

HYTORC Nut

Description, Operation and Safety

HYTORC Nut

The HYTORC Nut is a dual spline mechanical tensioning device that replaces a regular hex nut that stays in place on the application.



Inner Sleeve

Engages the stud on the inside and the outer sleeve on the outside – does not turn but travels vertically as the outer sleeve turns and stretches the stud

Outer Sleeve

Rotates under the turning force applied by the torque tool

Washer

Bears against the flange and remains stationary as the outer sleeve turns.

Primary Benefits

- ✓ No torsion transferred to stud
- ✓ No chance of thread galling
- ✓ No bending or side load
- ✓ Controlled & predictable friction coefficients
- ✓ No bolt load loss or relaxation as with hydraulic tensioners
- ✓ No need for backup wrench
- ✓ Compatible with square drive or narrow clearance tools
- ✓ Reusable

HYTORC Nut Stays in Place on the Application



HYTORC Nut Configurations

The HYTORC Nut is Available in Multiple Configurations for a range of applications.



TN
Limited Radius
HYTORC Tension Nut



SN
Limited Height
HYTORC Tension Nut



CN
Bolt Protrusion
HYTORC Tension Nut



Smart Stud
Allen Bolt
Replacement



HYTORC Nut Planning

In the planning stage the HYTORC Nut is Configured to match specific bolting application, and a load chart is provided for tightening the nut to achieve desired bolt load.

HYTORC Nut Specified for Specific Bolt Configurations

HYTORC uses a load cell to evaluate specific bolt configurations to determine the load that should be applied to the bolt configuration using the HYTORC tool and HYTORC Nut combination recommended for the application.

Load to Pressure Chart

HYTORC provides a load to pressure conversion chart providing the pump pressure that should be applied for a specific tool in order to properly tighten the HYTORC Nut in the field.



LOAD TO PRESSURE CONVERSION CHART
TN09-M04545-SAT HYTORC-CLAMP

Projected for Tool Avant-5
Clamp Size TN09-M04545-SAT

PUMP	PUMP	POUNDS	kNewtons	PUMP Mpa
PSI	BAR	FORCE	Force	
1,500	103.42	38,429	170.94	10.34
2,000	137.90	59,099	262.88	13.79
2,500	172.37	80,687	358.91	17.24
3,000	206.84	102,786	457.21	20.68
3,500	241.32	124,988	555.97	24.13
4,000	275.79	146,885	653.38	27.58
4,500	310.26	168,071	747.62	31.03
5,000	344.74	188,138	836.88	34.47
5,500	379.21	206,679	919.35	37.92
5,921	406.22	220,798	982.16	40.82
6,000	413.69	223,286	993.22	41.37
6,500	448.16	237,551	1,056.68	44.82

Results Using GN METAL ASSY PASTE Lubricant
Target Load = Load Pounds @ Pump PSI = 220798 lbs



HW- HYTORC Nut Install Procedure

The following procedures should be followed to install HYTORC Nut.

- HN1 Lubricate HYTORC Nut & Stud
- HN2 Assemble HYTORC Nut
- HN3 Assemble Driver
- HN4 Tighten HYTORC Nut
- HN5 Loosen HYTORC Nut

Lubricate HYTORC Nut & Stud

In order to produce uniform tensioning loads the HYTORC Nut comes pre-lubricated. Before reusing HYTORC Nuts they should be disassembled, cleaned and re-lubricated before the next use.

HN1 - HYTORC NUT LUBRICATION

- ❑ Lubricate all Surfaces Shown
- ❑ Although the bolt stud is not subject to any torsion during installation it is recommended to lubricate the bolt stud threads to facilitate future disassembly and removal.



Assemble HYTORC Nut

HN2- HYTORC NUT ASSEMBLY

- ❑ Thread the HYTORC Nut onto the stud by hand.
- ❑ For long studs it may be desirable to use an impact wrench with mating insert to run down the HYTORC Nut.
- ❑ Adjust the height of the stud so that the stud fully engages all the threads of the inner sleeve and the top of the stud is about 2 threads below the lip of the inner sleeve.
- ❑ When the HYTORC Nut is in place check to make sure the inner sleeve fully engages the splined washer and the outer sleeve rests on the washer.
- ❑ The two sleeves should be aligned at the top.



Assemble Driver

A wide variety of HYTORC Torque Tools can be used to tighten the HYTORC Nut. Consult the operating guide for each tool for instructions to assemble the driver.

HN3- Assemble HYTORC Nut Driver



HYTORC Tools with Compatible Drivers/Adapters:

- ✓ ICE
- ✓ AVANTI
- ✓ STEALTH
- ✓ jGUN SINGLE SPEED
- ✓ jGUN DUAL SPEED
- ✓ Digital jGUN
- ✓ LITHIUM SERIES
- ✓ LION GUN

Tighten HYTORC Nut

HN4- Tighten HYTORC Nut

- ❑ Verify that a bolting pattern and pressure should already have been specified for the particular application.
- ❑ Verify if multiple tools will be used – parallel joint closure.
- ❑ Engage the Driver and the HYTORC Nut.
- ❑ Initiate the Driver:
 - Note: No reaction force is applied so no reaction arm is needed.
 - ❑ With Hydraulic Tool advance the tool using the control on the Hydraulic Pump until the outer sleeve no longer turns and the tool stalls at the specified pressure.
 - ❑ With Guns pull the trigger and advance until the outer sleeve no longer turns and the tool stalls at the specified torque.
- ❑ Repeat until all HYTORC Nuts are tightened for the application, following the pattern specified in the bolting plan.



Loosen HYTORC Nut

HN5- Loosen HYTORC Nut

- ❑ Configure the drive for the torque tool to loosen.
- ❑ Turn up the pump pressure or torque value to the maximum or peak value.
- ❑ Engage the Driver and the HYTORC Nut.
- ❑ Apply pressure until the out sleeve moves freely.
- ❑ It may be advisable to loosen the load on the bolts in steps gradually in reverse order of tightening so the joint is not misaligned and the remaining bolts are not overtightened.
- ❑ Remove the nuts by hand.



Let's Bolt!

HYTORC®
Since 1968