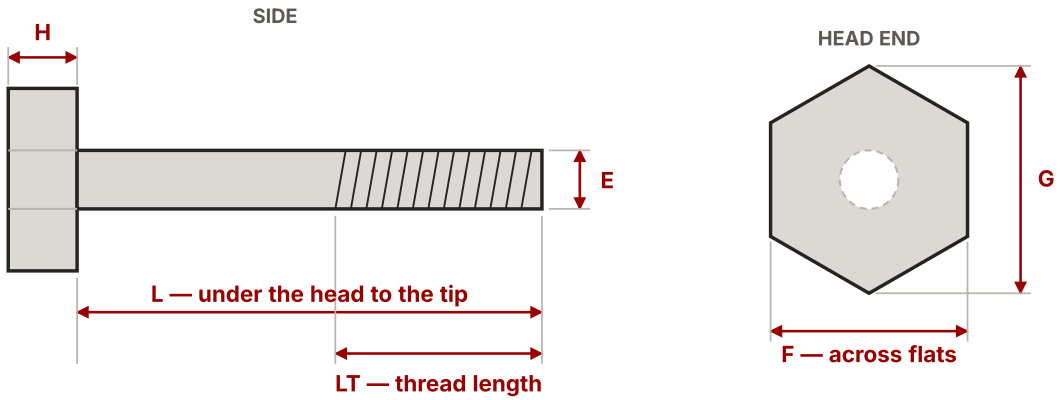
Hex Cap Screw Dimensions

jandesupply.com/reference-hex-cap-dimensions.php

J & E Supply & FASTENER CO.

Head and thread dimensions for inch hex cap screws — across flats, across corners, head height, thread length and stress area. ASME B18.2.1.

The numbers behind a **hex cap screw** (the finished hex head most people call a "hex bolt"). **Across flats** is your wrench size; **across corners** is the room the head needs to turn; **head height** and **thread length** are what you need when the part sits in a counterbore or has to clear a nut. Sizes ¼″ to 1½″.



Letters match the table columns. **F** across flats (the wrench size), **G** across corners, **H** head height, **L** length measured from under the head, **LT** standard thread length, **E** body diameter.

Hex cap screws — ASME B18.2.1 (inches)

SIZE	ACROSS FLATS F	F MAX / MIN	ACROSS CORNERS G MAX / MIN	HEAD HEIGHT H	H MAX / MIN	THREAD LENGTH LT, L ≤ 6″	LT, L > 6″
1/4″	7/16″	.438 / .428	.505 / .488	5/32″	.163 / .150	.750″	1.000″
5/16″	1/2″	.500 / .489	.577 / .557	13/64″	.211 / .195	.875″	1.125″
3/8″	9/16″	.562 / .551	.650 / .628	15/64″	.243 / .226	1.000″	1.250″
7/16″	5/8″	.625 / .612	.722 / .698	9/32″	.291 / .272	1.125″	1.375″
1/2″	3/4″	.750 / .736	.866 / .840	5/16″	.323 / .302	1.250″	1.500″
9/16″	13/16″	.812 / .798	.938 / .910	23/64″	.371 / .348	1.375″	1.625″
5/8″	15/16″	.938 / .922	1.083 / 1.051	25/64″	.403 / .378	1.500″	1.750″
3/4″	1-1/8″	1.125 / 1.100	1.299 / 1.254	15/32″	.483 / .455	1.750″	2.000″
7/8″	1-5/16″	1.312 / 1.285	1.516 / 1.465	35/64″	.563 / .531	2.000″	2.250″
1″	1-1/2″	1.500 / 1.469	1.732 / 1.675	39/64″	.627 / .591	2.250″	2.500″
1-1/8″	1-11/16″	1.688 / 1.631	1.949 / 1.859	11/16″	.718 / .658	2.500″	2.750″
1-1/4″	1-7/8″	1.875 / 1.812	2.165 / 2.066	25/32″	.813 / .749	2.750″	3.000″
1-1/2″	2-1/4″	2.250 / 2.175	2.598 / 2.480	15/16″	.974 / .902	3.250″	3.500″

Thread length rule: 2 × diameter + ¼″ for screws 6″ long and shorter; 2 × diameter + ½″ over 6″. A **tap bolt** is threaded the full length instead. Sizes over 1½″ — call either store.

Tensile stress area (square inches)

SIZE	COARSE (UNC) THREADS PER INCH	STRESS AREA, UNC	FINE (UNF) THREADS PER INCH	STRESS AREA, UNF
1/4″	20	0.0318	28	0.0364
5/16″	18	0.0524	24	0.0581
3/8″	16	0.0775	24	0.0878
7/16″	14	0.1063	20	0.1187
1/2″	13	0.1419	20	0.1600
9/16″	12	0.1819	18	0.2030
5/8″	11	0.2260	18	0.2560
3/4″	10	0.3345	16	0.3730
7/8″	9	0.4617	14	0.5095
1″	8	0.6057	12	0.6630
1-1/8″	7	0.7633	12	0.8557
1-1/4″	7	0.9691	12	1.0729
1-1/2″	6	1.4053	12	1.5810

The area a bolt's strength works over: **strength in pounds = stress area × the grade's strength in psi**. Example: a ½″-13 Grade 5 has 0.1419 sq in × 120,000 psi = about 17,000 lb minimum tensile. Worked out as 0.7854 × (D − 0.9743 ÷ threads per inch)² (ASME B1.1), from the thread pitch chart.

Hex cap screw or hex bolt?

They look alike, but a **hex cap screw** is made to tighter limits than a plain **hex bolt**, and the hex bolt's head can run taller. **Heavy hex** is a different series again — one size wider across the flats (see the wrench size chart). This chart is for hex cap screws.

Strength by grade is on the bolt grades chart and the SAE J429 page. Measuring one you have? See How to Measure a Bolt.

Reference values drawn from the governing standards. For critical applications, confirm against the standard and the manufacturer's published data. Technical information disclaimer →