

No. 047

How to create an internal insert coil thread?

How to use

【Question】

My drawing has instructions stating, "Please insert an *insert coil* and finish the internal thread. What is an "insert coil"? Also, can I use a regular taps to produce an internal insert coil thread?

【Answer】

An insert coil is a spring-like coil that is used to reinforce and repair internal threads. It is commonly referred to as a STI (Screw Thread Insert) helical insert coil. An internal screw thread that utilizes an insert coil is processed with a special tap, so a standard normal tap cannot be used.

【Explanation】

A helical insert coil is a reinforcing rhombic shaped wire that is produced by winding the wire into a coil that has internal and external threads on the major and minor diameters. The spring like coil is inserted into a thread of soft ductile materials thread such as light metal, cast iron, plastic, and wood to strengthen the thread. It can be applied to an expensive delicate component to prevent thread damage or it is used when repairing damaged internal threads. The insert coil is applied by inserting it into an internal thread that has been tapped with an insert coil tap. The internal thread diameter that the inserts coil fits into is larger by the combined thickness of both sides of the coil. Therefore, the tap for the insert coil is considerably larger than the nominal diameter of the same size standard thread. The Formula for finding the helical coil wire basic thread dimensions = 2 X .64952 X P. Add the answer to all standard thread dimensions.

For example, the outer diameter dimension of a standard tap: HT P3 M 6 X 1 5P is about 6.000 mm, the outer diameter dimension of an Insert coil hand tap: AL - HT 1 b STI M 6 X 1 5P is about 7.299 mm. That's about 1.299 mm larger in diameter than a standard M6 internal thread. As a result, the diameter of the bored hole for tapping for an insert coil is usually larger than a standard thread size. As a reference , please see the MAX. and MIN. bored hole diameters table below for various insert coil sizes.

【data】

■ For helical coil threaded inserts, metric threads

Nominal size	Bored hole size		Bored hole size ref.
	MAX	MIN	
M 2 X 0.4	2.16	2.10	2.13
M 2.5X 0.45	2.68	2.60	2.6
M 2.6X 0.45	2.78	2.70	2.7
M 3 X 0.5	3.20	3.12	3.15
M 4 X 0.7	4.30	4.17	4.2
M 5 X 0.8	5.33	5.16	5.2
M 6 X 1	6.42	6.25	6.3
M 8 X 1.25	8.52	8.31	8.4
M 10 X 1.5	10.62	10.37	10.5
M 10 X 1.25	10.52	10.31	10.4
M 10 X 1	10.42	10.25	10.3
M 12 X 1.75	12.73	12.43	12.6
M 12 X 1.5	12.62	12.37	12.5
M 12 X 1.25	12.52	12.31	12.4

Nominal size	Bored hole size		Bored hole size ref.
	MAX	MIN	
M 14 X 2	14.83	14.49	14.7
M 14 X 1.5	14.62	14.37	14.5
M 14 X 1.25	14.52	14.31	14.4
M 16 X 2	16.83	16.49	16.7
M 16 X 1.5	16.62	16.37	16.5
M 18 X 2.5	19.04	18.58	18.9
M 18 X 1.5	18.62	18.37	18.5
M 20 X 2.5	21.04	20.58	20.9
M 20 X 1.5	20.62	20.37	20.5
M 22 X 2.5	23.04	22.58	22.9
M 22 X 1.5	22.62	22.37	22.5
M 24 X 3	25.25	24.70	25.1
M 24 X 1.5	24.62	23.37	24.5

The bored hole size for a helical insert coil thread is completely different from that of the same standard size thread to accommodate for the thickness of the coil wire.

*The figures listed above are according to the data provided by helical coil wire insert manufacturers.

For the introduction of Hand tap: AL - HT (1b STI) Spiral tap: AL - SP (1b STI) and Point tap: AL - PO (1b STI). For insert coils, see "Bag full of wisdom..." No. 027 for your reference.