



WHAT IS THREAD NOMENCLATURE?

Thread classes for products, and by extension the gages used to inspect them, can be difficult and confusing to understand. The current industry standard for unified inch screw threads is ASME B1.1-2003 and the current standard for the gages used to inspect them is ASME B1.2-1983. Both standards have been reaffirmed multiple times since their introduction, and they remain the current US standard.

SO, WHAT EXACTLY DOES "1/2-13 UNC 2B" MEAN ON YOUR PART PRINT?

This callout means that the internal thread meets the current ASME standards for thread manufacturing and thread inspection. This threaded hole would have a major diameter of .500" minimum, 13 threads per inch (also referred to as pitch), a pitch diameter of .4500" to .4565" and would be a Unified National Course thread. It has a class of fit of 2, and the "B" tells us that a working Go NoGo thread gage should be used to check this internal threaded hole.

A 1/2-13 UNC 2B thread plug contains both a Go and a NoGo member. The Go member must pass through the threaded hole and the NoGo should go no more than 1.5 turns into the hole. If either of these two functions should not happen as stated, the part would fail inspection.

A closer look will tell us that the Go member has a major diameter of .500" with a plus tolerance of .0006", and a pitch diameter (PD) of .4500 with a plus tolerance of .0003". Please note that a thread plug manufactured to this specification does not have a minor diameter with a tolerance. Keep in mind that any thread gage can only measure pitch diameter – the major and minor diameter will not fit a bad thread.

WHAT DOES "CLASS OF FIT" MEAN?

In English threads, there are 3 classes of fit: 1, 2, or 3. The higher the number, the tighter the manufacturing tolerance will be to pass the part with the gage. If you simply look at the difference between the NoGo

member on a 2B versus a 3B thread plug gage the answer will be easy to see: the PD for a 2B NoGo member is .4565 with a minus .0003" tolerance. The PD for a 3B NoGo member is .4548 with a minus .0003" tolerance. Since we do not want the NoGo member to turn into a threaded hole, the 3B gage will take away product tolerance and make it easier for the NoGo member to thread into the hole.

WHAT IS THE SIGNIFICANCE OF THE LETTERS A AND B?

The B will indicate that the gage is a working thread plug where an A will tell you that it is a ring gage used to measure the male threaded rod. When you have a plug gage in hand, and it says 1/2-13 UNC 2A it is a thread setting plug used to calibrate the threaded ring gage – it cannot be used properly for any other purpose. It should not fit into a threaded hole under any circumstance – if it does thread into your parts they were made to the wrong specification. A working thread plug will not fit into a ring gage.