Cutting data for milling
RAKU® TOOL CC-6507

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formula for calculating speed (spindle)

$$n = \frac{V_c \times 1000}{D_c \times \pi}$$

14968 [rpm] = $\frac{940\ [m/min] \times 1000}{20,0\ [mm] \times 3,14}$

formula for calculating axis feed rate

$$V_f = n \times f_z \times z_n$$

7500 [mm/min] = 15000 [rpm] x 0,250 [mm] x 2 [number]

validated cutting data for roughing

Type	D_c [mm]	z_n [number]	V_c [m/min]	f_z [mm]	n [rpm]	V_f [mm/min]	a_e [mm]	a_p [mm]	L_1 [mm]	L_2 [mm]
torus	20,0	2	940	0,250	14.968	7.484	10,00	20,00	86,0	20,0
torus	12,0	2	560	0,240	14.862	7.134	6,00	12,00	55,0	16,0
torus	6,0	2	280	0,230	14.862	6.837	3,00	6,00	23,0	8,0

validated cutting data for finishing

Type	D_c [mm]	z_n [number]	V_c [m/min]	f_z [mm]	n [rpm]	V_f [mm/min]	a_e [mm]	a_p [mm]	L_1 [mm]	L_2 [mm]
ball	20,0	2	940	0,550	14.968	16.465	0,20	2,00	67,0	17,0
ball	12,0	2	560	0,550	14.862	16.348	0,12	1,20	52,0	10,5
ball	6,0	2	280	0,580	14.862	17.240	0,06	0,60	23,0	10,0

recommended cutting data for roughing

parameter	symbol	unit	roughing recommendation min.	roughing recommendation ideal	roughing recommendation max.
radial infeed:	a_e	[mm]	- x D_c	**0,50 x D_c**	0,50 x D_c
axial infeed:	a_p	[mm]	0,10 x D_c	**1,00 x D_c**	1,00 x D_c
number of teeth:	z_n	[number]	2	**2**	4

recommended cutting data for finishing

parameter	symbol	unit	finishing recommendation min.	finishing recommendation ideal	finishing recommendation max.
radial infeed:	a_e	[mm]	- x D_c	**0,01 x D_c**	0,05 x D_c
axial infeed:	a_p	[mm]	0,01 x D_c	**0,10 x D_c**	0,20 x D_c
number of teeth:	z_n	[number]	2	**2**	4

parameter	symbol	unit	user specifications
cutting speed:	V_c	[m/min]	selection in the diagram
feed/tooth:	f_z	[mm]	selection in the diagram
speed (spindle):	n	[rpm]	calculation by user
axis feed rate:	V_f	[mm/min]	calculation by user
cutting diameter:	D_c	[mm]	processing specific
tool total length:	L_0	[mm]	processing specific
tool unclamping length:	L_1	[mm]	processing specific
tool cutting length:	L_2	[mm]	processing specific

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Cutting data diagram for milling
RAKU® TOOL CC-6507

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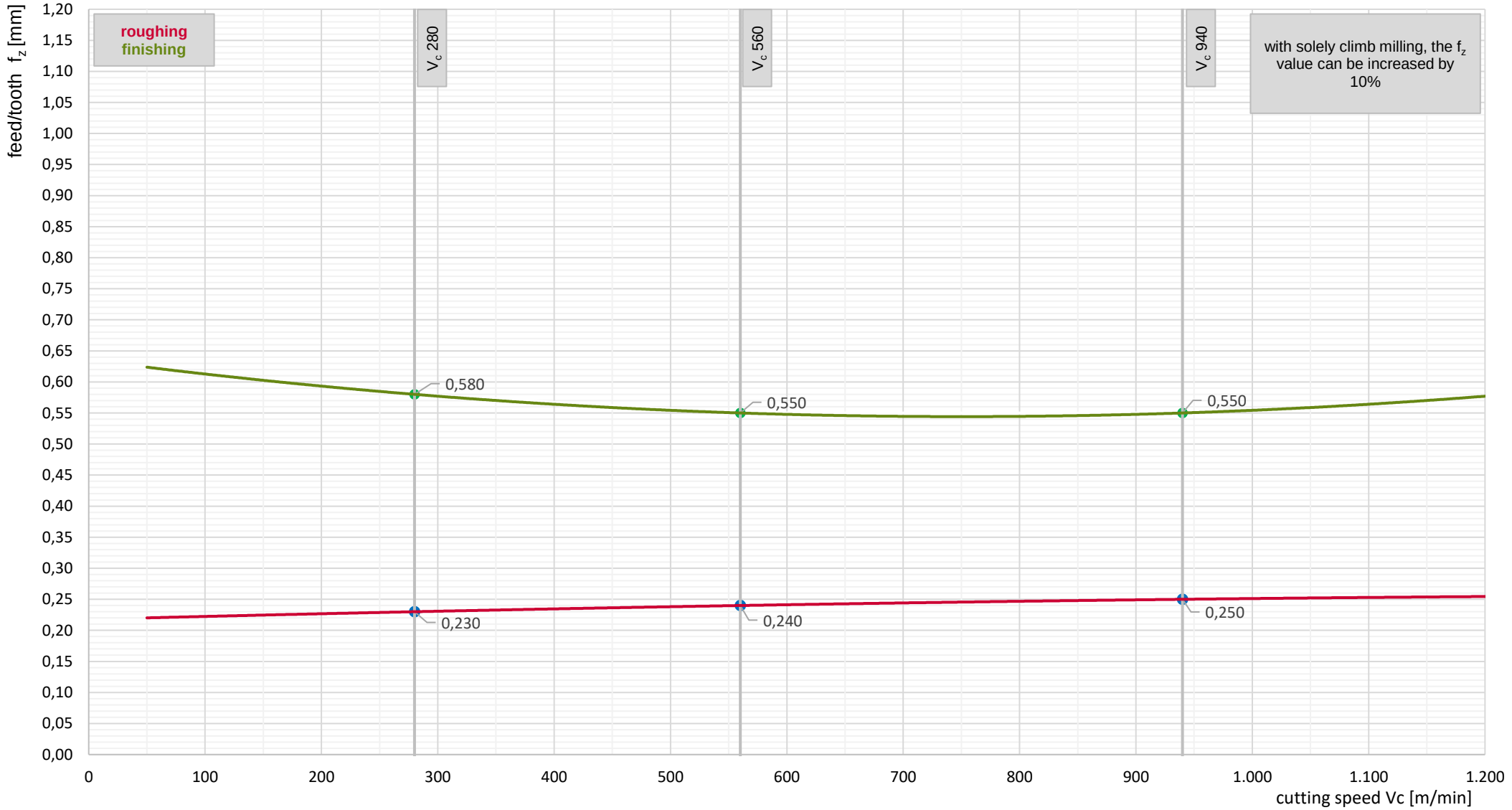

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Practical application of the cutting data
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cutting data used on the demonstrator

sequence of processing	processing strategy	a_e	a_p	offset	f_z	V_c
roughing torus D6	vol. roughing following contour	3,00	6,00	0,60	0,23	280
roughing torus D12	vol. roughing following contour	6,00	12,00	0,12	0,24	560
roughing torus D20	vol. roughing following contour	10,00	20,00	2,00	0,25	940
finishing ball D6	zigzag stroke milling	0,06	0,60	0,00	0,58	280
finishing ball D12	zigzag stroke milling	0,12	1,20	0,00	0,55	560
finishing ball D20	zigzag stroke milling	0,20	2,00	0,00	0,55	940

tools used on the demonstrator

tool manufacturer	tool type	D_c	L_0	L_1	L_2	z_n
hufschmied-tools.com/de/	PROTO-LINE / Torus	6,0	60,0	23,0	8,0	2
hufschmied-tools.com/de/	PROTO-LINE / Torus	12,0	100,0	55,0	16,0	2
hufschmied-tools.com/de/	PROTO-LINE / Torus	20,0	104,0	86,0	20,0	2
hufschmied-tools.com/de/	PROTO-LINE / Kugel	6,0	60,0	23,0	10,0	2
hufschmied-tools.com/de/	PROTO-LINE / Kugel	12,0	83,0	52,0	10,5	2
hufschmied-tools.com/de/	PROTO-LINE / Kugel	20,0	104,0	67,0	17,0	2

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