



## ASTM A490M TYPE-1 HEAVY HEX BOLT

STANDARDS		ASTM A490M 10S (American Society for Testing & Materials)													
Dimension Heavy Hex Structural Bolt B18.2.3.7M															
Nominal Dia		M16		M20		M22		M24		M27		M30		M36	
Coarse Pitch		2.00		2.50		2.50		3.00		3.00		3.50		4.00	
Thread Length ≤100 & ≥100 (Normal)	t	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		31	38	36	43	38	45	41	48	44	51	49	56	56	63
Body Diameter	b	15.30	16.70	19.16	20.84	21.16	22.84	23.16	24.84	26.16	24.84	29.16	30.84	35.00	37.00
Across Flat	s	26.16	27.00	33.00	34.00	35.00	36.00	40.00	41.00	45.00	46.00	49.00	50.00	58.80	60.00
Across Corner	e	29.56	31.18	37.29	39.26	39.55	41.57	45.20	47.34	50.85	53.12	55.37	57.74	66.44	69.28
Head Thickness	k <sup>1</sup>	9.25	10.75	11.60	13.40	13.10	14.90	14.10	15.90	16.10	17.90	17.65	19.75	21.45	23.55
Face Washer	df	24.9 min		31.4 min		33.3 min		38.0 min		42.80 min		46.50 min		55.9 min	
Face Washer Depth	c	0.4	0.8	0.4	0.8	0.4	0.8	0.4	0.8	0.4	0.8	0.4	0.8	0.4	0.8
Fillet Radios	r	0.6 min		0.8 min		0.8 min		1.0 min		1.2 min		1.2 min		1.5 min	
Fillet Length	f	3.0 max		4.0 max		4.0 max		4.0 max		5.0 max		6.0 max		6.0 max	
Transition Diameter	de	18.2 max		22.4 max		24.4 max		26.4 max		30.4 max		33.4 max		39.4 max	
Wrenching Height	k <sup>2</sup>	6.5 max		8.1 max		9.2 max		9.9 max		11.3 max		12.4 max		15.0 max	
Bearing Surface	bf	0.48 max		0.59 max		0.63 max		0.70 max		0.77 max		0.85 max		1.01 max	
<b>PRODUCT CHARACTERISTIC, STANDARD &amp; MECHANICAL PROPERTIES</b>															
Characteristic		Standard				Size	Stress Area min	Proof Load kN	Proof Load kN <sup>a</sup>	Tensile Load		Hardness HRC			
										Min	Max				
Material & Manufacture		ASTM A490M as Standard (Alloy Steel)				<b>Tensile Load and Proof Load Requirements for full size bolts.</b>									
Mechanical Properties		ASTM A490M as Standard				M16	157	130	148	163	191	33	39		
Dimension & Tolerance		ASME B18.2.3.7M				M20	245	203	230	255	297	33	39		
Threads		ASME B18.3M				M22	303	251	285	315	365	33	39		
Workmanship		ASTM F788m or ASTM F788				M24	353	293	332	367	428	33	39		
Finish /Coating	Self Color Black	Black ASTM A490M				M27	459	381	431	477	553	33	39		
Tolerance		Class 6g				M30	561	466	527	583	680	33	39		
Product Marking		ASTM A490M				M36	817	678	768	880	990	33	39		
<b>Tensile Strength Requirement For Specimens Machine From Bolt</b>															
Nominal Dia M12 to M36	Tensile Strength min	Mpa	1040	Yield Strength min	Mpa	940	Elongation in 4D min	%	14	Reduction of Area min	%	40			