

SUBJECT: NUTS – HEX FLANGE TOP LOCK (INCH)

1.0 SCOPE AND PURPOSE. This Material and Process Specification provides dimensional data, material specifications and performance requirements for prevailing torque Hex Flange Top Lock Nuts (Inch), all metal design.

2.0 USE OF THIS STANDARD. Unless otherwise specified, all Hex Flange Top Lock Nuts, all metal, (Inch) will conform to this Material & Process Specification.

3.0 SOURCE REFERENCE. AGCO's Hesston Operations standards engineer is responsible for the content of this specification.

Note: There are no American National Standards for inch prevailing-torque type steel hex nuts or hex flange nuts.

The following documents were used as reference:

IFI 100 / 107 2002 (R2007)

IFI 101 2002 (R2007)

IFI 140

M&PS 705100300

4.0 MATERIAL. Nuts shall be made from steel conforming to requirements specified in IFI 140. Medium carbon material capable of being heat treated to meet mechanical and performance requirements listed in this standard.

5.0 MECHANICAL PROPERTIES. There are two grades of prevailing torque hex flange nuts designated as Grades F and G.

Grade	Size	Proof Load Stress (PSI)	Rockwell Hardness
F	1/4 - 3/4	120,000	C28 max.
G	1/4 - 5/8	150,000	C24 - C32
	3/4	150,000	C26 - C34

6.0 THREADS. Threads shall conform to ASME / ANSI B1.1, UNC-2B or UNF-2B as specified. Threads shall be right hand unless otherwise specified.

7.0 GRADE. The preferred grade shall be Grade G. Grade F is acceptable for use when specified on the individual fastener drawing.

8.0 FINISH. The preferred finish for Hex Flange Top Lock Nuts is per M&PS 705100300 (Fasteners–Dip Spin Zinc Rich Inorganic Coating with Wax).

8.1 The application of wax coating with the dip spin coating on hex flange top lock nuts was to closely replicate the CoF of the former coating which was cad, wax and yellow. This coating is no longer approved or accepted at AGCO production facilities.

8.2 The approved wax coating must conform to requirements of GMW1400 (GM7111-M). This is a Brulin water based wax, 25% concentration, allowed to dry with ambient circulating air.

8.3 Other wax coating formulations may be acceptable as long as the CoF of the HFTLN tested is the same as the approved formulation.

8.4 For HFTLN's used in welding applications these are the only acceptable finishes. If specified for welding applications, non-plated (NP) and Black Phos & Oil (BP&O) or Phos & Oil (P&O) should be used. Welding on dip spin coatings, electroplated coating or cad plating is absolutely forbidden.

9.0 PERFORMANCE. Hex Flange Top Lock Nuts shall meet all performance requirements listed in the IFI 100 / 107 standard. The prevailing torque feature for all metal hex flange top lock nuts is obtained by deformation of the threads at the top of the nut. This can be achieved by the ovalized style or the automation style which has the top two or three threads deformed. The ovalized deformation is preferred at Hesston Operations. Both styles must meet requirements listed for first on and first and third off listed in Tables 13B & 13C of this specification or IFI 100 / 107.

10.0 IDENTIFICATION SYMBOLS. Hex Flange Top Lock Nuts (all metal) shall have the grade identification symbols on the flange in accordance with IFI 100 / 107 or as shown below.

Grade F shall have three equally spaced symbols (dot, line, letter or other character) on the top side of the nut or flange or the letter F indented in one or more flats of the nut.

Grade G shall have six equally spaced symbols (dot or line) on the top side of the flange or the letter G indented in one or more flats of the nut.

11.0 DEFECTS. Nuts shall not contain any surface imperfections that might affect their serviceability. For example: burrs, seams, laps, loose scale and other irregularities.

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12.0 AGCO HESSTON PART NUMBERS. A current listing of all hex flange top lock nuts (inch) can be found in the MRP program (BSCDSP) in Category 3980. An effort should be made to use existing part numbers and not create new part numbers.

13.0 BASIC DIMENSIONS. Refer to the following tables for basic dimensional and mechanical requirements for Hex Flange Top Lock Nuts (all metal), inch.

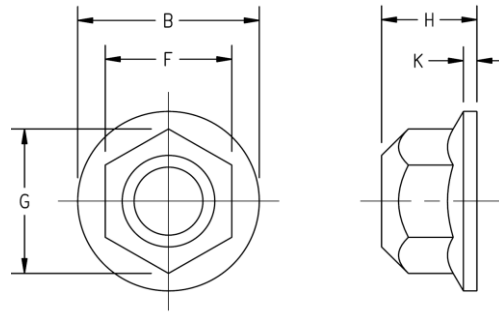


Table 13A Basic Dimensional Requirements

Nominal Size Basic Major Thread Diameter	Width Across Flats			Width Across Corners		Height	Flange Diameter	Flange Thickness
	F			G		H	B	K
	Basic	Max.	Min.	Max.	Min.	Max.	Max.	Min.
#8 *	11/32	0.344	0.334	0.397	0.381	0.203	0.469	0.02
#10 *	3/8	0.375	0.365	0.433	0.416	0.219	0.500	0.03
#12 *	7/16	0.439	0.428	0.505	0.488	0.236	0.594	0.04
1/4 (0.2500)	7/16	0.439	0.428	0.505	0.488	0.300	0.560	0.04
5/16 (0.3125)	1/2	0.502	0.489	0.577	0.557	0.365	0.680	0.05
3/8 (0.3750)	9/16	0.5645	0.551	0.650	0.628	0.425	0.810	0.06
7/16 (0.4375)	11/16	0.6895	0.675	0.794	0.768	0.495	0.930	0.07
1/2 (0.5000)	3/4	0.752	0.736	0.866	0.840	0.555	1.070	0.08
9/16 (0.5612)	7/8	0.877	0.861	1.010	0.982	0.625	1.190	0.09
5/8 (0.6250)	15/16	0.940	0.922	1.083	1.051	0.690	1.330	0.10
3/4 (0.7500)	1-1/8	1.127	1.088	1.299	1.240	0.825	1.585	0.11

Table 13B Mechanical Requirements (Coarse Threads)

Nut Size & Thrds/Inch	Prevailing-Torque			Grade F HFTLN		Grade G HFTLN	
	First Install max. lb. in	First Removal min. lb. in	Third Removal min. lb. in	Proof Load lb	Clamp Load lb	Proof Load lb	Clamp Load lb
8 *	12	2	0.5	1700		-	-
10 *	17	2.5	1.0	1750		-	-
12 *	17	2.5	1.0	1750		-	-
1/4 - 20	40	5.0	1.5	3,800	2,000	4,750	2,850
5/16 - 18	80	8.0	2.5	6,300	3,350	7,850	4,700
3/8 - 16	110	12.0	4.0	9,300	4,950	11,600	6,950
7/16 - 14	135	17.0	5.0	12,800	6,800	15,900	9,600
1/2 - 13	204	22.0	7.5	17,000	9,050	21,300	12,800
9/16 - 12	300	30.0	10.0	21,800	11,600	27,300	16,400
5/8 - 11	420	39.0	12.5	27,200	14,500	33,900	20,300
3/4 - 10	540	58.0	20.0	40,100	21,300	50,100	30,100

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Table 13C Mechanical Requirements (Fine Threads)

Nut Size & Thrds/Inch	Prevailing-Torque			Grade F HFTLN		Grade G HFTLN	
	First Install max. lb. in	First Removal min. lb. in	Third Removal min. lb. in	Proof Load lb	Clamp Load lb	Proof Load lb	Clamp Load lb
#8 *	12	2	0.5	1750		-	-
#10 *	17	2.5	1	2400		-	-
#12 *	17	2.5	1.5	2400		-	-
1/4 - 28	40	5.0	1.5	4,350	2,300	5,450	3,250
5/16 - 24	80	8.0	2.5	6,950	3,700	8,700	5,200
3/8 - 24	110	12.0	4.0	10,500	5,600	13,200	7,900
7/16 - 20	135	17.0	5.0	14,200	7,550	17,800	10,700
1/2 - 20	204	22.0	7.5	19,200	10,200	24,000	14,400
9/16 - 18	300	30.0	10.0	24,400	13,000	30,400	18,300
5/8 - 18	420	39.0	12.5	30,700	16,300	38,400	23,000
3/4 - 16	540	58.0	20.0	44,800	23,800	56,000	33,600

* IFI & ASME do not cover sizes below 1/4" for flanged nuts. Values listed are for reference only.

05 rev. Updated entire specification including finish requirement
06 rev. Add reference values to tables for #8, #10 & #12 nuts

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