HYBROCO SALES INC

HEAVY HEX NUTS

- Standard materials: steel & 18-8 stainless steel.
- Standard finish: zinc & galvanized; other finishes available upon request.
- These nuts are the strongest of all comparable graded materials due to width across flats and greater thread length.

SIZE & DIAMETER OF THREAD		WIDTH ACROSS FLATS			WIDTH ACROSS CORNERS		LENGTH		
		Basic	Max	Min	Max	Min	Basic	Max	Min
1/4	0.2500	1/2	0.500	0.488	0.577	0.556	15/64	0.250	0.218
5/16	0.3125	9/16	0.562	0.546	0.650	0.622	19/64	0.314	0.280
3/8	0.3750	11/16	0.688	0.669	0.794	0.763	23/64	0.377	0.341
7/16	0.4375	3/4	0.750	0.728	0.866	0.830	27/64	0.441	0.403
1/2	0.5000	7/8	0.875	0.850	1.010	0.969	31/64	0.504	0.464
9/16	0.5625	15/16	0.938	0.909	1.083	1.037	35/64	0.568	0.526
5/8	0.6250	1-1/16	1.062	1.031	1.227	1.175	39/64	0.631	0.587
3/4	0.7500	1-1/4	1.250	1.212	1.443	1.382	47/64	0.758	0.710
7/8	0.8750	1-7/16	1.438	1.394	1.660	1.589	55/64	0.885	0.833
1	1.0000	1-5/8	1.625	1.575	1.876	1.796	63/64	1.012	0.956
1-1/8	1.1250	1-13/16	1.812	1.756	2.093	2.002	1-7/64	1.139	1.079
1-1/4	1.2500	2	2.000	1.938	2.309	2.209	1-7/32	1.251	1.187
1-3/8	1.3750	2-3/16	2.188	2.119	2.526	2.416	1-11/32	1.378	1.310
1-1/2	1.5000	2-3/8	2.375	2.300	2.742	2.622	1-15/32	1.505	1.433
1-5/8	1.6250	2-9/16	2.562	2.481	2.959	2.828	1-19/32	1.632	1.556
1-3/4	1.7500	2-3/4	2.750	2.662	3.175	3.035	1-23-32	1.759	1.679
2	2.0000	3-1/8	3.125	3.025	3.608	3.449	1-31/32	2.013	1.925
2-1/4	2.2500	3-1/2	3.500	3.388	4.041	3.862	2-13/64	2.251	2.155
2-1/2	2.5000	3-7/8	3.875	3.750	4.474	4.275	2-29/64	2.505	2.401
2-3/4	2.7500	4-1/4	4.250	4-112	4.907	4.688	2-45/64	2.759	2.647
3	3.0000	4-5/8	4.625	4.475	5.340	5.102	2-61/64	3.013	2.893
3-1/4	3.2500	5	5.00	4.838	5.774	5.515	3-3/16	3.252	3.124
3-1/2	3.5000	5-3/8	5.375	5.200	6.207	5.928	3-7/16	3.506	3.370
3-3/4	3.7500	5-3/4	5.750	5.562	6.640	6.341	3-11/16	3.760	3.616
4	4.0000	6-1/8	6.125	5.925	7.073	6.755	3-15/16	4.014	3.862

800-458-9353

www.hybrocosales.com

HYBROCO SALES INC

MECHANICAL & PERFORMANCE DATA

Steel

Description	A six-sided internally threaded fastener which is both thicker and wider across the flats than a same sized finished hex nut. Nuts in sizes 7/16" & smaller shall be double chamfered. Larger sizes are either double chamfered or chamfered on top with a washer faced bearing surface.
Applications/ Advantages	This is the strongest of all comparably-graded nuts because of its greater length of thread engagement and greater resistance to dilation (widening or stretching). Grade A nuts are used with low carbon heavy hex bolts. Grade C nuts are recommended for use with A325 structural bolts. Grade 2H nuts are recommended for use with bolts in high-pressure and high-temperature applications. Grade DH nuts are recommended for use with A490, type 1 structural bolts and Grade DH3 nuts for use with A490, Type 3 structural bolts.
Material	Nuts shall be made from a steel which conforms to the following chemical composition requirements (heat analysis). **Grades A & C–** Carbon: 0.55% maximum; Phosphorus: 0.12% maximum; Sulfur: 0.023% maximum **A194 Grade 2H–** Carbon: 0.40% minimum; Manganese: 1.00% maximum; Phosphorus: 0.04% maximum; Sulphur: 0.05% maximum; Silicon: 0.40% maximum **A563 Grade DH–** Carbon: 0.20-0.55%; Manganese: 0.60% minimum; Phosphorus: 0.04% maximum; Sulfur 0.05% maximum **Grade DH3–** Carbon0.20-0.53%; Manganese: 0.40% minimum; Phosphorus: 0.046% maximum; Sulfur 0.050% maximum; Copper: 0.20% minimum; Chromium: 0.45% minimum; (Either Nickel: 0.20% minimum or Molybdenum: 0.15% minimum may be used)
Heat Treatment	**Grade 2H:** These nuts shall be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 850° F. **Grades C, DH & DH3:** These nuts shall be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 800° F.
Core Hardness	**Grade A:** Rockwell B68-C32 **Grade C:** Rockwell B78-C38 **A194 Grade 2H; A563 Grades DH & DH3:** Rockwell C24-C38
Proof Load	**Grade A:** Course-100,000 psi; Fine-90,000 psi. **Grade C:** 144,000psi. **Grade 2H:** 150,000 psi. **Grades-DH & DH3:** 175,000 psi.

HYBROCO SALES INC

MECHANICAL & PERFORMANCE DATA

18-8 Stainless Steel

Description	A six-sided internally threaded fastener which is both thicker and wider across the flats than a same sized finished hex nut. Nuts in sizes 7/16" & smaller shall be double chamfered. Larger sizes are either double chamfered or chamfered on top with a washer faced bearing surface.
Applications/ Advantages	This is the strongest of all 18-8 stainless hex nuts because of its greater length of thread engagement and greater resistance to dilation (widening or stretching).
Material	Nuts shall be made from one of the following austenitic stainless alloys: 303, 303Se, 304, XM7, all of which are characterized as having a chromium content of 18% and a nickel content of 8%.
Heat Treatment	The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900° F to a dead soft condition and is not normally thermally reversible.
Hardness	1/4 through 5/8": Rockwell B95-C32 3/4 through 1": Rockwell B80-C32
Proof Load	1/4 through 5/8": 100,000 psi. 3/4 through 1": 85,000 psi.