STELLRAM

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Programme Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Multiplication factor for the feed rate based on the percentage of radial engagement of the cutter diameter

Cutter Ø 32mm			Cutter Ø 80mm			Cutter Ø 100mm		
a_e %	a_e mm	Coefficient Factor	a_e %	a_e mm	Coefficient Factor	a_e %	a_e mm	Coefficient Factor
5	1,60	2,30	5	4,00	2,30	5	5,00	2,30
10	3,20	1,66	10	8,00	1,66	10	10,00	1,66
15	4,80	1,40	15	12,00	1,40	15	15,00	1,40
20	6,40	1,25	20	16,00	1,25	20	20,00	1,25
25	8,00	1,16	25	20,00	1,16	25	25,00	1,16
35	11,20	1,05	35	28,00	1,05	35	35,00	1,05
50 - 100	16,00 - 32,00	1,00	50 - 100	40,00 - 80,00	1,00	50 - 100	50,00 - 100,00	1,00

Example: 80mm diameter cutter using a 8,0mm radial engagement (a_e) = 10% of the cutter diameter.
At 10%, your coefficient is 1,66 (see chart); therefore you must multiply your feed rate by 1,66 for correcting the feed for profiling.