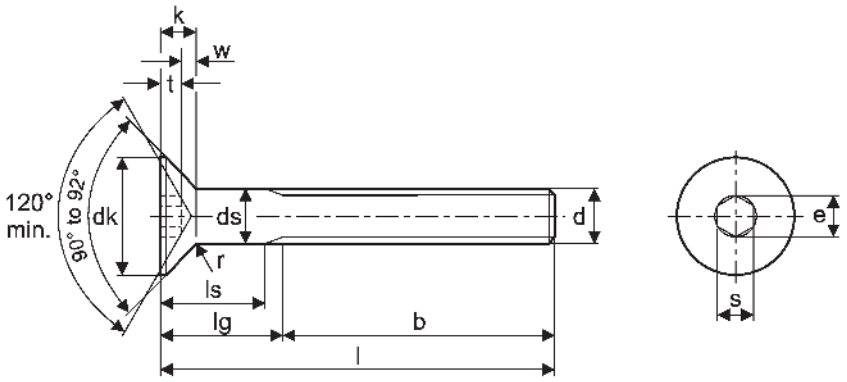
Hexagon Socket Countersunk Head Screws

EN ISO 10642 (DIN 7991) Grade 10.9



DIN 7991 Dimensions of Socket Counterunk Head Screws

Nominal size and thread diameter d	Pitch of thread P	Thread length b	Head diameter dk		Transition diameter da	Diameter of unthreaded shank ds		Hex socket width across corners e	Thickness of head k	Radius under head r	Hex socket width across flats s			Hex socket depth t	Depth from socket to head base w
	coarse pitch	max.	min.	max.	max.	min.	max.	min.	max.	min.	min.	max.	nom.	min.	min.
M3	0.50	18	5.54	6.72	3.30	2.86	3.00	2.30	1.86	0.1	2.02	2.06	2.00	1.1	0.25
M4	0.70	20	7.53	8.96	4.40	3.82	4.00	2.87	2.48	0.2	2.52	2.58	2.50	1.5	0.45
M5	0.80	22	9.43	11.20	5.50	4.82	5.00	3.44	3.10	0.2	3.02	3.08	3.00	1.9	0.66
M6	1.00	24	11.34	13.44	6.50	5.82	6.00	4.58	3.72	0.25	4.02	4.095	5.14	2.2	0.70
M8	1.25	28	15.24	17.92	8.54	7.78	8.00	5.72	4.96	0.4	5.02	5.14	5.00	3.0	1.16
M10	1.50	32	19.22	22.40	10.62	9.78	10.00	6.86	6.20	0.4	6.020	6.14	6.00	3.5	1.62
M12	1.75	36	23.12	26.88	13.50	11.73	12.00	9.15	7.44	0.6	8.025	8.175	8.00	4.3	1.80
(M14)	2.00	40	26.52	30.80	15.50	13.73	14.00	11.43	8.40	0.6	10.025	10.175	10.00	4.5	1.62
M16	2.00	44	29.01	33.60	17.50	15.73	16.00	11.43	8.80	0.6	10.025	10.175	10.00	4.8	2.20
M20	2.50	52	36.05	40.32	22.00	19.67	20.00	13.72	10.16	0.8	12.032	12.212	12.00	5.6	2.20

Thread (d)			M3		M4		M5		M6		M8		M10		M12		(M14)		M16		M20	
l			ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.	ls min.	lg max.
nom.	min.	max.																				
8	7.71	8.29																				
10	9.71	10.29																				
12	11.65	12.35																				
16	15.65	16.35																				
20	19.58	20.42																				
25	24.58	25.42																				
30	29.58	30.42	9.5	12	6.5	10																
35	34.50	35.50			11.5	15	9	13														
40	39.50	40.50			16.5	20	14	18	11	16												
45	44.50	45.50					19	23	16	21												
50	49.50	50.50					24	28	21	26	15.75	22										
55	54.40	55.60							26	31	20.75	27	15.5	23								
60	59.40	60.60							31	36	25.75	32	20.5	28								
65	64.40	65.60									30.75	37	25.5	33	20.25	29						
70	69.40	70.60									35.75	42	30.5	38	25.25	34	20	30				
80	79.40	80.60									45.75	52	40.5	48	35.25	44	30	40	26	36		
90	89.30	90.70											50.5	58	45.25	54	40	56	36	46		
100	99.30	100.70											60.5	68	55.25	64	50	60	45	56	35.5	48

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Specification for bolts and reference standards

Characteristic		Standard
Material		Steel
General Requirements		ISO 8992
Thread	Tolerance	6g for property class 8.8 and 10.9; 5g6g for property class 12.9
	Standard	ISO 261, ISO 965-2, ISO 965-3.
Mechanical Properties	Property Class [1]	8.8, 10.9, 12.9
	Standard	ISO 898-1
Tolerances on dimensions and form	Product Grade	A
	Standard	ISO 4759-1
Surface finish		Black oxide (thermal or chemical)
		Requirements for electroplating are covered in ISO 4042. If different electroplating are desired or if requirements are needed for other finishes they should be negotiated between customer and supplier. Limits for surface discontinuities are covered in ISO 6157-1 and ISO 6157-3.
Acceptable inspection		Acceptance procedure is dealt with in ISO 3269.

1 Because of their head configurations, these screws may not meet the minimum ultimate tensile load for property classes 8.8, 10.9 and 12.9 specified in ISO 898-1, when tested in accordance with the test programme B. They shall nevertheless meet the other material and property requirements for property classes 8.8, 10.9 and 12.9 is ISO 898-1.

In addition, when full size screws are loaded with the head supported on a suitable collar (conical bearing surface) using the type of testing fixture illustrated in ISO 898-1 they shall withstand the test loads specified in table 3 without fracture.

If tested to failure, the fracture may occur in the threaded section, the shank, the head or at the head/shank junction.

Minimum ultimate tensile loads of hexagon socket countersunk head screws

Bolt thread diameter d	Property Class		
	8.8	10.9	12.9
	Minimum ultimate tensile load N		
M3	3,220	4,180	4,910
M4	5,620	7,300	8,560
M5	9,080	11,800	13,800
M6	12,900	16,700	19,600
M8	23,400	30,500	35,700
M10	37,100	48,200	56,600
M12	53,900	70,200	82,400
M14	73,600	96,000	112,000
M16	100,000	130,000	154,000
M20	162,000	204,000	239,000