

## Hexagon Serrated Flange Bolts – Inch – Non-Preferred

### 1. GENERAL

- 1.1 There are no national or international standards for hexagon head, serrated flange bolts. This standard is based upon user requirements and available commercial products.
- 1.2 All dimensions in this standard are in inches.
- 1.3 The Serrated Flange Bolt is generally used in applications with joints that require integrity when tightened and do not come loose when subjected to vibration.

### 2. RELATED DOCUMENTS

#### 2.1 REFERENCE STANDARDS

- MAT0310—Zinc Plating
- MAT4030—Gas Carburizing
- STPA020—Fastener Finishes and Material Specifications
- Case MS-91—Zinc Phosphate Coating
- Case P-2—Shallow Case Carburizing
- SAE J403—Chemical Compositions of SAE Carbon Steels
- SAE J429—Mechanical and Material Requirements for Externally Threaded Fasteners

#### 2.2 REPLACED STANDARDS

- Case B-044—Hex Serrated Flange Bolts (General Specifications)
- Case B-045—Hex Serrated Flange Bolts Grade 5 UNC ZND & Grade 8 PHC - Preferred
- Case B-046—Hex Serrated Flange Bolts - Non-Preferred
- Case B-047—Hex Serrated Large Flange Bolts - Non-Preferred
- FNHA 1-B-070.00—Screw, Cap, Hex Head, Flange, Underserrated, ZnCr, Inch

### 3. PREFERRED PARTS POLICY

All standard parts measured in inches are considered non-preferred. See STPB810 for preferred parts (metric).

### 4. CROSS REFERENCE

For cross reference listing of company part numbers, go to [CNH Catalogue](#).

### 5. MATERIAL

- 5.1 Serrated flange bolts are made from 5SPL or Grade 8 steels.
- 5.1.1 5SPL is a special, case-hardened steel material that meets mechanical and performance requirements for Grade 5 steel per SAE J429.

ISSUED BY AK 21JUN12	ECN NO. 35146705	NAME <b>HEXAGON SERRATED FLANGE BOLTS</b>		
APPROVED BY SWH 21JUN12	REV. F	PAGE 1 OF 6	CNH NUMBERS <b>87366889</b>	<b>STPB300</b>

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5.1.2 5SPL steel will mechanically bite into the base material.

5.1.3 Table 1 shows the material composition.

**Table 1: 5SPL Material Composition**

Material	Range
Carbon	.13 – .25%
Manganese	.60 – 1.50%
Silicon	.10 – .35%
Phosphorus	.05% maximum
Sulfur	.06% maximum
Alloying Elements	Optional
Boron (optional)	.0005 – .003 if present

5.1.4 Case-harden 5SPL material as follows:

Carbonitride per Case Spec P-2 or carburize per MAT4030

Case depth .08 - .18 mm for 9.5 mm and under and .18 - .30 mm for 11.1 minimum diameter and greater

Temper to a surface hardness between 79 to 86 HR15N

Core hardness of 25 to 34 HRC

5.2 Bake or otherwise treat these parts for hydrogen embrittlement relief as agreed by the supplier and local user.

5.3 Grade 8 steel shall conform to the chemical composition, mechanical properties, and heat treatment requirements of SAE J429.

5.4 Grade 8 is a softer alternative to 5SPL and might not bite into the base material.

## 6. FINISH

Bolts shall be furnished plain (PLN), plated, or coated as designated by part number in accordance with CNH or former company Material Specifications.

## 7. HEAD MARKING

7.1 Bolts shall have a legible manufacturer's identification symbol recognizable in the trade to indicate source. Grade 8 bolts shall have appropriate radial raised head markings. Refer to SAE J429 for standard grade marking symbols for grade 8 bolts.

7.2 Marking symbols on the heads for bolt sizes 5/8 inch and smaller shall project not less than .005 inch above surface nor more than .015 inch over the specified maximum head height.

## 8. SERRATIONS

The underside of the flange shall contain serrations designed to produce approximately 25% more break loose torque than application torque. The configuration of serrations is optional.

NAME	REV.	PAGE	CNH NUMBERS
<b>HEXAGON SERRATED FLANGE BOLTS</b>	F	2 OF 6	<b>87366889   STPB300</b>

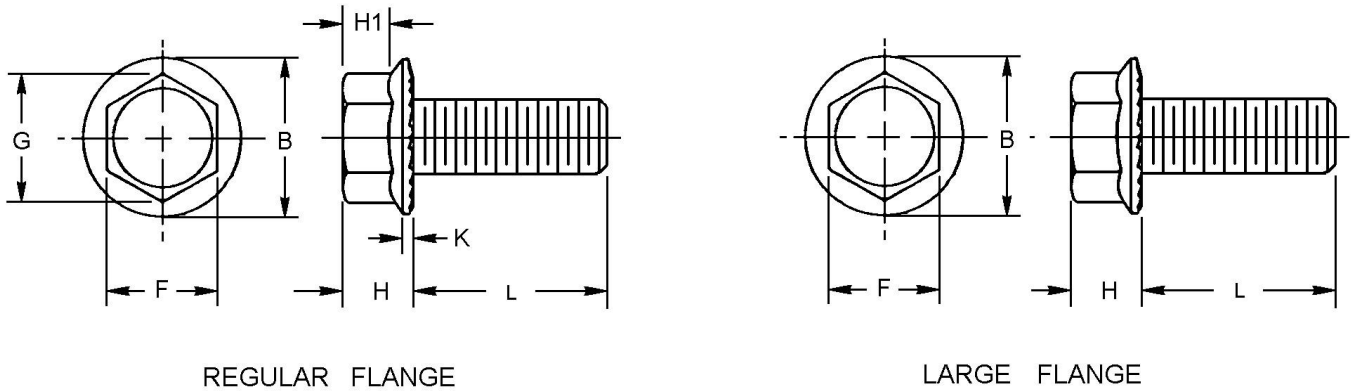
9. **THREAD LENGTH**

Serrated flange bolts shall be fully threaded unless otherwise noted.

10. **SOURCING**

Sources for bolts in this standard should be cleared with Materials Engineering.

NAME	REV.	PAGE	CNH NUMBERS
<b>HEXAGON SERRATED FLANGE BOLTS</b>	F	3 OF 6	<b>87366889   STPB300</b>



**FIGURE 1: Hex Serrated Flange Bolt**

**TABLE 2: Basic Dimensions in Inches**

Nominal Size	F		G		B		H		H <sub>1</sub>	K
	Width Across Flats		Width Across Corners		Flange Diameter		Total Head Height		Wrench Height	Flange Thickness
	Max	Min	Max	Min	Max	Min	Max	Min	Min	Min
#8	0.250	0.244	-	-	0.355	0.341	0.168	0.132	-	-
#10	0.312	0.305	NA	0.340	0.441	0.425	0.210	0.152	0.110	0.016
1/4	0.375	0.367	0.433	0.409	0.565	0.513	0.280	0.201	0.130	0.019
5/16	0.500	0.489	0.577	0.548	0.710	0.630	0.320	0.259	0.170	0.025
3/8	0.562	0.551	0.650	0.618	0.810	0.750	0.390	0.296	0.190	0.028
7/16	0.625	0.612	0.722	0.685	0.930	0.856	0.460	0.365	-	-
1/2	0.750	0.736	0.866	0.825	1.070	1.020	0.510	0.392	0.312	0.038
<b>Large Serrated Flange</b>										
1/4	0.375	0.367	0.433	0.409	0.625	0.607	0.250	0.230	-	-
5/16	0.500	0.489	0.577	0.548	0.820	0.800	0.308	0.293	-	-
3/8	0.562	0.551	0.650	0.618	0.915	0.890	0.349	0.332	-	-

NAME	REV.	PAGE	CNH NUMBERS
<b>HEXAGON SERRATED FLANGE BOLTS</b>	F	4 OF 6	<b>87366889 STPB300</b>

**TABLE 3: Inch Hex Serrated Flange Bolts, 5SPL, ZND**

Length L	Nominal Bolt Diameter						
	#8*	#10*	1/4	5/16	3/8	7/16*	1/2
0.375*			590860				
0.5	86512166	86512167	523291	256873	50215		
0.625*		274792	87564727	271288			
0.75			523292	145913	255918	9790589	86512178
1			86511443	86512168	9706726	86471	30944
1.25				86512169	86512174		84209
1.5				86512170	86512175		86512179
1.75				86512171			
2				86512172	86512176		
2.25				30530	86512177		
2.5				86512173	86977730		
2.75					50210		
3					86514459		
	#8*	#10*	1/4	5/16	3/8	7/16*	1/2
Coarse Thread Pitch	32	24	20	18	16	14	13

\* Do not use these sizes in new designs

**TABLE 4: Inch Hex Serrated Flange Bolts, Grade 8, ZND**

Length L	Nominal Bolt Diameter			
	1/4	5/16	3/8	1/2
0.5	87327155	87327160		
0.75	87327156	87327161	87327166	
1	87327157	87327162	87327171	87327175
1.25			87327172	87327176
1.5	87327158	87327164	87327173	87327177
1.75				
2			87602943	87327178
2.25				
2.5			87327174	
2.75				
3				
	1/4	5/16	3/8	1/2
Coarse Thread Pitch	20	18	16	13

NAME	REV.	PAGE	CNH NUMBERS
<b>HEXAGON SERRATED FLANGE BOLTS</b>	F	5 OF 6	<b>87366889 STPB300</b>

**TABLE 5: Inch Hex Serrated Flange Bolts, 5SPL, DOR**

Length L	Nominal Bolt Diameter			
	1/4	5/16	3/8	1/2
0.5	87343120	87343271	87343281	
0.75	87343134	87343272	87343449	87343458
1	87343135	87343273	87343452	87343459
1.25		87343275	87343453	87343465
1.5	87343270	87343277		87343466
1.75				
2		87343279		87343468
2.25				
2.5			87343455	
2.75				
3				
	<b>1/4</b>	<b>5/16</b>	<b>3/8</b>	<b>1/2</b>
Coarse Thread Pitch	20	18	16	13

**TABLE 6: Inch Hex Serrated Flange Bolts, Miscellaneous**

Nominal Diameter	Threads Per Inch	Length (L)	Material	Finish	Other	Part Number
0.25	20	0.375	5	PLN		271955
0.312	18	2.25	5SPL	BZN		86625017
0.375	16	1	5SPL	ZND	Large flange	87034804

NAME <b>HEXAGON SERRATED FLANGE BOLTS</b>	REV. F	PAGE 6 OF 6	CNH NUMBERS <b>87366889</b>	<b>STPB300</b>
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