

TRAK[®] MACHINE TOOLS



SOUTHWESTERN INDUSTRIES, INC.

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White Paper

Why is my TRL cutting the wrong thread?

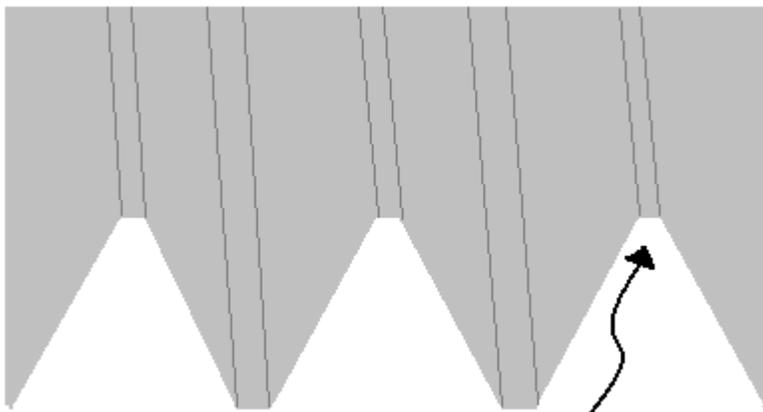
The problem may be coming from the use of partial threading inserts.

Full vs. partial threading inserts on TRL lathes

The canned threading cycle is designed for full-profile threading inserts. Use of partial-profile inserts may require an X-modifier.

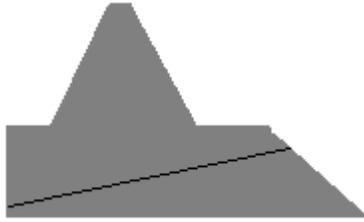
What is a full or partial-profile threading insert?

Essentially, a thread is supposed to look like this:



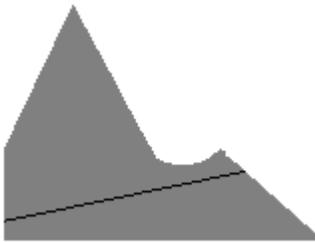
Notice how there are no “sharp” points?

A full-profile threading insert completely sculpts the thread, and is designed for only one pitch. A common full-profile threading insert looks like this:



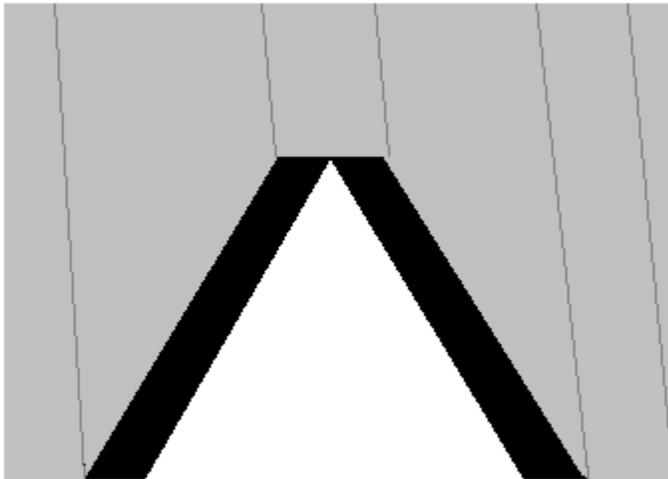
Again, there is not a sharp point on the end.

In contrast, a partial profile tool looks something like this:



It's designed to thread a variety of pitches depending on how far it cuts into the material.

Our software is designed for a full-profile insert, meaning when the operator touches the tip to the material in tool set-up, the computer thinks a flat tip is touching, not a sharp tip. A partial-profile insert will not take off enough material. Consider the following picture:



The black portion shows the extra material that a partial-profile insert would leave behind. Therefore, especially with large threads, each thread will be too "fat."

How do we take off the extra material?

The operator has to put in a negative X-modifier to compensate for the extra material. How much of a modifier? More for big threads than for small threads. Play around. If the customer needs a super precise thread, then he should probably invest in full profile threading inserts.

Which type of threading insert is best?

Each has its strengths and weaknesses. A full-profile insert cuts the exact thread without removing extra material, and therefore produces a stronger thread. Yet, it requires a shop to keep a larger threading insert stock. A partial-profile insert produces a weaker, less exact thread, but enables the shop to keep only a handful of inserts that cut a variety of threads, thus simplifying stock keeping.