

BOLT-SCOPE™ II



Ultrasonic load monitoring

BOLT-SCOPE™ II

HYDRATIGHT SWEENEY is the world leader in bolting technology . No other company can offer the extensive range of products and services to achieve total joint integrity. Staying at the forefront of Ultrasonics technology has resulted in the development of the BOLT-SCOPE™ II.

BOLT-SCOPE™ II ultrasonically measures the stress developed in fasteners and clearly displays the information on a large, easy to read screen. The unit works with all bolt tightening systems. It monitors the fastener during the tightening process to ensure accurate initial loading. Retained load in the fastener can be monitored at any time .

BOLT-SCOPE™ II is the smallest, lightest and most rugged ultrasonic load-monitoring product available. Using the unit is straightforward and simple, as all calculations are automatically adjusted for temperature changes and material properties. Obtained results can be sent directly to a printer or downloaded to a computer using the supplied software.



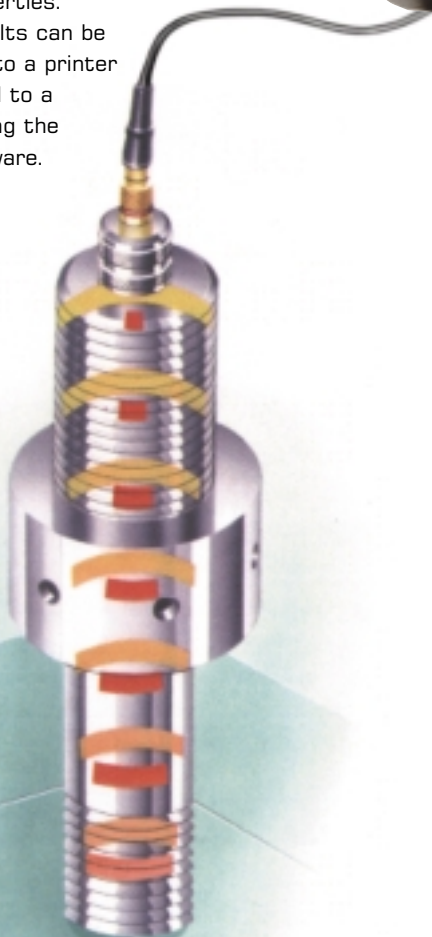
The BOLT-SCOPE™ II is a superior method of measurement when compared with;

- Mechanical Extensometers
- Dial Test Indicators
- Load Indication Washers
- Load Variable Displacement Transducers
- Strain Gauges

Principles of Operation

BOLT-SCOPE™ II uses the reliable Pulse-Echo technique of ultrasonic measurement. A transducer is placed on one end of the fastener and generates a pulse which travels down the length of the fastener. The pulse is reflected off the other end and the echo returns to the transducer. The unit then measures the time of flight of the signal.

This operation is carried out on the unloaded fastener to record a reference length. Once the fastener has been tightened the operation is repeated. The difference in the time of flight between the unloaded and loaded state of the fastener is used to establish the resultant stress. BOLT-SCOPE™ II also calculates and displays the fastener elongation and load .





Specification

Features

- Can store up to 10,000 fastener measurements in up to 512 applications.
- Measures reference length of fastener to better than 4 decimal places resolution.
- Simultaneous display of fastener stress, elongation, load and time of flight.
- 12 pre-programmed industry-standard material constants.
- Automatic temperature compensation.
- Measures fastener lengths up to 6.4 metres (21 feet).
- Built-in zero block enables easy exchange of transducers.
- Various transducer size (10 – 30mm) and frequencies (2.25 – 10MHz) available.
- Two methods of monitoring, single echo and multi-echo. Multi echo eliminates couplant thickness
- Minimal application data required.
- Easy to use interface, one menu deep, with direct access keys.
- Lightweight, compact.
- Rugged design for production and site environments.
- A powerful zoom facility enables the full length of the fastener to be viewed for possible structural defects.
- Monitors stress in a wide range of materials.
- On-site field calibration.
- Large LCD screen, displaying either "A Scan" waveform or bar graph display.
- Supervisor lock-out capability.
- Multilingual - English, French, German, Spanish, Italian and Russian .

Physical Description

Width: 191mm (7.5in)

Height: 140mm (5.5in)

Depth: 56mm (2.2in)

Weight: 1.14kg (2.5lbs) inc. batteries

Display

Graphic Waveform LCD: high resolution $\frac{1}{4}$ VGA LCD display

Viewing Area: (w x h) 96x71mm (3.8x2.8in)

Pixel Density: (w x h) 320x240

Update Rate: 4Hz

Adjustable contrast and backlight

Four Level zoom: for signal enlargement

Power Supply

5 "AA" Alkaline or NiCad batteries

Operating Time: 40 hrs minimum without backlight
A.C. Power (85 to 260v)

Fastener Monitoring Temperature Range

-10 to + 80°C (+10 to +176°F)

Warranty

BOLT-SCOPE™ II has a full two year warranty on parts and labour excluding batteries, transducers and cables.

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Applications

BOLT-SCOPE™ II is ideally suited for any application requiring accurate fastener tension measurements. Some applications include:

◆ Diesel and Gas Engines

main bearings, balance weights, connecting rods and cylinder heads

◆ Power Generation

manway fasteners, wind, steam and nuclear turbines

◆ Petrochemical

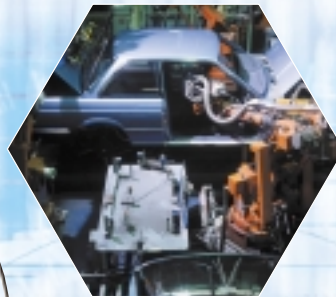
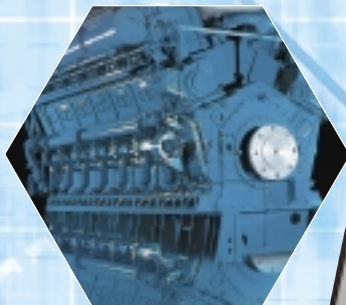
pressure vessel, pipe and heat exchanger fasteners

◆ Industrial

presses, injection moulding machines and steel mills

◆ Aerospace

landing gear and engine component fasteners



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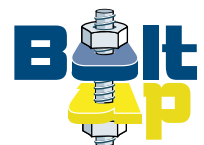
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