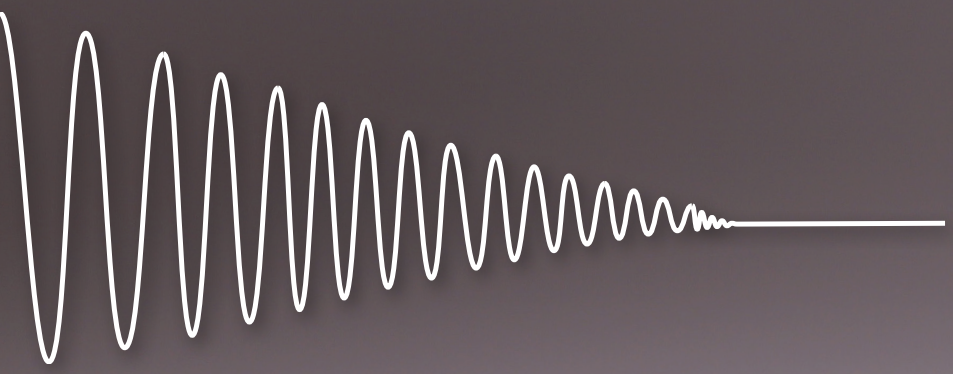
SmiCut™ STS

NEWS 2024

New Tools with more Flutes!

- *Less Vibrations*
- *Shorter Machining Time*
- *Longer Tool Life*
- *Better Economy*



Vibration-Free Thread Mills

SmiCut STS

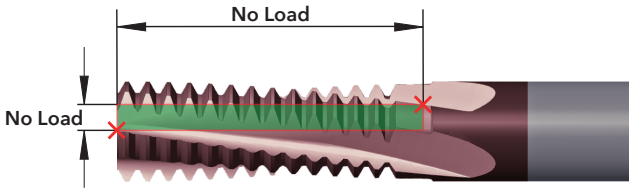
THREAD MILLING

Vibration-Free Machining

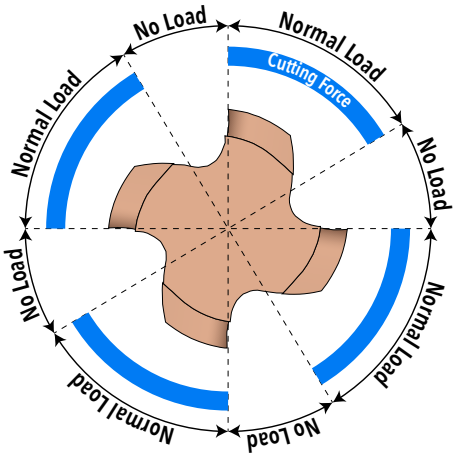
How Tool Design Impacts Vibrations

To achieve a vibration-free tool, it is important to maintain consistent cutting force and tool load throughout the entire process.

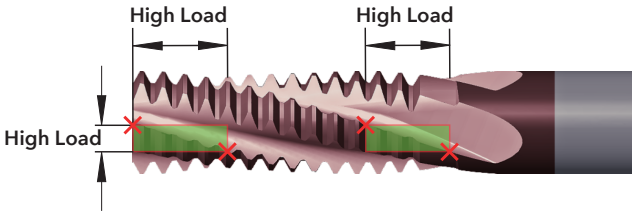
If the cutting edge leaves too early, it will result in an irregular tool load, causing vibrations.



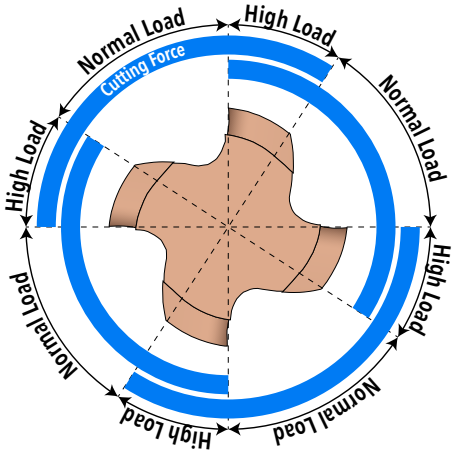
This Thread Mill is not Vibration-Free



If it leaves too late, in addition to the irregular load, you will experience a very high load due to two flutes cutting simultaneously.

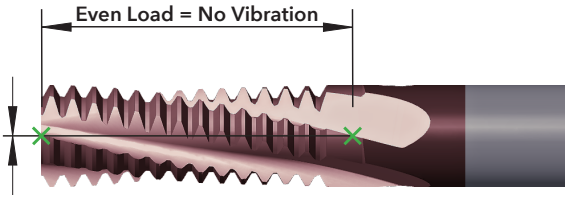


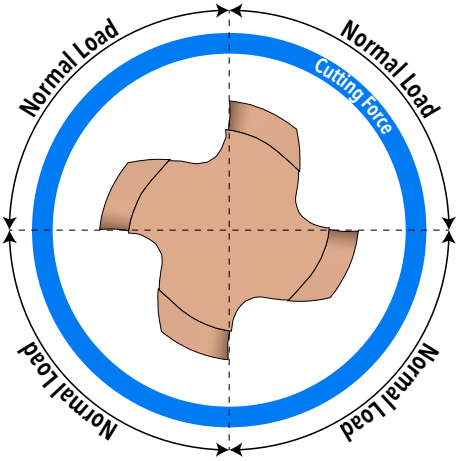
This Thread Mill is not Vibration-Free



SOLUTION

To achieve a vibration-free tool, the cutting edge should not leave the material until the cutting edge from the next flute starts entering the material.





This Thread Mill has the optimal helix angle, tool diameter and number of flutes to ensure Vibration-Free machining when using the entire cutting length.

THREAD MILLING

Vibration-Free Machining

How SmiCut Design Vibration-Free Thread Mills

The following parameters will affect whether the tool can achieve vibration-free machining:

- **Thread Length** Thread length is difficult to change, as it is mostly determined by the drawing.
- **Tool Diameter** Tool diameter is always the same for coarse threads since they are designed to be as strong as possible.
- **Number of Flutes** It is possible to increase the number of flutes for vibration-free machining, but keep in mind that some materials may present chip flow problems.
- **Helix Angle of Tool** The helix angle of the tool can be varied slightly. Our experience shows that 15° is optimal, but good results can be obtained between 12° and 18°.

With this in mind, SmiCut has designed new tools that, under the appropiate conditions will provide vibration-free machining when used at the correct thread length. Short thread lengths should have more flutes.

Thread Length	New Design	Old Design	
1,5xD	5 flutes	3 flutes	2 flutes more
2xD	4 flutes	3 flutes	1 flute more
2,5xD	3 flutes	3 flutes	Same as before
3xD	3 flutes	3 flutes	Same as before

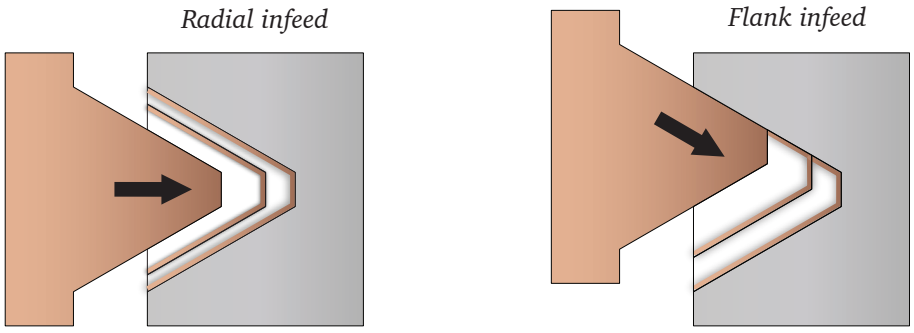
With more flutes, you will experience less vibration, shorter machining time, longer tool life, and better economy.

Reduce vibrations with proper programming

When you have problems with vibrations you normally increase number of passes. Instead of making the thread in one pass you may do it in two or three passes.

The most common way is to make the first pass at a smaller diameter and then increase the diameter to the correct size for the last pass. This will result in a radial infeed with chips that are difficult to break and may not reduce the vibrations as much as you want.

To avoid this you should not only change the diameter for the extra passes. You should as well change the level for them (Z). If you do this you will get a flank infeed with easily broken chips and less vibrations. The software SmiProg will give you correct infeed for multipasses.



Thread Milling with three passes. Use flank infeed to reduce vibrations. SmiProg gives the data for flank infeed when you make the thread in multipasses.

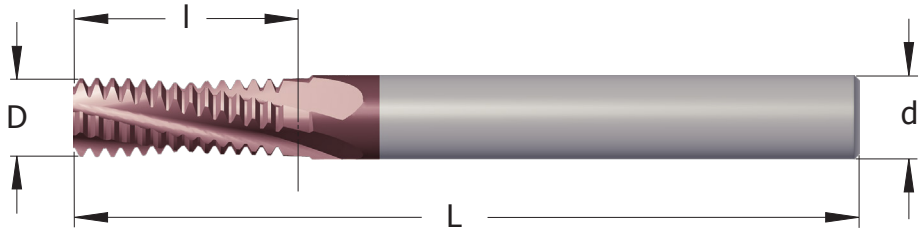
SmiCut STS

SOLID CARBIDE THREAD MILLS

ThreadBurr, Vibration-Free

NEW TOOLS

AC
TiAlCN coated, Micrograin Carbide
Tolerance
The theoretical external diameter of the cutter is laser marked on the tool.
Shank
Cylindrical h6, DIN6535 HA
Flute
Between 12° and 18°
Field of application
Thread Milling of all types of steel



M — METRIC

Pitch mm	M coarse	M fine	Vib. free	INTERNAL Part Number	d mm	D mm	Z flutes	l mm	L mm
0,5	M3 (1,5xD)		VF	NB04023E5_0.5ISO_AC	4	2,3	5	5,25	50
0,5	M3 (2xD)		VF	NB04023D6_0.5ISO_AC	4	2,3	4	6,75	50
0,7	M4 (1,5xD)		VF	NB0403E7_0.7ISO_AC	4	3	5	7,35	50
0,7	M4 (2xD)		VF	NB0403D8_0.7ISO_AC	4	3	4	8,75	50
0,75		≥ 6	VF	NB06048E10_0.75ISO_ AC	6	4,8	5	10,87	63
0,8	M5 (1,5xD)		VF	NB04038E8_0.8ISO_AC	4	3,8	5	8,4	50
0,8	M5 (2xD)		VF	NB04038D10_0.8ISO_AC	4	3,8	4	10,8	50
1	M6 (1,5xD)		VF	NB06045E10_1.0ISO_AC	6	4,5	5	10,5	63
1	M6 (2xD)		VF	NB06045D13_1.0ISO_AC	6	4,5	4	13,5	63
1		≥ 8	VF	NB0606E14_1.0ISO_ AC	6	6	5	14,5	63
1		≥ 10	VF	NB0808F16_1.0ISO_AC	8	8	6	16,5	63
1		≥ 12	VF	NB1010G17_1.0ISO_ AC	10	10	7	17,5	76
1		≥ 14	VF	NB1212H18_1.0ISO_AC	12	12	8	18,5	83
1,25	M8 (1,5xD)		VF	NB0606E14_1.25ISO_AC	6	6	5	14,37	63
1,25	M8 (2xD)		VF	NB0606D18_1.25ISO_AC	6	6	4	18,12	63
1,5	M10 (1,5xD)		VF	NB08075E17_1.5ISO_AC	8	7,5	5	17,25	63
1,5	M10 (2xD)		VF	NB08075D21_1.5ISO_AC	8	7,5	4	21,75	76
1,5		≥ 14	VF	NB1010F20_1.5ISO_AC	10	10	6	20,25	76
1,5		≥ 16	VF	NB1212G21_1.5ISO_AC	12	12	7	21,75	83
1,5		≥ 20	VF	NB1616H24_1.5ISO_AC	16	16	8	24,75	89
1,75	M12 (1,5xD)		VF	NB1009E20_1.75ISO_AC	10	9	5	20,12	76
1,75	M12 (2xD)		VF	NB1009D27_1.75ISO_AC	10	9	4	27,12	76
2	M16 (1,5xD)		VF	NB1212E27_2.0ISO_AC	12	12	5	27	83
2,5	M20 (1,5xD)		VF	NB1414E33_2.5ISO_AC	14	14	5	33,75	89

G/Rp — WHITWORTH PIPE THREAD

Pitch TPI	Standard	Vib. free	INTERNAL / EXTERNAL Part Number	d mm	D mm	Z flutes	l mm	L mm
28	G 1/16 - 1/8	VF	XB0606F10_28W_AC	6	6	6	10,43	63
28	G 1/8	VF	XB0808G14_28W_AC	8	8	7	14,06	63
19	G 1/4 - 3/8	VF	XB0808F15_19W_AC	8	8	6	15,37	63
19	G 1/4 - 3/8	VF	XB1010F22_19W_AC	10	10	6	22,06	76
14	G 1/2 - 7/8	VF	XB1212G20_14W_AC	12	12	7	20,86	83
14	G 1/2 - 7/8	VF	XB1616G28_14W_AC	16	16	7	28,12	89
11	G 1 - 1 1/2	VF	XB1212E26_11W_AC	12	12	5	26,55	83

NPT — NPT PIPE THREAD

Pitch TPI	Standard	Vib. free	INTERNAL / EXTERNAL Part Number	d mm	D mm	Z flutes	l mm	L mm
27	1/16 - 1/8	VF	XB0606F10_27NPT_AC	6	6	6	10,82	63
18	1/4 - 3/8	VF	XB0808F16_18NPT_AC	8	8	6	16,23	63
14	1/2 - 3/4	VF	XB1212F22_14NPT_AC	12	12	6	22,68	83
11,5	1 - 2	VF	XB1616F29_11.5NPT_AC	16	16	6	29,82	89

VF = Vibration-Free if you use the entire cutting length. In the SmiCut main catalogue you will find more tools that are Vibration-Free.

SmiCut AB, Sweden, tel. +46 240 182 30, info@smicut.se, www.smicut.com