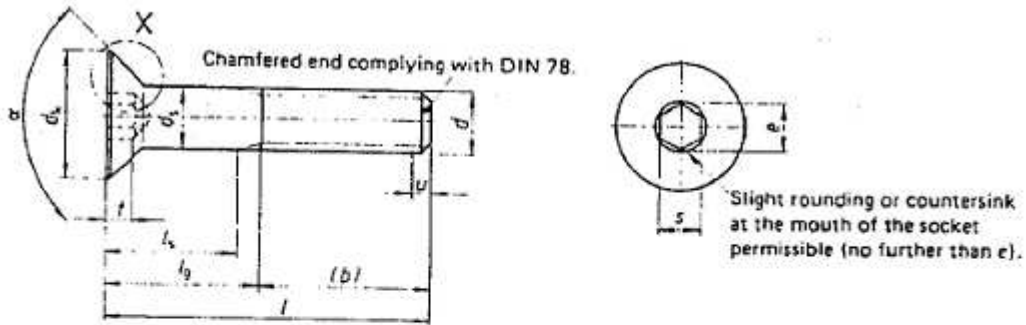


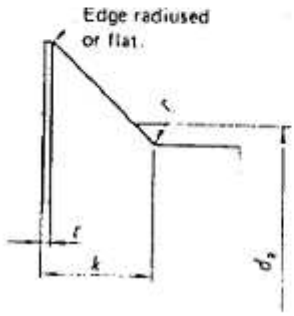
# Hexagon socket countersunk head cap screws

## 2 Dimensions



$d_s$  is applicable only for screws with unthreaded portion of shank.  
 $u = 2P$  maximum; incomplete thread.

Detail X



Thread size $d$		M 3	M 4	M 5	M 6	M 8	M 10	M 12										
$P^1)$		0,5	0,7	0,8	1	1,25	1,5	1,75										
$a$	$\frac{1}{2}P$	90°																
$b$ Thread length	2)	12	14	16	18	22	26	30										
	3)	-	-	-	24	28	32	36										
	4)	-	-	-	-	-	45	49										
$c$	$\frac{1}{4}P$	0,2	0,3	0,3	0,3	0,4	0,5	0,5										
$d_k$	max. = nominal dimension	6	8	10	12	16	20	24										
	min	5,7	7,64	9,64	11,57	15,57	19,48	23,48										
$d_s$	max	3,6	4,7	5,7	6,8	9,2	11,2	13,7										
$d_r$	max. = nominal dimension	3	4	5	6	8	10	12										
	min	2,86	3,82	4,82	5,82	7,78	9,78	11,73										
$e^2)$	min	2,3	2,87	3,44	4,58	5,72	6,86	8,15										
$k^4)$	max	1,7	2,3	2,8	3,3	4,4	5,5	6,5										
$r$	min	0,1	0,2	0,2	0,3	0,3	0,5	1										
$s$	Nominal dimension	2	2,5	3	4	5	6	8										
	min	2,02	2,52	3,02	4,02	5,02	6,02	8,025										
	max	2,10	2,60	3,10	4,12	5,14	6,14	8,175										
$t$	max. = nominal dimension	1,2	1,8	2,3	2,5	3,5	4,4	4,6										
	min	0,95	1,55	2,05	2,25	3,2	4,1	4,3										
$l$		Shank lengths $l_s$ and $l_g^6)$																
Nominal length	min	max	$l_1$ min	$l_2$ max	$l_3$ min	$l_4$ max	$l_5$ min	$l_6$ max	$l_7$ min	$l_8$ max	$l_9$ min	$l_{10}$ max	$l_{11}$ min	$l_{12}$ max	$l_{13}$ min	$l_{14}$ max	$l_{15}$ min	$l_{16}$ max
8	7,71	8,29	-	3,2	-	4,4	-	5,2	-	6,3								
10	9,71	10,29	-	3,2	-	4,4	-	5,2	-	6,3								
12	11,65	12,35	-	3,2	-	4,4	-	5,2	-	6,3		8,2						
16	15,65	16,35	-	3,2	-	4,4	-	5,2	-	6,3		8,2	-	10				
20	19,58	20,42	-	3,2	-	4,4	-	5,2	-	6,3		8,2	-	10	-			
25	24,58	25,42	10,5	13	-	4,4	-	5,2	-	6,3		8,2	-	10	-			11,8
30	29,58	30,42	15,5	18	12,5	16	-	5,2	-	6,3		8,2	-	10	-			11,8
35	34,5	35,5			17,5	21	15	19	-	6,3		8,2	-	10	-			11,8
40	39,5	40,5			22,5	26	20	24	17	22		8,2	-	10	-			11,8
50	49,5	50,5					30	34	27	32	21,7	28	16,5	24	-			11,8
60	59,4	60,6									31,7	38	26,5	34	21,25	30		
70	69,4	70,6											36,5	44	31,25	40		

1)  $P$  = pitch of thread (coarse pitch thread).  
2) For lengths  $l \leq 125$  mm.  
3) For lengths  $l > 125$  mm  $\leq 200$  mm.  
4) For lengths  $l > 200$  mm.  
5)  $e$  min. = 1,14  $s$  min.  
6) The head height  $h$  is included in the shank lengths.

Thread size d	(M 14)	M 16	(M 18)	M 20	(M 22)	M 24									
$P^1)$	2	2	2.5	2.5	2.5	3									
a	90°		60°												
b Thread length	2)	34	38	42	46	50	54								
	3)	40	44	48	52	56	60								
	4)	53	57	61	65	69	73								
c	=	0.5	0.5	0.5	0.5	1	1								
$d_1$	max. = nominal dimension	27	30	33	36	36	39								
	min	26.48	29.48	32.38	35.38	35.38	38.38								
$d_2$	max	15.7	17.7	20.2	22.4	24.4	26.4								
$d_3$	max. = nominal dimension	14	16	18	20	22	24								
	min	13.73	15.73	17.73	19.67	21.67	23.67								
$e^2)$	min	11.43	11.43	13.72	13.72	16	16								
$k^4)$	max	7	7.5	8	8.5	13.1	14								
r	min	1	1	1	1	1	1.6								
s	Nominal dimension	10	10	12	12	14	14								
	min	10.025	10.025	12.032	12.032	14.032	14.032								
	max	10.175	10.175	12.212	12.212	14.212	14.212								
t	max. = nominal dimension	4.8	5.3	5.5	5.9	6.8	10.3								
	min	4.5	5	5.2	5.6	6.44	9.87								
Nominal length		Shank lengths $l_s$ and $l_g$ 5)													
	min	max	$l_s$ min	$l_s$ max	$l_g$ min	$l_g$ max	$l_s$ min	$l_s$ max	$l_g$ min	$l_g$ max	$l_s$ min	$l_s$ max	$l_g$ min	$l_g$ max	
20	19.58	20.42													
25	24.58	25.42	-	13											
30	29.58	30.42	-	13	-	13.5									
35	34.5	35.5	-	13	-	13.5	-	15.5	-	16					
40	39.5	40.5	-	13	-	13.5	-	15.5	-	16	-	20.6			
50	49.5	50.5	-	13	-	13.5	-	15.5	-	16	-	20.6	-	23	
60	59.4	60.6	16	26	-	13.5	-	15.5	-	16	-	20.6	-	23	
70	69.4	70.6	26	36	22	32	15.5	28	-	16	-	20.6	-	23	
80	79.4	80.6	36	46	32	42	25.5	38	21.5	34	-	20.6	-	23	
90	89.3	90.7			42	52	35.5	48	31.5	44	27.5	40	-	23	
100	99.3	100.7					45.5	58	41.5	54	37.5	50	31	46	

See page 2 for 1) to 6).

The commercial nominal lengths are designated by giving the shank lengths.

The thread sizes and intermediate lengths given in brackets shall be avoided where possible.

Nominal lengths above 100 mm shall be graded by steps of 10 mm, and those above 200 mm by steps of 20 mm.

Screws with nominal lengths above the dashed stepped line shall be threaded up to the head (the maximum distance from the last full form thread to the head bearing surface,  $l_g$ , is  $k \cdot \max + 3 P$ ). The  $l_s$  and  $l_g$  values for bolts with nominal lengths below the dashed stepped line shall be determined in accordance with the following equations:

$$l_g \text{ max.} = l \text{ (nominal length)} - b \text{ (nominal length); } l_s \text{ min.} = l_g \text{ max.} - 5 P.$$

### 3 Technical delivery conditions

Material		Steel	Stainless steel	Nonferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance class	6 g		
	Standard	DIN 13 Part 12 and Part 15		
Mechanical Properties	Property class (material)	8.8	≤ M 20: A2-70; > M 20: A2-50	CuZn = copper-zinc alloy <sup>2)</sup>
	Standard	Other property classes or materials subject to agreement.		
Permissible dimensional deviations and deviations of form	Product grade	ISO 898 Part 1 <sup>1)</sup>	DIN 267 Part 11	DIN 267 Part 18
	Standard	A		
Surface finish		(Thermally or chemically) blackened.	Bright.	Bright.
		DIN 267 Part 2 shall apply with regard to the surface roughness. DIN 267 Part 19 shall apply with regard to the permissible surface discontinuities. DIN 267 Part 9 shall apply with regard to electroplating. If a different kind of electroplating or a different kind of surface protection is desired, this shall be agreed upon at the time of ordering.		
Acceptance inspection		DIN 267 Part 5 shall apply with regard to acceptance inspection.		

<sup>1)</sup> The acceptance inspection shall include hardness testing of property class 8.8 screws, with hardness values of HV 250 to 320 for sizes up to and including M 16, and HV 255 to 335 for sizes greater than M 16 (see Explanatory notes).

<sup>2)</sup> Preferably CU2 or CU3, at the manufacturer's discretion. 白銅