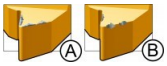
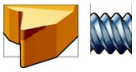
Troubleshooting for thread turning

Careful observation of the insert/cutting edge after machining can help to optimize results regarding tool life, thread quality and cutting speed. Use this list of causes and solutions to different forms of insert wear as a reference for successful threading.

	Cause	Solution
Plastic deformation 	1. Excessive temperature in cutting zone 2. Inadequate supply of coolant 3. Wrong grade	1. a) Reduce the cutting speed, increase the number of infeeds b) Reduce the largest infeed depth, check the diameter before threading 2. Improve coolant supply 3. Choose a grade with better resistance to plastic deformation
Starts as plastic deformation (A), which leads to edge chipping (B). Built-up edge (BUE) 	1. Often occurs in stainless steel and low-carbon steel 2. Unsuitable grade or cutting edge temperature too low	1. Increase cutting speed 2. Choose an insert with good toughness, preferably PVD coated
BUE (A) and edge chipping (B) often occur in combination. Accumulate BUE is then ripped away together with small amounts of insert material, which leads to chipping.		
Insert breakage 	1. Wrong turned diameter prior to threading 2. Infeed series too tough 3. Wrong grade 4. Poor chip control 5. Incorrect centre height	1. Turn to correct diameter before threading. 0.03–0.07 mm (0.001–0.003 inch) radially larger than max. diameter for thread 2. Increase number of infeeds. Reduce size of the largest infeed 3. Choose a tougher grade 4. Change to C-geometry and use modified flank infeed 5. Correct centre height
Rapid flank wear 	1. Highly abrasive material 2. Cutting speed too high 3. Infeed depths too shallow 4. Insert is above centre line	1. Wrong grade. Choose a more wear resistant grade 2. Reduce cutting speed 3. Reduce number of infeeds 4. Correct centre height
Abnormal flank wear 	1. Incorrect method for flank infeed 2. Insert inclination angle does not agree with the thread lead angle	1. Change method of flank infeed for F- and A-geometry: 3–5° from flank, for C-geometry: 1° from flank 2. Change shim to obtain correct angle of inclination
Poor surface on one thread flank Vibration 	1. Incorrect workpiece clamping 2. Incorrect tool set-up 3. Incorrect cutting data 4. Incorrect centre height	1. a) Use soft jaws b) When using tail stock optimize component centering hole and check pressure of tail stock/face driver 2. a) Minimize tool overhang b) Make sure the clamping sleeve for bars is not worn c) Use anti-vibration bars dedicated for thread turning 3. Increase cutting speed; if this does not help, lower the speed dramatically and try F-geometry 4. Correct centre height

Related information

- Threading Application guide (Publications)
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- Knowledge (Knowledge)
- Hard part turning with CBN (Publications)