Calculate the "Effective Cutting Diameter

Utilized when the ADOC is less than the full radius of the ball nose end mill.

$$\text{Effective Cutting Diameter} = 2 \times \sqrt{(R^2 - \text{ADOC})^2}$$

Calculate the "Velocity Adjustment"

When utilizing "less than" the cutter diameter, the RPM will need to be adjusted slightly higher.

$$\text{Velocity Adjustment} = \frac{\text{SFM} \times 3.82}{\text{Effective Cutting Diameter}}$$

Cutter Diameters	Effective Cutting Diameter for common Axial Depth of Cuts (90° Method)															
	.010	.020	.030	.050	.070	.090	.120	.150	.180	.220	.260	.300	.350	.400	.450	.500
1/8	.068	.092	.107													
1/4	.098	.136	.162	.200	.224	.240										
3/8	.121	.169	.203	.255	.292	.320	.350	.367	.375							
1/2	.140	.196	.237	.300	.347	.384	.427	.458	.480	.496	.500					
5/8	.157	.220	.267	.339	.394	.439	.492	.534	.566	.597	.616	.624				
3/4	.172	.242	.294	.374	.436	.487	.550	.600	.641	.683	.714	.735	.758			
1	.199	.280	.341	.436	.510	.572	.650	.714	.768	.828	.877	.917	.954	.980	.995	1.000

Refer to next page for more Ball Nose End Mill Technical Data / Information.

For applications requiring the 15° "tilt" application method, it's recommended to utilize ball nose end mills on a incline (ß) to avoid "0" SFM condition at the center of the end mill. This will increase tool life and performance while producing acceptable finish on the parts. Feed the end mill in the direction of the incline while utilizing the "climb milling" technique.

Calculate the "Effective Cutting Diameter

Utilized when the ADOC is less than the full radius of the ball nose end mill.

$$\text{Effective Cutting Diameter} = D \times \text{sine}\left[\text{ß} \pm \left(\frac{D - 2 \times \text{ADOC}}{\text{Cutter Diameter}} \right) \right]$$

Calculate the "Velocity Adjustment"

When utilizing "less than" the cutter diameter, the RPM will need to be adjusted slightly highe

$$\text{Velocity Adjustment} = \frac{\text{SFM} \times 3.82}{\text{Effective Cutting Diameter}}$$

Cutter Diameters	Effective Cutting Diameter for common Axial Depth of Cuts (15° "Tilt" Method)															
	.010	.020	.030	.050	.070	.090	.120	.150	.180	.220	.260	.300	.350	.400	.450	.500
1/8	.093	.092	.120	.125	.116											
1/4	.154	.185	.206	.232	.245	.249	.243									
3/8	.208	.249	.278	.317	.343	.360	.373	.374	.366							
1/2	.259	.308	.343	.393	.454	.384	.479	.494	.499	.495	.477					
5/8	.308	.363	.404	.463	.506	.539	.575	.599	.615	.624	.622	.610				
3/4	.355	.242	.294	.374	.436	.487	.550	.550	.641	.683	.714	.735	.748			
1	.199	.280	.341	.436	.510	.572	.650	.650	.768	.828	.877	.917	.954	.980	.995	1.000

The above data are recommendations and when applied may need to be adjusted to obtain maximum tool performance.

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