

Westfield Fasteners Product Specification:

ASME B18.2.1 - UNC Hex Head Flange Bolts

This product guide contains the specification for UNC (Unified Coarse) threaded hex head flange bolts or screws, a series of standard parts available from Westfield Fasteners. The ASME standard ASME B18.2.1 covers several fastener types including hexagon flange bolts, and the relevant information for these parts form the basis of this specification.

Product Description

Hexagon headed bolt with a flange. Also known as a washer bolt. The wider surface area beneath the head spreads the clamping pressure and negates the need for a washer.

These UNC hex head flange bolts are serrated. The serrations are anti-rotational and bite into the material which they are connecting to secure the fixing.

Scope of the ASME standard.

ASME B18.2.1 specifies the dimensions, tolerances and variation in form for these hex head flange bolts, from thread diameters of 1/4 inch up to and including 3/4 inches. Tables 1 & 2 below define these dimensions and tolerances. Table 3 illustrates the standard thread pitches of each thread diameter for both UNC and UNF threads. Please note that this ASME standard specifies a fully threaded shank for these items.

Material specifications for steel hex flange screws conform with one of ASTM A449, ASTM A354 or SAE J429. Stainless steel variants conform with ASTM F593.

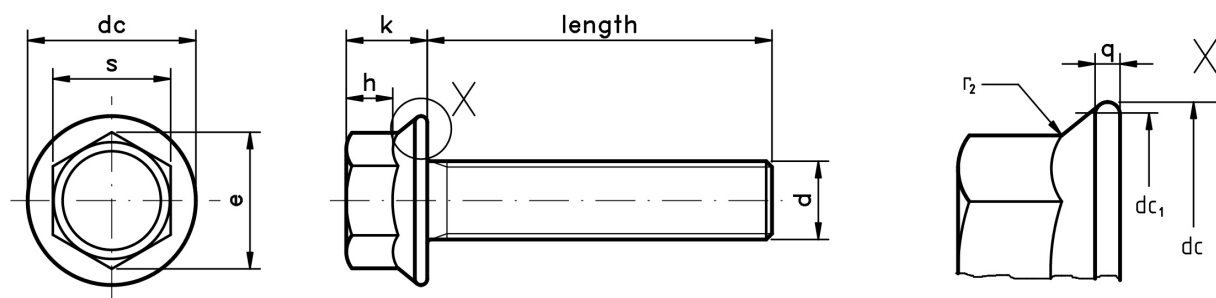


Figure 1: UNC Hex Head Flange Bolt

Table 1: Dimensional Tolerances according to ASME B18.2.1 (dimensions in inches & decimal inches)

Nominal Size or Basic Major Diameter of Thread	Body Diameter, d		Width Across Flats, s			Width Across Corners, e		Maximum Flange Diameter, dc	Maximum Flange Thickness, q	Maximum Head Height, k	Maximum Hex Height, h	Maximum Flange Top Radius, r ₂
	Max	Min	Basic	Max	Min	Max	Min					
1/4 (0.2500)	0.2500	0.2450	3/8	0.3750	0.367	0.433	0.409	0.56	0.04	0.28	0.17	0.015
5/16 (0.3125)	0.3125	0.3065	1/2	0.5000	0.489	0.577	0.548	0.68	0.05	0.32	0.21	0.019
3/8 (0.3750)	0.3750	0.3690	9/16	0.5625	0.551	0.650	0.618	0.81	0.06	0.39	0.25	0.022
7/16 (0.4375)	0.4375	0.4305	5/8	0.6250	0.612	0.722	0.685	0.93	0.07	0.46	0.30	0.026
1/2 (0.5000)	0.5000	0.4930	3/4	0.7500	0.736	0.866	0.825	1.07	0.08	0.51	0.34	0.030
9/16 (0.5625)	0.5625	0.5545	13/16	0.8125	0.798	0.938	0.895	1.19	0.09	0.57	0.38	0.034
5/8 (0.6250)	0.6250	0.6170	15/16	0.9375	0.922	1.083	1.034	1.33	0.10	0.62	0.42	0.038
3/4 (0.7500)	0.7500	0.7410	1 1/8	1.1250	1.100	1.299	1.234	1.59	0.11	0.73	0.51	0.045

Table 2: Dimensional Tolerances according to ASME B18.2.1 Continued

Nominal Size or Basic Major Diameter of Thread	Minimum Bearing Diameter, dc1	Maximum Runout of Bearing Surface FIM
1/4 (0.2500)	0.480	0.010
5/16 (0.3125)	0.600	0.011
3/8 (0.3750)	0.730	0.012
7/16 (0.4375)	0.850	0.013
1/2 (0.5000)	0.980	0.014
9/16 (0.5625)	1.100	0.015
5/8 (0.6250)	1.230	0.017
3/4 (0.7500)	1.470	0.020

Table 3: UNC and UNF Thread Pitch (Threads Per Inch) by Nominal Thread Diameter

Size	Threads per inch (TPI)		Size	Threads per inch (TPI)	
	UNC	UNF		UNC	UNF
#0	-	80	3/4"	10	16
#1	64	72	7/8"	9	14
#2	56	64	1"	8	14
#3	48	56	1 1/8"	7	12
#4	40	48	1 1/4"	7	12
#5	40	44	1 3/8"	6	12
#6	32	40	1 1/2"	6	12
#8	32	36	1 3/4"	5	-
#10	24	32	2"	4 1/2	-
#12	24	28	2 1/4"	4 1/2	-
1/4"	20	28	2 1/2"	4	-
5/16"	18	24	2 3/4"	4	-
3/8"	16	24	3"	4	-
7/16"	14	20	3 1/4"	4	-
1/2"	13	20	3 1/2"	4	-
9/16"	12	18	3 3/4"	4	-
5/8"	11	18	4"	4	-

For further details, please refer to the ASME standard document for this item.