INSTRON®

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Welcome to the April 2006 issue of the Instron® Materials Testing Accessories e-newsletter

In this Issue:

Introduction to Accessories Newsletter

The purpose of this Instron communication feature is to provide the customer with new product or application information and articles of interest on materials testing. It will feature new product releases, applications articles and details on Instron product promotions. The newsletter will also act as a one-stop information centre allowing you access to the many different Instron products and support.

We would be delighted if you provided us with feedback or an interesting story in regards to materials testing using the link at the base of the newsletter.

Product Feature: New BioPuls Submersible Pneumatic Grips and Temperature-controlled Bath

- Instron has recently designed and released a testing environment ideal for medical testing applications. The system consists of light weight submersible pneumatic grips, a temperature-controlled bath and if required, the ability to attach a video extensometer. The system is ideally suited for use with Bluehill® 2 software to generate and analyse test results.

- The lightweight grips are ideal for testing hydrogels, contact lenses and fibres, but rugged enough to cope with loads up to 250N as required by bio-engineering tissues, medical tubing and plastics.

- The temperature-controlled bath allows for accurate simulation of the environmental conditions required. The solution can be brought to temperature within 30 minutes and maintained within +_ 1°C through closed loop control. The bath has an easy to use smooth pneumatic lifting and lowering system. The bath has been specifically designed to work with a video extensometer. This non-contacting method of extensometry is ideally suited to bio medical applications where standard extensometry can easily damage test specimens.

Application Article: Grip Types and Suitable Applications - Part 2 of 3

Selecting the best gripping solution has a number of aspects to it. In particular, the specimen must be held in a way that prevents slippage and jaw breaks and ensures axiality of the applied force. However, there are other considerations such as productivity and ease of use that may make one design better suited to your needs. Some grip applications are determined by particular testing standard requirements making the grip choice straightforward.

For many tests however, you can use a general purpose accessory. General purpose grips and fixtures have the advantage of being able to grip a wide variety of specimen types and materials, using differing jaw faces, alignment fixtures etc.

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Related Links

- FREE Accessory Catalog
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Future Events

- Metals & Metallurgy Beijing China April 18-21 2006
- Chinaplas 2006 - Shanghai New International Expo Center China 26-29 April 2006
- 9th International Fatigue Congress Atlanta, USA May 14-19, 2006
- JSAE2006 - Japan Automotive Engineering Exposition(24 - 26 May 2006, in Yokohama)
- Plaspol10th International Fair of Plastics Processing Kielce Poland 30 May - 2 June, 2006

The table below includes examples of grip types and possible applications.

Modular Hydraulic Grips

- Static or dynamic, reverse stress loading capability
- Suitable for metallic, plastic and ceramic material samples
- Round section, Flat, Buttonhead and threaded specimen geometry capability

Self-Tightening Grips

- Tensile, static, tension cyclic test capability (not suitable for high-cycle fatigue)
- Suitable for thin sheets, films, flexible plastics and elastomeric material samples
- Flat specimen with or without shoulder tab specimen geometry capability

Shoulder and Threaded end Grips

- Static Tensile test capability
- Suitable, but not limited to, steel, cast iron, aluminium, titanium and brass
- Machined, shoulder end and threaded specimen geometry capability

Pneumatic Wedge Action Grips

- Tension only, test capability (not suitable for through zero/reverse stress or fatigue testing)
- Suitable for wires rigid plastics and metals
- Flat or round specimen geometry capability

Mechanical Lever Action Wedge Grips

- Static tension test capability
- Suitable for wires, plastics metals and elastomers
- Flat or round specimen geometry capability

Specimen Gripping Solutions and Grip Care - Part 2 of 3

Looking After Your Grips

- Any successful gripping solution can be adversely affected by poor maintenance. Many common gripping techniques rely on friction or local surface deformation of the specimen to function. If the gripping surfaces are allowed to wear or become contaminated, a loss in gripping efficiency results. Ultimately, this causes slippage of the specimen and an invalid test.
- The first response to slippage is often to increase the gripping force by over-tightening mechanical grips or increasing the pressure of pneumatic or hydraulic grips. Although this may temporarily solve the slippage, it can also bring new problems.
- Simple screw action grips are often over tightened with a spanner or wrench. It is very easy to exert very high torque loadings to the load cell unless care is taken. Excessive tightening can easily damage low force load cells. Taken to extremes, it is possible to damage the grips themselves. Use a small torque wrench to achieve consistent gripping force.
- Increasing the pressure applied to the specimen by the gripping system also increases the chance of influencing the mechanical properties. This is especially true of materials that are weaker in compression than tension. Increases in jaw breaks often accompany increases in gripping force.
- Poor maintenance can result in uneven or inconsistent gripping. High frictional losses in screw grips reduce the clamping force on the specimen for as given tightening force. Stiction effects in wedge grips can induce bending if the faces move unevenly.

For more information on Accessories

Please submit an online request or call us at
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Are you testing something a little different? Do you think more people should know about it? Would you like to submit an article for possible publication in the Instron accessories newsletter? If so please submit your story.

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