



TABLE I – DIMENSIONS ⁽²⁾

THREAD SIZE	X MIN /a/	THREAD SIZE	X MIN /a/	THREAD SIZE	X MIN /a/
.1120-40	.125	.3750-24	.208	.8750-14	.357
.1380-32	.156	.4375-20	.250	1.0000-12	.417
.1640-32		.5000-20		1.1250-12	
.1900-32		.5625-18		1.2500-12	
.2500-28	.178	.6250-18	.278		
.3125-24	.208	.7500-16			

/a/ "X", MINIMUM REPRESENTS THE MINIMUM LENGTH OF EXTERNAL THREADS REQUIRED FOR ENGAGEMENT WITH COMPLETE INTERNAL THREAD PITCH. THE LOCKING ELEMENT SHALL ENGAGE WITHIN THIS MINIMUM LENGTH AND MEET REQUIREMENTS OF THE LOCKING ELEMENT OR FASTENER SPECIFICATION OR STANDARD APPROVED FOR USE.

"X", MINIMUM IS EQUAL TO 5 THREAD PITCHES.

/b/ "X", MAXIMUM EQUALS THE LENGTH OF COMPLETE THREAD PITCHES BETWEEN "Y" AND "Z".

/c/ "Y", IS FOR EASE IN STARTING, THE LOCKING ELEMENT SHALL NOT BE EFFECTIVE WITHIN THE AREA OF Y MINIMUM.

"Y", MINIMUM EQUALS ONE COMPLETE THREAD PITCH: "Y", MAXIMUM EQUALS TWO COMPLETE THREAD PITCHES. THIS DIMENSION SHALL NOT INCLUDE THREAD PITCHES WHICH HAVE INCOMPLETE FORM OR UNTHREADED PORTIONS OF END, THAT IS, CHAMFER AND ANY EXTENSION BEYOND THREAD AREA.

/d/ "Z", EQUALS ONE COMPLETE THREAD PITCH PLUS THREAD RUNOUT. THE LOCKING ELEMENT OR ANY MACHINE HOLES OR GROOVES FOR THE LOCKING ELEMENT SHALL NOT PENETRATE THIS AREA.

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THIRD ANGLE PROJECTION	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 2
PROCUREMENT SPECIFICATION NONE	TITLE FASTENERS, EXTERNALLY THREADED, SELF-LOCKING DESIGN AND USAGE LIMITATIONS FOR	CLASSIFICATION DESIGN STANDARD MS15981

SELF-LOCKING EXTERNALLY THREADED FASTENERS SHALL BE APPROVED DESIGNS AND SHALL BE SUBJECT TO THE FOLLOWING LIMITATIONS:

1. FASTENERS SHALL BE SELECTED AND USED IN A MANNER THAT WILL PERMIT FUNCTIONAL AND DIMENSIONAL INTERCHANGEABILITY WITH A PART THAT HAS ONLY THE ATTRIBUTES DESCRIBED AND DEFINED BY THE APPLICABLE STANDARDS AND SPECIFICATIONS.
2. FASTENERS SHALL BE USED ONLY IN APPLICATIONS THAT PERMIT ENGAGEMENT WITH COMPLETE INTERNAL THREADS OVER THE MINIMUM EXTERNAL THREAD AS DESIGNATED BY X, MINIMUM AS SHOWN ABOVE.
3. SELF-LOCKING EXTERNALLY THREADED FASTENERS SHALL NOT BE USED AS FOLLOWS:
 - a. AT JOINTS IN CONTROL SYSTEMS AT SINGLE ATTACHMENTS, OR WHERE LOSS OF THE FASTENER WOULD AFFECT SAFETY OF FLIGHT.
 - b. AS AN AXIS OF ROTATION FOR ANOTHER PART UNLESS THE FASTENER IS HELD BY A POSITIVE LOCKING DEVICE THAT REQUIRES SHEARING OR RUPTURE OF MATERIAL BEFORE TORSIONAL LOADS WOULD BE APPLIED TO THE FASTENER IN SUCH A MANNER AS TO RELIEVE THE INITIAL STRESSES OF THE ASSEMBLY OR TURN THE FASTENER LOOSE.

EXAMPLES: BEARINGS, BUSHINGS, CLAMP-UP BUSHINGS, PULLEYS, CRANKS, LEVERS, LINKAGES, HINGE PINS, AXLES, SHAFTS, SPINDLES, GEARS, CAMS, CAM FOLLOWERS, SLIDING MECHANISMS, AND PIVOT POINTS.

- c. AT ANY SINGLE BOLTED STRUCTURAL JOINT WHICH SERVES AS A PRIMARY LOAD PATH, THE FAILURE WHICH WOULD ENDANGER THE SAFETY OF PERSONNEL OR WOULD RENDER THE EQUIPMENT INOPERATIVE OR CAUSE ITS DESTRUCTION.

EXAMPLES: FIXED JOINTS, TIE RODS, STRUTS (FIXED LENGTH MEMBERS) WING ATTACHMENTS TO FUSELAGE, STABILIZER SURFACE ATTACHMENTS, LONGERON JOINTS, ALIGHTING GEAR JOINTS, AND ENGINE MOUNTS.

4. FASTENERS WITH MIL-DTL-18240 SELF-LOCKING ELEMENT DESIGN OR WHICH INCORPORATES AN INSERT OR PART THAT IS NON-METALLIC SHALL NOT BE USED IN PARTS WHERE THE LOCKING ELEMENT WILL ENCOUNTER KEYWAYS, SLOTS, CROSS-HOLES OR THREAD INTERRUPTIONS.
5. FASTENERS SHALL NOT BE USED TO ATTACH ACCESS PANELS, DOORS, OR TO ASSEMBLE ANY PARTS THAT ARE ROUTINELY DISASSEMBLED PRIOR TO OR AFTER FLIGHT.
6. FASTENERS SHALL NOT BE USED ON JET ENGINE AIRCRAFT IN LOCATIONS WHERE A LOOSE FASTENER COULD FALL OR BE DRAWN INTO THE ENGINE AIR INTAKE SCOOP.
7. FASTENERS THAT HAVE HAD THE LOCKING DESIGN REWORKED OR REPROCESSED SHALL NOT BE USED.
- ② 8. SELF-LOCKING ELEMENTS CLASSIFIED AS 250 °F, 450 °F OR 1200 °F ARE DESIGNED TO FUNCTION SATISFACTORILY AT TEMPERATURES THRU THEIR RANGES (-65 °F TO +250 °F, 450 °F OR 1200 °F).
9. WHEN FASTENERS ARE USED IN APPLICATIONS REQUIRING CONTROLLED TORQUE, SUCH AS CLAMPING MOLDED GASKETS IN FUEL CELLS, CONSIDERATION MUST BE GIVEN TO THE MAXIMUM AND MINIMUM LOCKING TORQUE PERMITTED BY THE LOCKING ELEMENT OR FASTENER SPECIFICATION OR STANDARD APPROVED FOR USE.

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