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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Cup head square neck bolts with small head and short neck — Product grade B

Vis à métaux à tête bombée à collet carré à tête réduite et collet court — Grade B

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Reference number
ISO 8678: 1988 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8678 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Cup head square neck bolts with small head and short neck — Product grade B

1 Scope and field of application

This International Standard specifies the characteristics of cup head square neck bolts with small head, short neck, metric dimensions and threads from M6 up to and including M20, of product grade B.

If, in special cases, specifications other than those listed in this International Standard are required, it is recommended that they should be selected from existing International Standards, for example ISO 261, ISO 888, ISO 898-1, ISO 965-2, ISO 4759-1.

2 References

ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and designations of dimensions.*

ISO 261, *ISO general purpose metric screw threads — General plan.*

ISO 888, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts.*

ISO 898-1, *Mechanical properties of fasteners — Part 1: Bolts, screws and studs.*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits for general purpose bolt and nut threads — Medium quality.*

ISO 1461, *Metallic coatings — Hot dip galvanized coatings on fabricated ferrous products — Requirements.*

ISO 3269, *Fasteners — Acceptance inspection.*

ISO 4042, *Threaded components — Electroplated coatings.*¹⁾

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws and nuts with thread diameters $> 1,6$ and < 150 mm and product grades A, B and C.*

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements.*

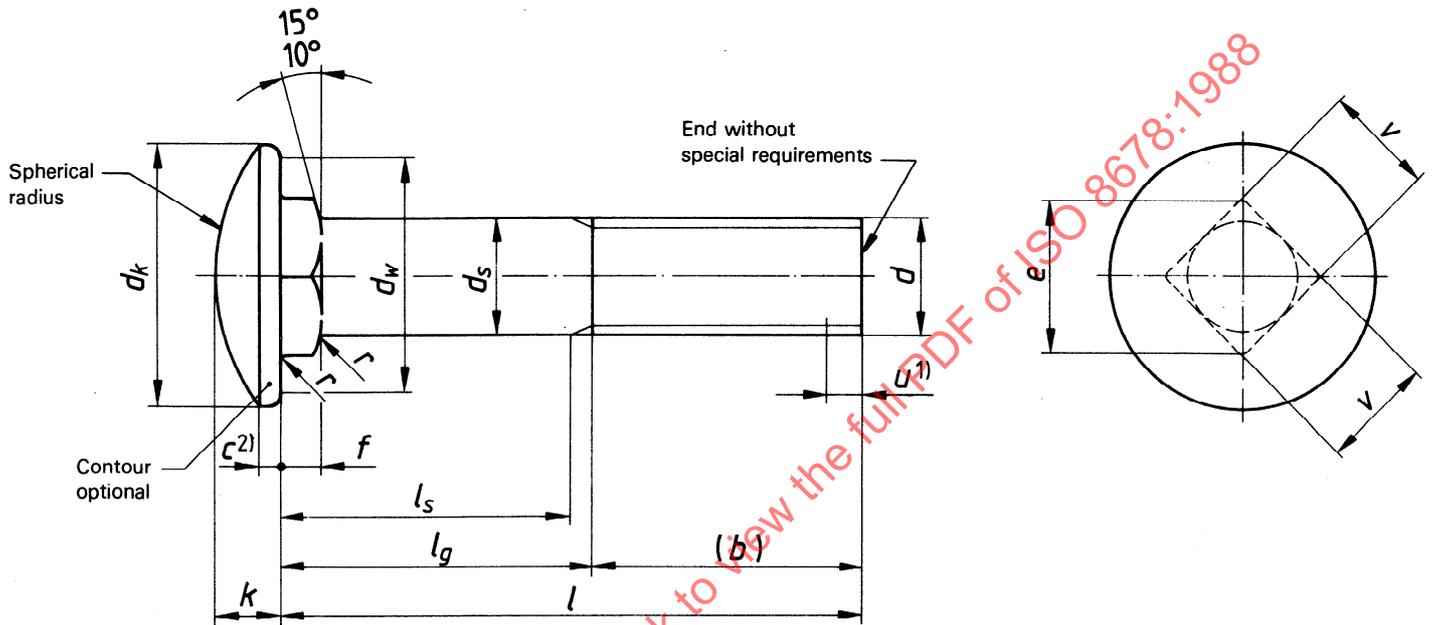
ISO 6157-3, *Fasteners — Surface discontinuities — Part 3: Bolts, screws and studs for special requirements.*

ISO 8992, *Fasteners — General requirements for bolts, screws, studs and nuts.*

1) At present at the stage of draft.

3 Dimensions

NOTE — Symbols and designations of dimensions are specified in ISO 225.



- 1) Incomplete thread $u < 2P$
- 2) Dimension c shall be measured at the level of diameter d_w .

Dimensions in millimetres

Thread (d)		M6	M8	M10	M12	M16	M20								
$P^{1)}$		1	1,25	1,5	1,75	2	2,5								
$b^{2)}$ ref.	3)	18	22	26	30	38	46								
	4)	—	—	—	—	44	52								
c	max.	1,9	2,2	2,5	2,8	3,6	4,2								
	min.	1,1	1,2	1,5	1,8	2,4	3								
d_k	max.	14,2	18	22,3	26,6	35	43								
	d_s	max.	6	8	10	12	16	20							
	min.	≈ Pitch diameter													
d_w	min.	12,2	15,8	19,6	23,8	31,9	39,9								
$e^{5)}$	min.	7,64	10,2	12,8	15,37	20,57	25,73								
f	max.	3	3	4	4	5	5								
	min.	2,4	2,4	3,2	3,2	4,2	4,2								
k	max.	3,6	4,8	5,8	6,8	8,9	10,9								
	min.	3	4	5	6	8	10								
r	max.	0,5	0,8	0,8	1,2	1,2	1,6								
v	max.	6,48	8,58	10,58	12,7	16,7	20,84								
	min.	5,88	7,85	9,85	11,82	15,82	19,79								
$l^{6)}$		Shank lengths $l_s^{7)}$ and grip lengths $l_g^{8)}$													
nom.	min.	max.	l_s min.	l_g max.											
12	11,1	12,9	—	5	—	—	—	—	—	—	—	—	—	—	
(14)	13,1	14,9	—	5	—	5,5	—	—	—	—	—	—	—	—	
16	15,1	16,9	—	5	—	5,5	—	—	—	—	—	—	—	—	
20	18,95	21,05	—	5	—	5,5	—	7	—	7,5	—	—	—	—	
25	23,95	26,05	—	5	—	5,5	—	7	—	7,5	—	—	—	—	
30	28,95	31,05	—	5	—	5,5	—	7	—	7,5	—	9	—	—	
35	33,75	36,25	—	5	—	5,5	—	7	—	7,5	—	9	—	10	
40	38,75	41,25	—	5	—	5,5	—	7	—	7,5	—	9	—	10	
45	43,75	46,25	—	5	—	5,5	—	7	—	7,5	—	9	—	10	
50	48,75	51,25	—	5	—	5,5	—	7	—	7,5	—	9	—	10	
55	53,5	56,5	32	37	26,75	33	21,5	29	16,25	25	—	9	—	10	
60	58,5	61,5	37	42	31,75	38	26,5	34	21,25	30	—	9	—	10	
65	63,5	66,5	—	—	36,75	43	31,5	39	26,25	35	17	27	—	10	
70	68,5	71,5	—	—	41,75	48	36,5	44	31,25	40	22	32	—	10	
80	78,5	81,5	—	—	51,75	58	46,5	54	41,25	50	32	42	21,5	34	
90	88,25	91,75	—	—	—	—	56,5	64	51,25	60	42	52	31,5	44	
100	98,25	101,75	—	—	—	—	66,5	74	61,25	70	52	62	41,5	54	
110	108,25	111,75	—	—	—	—	—	—	71,25	80	62	72	51,5	64	
120	118,25	121,75	—	—	—	—	—	—	81,25	90	72	82	61,5	74	
130	128	132	—	—	—	—	—	—	—	—	76	86	65,5	78	
140	138	142	—	—	—	—	—	—	—	—	86	96	75,5	88	
150	148	152	—	—	—	—	—	—	—	—	96	106	85,5	98	
160	158	162	—	—	—	—	—	—	—	—	106	116	95,5	108	

- 1) P = pitch of the thread.
- 2) For nominal lengths above the solid stepped line, the length of the thread, b , shall be the whole length of the shank up to the square neck ($l_{g \max} = f_{\max} + 2P$).
- 3) For nominal lengths below the solid stepped line and $l_{\text{nom}} < 125$ mm.
- 4) For nominal lengths $125 < l_{\text{nom}} < 200$ mm.
- 5) e_{min} applies only for a length equal to $0,8 f_{\text{min}}$ measured from the bearing surface ($e_{\text{min}} = 1,3 v_{\text{min}}$).
- 6) For nominal lengths above 160 mm, steps of 20 mm should be used; for thread lengths b see ISO 888.
- 7) $l_{s \text{ min}} = l_{g \text{ max}} - 5P$
- 8) $l_{g \text{ max}} = l_{\text{nom}} - b$

4 Specifications and reference International Standards

Material		Steel
General requirements	International Standard	ISO 8992
Thread	Tolerance	6g
	International Standard	ISO 261, ISO 965-2
Mechanical properties	Class	4.8, 8.8, 10.9
	International Standard	ISO 898-1
Tolerances	Product grade	B
	International Standard	ISO 4759-1
Finish		As processed Requirements for electroplating are covered in ISO 4042. If different electroplating requirements are desired or if requirements exist for other finishes, they should be negotiated between supplier and customer. Limits for surface discontinuities are covered in ISO 6157-1 and ISO 6157-3. For hot dip galvanizing, see ISO 1461.
Acceptability		For acceptance procedure, see ISO 3269.

5 Designation

Example for the designation of a cup head square neck bolt with small head and short neck with thread M12, nominal length $l = 80$ mm and property class 8.8:

Cup head square neck bolt ISO 8678 - M12 × 80 - 8.8