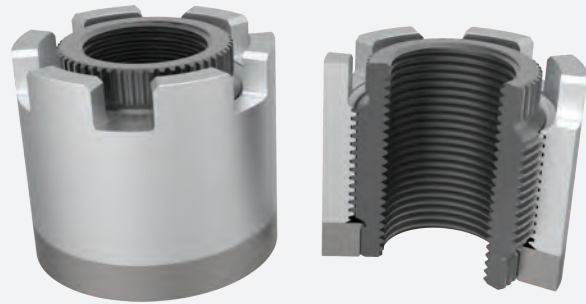


HYTORC

The World's Most Trusted Industrial Bolting Systems

The HYTORC Nut replaces fasteners, minimizes stresses, and covers a wide range of sizes and applications

CT-SERIES HYTORC NUT Specification Guide



ABOUT THE CT-SERIES HYTORC NUT

The CT-Series of HYTORC Nuts was originally specified to replace fasteners that were operated with hydraulic bolt tensioners. The through bolt design of the HYTORC Nut makes them an appropriate choice for applications with high stud protrusions from the flange. The outside diameter of a HYTORC Nut is approximately the across corner dimension of a standard heavy hex nut. The relatively thick outer sleeve of a HYTORC Nut minimizes stresses and allows them to handle high loads at elevated temperatures.

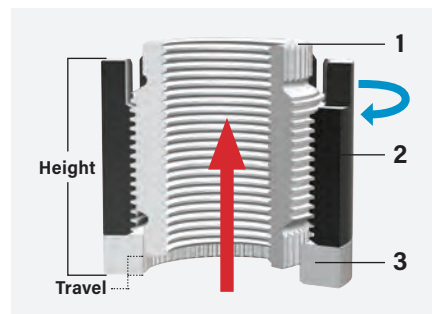
BENEFITS AND FEATURES

- Reaction-free bolt tensioning
- Pure tensile loads
- 100% elimination of galling on flange and stud surfaces
- Highest bolt tension accuracy and reliability available
- Smallest possible footprint (Diameter = Approx. Heavy Hex Across Corners)
- External spline on inner sleeve allows for simple economical drive
- Castellated outer sleeve eliminates need for an oversized socket drive
- Standard drives available for all applicable tools
- Low, Standard, Medium, and High Temperature ratings available
- All thread forms available

HYTORC NUT APPLICATION



CT-SERIES HYTORC NUT COMPONENTS



The HYTORC Nut is composed of an inner sleeve (1), outer sleeve (2), and washer (3). As the outer sleeve turns (blue arrow), the inner sleeve moves upwards (red arrow). The washer spline rotationally couples the inner sleeve with the washer preventing the inner sleeve from turning while providing a solid reaction point for turning the outer sleeve.

CT-SERIES PART NUMBER DESIGNATION

CTXX-XXXXXX-XXX

Blank Size

Thread Specification

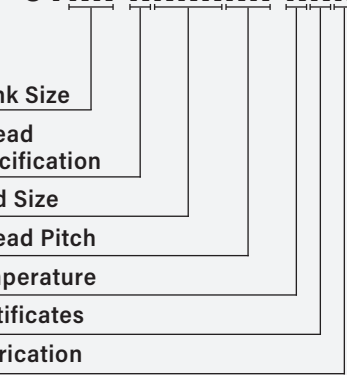
Stud Size

Thread Pitch

Temperature

Certificates

Lubrication



BLANK SIZE

The Blank Size defines the HYTORC Nut body size – retrieve from Column 1 of the Dimensional Table located on the facing page. This size is always a two-digit number.

THREAD SPECIFICATION

IMPERIAL (in.)		
TYPE	CLASS	THREAD CODE
UN	2B	U
UN	3B	S
UNJ	3B	T
ACME	2G	W
BSW	Normal	X
BSF	Normal	Y
C-ACME	2C	Z
ACME	2G	W
STUB ACME	2G	R

METRIC (mm)		
TYPE	CLASS	THREAD CODE
METRIC	6H6G	M
METRIC	4H5H	K
MJ	4H5H	N
TRAPEZOID	7H	P

STUD SIZE

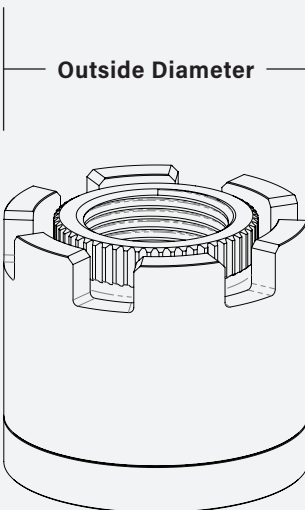
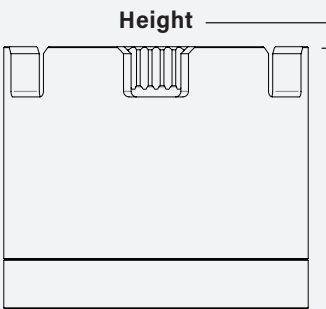
IMPERIAL (in.)	
STUD SIZE	SIZE CODE
5/8	010
1	100
2-1/2	208
4-1/4	404

METRIC (mm)	
STUD SIZE	SIZE CODE
5	005
10	010
100	100
150	150

THREAD PITCH

IMPERIAL (in.)	
THREADS PER IN.	PITCH CODE (TPI)
4	04
4-1/2	45
8	08
12	12

METRIC (mm)	
MM PER THREAD	PITCH CODE
1	01
3	03
3.5	35
6	06



TEMPERATURE

For best performance, Standard Temperature should be specified unless the environment specifically requires otherwise. Temperature ratings may not apply to applications that require CREEP resistance. Please inquire with HYTORC Engineering for applications with long durations at temperatures **greater than 800°F (426°C)**.

SERVICE TEMPERATURE RATINGS

H = High $\leq 1000^{\circ}\text{F}$ ($\leq 538^{\circ}\text{C}$)

M = Medium $\leq 900^{\circ}\text{F}$ ($\leq 482^{\circ}\text{C}$)

S = Standard $\leq 550^{\circ}\text{F}$ ($\leq 288^{\circ}\text{C}$)

L = Low -150°F to 32°F (-101°C to 0°C)

LUBRICATION

Lubrication can have implications on load characteristics, temperature ratings and ease of removal. Please consult HYTORC lubrication data sheets to guide your selection process. Alternative lubricants are available upon request. The most common lubricants are:

R Molykote 1000 Paste

S Molykote P-37 Anti-Seize Paste (Standard)

T Molykote GN Metal Assembly Paste

W N-7000 Loctite Anti-Seize

MATERIAL CERTIFICATE PACKAGE*

A Certificate of Compliance (Standard)

B JQP21000

C JQP22000

D JQP31000

E JQP32000

F JQP10500

G JQP10510

*Please see HYTORC quality level data for further details.

STEPS FOR SPECIFYING THE PROPER SIZE

SIZE SELECTION CHART

1. Identify **Blank Size** from table below. (Cross reference this number from the row with the proper **Nominal Stud Size**).
2. **Outside Diameter** for this Blank Size should not interfere with adjacent nuts or other application constraints (such as a small spot face).
3. Verify that the **Max Stroke** is sufficient for your application.
4. Verify that there is sufficient overhead clearance for access with tooling.
5. Use the part number template from the adjacent page to generate the part number.

IMPERIAL (in.)					
BLANK SIZE	STUD SIZE CODE	NOMINAL STUD SIZE	OUTSIDE DIAMETER	HEIGHT	MAX STROKE
01	014	7/8	1.660	1.429	0.201
02	100	1	1.811	1.559	0.220
03	102	1-1/8	2.038	1.754	0.247
04	104	1-1/4	2.264	1.949	0.275
05	106	1-3/8	2.491	2.144	0.302
06	-	-	2.717	2.339	0.330
07	108	1-1/2	2.943	2.533	0.357
08	110	1-5/8	3.170	2.728	0.384
09	112	1-3/4	3.396	2.923	0.412
10	114	1-7/8	3.623	3.118	0.439
11	200	2	3.925	3.378	0.476
12	204	2-1/4	4.226	3.638	0.513
13	208	2-1/2	4.830	3.914	0.586
14	212	2-3/4	5.283	4.547	0.614
15	-	-	5.434	4.677	0.659
16	300	3	5.736	4.937	0.696
17	-	-	6.038	5.197	0.732
18	304	3-1/4	6.340	5.457	0.769
19	308	3-1/2	6.793	5.846	0.824

METRIC (MM)					
BLANK SIZE	STUD SIZE	NOMINAL STUD SIZE	OUTSIDE DIAMETER	HEIGHT	MAX STROKE
01	022	M22	42.16	36.30	5.11
02	024	M24	46.00	39.30	5.59
03	027	M27	51.77	44.55	6.27
04	030	M30	57.51	49.50	6.99
05	033	M33	63.27	54.46	7.67
06	036	M36	69.01	59.41	8.38
07	039	M39	74.75	64.34	9.07
08	042	M42	80.52	69.29	9.75
09	045	M45	86.26	74.24	10.46
10	048	M48	92.02	79.20	11.15
11	052	M52	99.70	85.80	12.09
12	056	M56	107.34	92.41	13.03
13	064	M64	122.68	99.42	14.88
14	070	M70	134.19	115.49	15.60
15	072	M72	138.02	118.80	16.74
16	076	M76	145.69	125.40	17.68
17	080	M80	153.37	132.00	18.59
18	-	-	161.04	138.61	19.53
19	090	M90	172.54	148.49	20.93

BLANK SIZE

This is the basic body size for the HYTORC Nut. Any desired thread up to the **Nominal Stud Size** can be cut into each **Blank Size**. Cross-reference this number from the row with the proper **Nominal Stud Size**. Verify that the **Outside Diameter** for this **Blank Size** will not interfere with adjacent nuts or other application constraints (such as a small spot face).

NOMINAL STUD SIZE

This is the largest stud that will fit a particular **Blank Size**. All HYTORC Nut blanks can be specified with threads smaller than the **Nominal Stud Size**.

MAX STROKE

Verify that the **Max Stroke** is sufficient for the application. HYTORC Nuts have maximum stroke lengths that are limited by the height of the splined washer. More stroke may be needed to accommodate gasket compression or an extraordinarily long joint length. Consult with a HYTORC Applications Engineer for special extended stroke HYTORC Nuts.

STUD SIZE

This is the HYTORC code used to indicate the **Nominal Stud Size**.

IMPERIAL: First digit signifies the whole number of inches. Add two digits to signify the number of 1/16 of an inch — (108 = 1" + 8/16" = 1-1/2").

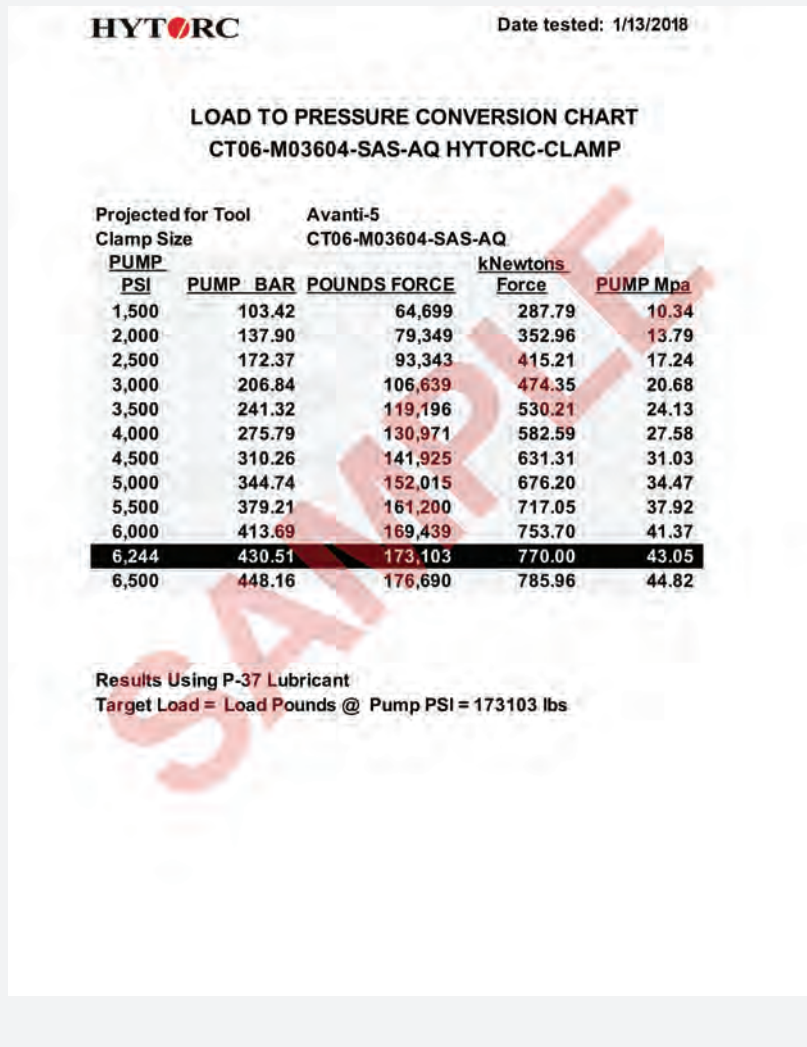
METRIC: The three digits signify the whole number in millimeters — (024 = M24, 110 = M110).

HEIGHT

This is the overall height of the standard HYTORC Nut for this **Blank Size**. Tooling will require additional overhead space. This is not the **Height** of the stud protrusion. Consult with a HYTORC Applications Engineer when custom height HYTORC Nuts are required.

ADDITIONAL FACTS AND INFORMATION

SAMPLE LOAD CHART



APPLICATION TIPS

Measurement of the thread pitch is the most error prone portion of HYTORC Nut specification. The easiest way to measure pitch is with a pitch gauge. Alternatively, please provide HYTORC with a sample of the stud. Special coatings can cause dimensional variations on studs and nuts, i.e. Galvanized studs often have a coating build up that effectively changes the thread size. If the application studs have coatings, special care should be taken to determine the actual thread size. A standard HYTORC Nut will not fit a standard UN stud thread if a thick coating is applied. In these situations it will typically be best to supply HYTORC with a sample stud.

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MATERIALS

HYTORC Nut material selection is based on the service temperature rating of the HYTORC Nut. Please consult with a HYTORC Applications Engineer for a detailed specification on the materials used for each component of the HYTORC Nut.

LOAD CHARTS

All HYTORC Nuts can be made available with a Load Chart. Load Charts provide data points showing the tool's hydraulic pressure vs. the bolt load that will be attained. A load chart can be created for any tool with any HYTORC Nut.

SPECIALS

When components fall outside of the boundaries of our standard part numbering system, they become specials. The following list exemplifies some of the variations that could make your HYTORC Nut specification a special:

- Modified or non standard thread sizes such as those for oversized studs
- Extended or shortened HYTORC Nut height requirements
- Higher than usual bolt loads
- Reduced HYTORC Nut diameter requirements
- Extended stroke requirements
- Special coating requirements such as galvanizing or xylan
- Non-standard materials, testing or certification requirements

AVAILABLE DRIVES

Please contact HYTORC to request available drives and to specify non-standard HYTORC Nuts.

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