

HEX CAP SCREWS

ZINC & STAINLESS STEEL

CERTIFICATION

TECHNICAL DATA



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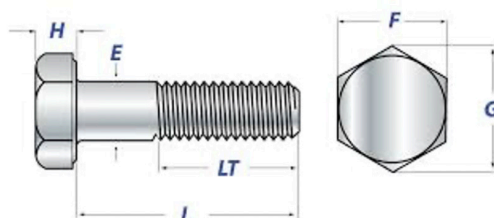
Hex Cap Screws are low or medium carbon steel, externally threaded mechanical fasteners 1/4" diameter shank or larger, with a trimmed hex head and a washer face on the underside of the head.



AVAILABILITY

- Coarse Thread (UNC)
- Partial Thread
- Zinc Plated - Grade 2
- Zinc Plated - Grade 5 (Heat Treated)
- Stainless Steel - Type 304 & Type 316

PRODUCT DIMENSIONS

**TABLE 1: PRODUCT DIMENSIONS ASME B18.2.1**

NOMINAL SIZE/ DIAMETER	E		F		G		H		LT	
	BODY DIAMETER		WIDTH ACROSS FLATS		WIDTH ACROSS CORNERS		HEAD HEIGHT		THREAD LENGTH	
									FOR SCREW LENGTHS 6" & SHORTER	FOR SCREW LENGTHS OVER 6"
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	REF	REF
1/4	0.2500	0.2450	0.438	0.428	0.505	0.488	0.163	0.150	0.750	1.000
5/16	0.3125	0.3065	0.500	0.489	0.577	0.557	0.211	0.195	0.875	1.125
3/8	0.3750	0.3690	0.562	0.551	0.650	0.628	0.243	0.226	1.000	1.250
7/16	0.4375	0.4305	0.625	0.612	0.722	0.698	0.291	0.272	1.125	1.375
1/2	0.5000	0.4930	0.750	0.736	0.866	0.840	0.323	0.302	1.250	1.500
9/16	0.5625	0.5545	0.812	0.798	0.938	0.910	0.371	0.348	1.375	1.625
5/8	0.6250	0.6170	0.938	0.922	1.083	1.051	0.403	0.378	1.500	1.750
3/4	0.7500	0.7410	1.125	1.100	1.299	1.254	0.483	0.455	1.750	2.000
7/8	0.8750	0.8660	1.312	1.285	1.516	1.465	0.563	0.531	2.000	2.250
1	1.0000	0.9900	1.500	1.469	1.732	1.675	0.627	0.591	2.250	2.500
1-1/8	1.1250	1.1140	1.688	1.631	1.949	1.859	0.718	0.658	2.500	2.750
1-1/4	1.2500	1.2390	1.875	1.812	2.165	2.066	0.813	0.749	2.750	3.000
1-3/8	1.3750	1.3630	2.062	1.994	2.382	2.273	0.878	0.810	3.000	3.250
1-1/2	1.5000	1.4880	2.250	2.175	2.598	2.480	0.974	0.902	3.250	3.500
1-3/4	1.7500	1.7380	2.625	2.538	3.031	2.893	1.134	1.054	3.750	4.000
2	2.0000	1.9880	3.000	2.900	3.464	3.306	1.263	1.175	4.250	4.500
2-1/4	2.2500	2.2380	3.375	3.262	3.897	3.719	1.423	1.327	—	5.000
2-1/2	2.5000	2.4880	3.750	3.625	4.330	4.133	1.583	1.479	—	5.500

NOTES: Thread Class Of Fit: Plain: 2A. Zinc Plated: 2A before zinc plating and after zinc plating must meet 3A GO & 2A NO GO thread ring gage condition.

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MECHANICAL PROPERTIES**GRADE 2**

D= Nominal diameter of the screw in inches; *These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts. ; ** Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter or larger. "X" represents on location such a marking may appear.

GRADE 5

D= Nominal diameter of the screw in inches; *These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.;** Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter or larger. "X" represents on location such a marking may appear.

TABLE 2: MECHANICAL PROPERTIES (FOR FULL SIZE SCREW - STEEL SAE J429)

CLASSIFICATION		ROCKWELL HARDNESS	PROOF LOAD STRENGTH	TENSILE STRENGTH MINIMUM	GRADE MARKING
GRADE	NOMINAL SIZE				
2	1/4 thru 3/4 (6" & Shorter)	B80 to B100	55,000 psi	74,000 psi	None
	1/4 thru 3/4 (Longer than 6")	B70 to B100	33,000 psi	60,000 psi	
	Over 3/4 thru 1-1/2	B70 to B100	33,000 psi	60,000 psi	
5	1/4 thru 1	C25 to C34	85,000 psi	120,000 psi	3 Radial Lines 120 Degrees Apart
	Over 1 thru 1-1/2	C19 to C30	74,000 psi	105,000 psi	
8	1/4 thru 1-1/2	C33 to C39	120,000 psi	150,000 psi	6 Radial Lines 60 Degrees Apart

NOTES: Mechanical properties for sizes above 1 -1/2 " derived from SAE J429 or ASTM A354 for appropriate grades. The screws will also have manufacturer's marking on the head in addition to the grade marking as mentioned in the table.

**STAINLESS
STEEL - 304
(18-8) & 316**

D= Nominal diameter of the screw in inches; *These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.; ** Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter or larger. "X" represents on location such a marking may appear.

TABLE 3: MECHANICAL PROPERTIES (FOR FULL SIZE SCREW - STAINLESS STEEL ASTM F593)

CLASSIFICATION		CONDITION	TENSILE STRENGTH ksi	YIELD STRENGTH ksi	ROCKWELL HARDNESS	GRADE MARKING
TYPE	NOMINAL SIZE					
304 (18-8)	1/4 to 5/8 incl	CW1	100 to 150	65	B95 to C32	F593C
	3/4 to 1-1/2 incl	CW2	85 to 140	45	B80 to C32	F593D
316	1/4 to 5/8 incl	CW1	100 to 150	65	B95 to C32	F593G
	3/4 to 1-1/2 incl	CW2	85 to 140	45	B80 to C32	F593H

NOTES: The screws will also have manufacturer's marking on the head in addition to the grade marking as mentioned in the table. Screws will be Passivated.

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MATERIAL SPECIFICATIONS**TABLE 4: MATERIAL SPECIFICATIONS ZINC PLATING**

PROPERTIES	ZINC	ZINC YELLOW	ZINC YELLOW
Type	Trivalent (Cr+3)	Hexavalent (CR+6)	Trivalent (Cr+3)
Color	Clear	Yellow	Yellow
Minimum Coating Thickness	0.0001" / 3 Microns or 0.0002" / 5 Microns	0.0001 " /3 Microns or 0.0002" / 5 Microns	0.0001 " /3 Microns or 0.0002" / 5 Microns
Specification	ASTM F1941 / F1941M. Fe/Zn 3AN or Fe/Zn 5AN ASTM B633. SC1. (0.0002" or 5 microns) Type III.	ASTM F1941 / F1941M. Fe/Zn 3C or Fe/Zn 5C	ASTM F1941 /F1941M Fe/Zn 3CN or Fe/Zn 5CN

ORDERING INFORMATION - GRADE 2 ZINC**TABLE 5: ORDERING INFORMATION - ZINC GRADE 2**

PART NUMBER	SIZE	QTY/BOX
2HCS14012	1/4-20 x 1/2	100
2HCS14058	1/4-20 x 5/8	100
2HCS14034	1/4-20 x 3/4	100
2HCS14100	1/4-20 x 1	100
2HCS14114	1/4-20 x 1-1/4	100
2HCS14112	1/4-20 x 1-1/2	100
2HCS14200	1/4-20 x 2	100
2HCS14300	1/4-20 x 3	100
2HCS14400	1/4-20 x 4	100
2HCS14500	1/4-20 x 5	100
2HCS56012	5/16-18 x 1/2	100
2HCS56034	5/16-18 x 3/4	100
2HCS56100	5/16-18 x 1	100
2HCS56114	5/16-18 x 1-1/4	100
2HCS56112	5/16-18 x 1-1/2	100
2HCS56200	5/16-18 x 2	100
2HCS56212	5/16-18 x 2-1/2	100
2HCS56312	5/16-18 x 3-1/2	50
2HCS56412	5/16-18 x 4-1/2	50
2HCS56500	5/16-18 x 5	50
2HCS38012	3/8-16 x 1/2	100
2HCS38034	3/8-16 x 3/4	100
2HCS38100	3/8-16 x 1	100
2HCS38114	3/8-16 x 1-1/4	100

TABLE 5: ORDERING INFORMATION - ZINC GRADE 2

PART NUMBER	SIZE	QTY/BOX
2HCS38112	3/8-16 x 1-1/2	100
2HCS38134	3/8-16 x 1-3/4	100
2HCS38200	3/8-16 x 2	100
2HCS38212	3/8-16 x 2-1/2	50
2HCS38312	3/8-16 x 3-1/2	50
2HCS38400	3/8-16 x 4	50
2HCS38412	3/8-16 x 4-1/2	50
2HCS38500	3/8-16 x 5	50
2HCS38512	3/8-16 x 5-1/2	50
2HCS38600	3/8-16 x 6	50
2HCS12034	1/2-13 x 3/4	50
2HCS12100	1/2-13 x 1	50
2HCS12114	1/2-13 x 1-1/4	50
2HCS12200	1/2-13 x 2	50
2HCS12212	1/2-13 x 2-1/2	50
2HCS12300	1/2-13 x 3	50
2HCS12312	1/2-13 x 3-1/2	25
2HCS12400	1/2-13 x 4	25
2HCS12412	1/2-13 x 4-1/2	25
2HCS12500	1/2-13 x 5	25
2HCS12512	1/2-13 x 5-1/2	25
2HCS12600	1/2-13 x 6	25
2HCS12700	1/2-13 x 7	25
2HCS12800	1/2-13 x 8	25

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ORDERING INFORMATION - GRADE 2 ZINC**TABLE 5: ORDERING INFORMATION - ZINC GRADE 2**

PART NUMBER	SIZE	QTY/BOX
2HCS12900	1/2-13 x 9	25
2HCS12010	1/2-13 x 10	25
2HCS12120	1/2-13 x 12	25
2HCS58100	5/8-11 x 1	25
2HCS58114	5/8-11 x 1-1/4	25
2HCS58112	5/8-11 x 1-1/2	25
2HCS58134	5/8-11 x 1-3/4	25
2HCS58200	5/8-11 x 2	25
2HCS58212	5/8-11 x 2-1/2	25
2HCS58234	5/8-11 x 2-3/4	25
2HCS58300	5/8-11 x 3	25
2HCS58400	5/8-11 x 4	25
2HCS58412	5/8-11 x 4-1/2	25
2HCS58512	5/8-11 x 5-1/2	25
2HCS58600	5/8-11 x 6	25
2HCS34114	3/4-10 x 1-1/4	20
2HCS34112	3/4-10 x 1-1/2	20

TABLE 5: ORDERING INFORMATION - ZINC GRADE 2

PART NUMBER	SIZE	QTY/BOX
2HCS34134	3/4-10 x 1-3/4	20
2HCS34212	3/4-10 x 2-1/2	20
2HCS34334	3/4-10 x 3-3/4	15
2HCS34400	3/4-10 x 4	15
2HCS34412	3/4-10 x 4-1/2	15
2HCS34500	3/4-10 x 5	15
2HCS34512	3/4-10 x 5-1/2	15
2HCS34600	3/4-10 x 6	15
2HCS78112	7/8-9 x 1-1/2	15
2HCS78200	7/8-9 x 2	15
2HCS78214	7/8-9 x 2-1/4	15
2HCS78212	7/8-9 x 2-1/2	15
2HCS78234	7/8-9 x 2-3/4	15
2HCS78300	7/8-9 x 3	15
2HCS78312	7/8-9 x 3-1/2	15
2HCS78334	7/8-9 x 3-3/4	15
2HCS78400	7/8-9 x 4	15

ORDERING INFORMATION - GRADE 5 ZINC**TABLE 6: ORDERING INFORMATION - ZINC GRADE 5**

PART NUMBER	SIZE	QTY/BOX
2HCS14114G5	1/4-20 x 1-1/4	100
2HCS14112G5	1/4-20 x 1-1/2	100
2HCS56100G5	5/16-18 x 1	100
2HCS56212G5	5/16-18 x 2-1/2	100
2HCS38100G5	3/8-16 x 1	100
2HCS38114G5	3/8-16 x 1-1/4	100
2HCS38112G5	3/8-16 x 1-1/2	100
2HCS38312G5	3/8-16 x 3-1/2	50
2HCS12100G5	1/2-13 x 1	50
2HCS12114G5	1/2-13 x 1-1/4	50
2HCS12200G5	1/2-13 x 2	50
2HCS12414G5	1/2-13 x 4-1/4	25
2HCS12500G5	1/2-13 x 5	25
2HCS58100G5	5/8-11 x 1	25

TABLE 6: ORDERING INFORMATION - ZINC GRADE 5

PART NUMBER	SIZE	QTY/BOX
2HCS58114G5	5/8-11 x 1-1/4	25
2HCS58200G5	5/8-11 x 2	25
2HCS14114G5	1/4-20 x 1-1/4	100
2HCS14112G5	1/4-20 x 1-1/2	100
2HCS56100G5	5/16-18 x 1	100
2HCS56212G5	5/16-18 x 2-1/2	100
2HCS38100G5	3/8-16 x 1	100
2HCS38114G5	3/8-16 x 1-1/4	100
2HCS38112G5	3/8-16 x 1-1/2	100
2HCS38312G5	3/8-16 x 3-1/2	50
2HCS12100G5	1/2-13 x 1	50
2HCS12114G5	1/2-13 x 1-1/4	50
2HCS12200G5	1/2-13 x 2	50
2HCS12414G5	1/2-13 x 4-1/4	25

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ORDERING INFORMATION - GRADE 5 ZINC**TABLE 6: ORDERING INFORMATION - ZINC GRADE 5**

PART NUMBER	SIZE	QTY/BOX
2HCS12500G5	1/2-13 x 5	25
2HCS58100G5	5/8-11 x 1	25
2HCS58114G5	5/8-11 x 1-1/4	25
2HCS58200G5	5/8-11 x 2	25
2HCS58214G5	5/8-11 x 2-1/4	25
2HCS58212G5	5/8-11 x 2-1/2	25
2HCS58234G5	5/8-11 x 2-3/4	25
2HCS58300G5	5/8-11 x 3	25
2HCS58400G5	5/8-11 x 4	25
2HCS58414G5	5/8-11 x 4-1/4	25
2HCS58412G5	5/8-11 x 4-1/2	25
2HCS58500G5	5/8-11 x 5	25
2HCS58700G5	5/8-11 x 7	25
2HCS34112G5	3/4-10 x 1-1/2	20
2HCS34200G5	3/4-10 x 2	20
2HCS34212G5	3/4-10 x 2-1/2	20
2HCS34300G5	3/4-10 x 3	20
2HCS34314G5	3/4-10 x 3-1/4	20
2HCS34312G5	3/4-10 x 3-1/2	15

TABLE 6: ORDERING INFORMATION - ZINC GRADE 5

PART NUMBER	SIZE	QTY/BOX
2HCS34334G5	3/4-10 x 3-3/4	15
2HCS34400G5	3/4-10 x 4	15
2HCS34414G5	3/4-10 x 4-1/4	15
2HCS34412G5	3/4-10 x 4-1/2	15
2HCS34512G5	3/4-10 x 5-1/2	15
2HCS34600G5	3/4-10 x 6	15
2HCS34700G5	3/4-10 x 7	15
2HCS78200G5	7/8-9 x 2	15
2HCS78234G5	7/8-9 x 2-3/4	15
2HCS78300G5	7/8-9 x 3	15
2HCS78400G5	7/8-9 x 4	15
2HCS78412G5	7/8-9 x 4-1/2	15
2HCS78500G5	7/8-9 x 5	15
2HCS01300G5	1-8 x 3	10
2HCS01400G5	1-8 x 4	10
2HCS01412G5	1-8 x 4-1/2	10
2HCS01612G5	1-8 x 6-1/2	10
2HCS01800G5	1-8 x 8	10

ORDERING INFORMATION - 304 STAINLESS STEEL**TABLE 7: ORDERING INFORMATION - 304 SS**

PART NUMBER	SIZE	QTY/BOX
2HCSS212100	1/2-13 x 1	50
2HCSS212114	1/2-13 x 1-1/4	50
2HCSS212112	1/2-13 x 1-1/2	50
2HCSS212200	1/2-13 x 2	50
2HCSS212214	1/2-13 x 2-1/4	50
2HCSS212212	1/2-13 x 2-1/2	50
2HCSS212300	1/2-13 x 3	50
2HCSS212400	1/2-13 x 4	25
2HCSS258112	5/8-11 x 1-1/2	25
2HCSS258200	5/8-11 x 2	25
2HCSS258212	5/8-11 x 2-1/2	25
2HCSS258234	5/8-11 x 2-3/4	25

TABLE 7: ORDERING INFORMATION - 304 SS

PART NUMBER	SIZE	QTY/BOX
2HCSS258300	5/8-11 x 3	25
2HCSS258312	5/8-11 x 3-1/2	25
2HCSS234212	3/4-10 x 2-1/2	20
2HCSS234300	3/4-10 x 3	20
2HCSS234312	3/4-10 x 3-1/2	15
2HCSS212100	1/2-13 x 1	50
2HCSS212100	1/2-13 x 1	50
2HCSS212114	1/2-13 x 1-1/4	50
2HCSS212112	1/2-13 x 1-1/2	50
2HCSS212200	1/2-13 x 2	50
2HCSS212214	1/2-13 x 2-1/4	50
2HCSS212212	1/2-13 x 2-1/2	50

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ORDERING INFORMATION - 304 STAINLESS STEEL**TABLE 7: ORDERING INFORMATION - 304 SS**

PART NUMBER	SIZE	QTY/BOX
2HCSS212300	1/2-13 x 3	50
2HCSS212400	1/2-13 x 4	25
2HCSS258112	5/8-11 x 1-1/2	25
2HCSS258200	5/8-11 x 2	25
2HCSS258212	5/8-11 x 2-1/2	25
2HCSS258234	5/8-11 x 2-3/4	25

TABLE 7: ORDERING INFORMATION - 304 SS

PART NUMBER	SIZE	QTY/BOX
2HCSS258300	5/8-11 x 3	25
2HCSS258312	5/8-11 x 3-1/2	25
2HCSS234212	3/4-10 x 2-1/2	20
2HCSS234300	3/4-10 x 3	20
2HCSS234312	3/4-10 x 3-1/2	15

ORDERING INFORMATION - 316 STAINLESS STEEL**TABLE 8: ORDERING INFORMATION - 316 SS**

PART NUMBER	SIZE	QTY/BOX
2HCSS412120	1/2-13 x 12	10