

# Instron SOP

## 1 Document Details

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|-------------|-------------|---------------|-----------|
| SOP Title   | Instron SOP |               |           |
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## 2 Introduction

### 2.1 Purpose

This standard operating procedure (SOP) covers the operation of the Instron 5942 testing system, located in the Innovation Space.

### 2.2 Table of Contents

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## 2.3 Background

The Instron can be used to evaluate mechanical properties of materials and components using tension, compression, fatigue, impact, torsion, etc. tests.

## 3 Preparation

### 3.1 Starting

Some materials may break into flying debris. Take care when installing or removing specimens from the load cells. The emergency stop button is located on the front of the machine if needed.

- Wear safety glasses when testing materials that may break or shatter.

- 3.1.1 Turn on the system with the switch on the back right of the machine. Ensure that the Power indicator light illuminates.
- 3.1.2 Power on other system components such as computer or other accessories.
- 3.1.3 Check the display on the control panel. An hourglass displays while the system is performing self-test. When the hourglass disappears, and only displays Instron logo, the procedure is complete.
- 3.1.4 When self-test is complete you can initiate the Instron Bluehill Universal software.
- 3.1.5 Wait for the software to fully integrate with the machine before operating the jog controls. The machine will click before the machine is ready.
- 3.1.6 Check if the Frame Ready indicator light on the control panel is illuminated before using the machine.
- 3.1.7 Calibrate the load cell:
  - 3.1.7.1. Click the frame icon in the upper right corner.
  - 3.1.7.2. Next, click on the Force Transducer settings button



- 3.1.7.3. Click on “Calibrate”

## 4 Machine Operation

### 4.1 Testing

- 4.1.1 When using the software, choose Test to perform tests on specimens. The next screen will prompt you to select either a saved test method, or to create a new one.
  - 4.1.1.1. Select Method either in the home screen or after choosing a specific test method to change settings.
- 4.1.2 Click Balance Load to zero out the load.
- 4.1.3 To load your specimen, use the Jog Up/Down buttons on the control panel to rapidly move the load cells. Use Fine Jog dial for fine movements of the load cell. Then load your specimen.
- 4.1.4 Assuming all test parameters are satisfied and you are ready to test your specimen, verify these settings on the control panel before continuing:
  - Frame Ready indicator illuminates,
  - Test Stopped indicator illuminates,
  - Start Test arrow indicator illuminates the correct direction of the test,
  - and At Zero (or AT GL) indicator illuminates green, meaning you are starting from zero extension. If this is not illuminated, be sure to press the button.
- 4.1.5 You can initiate the test either from the control panel or from the software. If you need to stop the test before it completes, you can either press the Stop button on the control panel or click Stop in the software.

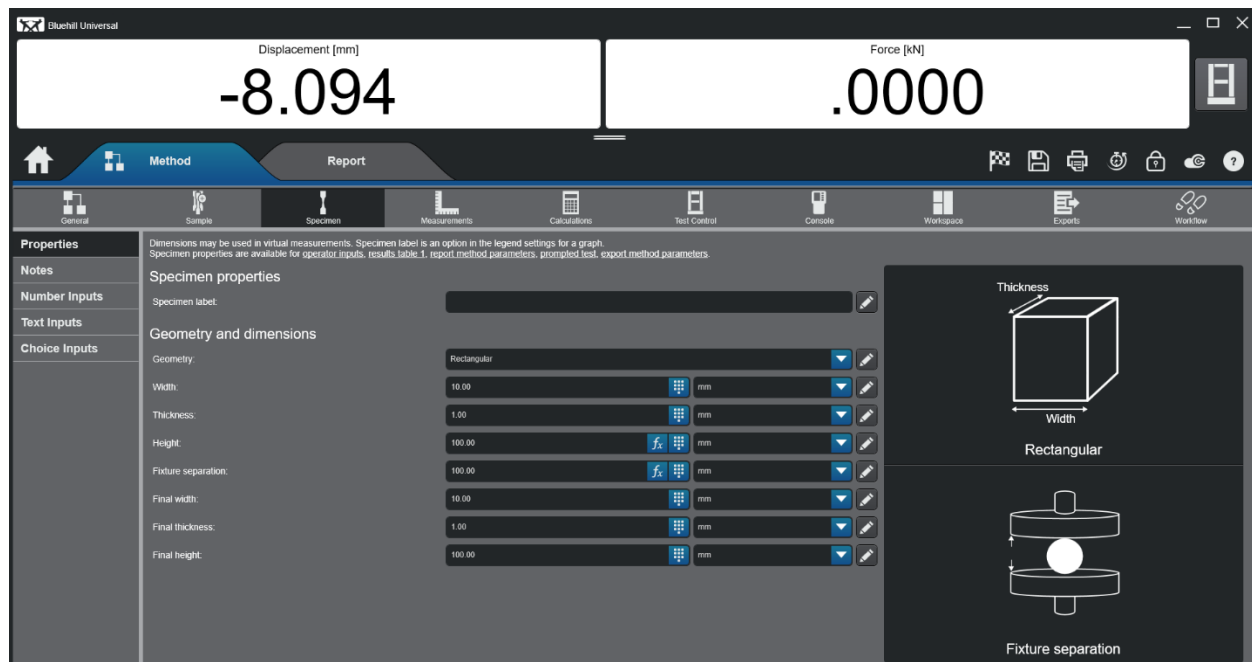
## 4.2 Shutting Down

- 4.2.1 Complete the test and ensure the Test In Progress indicator light is no longer illuminated.
- 4.2.2 Remove the specimen
- 4.2.3 Exit the software and turn off the computer.
- 4.2.4 Shut off all other components or accessories to the Instron
- 4.2.5 Switch the power to the Off position and ensure the Power indicator light no longer illuminates.

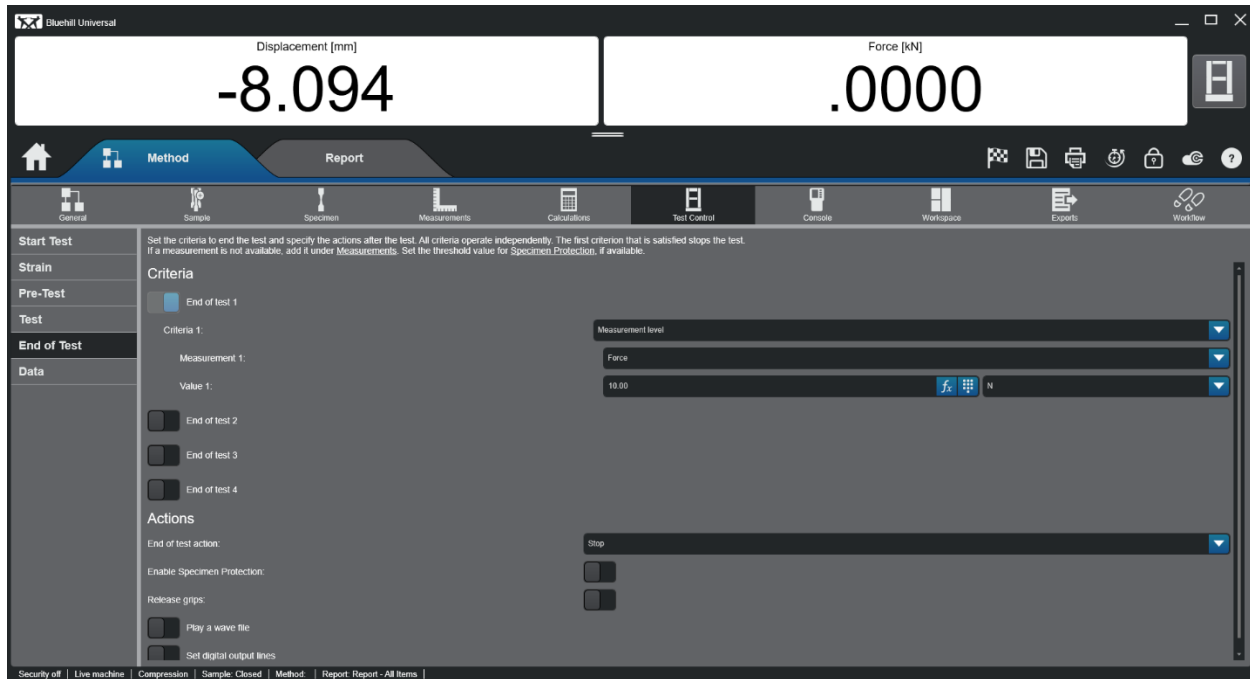
## 5 APPENDIX

### 5.1.1 Creating a new Method

- 5.1.1.1. Select a template or start off using an existing method.
- 5.1.1.2. In the Sample section, add inputs for the tester to fill in.
- 5.1.1.3. In the Specimen section, specify default geometry and dimensions of samples to be tested.



- 5.1.1.4. In the Calculations section, select calculations from the left column and move them to the right to have them appear on the display.
- 5.1.1.5. In Test Control, the behavior throughout the test can be altered. Most importantly, set the End of Test to include a Force-based stop for the safety of the load cell (maximum 50 N). Add other end conditions as necessary.



- 5.1.1.6. In Exports, under Export 1, scroll down to Raw data and enable to ensure the raw data is exported at the end of the test.

