

ASME B18.3

Hexagon socket head cap screws - inch series (Table 1 profile)



Standard	ASME B18.3		
Product Type	General and dimensional data for inch-series socket cap screws, shoulder screws, set screws and hex keys.		
Material	Stainless Steel, Alloy Steel		
Property Class	AF, CW		
Surface Finish	Passivated, Plain, Blackened		
Size Range	#4-40 UNC - 1-12 UNF	Length Range	1-16 mm
Thread	Unified inch UNC / UNF		

BASIS OF SPECIFICATION

WHICH STANDARD GOVERNS WHAT

Dimensions to	ASME B18.3-2012
Alloy steel mechanical properties to	ASTM F835 (minimum tensile as for button head cap screws; ASTM A574 mechanical requirements do not apply)
Stainless steel mechanical properties to	ASTM F837

MECHANICAL PROPERTIES

REQUIRED VALUES PER ISO 3506-1

Class	Rm min.	Yield requirement	Elongation requirement	Hardness	Source
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Property classes AF, CW are supplied to this standard; their requirement values are not tabulated here. Refer to the standard.

DIMENSIONAL DATA - SIZES WE SUPPLY

ALL DIMENSIONS PER THE STANDARD

Same for every size listed: Thread Class: 3A

Nominal Size	Basic Major Diameter - in	TPI Threads Per Inch	Thread Series	D max Body Diameter Max - in	D min Body Diameter Min - in	A Head Diameter - in	A (min) Head Diameter - in	H Nominal Head Height - in	H (min) Head Height - in	C (max) Head Chamfer - in	J Hex Socket Size - in	T (min) Key Engagement - in	G (min) Socket Wall - in	K (max) Head Bearing Edge Chamfer or Radius - in	LT Minimum Thread Length (LT) - in
#6-32 UNC	0.138	32	UNC	0.138	0.1329	0.226	0.216	0.138	0.134	0.013	0.109	0.064	0.047	0.008	0.75
#8-32 UNC	0.164	32	UNC	0.164	0.1585	0.27	0.257	0.164	0.159	0.014	0.141	0.077	0.056	0.008	0.88
#10-24 UNC	0.19	24	UNC	0.19	0.184	0.312	0.298	0.19	0.185	0.018	0.156	0.09	0.065	0.008	0.88
1/4-20 UNC	0.25	20	UNC	0.25	0.2435	0.375	0.354	0.25	0.244	0.025	0.188	0.12	0.095	0.01	1
5/16-18 UNC	0.3125	18	UNC	0.3125	0.3053	0.469	0.446	0.312	0.306	0.033	0.25	0.151	0.119	0.01	1.12
3/8-16 UNC	0.375	16	UNC	0.375	0.3678	0.562	0.54	0.375	0.368	0.04	0.312	0.182	0.143	0.01	1.25
1/2-13 UNC	0.5	13	UNC	0.5	0.4919	0.75	0.725	0.5	0.492	0.055	0.375	0.245	0.19	0.015	1.5

FURTHER SIZES IN THIS STANDARD

ALL DIMENSIONS PER THE STANDARD

Not held in stock. Available to order; minimum order quantity applies.

Nominal Size	Basic Major Diameter - in	TPI Threads Per Inch	Thread Series	D max Body Diameter Max - in	D min Body Diameter Min - in	A Head Diameter - in	A (min) Head Diameter - in	H Nominal Head Height - in	H (min) Head Height - in	C (max) Head Chamfer - in	J Hex Socket Size - in	T (min) Key Engagement - in	G (min) Socket Wall - in	K (max) Head Bearing Edge Chamfer or Radius - in	LT Minimum Thread Length (LT) - in
#4-40 UNC	0.112	40	UNC	0.112	0.1075	0.183	0.176	0.112	0.108	0.009	0.094	0.051	0.038	0.008	0.75
#4-48 UNF	0.112	48	UNF	0.112	0.1075	0.183	0.176	0.112	0.108	0.009	0.094	0.051	0.038	0.008	0.75
#5-40 UNC	0.125	40	UNC	0.125	0.1202	0.205	0.198	0.125	0.121	0.012	0.094	0.057	0.043	0.008	0.75
#5-44 UNF	0.125	44	UNF	0.125	0.1202	0.205	0.198	0.125	0.121	0.012	0.094	0.057	0.043	0.008	0.75
#6-40 UNF	0.138	40	UNF	0.138	0.1329	0.226	0.216	0.138	0.134	0.013	0.109	0.064	0.047	0.008	0.75
#8-36 UNF	0.164	36	UNF	0.164	0.1585	0.27	0.257	0.164	0.159	0.014	0.141	0.077	0.056	0.008	0.88
#10-32 UNF	0.19	32	UNF	0.19	0.184	0.312	0.298	0.19	0.185	0.018	0.156	0.09	0.065	0.008	0.88
#12-24 UNC	0.216	24	UNC	0.216	0.2095	0.324	0.314	0.216	0.21	0.022	0.156	0.103	0.082	0.01	0.88
#12-28 UNF	0.216	28	UNF	0.216	0.2095	0.324	0.314	0.216	0.21	0.022	0.156	0.103	0.082	0.01	0.88
1/4-28 UNF	0.25	28	UNF	0.25	0.2435	0.375	0.354	0.25	0.244	0.025	0.188	0.12	0.095	0.01	1
5/16-24 UNF	0.3125	24	UNF	0.3125	0.3053	0.469	0.446	0.312	0.306	0.033	0.25	0.151	0.119	0.01	1.12
3/8-24 UNF	0.375	24	UNF	0.375	0.3678	0.562	0.54	0.375	0.368	0.04	0.312	0.182	0.143	0.01	1.25
7/16-14 UNC	0.4375	14	UNC	0.4375	0.4294	0.656	0.631	0.438	0.43	0.047	0.375	0.213	0.166	0.015	1.38
7/16-20 UNF	0.4375	20	UNF	0.4375	0.4294	0.656	0.631	0.438	0.43	0.047	0.375	0.213	0.166	0.015	1.38
1/2-20 UNF	0.5	20	UNF	0.5	0.4919	0.75	0.725	0.5	0.492	0.055	0.375	0.245	0.19	0.015	1.5
9/16-12 UNC	0.5625	12	UNC	0.5625	0.5538	0.843	0.827	0.562	0.554	0.062	0.437	0.276	0.214	0.015	1.5
9/16-18 UNF	0.5625	18	UNF	0.5625	0.5538	0.843	0.827	0.562	0.554	0.062	0.437	0.276	0.214	0.015	1.5
5/8-11 UNC	0.625	11	UNC	0.625	0.6163	0.938	0.914	0.625	0.616	0.07	0.5	0.307	0.238	0.015	1.75
5/8-18 UNF	0.625	18	UNF	0.625	0.6163	0.938	0.914	0.625	0.616	0.07	0.5	0.307	0.238	0.015	1.75
3/4-10 UNC	0.75	10	UNC	0.75	0.7406	1.125	1.094	0.75	0.74	0.085	0.625	0.37	0.285	0.015	2
3/4-16 UNF	0.75	16	UNF	0.75	0.7406	1.125	1.094	0.75	0.74	0.085	0.625	0.37	0.285	0.015	2
7/8-9 UNC	0.875	9	UNC	0.875	0.8647	1.312	1.291	0.875	0.864	0.1	0.75	0.432	0.333	0.02	2.25
7/8-14 UNF	0.875	14	UNF	0.875	0.8647	1.312	1.291	0.875	0.864	0.1	0.75	0.432	0.333	0.02	2.25
1-8 UNC	1	8	UNC	1	0.9886	1.5	1.476	1	0.988	0.114	0.75	0.495	0.38	0.02	2.5
1-12 UNF	1	12	UNF	1	0.9886	1.5	1.476	1	0.988	0.114	0.75	0.495	0.38	0.02	2.5

TECHNICAL SPECIFICATIONS

Property Class	AF, CW	Surface Finish	Passivated, Plain, Blackened
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MARKING

Steel — No marking clause

What This product type has no part-marking clause in this product standard

Sizes

Clause ASME B18.3-2012, 1.8 Identification Marking

Stainless steel — No marking clause

What This product type has no part-marking clause in this product standard

Sizes

Clause ASME B18.3-2012, 1.8 Identification Marking

Clause 1.8 names the head types it covers. Socket low head cap screws (para. 1.2.5, Table 12) and socket set screws (para. 1.4, Tables 14 to 16) are not among them, so this Standard sets no part marking of its own for those two.

Mechanical and chemical requirements are set by the referenced ASTM specifications, each tied to its own table: ASTM A574 and F837 for socket head cap screws, F835 and F879 for flat countersunk and button head cap screws, F912 and F880 for socket set screws. Any grade marking follows the ASTM specification the order names.

Clause 1.7 recommends that these products not be electroplated, because of their high hardness.

Confirm the ordered property class before production.

INSPECTION DOCUMENTS WE CAN ISSUE

EN 10204 3.1 material certificate	Can be included when agreed in the order.
Dimensional inspection report	Can be provided for the agreed inspection scope.
Certificate of conformity	Can be issued against the confirmed order requirements.
Mechanical test report	Available when the required tests are agreed before production.
Chemical analysis report	Available when the material verification scope is agreed.

REFERENCES & NOTES

Note: Dimensional values follow the selected execution standard. Material properties and batch test results are included only when declared or supported by the applicable certificate or test report.