

Solutions for Pipe and Tube Testing



DX Models



LX Models



MPX Series



HDX Models



KPX Models

Recent growth in oil drilling and gas extraction to serve the energy market has increased the demand for Oil Country Tubular Goods (OCTG). At the same time, global product standards pertaining to pipe and tube testing – including ANSI/API Spec 5L, ISO 3183:2012, ISO 6892-1:2009, ASTM A370, and ASTM E8M – are evolving to facilitate global standardization, which creates a challenge for pipe and tube manufacturers. Instron® testing systems are designed to meet these developing challenges of the Pipe and Tube Industry.

The Challenge

Specimen Geometry

The curved shape of pipe and tube presents a number of challenges when tensile testing.

- Test specifications permit “end flattening” prior to testing. However, it is time consuming and difficult to achieve with thicker material.
- Satisfactory grip engagement is an issue with the curved surface and allows for the possibility of specimen slippage.



Our Solution

Use jaw faces to match the concave portion of the longitudinal strip specimen.

- Incorporates an interchangeable face for the concave portion of the specimen that can be easily equipped with different inserts to test various sizes of pipe and tube
- Uses a standard vee jaw to grip the convex portion of the specimen
- Standard flat jaw sets are available and are suitable for thin-walled material
- In some instances, it is ideal to use a standard flat jaw on the inside and a vee jaw on the outside



The Challenge

Testing Full Section Pipe/Tube

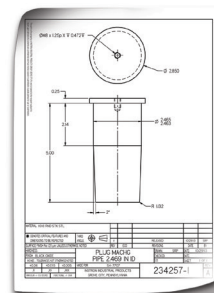
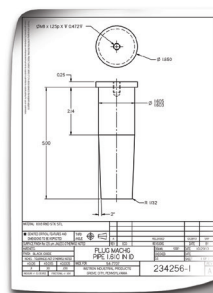
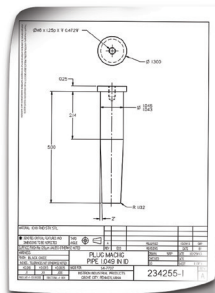
Generally, producers want to test the largest section of pipe, but specimen preparation is time consuming.

- Gripping hollow material will cause crushing
- The grip jaw opening is the limiting factor in determining how large the pipe (or tube) sample can be tested
- A higher capacity system is often required in order to accept larger diameter test specimens

Our Solution

End plugs, which are typically manufactured by the producer, are inserted into each end of the specimen during testing.

- Prevents crushing
- Made to size
- Designed with a “lip” for easy removal



The Challenge

Impact Testing High-Strength Materials

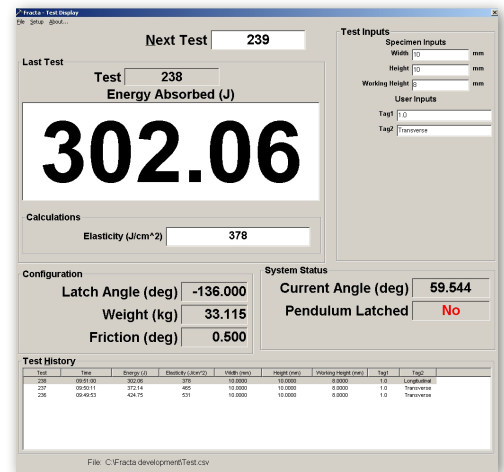
New materials being used in the pipe and tube industry for higher strength and durability require larger impact energies to perform standard Charpy tests to ASTM E-23 and ISO 148.

- Require larger testing systems
- Demand more versatility from pendulum systems
- May require quick modifications of hammer size
- Increased safety requirements due to specimen debris

Our Solution

The Instron® MPX Series motorized impact testing system in 300-900 Joule capacities with adjustable hammer energy is capable of testing higher strength maraging steels and newer alloys with Niobium or Chromium.

- Interchangeable hammer weights adjust the system capacity without removal of the hammer shaft
- Automatic release of the hammer upon closure of guard door for cold specimen breaks and NIST certification
- Motorized hammer and interlocked guard protects technician from injury
- Easy-to-use software interface



The Challenge

Suitable Strain Measurement

The irregular specimen geometry of pipe and tube makes choosing an extensometer difficult. Not all 50 mm (2 in) gage length clip-on style instruments are appropriate.

- Longitudinal strips are curved
- Full section pipe can have a large diameter, which limits the choice of strain instruments

Our Solution

The Instron® model T3M (W-6204) Clip-on Extensometer.

- Back support securely meets the contour of the inner portion of the longitudinal strip specimen
- Can be used to test full section pipe with diameters up to 89 mm (3.5 in)



For further information, support, or application expertise, please contact your local Instron office. We also encourage you to visit the Testing Solutions section of our website at www.instron.com

www.instron.com



Worldwide Headquarters
825 University Ave, Norwood, MA 02062-2643, USA
Tel: +1 800 564 8378 or +1 781 575 5000

European Headquarters
Coronation Road, High Wycombe, Bucks HP12 3SY, UK
Tel: +44 1494 464646