



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

**STPB130**

**87366875**

Rev BJ

Page 1 of 11

### 1. GENERAL

This standard conforms essentially to Finished Hex Head Bolts (Hex Cap Screws) described in ANSI B18.2.1. All dimensions in this standard are in inches. For dimensions not shown in this specification, refer to ANSI B18.2.1.

### 2. RELATED DOCUMENTS

#### 2.1 REFERENCE STANDARDS

- ANSI B18.2.1—Square and Hex Bolts and Screws Inch Series
- MAT0310—Zinc Plating
- STPA020—Fastener Finishes and Material Specifications
- Case MS-91—Zinc Phosphate Coating
- SAE J429—Mechanical and Material Requirements for Externally Threaded Fasteners
- SAE J123—Surface Discontinuities on Bolts, Screws and Studs in Fatigue Applications
- ASME B18.18.1—Inspection and Quality Assurance (QA) for General Purpose Fasteners

#### 2.2 REPLACED STANDARDS

- Case B-001—Hex Head Bolts (General Specifications)
- Case B-003—Hex Head Bolts Grade 8 UNC PHC - Preferred
- Case B-007—Hex Head Bolts Grade 8 UNC - Non Preferred
- NH FNHA-1-B-040.00—Screw, Cap, Hex Head, G8, ZnCr, Inch

### 3. PREFERRED PARTS POLICY

All standard parts measured in inches are considered non-preferred. See STPB580 for preferred parts (metric).

### 4. CROSS REFERENCE

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

### 5. MATERIAL

Bolts shall conform to the chemical composition, mechanical properties, and heat treatment requirements for Grade 8 steel per SAE J429.

### 6. FINISH

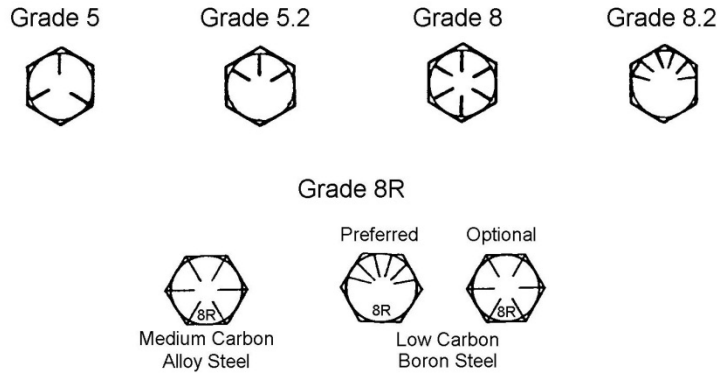
Bolts shall be furnished plain (PLN), plated, or coated as designated by part number in accordance with CNH or Case Material Specifications.

AUTHOR	APPROVED BY	ECO	PART NUMBER
A KHAN	09SEP25	A KHAN	09SEP25
		35516516	<b>87366875</b>

THE INFORMATION HEREON IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF CNH INDUSTRIAL AND/OR ITS SUBSIDIARIES OR DIVISIONS. ANY USE, EXCEPT THAT FOR WHICH IT MAY BE LOANED, IS PROHIBITED.

## 7. HEAD MARKING

7.1 Bolts shall have legible, raised radial head markings to indicate bolt grade and a manufacturer's identification symbol recognizable in the trade to indicate source. Figure 1 illustrates the standard grade marking symbols for steel bolts and screws.



**FIGURE 1: Standard Grade Markings**

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.

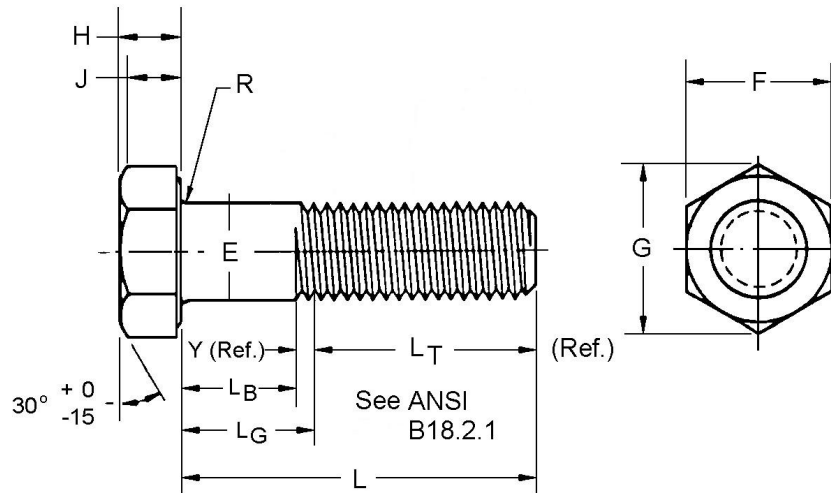
7.3 Markings for bolt sizes larger than 5/8 inch shall project not less than the equivalent in inches of .0075 times the basic bolt diameter above the surface or more than .030 inch over the specified maximum head height.

## 8. THREAD LENGTH (SEE FIGURE 2)

8.1 The basic thread length ( $L_T$ ) for a bolt with shank is equal to twice the nominal body diameter ( $E$ ) plus 0.25 inch for nominal bolt lengths up to and including 6 inches, and twice the basic thread diameter plus 0.50 inch for nominal lengths over 6 inches. See Table 1.

8.2 Body length,  $L_B$ , is the distance from the underhead bearing surface to the last scratch of thread or to the top of the extrusion angle.

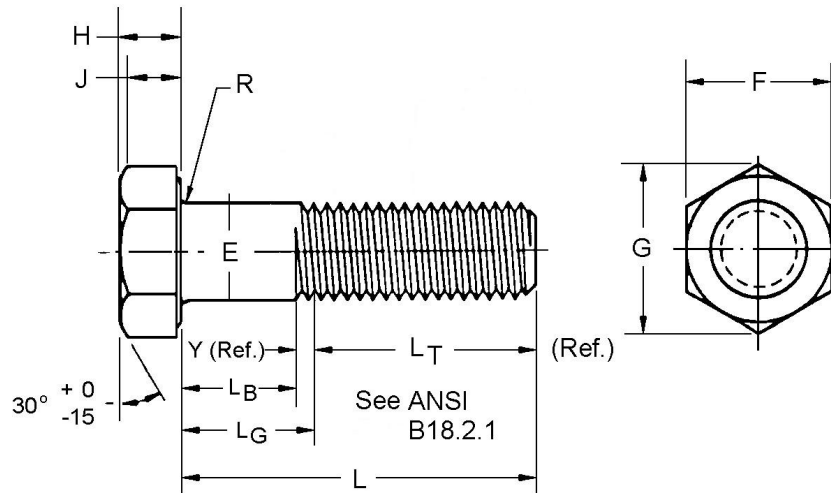
8.3 Bolts of nominal length which have a calculated  $L_B(\text{min})$  length equal to or shorter than 2.5 times the coarse thread (UNC) pitch shall be threaded for full length. See Table 3. The length of the underhead fillet of these "thread to head" bolts shall not be less than  $L_B$  as defined in note 7 to Table 4 of ANSI B18.2.1.


**FIGURE 2: Hex Head Bolt**
**TABLE 1: Basic Dimensions in Inches**

E			L <sub>T</sub> *		Y**
Body Diameter			Basic Thread Length for Given Bolt Lengths		Transition Thread Length Maximum
Nominal	Maximum	Minimum	L ≤ 6"	L > 6"	
1/4	.25	.245	.75	1	.25
5/16	.312	.306	.875	1.125	.278
3/8	.375	.369	1	1.25	.312
7/16	.438	.43	1.125	1.375	.357
1/2	.5	.493	1.25	1.5	.385
9/16	.562	.554	1.375	1.625	.417
5/8	.625	.617	1.5	1.75	.455
3/4	.75	.741	1.75	2	.5
7/8	.875	.866	2	2.25	.556
1	1	.99	2.25	2.5	.625
1-1/8	1.125	1.114	2.5	2.75	.714
1-1/4	1.25	1.239	2.75	3	.714
1-3/8	1.375	1.363	3	3.25	.833
1-1/2	1.5	1.488	3.25	3.5	.833

\* L<sub>T</sub> is a reference dimension equal to the distance from the extreme end of the bolt to the last complete (full form) thread. For any bolt not threaded full length, L<sub>G</sub>(max) = L - L<sub>T</sub>

\*\* Y is a reference dimension equal to five coarse (UNC) pitches. It includes the length of incomplete threads, the extrusion angle on rolled threads, and tolerance on grip length.



**FIGURE 3: Hex Head Bolt**

**TABLE 2: Additional Dimensions in Inches**

E	F		G		H			J	R	
	Width Across Flats		Width Across Corners		Head Height			Wrenching Height	Radius	
	Basic	Min	Max	Min	Max	Basic	Min	Min	Max	Min
1/4	.438	.428	.505	.488	.163	.156	.15	.106	.025	.015
5/16	.5	.489	.577	.557	.211	.203	.195	.14	.025	.015
3/8	.563	.551	.65	.628	.243	.234	.226	.16	.025	.015
7/16	.625	.612	.722	.698	.291	.281	.272	.195	.025	.015
1/2	.75	.736	.866	.84	.323	.313	.302	.215	.025	.015
9/16	.813	.798	.938	.91	.371	.359	.348	.25	.045	.02
5/8	.938	.922	1.083	1.051	.403	.391	.378	.269	.045	.02
3/4	1.125	1.1	1.299	1.254	.483	.469	.455	.324	.045	.02
7/8	1.313	1.285	1.516	1.465	.563	.547	.531	.378	.065	.04
1	1.5	1.469	1.732	1.675	.627	.609	.591	.416	.095	.06
1-1/8	1.688	1.631	1.949	1.859	.718	.688	.658	.461	.095	.06
1-1/4	1.875	1.812	2.165	2.066	.813	.781	.749	.53	.095	.06
1-3/8	2.062	1.994	2.382	2.273	.878	.844	.81	.569	.095	.06
1-1/2	2.25	2.175	2.598	2.48	.974	.938	.902	.64	.095	.06

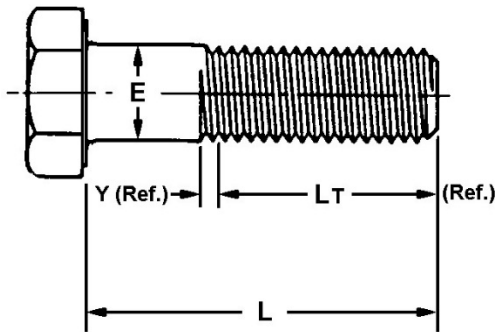


FIGURE 4: Hex Head Bolt With Shank

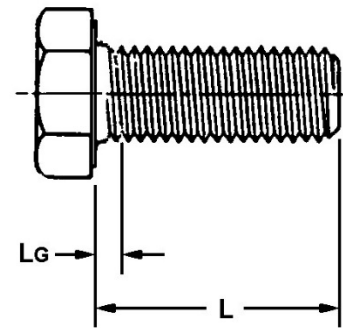


FIGURE 5: Hex Head Bolt Fully Threaded

TABLE 3: Standard Thread to Head Length Limitations

Nominal Diameter	For L ≤	L <sub>G</sub> (Max)*	For L >	For L ≤	L <sub>G</sub> (Max)**
		All Thread Series			UNC Series Only
1/4	.5	.075	.5	1.125	0.125
5/16	.625	.083	.625	1.375	0.139
3/8	.75	.094	.75	1.5	0.156
7/16	7/8	.107	.875	1.75	0.179
1/2	1	.115	1	1.875	0.192
9/16	1.125	.125	1.125	2	0.208
5/8	1.25	.136	1.25	2.25	0.227
3/4	1.5	.15	1.5	2.25	0.25
7/8	--	--	--	2.875	0.278
1	--	--	--	3.25	0.312
1-1/8	--	--	--	3.625	0.357
1-1/4	--	--	--	3.875	0.357
1-3/8	--	--	--	4.25	0.417
1-1/2	--	--	--	4.5	0.417

\* 1.5 times the coarse thread (UNC) pitch

\*\* 2.5 times the thread pitch



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

**STPB130**  
**87366875**  
 Rev BJ  
 Page 6 of 11

**TABLE 4: Inch Hex Head Bolts, Grade 8, ZND**

Length L †	Nominal Bolt Diameter					
	1/4	5/16	3/8	7/16*	1/2	9/16*
0.5						
0.625*	84340186		86622978			
0.75	281032	86622980	86500692			
0.875*	86500693	80088684	86637936			
1	86637935	280341	9670285	280410	9790143	
1.25		86605310	280165	86505834	280853	
1.5	87016191	86514369	86977691	86050212	88904	86592174
1.625*					280423	
1.75	86508722	281034	280589	86544169	9790095	
2	70930238	86508723	280425	280541	80281058	87304180
2.25	87668385	280294	86575418	280426	50032	9602224
2.5	281069		280259	281071	20987	9511
2.75			280188		86520614	
3	9845477	9566	280260	280874	280620	
3.25			84246769	81834248	280820	87301770
3.5		86508724	280464	83905793	9818286	
3.75		84359106	280919	280548	280822	
4		84180360	280109		86508729	
4.25*	86618178		86578526		51558349	
4.5			280445	280549	86508730	
4.75*						
5			280246	87661867	280231	
5.5			9849451			
5.75*						
6					280470	
6.5				280337	87522216	
7					86508731	
7.5						
8					280984	
8.25*					87014928	
8.5					86642643	
9						
9.25*						
9.5*			86505242			
10						
10.5*						
11						
11.875*						
12						
14						
	<b>1/4</b>	<b>5/16</b>	<b>3/8</b>	<b>7/16*</b>	<b>1/2</b>	<b>9/16*</b>
Coarse Thread Pitch	20	18	16	14	13	12

\* Do not use these sizes in new designs

† Parts above broken heavy line are always fully threaded

Parts below solid heavy line adhere to basic thread length defined in Table 1

Parts in between heavy lines may be fully threaded or have basic thread length, at the discretion of the manufacturer



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

**STPB130**  
**87366875**  
 Rev BJ  
 Page 7 of 11

**TABLE 4: Inch Hex Head Bolts, Grade 8, ZND (Continued)**

Length L †	Nominal Bolt Diameter					
	5/8	3/4	7/8*	1	1-1/4	1-1/2
0.5						
0.75						
0.875*						
1	306436					
1.25	281047					
1.5	88685	86529932				
1.625*						
1.75	88706	86632560				
1.875*	82001789					
2	86508732	9635076	84406849			
2.25	280355	920783	280487			
2.5	280233	281074	280488	87733390		
2.75		280344				
3	4932	280128	280794	86539260		
3.25	280170	48946	87493292			
3.5	87314823	86508733	87493293	86979387	87037002	
3.75	86631590	280770				
4	9804395	9825647	84402310	86508736		
4.25*	86605502		280511			
4.5	86529695	84450	47390930	84323486	70925427	
4.75*	87306801					
5	280852	9602203	223552	80280675		
5.5	86542820	86508734	280489		3973	
5.75*			280697			
6		86508735				
6.5	86622983	9430570	47400859	9458		
7	87012655	9846394		87493294	1032406	
7.5	281041	86557052	47400882	86637934	84569156	
8	51522290	87493291	280510	86534764	70928400	
8.25*				9636095		
8.5	86518627	86516480		87020629	84569157	
9	87493289		280491	87493295	70934243	47521877
9.25*		9636555				
9.5*	86518628	87014470		9636833		
10		86518626	87014471	87014472	7600355104	
10.5*	47652851					87033331
11		86516481				
11.875*		9628014				
12		86502723		84545655		87358257
13				84567302	91707011	
14				86613486		
	<b>5/8</b>	<b>3/4</b>	<b>7/8*</b>	<b>1</b>	<b>1-1/4</b>	<b>1-1/2</b>
Coarse Thread Pitch	11	10	9	8	7	6

\* Do not use these sizes in new designs

† Parts above broken heavy line are always fully threaded

Parts below solid heavy line adhere to basic thread length defined in Table 1

Parts in between heavy lines may be fully threaded or have basic thread length, at the discretion of the manufacturer



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

STPB130

87366875

Rev BJ

Page 8 of 11

**TABLE 5: Inch Hex Head Bolts, Grade 8, PLN**

Length L †	Nominal Bolt Diameter								
	1/4	5/16	3/8	1/2	9/16*	5/8	3/4	7/8*	1
0.5									
0.75			88659						
0.875*			454899						
1		88304				87519			
1.25									
1.5									
1.75									
2			1536	509966		87493275			
2.25	88927		1532						
2.5								223470	
2.75			300763						
3									
3.25									
3.5							223456		
3.75			7071921						
4				1535					
4.5		9430186							
4.75*				86513181					
5					86539458				
5.625*									
6				87314816					
6.5									
7									
7.5									
8					87309040				
8.5									
9					87309532				
10								86622998	
	<b>1/4</b>	<b>5/16</b>	<b>3/8</b>	<b>1/2</b>	<b>9/16*</b>	<b>5/8</b>	<b>3/4</b>	<b>7/8*</b>	<b>1</b>
Coarse Thread Pitch	20	18	16	13	12	11	10	9	8

\* Do not use these sizes in new designs

† Parts above broken heavy line are always fully threaded

Parts below solid heavy line adhere to basic thread length defined in Table 1

Parts in between heavy lines may be fully threaded or have basic thread length, at the discretion of the manufacturer



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

STPB130

87366875

Rev BJ

Page 9 of 11

TABLE 6: Inch Hex Head Bolts, Grade 8, PHC

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (L <sub>T</sub> )	Finish	Part Number
1/4	20	2.75	0.750	PHC	87493287
5/16	18	4.25	0.875	PHC	87015320
5/16	18	4.5	0.875	PHC	9430693
3/8	16	1	FULL	PHC	87023124
3/8	16	2.75	1	PHC	9420892
7/16	14	3	1.125	PHC	87034822
1/2	13	1	FULL	PHC	9427615
1/2	13	1.5	FULL	PHC	9422332
1/2	13	2.50	1.25	PHC	82934372
1/2	13	2.75	1.25	PHC	87632743
1/2	13	3.75	1.25	PHC	87493288
5/8	11	1.5	FULL	PHC	87023125
*5/8	11	1.5	FULL	PHC	86632533
5/8	11	2.25	1.5	PHC	9424859
5/8	11	7.5	1.75	PHC	87493276
3/4	10	3	1.75	PHC	87493277
3/4	10	3.75	1.75	PHC	9430942
3/4	10	5	1.75	PHC	87493280
3/4	10	9.5	2	PHC	86622996
1	8	2.5	FULL	PHC	86622976
1	8	3.25	2.25	PHC	86622977
1	8	4.5	2.25	PHC	87779093
1	8	6	2.25	PHC	87530313
1	8	6.5	2.5	PHC	87493281
1	8	7	2.5	PHC	87493282
1	8	7.5	2.5	PHC	87493283
1	8	8	2.5	PHC	87493284
1	8	9	3	PHC	87493285
1	8	10	2.5	PHC	86622975
1-1/2	6	9	4	PHC	87493286
1-1/2	6	10	3.5	PHC	86637794

\* Left Hand Thread



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

STPB130

87366875

Rev BJ

Page 10 of 11

**TABLE 7: Inch Hex Head Bolts, Grade 8, DOR**

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (LT)	Finish	Part Number
1/4	20	1.25	0.75	DOR	51695523
5/16	18	2	0.875	DOR	87342594
3/8	16	0.75	FULL	DOR	87342574
3/8	16	1	FULL	DOR	87342918
3/8	16	1.5	1	DOR	87342922
3/8	16	1.5	FULL	DOR	87564748
3/8	16	3.5	1	DOR	87342575
7/16	14	1.5	*	DOR	51499614
7/16	14	1.75	1.125	DOR	87019709
1/2	13	1	FULL	DOR	87342924
1/2	13	1.25	FULL	DOR	87342927
1/2	13	1.5	FULL	DOR	87342928
1/2	13	1.75	1.25	DOR	87342931
1/2	13	2	1.25	DOR	87019710
1/2	13	2.25	1.25	DOR	87342576
1/2	13	2.5	1.25	DOR	87342933
1/2	13	2.5	1.5	DOR	87342603
1/2	13	2.75	1.25	DOR	87342934
1/2	13	4.5	1.25	DOR	87342936
1/2	13	6	1.25	DOR	87342577
1/2	13	6.5	1.5	DOR	87342579
5/8	11	1.75	1.5	DOR	87342937
5/8	11	2.5	1.5	DOR	87310421
5/8	11	5.5	1.5	DOR	92067847
3/4	10	3.75	1.75	DOR	87342942
3/4	10	4.5	1.75	DOR	87698750
3/4	10	6.5	2	DOR	47410121
3/4	10	8	2	DOR	51584388
3/4	10	11	2	DOR	87342580
7/8	9	3.5	2	DOR	51695524

\*Parts may be fully threaded or have basic thread length, at the discretion of the manufacturer



# Standard Part

## Grade 8 Hex Head Bolts - Inch - Non-Pref

STPB130

87366875

Rev BJ

Page 11 of 11

TABLE 7: Inch Hex Head Bolts, Grade 8, DOR

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (LT)	Finish	Part Number
1	8	2	FULL	DOR	87342583
1	8	3	2.25	DOR	87342586
1	8	5.5	2.25	DOR	51695522
1	8	6	2.25	DOR	87698751
1	8	6.5	2.5	DOR	90325004
1	8	7	2.5	DOR	92298369
1	8	12	2.5	DOR	87342581
1	14	3	2.5	DOR	87644287

TABLE 8: Inch Hex Head Bolts, Grade 8, Miscellaneous (RH – Right Hand; LH Left Hand)

Nominal Diameter (E)	Length (L)	Basic Thread Length (LT)	Thread Direction	Finish	Part Number
1/4-20	0.625	FULL	RH	DAC	90500191
1/4-20	0.75	FULL	RH	DAC	90415510
3/8-16	0.75	FULL	RH	DAC	90351423
3/8-16	1.25	FULL	RH	DAC	90351375
3/8-16	1.50	FULL	RH	DAC	90351366
3/8-16	2.25	FULL	RH	DAC	90351363
3/8-16	4	1	RH	DAC	91756577
3/8-16	6	1	RH	DAC	91756576
1/2-13	1.25	FULL	RH	DAC	90351382
1/2-13	1.375	1.25	RH	ZND	70923494
5/8-11	1.5	FULL	RH	DAC	90351426
5/8-11	1.75	FULL	LH	ZND	86622982
5/8-11	2	1.5	LH	ZND	87698796
5/8-11	5	1.5	RH	DAC	90349290
3/4-10	3.5	1.75	RH	DAC	90395295
3/4-10	6	1.75	RH	DAC	90395296
3/4-10	7.5	2	RH	DAC	90351386
3/4-10	8	2	RH	DAC	90415507
*1-8 UNRC 2A Thread with 20° chamfer	5.625	Thread – 1.0" (-0.00", +0.125") Full Shank – 4.25" Minimum	RH	ZND	87682410
1-8	5	2.25	RH	DAC	90351405
1-8	7.5	2.5	RH	DAC	92652550
1-8	9	2.5	RH	DAC	92652552
1-14	3	2.25	RH	DAC	90350438
1-14	3	FULL	RH	DAC	92752119

\*UNRC = Unified inch screw thread, coarse-thread series, with rounded root of radius not less than 0.108P(ANSI B1.1)