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Westfield Fasteners Product Specification:

ISO 4014 - Hex Head Bolts

This product guide contains the specification for metric threaded Hex Head Bolts, a series of standard parts available from Westfield Fasteners. The basis of this specification is the internationally recognised ISO standard ISO 4014.

Product Description

Metric partly threaded hex bolts manufactured to the newer ISO 4014 standard rather than the DIN 931 standard. ISO 4014 specifies minor differences in head dimensions for M10, M12 and M14 thread diameters, including revised spanner sizes. Please take note!

These hex bolts are currently available in a modern mechanically applied zinc based coating called zinc flake that offers superior corrosion resistance over the common zinc plated finish. In addition, high tensile fasteners coated in a zinc flake finish are free from the risk of hydrogen embrittlement. Zinc flake coated fasteners are standard fitments in the automotive industry, amongst others, particularly for applications outside of the cabin where corrosion is more of an issue.

Scope of the ISO Standard

ISO 4014 is the international standard for hexagon head bolts, covering thread diameters from M1.6 up to and including M64. Mechanical properties for these items are defined in ISO 898 and ISO 3506. Table 1 below defines the overall dimensions and tolerances for hexagon head bolts, whilst table 2 defines the same for what are considered non-preferred threads. Table 3 defines the tolerance on the shank length.

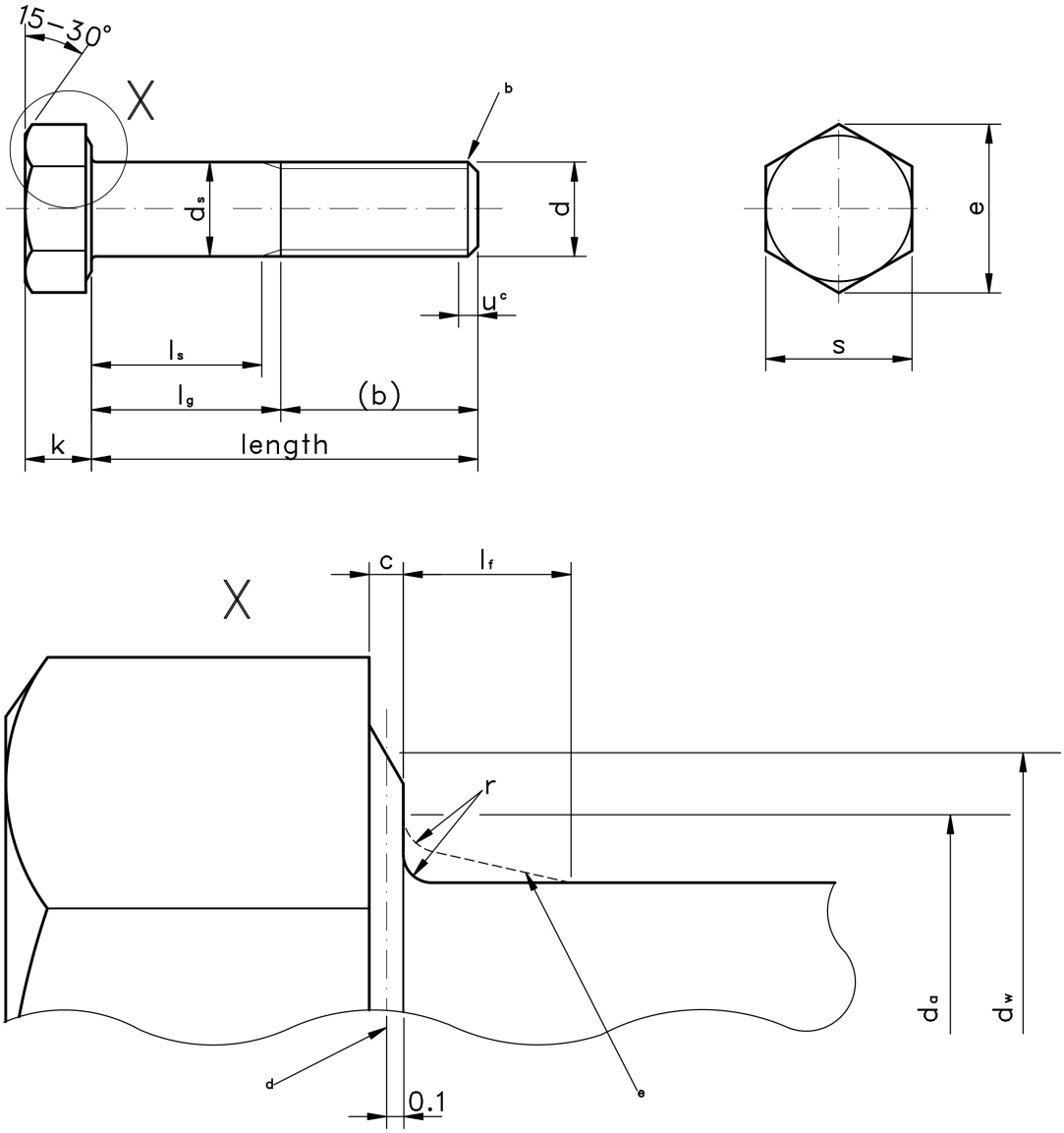


Figure 1: Hexagon Head Bolt ISO 4014

Notes to figure 1:

- The threaded end of the bolt (b) can be chamfered or sheared as rolled.
- There may be up to 2 incomplete threads at the end of the bolt (c).
- d - The datum reference for dw is in the centre of the depth of the step beneath the head.

Variations from ISO 4014

ISO 4017 is an equivalent standard, covering hex head bolts or set screws with a fully threaded shank.

Table 1: Dimensions & Tolerances according to ISO 4014 (Preferred Threads) in mm

Thread, d		**M1.6**	**M2**	**M2.5**	**M3**	**M4**	**M5**	**M6**	**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**	**M36**	**M42**	**M48**	**M56**	**M64**
thread pitch		0.35	0.4	0.45	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
b ref.	b	9	10	11	12	14	16	18	22	26	30	38	46	54	66	-	-	-	-	-
	c	15	16	17	18	20	22	24	28	32	36	44	52	60	72	84	96	108	-	-
	d	28	29	30	31	33	35	37	41	45	49	57	65	73	85	97	109	121	137	153
c	max.	0.25	0.25	0.25	0.40	0.40	0.50	0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
	min.	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
d_a	max.	2.0	2.6	3.1	3.6	4.7	5.7	6.8	9.2	11.2	13.7	17.7	22.4	26.4	33.4	39.4	45.6	52.6	63	71
d_w	min.	2.27	2.95	3.95	4.45	5.74	6.74	8.74	11.47	14.47	16.47	22.00	27.70	33.25	42.75	51.11	59.95	69.45	78.66	88.16
e	min.	3.28	4.18	5.31	5.88	7.50	8.63	10.89	14.20	17.59	19.85	26.17	32.95	39.55	50.85	60.79	71.30	82.60	93.56	104.86
k	nom.	1.1	1.4	1.7	2	2.8	3.5	4	5.3	6.4	7.5	10	12.5	15	18.7	22.5	26	30	35	40
	max.	1.30	1.60	1.90	2.20	3.00	3.74	4.24	5.54	6.69	7.79	10.29	12.85	15.35	19.12	22.92	26.42	30.42	35.5	40.5
	min.	0.90	1.20	1.50	1.80	2.60	3.26	3.76	5.06	6.11	7.21	9.71	12.15	14.65	18.28	22.08	25.58	29.58	34.5	39.5
k_w	min.	0.63	0.84	1.05	1.26	1.82	2.28	2.63	3.54	4.28	5.05	6.8	8.51	10.26	12.8	15.46	17.91	20.71	24.15	27.65
r	min.	0.1	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.8	0.8	1	1	1.2	1.6	2	2
s	nom. = max.	3.2	4	5	5.5	7	8	10	13	16	18	24	30	36	46	55	65	75	85	95
	min.	2.90	3.70	4.70	5.20	6.64	7.64	9.64	12.57	15.57	17.57	23.16	29.16	35.00	45.0	53.8	63.1	73.1	82.8	92.8

Table 2: Dimensions & Tolerances according to ISO 4014 (Non-Preferred Threads) in mm

Thread, d		M3.5	M14	M18	M22	M27	M33	M39	M45	M52	M60
thread pitch		0.6	2	2.5	2.5	3	3.5	4	4.5	5	5.
b ref.	b	13	34	42	50	60	-	-	-	-	-
	c	19	40	48	56	66	78	90	102	116	-
	d	32	53	61	69	79	91	103	115	129	145
c	max.	0.40	0.60	0.80	0.80	0.80	0.8	1.0	1.0	1.0	1.0
	min.	0.15	0.15	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
d_a	max	4.1	15.7	20.2	24.4	30.4	36.4	42.4	48.6	56.6	67
d_w	min.	4.95	19.15	24.85	31.35	38.0	46.55	55.86	64.70	74.2	83.41
e	min.	6.44	22.78	29.56	37.29	45.20	55.37	66.44	76.95	88.25	99.21
k	nom.	2.4	8.8	11.5	14	17	21	25	28	33	38
	max.	2.60	9.09	11.85	14.35	17.35	21.42	25.42	28.42	33.50	38.5
	min.	2.20	8.51	11.15	13.65	16.65	20.58	24.58	27.58	32.50	37.5
k_w	min.	1.54	5.96	7.81	9.56	11.66	14.41	17.21	19.31	22.75	26.25
r	min.	0.1	0.6	0.6	0.8	1	1	1	1.2	1.6	2
s	nom. = max.	6	21	27	34	41	50	60	70	80	90
	min.	5.70	21.16	26.16	33.00	40.00	49.0	58.8	68.1	78.1	87.8

Table 3: Shank Length Tolerance according to ISO 4014 in mm

mm	+/-	
	Product grade	
	A	B
2-3	0.2	-
4-6	0.24	-
8-10	0.29	-
12-16	0.35	-
20-30	0.42	1.05
35-50	0.5	1.25
55-80	0.6	1.5
90-120	0.7	1.75
130-150	0.8	2
160-180	-	2
200	-	2.3

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