UDC 621.882.211.092.4

July 1984

Hexagon fit bolts
with short threaded dog point

DIN 610

Sechskant-Paßschrauben mit kurzem Gewindezapfen

Supersedes January 1971 edition.

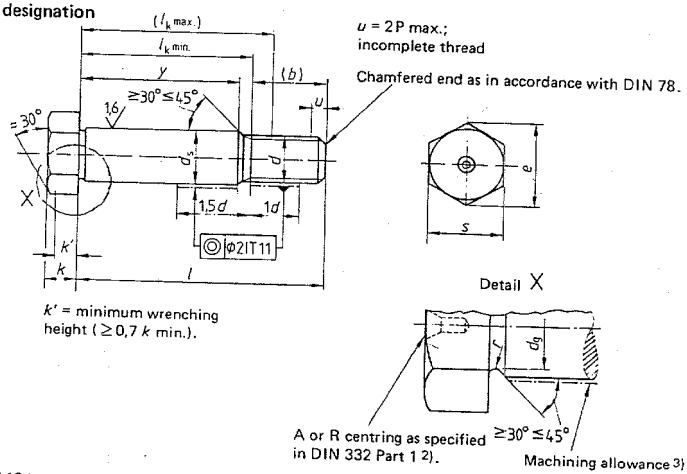
In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

This standard does not apply for new designs. Fit bolts as specified in DIN 609 shall be used for these (see also Explanatory notes).

Since there is yet no date for the withdrawal of DIN 610, the additional widths across flats 16 mm, 18 mm, 21 mm and 34 mm have been adopted in accordance with ISO 272 for sizes with thread diameters 10, 12, 14 and 22 mm; it is recommended that these generally be used.

1 Dimensions, designation



k' = minimum wrenching height ($\geq 0{,}7\ k$ min.).

Designation of an M 12 hexagon fit bolt (width across flats: 17 mm), of length l = 60 mm and assigned to property class 8.8 1):

Fit bolt DIN 610 – M 12 × 60 – 8.8

Designation of an M 20 X 1,5 hexagon fit bolt, with machining allowance (shank diameter d_s = 21,3 mm), of length l = 100 mm and assigned to property class 8.8:

Fit bolt DIN 610 – M 20 × 1,5 × 21,3 × 100 – 8.8

1) In this designation, the previous widths across flats 17 mm, 19 mm, 22 mm and 32 mm apply to the sizes with 10, 12, 14 or 22 mm thread diameter. If it is required to supply these sizes with the new widths across flats 16 mm, 18 mm, 21 mm and 34 mm as specified in ISO 272, the width across flats (SW) shall be incorporated in the designation, e.g.:

Fit bolt DIN 610 – M 12 X 60 – SW 18 – 8.8

2) Centring is only obligatory for bolts having a machining allowance (larger shank diameter d_s); for bolts having no machining allowance (finished bolts), centring is left to the manufacturer's discretion.

3) DIN 609 previously specified shank diameters having a machining allowance (grinding allowance) which could be ordered if needed (see designation example). Since the allowance required for the shank diameter differ according to the application concerned (usually between 0,2 and 0,4 mm), allocation of specific allowances has been omitted.

Continued on pages 2 to 8

Table 1.

Thread size d		M 8	M 10	M 12	(M 14)	M 16	(M 18)	M 20
		-	-	-	-	-	(M 18 × 1,5)	M 20 × 1,5
		-	-	-	-	-	(M 18 × 2)	M 20 × 2
b (auxiliary dimension)	1)	11,5	13,5	15,5	17	19	21,5	22,5
	2)	13,5	15,5	17,5	19	21	23,5	24,5
	3)	18,5	20,5	22,5	24	26	28,5	29,5
d_s	k6 4)	9	11	13	15	17	19	21
d_a	min.	7,9	9,9	11,5	13,5	15,5	17,5	19,1
	max.	8,2	10,2	11,8	13,8	15,8	17,8	19,4
c	min.	14,38	17,77 / 18,90	19,85 / 20,88	22,78 / 23,91	26,17	29,56	32,95
k	Nominal dimension	5,3	6,4	7,5	8,8	10	11,5	12,5
	min.	5,15	6,22	7,21	8,51	9,71	11,15	12,15
	max.	5,45	6,58	7,79	9,09	10,29	11,85	12,85
k'	min.	3,6	4,3	5,1	6	6,8	7,8	8,5
r	min.	0,4	0,4	0,6	0,6	0,6	0,6	0,8
	max.	0,55	0,55	0,75	0,75	0,75	0,75	0,95
s	max. = nominal dimension	13	16 / 17	18 / 19	21 / 22	24	27	30
	min.	12,73	15,73 / 16,73	17,57 / 18,48	20,16 / 21,16	23,16	26,16	29,16

l Product grade					Shank length y 5) and clamping length l_k 6), 7)													
Nominal size	A min.	A max.	B min.	B max.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.
25	24,6	25,4	-	-	11	14,6												
28	27,6	28,4	-	-	14	17,6	11,5	15,4										
30	29,6	30,4	-	-	16	19,6	13,5	17,4	11,5	15,7								
32	31,5	32,5	30,75	33,25	18	21,6	15,5	19,4	13,5	17,7	11,5	16						
35	34,5	35,5	33,75	36,25	21	24,6	18,5	22,4	16,5	20,7	14,5	19	12,5	17				
38	37,5	38,5	36,75	39,25	24	27,6	21,5	25,4	19,5	23,7	17,5	22	15,5	20	12,5	17,7		
40	39,5	40,5	38,75	41,25	26	29,6	23,5	27,4	21,5	25,7	19,5	24	17,5	22	14,5	19,7	13,5	18,7
42	41,5	42,5	40,75	43,25	28	31,6	25,5	29,4	23,5	27,7	21,5	26	19,5	24	16,5	21,7	15,5	20,7
45	44,5	45,5	43,75	46,25	31	34,6	28,5	32,4	26,5	30,7	24,5	29	22,5	27	19,5	24,7	18,5	23,7
48	47,5	48,5	46,75	49,25	34	37,6	31,5	35,4	29,5	33,7	27,5	32	25,5	30	22,5	27,7	21,5	26,7
50	49,5	50,5	48,75	51,25	36	39,6	33,5	37,4	31,5	35,7	29,5	34	27,5	32	24,5	29,7	23,5	28,7
55	54,4	55,6	53,5	56,5	39	42,6	36,5	40,4	34,5	38,7	32,5	37	30,5	35	27,5	32,7	26,5	31,7
60	59,4	60,6	58,5	61,5	44	47,6	41,5	45,4	39,5	43,7	37,5	42	35,5	40	32,5	37,7	31,5	36,7
65	64,4	65,6	63,5	66,5	49	52,6	46,5	50,4	44,5	48,7	42,5	47	40,5	45	37,5	42,7	36,5	41,7
70	69,4	70,6	68,5	71,5	54	57,6	51,5	55,4	49,5	53,7	47,5	52	45,5	50	42,5	47,7	41,5	46,7
75	74,4	75,6	73,5	76,5	59	62,6	56,5	60,4	54,5	58,7	52,5	57	50,5	55	47,5	52,7	46,5	51,7
80	79,4	80,6	78,5	81,5	64	67,6	61,5	65,4	59,5	63,7	57,5	62	55,5	60	52,5	57,7	51,5	56,7
85	84,3	85,7	83,25	86,75			66,5	70,4	64,5	68,7	62,5	67	60,5	65	57,5	62,7	56,5	61,7
90	89,3	90,7	88,25	91,75			71,5	75,4	69,5	73,7	67,5	72	65,5	70	62,5	67,7	61,5	66,7
95	94,3	95,7	93,25	96,75			76,5	80,4	74,5	78,7	72,5	77	70,5	75	67,5	72,7	66,5	71,7
100	99,3	100,7	98,25	101,75			81,5	85,4	79,5	83,7	77,5	82	75,5	80	72,5	77,7	71,5	76,7
105	-	-	103,25	106,75					84,5	88,7	82,5	77	80,5	85	77,5	82,7	76,5	81,7
110	-	-	108,25	111,75					89,5	93,7	87,5	92	85,5	90	82,5	87,7	81,5	86,7
115	-	-	113,25	116,75					94,5	98,7	92,5	97	90,5	95	87,5	92,7	86,5	91,7
120	-	-	118,25	121,75					99,5	103,7	97,5	102	95,5	100	92,5	97,7	91,5	96,7
125	-	-	123	127									100,5	105	97,5	102,7	96,5	101,7
130	-	-	128	132									105,5	110	102,5	107,7	101,5	106,7
135	-	-	133	137									110,5	115	107,5	112,7	106,5	111,7
140	-	-	138	142									115,5	120	112,5	117,7	111,5	116,7
145	-	-	143	147									120,5	125	117,5	122,7	116,5	121,7
150	-	-	148	152									125,5	130	122,5	127,7	121,5	126,7

For 1) to 7), see page 7.

Table 1. (continued)

Thread size d		(M 22)		M 24		(M 27)	M 30	(M 33)	M 36	(M 39)
		(M 22 × 1,5)		M 24 × 2		(M 27 × 2)	M 30 × 2	(M 33 × 2)	M 36 × 3	(M 39 × 3)
		(M 22 × 2)		M 24 × 1,5		–	–	–	–	–
b (auxiliary dimension)	1)	24,5		26,5		–	–	–	–	–
	2)	26,5		28,5		31,5	34	36	40	42
	3)	31,5		33,5		36,5	39	41	45	47
d_s	ks[4])	23		25		28	32	34	38	40
d_g	min.	21,1		23,1		25,7	29,7	31,7	35,7	37,7
	max.	21,4		23,4		26	30	32	36	38
e	min.	35,03	37,29	39,55		45,2	50,85	55,37	60,79	66,44
k	Nominal dimension	14		15		17	19	21	22	25
	min.	13,65		14,65		16,65	18,58	20,58	21,58	24,58
	max.	14,35		15,35		17,35	19,42	21,42	22,42	25,42
k'	min.	9,6		10,2		11,7	13	14,4	15,1	17,2
r	min.	0,8		0,8		1	1	1	1	1
	max.	0,95		0,95		1,15	1,15	1,15	1,15	1,15
s	max. = nominal dimension	32	34	36		41	46	50	55	60
	min.	31	33	35		40	45	49	53,8	58,8

l			Shank length y[5]) and clamping length l_k[6]), 7])													
Nominal size	min.	max.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.
42	40,75	43,25	13,5	18,7												
45	43,75	46,25	16,5	21,7	14	19,8										
48	46,75	49,25	19,5	24,7	17	22,8										
50	48,75	51,25	21,5	26,7	19	24,8										
55	53,5	56,5	24,5	29,7	22	27,8	19	24,8	16	22,5						
60	58,5	61,5	29,5	34,7	27	32,8	24	29,8	21	27,5	19	25,5				
65	63,5	66,5	34,5	39,7	32	37,8	29	34,8	26	32,5	24	30,5	19	26	17	24
70	68,5	71,5	39,5	44,7	37	42,8	34	39,8	31	37,5	29	35,5	24	31	22	29
75	73,5	76,5	44,5	49,7	42	47,8	39	44,8	36	42,5	34	40,5	29	36	27	34
80	78,5	81,5	49,5	54,7	47	52,8	44	49,8	41	47,5	39	45,5	34	41	32	39
85	83,25	86,75	54,5	59,7	52	57,8	49	54,8	46	52,5	44	50,5	39	46	37	44
90	88,25	91,75	59,5	64,7	57	62,8	54	59,8	51	57,5	49	55,5	44	51	42	49
95	93,25	96,75	64,5	69,7	62	67,8	59	64,8	56	62,5	54	60,5	49	56	47	54
100	98,25	101,75	69,5	74,7	67	72,8	64	69,8	61	67,5	59	65,5	54	61	52	59
105	103,25	106,75	74,5	79,7	72	77,8	69	74,8	66	72,5	64	70,5	59	66	57	64
110	108,25	111,75	79,5	84,7	77	82,8	74	79,8	71	77,5	69	75,5	64	71	62	69
115	113,25	116,75	84,5	89,7	82	87,8	79	84,8	76	82,5	74	80,5	69	76	67	74
120	118,25	121,75	89,5	94,7	87	92,8	84	89,8	81	87,5	79	85,5	74	81	72	79
125	123	127	94,5	99,7	92	97,8	89	94,8	86	92,5	84	90,5	79	86	77	84
130	128	132	99,5	104,7	97	102,8	94	99,8	91	97,5	89	95,5	84	91	82	89
135	133	137	104,5	109,7	102	107,8	99	104,8	96	102,5	94	100,5	89	96	87	94
140	138	142	109,5	114,7	107	112,8	104	109,8	101	107,5	99	105,5	94	101	92	99
145	143	157	114,5	119,7	112	117,8	109	114,8	106	112,5	104	110,5	99	106	97	104
150	148	152	119,5	124,7	117	122,8	114	119,8	111	117,5	109	115,5	104	111	102	109
160	158	162					119	124,8	116	122,5	114	120,5	109	116	107	114
170	168	172					129	134,8	126	132,5	124	130,5	119	126	117	124
180	178	182					139	144,8	136	142,5	134	140,5	129	136	127	134
190	187,7	192,3					149	154,8	146	152,5	144	150,5	139	146	137	144
200	197,7	202,3					159	164,8	156	162,5	154	160,5	149	156	147	154

For 1) to 7), see page 7.

Table 1. (continued)

Thread size d		M 42	(M 45)	M 48	(M 52)
		M 42 × 3	(M 45 × 3)	M 48 × 3	(M 52 × 3)
		–	–	–	–
b (auxiliary dimension)	2)	46	48	51	55
	3)	51	53	56	60
d_s	k6 4)	44	46	50	55
d_Q	min	41,7	43,7	47,7	52,7
	max	42	44	48	53
e	min	71,3	76,95	82,6	88,25
k	Nominal dimension	26	28	30	33
	min	25,58	27,58	29,58	32,5
	max	26,42	28,42	30,42	33,5
k'	min	17,9	19,3	20,7	22,7
r	min	1	1	1	1
	max	1,15	1,15	1,15	1,15
s	max = nominal dimension	65	70	75	80
	min	63,1	68,1	73,1	78,1

Nominal size	l min	l max	Shank length y 5) and clamping length l_k 6), 7)							
			y	l_k min.	y	l_k min.	y	l_k min.	y	l_k min.
70	68,5	71,5	17,5	25						
75	73,5	76,5	22,5	30	20,5	28				
80	78,5	81,5	27,5	35	25,5	33	22	30,3		
85	83,25	86,75	32,5	40	30,5	38	27	35,3	23	31,3
90	88,25	91,75	37,5	45	35,5	43	32	40,3	28	36,3
95	93,25	96,75	42,5	50	40,5	48	37	45,3	33	41,3
100	98,25	101,75	47,5	55	45,5	53	42	50,3	38	46,3
105	103,25	106,75	52,5	60	50,5	58	47	55,3	43	51,3
110	108,25	111,75	57,5	65	55,5	63	52	60,3	48	56,3
115	113,25	116,75	62,5	70	60,5	68	57	65,3	53	61,3
120	118,25	121,75	67,5	75	65,5	73	62	70,3	58	66,3
125	123	127	72,5	80	70,5	78	67	75,3	63	71,3
130	128	132	77,5	85	75,5	83	72	80,3	68	76,3
135	133	137	82,5	90	80,5	88	77	85,3	73	81,3
140	138	142	87,5	95	85,5	93	82	90,3	78	86,3
145	143	147	92,5	100	90,5	98	87	95,3	83	91,3
150	148	152	97,5	105	95,5	103	92	100,3	88	96,3
160	158	162	102,5	110	100,5	108	97	105,3	93	101,3
170	168	172	112,5	120	110,5	118	107	115,3	103	111,3
180	178	182	122,5	130	120,5	128	117	125,3	113	121,3
190	187,7	192,3	132,5	140	130,5	138	127	135,3	123	131,3
200	197,7	202,3	142,5	150	140,5	148	137	145,3	133	141,3

For 1) to 7), see page 7.

2 Masses

The values of mass specified are for guidance only.

For sizes M 10, M 12, M 14 and M 22, the values of mass listed apply for bolts with the previous widths across flats 17 mm, 19 mm, 22 mm or 32 mm.

Approximately the same values of mass can be assumed for bolts with fine screw thread.

Table 2.

Thread size d	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 27
Length l	Mass, in kg per 1000 units ≈									
25	16,5									
28	19	32,7								
30	20	34,1	47,7							
32	21	35,6	49,8	69,9						
35	22,5	37,9	52,9	74,1	98,3					
38	24	40,1	56	78,3	104	129				
40	25	41,6	58,1	81	107	136	178			
42	26	43,1	60,2	83,8	111	143	184	230		
45	27,5	45,3	63,3	88	116	150	192	236	291	
48	29,5	47,6	66,4	92,1	121	157	200	245	303	
50	30	49,1	68,5	94,9	125	161	205	251	311	
55	32,5	52,3	73,1	101	133	172	221	267	328	465
60	35	56	78,3	108	142	183	235	283	347	489
65	37,5	59,8	83,5	115	151	194	248	299	366	513
70	40	63,5	88,7	122	160	206	262	315	385	537
75	42,5	67,2	93,9	129	169	217	275	332	405	561
80	45	70,9	99,1	136	178	228	289	348	424	585
85		74,7	104	143	187	239	303	364	444	609
90		78,4	109	150	195	250	316	381	464	634
95		82,1	114	156	204	261	330	397	482	658
100		85,9	119	163	213	272	343	413	501	682
105			125	170	222	283	357	430	521	706
110			130	177	231	295	370	446	540	730
115			135	184	240	306	384	462	559	754
120			140	191	249	317	398	479	578	779
125					258	328	411	495	597	803
130					267	339	425	511	617	827
135					276	350	439	527	636	851
140					285	361	452	544	655	875
145					293	372	466	560	675	899
150					302	384	479	576	694	924
160										964
170										1010
180										1060
190										1110
200										1160

Table 2. (continued)

Thread size d	M 30	M 33	M 36	M 39	M 42	M 45	M 48	M 52
Length l	Mass, in kg per 1000 units ≈							
55	584							
60	616	763						
65	648	799	1010	1220				
70	680	835	1060	1270	1510			
75	712	871	1100	1320	1570	1890		
80	743	907	1140	1370	1630	1950	2310	
85	775	942	1180	1420	1690	2010	2390	2870
90	807	978	1230	1470	1750	2070	2460	2960
95	838	1010	1270	1520	1810	2130	2540	3050
100	870	1050	1320	1570	1870	2200	2610	3150
105	901	1090	1360	1620	1930	2260	2690	3240
110	933	1120	1410	1670	1990	2330	2760	3330
115	964	1160	1450	1720	2050	2390	2840	3420
120	996	1190	1500	1770	2110	2460	2920	3510
125	1030	1230	1540	1820	2170	2520	3000	3610
130	1060	1260	1590	1870	2230	2590	3070	3700
135	1090	1300	1630	1920	2290	2650	3150	3790
140	1120	1340	1670	1970	2350	2720	3230	3890
145	1150	1370	1720	2020	2410	2780	3300	3980
150	1190	1410	1760	2060	2470	2850	3380	4070
160	1240	1470	1840	2160	2580	2980	3520	4240
170	1300	1540	1930	2250	2700	3110	3670	4430
180	1370	1610	2020	2350	2810	3230	3830	4610
190	1430	1680	2110	2450	2930	3370	3980	4800
200	1490	1750	2200	2550	3060	3500	4140	4990

3 Technical delivery conditions

Material		Steel	Stainless steel	Nonferrous metal
General requirements		In accordance with DIN 267 Part 1.		
Thread	Tolerance	6g		
	Standard	DIN 13 Part 12 and Part 15		
Mechanical properties	Property class (material) 1)	≦ M 39: 8.8; > M 39: subject to agreement.	≦ M 20: A 2-70; > M 20 ≦ M 39: A2-50; > M 39: subject to agreement.	e.g. CU 2, CU 3
	Standard	ISO 898 Part 1	DIN 267 Part 11	DIN 267 Part 18
Permissible dimensional deviations and deviations of form	Product grade 2)	≦ M 10: A (previously m); ≧ M 12: B (previously mg).		
	Standard	ISO 4759 Part 1		
Surface		Blackened 3) (thermally or chemically)	Bright	Bright
		Fit shank: bright. DIN 267 Part 2 shall apply with regard to surface roughness. DIN 267 Part 19 shall apply with regard to permissible surface discontinuities. DIN 267 Part 9 4) 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) Where, for special purposes, the bolts are to meet requirements differing from those specified, e.g. in respect of property class or material, the specifications of the relevant standards shall be complied with.

2) If product grade A is required for sizes from M 12 upwards, this shall be incorporated in the designation, e.g.:

Fit bolt DIN 610 – M 20 X 100 – 8.8 – A

In this case, the appropriate tolerances as specified in ISO 4759 Part 1 shall apply. This does not apply however to the diameter of the fit shank.

3) Different surfaces are the standard for different property classes or materials, as appropriate, e.g. "as rolled", i.e. without additional surface treatment, for property class 5.6.

4) The supply of electroplated fit bolts with bright shank is permitted for manufacturing reasons, because surface protection applied to the shank would preclude maintenance of the tolerance specified for the shank. If necessary, agreements shall be made with regard to a surface protection possibly required for the fit bolts.

Footnotes to table 1

1) For lengths l not exceeding 50 mm.

2) For lengths l exceeding 50 mm up to and including 150 mm.

3) For lengths l exceeding 150 mm.

4) Differing tolerance classes shall be stated when ordering, e.g.:
Fit bolt DIN 610 – M 12 n6 X 60 – 8.8
A k6 fit shank is normally mated with an H7 clearance hole.

5) Tolerance on shank length y: $^{0}_{-1}$ mm.

6) Clamping length l_k max. = l min. – v min. (or nut height + u) (see DIN 78).

7) The clamping length l_k min. corresponds to the effective length l_k min. specified in the previous edition of DIN 610, and thus will not jeopardize interchangeability.

Lengths over 200 mm shall be graded in 10 mm steps.

Bracketed sizes and intermediate lengths (see DIN 962) shall be avoided as far as possible.

The bolts are normally manufactured in the sizes for which clamping lengths and mass values have been specified.

Fit bolts with a shank diameter larger by 1 mm are recommended for repairs (drilled out holes), e.g. d_s = 22 mm instead of 21 mm for an M 20 screw thread. The larger shank diameter shall be incorporated in the designation of the fit bolt, e.g.:

Fit bolt DIN 610 – M 20 X 22 X 120 – 8.8

Standards referred to

DIN 13 Part 12	ISO metric screw thread; coarse and fine threads from 1 to 300 mm diameter; selection of diameters and pitches
DIN 13 Part 15	ISO metric screw thread; fundamental deviations and tolerances for screw threads from 1 mm diameter
DIN 78	Thread ends and lengths of projection of bolt ends for ISO metric screw threads in accordance with DIN 13
DIN 267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN 267 Part 2	Fasteners; technical delivery conditions; design 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 parts
DIN 267 Part 11	Fasteners; technical delivery conditions with additions to ISO 3506; components made from stainless and acid proof steels
DIN 267 Part 18	Fasteners; technical delivery conditions; components made from nonferrous metals
DIN 267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts and screws
DIN 332 Part 1	60° centre holes; types R, A, B and C
DIN 609	Hexagon fit bolts with long threaded dog point
DIN 962	Bolts, screws, studs and nuts; designations, types and finishes
ISO 272	Fasteners; hexagon products; widths across flats
ISO 898 Part 1	Mechanical properties of fasteners; bolts, screws and studs
ISO 4759 Part 1	Tolerances for fasteners; bolts, screws and nuts with thread diameters from 1,6 to 150 mm, product grades A, B and C

Previous editions

DIN 610: 04.42, 09.51, 07.53, 11.53, 04.56, 05.63, 01.71

Amendments

The following amendments have been made in comparison with the January 1971 edition:

a) The dimensioning of the fit bolts has been partially amended.

b) Clamping lengths have been included.

c) The designation of the fit bolts has been complemented.

d) The widths across flats 16 mm, 18 mm, 21 mm and 34 mm as specified in ISO 272 have been additionally adopted for sizes M 10, M 12, M 14 and M 22.

e) The technical delivery conditions have been expanded and harmonized with ISO 898 Part 1 and with ISO 4759 Part 1.

f) The content of the standard has been editorially revised.

g) The standard does not apply to new designs, as those are covered by DIN 609.

Explanatory notes

This standard is a revision of the January 1971 edition of DIN 610. A new system of dimensioning has been chosen, which includes and specifies the shank length and the clamping length, because these two lengths are of particular significance to fit bolts. The adoption of the new system of dimensioning ensures that the previous configuration of the fit bolts is not altered in any way, and that interchangeability remains unaffected. The clamping length l_k min. has been calculated on the basis of the previous specifications.

The dimensions now specified for the undercut between the shank and the head of the bolt now enables fit bolts to be fitted without countersinking the clearance hole. This revision, together with the fact that the specified lengths of projection of bolt ends are also given in DIN 78, prompted the deletion of the former "Application" clause. The undercut now specified in no way diminishes the strength of the fit bolt.

Practical experience and calculations have shown that hexagon fit bolts with long thread as specified in DIN 609 can generally be used instead of fit bolts complying with DIN 610 without lasting damage to the face of the hole. Furthermore, the longer threaded dog points as specified in DIN 609 allow a smooth transition within the clamping length grading. It is also recommended, with regard to the future use of taller hexagon nuts complying with DIN 970 and DIN 971 (the so-called ISO nuts) instead of hexagon nuts complying with DIN 934, that fit bolts as specified in DIN 609 be preferred to those complying with DIN 610, the aim of this recommendation being to reduce the number of types.

International Patent Classification

16 B 35-00