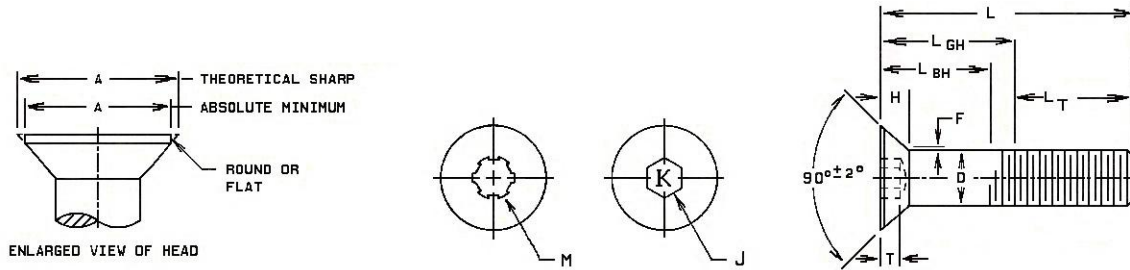


Metric Flat Socket Head Cap Screws – Property Class 12.9

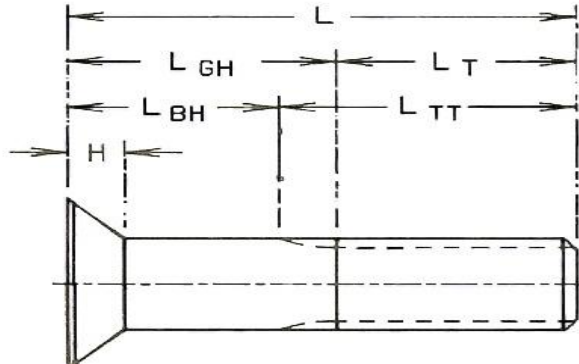


Nominal Size	D Body Diameter		A Head Diameter		H Head Height Ref. Flushness Tolerance		J Hexagon Socket Size Nom.
	Min.	Max.	Max. Theo-retical Sharp	Absolute Min.			
M3x0.5	3.0	2.86	6.72	5.35	1.86	0.25	2.0
M4x0.7	4.0	3.82	8.96	7.80	2.48	0.25	2.5
M5x0.8	5.0	4.82	11.20	9.75	3.10	0.30	3.0
M6x1.0	6.0	5.82	13.44	11.70	3.72	0.35	4.0
M8x1.25	8.0	7.78	17.92	15.60	4.96	0.40	5.0
M10x1.50	10.0	9.78	22.40	19.50	6.20	0.40	6.0
M12x1.75	12.0	11.73	26.88	23.40	7.44	0.45	8.0
M16x2.0	16.0	15.73	33.60	29.01	8.80	0.50	10.0
M20x2.5	20.0	19.67	42.00	36.05	11.00	0.75	12.0

Nominal Size	T Key Engagement Min.	F Fillet Extension Above D Max.
M3x0.5	1.1	0.25
M4x0.7	1.5	0.35
M5x0.8	1.8	0.40
M6x1.0	2.4	0.50
M8x1.25	3.0	0.60
M10x1.50	3.6	0.80
M12x1.75	4.6	0.90
M16x2.0	5.5	1.00
M20x2.5	7.2	1.20

Applicable Standards: ASME B18.3.5M and ASTM F835M.
Hardness: RC 38-44.
Tensile Strength full size: 980 MPa. Specimen: 1220 MPa.
Full size screw tensile strength is lower due to head configuration.

Metric Flat Socket Head Cap Screws – Property Class 12.9 (continued)



Body and Grip Lengths

Nominal Size	M3		M4		M5		M6		M8		M10		M12	
Nominal Length	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH	LGH	LBH
35	17.0	14.5	15.0	11.5										
40	22.0	19.5	20.0	16.5	18	14								
45	27.0	24.5	25.0	21.5	23	19	21	16						
50	32.0	29.5	30.0	26.5	28	24	26	21	22	15.7				
55	37.0	34.5	35.0	31.5	33	29	31	26	27	20.7				
60	--	--	40.0	36.5	38	34	36	31	32	25.7	28	20.5		
65	--	--	45.0	41.5	43	39	41	36	37	30.7	33	25.5	29	20.2
70	--	--	50.0	46.5	48	44	46	41	42	35.7	38	30.5	34	25.2
80	--	--	60.0	56.5	58	54	56	51	52	45.7	48	40.5	44	35.2
90	--	--	--	--	68	64	66	61	62	55.7	58	50.5	54	45.2
100	--	--	--	--	78	74	76	71	72	65.7	68	60.5	64	55.2
110	--	--	--	--	--	--	86	81	82	75.7	78	70.5	74	65.2
120	--	--	--	--	--	--	96	91	92	85.7	88	80.5	84	75.2
130	--	--	--	--	--	--	--	--	102	95.7	98	90.5	94	85.2
140	--	--	--	--	--	--	--	--	112	105.7	108	100.5	104	95.2
150	--	--	--	--	--	--	--	--	122	115.7	118	110.5	114	105.2

Nominal Size	M16		M20	
Nominal Length	LGH	LBH	LGH	LBH
35				
40				
45				
50				
55				
60				
65				
70				
80	36	26.		
90	46	36		
100	56	46		
110	66	56	58	45.5
120	76	66	68	55.5
130	86	76	78	65.5
140	96	86	88	75.5
150	106	96	98	85.5

Metric Flat Socket Head Cap Screws- Property Class 12.9 (continued)
Thread Lengths for Sizes Beyond Listed in Above Table

Nominal Size	LT Thread Length Min	LTT Total Thread Length Max
M3	18.0	20.5
M4	20.0	23.5
M5	22.0	26.0
M6	24.0	29.0
M8	28.0	34.3
M10	32.0	39.5
M12	36.0	44.8
M16	44.0	54.0
M20	52.0	64.5

Mechanical Properties and Tightening Torques

Nominal Size	Tensile Strength kN	Shear Strength kN Thread Section	Max. Tightening Torque Nm
M3x0.5	4.93	3.81	1.85
M4x0.7	8.60	6.65	3.4
M5x0.8	13.9	10.7	6.9
M6x1.0	19.7	15.2	12
M8x1.25	35.9	27.7	28
M10x1.50	56.8	43.9	56
M12x1.75	82.6	63.9	99
M16x2.0	155	119	246
M20x2.5	240	185	400

