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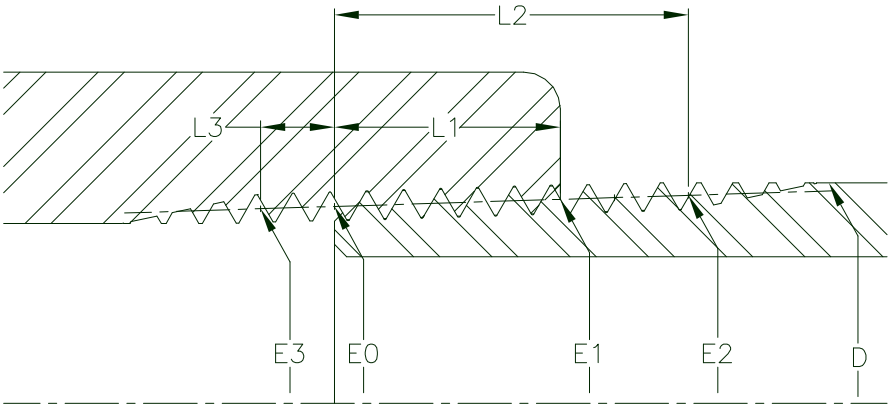
AEROSPACE STANDARD
SAE AS71051 Rev A 2007-02

PIPE THREADS, AERONAUTICAL NATIONAL FORM, SYMBOL ANPT- DESIGN AND INSPECTION



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PIPE THREADS, TAPER, AERONAUTICAL NATIONAL FORM, SYMBOL ANPT- SAE AS71051 1999-06

Threads are intended for use on pipe, plugs, fittings, and similar devices in Aeronautical components and equipment requiring a sealed thread joint.

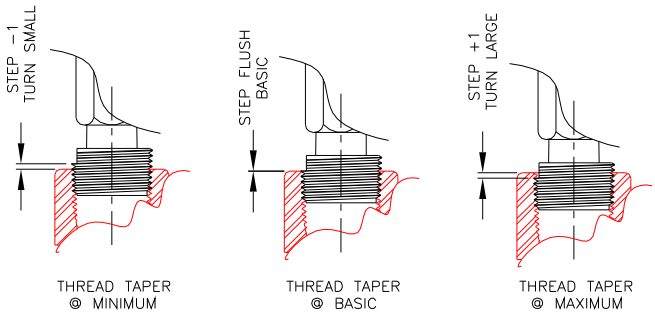
Gaging ANPT

External Product	**L1 Thread Ring Tolerance**	**+1 Turn Small / -1 Turn Large**
	L2 Thread Ring Tolerance	**+1 Turn Small / -1 Turn Large**
	Crest Check Ring Tolerance	**Step limit**
Internal Product	**L1 Thread Plug Tolerance**	**+1 Turn Large / -1 Turn Small**
	L3 Thread Plug Tolerance	**+1 Turn Large / -1 Turn Small**
	Crest Check Plug Tolerance	**Step limit**

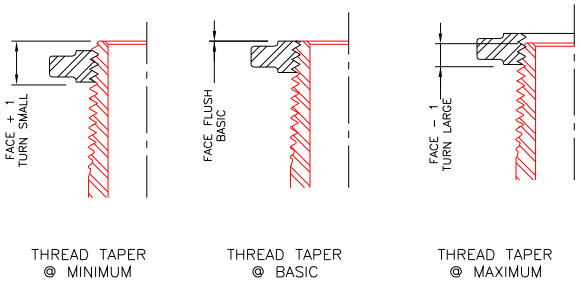
THE RECOMMENDED METHOD OF GAGING ANPT THREADS

Inspection of Basic thread size-

Internal Thread: The thread is within its extreme limits when the basic gaging notch of the L1 thread plug gage is within one turn (pitch) either way of the fitting or boss face when screwed in tightly by hand.



External Thread: The fitting or pipe is within its extreme limits when the end of the fitting or pipe is within one turn (pitch) either way of the small end of the L1 ring gage when screwed on tightly by hand.

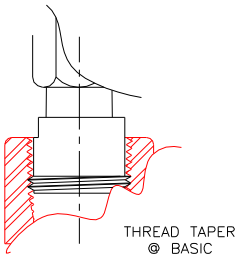


Note: Gages shall not be used when worn beyond the basic dimensions by more than ½ turn (pitch).

Inspection of thread taper-

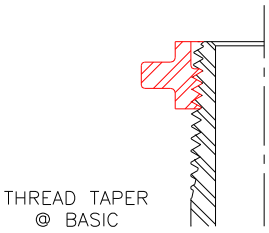
Thread Taper Internal: When gaging the taper of the internal threads, the application shall involve the use of an L1 thread plug gage and an L3 thread plug gage with thread relief. The L1 thread plug gage shall be screwed into the product hand-tight noting the position of the gaging notch with its relation to the face or reference point and qualify the product as maximum, basic, or minimum.

The L3 thread plug gage shall then be screwed into the product hand-tight and the relative position of the gaging notch shall not vary more than ½ turn (pitch) from that position noted when gaging with the L1 gage.



Thread Taper External: When gaging the taper of the external threads, the application shall involve the use of an L1 thread ring gage and an L2 thread ring gage with thread relief. The L1 thread ring gage shall be screwed onto the product hand-tight noting the position of its small end face and qualify the product as maximum, basic, or minimum.

The L2 thread ring gage shall be screwed onto the product hand-tight and the relative small end position shall not vary more than ½ turn (pitch) from that position noted when gaging with the L1 gage.



Inspection of thread Truncation-

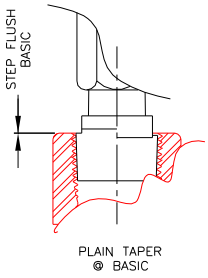
Minor Diameter – Truncation:

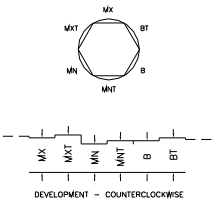
The minor diameter or truncation of the internal thread shall be checked in relation to its basic thread using a 6 step plain tapered truncation plug.

When the L1 tapered thread plug determines the product to be Basic then the B and BT steps are to be used.

When the L1 tapered thread plug determines the product to be Minimum then the MN and MNT steps are to be used.

When the L1 tapered thread plug determines the product to be Maximum then the MX and MXT steps are to be used.





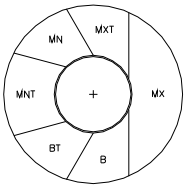
Major Diameter – Truncation:

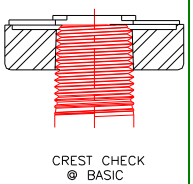
The major diameter or truncation of the external thread shall be measured over the effective L2 length and checked in relation to its basic thread size using a 6 step plain tapered truncation ring.

When the L1 tapered thread ring determines the product to be Basic then the B and BT steps are to be used.

When the L1 tapered thread ring determines the product to be Minimum then the MN and MNT steps are to be used.

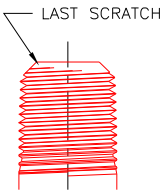
When the L1 tapered thread ring determines the product to be Maximum then the MX and MXT steps are to be used.





Off taper or out of round is indicated by excessive shake or play when applying the tapered plug or ring gage.

Excess chamfer or countersink: The thread size shall be determined by using as the reference point the first scratch instead of the end of the pipe or fitting.

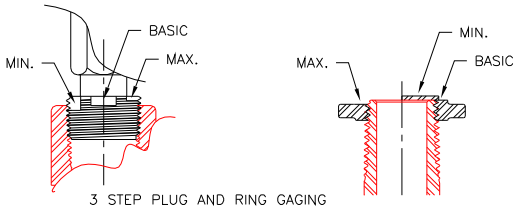


GAGING A CHAMFER WHICH EXCEEDS THE ROOT DIAMETER

-GAGE OPTIONS

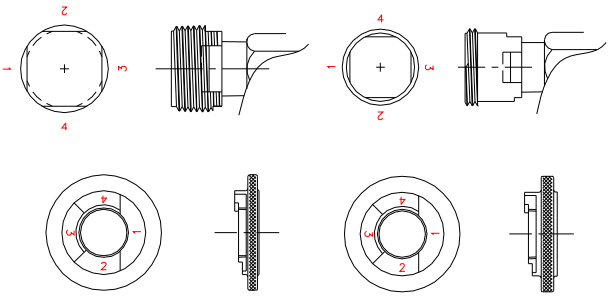
Although specific options are not introduced in this document it is common practice to use 3 or 4 step gages to assist in qualifying the product at its minimum, basic, or maximum size.

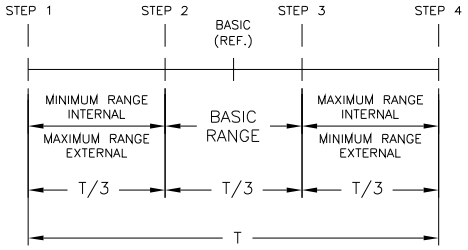
3 STEP DESIGN



3 STEP PLUG AND RING GAGING

4 STEP DESIGN





-MASTER GAGE

Master gages are not specified in this standard however are important in the proper maintenance of working gages. In general the practices outlined in the following section of this article should be followed.

-GAGE CALIBRATION

New gages should be calibrated to a master gage and have their initial stand-off recorded prior to being put into service.

In-service gages should be calibrated to the same master gage as their original calibration and shall not wear more than the equivalent of ½ turn from their original recorded position.

This article contains select information referencing the following Standards, and is to be used only as a reference. The following standards should always be consulted for final manufacturing and gaging decisions.

Aerospace Standard SAE AS71051 1999-06