

Speeds and Feeds



- 1) Select your material in the ISO colored chart with respect to material description.
- 2) Start with a middle/average value for spindle speed, n (RPM) and feed rate, V_f (mm/min). Adjust the spindle speed and/or feed rate based on your cutting conditions.

End Mill Series – CPRA

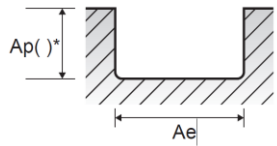
Material			Recommended Cutting Values – Slotting									
Group		Material Description	Width of Cut, a_e	Depth of Cut, a_p	Parameter	Tool Diameter (mm)						
ISO	VDI 3323					6	8	10	12	16	20	25
N	21-22	Aluminum-Wrought Alloy	1.0D	1.0D	V_c , SMM	82	70	68	73	73	70	73
					F_z , MMPT	0.012	0.020	0.037	0.053	0.079	0.110	0.120
					n , RPM	4358	2801	2173	1924	1443	1121	924
	23-25	Aluminum-Cast Alloy	1.0D	1.0D	V_c , SMM	82	70	68	73	73	70	73
					F_z , MMPT	0.012	0.020	0.037	0.053	0.079	0.110	0.120
					n , RPM	4358	2801	2173	1924	1443	1121	924
					V_f , MPPM	159	171	238	305	343	369	332

Material			Recommended Cutting Values – Side Cutting									
Group		Material Description	Width of Cut, a_e	Depth of Cut, a_p	Parameter	Tool Diameter (mm)						
ISO	VDI 3323					6	8	10	12	16	20	25
N	21-22	Aluminum-Wrought Alloy	0.5D	1.5D	V_c , SMM	117	101	98	104	104	101	104
					F_z , MMPT	0.015	0.025	0.046	0.066	0.099	0.137	0.150
					n , RPM	6226	4002	3105	2749	2062	1601	1319
	23-25	Aluminum-Cast Alloy	0.5D	1.5D	V_f , MPPM	285	305	426	545	613	659	593
					V_c , SMM	117	101	98	104	104	101	104
					F_z , MMPT	0.015	0.025	0.046	0.066	0.099	0.137	0.150
					n , RPM	6226	4002	3105	2749	2062	1601	1319
					V_f , MPPM	285	305	426	545	613	659	593

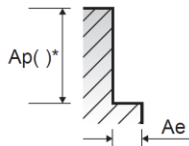
NOTE: All cutting data are target values.

Maximum recommended depth shown.

Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions.



Slotting



Side Cutting



Speeds and Feeds



Feed Rate, Per Revolution (mm/min)
$v_f = f_n \cdot n$

Feed Rate, Per Tooth (mm/min)
$v_f = f_z \cdot n \cdot Z$

Feed Per Revolution (mm/rev)
$f_n = \frac{v_f}{n}$

Feed Per Tooth (mm)
$f_z = \frac{v_f}{n \cdot Z}$

Cutting Speed (m/min)
$v_c = \frac{\pi \cdot D_{tool} \cdot n}{1000}$

Spindle Speed (rev/min)
$n = \frac{v_c \cdot 1000}{\pi \cdot D_{tool}}$

Material Removal Rate (mm ³ /min)
$MMR = \frac{a_p \cdot a_e \cdot v_f}{1000}$

Metric

Symbol	Definition	Unit
v_f	Feed rate	mm/min
f_n	Feed per revolution	mm/rev
f_z	Feed per tooth	mm
v_c	Cutting speed	m/min (SMM)
n	Spindle speed	rev/min (RPM)
D_{tool}	Tool cutting diameter	mm
MMR	Material removal rate	(mm ³ /min)
a_e	Radial depth of cut	mm
a_p	Axial depth of cut	mm
Z	Number of teeth/flutes	