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M1,6 to M39 hexagon head bolts

Product grades A and B

<u>DIN</u> 931

Sechskantschrauben mit Schaft; Gewinde M1,6 bis M39; Produktklassen A und B

This standard, together with DIN ISO 4014, September 1987 edition, supersedes the December 1982 edition.

This standard should be used together with ISO 4014. For details, see Explanatory notes. It is intended to withdraw the present standard by 1 July 1992 at the latest.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

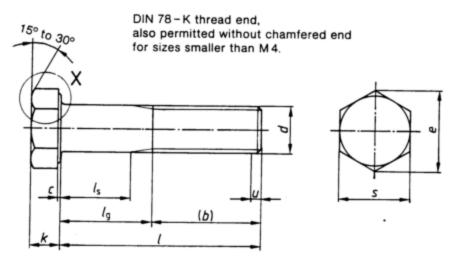
Dimensions in mm

1 Field of application

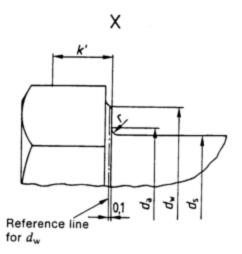
This standard specifies requirements for M 1,6 to M 36 hexagon head bolts assigned to product grade A for thread sizes up to and including M 24 and lengths smaller than $10\,d$ or $150\,\mathrm{mm}$, and assigned to product grade B for thread sizes above M 24 or lengths exceeding $10\,d$ or $150\,\mathrm{mm}$.

If, in special cases, bolts are to comply with specifications other than those given in this standard, e.g. regarding nominal lengths, these shall be selected in accordance with the appropriate standard.

2 Dimensions



u = maximum of 2P incomplete thread.



k' = minimum wrenching height (0,7 k min.).

Continued on pages 2 to 7

7.02

	É	Thread size			M 1,6	9'1	Σ	M 2	M 2,5	2	M 3	3	(M 3.5)	3.5)	A M	4	2	M	9 14	9
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ďa				тах.	2		2	9	3.1		5 6	36	5	1,4	5	4,0	0	0,5	o'	0,5
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4			•		860	0	-	28	1,58	80	1,1	88	2.	28	2,	68	e,	35	3	35
×		Produc	Product grade		1,22	72	-	1,52	1,8	2	2,12	12	2,	2,52	2,5	2,92	3	3,65	4	4.15
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×				e.	0,7		6'0	6	1,1		1,5	_	1,6	9	3	6	2	28	6	53
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	max. =	nominal size	al size		3,2		4		2		5,5	100	9		7		0		10,53	3
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Mominal	•	Product grade		_	7	7	7	-	-	-	-									
Nominal	1				s	ge	ş	36	s,	39	s ₃	8,	62	87	s ₁	9	r	8	l,	1/8
3716	min.	тах.	E.	тах.	J.	max.	min.	max.	min.	max.	min	max.	min.	тах	min.	max.	air.	max	e e	max.
12	11,65	12,35	'	1	1,2	က														
(14)	13,65	14,35	-	1	3,2	2														
9	15,65	16,35	'	ı	5,2	7	4	9	2,75	s)										
(18)	17,65	18,35	1	'		-	9	8	4.75	7										
20	19,58	20,42		,			8	9	6.75	6	5.5	00								
(22)	21,58	22,42	,	,			:	-	8.75	=	7.5	9 0								
25	24,58	25,42	1	'				-	11.75	14	10.5	13	o	12	7.5	÷	u			
(28)	27,58	28,42	,	,				,		-	13.5	9 9	. 5	i t	5 6	: :	0 0	n ;		
30	29,58	30,42	,	ı							2 4	2 α		2 0	0 0	4 9	o ç	77		
35	34,5	35,5	,	'								2	20	200	12,0	2	2	4	1	12
4	39.5	40.5	,	'								,	2	77	0, 10	17	2	6	12	14
45	44.5	45.5	,	,											27,5	56	200	24	17	55
20	49.5	50.5	,	,		T					+	+	1				52	53	22	27
55	54.4	55.6	,														8	34	27	32
8	207	900	1															1	32	37
3	4,00	000	-	-														- 6-	37	42
For con	mercial s	For commercial sizes, shank lengths have been specified. Use of values given in	k lengths	s have be	en specif	ied. Use o	f values		brackets should be avoided where possible.	ould be a	voided wh	ere possi	ble.			u 87 (.	nax. = l (n	l_8 max. = l (nominal size) –	e) – b.	
Product	grade A	Product grade A has been given above, product grade B below the stepped line	given abo	ove, prod	fuct grade	B below	the stepp	ed line.								ls r	nin. = $l_{\rm g}$ r	max. – 5 P		_
For 1) to	For 1) to 4), see page 5.	age 5.														Note.	Values of	Note. Values of mass have been included	e been in	cluded
																	in Supple	in Supplement 1 to DIN 931.	DIN 931.	

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70 17	27 10	6,5	2	2	0,2	8'0	2,4	0	9,67	9,48	7.7	3.53	295	2.5	2.28	12,72	2,15	2,85	0,0	0,0	29.67	29.16		7	•	max								Ļ		4			\perp	74			Ϊ.	1	_	_
	1		2	9			2	2		- 6	46	6	3							2	2	2		7		Ē			L			9	0,0	16,5	21,5	26,5	31,5	415	51,5	61,5	65,5	75,5	200	105.5	115,5	125.5
10 18)	25	2,5	88	_	0,2	0,8	0,2	8	1,73	70,7	48	0.14	9.56	1.5	1,28	11,72	61.15	1,85	0'0	2.	26,67	5,16		1	4	max.						6	2 8	33	38	43	84 6	2 8	89	78	82	95	112	122	132	
	-	4	4	9			2			- 6	100	0	2	_	_					6	20	2		1 18	i				L			40	15.5	20,5	25,5	30,5	30,0	45.5	55,5	65,5	69,5	79,5	0.00	109,5	119,5	
M 16		8	44	7	0,2	8'0	1,7	673	5,73	25	2	6.75	6,17	0	9,82	10,18	0000	62,0	0,0	200	23,67	3,16		1 1	a we					;	7	27	32	37	45	4/	25	62	72	82	98	96	11.0	-		_
	1	3	4	2				-		2	2	2	2	-		-	•			2	2	2	_	1 18	e e					,	1	12	55	27	35	5	42	52	62	72	9/9	98 98	106			
(M 14)	2	4	40	3	0,15	9,0	2,7	13 73	2,5	20.5		24,49		8,8	8,62	86'8		596	90	2	21,67	-	grip length, Ig*	1/2	max			_		19	7 00	3 50	36	41	46	0 9	6.0	99	9/	98	3	3		L		
8		3	4	2				-	1	2		2								2	2		and grip I	1 18	ui.				Ľ	٠:	9	2 5	56	31	36	46	519	26	99	92	88) - -				
M 12	1.75	0	36	6	0,15	0,6	3,0	1173	2 .	17.4		1,1	,	7,5	7,32	7,68		5.05	0.6		18,67		ls.	87	max.				15	22	200	32	4	45	8 8	88	65	20	80	06				L	_	
		3	9	4						_		2								-	-		Shank length,	57	min.				6,25	16.25	21.05	26.25	31,25	36,25	41,25	51.25	56.25	61,25	71,25	81,25	1					
M 10	1,5	9	32	200	0,15	0,0	y. 0	9.78		15,6		8,9		6,4	6,22	6,58	,	4.28	0,4	7	16,73	,		87	max.	1		14	19	2 6	34	8	44	49	¥ %	64	69	74								
		2	0	4	1	-				-						1				-				s ₁	min.	1		6,5	11,5	215	28.5	31,5	36,5	41,5	2,04 C,13	565	61,5	66,5								
8 W	1,25	22	28	- 0	0.13	0,0	2,0	7.78	,	11,6		14,38		5,3	5,15	0,40		3,54	0,4	13	12,73	,		81	max	\downarrow	13	18	53		+		48	23	8					_						
		2	2	1	-	1	-	-	L											-				s ₁	nie.	ļ	6,75	11,75	16,75	26.75	31.75	36,75	41,75	46,75	0,	L				_	L					
(M 7)	-	20	26	0.15	0,0	7.8	2,2	6.78		9'6		12,12		8,8	4,65	4,80	,	3,19	0,25	=	10,73			81	max.	10	15	50	3 2	32	40	42	22							_						
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ez.			remporary size				nominal size		Product grade	Product orada	act Brade	Product grade		Nominal size		Product grade				nominal size	Product grade		r Product orade		e.	'	'	'	1		1	1	'	'	'	1	1	'	'	<u> </u>		,	158	168	1877	
Thread size			Temp					0	Produ	Prod	5	Produ		Nom		Produ					Produ	-	Produ	4	max.	Н	35,5	0,0	50.5	55,6	9'09	9'59	9'02	908	85,7	90,7	95.7	100,7	120.7	130.8	140,8	150,8	160,8	170,8	190.92	20.00
							max. =	1	ui I	min	-	min								T XeL	min		_		min.	29,58	35,5	0,85	49.5	54.4	59,4	64,4	69,4	79,4	84,3	89,3	94,3	99,3	1193	129,2	139,2	149.2	159,2	169,2	189.08	2
	Ь		٥		c	da		ďs		d.u.		ė			q	ŧ		k,	-		s			Nominal	Size	30	35	2	20	55	60	65	70	80	(88)	90	(62)	9	120	130	140	150	160	180	(190)	

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	(M 39)	4	84	90	73	300	20	- 3	42,4	200	- 00	38,38		900		00,44	0		03.70	00,43	17.02	2	- 69	8 '	58.8		-	160	max		_					9	A A	2 2	8 8	70	8	90	5	110	=	137	20.
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96	M 36					2	α	2			38	000			70	2			OB)	800	20				89		7		. Way							32	46	26	99	92	98	96	106	116	123	163	3 6
	E	4	78	84	97	0		30	98	3	35	200	51.1	5	90	22.5	1	ľ	22	22	15.5		55	3 '	53,8		7	, iw							,	22	26	38	46	26	99	92	88	96	502	123	2
331	33)	0				2	8	4			38	8	9		37				58	42	1						10	o XE						000	87.0	8 8	52	62	72	82	95	102	112	122	67	169	000
(M 33)	8	r)	72	78	91	0	0	36	33	3	32	1	466	1	55	21		ľ	20	21	14.4	-	50	'	49	3th. (g*)	16	e e						400	0,0	30.5	34.5	44,5	54,5	64,5	74,5	84,5	6,54	5 5	21.0	151,0	171.
30	8 4	0				2	8	4			48		7		85	7			28	12	8					d grip leng	10	max					54	28	* *	54	28	89	78	88	98	901	0 00	135	155	175	105
2	6	200	99	72	85	Ö	0	33	30		29.48	'	42.7		50.	18.7	'		18.	19	12.8	-	46		45	Shank length, $l_{\rm s}$, and grip length, $l_{\rm g}^{ \star})$	ls 1	min.					6,5	0,4	26.5	36,5	40,5	50,5	60,5	70,5	000	90,0	3,0	117.5	137.5	157,5	1775
(M 27)						.2	8,	4.			26.48				2				.65	35	11.7					Shank le	, s	тах					98	40	2 2	8 8	2	74	84	8 5	5 :	124	134	141	161	181	
3	-	200	09	99	79	0	0	30	27		26		38	ľ	45,2	17			16	17	Ξ	-	41		40		s ₁	min.					5 6	25	35	45	49	29	69	6 G	0 0	109	119	126	146	166	
24						7.5	8'(3,4		191	1,48	33,6	1,2	96'	,55		.78	,22	.65	,35	6,3	.8		38			8	max			56	31	8 :	46	299	99	70	8	06	3 5	2 2	130	140	147	167		
2		1	0	Ď	2			26	24	23	23	33	33	36	36	15	14	15,	14	15	10	0	36	35	32		s ₁	min			Ξ	16	26.	31	4	51	22	65	(2)	8 8	105	115	125	132	152		
(M 22)	2.5					0,2	8'	24,4		21,67	.48		29,5	.72	35,03		13,78	14,22	13,65	14,35	9.	0,8		31,61			27	max.	20	25	30	35	4 4	20	9	70	74	2 2	2	1 5	124	134	144	151			
3		2	3	000	80			24	22	21	21	30	29	35	35	14	13	14	13	14	6		32	33	5		$l_{\rm s}$	min	7.5	12,5	17,5	22,5	32.5	37,5	47,5	57,5	61,5	0,10	01.0	101.5	111.5	121,5	131,5	138,5			
	î	2)	6	A		e e	max.	max.		4	8	V	8	«	8		A min.		B min.	max.	min.	Gie		< a	٥			max.				01.75	96.75	100,75	111,75	121,75	132	142	182	172	182	192,3	202,3	222,3	242,3	262,6	282,6
			0.10	y size					ize	rade	200	rade	2	rade		ize		rade					ize	rade		orado	8	min.	-		'	28 25	93.25	98,25	108,25	118,25	128	148	158	168	178	187.7	197,7	217.7	237.7	257.4	277.4
Thread size			Tompoor	remporary size					nominal size	Product orade	2000	Product orade		Product grade		Nominal size		Product grade				100000	nominal size	Product grade	-	Product orade		max.	9'02	75,6	80,6	85,7	95.7	100,7	110.7	120,7	30,0	150,0 8,0 8,0 8,0	2 1		ı	1	-		,		
Ĺ									ax.	nin		min.		min									Hax.	min.			•	min.	69,4	74,4	79,4	80,3	94,3	66'3	109.3	119,3	130.2	149.2	40.		,		,	,			
	Ь		9			c	-	g	,	as		dw.		в			4	×			×			0		_	Nominal	size	20	(22)	0 1	(69)	(98)	100	0	120	2 9	150	160	(170)	180	(190)	200	220	240	260	280

For 1) to 4), see page 5. Product grade B below the stepped line.

3 Technical delivery conditions

	Material	Steel	Stainless steel	Non-ferrous metal
General requireme	nts	As	s specified in DIN 267 Pa	rt 1.
Thread	Tolerance		6 g	
	Standard		DIN 13 Parts 12 and 15.	
Mechanical properties	Property class (material)	5.6, 8.8, 10.9	≤ M 20: A2-70, A4-70 > M 20: A2-50, A4-50 C3, C4	Subject to agreement
	Standard	ISO 898 Part 1	DIN 267 Part 11	DIN 267 Part 18
Limit deviations, geometrical	Product grade	A for products B for products ex	up to size M 24 and $l \le 1$ cceeding size M 24 or $l > 1$	0 d or 150 mm ¹). 10 d or 150 mm ¹).
tolerances	Standard		ISO 4759 Part 1	
		As processed. Property class 8.8 and above: (thermally or chemically) blackened.	Bright.	Bright.
Surface finish		DIN 267 Part 19 shall a discontinuities. DIN 267 Part 9 shall a	pply with regard to surfact apply with regard to perm pply with regard to electr apply with regard to hot o	nissible surface
Acceptance inspect	ion	DIN 267 Part 5 shall ap	pply with regard to accep	otance inspection.
) Whichever is sho	rter (see stepped line in the	dimension table).		

4 Designation

Designation of an M12 hexagon head bolt of nominal length, $l = 80 \, \mathrm{mm}$, with material assigned to property class 8.8:

Hexagon head bolt DIN 931 - M12×80-8.8

If product grade A is required for sizes up to M 24 with lengths over 150 mm or with l greater than 10 d, or for sizes above M 24, then this shall be indicated in the designation by adding 'A', e.g.

Hexagon head bolt DIN 931 - M 30 imes 100 - 8.8 - A

DIN 962 shall apply with regard to the designation of designs and types, with additional details to be given when ordering. DIN 6900 shall apply with regard to the designation of types with captive components.

DIN 7500 Part 1 shall apply with regard to the designation of types with thread rolling properties.

The DIN 4000 - 2 - 1 tabular layout of article characteristics shall apply to bolts covered in this standard.

Footnotes for the tables on pages 2 to 4:

- 1) P = pitch of thread (coarse pitch thread).
- 2) For $l \le 125 \, \text{mm}$.
- 3) For $l > 125 \, \text{mm} < 200 \, \text{mm}$.
- For l > 200 mm.

Appendix A

Additional thread sizes for spare parts

The previous thread sizes M1,7, M2,3 and M2,6, which are not included in the international selection of screw threads for bolts, screws and nuts, shall no longer be used. In consideration of existing documents and of the demand for spare parts, they may, however, still be ordered in accordance with DIN 931, November 1970 edition*). The table below shall apply with regard to the dimensions of bolts (DIN 13 Parts 1 and 15 applying with regard to screw threads).

Thread s	ize	М 1,7	М 2,3	М 2,6
b		9	11	11
с		-	-	-
$d_{\rm a}$	max.	2,1	2,9	3,2
е	min.	3,82	4,95	5,51
k	js14	1,2	1,6	1,8
r	min.	0,1	0,1	0,1
s	h13	3,5	4,5	5
<i>l</i> ± ½ IT	15		ss (7,85 kg/d its, in kg, app	
12		0,28		
14		0,315	0,61	0,79
16		0,35	0,675	0,87
18			0,74	0,95
20			0,805	1,03
				1,11
22				.,

Standards referred to and other documents

DIN	13 Part 1	ISO metric screw threads; 1 mm to 68 mm diameter coarse pitch threads; nominal sizes
DIN	13 Part 12	ISO metric screw threads; coarse and fine pitch threads with diameters from 1 to 300 mm; selection for diameters and pitches
DIN	13 Part 15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm diameter and larger
DIN	78	Thread ends and ends of projection of bolt ends for ISO metric threads in accordance with DIN 13
DIN	267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN	267 Part 2	Fasteners; technical delivery conditions; finish and dimensional accuracy
DIN	267 Part 5	Fasteners; technical delivery conditions; acceptance inspection
DIN	267 Part 9	Fasteners; technical delivery conditions; electroplated components
DIN	267 Part 10	Fasteners; technical delivery conditions; hot-dip galvanized components
DIN	267 Part 11	Fasteners; technical delivery conditions, with addenda to ISO 3506; corrosion-resistant stainless steel components
DIN	267 Part 18	Fasteners; technical delivery conditions; non-ferrous metal components
DIN	267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts
Supp	element 1 to	
DIN	931 Part 1	Hexagon head bolts with shank; masses
DIN	962	Bolts, screws, studs and nuts; designations; types and finishes
DIN 4	4000 Part 2	Tabular layout of article characteristics for bolts, screws and nuts
DIN (6900	Screw and washer assemblies
DIN :	7500 Part 1	Thread rolling screws for ISO metric threads; dimensions, requirements, testing
ISO	898 Part 1	Mechanical properties of fasteners; bolts, screws and studs
ISO 4	4759 Part 1	Tolerances for fasteners; bolts, screws, and nuts with thread diameters \geq 1,6 and \leq 150 mm and product grades A, B and C

Withdrawn in 1982.

Previous editions

DIN 932 Part 1 and Part 2: 01.26; DIN 600: 10.26x; DIN 532: 11.29x; DIN Kr 551: 11.35, 11.36; DIN 931 Part 2: 01.26, 04.42; DIN 931: 12.67, 11.70; DIN 931 Part 1: 01.26, 04.42, 12.52, 03.63, 07.82.

Amendments

The following amendments have been made to the July 1982 edition.

- a) A note on the period of validity of this standard has been included.
- b) The specification regarding the underhead fillet has been deleted.
- c) For sizes M10, M12, M14 and M22, the widths across flats specified in ISO 272 have been deleted.
- d) A reference line for the determination of the bearing face diameter, d_{w} has been included.

Explanatory notes

For more than 20 years efforts have been directed towards the achievement of the international interchangeability of fasteners by preparing international standards for the product concerned. ISO Standards have now been published for the most important types of fasteners (see ISO Standards Handbook 18).

However, international efforts only serve a useful purpose if national standards are adapted as far as possible to international standards, or, ideally, replaced by them. Current DIN Standards already agree in substance with the relevant ISO Standards, but still differ in some respects, as for instance in the widths across flats for hexagon products.

The Federal Republic of Germany adopted International Standard ISO 272 on widths across flats as national standard DIN ISO 272 in October 1979. Nevertheless, widths across flats deviating from DIN ISO 272 are still being used in Germany for nominal sizes M 10, M 12, M 14 and M 22. The table below compares the previous widths across flats with the new ones specified for the four nominal sizes referred to.

Thread size	M 10	M12	M 14	M 22
Previous width across flats, in mm	17	19	22	32
New width across flats as in ISO 272, in mm	16	18	21	34

The manufacturers and users of hexagon products participating in the work of the Normenausschuß Mechanische Verbindungselemente (Fasteners Standards Committee), together with representatives of the dealers in fasteners, have decided to introduce the new widths across flats in all relevant product standards. Since experience has shown, that the introduction of the new widths across flats has not been advanced by their inclusion in DIN Standards merely as preferred alternatives to the previous widths across flats, the following decisions have been reached to accelerate the changeover procedure.

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available, be published which, besides introducing a number of other minor amendments, will specify the new widths across flats conforming to ISO 272. In both DIN and DIN ISO Standards attention will be drawn to the fact that the relevant ISO Standards are to be preferred and that the DIN Standard is to be replaced after a transition period of 5 years.

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International Patent Classification

F 16 B 35/00

^{*)} Obtainable from: Dokumentation Kraftfahrwesen e.V., Grönerstraße 5, D-7140 Ludwigsburg.

part of this standard may be reproduced without the prior permission of DIN Deutsches institut für Normung e. V., Berlin. In case of doubt, the German-language original should be consulted as the authoritative text.

M42 to M160 \times 6 hexagon head bolts

Product grade B

931

Sechskantschrauben mit Schaft; Gewinde M42 bis M160 \times 6; Produktklasse B

Supersedes July 1982 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Field of application

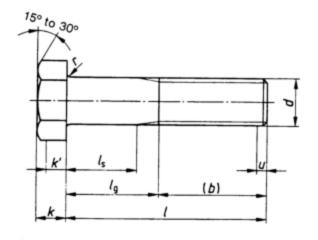
This standard, supplementing DIN 931 Part 1, specifies requirements for M 42 to M 160 \times 6 hexagon head bolts assigned to product grade B.

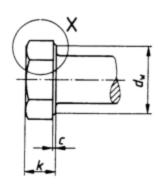
If, in special cases, the bolts are to comply with specifications other than those given in this standard, e.g. regarding nominal lengths, these shall be selected in accordance with the appropriate standard.

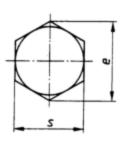
2 Dimensions

DIN 78-K thread end.

Washer face for sizes up to and including M 52; for sizes above M 52, subject to agreement

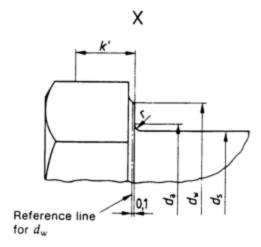






k' = minimum wrenching height (0,7 k min.).

u = maximum of 2P incomplete thread.



Continued on pages 2 to 5

7.03

Γ	T								Г	T	T			T	Τ	T		T	T	T									T		_	T	_	_	T	_	_			1
M 72 × 6	a	0		156	169	,	-	6	.5	1.26	77	6.16	0 4	44.5	2 4	0,0	2,10	N L	1028		-	20	max			1			1	_	4 4	0	5 2	5		2 4	2 5	101		7
Σ				15	16			_	_		0	-				100	2	5	2 2		7	s .	u u							;	2 5	7	4 0	5 6	5	5	7 ?	19	9	0
(M 68)										26	0	51		2	L L	0 00			8		7	20 2	IIIGA.						40	42	20	200	0	110	130	150	170	199	210	2
Æ	9			148	161	1		75	68	67	92	110.51	43	42	43	200	2	1001	97.8		7	r E							10	3.00	2 0	40	9	8 8	100	120	140	169	180	
M 64										26	2	86		5	2	9			8		7	a w						40	2	8 8	67	24	10,0	127	147	167	187	207	į	
Σ	9		1	5 5	3			71	8	63	88	104,86	40	39	40	27	2	95	92,8		7	, in						9	20	3 6	37	22	1 2	6	117	137	157	177		
(M 60)	5,5									26	4	21		2	2	2			8	(_g *)	100	шах					8	8 4	28	89	75	95	115	135	155	175	195	215		
W)	5		130	145	2			67	9	59	83,	66	38	37.	38.	26.	2	90	87,8	Shank length, l_s and grip length, $l_k^\star)$	18	min.					10.5	20,5	30.5	40.5	47.5	67.5	87.5	107,5	127.5	147.5	167.5	187,5		
M 56	5,5									26	7	56		5	5	2			8	and grip	12	max				36	46	299	99	9/	8	103	123	143	163	183	203	223		
Σ	5		124	137	2	-	- 8	38	26	52	78,	93,	35	34,5	35,	24,	2	85	82,8	angth, ls	l's	min				8.5	18.5	28,5	38,5	48,5	55,5	75.5	95.5	115,5	135,5	155,5	175,5	195,5		
(M 52)					~	20-	d	0		,26	5	.25		32,5	2	8	9		-	Shank le	1 8	max.			34	44	25	2	74	8	91	Ξ	131	151	171	191	211			
₹.	2		116	129			22	8	25	51	74	88	33	32	33	22	-	80	78		- s ₁	min.			6	19	53	39	49	29	99	98	106	126	146	166	186			
M 48					0.3	2	e e	0,	000	47,38	4	82,60		29,58	30,42	6	9		_		37	max.		32	45	52	62	72	82	95	66	119	139	159	179	199	219			
Σ	2	102	108	121	0	-	528	70,	9	4/	69,4	82	30	29	30	20,9	-	75	73,1		18	min.		7	17	27	37	47	22	67	74	94	114	134	154	174	194			
(M 45)	4,5				0.3		48.6	2	24.00	80,	,	76,95		27,58	.42	6	2				87	тах.	28	38	48	28	89	78	88	86	105	125	145	165	185					
2	4	96	102	115	0		48	AF A	1	44	64,7	76	28	27	28	19		2	68,1		87	nin.	5.5	15,5	25,5	35,5	45,5	55,5	65,5	75,5	82,5	102,5	122,5	142,5	162,5					
M 42	4,5	0	23	6	7.3	-	45.6	200	41.04	0,0	90,09	5,		25,58	26,42	6,7	1,2		63,1		81	max.	┡		54	8	74	84	94	104	Ξ	131	151	171	191					
2		6	96	109			4	42		1 6	Ď	1	56	Š	2			65	ó		s ₁	min.	11.5	21,5	31,5	41,5	51,5	61,5	71,5	81,5	88,5	108,5	128,5	148,5	168,5	_		_	_	
ze ze	é	(2)		4	min	max.	max	nominal size	2710		Min.	min.	eize	min.	max.	min.	uiu.	nal size	min.			max.	132	142	152	162	172	182	192,3	202,3	222,3	242,3	262,6	282,6	302,6	322,85	342,85	362,85	382,85	1000
Inread size		Temporary	amporal	Size				max = nom					Nominal size					max. = nominal size		~		min.	128	138	148	158	168	178	187,7	197,7	217,7	237,7	257,4	277,4	297,4	317,15	337,15	357,15	3//,15	1
١.	4		9	0	190	(~2	d _s		d _s	7	M _W	9	ا z	×	=	R	-	s E			Nominal	3715	130	140	150	160	(170)	180	(190)	\forall	+	+	7	\forall	+	+	+	360	+	

For commercial sizes, shank lengths have been specified. Use of values given in brackets should be avoided where possible.

 P = pitch of thread. 4) For *l* > 200 mm.

 $^2)$ For $l \le 125\,\mathrm{mm}$. $^3)$ For $l > 125 \le 200\,\mathrm{mm}$. $^5)$ Washer face for all sizes above M 56, subject to agreement. Designation as in clause 4.

*) $l_g \max = l \text{ (nominal size)} - b$.

 l_{s} min. = l_{g} max. - 5 P.

Note. Values of mass have been included in Supplement 1 to DIN 931.

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_	_	_	_	_	_	_	_	_	_	_	_	<u> </u>	_	_			_	_	_	_			_			_			_								
M 160 × 6					10							-			2 1		2,50	2	4		7	0	шах.								30	55	5 2	0, 0	115	124	155
M 16		٥			345		6	187	2 2	3 5	80	214,1	7,402	3 8	0.00	7,001	600	230	225.4		7	, ,	Hill								ч	25	3 4	5 t	8 8	3 5	125
9 × 0											0	0	0		2 1				4		7	۵ ۵	max.						20	S 1	5 7	5 8	8 =	135	155	175	195
M 140 ×	9				305		2	147	140	130	50	0,000	98	87.3	5, 50	61.1	25	200	195.4		16									ם מ	62 45	65	8 %	3 5	125	145	165
9 × 9											9	27	2	4		0	2		5		1/2	à è						45	2 4	3 4	5 5	125	145	165	185	205	225
M 125	9	1			275		2	132	125	124	1696	200,0	20,2	78.4	70.6	549	2.5	180	177,5		13	qi						Ť	2 4	3 4	25	95	115	135	155	175	195
9 × 0										13	200	33	1	4	9	6	2.5		2	ngth, L,*)	, 8 ₁	max				35	3 2	75	8	115	135	155	175	195	215	235	255
M 110 ×	9				242		2	117	110	109 13	1449	172.32	69	68.4	69.6	47.9	2	155	152,5	nd grip le	18	c E				ıc	25	45	65	82	105	125	145	165	185	205	225
9 × 0							_			99.13	4	161.02		62.4	63.6	43,7	2,5		5,	Shank length, l_s , and grip length, l_u^{ullet})	87	max			35	55	75	95	115	135	155	175	195	215	235	255	275
M 100 ×	9			100	677		2	107	100	66	135.4	161	8	62	63	43	2	145	142,5	Shank le	3	nie.			5	25	45	65	82	105	125	145	165	185	205	225	245
9 × 06	00	,		,			~			89,13	-	144,08		3,4	9.7	40,3	2,5		,5		87	max.		. 35	22	75	95	115	135	155	175	195	215	235	255	275	295
6 W			10,	300	200			97	96	88	121.1	147	57	26	57	4		130	127.		18	min.		. 2	25	45	65	82	105	125	145	165	185	205	225	245	265
M 80 × 6	9	,					2	7	9	79,26	6,9	127,46		49,5	50,5	34,6	2		2,8		87	max	35	22	75	95	115	135	155	175	195	215	235	255	275		
W W			179	185	Ó			87	88	75	106,9	127	20	46	2	3,		115	112,8		s ₁	nie.	2	25	45	65	82	105	125	145	165	185	205	225	245		
(9 × 9	9		_					_	6	75,26	2,1	121,81	~	47,5	48,5	33,2	2		8,		87	max.	43	83	88	103	123	143	163	183	203	223	243				
× 92 W)			164	177				88	9/	7,	102,1	12.	48	4	₩	8	``	110	107,8		s ₁	min.	13	83	53	73	93	113	133	153	173	193	213				
9	٦.		3)	4			max.	max.	minal size	min.	min.	min.	size	min.	max.	min.	min.	= nominal size	min.	_		max.	222,3	242,3	262,6	282,6	302,6	322,85	342,85	362,85	382,85	402,85	423,15	443,15	463,15	483,15	503,15
Thread size			lemporary	Size					max. = nominal size				Nominal size					max. = 00m		7		min.	217,7	237,7	257,4	277,4	297,4	317,15	337,15	357,15	377,15	397,15	416,85	436,85	456,85	476,85	496,85
1	Ь		q			c_2		ďa	ď		d _w	в		×		k,	-	s			Nominal	2	220	240	260	280	300	320	340	360	380	400	420	440	460	480	200

Lengths over 500 mm shall be graded in 20 mm steps.

For 1) to 5), see page 2.

3 Technical delivery conditions

Material General requirements		Steel 1) As specified in DIN 267 Part 1.		
Thread	Standard	DIN 13 Parts 12 and 15.		
Mechanical properties 7		In accordance with the material concerned or subject to agreemen		
Limit deviations, geometrical tolerances	Product grade	B (previously, design mg)		
	Standard	ISO 4759 Part 1.		
Surface finish		As processed. DIN 267 Part 2 shall apply with regard to surface roughness.		
		DIN 267 Part 9 shall apply with regard to electroplating. DIN 267 Part 10 shall apply with regard to hot dip galvanizing.		
Acceptance inspection		DIN 267 Part 5 shall apply with regard to acceptance inspection.		

¹⁾ Steel grade or other materials shall be subject to agreement.

4 Designation

Designation of an M 56 hexagon head bolt of nominal length, $l = 200 \, \text{mm}$, in steel St...:

Hexagon head bolt DIN 931 - M 56 × 200 - St...

If product grade A (previously, design m) is required, this shall be indicated in the designation by adding 'A', e.g.:

Hexagon head bolt DIN 931 - M 56 × 200 - St ... - A

If a washer face beneath the bolt head is required for sizes M 56 and above, then the symbol Tm shall be added to the designation, e.g.:

Hexagon head bolt DIN 931 - M72 \times 6 \times 240 - Tm - St... - A

DIN 962 shall apply with regard to the designation of designs and types, with additional details to be given when ordering. The DIN 4000-2-1 tabular layout of article characteristics shall apply to bolts covered in this standard.

Standards referred to and other documents

DIN	13 Part 12	ISO metric screw threads; coarse and fine pitch threads with diameters from 1 to 300 mm; selection for diameters and pitches			
DIN	13 Part 15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm diameter and larger			
DIN	78	Thread ends and ends of projection of bolt ends for ISO metric threads in accordance with DIN 13			
DIN	267 Part 1	Fasteners; technical delivery conditions; general requirements			
DIN	267 Part 2	Fasteners; technical delivery conditions; finish and dimensional accuracy			
DIN	267 Part 5	Fasteners; technical delivery conditions; acceptance inspection			
DIN	267 Part 9	Fasteners; technical delivery conditions; electroplated components			
DIN	267 Part 10	Fasteners; technical delivery conditions; hot-dip galvanized components			
DIN	931 Part 1	M1,6 to M39 hexagon head bolts; product grades A and B			
Supp	element 1 to				
DIN 9	931	Hexagon head bolts; masses			
DIN	962	Bolts, screws, studs and nuts; designations; types and finishes			
DIN	4000 Part 2	Tabular layout of article characteristics for bolts, screws and nuts			
ISO	898 Part 1	Mechanical properties of fasteners; bolts, screws and studs			
ISO 4	4759 Part 1	Tolerances for fasteners; bolts, screws, and nuts with thread diameters \geq 1,6 and \leq 150 mm and product grades A, B and C			

The symbols denoting the property classes specified in ISO 898 Part 1 may also be used for sizes above M 39, provided that all the mechanical properties related to the symbol concerned are complied with.

Previous editions

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Amendments

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- b) A reference line for the determination of the bearing face diameter, d_{w} , has been included.
- c) The values of e and s for sizes M 42, M 76 imes6 and M 80 imes6 have been changed.

Explanatory notes

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International Patent Classification

F 16 B 35/00

^{*)} Obtainable from: Dokumentation Kraftfahrwesen e.V., Grönerstraße 5, D-7140 Ludwigsburg.