

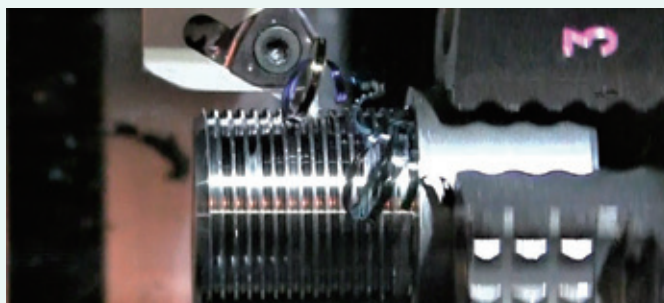
Measures against chips in thread cutting (Patent No. 6661823)

■ Issues in thread cutting

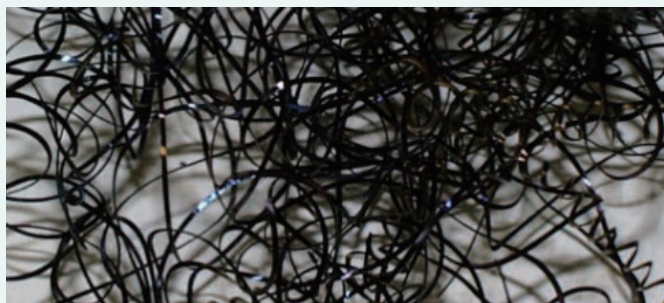
The shape of chips generated in thread cutting tends to be unstable and such chips are likely to cause problems by getting tangled around the workpiece and tool.

Chips tangled on the workpiece may then cause scratches resulting in defective products and the need for frequent chip removal and short stoppages reduces the machine operation rate.

The method we have verified this time is effective even in cases where improvement of chip breaking is not possible using a thread cutting insert equipped with a chip breaker, or high-pressure coolant.



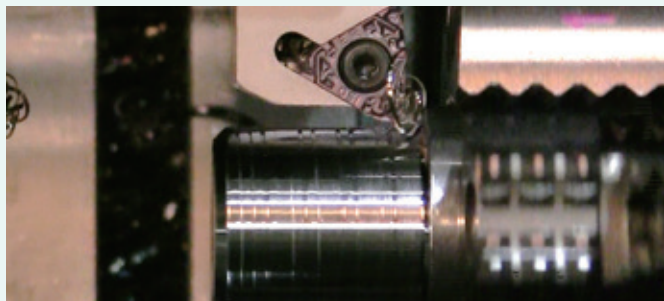
Thread cutting in progress



Entangled chips from thread cutting

■ Reliable chip processing by dividing machining into two stages

During thread cutting, the X axis is moved to create portions where thread cutting has been completed and portions where it has not, and this is followed by normal thread cutting. We consider that this will enable reliable breaking of chips because there is no machining done at the locations where thread cutting has already been completed. (Patent No. 6661823)



Thread cutting with X-axis motion

■ Results of the verification

The result of machining with this measure adopted is shown in the photographs below.

Before the change, the chips were long and their form was unstable, so various problems were likely to occur, but performing the machining in two stages made the chips shorter and gave them a form that was less likely to cause problems such as entwining.



No chip breaking movement



Chip breaking movement applied

■ Disadvantages of the verified method

The following disadvantages are conceivable in regard to the measure against chips in thread cutting that we verified this time.

- Since the number of thread cutting passes increases, the machining time increases.
- The life of the insert may be shortened because the cutting distance is extended.

In order to reduce the impact of these disadvantages, it is advisable to restrict use of the chip breaking movement to passes where entangling chips will be or have been generated.

In order to continue to provide machines that earn money and to propose high-efficiency cutting methods that make even better use of these machines, we will help to improve our customers' productivity by taking on difficult challenges and finding ways to resolve them.

Contact: 076-274-1402
Technical Sales & Cutting Division, Sales Affairs Department

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