

DIN916

Set Screws with hexagon socket and ring point ISO 4029 modified

Hexagon socket set screws with cup point

This standard contains, in German translation, all the provisions of International Standard ISO 4029 - 1977, together with national additions. These additions are identified by a grid pattern.

An unchanged adoption of ISO 4029 as a DIN-ISO standard was not possible at the present time, because some reference standards were not yet available and national standards are used in their place. Furthermore, ISO 4029 lacks the sizes M 1.4, M 1.8, M 14, M 18 and M 22, as well as some intermediate lengths that are required nationally.

Dimensions in mm

1 Scope

ISO 4029 specifies hexagon socket set screws with ring point, with metric dimensions and thread diameters from 1.6 to 24 mm, in product grade A.

If additional specifications beyond those listed are required in special cases, they shall be selected in accordance with the corresponding ISO standards, e.g. ISO 261, ISO 888, ISO 898, ISO 965, ISO 3506.

In Germany, the following additional standards apply:

DIN 267 Part 1 Screws, nuts and similar threaded and shaped parts; Technical delivery conditions, General requirements

DIN 267 Part 2 Screws, nuts and similar threaded and shaped parts; Technical delivery conditions, Execution and dimensional accuracy

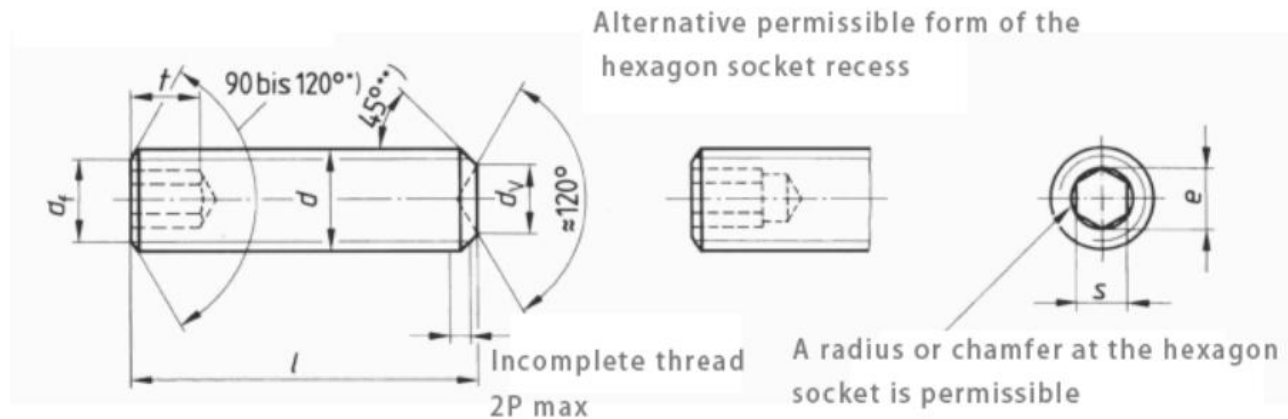
DIN 267 Part 5 Screws, nuts and similar threaded and shaped parts; Technical delivery conditions, Testing and acceptance

DIN 267 Part 6 Mechanical fasteners; Technical delivery conditions, Execution and dimensional accuracy for product class F

DIN 267 Part 9 Mechanical fasteners; Technical delivery conditions, Parts with galvanic coatings

DIN 267 Part 11 Mechanical fasteners; Technical delivery conditions, Parts made of non-rusting steels

2 Dimensions and Designation



Designation of a set screw with hexagon socket, thread $d = M6$, nominal length $l = 12 \text{ mm}$, and property class 45H: Set screw DIN 916 - $M6 \times 12$ - 45H

Set screws down to $M2.5$ can also be manufactured to product class F in accordance with DIN 267 Part 6. For this, the letter "F" shall be included in the designation, e.g.: Set screw DIN 916 - $M2 \times 4$ - 45H - F

If set screws are galvanized to other property classes (hardness classes) in accordance with DIN ISO 898 Part 9, the corresponding designation code shall be indicated, e.g.: Set screw DIN 916 - $M6 \times 12$ - 22

Thread d			M 1, 4	M 1, 6	(M 1, 8)	M 2	M 2, 5	M 3	M 4	M 5	M 6
P1			0, 3	0, 35	0, 35	0, 4	0, 45	0, 5	0, 7	0, 8	1
dv	max		0, 7	0, 8	0, 9	1	1, 2	1, 4	2	2, 5	3
	min		0, 45	0, 55	0, 65	0, 75	0, 95	1, 15	1, 75	2, 25	2, 75
df	≈		Minor diameter								
e	min, ²)		0, 803	0, 803	0, 803	1, 003	1, 427	1, 73	2, 30	2, 87	3, 44
s	Nominal size		0, 7	0, 7	0, 7	0, 9	1, 3	1, 5	2	2, 5	3
	max		0, 711	0, 711	0, 711	0, 889	1, 27	1, 52	2, 02	2, 52	3, 02
	min		0, 724	0, 724	0, 724	0, 902	1, 295	1, 545	2, 045	2, 56	3, 08
t	min 3		0, 6	0, 7	0, 8	0, 8	1, 2	1, 2	1, 5	2	2
	min 4		1, 4	1, 5	1, 6	1, 7	2	2	2, 5	3	3, 5
Nominal size	L		Weight (7.85 kg/dm³) per 1000 pieces ≈								
	L (max)										
	Min	Max									
2	1, 80	2, 20				–	–	–	–	–	–
2. 5	2. 30	2. 70	0. 018	0. 029	0. 030		–	–	–	–	–

3	2,80	3,20	0,022	0,028	0,036	0,044	0,075	–	–	–	–
(3, 5)	3,26	3,74	–	–	–	–			–	–	–
4	3,76	4,24	0,029	0,037	0,048	0,059	0,100	0,140		–	–
5	4,76	5,24	0,036	0,046	0,060	0,074	0,125	0,180	0,255	0,420	–
6	5,76	6,24	0,043	0,056	0,072	0,089	0,150	0,22	0,38	0,54	0,74
8	7,71	8,29	–	–	–	0,119	0,199	0,310	0,530	0,780	1,09
10	9,71	10,29	–	–	–	0,148	0,249	0,400	0,680	1,02	1,44
12	11,65	12,35	–	–	–	–		0,490	0,830	1,26	1,79
–14	13,65	14,35	–	–	–	–	–	–	–	–	–
16	15,65	16,35	–	–	–	–	–	0,670	1,13	1,74	2,49
–18	17,65	18,35	–	–	–	–	–	–	–	–	–
20	19,58	20,42	–	–	–	–	–	0,850	1,43	1,22	3,19
–22	21,58	22,42	–	–	–	–	–	–	–	–	–
25	24,58	25,42	–	–	–	–	–	–	–	2,82	4,07
–28	27,58	28,42	–	–	–	–	–	–	–	–	–
30	29,58	30,42	–	–	–	–	–	–	–	–	4,95
35	34,5	35,5	–	–	–	–	–	–	–	–	5,83
*) For short threaded studs with lengths above the dashed step line, an angle of 120° applies.											
**) The 45° angle applies only to the area between the minor diameter of the thread and the annular cutting diameter.											

Thread d		M 8	M 10	M 12	(M 14)	M 16	(M 18)	M 20	(M 22)	M 24
P1		1,25	1,5	1,75	2	2	2,5	2,5	2,5	3
dv	max	5	6	8	9	10	12	14	16	16
	min	4,7	5,7	7,64	8,64	9,64	11,57	13,57	15,57	15,57
df	≈	Minor diameter								
e	min, ²)	4,7	5,7	7,64	8,64	9,64	11,57	13,57	15,57	15,57
s	Nominal size	5	6	6	6	8	10	10	12	12
	max	4,095	5,095	6,095	6,095	8,115	10,115	10,115	12,142	12,142
	min	4,58	5,72	6,86	6,86	9,15	11,43	11,43	13,72	13,72
t	min 3	3	4	4,8	5,6	6,4	7,2	8	9	10
	min 4	5	6	8	9	10	11	12	13,5	15

Nominal size	L		Weight (7.85 kg/dm³) per 1000 pieces ≈								
	L (max)										
	Min	Max									
6	5,76	6,24				–	–	–	–	–	–
8	7,71	8,29	1,88								
10	9,71	10,29	2,51								
12	11,65	12,35	3,14	4,73							
14	13,65	14,35	–	–							
16	15,65	16,35	4,40	6,73	9,50						
18	17,65	18,35	–	–	–						
20	19,58	20,42	5,66	8,71	12,3		20,9				
22	21,58	22,42	–	–	–		–				
25	24,58	25,42	7,25	11,2	15,9		27,4		41,4		
28	27,58	28,42	–	–	–		–		–		
30	29,58	30,42	8,84	13,7	19,5		34,0		51,7		70,3
35	34,5	35,5	10,4	16,2	23,1		40,5		62,0		85,3
40	39,5	40,5	12,0	18,7	26,7		47,1		72,3		100
45	44,5	45,5	–						82,6		115
50	49,5	50,5	–						92,9		130
55	54,4	55,6	–						–		145
60	59,4	60,6	–								160

P= Thread pitch (standard thread)e

min=1,14s min; applies to sizes M 1,4 to M 2,5

Minimum engagement depth of the wrench for threaded studs with nominal sizes above the dashed step line.
Minimum engagement depth of the wrench for threaded studs with nominal sizes below/above the dashed step line.

The commercial sizes are identified by weight indications.

Thread and nominal sizes marked in square brackets should be avoided as far as possible.

Note: In ISO 4029, the range of commercial nominal sizes l is sometimes defined slightly differently.

The values are given in accordance with ISO 4029. The values in the preceding table, identified by weight indications, correspond to the usual requirements in Germany and are generally used in practice.

For short threaded studs, penetration of the hexagonal base is not permitted.

Material		Steel	Stainless Steel	Non-ferrous Metal
General Requirements		in accordance with DIN 267 Part 1		
Thread	Tolerance	5g 6g for strength class 45H; 6g for all other strength classes and materials		
	Standard	Part 12 and Part 15		
Mechanical Properties	Strength Class	45H	Up to M 20: A2-70, A4, C3; over M 20: A2-50	 ²)
	Standard	DIN ISO 898 Part5	DIN267 Part11 1)	DIN267 Part18
Allowable Dimensional and Form deviations	Product class	A 3)		
	Standard		DIN ISO 4759 Part1	
Surface		blackened (thermal or chemical)	plain	plain
		DIN 267 Part 2 (April 1968 edition), Section 2.1 shall apply to the surface roughness depths. Requirements for electrolytic surface protection shall comply with DIN 267 Part 9.		
Acceptance inspection		DIN 267 Part 5 shall apply to the acceptance inspection.		
ISO 3506 is cited in ISO 4026. This standard is included in DIN 267 Part 11. DIN 267 Part 18 contains a selection of non-ferrous metals (light and heavy metals) for fasteners. It was first published in 1980. A material selection for threaded pins has not yet been determined. See Section 2				

4 Designation

Section 4, which specifies the designation of threaded studs in accordance with ISO 4029, has not been adopted, as this is a national standard (not a DIN-ISO standard). In this case, the parts must be designated using their DIN number (see Section 2 and its explanations).

Explanations

The content of this document has been aligned with the international standard ISO 4029 - 1977 *Hexagon socket set screws with cup point* (French: *Vis sans tête à six pans creux, à cuvette*; German: *Gewindestifte mit Innensechskant und Ringschneide*). This means the ISO standard was fully incorporated in terms of content. All deviations from ISO 4029 are identified by dashed lines in the tables. The reasons for not adopting the ISO standard as a national standard are stated in the preamble.

By adopting ISO 4029, the previous January 1973 edition of DIN 916 is replaced, including its amendments.

Threaded studs will - as before - generally be designated according to DIN 916 (see Section 4). To facilitate international communication, it is also permissible to use the ISO 4029 designation if required. However, this

document only covers characteristics that match the ISO standard (features not matching are marked with dashed lines).

Example: *Threaded stud ISO 4029 - M 6 × 12 - 45H*

In ISO 4029, strength classes (hardness classes) are specified according to ISO 898/V (see draft ISO 898 Part 1) only.

This is designated as class 45H. The threaded studs will also be available in other strength classes, e. g. , 22H, so this option is explicitly pointed out. This also applies to the production (design) according to DIN 267 Part 6, which is required for M2.5 threaded studs used in precision engineering.

In the international standard ISO 4029, only rust- and acid-resistant (stainless steel) versions are specified, designated as strength class A2-2. This corresponds to material group A2-70 or A2-50 in ISO 3506 (see DIN 267 Part 11).

For non-ferrous metals, DIN 267 Part 18 was used, as no corresponding international standard existed at the time.

The minimum wrench engagement depths t were significantly reduced for very short threaded studs that fall below the dashed step line. Additionally, a note was added stating that the hexagonal base of these short threaded studs must not be penetrated. When installing these short threaded studs, the reduced engagement conditions must be taken into account.

The editorial layout of this standard was deliberately kept as close as possible to the ISO standard, to facilitate comparisons between DIN and ISO versions.