



## TECHNICAL ADVANTAGES

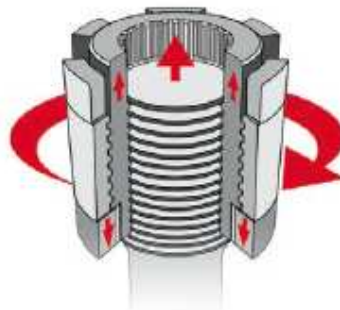
- No external reaction point required
- No side load
- No bending forces
- Torsion free bolt stretching
- No over stretch
- No bolt relaxation
- Hands free working, even upside-down
- Applicable in every situation
- Simple to use
- High accuracy of  $< \pm 5\%$
- Major improvement in bolting speed

## STRETCH-TO-LOAD TECHNOLOGY

### Stop all bolting related leaks, joint- and gasket failures!

A high-speed HYTORC tool stops the inner sleeve from turning while turning the outer sleeve at a known friction. The inner sleeve is pulled up, the bolt is stretched to within  $\pm 4\%$  of the preset bolt load

- SIDE LOAD-FREE
- TORSION-FREE



## ECONOMICAL ADVANTAGES

- Nut is unlimited reusable
- Safe operation due to hands-free labour
- Multi tooling by one operator
- High efficiency
- Bolts last longer
- Flange surface cannot be damaged
- Suitable for all weather conditions
- No back-up wrench required
- Less handling of tools

## MORE INFORMATION

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# CLAMP™ TENSIONING NUT

# HYTORC®

## How does it work?

The **HYTORC-CLAMP®** is the first mechanical tensioner that permits accurate bolt load setting without diverting to torque or pulling force. This tensioning nut is designed to be used in difficult conditions like high temperatures, extreme forces as well as limited overhead.

The **HYTORC-CLAMP®** consists of a washer (3) and an outer sleeve (2) connected to an inner sleeve (1) that is connected to the bolt end. When the inner sleeve is held stationary by the tool that turns the outer sleeve, the inner sleeve is pulled up along with the bolt, torsion and side load free.

As the outer sleeve turns on the washer and the inner sleeve-thread at a known coefficient of friction, the residual bolt load or pre-load can be calibrated in a traceable way with an unprecedented accuracy of  $\pm 5\%$ .



## Dimensions



**Turbine style Clamp (TN)**  
Outside diameter 1,6 times bolt diameter  
Height: 1,5 times bolt diameter



**Through-bolt Clamp (CN)**  
Outside diameter 1,9 times bolt diameter  
Height: 1,5 times bolt diameter



**Limited overhead clearance Clamp (SN)**  
Outside Diameter: 1,8 times bolt diameter  
Height: 1 times bolt diameter



**Smart-Stud for extreme side-clearances**  
Outside Diameter: 1,5 times bolt diameter  
Height: 1,7 times bolt diameter

The outer diameter of the Turbine style Clamp is 1,6 x diameter of the bolt. The length of the bolt above the flange surface is min. 0,8 to max.  $1x + 8\text{mm}$  bolt diameter.

You can use the Clamp at a temperature until  $450^{\circ}\text{C}$ . For usage above  $450^{\circ}\text{C}$  we suggest the Smart Stud. Here the inner sleeve is already the bolt. For limited overhead we have the Low Clearance, which operates perfectly in combination with a special flat ratchet link. The required height is 1x the bolt diameter.

## Examples



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