



Standard Part

Round Head, Square Neck Bolts - Inch Coarse Thread - Non-Preferred

STPB250

87366884

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1. GENERAL

- 1.1 This standard conforms essentially to Round Head Square Neck (Carriage) Bolts described in ANSI B18.5. All dimensions in this standard are in inches. For dimensions not shown in this specification, refer to ANSI B18.5.
- 1.2 This style of bolt is typically used when the longer neck length is needed to clear casting draft, to provide better engagement, or to engage more than one part. Short Square Neck bolts found in STPB260 are favored.

2. RELATED DOCUMENTS

2.1 REFERENCE STANDARDS

- ANSI B18.5—Round Head Bolts (Inch Series)
- MAT0310—Zinc Plating
- STPA020—Fastener Finishes and Material Specifications
- Case MS-61—Fluorocarbon Coating
- Case MS-91—Zinc Phosphate Coating
- SAE J429—Mechanical and Material Requirements for Externally Threaded Fasteners
- IFI 124—Locking Performance of Non-Metallic Locking Element (Patch)
- IFI 125—Test Procedure for the Performance of Chemical Coated Prevailing-Torque Screws

2.2 REPLACED STANDARDS

- Case B-020—Round Head Square Neck Bolts (General Specifications)
- Case B-021—Round Head Square Neck Bolts Grade 5 UNC - Preferred
- Case B-022—Round Head Square Neck Bolts - Non-Preferred
- Case B-025—Round Head Square Neck Bolts - Specials - Non-Preferred
- FNHA 1-B-120—Bolt, CB, G5, ZnCr, Inch

3. PREFERRED PARTS POLICY

All standard parts measured in inches are considered non-preferred. See STPB790 for preferred parts (metric).

4. CROSS REFERENCE

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

5. MATERIAL

Bolts shall conform to the chemical composition, mechanical properties, and heat treatment requirements for steel per SAE J429. Bolts may also be made of stainless steel (SST) Type 410.

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6. FINISH

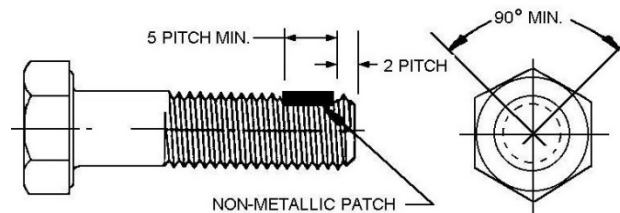
Bolts shall be furnished plain (PLN), plated, or coated as designated by part number in accordance with CNH or former company Material Specifications.

7. HEAD MARKING

- 7.1 Bolts shall have legible, raised radial head markings to indicate bolt grade and a manufacturer's identification symbol recognizable in the trade to indicate source. Refer to SAE J429 for standard grade marking symbols for steel bolts and screws.
- 7.2 Grade 2 bolts are unmarked.
- 7.3 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.
- 7.4 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. Chemical Patch

Prevailing torque bolts with non-metallic patch shall conform to IFI 124. These bolts are for applications where temperatures will not exceed 120° C (250° F). Bolts shall assemble one full turn by hand. The prevailing torque of bolts shall not exceed the maximum value specified in IFI 124. Illustration below is for reference purposes only concerning patch. Source approval by Materials Engineering is required for the coating.





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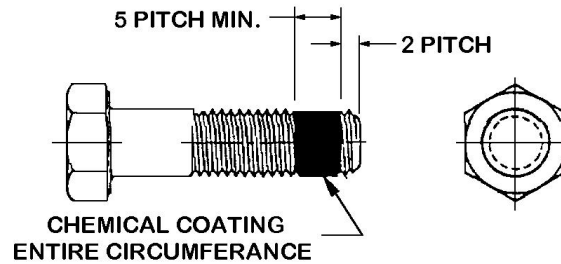
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9. Chemical Coating

Locking bolts with chemical coating shall conform to IFI 125 standard. These bolts are for applications where temperatures will not exceed 105°C (220°F).

Approved chemical coating: ND Microspheres 593S (Blue) or Precote 85

Bolts shall assemble one full turn by hand. The prevailing torque of lock bolts occurring during the first installation shall not exceed the prevailing torque specified. In addition, the break-away torque and the maximum prevailing off torque occurring during the first removal shall not be less than the minimum values specified.





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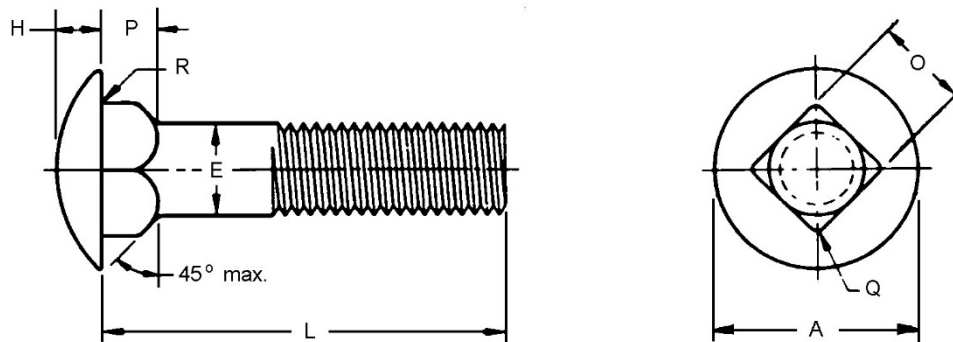


FIGURE 1: Round Head Square Neck Bolt

TABLE 1: Basic Dimensions in Inches

Nominal Size		E		A		H	
		Body Diameter		Head Diameter		Head Height	
		Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
#10	0.190	.199	.159	.469	.436	.114	.094
1/4	0.250	.260	.213	.594	.563	.145	.125
5/16	0.312	.324	.272	.719	.688	.176	.156
3/8	0.375	.388	.329	.844	.782	.208	.188
7/16	0.438	.452	.385	.969	.907	.239	.219
1/2	0.500	.515	.444	1.094	1.032	.270	.250
5/8	0.625	.642	.559	1.344	1.219	.344	.313
3/4	0.75	.768	.678	1.594	1.469	.406	.375
7/8	0.875	.895	.795	1.844	1.719	.459	.438
1	1.000	1.022	.910	2.094	1.969	.531	.500

* The minimum radius is 1/2 of the value shown

TABLE 2a: Additional Dimensions in Inches

Nominal Size		O		P		Q	R
		Square Width		Square Depth		Corner Radius	Fillet Radius
		Maximum	Minimum	Maximum	Minimum	Maximum	Maximum*
#10	0.190	.199	.185	.125	.094	.031	.031
1/4	0.250	.260	.245	.156	.125	.031	.031
5/16	0.312	.324	.307	.187	.156	.031	.031
3/8	0.375	.388	.368	.219	.188	.047	.031
7/16	0.438	.452	.431	.250	.219	.047	.031
1/2	0.500	.515	.492	.281	.250	.047	.031
5/8	0.625	.642	.616	.344	.313	.078	.062
3/4	0.75	.768	.741	.406	.375	.078	.062
7/8	0.875	.895	.865	.469	.438	.094	.062
1	1.000	1.022	.990	.531	.500	.094	.062

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TABLE 2b: Additional Dimensions in Inches

Nominal Size		Thread Length		Thread Length	
		L ≤ 6		L > 6	
		Maximum (1)	Minimum	Maximum (1)	Minimum
#10	0.190		.630		0.880
1/4	0.250	1.000	.750	1.250	1.000
5/16	0.312	1.153	.875	1.403	1.125
3/8	0.375	1.312	1.000	1.562	1.250
7/16	0.438	1.482	1.125	1.732	1.375
1/2	0.500	1.635	1.250	1.885	1.500
5/8	0.625	1.955	1.500	2.205	1.750
3/4	0.75	2.250	1.750	2.500	2.000
7/8	0.875	2.556	2.000	2.806	2.250
1	1.000	2.875	2.250	3.125	2.500

NOTE 1: Different from ANSI/ASME B18.5, which requires only a minimum thread length.



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TABLE 3: Inch Round Head Square Neck Bolts, Grade 5, ZND

Length L †	Nominal Bolt Diameter								
	#10*	1/4	5/16	3/8	7/16*	1/2	5/8	3/4	1
0.5		88715	86508770						
0.625*	9849620								
0.75		88832	280327	280430					
1		86508769	280428	88682	86508776	280486			
1.125*				280729					
1.25		280687	280507	86508773	86508777	87868	87034826		
1.5		280788	280562	9706752	88586	280420	280617		
1.75		280778	86508771	86508775	86508778	88530	280805		
2			280618	280661	280804	280185	280742		
2.25		280498	280631	280514	86502115	280504	280508		
2.5		9827610	280622	280722	86512905	280435	87495285		
2.75		281016	280628	280628	86518967	88955	9602228		
3		280961	281006	80280806	86520474	280818	51468801		
3.25		280872		280688		280268	280509		
3.5		86977729		280348		280823	280563	84378595	
3.75				280866		280454			
4		47529821	47467603	47588026		87495288	280461		
4.25*				87023042					
4.5			86568238	280825		280725	9602207	87020810	
5			86508772	9790652		280856	87495286		
5.5						87495289	9602229		
6				280555			9807008		86520646
6.25*				280418					
6.5				280556					
6.75		87661859							
7							87495283		
7.5							87495284		
8									
9				280558			87029660		
10				86574200					
11						86577640			
	#10*	1/4	5/16	3/8	7/16*	1/2	5/8	3/4	1
Coarse Thread Pitch	24	20	18	16	14	13	11	10	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 minimum thread length defined in ANSI B18.5 and have unthreaded shank

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



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TABLE 4: Inch Round Head Square Neck Bolts, Miscellaneous ZND

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (L _T)	Grade	Part Number
10	24	0.75	0.63	2	47458687
1/4	20	3	0.750	2	84345504
5/16	18	1.25	FULL	5	87477164
5/16	18	1.25	FULL	8	9602226
5/16	18	4	.875	2	87661863
5/16	18	4.25	.875	2	47570994
3/8	16	0.75	FULL	2	87034824
3/8	16	1	FULL	2	87317405
3/8	16	2	FULL	5	84198529
3/8	16	2.5	FULL	5	84198530
3/8	16	3	FULL	5	84198531
3/8	16	3.5	FULL	5	84198532
3/8	16	4.5	FULL	5	84256788
3/8	16	7	1.25	2	87588867
7/16	14	4	1.125	2	87493299
1/2	13	1	1.25	8	84180363
1/2	13	1.25	1.25	8	84180365
1/2	13	1.25	1.25	8	#47534192
1/2	13	1.5	FULL	8	280833
1/2	13	1.5	FULL	8	#84382747
1/2	13	1.75	1.25	8	280659
1/2	13	2	1.25	8	280971
1/2	13	2	FULL	8	#84405135
1/2	13	2.5	FULL	5	48067089
1/2	13	3.75	1.25	8	51558357
5/8	11	2.25	1.5	8	84180367
5/8	11	2.5	1.5	8	84180924
5/8	11	4.75	1.5	8	86505260
5/8	11	6	1.5	8	86605503
3/4	10	2.25	1.75	8	87493300
3/4	10	2.5	1.75	8	87495282
3/4	10	5.25	1.75 – 2.25	5	51482706

with chemical coat per IFI 125



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TABLE 5: Inch Round Head Square Neck Bolts, PLN

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (L _T)	Grade	Part Number
1/4	20	1	FULL	5	86560075
5/16	18	1	FULL	5	88489
3/8	16	0.75	FULL	5	80088464
3/8	16	1	FULL	5	88481
7/16	14	1.25	FULL	5	606656
7/16	14	1.5	1.125	5	606657
7/16	14	1.75	1.125	5	606661
7/16	14	2	1.125	5	80088365
1/2	13	1.5	FULL	5	88783
5/8	11	1.5	1.18	5	300792
3/4	10	6.5	2	5	88498

TABLE 6: Inch Round Head Square Neck Bolts, DOR

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (L _T)	Grade	Part Number
1/4	20	1	0.75	2	87342982
5/16	18	3	0.875	5	47399201
3/8	16	3	1	5	87342977
1/2	13	1.75	1.25	5	87342979
1/2	13	2	1.25	5	87342980
1/2	13	2.5	1.25	5	87342981

TABLE 7: Inch Round Head Square Neck Bolts, Special or Miscellaneous

Nominal Diameter (E)	Coarse Thread Pitch	Length (L)	Basic Thread Length (L _T)	Material	Finish	Part Number
1/4	20	3/4	FULL	SST	PLN	90396015
1/4	20	1	0.75	SST	PLN	90396016
5/16	18	1	0.875	SST	PLN	90472519
5/16	18	1.5	0.875	SST	PLN	87012914
5/16	18	3	0.875	Grade 5	DAC	90350434
3/8	16	1	FULL	SST	PLN	91763525
3/8	16	1.25	1.0	SST	PLN	90472524
3/8	16	2	1.0	SST	PLN	91763527
5/8	11	2.25	FULL	Grade 5	ZND	87311210