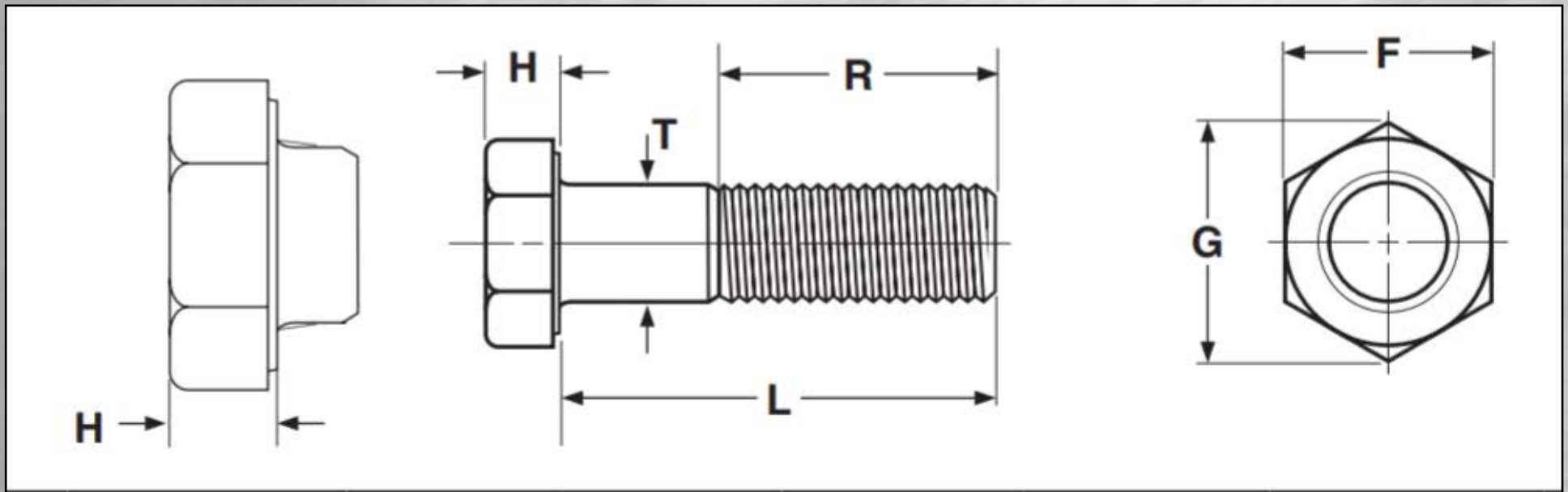




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METRIC BOLTS - ZINC HEX CAP CLASS 8.8 & 10.9 DIN 931





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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.
M6	1.00	18	24	4.15	3.85	10	9.78	6	5.82	11.05
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	10.15	9.82	24	23.67	16	15.73	26.75
M20	2.50	46	52	12.72	12.28	30	29.67	20	19.67	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	
Description	An externally threaded fastener with hexagonal head, washer-face beneath the head, a metric thread pitch, made from medium carbon steel and heat-treated. Threaded shank does not extend completely to the head.		An externally threaded fastener with hexagonal head, washer-face beneath the head, a metric thread pitch, made from high alloy steel and heat-treated. Threaded shank does not extend completely to the head.	
Applications / Advantages	Has greater tensile strength than Class 4.6, 4.8 and 5.8 bolts		Has greater tensile strength than Class 8.8 bolts; is most comparable but not exactly equivalent to US Grade 8 cap screws.	
Material	Class 8.8		Class 10.9	
	Class 8.8 bolts can be made from a carbon steel which conforms to the following chemical composition: Carbon 0.25-0.55% • Phosphorus 0.035% maximum • Sulfur 0.035% maximum		Class 10.9 bolts can be made from an alloy steel which conforms to the following chemical composition: • Carbon 0.20-0.55% • Phosphorus 0.035% maximum • Sulfur 0.035% maximum And shall contain one or more of the following elements: • Chromium • Nickel • Molybdenum • Vanadium	
Heat Treatment	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	
Core Hardness	<i>For diameters less than or equal to 16mm:</i> Rockwell C22-32 <i>For diameters greater than 16mm:</i> Rockwell C23-34		All diameters: Rockwell C32-39	
Yield Strength	<i>For diameters less than or equal to 16mm:</i> 92,000 psi minimum <i>For diameters greater than 16mm:</i> 120,350 psi minimum		All diameters: 136,300 psi minimum	
Tensile Strength	<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		All diameters: 150,800 psi minimum	