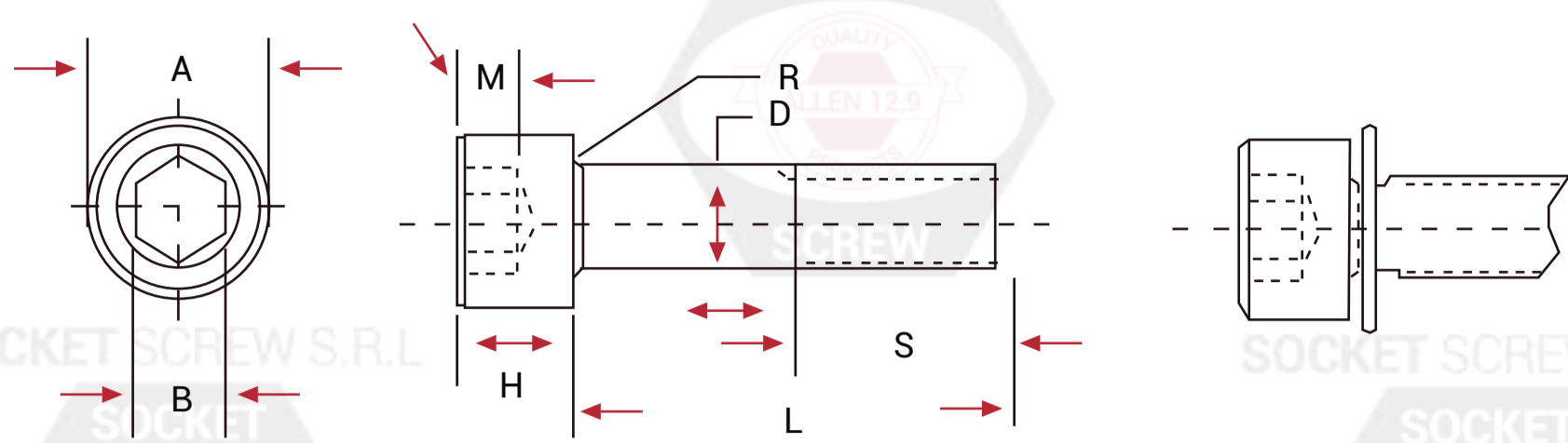


ALLEN CABEZA CILINDRICA CALIDAD 12.9 MÉTRICO



Dimensiones (mm)

Nom. Size	A	H	D	B	M min.	S min.	R min.	RS Torque (NM)	12.9	10.9
M 1.6	2.86 - 3.14	1.46 - 1.60	1.46 - 1.60	1.520 - 1580	0.70	15	0.10	0.30	0.25	
M2	3.62 - 3.98	1.85 - 2.00	1.86 - 2.00	1.520 - 1.580	1.00	16	0.10	0.63	0.50	
M2.5	4.32 - 4.68	2.36 - 2.50	2.36 - 2.50	2.020 - 2.080	1.10	17	0.10	1.27	1.03	
M3	5.32 - 5.68	2.86 - 3.00	2.86 - 3.00	2.520 - 2.580	1.30	18	0.10	2.20	1.8	
M4	6.78 - 7.22	3.82 - 4.00	3.82 - 4.00	3.020 - 3.080	2.00	20	0.20	4.83	4.27	
M5	8.28 - 8.72	4.82 - 5.00	4.82 - 5.99	4.020 - 4.095	2.50	22	0.20	10.0	8.64	
M6	9.78 - 10.22	5.70 - 6.00	5.82 - 6.00	5.020 - 5.140	3.00	24	0.25	16.8	14.7	
M8	12.73 - 13.27	7.64 - 8.00	7.78 - 8.00	6.020 - 6.140	4.00	28	0.40	41.0	35.6	
M10	15.73 - 16.27	9.64 - 10.00	9.78 - 10.00	8.025 - 8.175	5.00	32	0.40	81.0	70.6	
M12	17.73 - 18.27	11.57 - 12.00	11.73 - 12.00	10.025 - 10.175	6.00	36	0.60	142	123	
M14	20.67 - 21.33	13.57 - 14.00	13.73 - 14.00	12.032 - 12.212	7.00	40	0.60	226	195	
M16	23.67 - 24.33	15.57 - 16.00	15.73 - 16.00	14.032 - 14.212	8.00	44	0.60	350	305	
M18	26.67 - 27.33	17.57 - 18.00	17.73 - 18.00	14.032 - 14.212	9.00	48	0.60	485	420	
M20	29.67 - 30.33	19.48 - 20.00	19.67 - 20.00	17.050 - 17.230	10.00	52	0.80	685	596	
M22	32.61 - 33.39	21.48 - 22.00	21.67 - 22.00	17.050 - 17.230	11.00	56	0.80	930	811	
M24	35.61 - 36.39	23.48 - 24.00	23.67 - 24.00	19.065 - 19.275	12.00	60	0.80	1180	1031	
M27	39.61 - 40.39	25.48 - 27.00	26.67 - 27.00	19.055 - 19.275	13.50	66	1.00	1730	1508	
M30	44.61 - 45.39	29.48 - 30.00	29.48 - 30.00	22.065 - 22.275	15.50	72	1.00	2380	2048	
M33	49.61 - 50.39	32.38 - 33.00	32.38 - 33.00	24.055 - 24.275	18.00	78	1.00	3262	2787	
M36	53.54 - 54.46	35.38 - 35.00	35.38 - 36.00	27.055 - 27.275	19.00	84	1.00	4190	3580	
M39	57.54 - 58.46	38.38 - 39.00	38.38 - 39.00	27.065 - 27.275	21.00	90	1.00	5420	4633	

Table 2 Length Tolerance

Nom. Length	Tolerance	Nom. Length	Tolerance
L ≤ 3	± 0.20	80 < L ≤ 120	± 0.20
3 < L ≤ 6	± 0.24	120 < L ≤ 180	± 0.24
6 < L ≤ 10	± 0.29	180 < L < 250	± 0.90
10 < L ≤ 18	± 0.35	250 < L ≤ 315	± 1.05
18 < L ≤ 30	± 0.42	315 < L ≤ 400	± 1.15
30 < L ≤ 50	± 0.50	L > 400	± 1.25
50 < L ≤ 80	± 0.60		

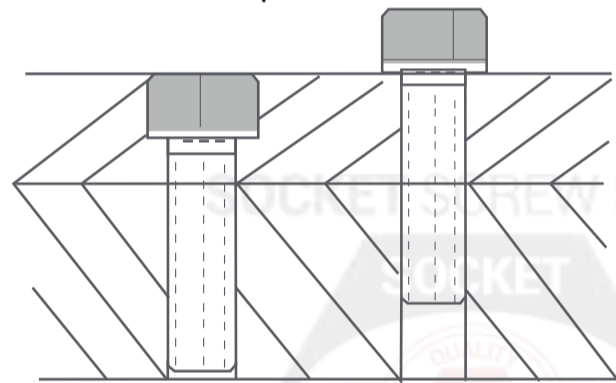
Mechanical Properties	
Property Class	12.9
Hardness (HRC)	39.44
Tensile Strength (Mpa)	1220 min
Yield Strength at 0.2% Offset (Mpa)	1100 min
Elongation	8 min
Descarburization and Carburization	E=3/4H1

Table 1 Head Diameter. A for Plain Heads

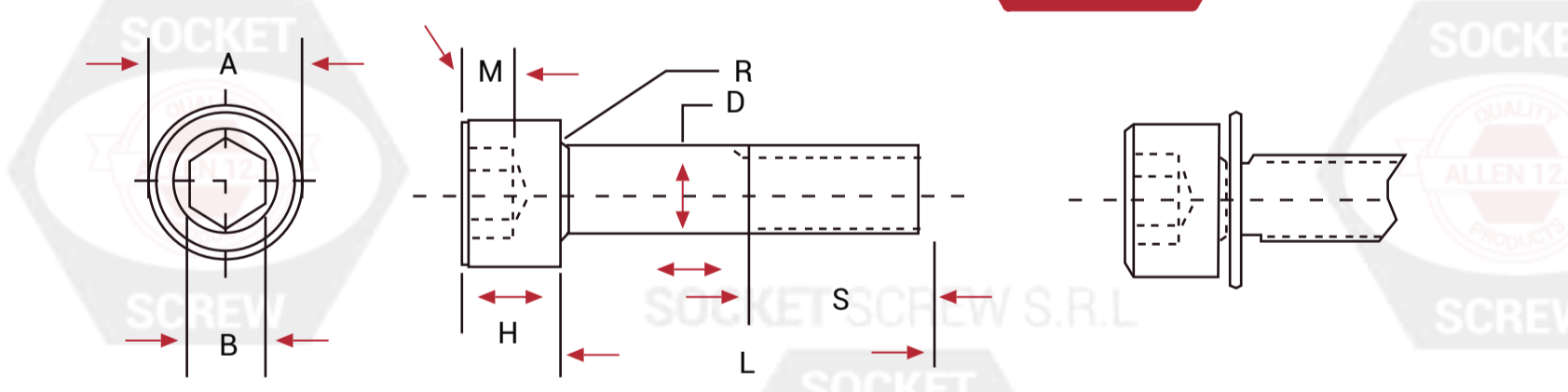
Nom. Size	Tolerance	Nom. Size	Tolerance	Nom. Size	Tolerance
M 1.6	2.85 - 3.00	M8	12.73 - 13.00	M22	32.61 - 33.00
M2	3.62 - 3.80	M10	15.73 - 16.00	M24	35.61 - 36.00
M2.5	4.32 - 4.50	M12	17.73 - 18.00	M27	39.61 - 40.00
M3	5.32 - 5.50	M14	20.67 - 21.00	M30	44.61 - 45.00
M4	6.78 - 7.00	M16	23.67 - 24.00	M33	49.61 - 50.00
M5	8.28 - 8.50	M18	26.67 - 27.00	M36	53.54 - 54.00
M6	9.78 - 10.00	M20	29.67 - 30.00	M39	57.54 - 58.00

Typical Application Fixture

Socket Head cap screw are designed to be used with the head protruding or counter bored. They should be used where high strength and ease of installation are required.



ALLEN CABEZA CILINDRICA CALIDAD 12.9 PULGADA



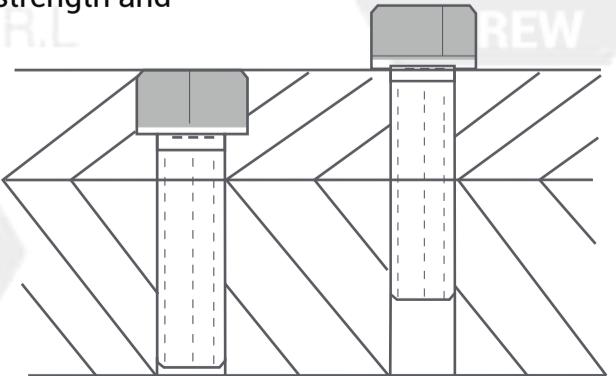
Dimensiones (inch)

Nom. Size	A	H	D	B	M min.	R min.	RS Torque (in lb)
#0	0.091 - 0.096	0.057 - 0.060	0.568 - 0.0600	0.050	0.025	0.50	2.26
#1	0.112 - 0.118	0.170 - 0.073	0.1695 - 0.0730	1/6 0.062	0.031	0.62	4.01
#2	0.134 - 0.140	0.083 - 0.066	0.0822 - 0.0860	5/64 0.078	0.038	0.62	6.65
#3	0.154 - 0.161	0.095 - 0.099	0.0949 - 0.0990	5/64 0.078	0.044	0.62	10.1
#4	0.176 - 0.163	0.108 - 0.112	0.1075 - 0.1120	3/32 0.094	0.051	0.75	14.1
#5	0.198 - 0.206	0.121 - 0.125	0.1202 - 0.1250	3/32 0.094	0.057	0.75	20.8
#6	0.218 - 0.226	0.134 - 0.138	0.1329 - 0.1380	7/64 0.109	0.064	0.75	26.2
#8	0.262 - 0.270	0.159 - 0.164	0.1585 - 0.1640	9/64 0.141	0.277	0.88	48.0
#10	0.303 - 0.312	0.185 - 0.190	0.1840 - 0.1900	5/32 0.156	0.090	0.88	69.5
1/4	0.365 - 0.375	0.244 - 0.250	0.2435 - 0.2500	3/16 0.188	0.120	1.00	166
5/16	0.457 - 0.469	0.306 - 0.312	0.3053 - 0.3125	1/4 0.250	0.151	1.12	342
3/8	0.550 - 0.562	0.366 - 0.375	0.3678 - 0.3750	5/16 0.312	0.182	1.25	606
7/16	0.642 - 0.656	0.430 - 0.438	0.4294 - 0.4380	3/8 0.375	0.213	1.38	973
1/2	0.735 - 0.750	0.492 - 0.500	0.4919 - 0.5000	3/8 0.375	0.245	1.50	1484
5/8	0.921 - 0.938	0.616 - 0.625	0.6163 - 0.6250	1/2 0.500	0.307	1.75	2792
3/4	1.107 - 1.125	0.740 - 0.750	0.7406 - 0.7500	5/8 0.625	0.370	2.00	4952
7/8	1.293 - 1.312	0.864 - 0.875	0.8647 - 0.8750	3/4 0.750	0.432	2.25	7991
1"	1.479 - 1.500	0.988 - 1.000	0.9886 - 1.0000	3/4 0.750	0.495	2.50	11979
1-1/8	1.665 - 1.688	1.111 - 1.125	1.1066 - 1.2500	7/8 0.875	0.557	2.81	16968
1-1/4	1.852 - 1.875	1.236 - 1.250	1.2336 - 1.2500	7/8 0.875	0.620	3.12	23944
1-3/8	2.038 - 2.062	1.360 - 1.375	1.2568 - 1.3750	1"	1.000	0.682	31394
1-1/2	2.224 - 2.250	1.485 - 1.500	1.4818 - 1.5000	1"	1.000	0.745	41661

Mechanical Properties	
Nom Size D	D ≥ 1/2
Hardness (HRC)	37 - 45min
Tensile Strength (Mpa)	170.000 min
Yield Strength at 0.2% Offset (psl)	153.000
Elongation (%)	10 min
Descarburization and Carburization	E=3/4 H1

Typical Application Fixture

Socket Head cap screw are designed to be used with the head protruding or counter bored. They should be used where high strength and ease of installation are required.



Nom. Length	Nom. Size, Tolerance on Length			
	#0 Thru 3/8, incl	7/16 Thru 3/4, incl	7/8 Thru 1-1/2, incl	Over 1-1/2
Up to 1.000, incl	- 0.03	- 0.03	- 0.05	
Over 1.00 to 2.50, incl	- 0.04	- 0.04	- 0.10	- 0.18
OVER 2.50 TO 6.00, incl	- 0.06	- 0.06	- 0.14	- 0.20
Over 6.00	- 0.12	- 0.12	- 0.20	- 0.24