



# HSS END MILL

## Troubleshooting in Endmilling

Breaking of tool	At time of engaging with work material	<ol style="list-style-type: none"> <li>1. Decrease feed rate.</li> <li>2. Decrease projection amount.</li> <li>3. Shorten cutting edge length to required minimum limit.</li> </ol>
	When ending cut	<ol style="list-style-type: none"> <li>1. Decrease feed rate.</li> <li>2. Control wear → replace tool early.</li> <li>3. Replace chuck or collet.</li> <li>4. Decrease projection amount.</li> <li>5. Carry out honing.</li> <li>6. If 4 flute, reduce to 2 flute (clogging of chipping)</li> <li>7. If dry cutting change to wet cutting utilize cutting fluid. In case of wet cutting flow oil supplied from the front, change to from rear angle of side top. Use ample with rate.</li> </ol>
	During normal cutting	<ol style="list-style-type: none"> <li>1. Utilize circular interpolation (in case of NC machine) or temporarily stop feed (Dwellling)</li> <li>2. Reduce feed rate before and after change of directions</li> <li>3. Replace chuck or collet</li> </ol>
Fracture of cutting edge	When changing direction of feed	<ol style="list-style-type: none"> <li>1. Carry out chamfering or nose with hand lapper.</li> <li>2. Down cut → Up cut.</li> </ol>
	Fracture of corners	<ol style="list-style-type: none"> <li>1. Down cut → Up cut</li> <li>2. Reduce cutting speed</li> </ol>
	Fracture at boundary of depth of cut	<ol style="list-style-type: none"> <li>1. Carry out honing. Or enlarge.</li> <li>2. Change number of rotation (in case machine vibrates).</li> <li>3. Increase cutting speed.</li> <li>4. In case of squeaking noise during cutting, increase feed.</li> <li>5. If dry cutting use cutting fluid or blow air.</li> <li>6. Replace chuck or collet.</li> <li>7. Reduce cutting speed.</li> </ol>
	Chipping at center part or overall	<ol style="list-style-type: none"> <li>1. Decrease feed rate.</li> <li>2. If 4 flute reduce to 2 flute</li> <li>3. Carry out honing. Or enlarge</li> <li>4. Replace chuck or collet</li> <li>5. Reduce cutting speed from the front, change to rear at an angle or from side top. Use ample supply.</li> </ol>
Large fracturing of cutting edge	Large fracturing of cutting edge	<ol style="list-style-type: none"> <li>1. Reduce cutting speed</li> <li>2. Up cut → Down cut</li> <li>3. Increase feed</li> <li>4. Utilize wet cutting or air</li> <li>5. If reground tool, improve surface roughness of flank</li> </ol>
	Rapid tool wear	<ol style="list-style-type: none"> <li>1. Decrease feed</li> <li>2. In case using 2 flute, increase to 4 flute</li> </ol>
	Surface is good but rough	

## Names of End Mill Parts

