

Applicable Specifications:
 BS4168
 DIN 912
 ISO 4762
 BS6104 Grade 12.9
 ISO 898/1 Grade 12.9

Dimensions and Tightening Torques - ISO Metric Threads

Maximum Tightening Torques

Thread Size (B Max)	Pitch	A Max.	da Max.	H Max.	W	See Note2 L	Length of Thread T (ref)	Unplated		Plated		Induced Load	
								Nm	lbf.in.	Nm	lbf.in.	kN	lbf.
M3	0.50	5.50	3.60	3.00	2.5	20	18	2.1	18.6	1.6	14.2	3.99	890
M4	0.70	7.00	4.70	4.00	3.0	25	20	4.6	40.7	3.5	31.0	6.75	1510
M5	0.80	8.50	5.70	5.00	4.0	25	22	9.5	84.1	7.1	62.8	11.10	2480
M6	1.00	10.00	6.80	6.00	5.0	30	24	16.0	142.0	12.0	106.0	15.60	3480
M8	1.25	13.00	9.20	8.00	6.0	35	28	39.0	345.0	29.0	257.0	28.70	6400
M10	1.50	16.00	11.20	10.00	8.0	40	32	77.0	682.0	58.0	513.0	45.70	10200
M12	1.75	18.00	13.70	12.00	10.0	50	36	135.0	1200.0	101.0	894.0	66.70	14900
(M14)	2.00	21.00	15.70	14.00	12.0	55	40	215.0	1900.0	161.0	1420.0	91.30	20400
M16	2.00	24.00	17.70	16.00	14.0	60	44	330.0	2920.0	248.0	2190.0	126.00	28100
(M18)	2.50	27.00	20.20	18.00	14.0	65	48	455.0	4030.0	341.0	3020.0	153.00	34100
M20	2.50	30.00	22.40	20.00	17.0	70	52	650.0	5750.0	488.0	4320.0	197.00	44000
(M22)	2.50	33.00	24.40	22.00	17.0	70	56	870.0	7700.0	652.0	5770.0	245.00	54700
M24	3.00	36.00	26.40	24.00	19.0	80	60	1100.0	9740.0	825.0	7300.0	284.00	63400
M27	3.00	40.00	30.40	27.00	19.0	90	66	1650.0	14600.0	1238.0	11000.0	374.00	83400
M30	3.50	45.00	33.40	30.00	22.0	100	72	2250.0	19900.0	1688.0	15000.0	454.00	101000
M33	3.50	50.00	36.40	33.00	24.0	100	78	3050.0	27000.0	2287.0	20200.0	550.00	123000
M36	4.00	54.00	39.40	36.00	27.0	110	84	3850.0	34100.0	2888.0	25000.0	664.00	148000
M42	4.50	63.00	45.60	42.00	32.0	130	96	6270.0	55500.0	4700.0	41600.0	889.00	198000

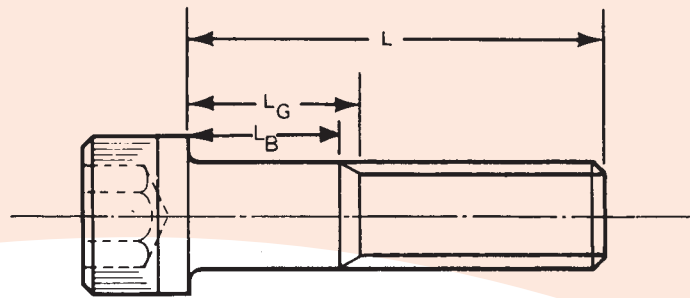
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 SIZES IN BRACKETS ARE NON-PREFERRED STANDARDS

MECHANICAL PROPERTIES

Material	Unbrako High Grade Alloy Steel	
Heat Treatment	Rc 38-43	
Screw Size	≤M16	>M16
Tensile Strength	1300 N/mm ²	1250 N/mm ²
Yield Strength	1170 N/mm ²	1124 N/mm ²
Shear Strength	780 N/mm ²	750 N/mm ²
Min. Elongation	9%	9%

NOTES:

1. Screws with lengths equal to or shorter than listed in column 'L' will be threaded to head.
2. **Thread Class** — 4g 6g
3. **da** — Transition diameter.
4. **Working Temperature** — -50°C. +300°C.
5. Torques calculated in accordance with VDI 2230 "Systematic calculation of high duty bolted joints" with $\sigma_{0.2} = 1080 \text{ N/mm}^2$ and $\mu = 0.125$ for plain finish and $\mu = 0.094$ for plated.



Body and Grip Lengths - ISO Metric Threads

Thread Size	Body and Grip Lengths	Length 'L'											
		20	25	30	35	40	45	50	55	60	65	70	80
M3	LB. Min.	To Head	4.5	9.5									
	LG. Max.		7.0	12.0									
M4	LB. Min.	→	To Head	6.5	11.5	16.50							
	LG. Max.			10.0	15.0	20.00							
M5	LB. Min.	→	To Head	4.0	9.0	14.00	19.00	24.00					
	LG. Max.			8.0	13.0	18.00	23.00	28.00					
M6	LB. Min.	→	To Head	6.0	11.0	16.00	21.00	26.00	31.00				
	LG. Max.			11.0	16.00	21.00	26.00	31.00	36.00				
M8	LB. Min.	→	To Head	5.75	10.75	15.75	20.75	25.75	30.75	35.75	45.75		
	LG. Max.			12.00	17.00	22.00	27.00	32.00	37.00	42.00	52.00		
M10	LB. Min.	→	To Head	5.50	10.50	15.50	20.50	25.50	30.50	40.50			
	LG. Max.			13.00	18.00	23.00	28.00	33.00	38.00	48.00			
M12	LB. Min.	→	To Head	10.25	15.25	20.25	25.25	35.25					
	LG. Max.			19.00	24.00	29.00	34.00	44.00					
(M14)	LB. Min.	→	To Head	10.00	15.00	20.00	30.00						
	LG. Max.			20.00	25.00	30.00	40.00						
M16	LB. Min.	→	To Head	11.00	16.00	26.00							
	LG. Max.			26.00	36.00								
(M18)	LB. Min.	→	To Head	9.50	19.50								
	LG. Max.			22.00	32.00								
M20	LB. Min.	→	To Head	15.50									
	LG. Max.			28.00									
(M22)	LB. Min.	→	To Head	11.50									
	LG. Max.			24.00									
M24	LB. Min.	→	To Head										
	LG. Max.												
M27	LB. Min.	→											
	LG. Max.												
M30	LB. Min.	→											
	LG. Max.												
M33	LB. Min.	→											
	LG. Max.												
M36	LB. Min.	→											
	LG. Max.												
M42	LB. Min.	→											
	LG. Max.												

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