

“Hobbing” is the type of machining commonly used for the gears essential to power transmission. We verified this machining on TAKAMAZ products.

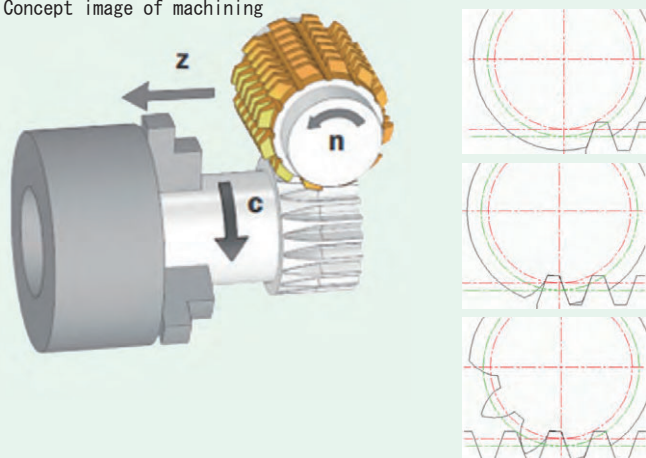
About “Hobbing” on Mill-Turn Lathes

As a result of starting machining trials on “inner diameter involute splines” to answer requirements for process integration in 2016, we’ve been running gear skiving and hobbing tests on internal and external gears, mainly for auto makers. In this volume we will cover the hobbing part of such endeavors.

What is hobbing?

This is a technique where a cutter with a lead like a screw is rotated while being pressed against the synchronously rotating workpiece and fed in the axial direction, incrementally cutting grooves to machine gears and spline grooves. Since gear machining using a hob cutter is generally done on a special-purpose machine called a hobbing machine, it was necessary to divide the work into a turning process and a gear machining process. Therefore, incorporating a hobbing unit into a mill-turn lathe that features a Y axis can enable the integration of processes, thereby reducing the number of machines. This is also expected to improve accuracy.

Concept image of machining



Characteristics of hobbing

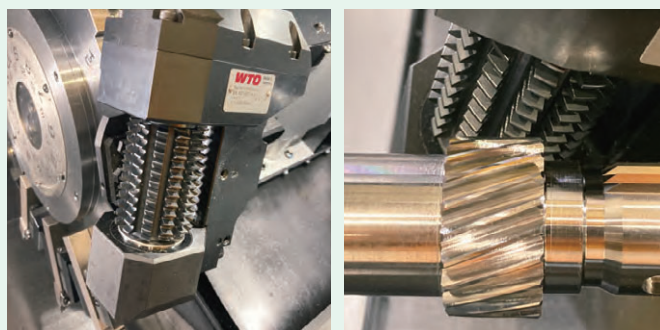
Hobbing is a generative technique where all of the teeth of a gear are formed together little by little by rotating both the hobbing cutter and the workpiece. In comparison with forming techniques such as milling, where a cutting tool is used to form one gear groove at a time, hobbing reduces machining time and allows efficient machining, so it is suited to mass-production manufacturing. To perform hobbing on TAKAMAZ lathes, a Y-axis slide is necessary. By shifting the Y-axis machining position during machining and making movements so that all parts of the hobbing cutter’s cutting edges are utilized, tool lives can be extended and running costs reduced. On the other hand, since internal gears and blind shapes cannot be machined by hobbing, the machining technique that is suited to the shape to be machined has to be considered.

Hobbing with TAKAMAZ Products

We have a track record of hobbing on a specially-adapted XT-8MY mill-turn lathe. This helps to cut costs through process integration for high-mix, low-volume products.



XT-8MY



Hobbing unit

Summary

In this volume we have covered the machining technique called “hobbing” commonly used for the gears that are essential to the power transmissions of automobiles and aircraft. We will continue our efforts to expand the range of models that can support the technique so that we can satisfy more customer needs. For more information on tools and machine specifications, contact your local distributor.

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