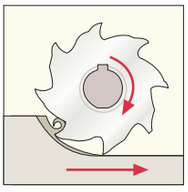
VARDEX Tip 9
Making Threading Easy
Thread Milling Tips
July 2006

Tip 1 — Use climb milling operation for Thread Milling machining

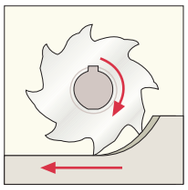
Conventional Milling - Feed movement opposite tool rotation



Drawbacks:

- Width of chip starts from zero and increase therefore tool edge rubbing generates much more friction and heat
- Tool edge rubbing requires more power
- Chip evacuation - Chips fall in front of cutter and spoiled the surface finish
- Rubbing and falling chips cause faster wear and shorten tool life
- Tool force tends to lift up workpiece

Climb Milling - Feed movement and tool rotation same direction



Advantages:

- Width of chip starts from maximum and decrease, no rubbing
- Less power required
- Better chips evacuation - chips flow behind the tool, excellent surface finish
- Less wear and better tool life
- Tool push the workpiece down to the table

Tip 2 — Take 2 passes to complete thread when thread milling hard materials

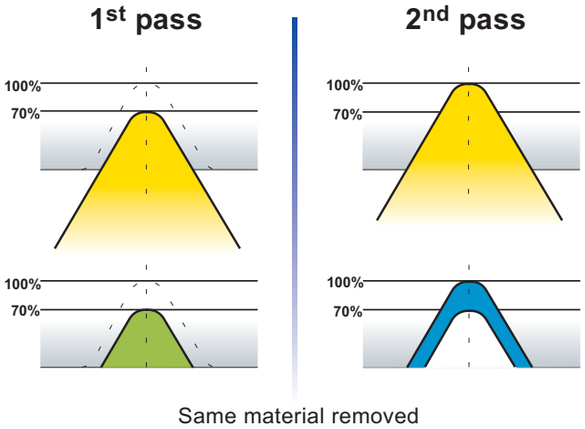
Preferred method:

1st pass - 70% of profile depth

2nd pass - remaning 30%

Thus, the same amount of material is removed in each pass:

- 2nd pass should be deep enough so that material is cut, not just pressed.
- TM Gen allows you to choose 1 or 2 passes according to material type



Same material removed

Tip 3 — Beware, in circular movement the feed rate at the cutting edge (F_1) is faster than at the center (F_2)

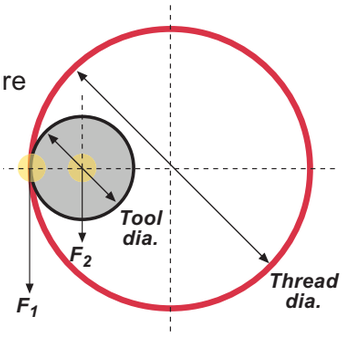
$F_1 = N \times z \times f$

N - Rotation Velocity (R.P.M.)
z - No. of Cutting Edges
f - Feed per Tooth per Rotation (mm/rev)

- The formula for tool feed rate (mm/min) caculates the feed on the **cutting edge** however, most CNC controllers require the feed at the **tool center**. Therefore you should calculate the feed at the tool center
- TM Gen displays both F_1 and F_2 automatically, and based on your controller, inserts the appropriate one into the CNC program

Example: M6 x 1
Tool cutting diameter 4.8 mm.
F_1= 238(mm/min)
F_2= 47(mm/min)

Conclusion: Be sure to use the correct feed rate in your application!



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