



Controlled angle under the head ensures maximum flushness and side wall contact. Non-slip Hex socket prevents marring of material.

Equivalent Standards

ISO 10642, ASME B18.3.5M, DIN 7991, BS 4168-8

Mechanical Properties

Material: Unbrako High Grade Alloy Steel
 Property Class: 012.9
 Heat Treatment: Rc 39-44
 Shear Strength: 630 N/mm²
 Min. Elongation: 9%
 Tensile Strength: 1040 Mpa
 Shear Strength: 630 Mpa
 Yield Strength: 945 Mpa

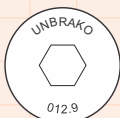
Notes

1. Thread Class: ANSI B1.13M, ISO262
2. Working Temperature: -50°C to +300°C
3. For sizes up to and including M20 Head Angle shall be 92°/90°, over M20 Head Angle be 62°/60°.
4. Torque calculated in accordance with VDI2230 - "Systematic calculation of high duty bolted joints" with $\sigma 0.2 = 720\text{N/mm}^2$ and $\mu = .125$ for plain finish and $\mu = 0.094$ for plated.

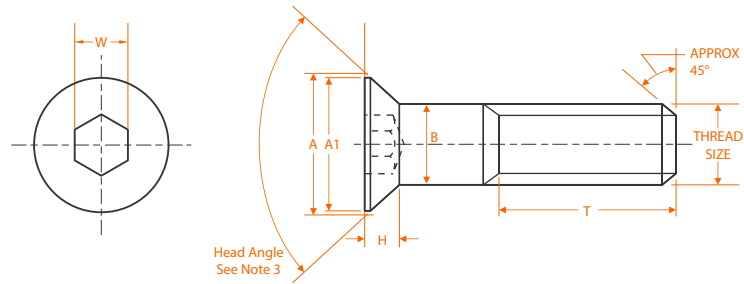
Length 'L' Tolerance (mm)

Screws Over	Up to and including	Tolerance
-	50	±0.25
50	80	±0.50
80	120	±0.70
120	250	±0.80
250	-	±1.02

Head Marking



Head markings may vary slightly depending on manufacturing practice. UNBRAKO and UNB are recognized identifications for M5 diameter & larger.



Product Dimensions

Thread size nom.	Pitch	Theoretical Diameter A max	Head Diameter A1 min	Body Dia B max	Hex Socket Size W nom.	Head Height H ref.	Thread Length T ref.
M3	0.50	6.72	5.82	2.98	2.0	1.86	18
M4	0.70	8.96	7.80	3.98	2.5	2.48	20
M5	0.80	11.2	9.78	4.98	3.0	3.10	22
M6	1.00	13.44	11.73	5.97	4.0	3.72	24
M8	1.25	17.92	15.73	7.97	5.0	4.96	28
M10	1.50	22.40	19.67	9.97	6.0	6.20	32
M12	1.75	26.88	23.67	11.97	8.0	7.44	36
(M14)	2.00	30.24	26.67	13.96	10.0	8.12	40
M16	2.00	33.60	29.67	15.96	10.0	8.80	44
(M18)	2.50	36.96	32.61	17.96	12.0	9.48	48
M20	2.50	40.32	35.61	19.96	12.0	10.11	52
(M22)	2.50	37.38	35.61	21.96	14.0	13.32	56
M24	3.00	40.42	38.61	23.96	14.0	14.22	60

Recommended Seating Torques				Tensile Load
Unplated		Plated		
N-m	lbf.in.	N-m	lbf.in.	kN
1.4	12	1.1	9	5.28
3.4	30	2.6	22	9.22
6.8	60	5.1	45	14.90
11.0	97	8.3	73	21.10
28.0	248	21.0	186	38.40
55.0	486	41.0	365	60.90
95.0	840	71.0	630	88.50
150.0	1,330	112.0	990	121.00
237.0	2,100	177.0	1,570	165.00
340.0	3,000	255.0	2,250	202.00
480.0	4,250	360.0	3,190	257.00
637.0	5,640	477.0	4,220	318.00
746.0	6,600	585.0	5,180	371.00

General Note: Flat, countersunk head cap screws and button head cap screws are designed and recommended for moderate fastening applications: machine guards, hinges, covers, etc. They are not suggested for use in critical high load strength applications where socket head cap screws should be used. Also due to their head configuration they may not meet the minimum ultimate tensile requirements for property class 12.9 as specified in EN ISO 898-1. They are nevertheless required to meet the other material and property requirements for property class 12.9.