INTERNATIONAL STANDARD

ISO 4028

Third edition
2003-12-01

Hexagon socket set screws with dog point

Vis sans tête à six pans creux, à téton

Reference number
ISO 4028:2003(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4028 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

This third edition cancels and replaces the second edition (ISO 4028:1993), which has been technically revised.

Hexagon socket set screws with dog point

1 Scope

This International Standard specifies the characteristics of hexagon socket set screws with dog point and threads from M1,6 up to and including M24 and of product grade A.

If, in special cases, specifications other than those listed in this International Standard are required, they should be selected from existing International Standards, e.g. ISO 261, ISO 898-5, ISO 965-2, ISO 3506-3 and ISO 4759-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO 898-5, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 5: Set screws and similar threaded fasteners not under tensile stresses*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 965-3, *ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 3: Set screws and similar fasteners not under tensile stress*

ISO 4042, *Fasteners — Electroplated coatings*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

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

ISO 8839, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals*

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

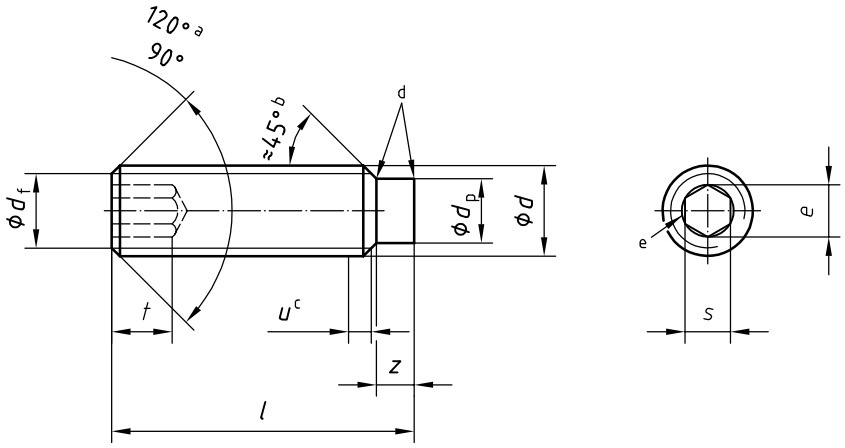
ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

ISO 23429, *Gauging of hexagon sockets*

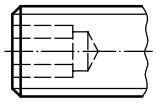
3 Dimensions

See Figure 1 and Table 1.

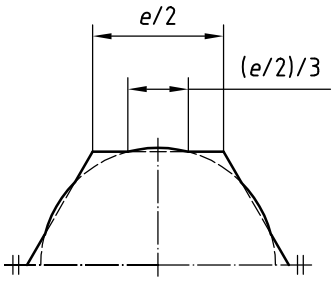
Symbols and designations of dimensions are specified in ISO 225.



Permissible alternative form of socket



For broached sockets which are at the maximum limit of size, the overcut resulting from drilling shall not exceed 1/3 of the length of any flat of the socket which is e/2.



[a] The 120° angle is a requirement for short-length screws of nominal length, l, situated in the shaded areas in Table 1.

[b] The 45° angle applies only to the portion of the point situated below the root diameter of the thread.

[c] Incomplete thread $u < 2P$.

[d] A slight radius.

[e] A slight rounding or countersink at the mouth of the socket is permissible.

Figure 1

Table 1 — Dimensions

Dimensions in millimetres

Thread (d)			M1,6	M2	M2,5	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
P[a]			0,35	0,4	0,45	0,5	0,7	0,8	1	1,25	1,5	1,75	2	2,5	3
d_p		max.	0,80	1,00	1,50	2,00	2,50	3,5	4,0	5,5	7,00	8,50	12,00	15,00	18,00
		min.	0,55	0,75	1,25	1,75	2,25	3,2	3,7	5,2	6,64	8,14	11,57	14,57	17,57
d_f		min.	≈ Minor thread diameter												
e[b, c]		min.	0,809	1,011	1,454	1,733	2,303	2,873	3,443	4,583	5,723	6,863	9,149	11,429	13,716
s[c]		nom.	0,7	0,9	1,3	1,5	2	2,5	3	4	5	6	8	10	12
		max.	0,724	0,913	1,300	1,58	2,08	2,58	3,08	4,095	5,14	6,14	8,175	10,175	12,212
		min.	0,710	0,887	1,275	1,52	2,02	2,52	3,02	4,020	5,02	6,02	8,025	10,025	12,032
t		min. [d]	0,7	0,8	1,2	1,2	1,5	2	2	3	4	4,8	6,4	8	10
		min. [e]	1,5	1,7	2	2	2,5	3	3,5	5	6	8	10	12	15
z	short dog point[d]	max.	0,65	0,75	0,88	1,00	1,25	1,50	1,75	2,25	2,75	3,25	4,3	5,3	6,3
		min.	0,40	0,50	0,63	0,75	1,00	1,25	1,50	2,00	2,50	3,00	4,0	5,0	6,0
	long dog point[e]	max.	1,05	1,25	1,50	1,75	2,25	2,75	3,25	4,3	5,3	6,3	8,36	10,36	12,43
		min.	0,80	1,00	1,25	1,50	2,00	2,50	3,00	4,0	5,0	6,0	8,00	10,00	12,00
l			Approximate mass, in kilograms per 1 000 pieces (ρ = 7,85 kg/dm^3) (for information only)												
nom.	min.	max.													
2	1,8	2,2	0,024												
2,5	2,3	2,7	0,028	0,046											
3	2,8	3,2	0,029	0,053	0,085										
4	3,76	4,24	0,037	0,059	0,11	0,12									
5	4,76	5,24	0,046	0,074	0,125	0,161	0,239								
6	5,76	6,24	0,054	0,089	0,15	0,186	0,319	0,528							
8	7,71	8,29	0,07	0,119	0,199	0,266	0,442	0,708	1,07	1,68					
10	9,71	10,29		0,148	0,249	0,346	0,602	0,948	1,29	2,31	3,6				
12	11,65	12,35			0,299	0,427	0,763	1,19	1,63	2,68	4,78	6,06			
16	15,65	16,35				0,586	1,08	1,67	2,31	3,94	6,05	8,94	15		
20	19,58	20,42					1,4	2,15	2,99	5,2	8,02	11	20,3	28,3	
25	24,58	25,42						2,75	3,84	6,78	10,5	14,6	25,1	38,6	55,4
30	29,58	30,42							4,69	8,35	13	18,2	31,7	45,5	69,9
35	34,5	35,5								9,93	15,5	21,8	38,3	55,8	78,4
40	39,5	40,5								11,5	18	25,4	44,9	66,1	92,9
45	44,5	45,5									20,5	29	51,5	76,4	107
50	49,5	50,5									23	32,6	58,1	86,7	122
55	54,4	55,6										36,2	64,7	97	136
60	59,4	60,6										39,8	71,3	107	151

NOTE Commercial lengths are those between the bold stepped lines.

[a] P is the pitch of the thread.

[b] $e_{min} = 1{,}14\ s_{min}$.

[c] Combined gauging of socket dimensions e and s, see ISO 23429.

[d] For screws with nominal lengths in the shaded areas.

[e] For screws with nominal lengths below the shaded areas.

4 Requirements and reference International Standards

See Table 2.

Table 2 — Specifications and reference International Standards

Material		Steel	Stainless steel	Non-ferrous metal
General requirements	International Standard	ISO 8992		
Thread	Tolerance	6g		
	International Standards	ISO 261, ISO 965-2, ISO 965-3		
Mechanical properties	Property class	45H	A1-12H, A2-21H, A3-21H, A4-21H, A5-21H	As agreed
	International Standards	ISO 898-5	ISO 3506-3	ISO 8839
Tolerances	Product grade	A		
	International Standard	ISO 4759-1		
Finish		As processed Requirements for electroplating are covered in ISO 4042. Requirements for non-electrolytically applied zinc flake coatings are covered in ISO 10683.	Plain	Plain Requirements for electroplating are covered in ISO 4042.
Surface discontinuities		Limits for surface discontinuities are covered in ISO 6157-1.	—	—
Acceptability		For acceptance procedure, see ISO 3269.		

5 Designation

EXAMPLE A hexagon socket set screw with dog point, thread M6, nominal length $l = 12$ mm and of property class 45H, is designated as follows:

Hexagon socket set screw ISO 4028 - M6×12 - 45H

ICS 21.060.10

Price based on 4 pages