

# TRAK<sup>®</sup> MACHINE TOOLS



SOUTHWESTERN INDUSTRIES, INC.

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White Paper

## Why is my TRL cutting the wrong thread?

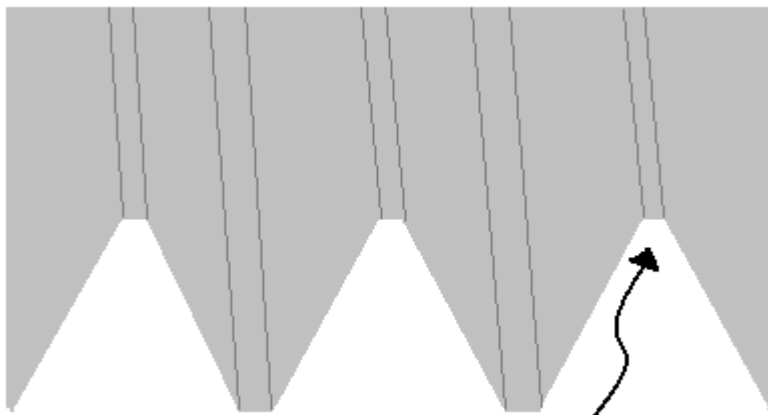
The problem may be coming from the use of partial threading inserts.

### 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.

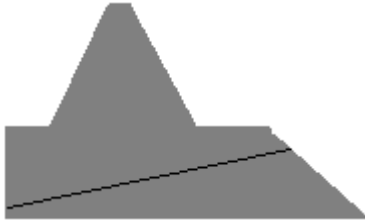
What is a full or partial-profile threading insert?

Essentially, a thread is supposed to look like this:



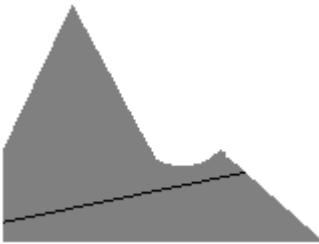
Notice how there are no “sharp” points?

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:



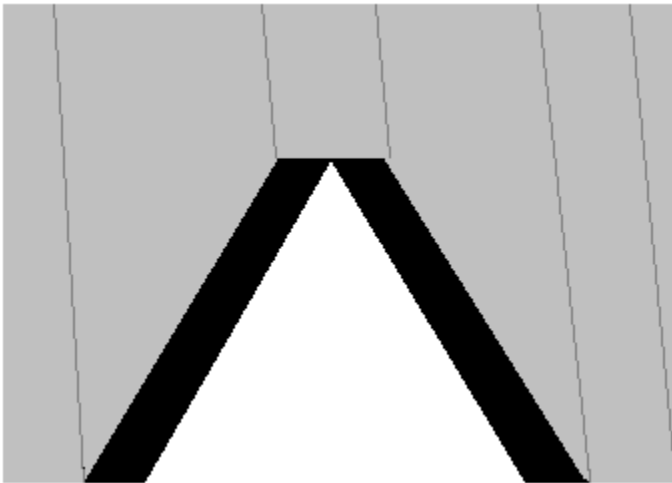
Again, there is not a sharp point on the end.

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.