

APPARATUS FOR STUDYING A PRESTRESSED BOLT

REFERENCE : ER420



Non contractual photo

**SERVICE : 1 6-WAY EXTENSOMETRY
BRIDGE, EI616 1 TORQUE WRENCH 40 TO
200 NM WITH POLYGONAL END OF 24 FOR
THE REALIZATION OF SOME
EXPERIMENTS.**

**DIMENSIONS : HYDRAULIC PUMP : 40 X 10
X 14 CM / BOLT ASSEMBLY : DIAMETER 15
X 37 CM**

**WEIGHT : HYDRAULIC PUMP : 12 KG /
BOLT ASSEMBLY : 3.5 KG**

**The ER420 prestressed bolt study unit, dedicated to studying the
behavior of bolted joints, allows :**

- The analysis of stresses and deformations that appear in a bolt for different clamping modes.
- The development of a model of behavior for a bolted assembly loaded in the axis: load diagram, influence of the plane of introduction of the load.

The bolt is equipped with strain gauges including a pair of 3-way rosettes for measuring elongation and torsion, and a hydraulic tensioner system with a high-pressure manual hydraulic pump for pulling pure. A comparator allows the measurement of its elongation. A pair of gauges glued to the inner tube allows the measurement of compression.

Educational Objectives :

- Study with clamping by a flat key and measuring the deformation of the bolt.
- Study with tightening torque wrench.
- Study with tensioning by hydraulic tensioner.
- Study of the influence of the position of the load plane.
- Study of the influence of the couple of materials in contact.

Technical specifications :

- **Modeling** : Static analysis of helical slide links and plane support with friction.
- **Resistance of materials** : Study of simple stresses, constraints in a cross section. Mohr circle of constraints, directions and main constraints.
- **The apparatus includes :**
 - A bolt of 16 mm diameter on which are glued strain gauges (2 rosettes in opposition).
 - A piece of generally tubular shape on the periphery of which are glued two gauges in opposition.
 - A tensioner that makes it possible to apply a preload on the bolt or to exert an external force on different levels of a bolted joint.
 - A manual hydraulic pump.
 - A comparator that allows measurement of elongation.
 - Washers and nuts of different materials.

The device requires the use of the EI616 extensometry bridge.