UDC 621.882.15-472.3 : 621.882.215.091.1 May 1991

Counterbores (holes)
for cheese head, pan head
and hexagon socket head cap screws

DIN
74
Part 2

Senkungen für Schrauben mit Zylinderkopf

Supersedes December 1980 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.

This standard should be used together with DIN 974 Part 1. For details, see Explanatory notes. It is intended to withdraw the present standard by 30 April 1996 at the latest.

Dimensions in mm

1 Scope and field of application

This standard specifies dimensions of counterbores (holes) for cheese head screws, pan head screws and hexagon socket head cap screws, used with or without washer(s), in components with clearance holes as specified in ISO 273.

2 Dimensions and designation

2.1 Counterbores for screws used without washer(s)

Type H for DIN 84, DIN 7500 (style A), DIN 7513 (style B) and DIN 7984 screws

Type J for DIN 6912 screws

Type K for DIN 912 screws

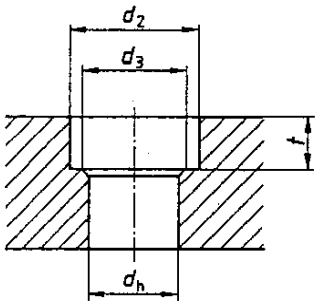

Figure 1.

Designation of a type H (H) counterbore for a medium series (m) clearance hole suiting screws with a nominal thread diameter of 10 mm:

Counterbore DIN 74 – H m 10

Continued on pages 2 to 5

Table 1.

Nominal thread diameter			1	1,2	1,4	1,6	1,8	2	2,5	3	3,5	4	5	6	8
d_h[1]	Medium series (m)[2]	H13	1,2	1,4	1,6	1,8	2,1	2,4	2,9	3,4	3,9	4,5	5,5	6,6	9
	Fine series (f)[3]	H12	1,1	1,3	1,5	1,7	2	2,2	2,7	3,2	3,7	4,3	5,3	6,4	8,4
d_2		H13	2,2	2,5	2,8	3,3	3,8	4,3	5	6	6,5	8	10	11	15
d_3[4]			-	-	-	-	-	-	-	-	-	-	-	-	-
t	For counterbores of type H		0,8	0,9	1	1,2	1,5	1,6	2	2,4	2,9	3,2	4	4,7	6
		type J	-	-	-	-	-	-	-	-	-	3,4	4,2	4,8	6
		type K	-	-	1,6	1,8	-	2,3	2,9	3,4	-	4,6	5,7	6,8	9
		Limit deviations	$^{+0,1}_{0}$			$^{+0,2}_{0}$						$^{+0,4}_{0}$			

Nominal thread diameter			10	12	14	16	18	20	22	24	27	30	33	36	42	48
d_h[1]	Medium series (m)[2]	H13	11	13,5	15,5	17,5	20	22	24	26	30	33	36	39	45	52
	Fine series (f)[3]	H12	10,5	13	15	17	19	21	23	25	-	-	-	-	-	-
d_2		H13	18	20	24	26	30	33	36	40	43	48	53	57	66	76
d_3[4]			-	15,5	17,5	19,5	22	24	26	28	33	36	39	42	48	56
t	For counterbores of type H		7	8	9	10,5	11,5	12,5	13,5	14,5	-	-	-	-	-	-
		type J	7,5	8,5	9,5	11,5	12,5	13,5	14,5	15,5	17,5	19,5	21,5	23,5	-	-
		type K	11	13	15	17,5	19,5	21,5	23,5	25,5	28,5	32	35	38	44	50
		Limit deviations	$^{+0,4}_{0}$									$^{+0,6}_{0}$				

[1]) This symbol, specified in ISO 273, supersedes d_1.
[2]) Medium series clearance hole as in ISO 273 (recommended).
[3]) Fine medium clearance hole as in ISO 273.
[4]) Countersunk (90°) or chamfered; for nominal thread diameter below 12 mm, edge to be deburred.

2.2 Counterbores for screw and washer assemblies

Type H 1 for DIN 84, DIN 7500 (style A), DIN 7513 (style B) and DIN 7984 screws
Type J 1 for DIN 6912 screws
Type K 1 for DIN 912 screws

Used with DIN 127, DIN 128, DIN 137 (type A), DIN 433, DIN 6797, DIN 6798, DIN 6902 (type C), DIN 6905, or DIN 6907 washer.

Type H 2 for DIN 84, DIN 7500 (style A), DIN 7513 (style B) and DIN 7984 screws
Type J 2 for DIN 6912 screws
Type K 2 for DIN 912 screws

Used with DIN 125, DIN 137 (type B), DIN 6902 (type A), or DIN 6904 washer.

Type H 3 for DIN 84, DIN 7500 (style A), DIN 7513 (style B) and DIN 7984 screws
Type J 3 for DIN 6912 screws
Type K 3 for DIN 912 screws

Used with DIN 7980 washer.

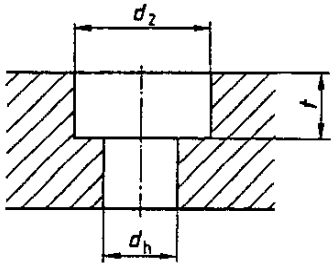

Figure 2.

Designation of a type H 1 (H 1) counterbore for a medium series (m) clearance hole suiting screws with a nominal thread diameter of 10 mm:

Counterbore DIN 74 – H 1 m 10

Table 2.

Nominal thread diameter				2	2,5	3	3,5	4	5	6	8	10	12	14
d_h[1]		Medium series (m)[2]	H13	2,4	2,9	3,4	3,9	4,5	5,5	6,6	9	11	13,5	15,5
		Fine series (f)[3]	H12	2,2	2,7	3,2	3,7	4,3	5,3	6,4	8,4	10,5	13	15
d_2 H13	For counterbores of	types H 1, J 1 and K 1		5,5	6,5	7	8	9	11	13	18	20	24	26
		types H 2, J 2 and K 2		6	8	9	9	10	13	13	20	24	26	30
		types H 3, J 3 and K 3		–	–	6	6,5	8	10	11	15	18	20	24
t	For counterbores of	types H 1, H 2 and H 3		2,2	2,7	3,3	3,8	4,5	5,5	6,5	8	9,5	11	12,5
		types J 1, J 2 and J 3		–	–	–	–	4,5	5,5	6,5	8	9,5	11	12,5
		types K 1, K 2 and K 3		–	–	4,3	–	5,5	7	8,5	11	13,5	16	18,5
		Limit deviations		+ 0,2 0				+ 0,4 0						

Nominal thread diameter				16	18	20	22	24	27	30	33	36	42	48
d_h[1]		Medium series (m)[2]	H13	17,5	20	22	24	26	30	33	36	39	45	52
		Fine series (f)[3]	H12	17	19	21	23	25	–	–	–	–	–	–
d_2 H13	For counterbores of	types H 1, J 1 and K 1		30	33	36	40	43	46	53	57	61	71	78
		types H 2, J 2 and K 2		33	36	40	43	46	53	61	63	71	82	98
		types H 3, J 3 and K 3		26	30	33	36	40	43	48	53	57	66	76
t	For counterbores of	types H 1, H 2 and H 3		14	15	16,5	17,5	19,5	–	–	–	–	–	–
		types J 1, J 2 and J 3		15	16	17,5	18,5	20,5	22,5	25,5	27,5	29,5	–	–
		types K 1, K 2 and K 3		21	23	25,5	27,5	30,5	33,5	38	41	44	52	59
		Limit deviations		+ 0,4 0						+ 0,6 0				

For [1] to [3], see page 2.

2.3 Non-standard counterbores

Where, for particular applications, counterbores need to be sunk to a depth, t, other than specified here (e.g. where projection of the screw head is a design feature), the depth (e.g. 5 mm for an H m 10 counterbore) shall be indicated in the designation, e.g.:

Counterbore DIN 74 – H m 10 × 5

3 Indications on drawings

Example 1. Indications on the basis of symbols

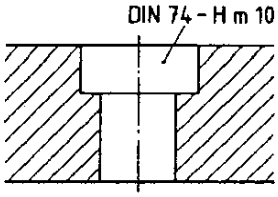

Figure 3.

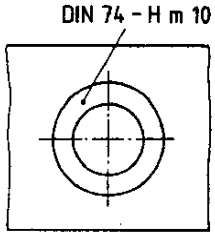

Figure 4.

Example 2. Indications on the basis of sizes

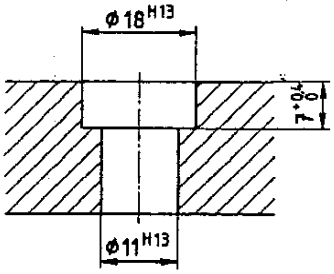

Figure 5.

Standards referred to

DIN 84	Product grade A slotted cheese head screws
DIN 125 Part 1	Product grade A washers with a hardness up to 250 HV, designed for use with hexagon bolts and nuts
DIN 125 Part 2	Product grade A washers with a hardness from 300 HV, designed for use with hexagon bolts and nuts
DIN 127	Spring lock washers with square ends or tang ends
DIN 128	Curved and wave spring lock washers
DIN 137	Curved and wave spring washers
DIN 433 Part 1	Product grade A washers with a hardness up to 250 HV, designed for use with cheese head screws
DIN 433 Part 2	Product grade A washers with a hardness from 300 HV, designed for use with cheese head screws
DIN 912	Hexagon socket head cap screws (modified version of ISO 4762 : 1977)
DIN 6797	Toothed lock washers
DIN 6798	Serrated lock washers
DIN 6902	Plain washers for screw and washer assemblies
DIN 6904	Spring washers for screw and washer assemblies
DIN 6905	Spring lock washers for screw and washer assemblies
DIN 6907	Externally serrated lock washers for screw and washer assemblies
DIN 6912	Hexagon socket thin head cap screws with pilot recess for wrench key
DIN 7500 Part 1	Thread cutting screws for ISO metric thread; dimensions, requirements and testing
DIN 7513	Heaxagon head and slotted head thread cutting screws; dimensions, requirements and testing
DIN 7980	Spring lock washers for use with pan head bolts
DIN 7984	Hexagon socket thin head cap screws
ISO 273 : 1979	Fasteners; clearance holes for bolts and screws

Other relevant standards

DIN 74 Part 1 Countersinks (holes)
DIN 74 Part 3 Counterbores (holes) for hexagon bolts and nuts
DIN 974 Part 1 Diameters of counterbores for cheese head, pan head and hexagon socket head cap screws
DIN 974 Part 2 Diameters of counterbores (holes) for hexagon bolts and nuts

Previous editions

DIN 75 Part 2: 02.56, 04.68; DIN 74 Part 2: 12.67, 07.71, 12.80.

Amendments

The following amendments have been made to the December 1980 edition.

a) A note on the period of validity of the standard has been included.
b) In agreement with ISO 273, d_h (to denote the clearance hole diameter) has been substituted for d_1.
c) The scope of subclause 2.2 has been extended to include type C washers as specified in DIN 6902.
d) In table 1, the values of diameter d_3 for nominal thread diameters 12 mm, 14 mm and 16 mm have been harmonized with those of the associated ISO 273 clearance holes.
e) The standard has been restructured and editorially revised.

Explanatory notes

Revision of DIN 74 Parts 2 and 3 was prompted by the fact that the specifications of Part 3 did not adequately cover the range of counterbore depths required in practice, mainly as a result of differences in washer height and the large number of possible washer combinations.

It was deemed expedient in future to standardize only the diameters of counterbores and to leave it to the user to specify their depth. However, such specifications must be based on certain principles.

As there was already a standard dealing with counterbore diameters, DIN 974, it was decided to revise it, dividing it into two Parts (one covering diameters of counterbores for cheese head, pan head and hexagon socket head cap screws (Part 1), and the other, for hexagon screws and nuts (Part 2)). Whereas previously, nominal thread diameters were correlated with counterbore diameters, series of counterbore diameters have now been specified and assigned to nominal thread diameters. When establishing the counterbore diameters for the individual series, care was taken to keep the number of possible diameters within reasonable limits.

To facilitate identification of counterbores in existing documentation based on DIN 74 Parts 2 and 3, these standards, as now revised, are to remain valid for the transitional period stated. For new designs, it is recommended that specifications for counterbores be based on DIN 974 Parts 1 and 2.

It should be noted that counterbores as specified in DIN 974 are suitable for ISO screws and nuts, which does not apply in all cases for counterbores as specified in DIN 74.

International Patent Classification

F 16 B 5/02