



## METRIC - SOCKET HEAD CAP SCREWS, CLASS 12.9

ISO 4762

Basic Screw Diameter	Thread Pitch	D		H		K		C	F	S		E	T	W
		Body Diameter		Head Diameter		Head Height		Top Chamfer or Radius	Fillet Transition Diameter	Socket Size Across the Flats		Socket Size Across the Corners	Key Engagement	Wall Thickness
		Max	Min	Max	Min	Max	Min	Max	Max	Max	Min	Min	Min	Min
M1.6	0.35	1.60	1.46	3.14	2.86	1.60	1.46	0.16	2	1.545	1.520	1.73	0.7	0.55
M2	0.4	2.00	1.86	3.98	3.62	2.00	1.86	0.2	2.6	1.545	1.520	1.73	1	0.55
M2.5	0.45	2.50	2.36	4.68	4.32	2.50	2.36	0.25	3.1	2.045	2.020	2.3	1.1	0.85
M3	0.5	3.00	2.86	5.68	5.32	3.00	2.86	0.3	3.6	2.56	2.52	2.87	1.3	1.15
M4	0.7	4.00	3.82	7.22	6.78	4.00	3.82	0.4	4.7	3.071	3.020	3.44	2	1.4
M5	0.8	5.00	4.82	8.72	8.28	5.00	4.82	0.5	5.7	4.084	4.020	4.58	2.5	1.9
M6	1	6.00	5.82	10.22	9.78	6.00	5.7	0.6	6.8	5.084	5.020	5.72	3	2.3
M8	1.25	8.00	7.78	13.27	12.73	8.00	7.64	0.8	9.2	6.095	6.020	6.86	4	3.3
M10	1.5	10.00	9.78	16.27	15.73	10.00	9.64	1	11.2	8.115	8.025	9.15	5	4
M12	1.75	12.00	11.73	18.27	17.73	12.00	11.57	1.2	13.7	10.115	10.025	11.43	6	4.8
M16	2	16.00	15.73	24.33	23.67	16.00	15.57	1.6	17.7	14.142	14.032	16	8	6.8
M20	2.5	20.00	19.67	30.33	29.67	20.00	19.48	2	22.4	17.23	17.05	19.44	10	8.6
M24	3	24.00	23.67	36.39	35.61	24.00	23.48	2.4	26.4	19.275	19.065	21.73	12	10.4
M30	3.5	30.00	29.67	45.39	44.61	30.00	29.48	3	33.4	22.275	22.065	25.15	15.5	13.1
M36	4	36.00	35.61	54.46	53.54	36.00	35.38	3.6	39.4	27.275	27.065	30.85	19	15.3
M42	4.5	42.00	41.61	63.46	62.54	42.00	41.38	4.2	45.6	32.33	32.08	36.57	24	16.3
M48	5	48.00	47.61	72.46	71.54	48.00	47.38	4.8	52.6	36.33	36.08	41.13	28	17.5
M56	5.5	56.00	55.54	84.54	83.46	56.00	55.26	5.6	63	41.33	41.08	46.83	34	19
M64	6	64.00	63.54	96.54	95.46	64.00	63.26	6.4	71	46.33	46.08	52.53	38	22

Tolerance on Length	2.5-3mm: ±0.2		4-6mm: ±0.24		8-10mm: ±0.29		12-16mm: ±0.35		20-30mm: ±0.42		
	35-50mm: ±0.5		55-80mm: ±0.6		90-120mm: ±0.7		130-180mm: ±0.8		200-240mm: ±0.925		260-300mm: ±1.05

Description	An externally threaded fastener with metric threads, a cylindrical head with a flat chamfered top surface, knurled cylindrical sides and hexagonal recess, made from alloy steel.
Applications/Advantages	Class 12.9 socket cap screws are comparable, but not exactly equivalent to U.S. alloy steel socket cap screws. Ideal for precision assembly work with close tolerances and applications needing a well-tooled appearance. Supplies greater tensile strength than equivalent sizes of Class 8.8 or 10.9 hex head cap screws while requiring less surface area or conterbore since the fastener is internally wrenched.
Material	Class 12.9 socket cap screws shall be made from an alloy steel which conforms to the following chemical composition requirements-- Carbon: 0.20-0.50%; Phosphorous: 0.035% maximum; Sulfur: 0.035% maximum; and one or more of chromium, nickel, molybdenum or vanadium.
Heat Treatment	Class 12.9 socket cap screws shall be heat treated by quenching in oil from above the transformation temperature and reheating to a tempering temperature of 380°C minimum.
Hardness	Rockwell C 39 - 44 (Vickers HV 385 - 435)
Tensile Strength	1220 N/mm <sup>2</sup> minimum
Proof Load	1100 N/mm <sup>2</sup> minimum
Elongation	8% minimum
Plating	Metric Class 12.9 socket cap screws are usually supplied with a plain, black finish.