FED. SUP CLASS
5310

1. THE APPLICATION OF PRELOAD LOCKING NUTS IN DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

1.1 PRELOAD LOCKING NUTS MAY BE USED IN THE FOLLOWING APPLICATIONS:

1.1.1 WITH BOLTS, SCREWS, STUDS OR OTHER EXTERNALLY THREADED PARTS THAT HAVE ROCKWELL "C" HARDNESS EQUAL TO THE NUT HARDNESS OR WITHIN THE HEAT TREAT RANGE IN TABLE I.

TABLE I. HARDNESS AND HEAT TREAT RANGES

PRELOADING NUT (ROCKWELL "C" HARDNESS)	MATING BOLT, SCREW, STUDS OR OTHER EXTERNALLY THREADED PART (HEAT TREAT RANGE)
C32 - C36	C32 - C39 (150 KSI TO 180 KSI)
C36 - C40	C34 - C43 (160 KSI TO 200 KSI)
C40 - C44	C39 - C49 (180 KSI TO 240 KSI)

1.1.2 ALL JOINTS IN CONTROL SYSTEMS AT SINGLE ATTACHMENTS OR WHERE LOSS OF BOLT WOULD AFFECT SAFETY OF FLIGHT WHEN THREADED PARTS ARE HELD BY A POSITIVE LOCKING DEVICE THAT REQUIRES SHEARING OR RUPTURE OF MATERIALS BEFORE TORSIONAL LOADS WOULD RELIEVE INITIAL STRESS.

1.1.3 ON ANY EXTERNALLY THREADED PART THAT SERVES AS AN AXIS OF ROTATION FOR ANOTHER PART WHEN THERE ARE NO TORSIONAL LOADS WHICH CAN BE APPLIED TO EITHER AN EXTERNALLY OR INTERNALLY THREADED PART TO RELIEVE INITIAL STRESS, AND THE THREADED PARTS HAVE IMPEDANCE TYPE LOCKING ELEMENTS IN ACCORDANCE WITH MIL-P-18240, MIL-P-8961 OR MIL-N-25027.

1.1.4 IN AIRFRAMES, AIRFRAMES MECHANICAL AND FLUID SUBSYSTEMS AND AIRBORNE SPECIAL MISSION SYSTEMS, IF USED IN COMBINATION WITH AN APPROVED IMPEDANCE TYPE SELF-LOCKING SCREW THREAD ELEMENT, AS IDENTIFIED BY MIL-P-18240, MIL-P-8961, AND MIL-N-25027; OR WITH AN APPROVED POSITIVE LOCKING DEVICE SUCH AS COTTER PIN OR LOCKWIRE WHERE A SINGLE DISCONNECT, MISSING, FAILURE, OR LOSS OF THE THREADED PART, DURING ANY OPERATING CONDITION, COULD CAUSE ONE OR MORE OF THE FOLLOWING SITUATIONS.

A. LOSS OF AIRCRAFT

B. PRECLUDE CONTINUED FLIGHT AND LANDING WITHIN THE DESIGN LIMITATIONS OF THE AIRCRAFT, USING NORMAL PILOT SKILL AND STRENGTH.

C. SIGNIFICANT INJURY TO OCCUPANTS OF THE AIRCRAFT OR GROUND PERSONNEL.

D. RENDER A MAJOR SUBSYSTEM OR SPECIAL MISSION SYSTEM INOPERATIVE, OR CAUSE ITS DESTRUCTION.

E. CAUSE THE UNINTENTIONAL RELEASE OR INABILITY TO RELEASE ANY EXTERNAL STORE, CARGO, OR LOAD.

1.2 PRELOAD LOCKING NUTS SHALL NOT BE USED IN THE FOLLOWING APPLICATIONS:

1.2.1 AT JOINTS IN CONTROL SYSTEMS AT SINGLE ATTACHMENTS OR WHERE LOSS OF THE THREADED PART WOULD AFFECT SAFETY OR FLIGHT (EXCEPT AS NOTED IN 1.1.2).

1.2.2 ON ANY EXTERNALLY THREADED PART THAT SERVES AS AN AXIS OF ROTATION FOR ANOTHER PART (EXCEPT AS NOTED IN 1.1.3).

EXAMPLE: PULLEYS, CRANKS, LEVERS, LINKAGES, HINGE PINS AND CAM FOLLOWERS.

1.2.3 WITH BOLTS, SCREWS OR OTHER THREADED PARTS ON JET ENGINE AIRCRAFT, WITHIN LOCATIONS WHERE, IN THE EVENT THAT HARDWARE BECOMES LOOSE, THE NUT, BOLT OR SCREW, OR OTHER THREADED PART COULD BE DRAWN INTO THE ENGINE AIR INTAKE DUCT.

1.2.4 WITH BOLTS, SCREWS, STUDS OR OTHER THREADED PARTS TO ATTACH ACCESS PANELS, DOORS OR ANY PARTS THAT ARE ROUTINELY DISASSEMBLED PRIOR TO OR AFTER EACH FLIGHT.

1.3 THE BOLT, SCREW OR STUDS OR OTHER EXTERNALLY THREADED PARTS SHALL BE FLUSH OR EXTEND BEYOND THE TOP OF THE NUT AFTER INSTALLATION.

1.4 INSTALLATION TORQUE SHALL CONFORM TO THE APPLICABLE PART DRAWING OR STANDARD.

DESIGN STANDARD FOR USE WITH MIL-N-85053

APPROVED 15 JULY 1981 REVISED

P.A. NAVY - AS Other Cust USAF - 11 ARMY - MI	TITLE ..S (FASTENERS), INTERNALLY THREADED, PRELOAD LOCKING, 450°F, 800°F, 1200°F, RELIABILITY AND MAINTAINABILITY DESIGN REQUIREMENTS FOR	MILITARY STANDARD MS 14194
PROCUREMENT SPECIFICATION	SUPERSEDES:	SHEET 1 OF 1

DD FORM 1 SEP 71 672-1 (Coordinated) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

PLATE NO. 17709

PROJECT NO. 5310-1108