

Socket Set Screws Knurled, Plain, Flat and Cone Point

Metric



Fasten collars, sheaves, gears, knobs on shafts. Locate machine parts. Self-locking knurled cup point is standard. Special Points like Flat, Dog, Cone & Plain Cup are also available.

Mechanical Properties

Unbrako High Grade Alloy Steel
Hardness: Rc 45 Minimum

Notes

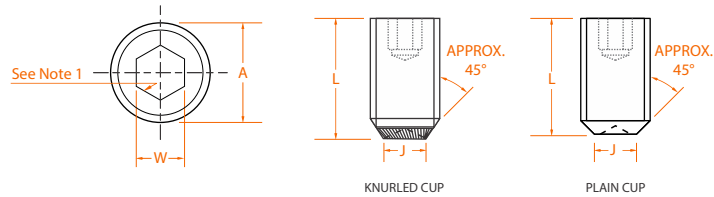
1. Corner of recess must have fillets to minimise stress concentrations.
2. Thread Class: 6g
3. Working Temperature: -50°C to +300°C
4. Angle: The cup angle is 135 max for screw lengths equal to or smaller than screw diameter. For longer lengths, the cup angle will be 124 max.
5. Torques calculated at 75% of the torsional shear strength of the respective Unbrako wrenches.

Maximum Tightening Torque

Thread size	Nm	lbf.in.
M3	0.87	7.7
M4	2.20	19.5
M5	4.60	41.0
M6	7.80	69.0
M8	18.00	160.0
M10	36.00	320.0
M12	62.00	550.0
(M14)	62.00	550.0
M16	150.00	1330.0
(M18)	290.00	2570.0
M20	290.00	2570.0
(M22)	475.00	4200.0
M24	475.00	4200.0

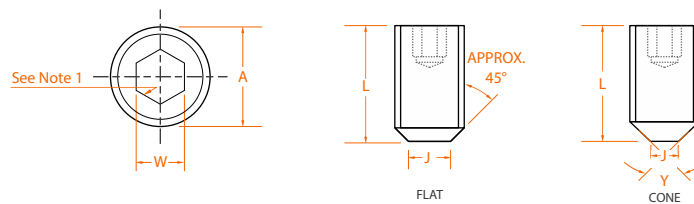
Length Tolerance

Screws Over	Up to and including	Tolerance
-	Screw Dia	+0.25 - 0.00
Screw Dia	50	±0.25
50	80	±0.50
80	120	±0.70
120	250	±0.80



Product Dimensions

Thread size A nom.	Pitch	Hex Socket Size W nom.	Knurled Cup Point		Plain Cup Point	
			J max	L - min preferred	J max	L - min preferred
M2.5	0.45	1.27	-	-	1.2	3.0
M3	0.50	1.5	1.30	3.0	1.4	3.0
M4	0.70	2.0	2.10	3.0	2.0	3.0
M5	0.80	2.5	2.40	4.0	2.5	4.0
M6	1.00	3.0	3.30	5.0	3.0	4.0
M8	1.25	4.0	4.30	6.0	5.0	5.0
M10	1.50	5.0	5.25	8.0	6.0	6.0
M12	1.75	6.0	6.60	10.0	8.0	8.0
(M14)	2.00	6.0	8.10	12.0	9.0	10.0
M16	2.00	8.0	9.10	14.0	10.0	12.0
(M18)	2.50	10.0	10.30	16.0	12.0	14.0
M20	2.50	10.0	11.50	18.0	14.0	16.0
(M22)	2.50	12.0	12.65	20.0	16.0	18.0
M24	3.00	12.0	14.65	20.0	16.0	20.0



Thread size A nom.	Pitch	Hex Socket Size W nom.	Flat Point		Cone Point		$y^{\circ} \pm 2^{\circ}$ 90° for these Lengths & Over; and 120° Under
			J max.	L - min Preferred	J max.	L - min Preferred	
M3	0.50	1.5	2.0	3.0	Sharp	4.0	4.0
M4	0.70	2.0	2.5	3.0	Sharp	4.0	5.0
M5	0.80	2.5	3.5	4.0	Sharp	5.0	6.0
M6	1.00	3.0	4.0	4.0	1.5	6.0	8.0
M8	1.25	4.0	5.5	5.0	2.0	6.0	10.0
M10	1.50	5.0	7.0	6.0	2.5	8.0	12.0
M12	1.75	6.0	8.5	8.0	3.0	10.0	14.0
(M14)	2.00	6.0	10.0	10.0	4.0	12.0	14.0
M16	2.00	8.0	12.0	12.0	4.0	14.0	18.0
(M18)	2.50	10.0	13.0	12.0	5.0	16.0	20.0
M20	2.50	10.0	15.0	14.0	5.0	18.0	22.0
(M22)	2.50	12.0	17.0	16.0	6.0	20.0	28.0
M24	3.00	12.0	18.0	20.0	6.0	20.0	28.0

All Dimensions In Millimetres.
Sizes In Brackets Are Non-preferred Standards.

Socket Set Screws Full and Half Dog Point

Metric



Fasten collars, sheaves, gears, knobs on shafts. Locate machine parts. Self-locking knurled cup point is standard. Special Points like Flat, Dog, Cone & Plain Cup are also available.

Equivalent Standards

	BS 4168, ASME B18.3.6M
Flat Point	DIN 913, ISO 4026
Cone Point	DIN 914, ISO 4027
Dog Point	DIN 915, ISO 4028
Plain Cup	DIN 916, ISO 4028 ISO 898-5

Mechanical Properties

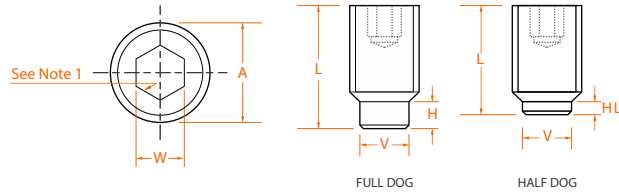
Unbrako High Grade Alloy Steel
Hardness: Rc 45 Minimum

Notes

1. Corner of recess must have fillets to minimise stress concentrations.
2. Thread Class: 6g
3. Working Temperature: -50°C to +300°C
4. Screws with lengths L or smaller will have half dog point H. Screws with lengths larger than L will have full dog point HL.
5. Torques calculated at 75% of the torsional shear strength of the respective Unbrako wrenches.

Length Tolerance

Screws Over	Up to and including	Tolerance
-	Screw Dia	+0.25 - 0.00
Screw Dia	50	±0.25
50	80	±0.50
80	120	±0.70
120	250	±0.80



Product Dimensions

Thread size A nom.	Pitch	Hex Socket Size W nom.	Dog Point			
			L (See Note 4)	H-Full Dog max	HL-Half Dog max	V max
M3	0.50	1.5	5.00	1.75	1.00	2.00
M4	0.70	2.0	6.00	2.25	1.25	2.50
M5	0.80	2.5	6.00	2.75	1.50	3.50
M6	1.00	3.0	8.00	3.25	1.75	4.00
M8	1.25	4.0	10.00	4.30	2.25	5.50
M10	1.50	5.0	12.00	5.30	2.75	7.00
M12	1.75	6.0	16.00	6.30	3.25	8.50
(M14)	2.00	6.0	20.00	7.36	3.80	10.00
M16	2.00	8.0	20.00	8.36	4.30	12.00
(M18)	2.50	10.0	25.00	9.36	4.80	13.00
M20	2.50	10.0	25.00	10.36	5.30	15.00
(M22)	2.50	12.0	30.00	11.43	5.80	17.00
M24	3.00	12.0	30.00	12.43	6.30	18.00

Application Data

Thread size	Maximum Tightening Torque	
	Nm	lbf.in.
M3	0.87	7.7
M4	2.20	19.5
M5	4.60	41.0
M6	7.80	69.0
M8	18.00	160.0
M10	36.00	320.0
M12	62.00	550.0
(M14)	62.00	550.0
M16	150.00	1,330.0
(M18)	290.00	2,570.0
M20	290.00	2,570.0
(M22)	475.00	4,200.0
M24	475.00	4,200.0

Sizes in brackets are non-preferred standards.

Torsional and axial holding power

Tabulated axial and torsional holding powers are typical strengths and should be used accordingly, with specific safety factors appropriate to the given application and load conditions.

Thread Size	Seating Torque Nm	Axial Holding Power (kN)	Shaft diameter (shaft hardness Rc 15 to Rc 35) Torsional holding power Nm													
			1.4	1.6	1.8	2.0	3.0	4.0	5.0	6.0	8.0	10	12	14		
M1.4	.10	.19	.13	.15	.17	.19	.29	.38	.48							
M1.6	.10	.22	.15	.18	.20	.22	.33	.44	.55	.66						
M1.8	.10	.25	.18	.20	.23	.25	.38	.50	.63	.75	1.0					
M2.0	.21	.29	.20	.23	.26	.29	.44	.58	.73	.87	1.2	1.5				
M2.5	.60	.53		.42	.48	.53	.80	1.10	1.30	1.60	2.1	2.7	3.2			
M2.6	.60	.56			.50	.56	.84	1.10	1.40	1.70	2.2	2.8	3.4	3.9		
M3	.87	.71				.71	1.07	1.40	1.80	2.10	2.8	3.6	4.3	5.0		
M4	2.20	1.70				1.70	2.60	3.40	4.30	5.10	6.8	8.5	10.0	12.0		
M5	4.60	2.50					3.80	5.00	6.30	7.50	10.0	13.0	15.0	18.0		
M6	7.80	4.20							11.00	13.00	17.0	21.0	25.0	29.0		
M8	18.00	6.70								20.00	27.0	34.0	40.0	47.0		
M10	36.00	9.30									37.0	47.0	56.0	65.0		
M12	62.00	12.00										60.0	72.0	84.0		
M14	62.00	15.00											90.0	105.0		
M16	150.00	18.00												126.0		

Thread Size	Seating Torque Nm	Axial Holding Power (kN)	Shaft diameter (shaft hardness Rc 15 to Rc 35) Torsional holding power Nm													
			16	18	20	25	30	40	50	60	70	80	90	100		
M2.6	.60	.56	4.5													
M3	.87	.71	5.7	6.4	7.1											
M4	2.20	1.70	14.0	15.0	17.0	21										
M5	4.60	2.50	20.0	23.0	25.0	31	38									
M6	7.80	4.20	34.0	38.0	42.0	53	63	84								
M8	18.00	6.70	54.0	60.0	67.0	84	101	134	168	201						
M10	36.00	9.30	74.0	84.0	93.0	116	140	186	233	279						
M12	62.00	12.00	96.0	108.0	120.0	150	180	240	300	360	420					
M14	62.00	15.00	120.0	135.0	150.0	188	225	300	375	450	525	600				
M16	150.00	18.00	144.0	162.0	180.0	225	270	360	450	540	630	720	810			
M18	290.00	21.00	168.0	189.0	210.0	263	315	420	525	630	735	840	945	1050		
M20	290.00	23.00		207.0	230.0	288	345	460	575	690	805	920	1040	1150		
M22	475.00	26.00			260.0	325	390	520	650	780	910	1040	1170	1300		
M24	475.00	29.00				363	435	580	725	870	1020	1160	1310	1450		