Cutting data for milling
RAKU® TOOL CB-6691

RAMPF discover the future

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

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

6900 [m/min] = 15000 [rpm] x 0,230 [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	0,230	14.968	6.885	10,00	20,00	87,0	20,0
torus	12,0	2	560	0,230	14.862	6.837	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	0,510	14.968	15.268	0,20	2,00	67,0	17,0
ball	12,0	2	560	0,510	14.862	15.159	0,12	1,20	52,0	10,5
ball	6,0	2	280	0,510	14.862	15.159	0,06	0,60	23,0	10,0

recommended cutting data for roughing

parameter	symbol	unit	roughing recommendation min.	ideal	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**	2

recommended cutting data for finishing

parameter	symbol	unit	finishing recommendation min.	ideal	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**	2

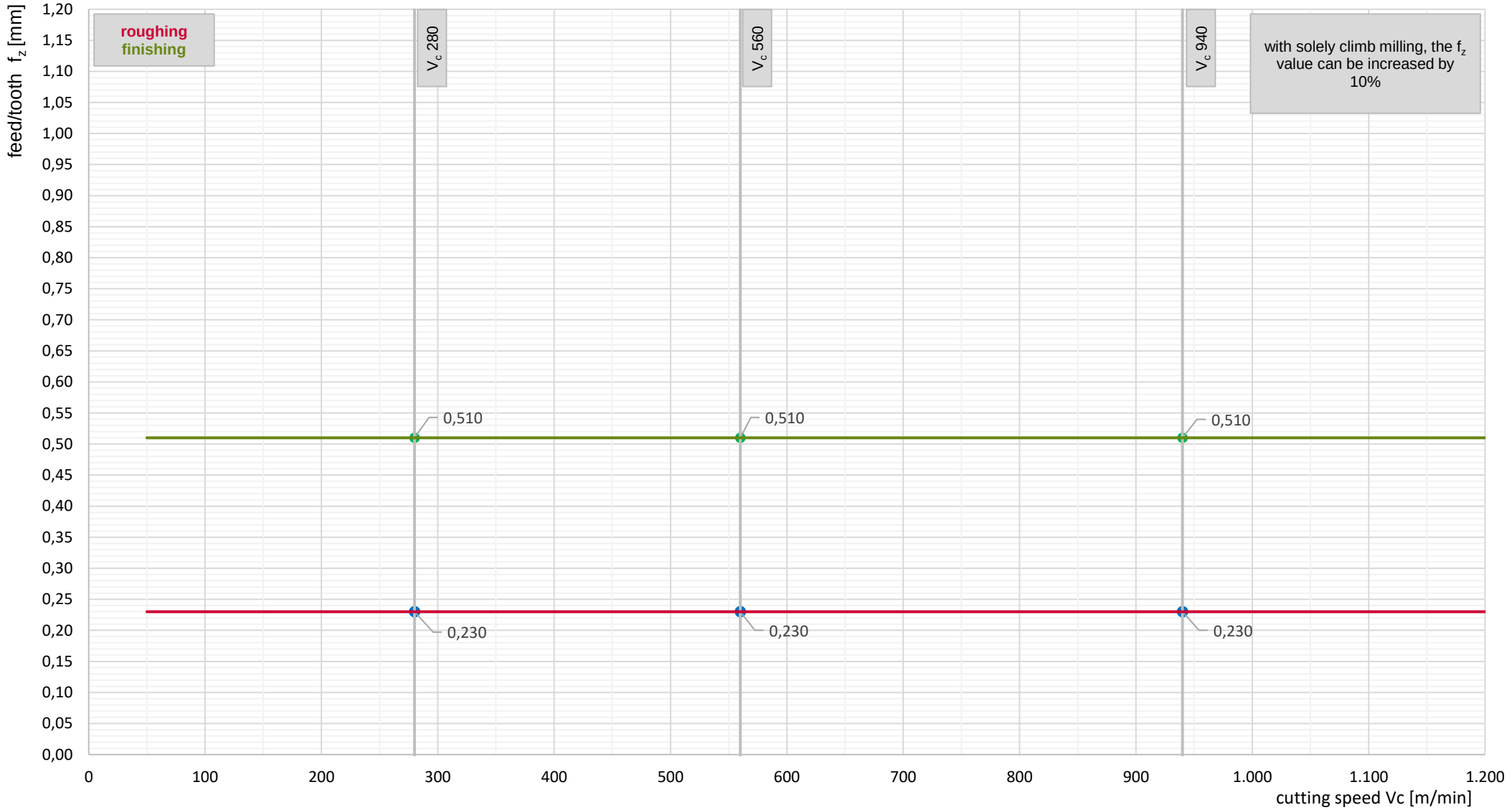
parameter	symbol	unit	user specifications
cutting speed:	V_c	[m/min]	selection in the diagram
feed/tooth:	f_z	[mm]	selection in the diagram
speed (spindle):	n	[rpm]	calculation by user
axis feed rate:	V_f	[mm/min]	calculation by user
cutting diameter:	D_c	[mm]	processing specific
tool total length:	L_0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

RAMPF Tooling Solutions GmbH & Co. KG

Robert-Bosch-Straße 8-10 I D-/2661 Grafenberg
T +49.71 23.93 42-1600 I F +49.71 23.93 42-1666
E tooling.solutions@rampf-group.com

Cutting data diagram for milling
RAKU® TOOL CB-6691

RAMPF
discover the future



RAMPF Tooling Solutions GmbH & Co. KG

Robert-Bosch-Straße 8-10 I D-/2661 Grafenberg
T +49.71 23.93 42-1600 I F +49.71 23.93 42-1666
E tooling.solutions@rampf-group.com

Practical application of the cutting data
RAKU® TOOL CB-6691

RAMPF discover the future

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	0,23	560
roughing torus D20	vol. roughing following contour	10,00	20,00	2,00	0,23	940
finishing ball D6	zigzag stroke milling	0,06	0,60	0,00	0,51	280
finishing ball D12	zigzag stroke milling	0,12	1,20	0,00	0,51	560
finishing ball D20	zigzag stroke milling	0,20	2,00	0,00	0,51	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	87,0	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

RAMPF Tooling Solutions GmbH & Co. KG

Robert-Bosch-Straße 8-10 I D-/2661 Grafenberg
T +49.71 23.93 42-1600 I F +49.71 23.93 42-1666
E tooling.solutions@rampf-group.com