência	Velocidade de Corte (m/min)	Profundidade Axial de Corte (mm)	Velocidade de Avanço (mm/min)
L/D≤4	100%	100%	100%
L/D=5	80% ~ 90%	70% ~ 90%	80% ~ 90%
L/D=6	60% ~ 80%	50% ~ 70%	60% ~ 80%

4TRECO

FRESA TOROIDAL 4 CORTES







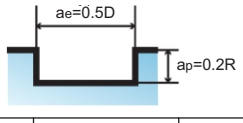
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRECO 0102 H04	1	0.2	3	50	4	4
4TRECO 0152 H04	1.5	0.2	4	50	4	4
4TRECO 0155 H04	1.5	0.5	4	50	4	4
4TRECO 0202 H04	2	0.2	6	50	4	4
4TRECO 0205 H04	2	0.5	6	50	4	4
4TRECO 0252 H04	2.5	0.2	8	50	4	4
4TRECO 0255 H04	2.5	0.5	8	50	4	4
4TRECO 0302 H04	3	0.2	8	50	4	4
4TRECO 0305 H04	3	0.5	8	50	4	4
4TRECO 0310 H04	3	1	8	50	4	4
4TRECO 0402 H04	4	0.2	11	50	4	4
4TRECO 0405 H04	4	0.5	11	50	4	4
4TRECO 0410 H04	4	1	11	50	4	4
4TRECO 0505 H06	5	0.5	13	50	6	4
4TRECO 0510 H06	5	1	13	50	6	4
4TRECO 0602 H06	6	0.2	15	50	6	4
4TRECO 0605 H06	6	0.5	15	50	6	4
4TRECO 0610 H06	6	1	15	50	6	4
4TRECO 0615 H06	6	1.5	15	50	6	4
4TRECO 0620 H06	6	2	15	50	6	4
4TRECO 0805 H08	8	0.5	20	60	8	4
4TRECO 0810 H08	8	1	20	60	8	4
4TRECO 0815 H08	8	1.5	20	60	8	4
4TRECO 0820 H08	8	2	20	60	8	4
4TRECO 1005 H10	10	0.5	25	75	10	4
4TRECO 1010 H10	10	1	25	75	10	4
4TRECO 1015 H10	10	1.5	25	75	10	4
4TRECO 1020 H10	10	2	25	75	10	4
4TRECO 1025 H10	10	2.5	25	75	10	4
4TRECO 1030 H10	10	3	25	75	10	4
4TRECO 1205 H12	12	0.5	30	75	12	4
4TRECO 1210 H12	12	1	30	75	12	4
4TRECO 1215 H12	12	1.5	30	75	12	4
4TRECO 1220 H12	12	2	30	75	12	4
4TRECO 1225 H12	12	2.5	30	75	12	4
4TRECO 1230 H12	12	3	30	75	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro (mm)	HRC ~ 30		HRC ~ 40		HRC ~ 45	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	10.500	6.250	8.500	4.500	7.450	3.900
4	7.950	6.600	6.350	4.800	5.550	4.200
5	6.350	7.000	5.100	5.100	4.450	4.450
6	5.300	7.000	4.250	5.100	3.700	4.450
8	4.550	7.000	3.200	5.100	2.800	4.450
10	3.200	7.000	2.550	5.100	2.250	4.450
12	2.650	7.000	2.100	5.100	1.850	4.450
	ap=0.5mm					

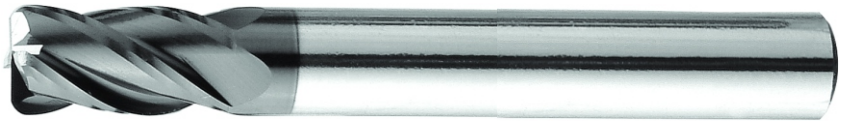
Profundidade de Corte

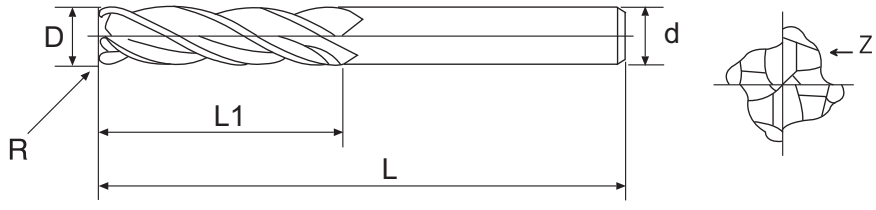


Saliência	Velocidade de Corte (m/min)	Profundidade Axial de Corte (mm)	Velocidade de Avanço (mm/min)
L/D≤4	100%	100%	100%
L/D=5	80% ~ 90%	70% ~ 90%	80% ~ 90%
L/D=6	60% ~ 80%	50% ~ 70%	60% ~ 80%

4TRLECO

FRESA TOROIDAL 4 CORTES LONGA





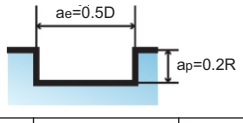
Código	Diâmetro D	Raio R	Compr. do Corte L1	Compr. Total L	Diâmetro da Haste d	Cortes Z
4TRLECO 0102 H04	1	0.2	3	75	4	4
4TRLECO 1502 H04	1.5	0.2	4	75	4	4
4TRLECO 1505 H04	1.5	0.5	4	75	4	4
4TRLECO 0202 H04	2	0.2	6	75	4	4
4TRLECO 0205 075	2	0.5	6	75	4	4
4TRLECO 0252 100	2.5	0.2	8	75	4	4
4TRLECO 0255 H04	2.5	0.5	8	75	4	4
4TRLECO 0302 H04	3	0.2	8	75	4	4
4TRLECO 0305 005	3	0.5	8	75	4	4
4TRLECO 0310 010	3	1	8	75	4	4
4TRLECO 0402 H04	4	0.2	11	75	4	4
4TRLECO 0402 H06	4	0.2	11	100	6	4
4TRLECO 0405 075	4	0.5	11	75	4	4
4TRLECO 0405 100	4	0.5	11	100	6	4
4TRLECO 0410 075	4	1	11	75	4	4
4TRLECO 0410 100	4	1	11	100	6	4
4TRLECO 0505 075	5	0.5	13	75	6	4
4TRLECO 0505 100	5	0.5	13	100	6	4
4TRLECO 0510 075	5	1	13	75	6	4
4TRLECO 0510 100	5	1	13	100	6	4
4TRLECO 0602 075	6	0.2	15	75	6	4
4TRLECO 0602 100	6	0.2	15	100	6	4
4TRLECO 0605 075	6	0.5	15	75	6	4
4TRLECO 0605 100	6	0.5	15	100	6	4
4TRLECO 0610 075	6	1	15	75	6	4
4TRLECO 0610 100	6	1	15	100	6	4
4TRLECO 0615 075	6	1.5	15	75	6	4
4TRLECO 0615 100	6	1.5	15	100	6	4
4TRLECO 0620 075	6	2	15	75	6	4
4TRLECO 0620 100	6	2	15	100	6	4
4TRLECO 0805 H08	8	0.5	20	100	8	4
4TRLECO 0810 H08	8	1	20	100	8	4
4TRLECO 0815 H08	8	1.5	20	100	8	4
4TRLECO 0820 H08	8	2	20	100	8	4
4TRLECO 1005 H10	10	0.5	25	100	10	4
4TRLECO 1010 H10	10	1	25	100	10	4
4TRLECO 1015 H10	10	1.5	25	100	10	4
4TRLECO 1020 H10	10	2	25	100	10	4
4TRLECO 1025 H10	10	2.5	25	100	10	4
4TRLECO 1039 H10	10	3	25	100	10	4
4TRLECO 1205 H12	12	0.5	30	100	12	4
4TRLECO 1210 H12	12	1	30	100	12	4
4TRLECO 1215 H12	12	1.5	30	100	12	4
4TRLECO 1220 H12	12	2	30	100	12	4
4TRLECO 1225 H12	12	2.5	30	100	12	4
4TRLECO 1230 H12	12	3	30	100	12	4

▪ Parâmetros de Corte

▪ RPM : rev./min ▪ FEED : mm/min

Diâmetro (mm)	HRC ~ 30		HRC ~ 40		HRC ~ 45	
	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)	Rotação (RPM)	Avanço (mm/min)
3	10.500	6.250	8.500	4.500	7.450	3.900
4	7.950	6.600	6.350	4.800	5.550	4.200
5	6.350	7.000	5.100	5.100	4.450	4.450
6	5.300	7.000	4.250	5.100	3.700	4.450
8	4.550	7.000	3.200	5.100	2.800	4.450
10	3.200	7.000	2.550	5.100	2.250	4.450
12	2.650	7.000	2.100	5.100	1.850	4.450
	ap=0.5mm					

Profundidade de Corte



Saliência	Velocidade de Corte (m/min)	Profundidade Axial de Corte (mm)	Velocidade de Avanço (mm/min)
L/D≤4	100%	100%	100%
L/D=5	80% ~ 90%	70% ~ 90%	80% ~ 90%
L/D=6	60% ~ 80%	50% ~ 70%	60% ~ 80%

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