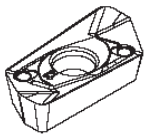
KENNAMETAL®
Engineering Your Competitive Edge

Technical Tip #144 – Increase Feed Rate When Using Less Than 50% of Cutter Diameter

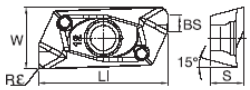
When an indexable milling cutter is used and the radial engagement is less than 50% of the cutter diameter, the feed rate must be adjusted to compensate for chip thinning.

Step 1:
Define the average chip thickness value that corresponds to the chosen insert. For reference, the Kennametal Milling Tooling 6050 catalog provides ”hm” values for each insert that indicate the average chip thickness based on that insert’s edge preparation.

(Example tool chart from Kennametal Milling Tooling 6050 catalog.)



EDCT14-LD



● first choice
○ alternate choice

H	
S	● ●
N	●
K	● ○ ● ○
M	● ● ○
P	○ ● ●

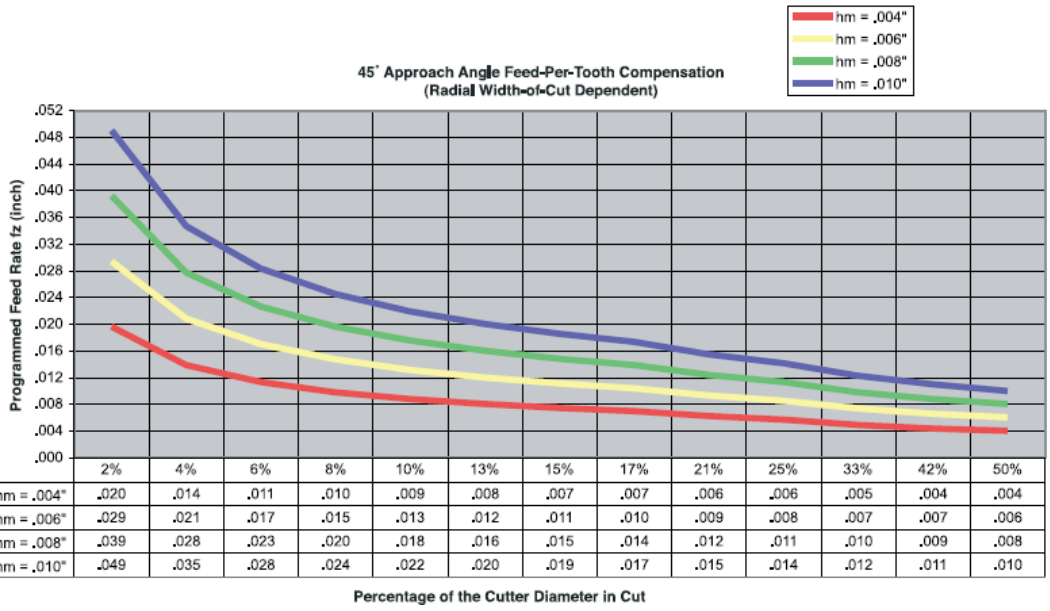
catalog number	cutting edges	LI	W	S	BS	Rε	hm	KC410M	KC520M	KC522M	KC725M	KC915M	KC935M
EC1404EGD	2	.687	.334	.177	.116	.016	.002				●		
EC1404ELD	2	.687	.334	.177	.116	.016	.003			●			
EC1404FLDJ	2	.687	.334	.177	.116	.016	.002	●					
EC1408EGD	2	.688	.334	.177	.101	.031	.002				●		
EC1408ELD	2	.688	.334	.177	.101	.031	.003			●			
EC1408FLDJ	2	.688	.334	.177	.101	.031	.002	●					

Step 2: Define the radial width of cut as a percentage of radial engagement. To determine this value, divide the radial width by the cutter diameter to achieve the percentage of radial engagement.

Step 3: Determine the adjusted feed rate from the feed rate chart that is provided in the Kennametal Milling Tooling 6050 catalog for each cutter.

To determine the adjusted feed rate, follow the (hm) value row to the percentage of radial engagement that was calculated. This is now the corrected feed rate.

(Example feed rate chart from Kennametal Milling Tooling 6050 catalog.)



	2%	4%	6%	8%	10%	13%	15%	17%	21%	25%	33%	42%	50%
hm = .004"	.020	.014	.011	.010	.009	.008	.007	.007	.006	.006	.005	.004	.004
hm = .006"	.029	.021	.017	.015	.013	.012	.011	.010	.009	.008	.007	.007	.006
hm = .008"	.039	.028	.023	.020	.018	.016	.015	.014	.012	.011	.010	.009	.008
hm = .010"	.049	.035	.028	.024	.022	.020	.019	.017	.015	.014	.012	.011	.010

Example using above chart:
If the percentage of radial engagement is 15% and the (hm) value is .004”, the adjusted feed rate would be .007”.