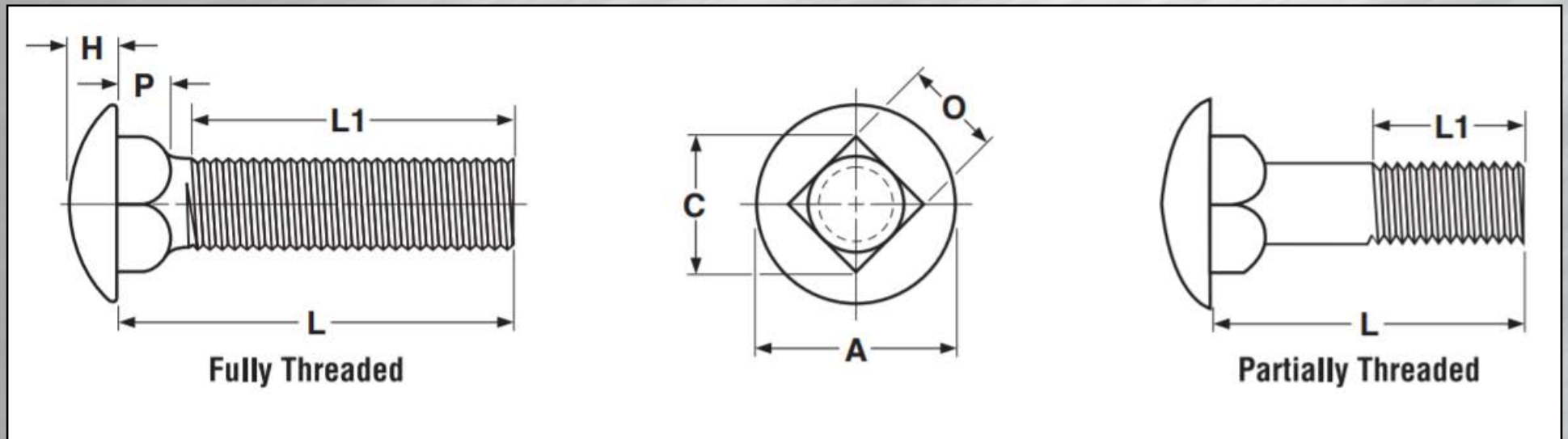




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## METRIC BOLTS - CARRIAGE BOLTS, SQUARE NECK DIN 603 FULLY THREADED





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Nominal Size	Thread Pitch	R		H		F		T		G
		Thread Length		Head Height		Width Across Flats		Body Diameter		Width Across Corners
		L ≤ 125 mm	L > 125 mm ≤ 200 mm	Max.	Min.	Max.	Min.	Max.	Min.	Min.
M4	0.70	14	-	2.92	2.68	7	6.78	4	3.82	7.74
M5	0.80	16	22	3.65	3.35	8	7.78	5	4.82	8.87
M6	1.00	18	24	4.15	3.85	10	9.78	6	5.82	11.05
M7	1.00	20	26	4.95	4.65	11	10.73	7	6.78	12.12
M8	1.25	22	28	5.45	5.15	13	12.73	8	7.78	14.38
M10	1.50	26	32	6.58	6.22	17	16.73	10	9.78	17.77
M12	1.75	30	36	7.68	7.32	19	18.67	12	11.73	20.03
M16	2.00	38	44	10.18	9.82	24	23.67	16	15.73	26.75
M18	2.50	42	48	11.72	11.28	27	26.67	18	16.73	30.14
M20	2.50	46	52	12.72	12.28	30	29.67	20	19.37	33.53
M24	3.00	54	60	15.22	14.78	36	35.38	24	23.67	39.98



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Tolerance on Length	12-16 mm: +/- 0.35	20-30mm: +/- 0.42	35-50mm: +/- 0.50	55-80mm: +/- 0.60
	90-120: +/- 0.70		130-180mm: +/- 0.80	

<b>Description</b>	A hex headed externally threaded fastener with washer face beneath the head, a metric thread pitch, made from medium carbon steel and heat treated. The threads on the shank extend all the way to directly beneath the head.	A hex headed, externally threaded fastener with washer face beneath the head, a metric thread pitch, made from high alloy steel and heat treated. The threads on the shank extend all of the way to directly beneath the head.
<b>Applications / Advantages</b>	Used to mount motors to machinery. Also popular in automotive and truck repair.	Used in automotive and fleet industries where greater tensile strength is required than can be achieved with a Class 8.8 fastener.
<b>Material</b>	<b>Class 8.8</b>	<b>Class 10.9</b>
	Class 8.8 bolts can be made from a carbon steel which conforms to the following chemical composition: <ul style="list-style-type: none"> <li>• Carbon: 0.25-0.55% • Phosphorus: 0.035% maximum • Sulfur: 0.035% maximum.</li> </ul>	Class 10.9 bolts can be made from an alloy steel which conforms to the following chemical composition: <ul style="list-style-type: none"> <li>• Carbon: 0.20-0.55% • Phosphorus: 0.035% maximum • Sulfur: 0.035% maximum</li> </ul> And shall contain one or more of the following elements: Chromium, Nickel, Molybdenum, or Vanadium
<b>Heat Treatment</b>	Class 8.8 bolts shall be heat treated by quenching in a liquid medium from above the transformation temperature and reheating to a tempering temperature of 425°C	Class 10.9 bolts shall be heat treated by quenching in oil from above the transformation temperature and reheating to a tempering temperature of 425°C
<b>Core Hardness</b>	<i>For diameters less than or equal to 16mm:</i> Rockwell C22 - 32 <i>For diameters greater than 16mm:</i> Rockwell C23 - 34	<i>All diameters:</i> Rockwell C32 - 39
<b>Yield Strength</b>	<i>For diameters less than or equal to 16mm:</i> 92,800 psi minimum <i>For diameters greater than 16mm:</i> 95,700 psi minimum	<i>All diameters:</i> 136,300 psi minimum
<b>Tensile Strength</b>	<i>For diameters less than or equal to 16mm:</i> 116,000 psi minimum <i>For diameters greater than 16mm:</i> 120,350 psi minimum	<i>All diameters:</i> 150,800 psi minimum