



## Innovative Tool Sales

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### Technical Support Page

## ENDMILL PROBLEMS TROUBLESHOOTING GUIDE

BREAKAGE	
POSSIBLE CAUSE	SOLUTION
Feed too fast	Slow down speed.
Too high stock removal	Decrease feed per tooth
Too long flute length or overall length	Hold shank deeper, use shorter end mill
Too much wear	Regrind at earlier stage

  

WEAR	
POSSIBLE CAUSE	SOLUTION
Speed too fast	Slow down, use another coolant
Hard work material	Use higher grade tool material and coating
Biting chips	Change feed and speed. Change chip size or clear chips with coolant or air pressure.
Improper feed and speed (too slow)	Increase feed and speed. Try down-cut.
Improper cutting angle	Change to correct cutting angle
Too small primary relief angle	Change to larger relief angle

  

SHORT TOOL LIFE (DULL TEETH)	
POSSIBLE CAUSE	SOLUTION
Too much cutting friction	Regrind at earlier stage.
Tough work material	Use premium tool steel (particle metallurgy).
Improper cutting angle	Change to correct cutting angle and primary

  

CHIPPING	
POSSIBLE CAUSE	SOLUTION
Feed too fast	Slow down to proper feed
Feed too fast on first cut	Slow down on first bite
Not enough rigidity of machine, tool and holder	Change to rigid machine tool or holder
Loose hold (tool)	Correct to tight hold
Loose hold (workpiece)	Correct to tight hold
Lack of rigidity	Use shortest end mill available, hold shank deeper, try down cut
Teeth too sharp	Decrease primary relief and cutting angle

  

CHIP PACKING	
POSSIBLE CAUSE	SOLUTION
Too high stock removal rate	Adjust feed or speed
Not enough chip space	Use less end mill flutes
Not enough coolant	Use air pressure

## ENDMILL PROBLEMS TROUBLESHOOTING GUIDE

BURRS	
POSSIBLE CAUSE	SOLUTION
Too much wear on primary relief	Regrind at earlier stage
Incorrect conditions	Correct milling conditions
Improper cutting angle	Change to correct cutting angle

  

NO PERPENDICULARITY ON SIDES	
POSSIBLE CAUSE	SOLUTION
Feed too fast	Slow down to correct speed
Excessive cutting	Decrease depth and width of cut
Length of flutes or overall length too long	Use proper length of tool, hold shank deeper
Too few flutes	Use multi flute end mills

  

DIMENSIONAL INACCURACIES	
POSSIBLE CAUSE	SOLUTION
Excessive cutting	Decrease depth and width of cut
Lack of accuracy (machine and holder)	Repair machine or holder
Not enough rigidity (machine and holder)	Change machine, holder or cutting conditions
Too few flutes	Use multi flute end mills

  

CHATTER	
POSSIBLE CAUSE	SOLUTION
Feed and speed too fast	Correct feed and speed
Not enough rigidity (machine and holder)	Use better machine or tool holder or change conditions.
Too great relief angle	Decrease relief angle, make margin (touch primary with oil stone)
Loose hold of workpiece	Hold workpiece tightly
Cutting too deep	Decrease depth of cut
Too long flute or overall length	Hold shank deeper, use shorter end mill or try down cut

  

ROUGH SURFACE FINISH	
POSSIBLE CAUSE	SOLUTION
Feed too fast	Slow down to correct speed
Slow speed	Apply higher speed
Too much wear	Regrind at earlier stage
Chip biting	Decrease stock removal
No end tooth concavity	Grind concave angle on bottom teeth