| No. 078 | **Nominal sizes of the unified screw threads** | Thread specifications |

【Question】

The screw thread dimensions of less than a 1/4" in the Unified screw threads are referred to as Number sizes, but how do I calculate the nominal major diameter dimension? I understand the nominal dimensions of fraction size, for example "1/4 UNC", will be calculated as "25.4 mm ÷ 4" or "6.35 mm in diameter". If the screw thread is listed as a Number size, how can I know the diameter size?

【Answer】

The calculation formula for fractional sizes of Unified screw threads is the nominal size as shown in the designation, like 1/4" (6.35mm) which is the nominal major diameter size. The thread sizes less than a 1/4" in diameter are listed as Numbers in the Unified screw thread sizes and are not listed in fractional sizes. The calculation formula for nominal major diameters of Unified Number size screw threads is a little troublesome but once expained it is easy to understand. The method of calculation for number size screw threads is shown below. It is far easier to refer to a table for the Unified number .

【Explanation】

The major diameters of the fractional size Unified screw threads and the Number size Unified screw threads are stated completely different.

Fractional size Unified screw threads are calculated as 1/4" = 1" ÷ 4 = .250 in diameter or 25.4 mm ÷ 4" or 6.35 mm.

The most common Number size Unified screw threads are from a #0 to a #12.
Unified Number size screw threads are calculated different from fractional sizes. The original Number size screw thread concept was developed in the late 1800's. The Number size threads started with the #0 thread size as a base of information at a .060 or 1.52mm in diameter.

To calculate a Number size screw thread, we must also start with the #0 as .060 or 1.52mm on the major diameter.
Each additional number over the #0 size will add .013 or .0051mm to the major diameter. This means an inch size #1 Unified screw thread is .060 + .013 = .073 on the major diameter or 1.52mm + 0.33mm = 1.85mm on the major diameter. A #2 Unified screw thread is .060 + 2 X .013 = .086 on the major diameter or 1.52mm + 2 X 0.33mm = 2.18mm on the major diameter. A #10 Unified screw thread is .060 + 10 X .013 = .190 on the major diameter or 1.52mm + 10 X 0.33mm = 4.82mm on the major diameter.

Size	Dimension of call (reference dimension)		Calculation formura of nominal dimension (inch)
	(inch)	(mm)	
№ 0	0.0600	1.524	0.06
№ 1	0.0730	1.854	0.06＋0.013
№ 2	0.0860	2.184	0.06＋(0.013×2)
№ 3	0.0990	2.515	0.06＋(0.013×3)
№ 4	0.1120	2.845	0.06＋(0.013×4)
№ 5	0.1250	3.175	0.06＋(0.013×5)
№ 6	0.1380	3.505	0.06＋(0.013×6)
№ 8	0.1640	4.166	0.06＋(0.013×8)
№ 10	0.1900	4.826	0.06＋(0.013×10)
№ 12	0.2160	5.486	0.06＋(0.013×12)

Even if it is made into a table, it is a calculation formula of inches, so it may be hard to understand for those who use mm as a