

Tensioning Systems



Industrial tightening system: precise and reliable tightening

Pilgrim HYDROCAM® hydraulic bolt tensioners

Bolted assemblies and couplings are the most widely used connection systems in industry. To ensure the optimum reliability of your installations it is essential to obtain precise and uniform tightening of all the bolts. Indeed, 30% of assembly failures are caused by defective or irregular tightening. On the strength of its experience in the area of hydraulic tightening, Pilgrim has developed a broad range of hydraulic bolt tensioners, both standard and customized: Pilgrim HYDROCAM®.

The traditional “torque” tightening methods result in a problem of tightening uniformity because it is impossible to reproduce exactly the same force every time. The hydraulic bolt tensioner makes it possible to eliminate all the uncertainties linked to torque tightening: this is the ideal solution for obtaining precise and secure bolted assemblies. It provides optimum and controlled tightening reducing the risk of loosening and shearing. Very simple to use, Pilgrim HYDROCAM® tensioners ensure very good tightening process repeatability.

Completely safe, high-performance solution

The choice of tensioner depends on the bolt's class and diameter, and on the available intervention space. Made up of three mechanical parts – brace, hydraulic body and skirt – a hydraulic

tensioner is powered with a hydraulic fluid – oil or water. It exerts a significant traction force via the brace screwed on to the bolt, and usually functions at pressures of 1,500 bar.

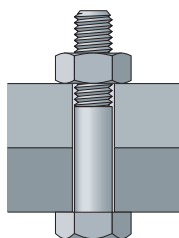
The standard Pilgrim HYDROCAM® range consists of 6 types of hydraulic tensioners. Designed for tightening 8- to 160-mm bolts (M8 to M160), these tensioners develop forces going from 50 to 8,500 kN. Particular attention has been paid to their sizing to enable optimum use in most situations.

In order to meet the specific requirements of its customers, Pilgrim can adapt its standard tensioners or design and manufacture special tailor-made tensioners. This specific added value makes it possible to extend the bolts' dimension range from 5 to 500 mm (M5 to M500).

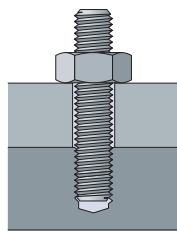
Main advantages

- Accuracy and control: tightening preload can be adjusted within one bar
- Uniformity: identical force applied to all the tensioners
- Simplicity and speed: as many tensioners as there are bolts to be tightened can be utilized
- Integrity of the parts preserved
- Cost reduction in use, inspection and maintenance
- Safety and reliability: ideal for critical applications
- Adaptability: all types of material such as steel, stainless steel, titanium, etc.

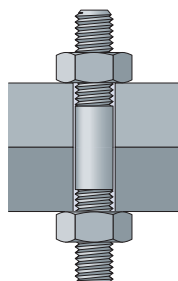
Three types of bolted assembly



Screw and nut



Stud with nut on one end



Stud with nuts on both ends

Hydraulic bolt tensioners

Standard range – Pilgrim HYDROCAM®

Multipurpose, powerful and compact, Pilgrim HYDROCAM® tensioners are the ideal solution for cutting tightening-related costs. Anticipating the use of a bolt tensioner right from the machine's design stage provides a guarantee of the optimum reliability and safety for your bolted assemblies and couplings.

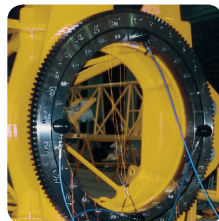
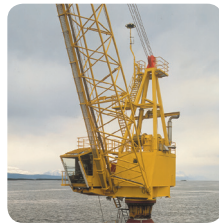
The integrity of all the elements is preserved and maintained however many times they are assembled and disassembled. Untightening is also facilitated because the hydraulic force required usually increases by barely 1% with respect to the initial tightening force.

Technical characteristics



	HTA	HTS	HTS N	HTS 2	HTC R	HTH R
Tightening of several diameters 1)	Yes	Yes	Yes	Yes	Yes	Yes
Diameter of bolts to be tightened (mm - In)	20 to 150 mm 3/4" to 5 3/4" In	8 to 100 mm 5/16" to 3 3/4" In	20 to 80 mm 3/4" to 3" In	20 to 80 mm 3/4" to 3" In	20 to 110 mm 3/4" to 4" In	20 to 160 mm 3/4" to 6" In
Dimensions	Normal	Medium	Small	Very small	Compact	Very small
Tightening load	Strong	Strong	Medium	Strong	Very strong	Very strong
Stroke limiter	Optional	Optional	Optional	Optional	Yes	Yes
Automatic return	No	Optional	Optional	Optional	Yes	Yes
Main features	Multipurpose Dimensions and tightening force that can be adapted to many types of application.	Small Designed to tighten bolts from M8 and above. Also tolerates certain geometrical assembly defects.	Thin Designed for restricted spaces. Also suitable for tightening large bolts with a low force.	Thin and powerful Small size, with 2 stages for a greatly increased tightening force. Designed for a single diameter.	Compact and powerful The best-performing standard-range tensioner for great traction forces.	Thin and super-powerful Maximum power for minimum size. Requires the use of a cylindrical nut.

1) By changing the brace



Application areas

- Aerospace
- Energy
- Electrical equipments
- Hydroelectric industry
- Diesel engines
- Construction
- Wind energy
- Civil engineering
- Heavy industries
- Oil & Gas

And all other applications involving bolted assemblies.

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