TAPER PIPE THREAD GAGES

METHOD OF GAGING PRODUCT ANPT AND NPTF

Internal Threads: The internal thread is first gaged with a limit-type L1 taper thread plug gage, and the gaging notch which most nearly represents the size of the thread is noted.

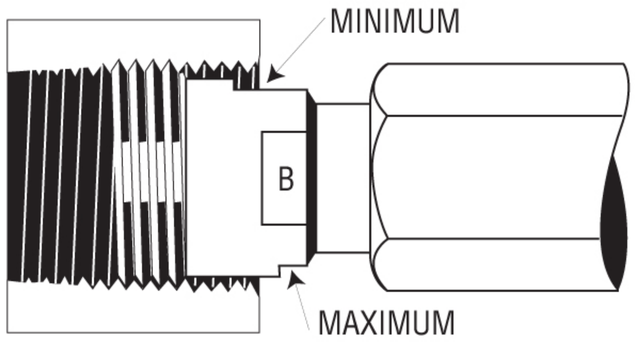

Fig. 5 Checking fitting with L3 thread Plug Gages.

The three product threads beyond the L1 are called the L3 length and are the additional threads which will be engaged when the pipe is tightened with a wrench, or “wrench tight”. These threads are next gaged with an L3 taper thread plug gage. This is also a limit type gage with the length equal to L1 plus L3, but which has four threads at the small end only. For a thread to be acceptable on an L3 gage, the position of the gaging notch must coincide with-in 1/2 turn of the position previously noted on the L1 gage. The L1 and the L3 together check the lead, taper, pitch diameter, and the major diameter.

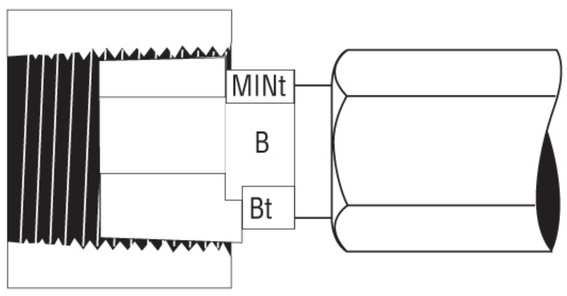

Fig. 6 Checking minor diameter truncation with 6 step plain Plug Gages.

The minor diameter of internal threads is determined by the amount of truncation of the thread crests. As the truncation and pitch diameter varies within limits, so will the minor diameter vary and for this reason it is customary to refer to minor diameter as at “maximum truncation” or “minimum truncation.” There are also 3 pitch diameter gaging positions: basic, minimum, and maximum, which necessitates 3 pairs of maximum and minimum truncation steps, or a total of 6 positions.

To gage the minor diameter, a 6 step plain plug gage is always used in connection with the L1 gage. The L1 gage is used as a guide to determine the gaging position. If the basic gage notch is flush with end of the product, the threads are considered to be basic. The plain plug gage used on the same fitting should show the end of the product at or between the basic maximum and minimum notches.

External Threads: ANPT and NPTF external threads are first gaged with a thin L1 taper thread ring gage. Observe the small end of the gaging face of the ring to the small end of the pipe.

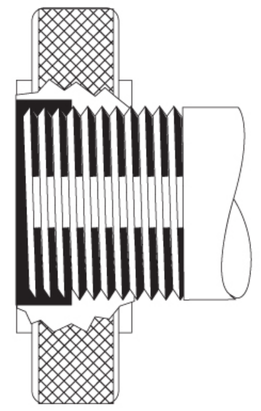

Fig. 7 L2 Thick Ring Gage

The L2 ring is used to gage the effective external threads beyond the L1 location length. It is relieved by counterboring at the small end to a depth equal to L1 minus 1P. The L2 is used like the thin L1 gage is used with a count of the number of turns by which the product over travels or fails to reach basic. The two gages together inspect the lead, pitch diameter, taper, and minor diameter. When both the L1 and L2 rings are used, the relative position of the small end of the pipe and the basic gaging face of the rings may not vary more than 1/2 turn.

The 6 step plain taper ring gage checks the truncation of the crest at the major diameter. Three of the steps represent the minimum truncation for the basic, maximum and minimum thread sizes – B, MN, MX. The other three represent the corresponding maximum truncation.

The 6 step plain ring is used similar to the 6 step plain plug. The ring is always used with a limit type thin L1 ring gage.

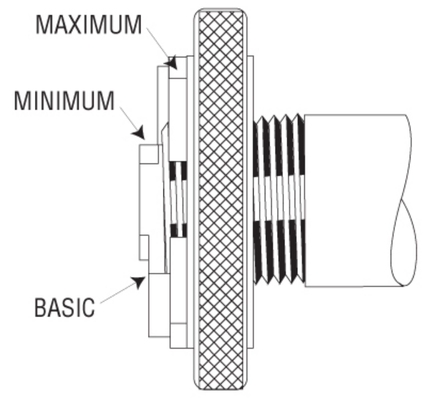

Fig. 8 Checking major diameter truncation with 6 step plain ring gage.

GAGES REQUIRED TO CHECK OTHER PIPE THREADS

THREAD TYPE	GAGING EXTERNAL PRODUCT THREAD	GAGING INTERNAL PRODUCT THREAD
ANPT	ANPT L1, L2, and Plain 6 Step Ring	ANPT L1, L3, and Plain 6 Step Plug
NPSF	Mates with NPTF External Threads	NPTF L1 Plug Gage
PTF SAE Short	PTF SAE Short L1, and L2 Ring gages	PTF SAE Short L1 and L3 Plug Gages
NPSC	Mates with NPT External Threads	NPT L1 Plug Gage
NPSM	Go / No Go Thread Ring Gages	Go / No Go Thread Plug Gages
NPSL	Go / No Go Thread Ring Gages	Go / No Go Thread Plug Gages
NPSH	Go / No Go Thread Ring Gages	Go / No Go Thread Plug Gages
NH	Go / No Go Thread Ring Gages	Go / No Go Thread Plug Gages
BSPT System A	BSPT Thread Ring	BSPT Thread Plug
BSPT System B	BSPT Thread Ring and Plain Ring	BSPT Thread Plug and Ring
BSPP	Go / No Go Thread Ring	Go / No Go Thread Plug
NGT	NGT L1, L8 and Plain 6 Step ring	NGT L1, L9 and Plain 6 Step