

No.110

Oversize cutting of internal threads

Cutting
tap

[Consultation]



When tapping with a tension/compression holder on a machining center, I sometimes have problems with the hole accepting the No-Go gauge (Oversize internal threads). I don't see any chipping or welding on the tap and I want to know what else can cause this problem.

[Answer]

The feed rate of the tap must be matched with the "thread lead". We think the cause of the problem may be "over feeding" or "under feeding". I will explain this concept below.



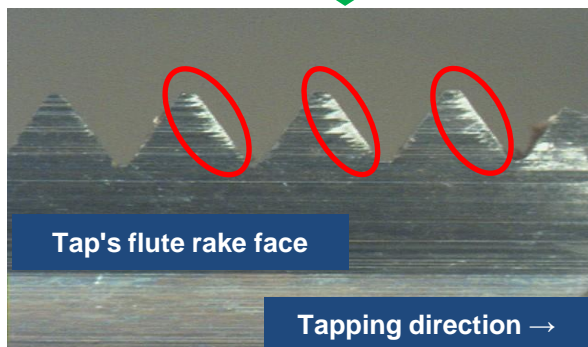
※The screw lead is the distance a screw (tap) travels in one revolution.

[Description]

You can judge whether "over feeding" or "under feeding" happens by observing the rake surface of the tap's flutes.

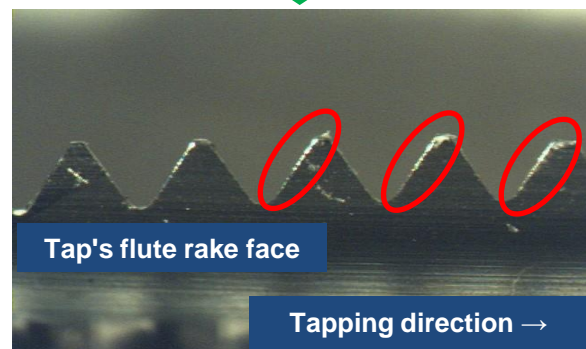
● Over feeding

When the tap proceeds with more than one lead of the thread by one rotation, abnormal cutting marks appear on the leading flanks. This over cutting results in oversize of the internal thread.



● Under feeding

When the tap proceeds with less than one lead of the thread by one rotation, abnormal cutting marks appear on the following flanks. This over cutting results in oversize of the internal thread.



[Countermeasures]



When these problems happen, please take the following measures to correct the feed rate.

- * Use a machining center with fully synchronous feed system and a rigid holder when possible.

If you don't have a machine with fully synchronous feed system, please take the following measures to correct the problem.

- * Adjust the weight balance of the main spindle.
- * In case of "over feeding", strengthen the tension spring.
- * In case of "under feeding", strengthen the compression spring.