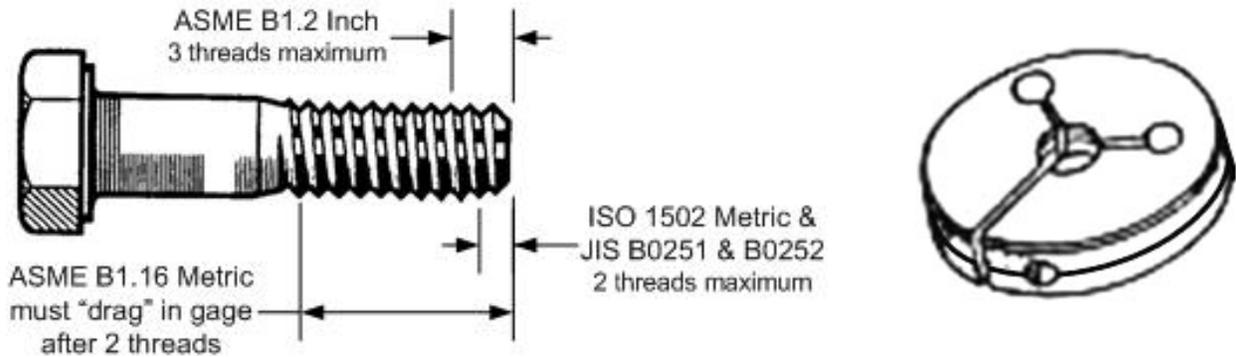


How Many Turns Can A Screw Enter A NOT GO Ring Gage? The Answer Depends On The Applicable Specification.



A frequently asked question on thread acceptability is, "How many turns can an external product thread enter a NOT GO (NOGO) ring gage and still be considered acceptable?"

What are the applicable thread specifications and what do they state?

Unfortunately, there is more than one answer to this seemingly simple question. There are four widely used thread specifications and each provides a different answer to this question. To answer this question accurately one must first determine which thread specification is applicable to the product thread being inspected and secondly, which thread gaging specification is therefore applicable. The following chart provides guidance in answering the question of the applicable gaging specification:

Applicable Thread Specification	Applicable Thread Gaging Specification
Inch Threads: ASME B1.1	ASME B1.2
Metric Thread: ASME B1.13M	ASME B1.16M
Metric Thread: <ul style="list-style-type: none"> • ISO 68 • ISO 261 • ISO 965/1 • ISO 965/2 	ISO 1502
Metric Thread: JIS B 0209	JIS B 0251
Metric Thread: JIS B 0211	JIS B 0252

The following statements come directly from the applicable thread specifications listed above:

(Inch) ASME B1.2-1983, section 5.2.1 states:

“NOT GO (LO) functional diameter is acceptable when the NOT GO (LO) thread ring gage applied to the product thread does not pass over more than three complete turns.”

(Metric) ASME B1.16M-1984, section 5.2.1 states:

“LO functional diameter limit is acceptable when the LO thread ring gage is applied to the product external thread if:

- a) it is not entered: or
- b) all complete product threads enter, provided that a definite drag from contact with the product material results on or before the second turn of entry. The gage shall not be forced after the drag is definite.

This means that a part having an external thread made according the ASME B1.13 can enter the Not Go ring gage the entire length of the thread and still be acceptable provided the inspector can feel a definite interference between the gage and the thread at a location not more than two threads from the starting end.

(Metric) ISO 1502-1996, section 7.1.9, b) states:

“A NOT GO screw ring gauge, when screwed by hand without using excess force on the workpiece thread, may enter on both sides not more than two turns of thread.”

(Metric) JIS 0251 and B0252, section 7 states:

“...the not-go thread can not be screwed two revolutions or more... “

What should happen when two gages provide different results?

When two Not GO gages provide differing inspection results, where one gage indicates the parts do not exceed the allowable entry into the gage, but another gage indicates the same parts do exceed the allowable entry, both gages should be examined to determine if they are suitably calibrated. Special attention should be given to examine the ring gages for unacceptable wear on their lead-in threads. This is the location in the gage that receives the most use and therefore will wear first.

If, after examination of both NOT GO ring gages, it is determined that both gages meet the applicable calibration requirements the parts should be considered acceptable even though different results are observed. This is based on the thread acceptance rule given in ASME B1.3, section 6.b which states, “Within each gaging system, a choice of gages is specified for each characteristic. Acceptance by any one gage specified for a characteristic shall be the criterion for acceptance of that characteristic.” This issue is also addressed in ASME

B1.2, section which states, "...it is possible for two individual limit gages of the same type to be at opposite extremes of the gage tolerances permitted, and borderline product threads accepted by one could be rejected by another. For this reason, a product screw thread is considered acceptable when it passes a test by any of the permissible gages in ASME B1.3M for the gaging system specified, provided the gages being used are within the tolerances specified..."

What should threaded product manufacturers do to be safe?

To assure threaded product acceptance, regardless of the applicable specification, I suggest the following internal policy be adopted by bolt and screw manufacturers:

NO THREADED PART SHALL ENTER THE NOT GO RING GAGE
MORE THAN TWO TURNS.

In the end, the applicable specifications must be followed!

Even though I make the suggestion above for the consideration of threaded product manufacturers to adopt internally, when a threaded product supplier finds himself in conflict with a purchaser concerning NOT GO gaging, the thread inspection applicable to the specific parts in question must be applied as stated above.