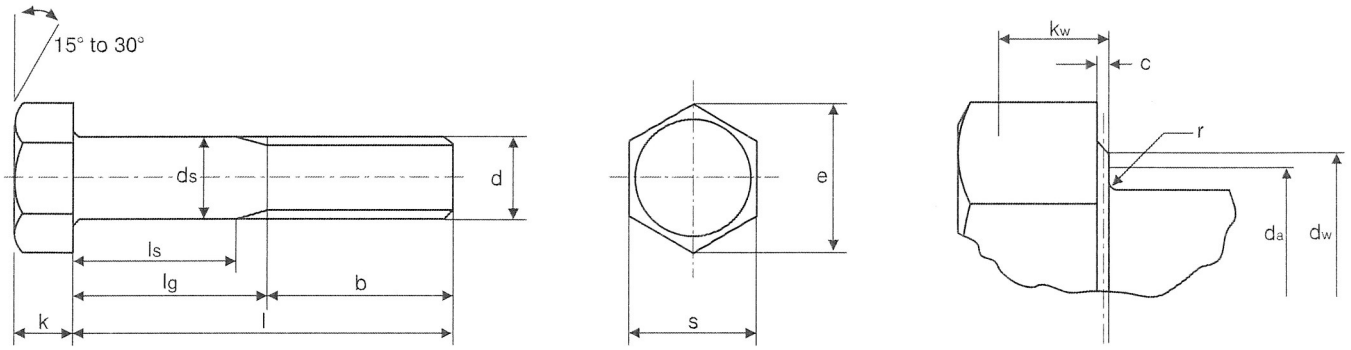
Hexagon Head Bolts

EN ISO 4014 (DIN 931) High Tensile



EN ISO 4014 (DIN931) Dimensions of bolts

Nominal Size and Thread diameter (d)	Pitch of the thread (p)[a]	Length of the thread (b) *(Reference)*			Depth of washer face (c)		Transition Diameter (d_a)	Diameter of unthreaded shank (d_s)			Dia. Of washer face (d_w)		Width across corners (e)	Thickness of head (k)[e]					Radius under head (r)	Width across flats (s)		
	Coarse pitch	Bolt[b] ≤125	Bolt[c] 125-200	Bolt[d] ≥200	Min.	Max.	Max.	Grade A Min	Grade B Min	Nom = Max	Grade A Min.	Grade B Min.	Min.	Grade A Min	Grade A Max	Grade B Min	Grade B Max	Nom.	Min.	Grade A Min	Grade B Min	Max.
M10	1.50	26	32	45	0.15	0.6	11.20	9.78	9.64	10	14.63	14.47	17.59	5.15	6.58	6.11	6.69	6.4	0.4	15.73	15.57	16.00
(M10)	1.50	26	32	45	0.15	0.6	11.20	9.78	9.64	10	14.63	15.60	18.90	5.15	6.58	6.11	6.69	6.4	0.4	15.73	15.57	17.00
M12	1.75	30	36	49	0.15	0.6	13.70	11.73	11.57	12	16.63	16.47	19.85	7.32	7.68	7.21	7.79	7.5	0.6	17.73	17.57	18.00
(M12)	1.75	30	36	49	0.15	0.6	13.70	11.73	11.57	12	16.63	17.40	21.10	7.32	7.68	7.21	7.79	7.5	0.6	17.73	17.57	19.00
M14	2.00	34	40	53	0.15	0.6	15.70	13.73	13.57	14	19.64	49.15	22.78	8.62	8.98	8.51	9.09	8.8	0.5	20.67	20.16	21.00
(M14)	2.00	34	40	53	0.15	0.6	15.70	13.73	13.57	14	19.64	20.50	24.49	8.62	8.98	8.51	9.09	8.8	0.6	20.67	20.16	22.00
M16	2.00	42	44	57	0.2	0.5	17.70	15.73	15.57	16	22.49	22.00	26.17	9.82	10.18	9.71	10.29	10.0	0.6	23.67	23.16	24.00
M18	2.00	42	48	61	0.2	0.8	20.20	17.73	17.57	18	25.34	24.85	29.56	11.285	11.715	11.15	11.85	11.5	0.6	26.67	26.16	27.00
M20	2.50	46	52	65	0.2	0.8	22.40	19.67	19.48	20	28.19	27.70	32.95	12.285	12.715	12.15	12.85	12.5	0.8	29.67	29.16	30.00
M22	2.50	50	56	69	0.2	0.8	24.40	21.67	21.48	22	31.71	31.35	37.29	13.785	14.215	13.65	14.35	14.0	0.8	33.38	33.00	34.00
(M22)	2.50	50	56	69	0.2	0.8	24.40	21.67	21.48	22	31.71	30.00	35.72	13.785	14.215	13.65	14.35	14.0	0.8	33.38	33.00	32.00
M24	3.00	54	60	73	0.2	0.8	26.40	23.67	23.48	24	33.61	33.25	39.55	14.785	15.215	14.65	15.35	15.0	1.0	35.38	35.00	36.00
M27	3.00	60	66	79	0.2	0.8	30.40	-	26.48	27	-	38.00	45.20	-	-	16.65	17.35	17.0	1.0	-	40.00	41.00
M30	3.50	66	72	85	0.2	0.8	33.40	-	29.48	30	-	42.75	50.85	-	-	18.28	19.12	18.7	1.0	-	45.00	46.00
M33	3.50	72	78	91	0.2	0.8	36.40	-	32.38	33	-	46.55	55.37	-	-	20.58	21.42	21.0	1.0	-	49.00	50.00
M36	4.00	78	84	97	0.2	0.8	39.40	-	35.38	36	-	51.11	60.79	-	-	22.08	25.58	22.5	1.0	-	53.80	55.00
M39	4.00	84	90	103	0.3	1.0	42.40	-	38.38	39	-	55.86	66.44	-	-	24.58	25.42	25.0	1.0	-	58.80	60.00
M42	4.50	90	96	109	0.3	1.0	45.60	-	41.38	42	-	59.95	71.30	-	-	25.58	26.42	26.0	1.2	-	63.10	65.00
M45	4.50	96	102	121	0.3	1.0	48.60	-	44.38	45	-	64.70	76.95	-	-	27.58	28.42	28.0	1.2	-	68.10	70.00
M48	5.00	102	108	127	0.3	1.0	52.60	-	47.38	48	-	69.45	82.60	-	-	29.58	30.42	30.0	1.6	-	73.10	75.00
M52	5.00	110	116	135	0.3	1.0	56.60	-	51.26	52	-	74.20	88.25	-	-	32.50	33.50	33.0	1.6	-	78.10	80.00
M56	5.50	-	124	137	0.3	1.0	63.00	-	55.26	56	-	78.66	93.56	-	-	34.50	35.50	35.0	2.0	-	82.80	85.00
M60	5.50	-	132	145	0.3	1.0	67.00	-	59.26	60	-	83.41	99.21	-	-	37.50	38.5	38.0	2.0	-	87.80	90.00
M64	6.00	-	140	153	0.3	1.0	71.00	-	63.26	64	-	88.15	104.86	-	-	39.50	40.50	40.0	2.0	-	92.80	95.00

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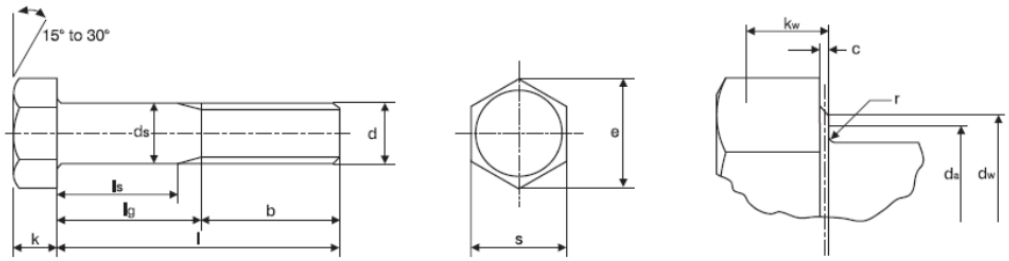

EN ISO 4014 (DIN931) Dimensions of bolts (concluded)

	Product Grade				M10 (M10)		M12 (M12)		M14 (M14)		M16		M18		M20		M22 (M22)		M24	
L	Type A		Type B		l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g
Nom.	Min.	Max.	Min.	Max.	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
45	44.50	45.50	43.75	46.25	11.5	19														
50	49.50	50.50	48.75	51.25	16.5	24	11.25	20												
55	54.40	55.60	53.50	56.50	21.5	29	16.25	25												
60	59.40	60.60	58.50	61.50	26.5	34	21.25	30	16	26										
65	64.40	65.60	63.50	66.50	31.5	39	26.25	35	21	31	17	27								
70	69.40	70.60	68.50	71.50	36.5	44	31.25	40	26	36	22	32	15.5	28						
80	79.40	80.60	78.50	81.50	46.5	54	41.25	0	36	46	32	42	25.5	38	21.5	34				
90	89.30	90.70	88.25	91.75	56.5	64	51.25	60	6	56	42	52	35.5	48	31.5	44	27.5	40	21	36
100	99.30	100.70	98.25	101.75	66.5	74	61.25	70	56	66	52	62	45.5	58	41.5	54	37.5	50	31	46
110	109.30	110.70	108.25	110.75			71.25	80	66	76	62	72	55.5	68	51.5	64	47.5	60	41	56
120	119.30	120.70	118.25	121.75			81.25	90	76	86	72	82	65.5	78	61.5	74	57.5	70	51	66
130	129.2	130.8	128	132					80	90	76	86	69.5	82	65.5	78	61.5	74	55	70
140	139.2	140.8	138	142					90	100	86	96	79.5	92	75.5	88	71.5	84	65	80
150	149.2	150.8	148	152							96	106	89.5	102	85.5	98	81.5	94	75	90
160			158	162							106	116	99.5	112	95.5	108	91.5	104	85	100
180			178	182									119.5	132	115.5	128	111.5	124	105	120
200			197.7	202.3											135.5	148	131.5	144	125	140
220			217.7	222.3													138.5	151	132	147
240			237.7	242.3															152	167

	Product Grade		M30		M33		M36		M39		M42		M45		M48		M52		M56		M60		M64	
L	Type B		l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g	l_s	l_g
Nom.	Min.	Max.	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max
110	108.25	111.75	26.5	44.0																				
120	118.25	121.75	36.5	54.0																				
130	128	132	40.5	58.0	34.5	52.0																		
140	138	142	50.5	68.0	44.5	62.0	36.0	56.0																
150	148	152	60.5	78.0	54.5	72.0	46.0	66.0	40.0	60.0														
160	158	162	70.5	88.0	64.5	82.0	56.0	76.0	50.0	70.0	41.5	64.0												
180	178	182	90.5	108.0	84.5	102.0	76.0	96.0	70.0	90.0	61.5	84.0	55.5	78.0	47.0	72.0								
200	197.7	202.3	110.5	128.0	104.5	122.0	96.0	116.0	90.0	110.0	81.5	104.0	75.5	98.0	57.0	92.0	59.0	84.0						
220	217.7	22.3	117.5	135.0	111.5	129.0	103.0	123.0	97.0	117.0	88.5	111.0	82.5	105.0	74.0	99.0	66.0	91.0	55.5	83.0				
240	237.7	242.3	137.5	155.0	131.5	149.0	123.0	143.0	117.0	137.0	108.5	131.0	102.5	125.0	94.0	119.0	86.0	111.0	75.5	103.0	67.5	95.0		
260	257.4	262.6	157.5	175.0	151.5	169.0	143.0	163.0	137.0	157.0	128.5	151.0	122.5	145.0	114.0	139.0	106.0	131.0	95.5	123.0	87.5	115.0	77.0	107.0
280	277.4	282.6	177.5	195.0	171.5	189.0	163.0	183.0	157.0	177.0	148.5	171.0	142.5	165.0	134.0	159.0	126.0	151.0	115.5	143.0	107.5	135.0	97.0	127.0
300	297.4	302.6	197.5	215.0	191.5	209.0	183.0	203.0	177.0	197.0	168.5	191.0	162.5	185.0	154.0	179.0	146.0	171.0	135.5	163.0	127.5	155.0	117.0	147.0
320	317.15	322.85			211.5	229.0	203.0	223.0	197.0	217.0	188.5	211.0	182.5	205.0	174.0	199.0	166.0	191.0	155.5	183.0	147.5	175.0	137.0	167.0
340	337.15	342.85					223.0	243.0	217.0	237.0	208.5	231.0	202.5	225.0	194.0	219.0	186.0	211.0	175.5	203.0	167.5	195.0	157.0	187.0
360	357.15	362.85					243.0	263.0	237.0	257.0	228.5	251.0	222.5	245.0	214.0	239.0	206.0	231.0	195.5	223.0	187.5	215.0	177.0	207.0
380	377.15	382.85							257.0	277.0	248.5	271.0	242.5	265.0	234.0	259.0	226.0	251.0	215.5	243.0	207.5	235.0	197.0	227.0
400	397.15	402.85									288.5	291.0	262.5	285.0	254.0	279.0	246.0	271.0	235.5	263.0	227.5	255.0	217.0	247.0
420	416.85	423.15									298.5	311.0	282.5	305.0	274.0	299.0	266.0	291.0	255.5	283.0	247.5	275.0	237.0	267.0
440	436.85	443.15									308.5	331.0	302.5	325.0	294.0	319.0	286.0	311.0	275.5	303.0	267.5	295.0	257.0	287.0
460	456.85	163.15													314.0	339.0	306.0	331.0	295.5	323.0	287.5	315.0	277.0	307.0
480	476.85	483.15													334.0	359.0	326.0	351.0	315.5	343.0	307.5	335.0	297.0	327.0
500	496.85	503.15																	335.5	363.0	327.5	355.0	317.0	347.0

Note: Popular lengths are defined in terms of L_s and L_g (***f & g***)

— For product grade A, above the dashed, stepped line

— For product grade B, below this stepped line

For d ≤ 24mm and l ≤ 10 d or 150mm[b]: A — whichever is shorter

For d > 24mm or l > 10 d or 150mm[b]: B — whichever is shorter

a *P* is the pitch of the thread

b For lengths l_{nom} ≤ 125mm

c For lengths 125mm < l_{nom} ≤ 200mm

d For lengths l_{nom} > 200mm

e K_W min = 0.7 K_{min}

f $l_{g\,max} = l_{nom} - b$, $l_{s\,min} = l_{g\,max} - 5p$

g l_g is the minimum grip length

Hexagon Head Bolts

EN ISO 4014 (DIN 931) High Tensile

Specification for bolts and reference standards

Material		Steel	Stainless Steel	Non-ferous metal
General Requirements	International Standard	ISO 8992		
Thread	Tolerance	6g		
	International Standard	ISO 724, ISO 965-1		
Mechanical properties	Property Class[a]	D< 3mm: as agreed 3mm ≤ d ≤ 39mm: 5.6, 8.8, 9.8, 10.9	d ≤ 24mm: A2-70, A4-70 24mm < d ≤ 39mm: A2-50, A4-50 d > 39mm: as agreed	Materials Specified in ISO 8839
	International Standard	3mm ≤ d ≤ 39mm: ISO 898-1 d < 3mm and d > 39mm: as agreed	d ≤ 39mm: ISO 3506-1 d> 39mm: as agreed	
Tolerances	Product grade	For d ≤ 24mm and l ≤ 10 d or 150mm[b] : A For d > 24mm or l > 10 d or 150mm[b] : B		
	International Standard	ISO 4759-1		
Finish and/or coating	As processed Requirements for electroplating are covered in 4042 Requirements for non-electrolytically applied zinc flake coatings are covered in ISO10683	Plain	Plain Requirements for electroplating are covered in ISO 4042	
	If Different electroplating requirements are desired or if requirements are needed for other finishes, they should be agreed between the customer and the supplier.			
	Limits for surface discontinuities are covered in ISO 9157-1			
Acceptability	For acceptance procedure, See ISO 3269			

a) For other property class see ISO 898-1 for steel and 3506-1 for stainless steel respectively.

b) Whichever is shorter