

## BUTTONHEAD BNH (5Ab) AND BNX (10Ab) SYSTEM TEST DATA CONVERSION - 15M & 20M (GRADE 400)

Lab Report & Reference No.		Head Type	ASTM Bar Size Designation	ASTM Bar Area (in <sup>2</sup> )	Max Load (lb)	Max Stress (psi)	Developed Stress % <i>f<sub>y</sub></i> ASTM Gr 60 (metric Gr 420)	Equivalent CSA Designation	CSA Bar Area (mm <sup>2</sup> )	Max Load (kN)	Equivalent Max Stress CSA Gr 400 (N/mm <sup>2</sup> )	Equivalent Developed Stress % <i>f<sub>y</sub></i> CSA Gr 400
5T3060	5A	BNH (5Ab)	No. 5	0.31	34,010	109,710	183%	15M	200	151.3	756	189%
	5B		No. 5	0.31	34,500	111,290	185%	15M	200	153.5	767	192%
5T4573	5A	BNH (5Ab)	No. 5	0.31	33,830	109,129	182%	15M	200	150.5	752	188%
	5B		No. 5	0.31	34,380	110,903	185%	15M	200	152.9	765	191%
5T5994	5A	BNH (5Ab)	No. 5	0.31	34,010	109,710	183%	15M	200	151.3	756	189%
	5B		No. 5	0.31	34,500	111,290	185%	15M	200	153.5	767	192%
5T6151 *A706	5A	BNX (10Ab)	No. 5	0.31	33,830	109,129	182%	15M	200	150.5	752	188%
	5B		No. 5	0.31	34,380	110,903	185%	15M	200	152.9	765	191%
6T1836	6A	BNH (5Ab)	No. 6	0.44	44,830	101,886	170%	20M	300	199.4	665	166%
	6B		No. 6	0.44	46,150	104,886	175%	20M	300	205.3	684	171%
6T2694	6A	BNH (5Ab)	No. 6	0.44	45,322	103,005	172%	20M	300	201.6	672	168%
	6B		No. 6	0.44	45,217	102,766	171%	20M	300	201.1	670	168%
	6C		No. 6	0.44	45,315	102,989	172%	20M	300	201.6	672	168%
6T4744	6A	BNH (5Ab)	No. 6	0.44	48,260	109,682	183%	20M	300	214.7	716	179%
	6B		No. 6	0.44	48,210	109,568	183%	20M	300	214.4	715	179%
6T4873 *A706	6A	BNX (10Ab)	No. 6	0.44	42,090	95,659	159%	20M	300	187.2	624	156%
	6B		No. 6	0.44	43,250	98,295	164%	20M	300	192.4	641	160%

### NOTES

All headed devices meet ACI 318 Section 20, and ASTM A970 Class A & HA requirements (100% *f<sub>u</sub>*) Grade 60 bar.  
 ButtonHead BNX meets CSA A23.3 Clause 7.1.4 requirement of gross bearing area to be 10 times the bar area, 10Ab.  
 Results shown are from routine testing of various heat lots of completed headed devices, per Barsplice Products, Inc. ISO 9001 Quality System.  
 Conducted on reinforcing bars per ASTM A615 (or \*A706) Grade 60, with a specified tensile, *f<sub>y</sub>* = 60,000 psi (420 N/mm<sup>2</sup>).  
 Tests performed in accordance with ASTM A1034, Section 10.3, Monotonic Tension Tests, using load rates per ASTM A370  
 See Lab reports for stress versus displacement curves (stress versus cross-head position).  
 ASTM = American Society for Testing and Materials, CSA = Canadian Standards Association

## BUTTONHEAD BNH (5Ab) AND BNX (10Ab) SYSTEM TEST DATA CONVERSION - 25M & 30M (GRADE 400)

Lab Report & Reference No.		Head Type	ASTM Bar Size Designation	ASTM Bar Area (in <sup>2</sup> )	Max Load (lb)	Max Stress (psi)	Developed Stress % <i>f<sub>y</sub></i> ASTM Gr 60 (metric Gr 420)	Equivalent CSA Designation	CSA Bar Area (mm <sup>2</sup> )	Max Load (kN)	Equivalent Max Stress CSA Gr 400 (N/mm <sup>2</sup> )	Equivalent Developed Stress % <i>f<sub>y</sub></i> CSA Gr 400
8T1709	8A	BNH (5Ab)	<b>No. 8</b>	0.79	82,740	104,734	<b>175%</b>	<b>25M</b>	500	368.0	736	<b>184%</b>
	8B		<b>No. 8</b>	0.79	81,450	103,101	<b>172%</b>	<b>25M</b>	500	362.3	725	<b>181%</b>
8T2107	8A	BNH (5Ab)	<b>No. 8</b>	0.79	84,350	106,772	<b>178%</b>	<b>25M</b>	500	375.2	750	<b>188%</b>
	8B		<b>No. 8</b>	0.79	84,770	107,304	<b>179%</b>	<b>25M</b>	500	377.1	754	<b>189%</b>
8T2762	8A	BNX (10Ab)	<b>No. 8</b>	0.79	85,560	108,304	<b>181%</b>	<b>25M</b>	500	380.6	761	<b>190%</b>
	8B		<b>No. 8</b>	0.79	84,550	107,025	<b>178%</b>	<b>25M</b>	500	376.1	752	<b>188%</b>
8T3518 <i>*A706</i>	8A	BNH (5Ab)	<b>No. 8</b>	0.79	77,530	98,139	<b>164%</b>	<b>25M</b>	500	344.9	690	<b>172%</b>
	8B		<b>No. 8</b>	0.79	78,920	99,899	<b>166%</b>	<b>25M</b>	500	351.0	702	<b>176%</b>
9T1298	9A	BNH (5Ab)	<b>No. 9</b>	1.00	101,780	101,780	<b>170%</b>	<b>30M</b>	700	452.7	647	<b>162%</b>
	9B		<b>No. 9</b>	1.00	101,500	101,500	<b>169%</b>	<b>30M</b>	700	451.5	645	<b>161%</b>
9T1710	9A	BNH (5Ab)	<b>No. 9</b>	1.00	108,460	108,460	<b>181%</b>	<b>30M</b>	700	482.4	689	<b>172%</b>
	9B		<b>No. 9</b>	1.00	115,490	115,490	<b>192%</b>	<b>30M</b>	700	513.7	734	<b>183%</b>
9T1812	9A	BNX (10Ab)	<b>No. 9</b>	1.00	106,780	106,780	<b>178%</b>	<b>30M</b>	700	475.0	679	<b>170%</b>
	9B		<b>No. 9</b>	1.00	108,720	108,720	<b>181%</b>	<b>30M</b>	700	483.6	691	<b>173%</b>
9T1932 <i>*A706</i>	9A	BNH (5Ab)	<b>No. 9</b>	1.00	95,430	95,430	<b>159%</b>	<b>30M</b>	700	424.5	606	<b>152%</b>
	9B		<b>No. 9</b>	1.00	96,650	96,650	<b>161%</b>	<b>30M</b>	700	429.9	614	<b>154%</b>

### NOTES

All headed devices meet ACI 318 Section 20, and ASTM A970 Class A & HA requirements (100% *f<sub>u</sub>*) Grade 60 bar.  
 ButtonHead BNX meets CSA A23.3 Clause 7.1.4 requirement of gross bearing area to be 10 times the bar area, 10Ab.  
 Results shown are from routine testing of various heat lots of completed headed devices, per Barsplice Products, Inc. ISO 9001 Quality System.  
 Conducted on reinforcing bars per ASTM A615 (or *\*A706*) Grade 60, with a specified tensile, *f<sub>y</sub>* = 60,000 psi (420 N/mm<sup>2</sup>).  
 Tests performed in accordance with ASTM A1034, Section 10.3, Monotonic Tension Tests, using load rates per ASTM A370  
 See Lab reports for stress versus displacement curves (stress versus cross-head position).  
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## BUTTONHEAD BNH (5Ab) AND BNX (10Ab) SYSTEM TEST DATA CONVERSION - 35M & 45M (GRADE 400)

Lab Report & Reference No.		Head Type	ASTM Bar Size Designation	ASTM Bar Area (in <sup>2</sup> )	Max Load (lb)	Max Stress (psi)	Developed Stress % <i>f<sub>y</sub></i> ASTM Gr 60 (metric Gr 420)	Equivalent CSA Designation	CSA Bar Area (mm <sup>2</sup> )	Max Load (kN)	Equivalent Max Stress CSA Gr 400 (N/mm <sup>2</sup> )	Equivalent Developed Stress % <i>f<sub>y</sub></i> CSA Gr 400
11T2213	11A	BNH (5Ab)	<b>No. 11</b>	1.56	165,131	105,853	<b>176%</b>	<b>35M</b>	1000	734.5	735	<b>184%</b>
	11B		<b>No. 11</b>	1.56	165,560	106,128	<b>177%</b>	<b>35M</b>	1000	736.4	736	<b>184%</b>
11T2639	11A	BNH (5Ab)	<b>No. 11</b>	1.56	167,620	107,449	<b>179%</b>	<b>35M</b>	1000	745.6	746	<b>186%</b>
	11B		<b>No. 11</b>	1.56	169,371	108,571	<b>181%</b>	<b>35M</b>	1000	753.4	753	<b>188%</b>
11T3323	11A	BNX (10Ab)	<b>No. 11</b>	1.56	173,840	111,436	<b>186%</b>	<b>35M</b>	1000	773.2	773	<b>193%</b>
	11B		<b>No. 11</b>	1.56	172,659	110,679	<b>184%</b>	<b>35M</b>	1000	768.0	768	<b>192%</b>
11T3455	11A	BNH (5Ab)	<b>No. 11</b>	1.56	178,101	114,167	<b>190%</b>	<b>35M</b>	1000	792.2	792	<b>198%</b>
	11B		<b>No. 11</b>	1.56	163,929	105,083	<b>175%</b>	<b>35M</b>	1000	729.2	729	<b>182%</b>
11T3939 <i>*A706</i>	11A	BNH (5Ab)	<b>No. 11</b>	1.56	153,410	98,340	<b>164%</b>	<b>35M</b>	1000	682.4	682	<b>171%</b>
	11B		<b>No. 11</b>	1.56	149,070	95,558	<b>159%</b>	<b>35M</b>	1000	663.1	663	<b>166%</b>
14T658	14A	BNH	<b>No. 14</b>	2.25	226,670	100,742	<b>168%</b>	<b>45M</b>	1500	1008.2	672	<b>168%</b>
14T757	14A	BNH (5Ab)	<b>No. 14</b>	2.25	250,839	111,484	<b>186%</b>	<b>45M</b>	1500	1115.7	744	<b>186%</b>
	14B		<b>No. 14</b>	2.25	253,370	112,609	<b>188%</b>	<b>45M</b>	1500	1127.0	751	<b>188%</b>
14T770	14A	BNH (5Ab)	<b>No. 14</b>	2.25	249,921	111,076	<b>185%</b>	<b>45M</b>	1500	1111.6	741	<b>185%</b>
	14B		<b>No. 14</b>	2.25	245,810	109,249	<b>182%</b>	<b>45M</b>	1500	1093.4	729	<b>182%</b>
14T1412 <i>*A706</i>	14A	BNH (5Ab)	<b>No. 14</b>	2.25	239,049	106,244	<b>177%</b>	<b>45M</b>	1500	1063.3	709	<b>177%</b>
	14B		<b>No. 14</b>	2.25	235,629	104,724	<b>175%</b>	<b>45M</b>	1500	1048.1	699	<b>175%</b>

### NOTES

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 Results shown are from routine testing of various heat lots of completed headed devices, per Barsplice Products, Inc. ISO 9001 Quality System.  
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