3400 Series
Universal Testing Systems

[Image of a woman operating a 3400 Series Universal Testing System]
The Instron® brand is widely recognized for producing some of the most accurate, responsive, and secure materials testing systems in the world. With seated members on international compliance boards and a global network of experienced and skilled service technicians, Instron backs each system with all the resources necessary to support it throughout its lifetime. For over 70 YEARS we have been proud to design some of the most advanced systems in the materials testing industry.

- **1500+ employees**
  A highly-educated, experienced, and diverse workforce

- **Representing 160 countries**, speaking **40+ languages**

- **50,000+ systems**
  installed worldwide

- **70+ years** of engineering and manufacturing testing systems

- **Diverse product range**
  for nearly all global markets and industries
The 3400 Series Universal Testing Machines range in capacity from 500 N to 50 kN and are designed to meet all of your force testing needs. Instron’s patent-pending Operator Protect system architecture makes the 3400 Series simpler, smarter, and safer than ever before.

Application Based Testing Solutions

Single Column Testing Systems

For low force applications, the 3400 single column series provides up to 5 kN capacity available in standard and extra height options.
For higher force applications, the 3400 dual column table model series provides up to 50 kN capacity available in standard and extra height options.
HOW WILL THE 3400 MEET MY NEEDS?

Application-Based Testing Solutions

Instron® systems are routinely found in industries that require the testing of plastics, metals, elastomers and packaging. Some of our key applications can be found in the biomedical, automotive, electronics, and raw materials industries.

The 3400 Series Universal Testing Machines are designed to perform tensile, compression, flex, peel, puncture, friction, shear tests and more. The systems are compatible with hundreds of grips and fixtures found in Instron’s expansive accessory catalog.

SCAN THE QR CODE to see Instron’s full Accessories Catalog.
Tensile Testing

01 Pneumatic Side Action Grips
02 Eccentric Roller Grips
03 Wedge Action Grips
04 Webbing Capstan Grips
05 Cord And Yarn Grips
06 Screw Side Action Grips
07 Eccentric Roller Grips
HOW WILL THE 3400 MEET MY NEEDS?

Application Based Testing Solutions

Compression and Flexure Testing

01 Syringe Compression Fixture
02 Three-point Bend Fixture
03 Perforated Compression Fixture with Swivel Platen
04 Rigid Compression Platens
05 Component Test Plate and 3-Jaw Chuck
Peel, Tear, Puncture, and Friction Testing Solutions

06  50 N Pneumatic Grips
07  Coefficient of Friction
08  T-peel Test with Side-Action Grips
09  Variable Angle Peel Fixture
10  Ballburst Puncture Fixture
Bluehill Universal is built from the ground up for touch interaction. The Operator Dashboard features large touchpoints to make the user experience simpler and smarter. Easy-to-understand icons and workflows make it easy to train new or experienced users, simplify operator training, and allow you to start testing even faster than ever before.

**QuickTest**

For when you need results fast, QuickTest allows users to enter a few simple parameters and run their test within seconds.

**Pre-Loaded Templates**

Bluehill Universal includes an extensive library of pre-configured methods for some of the most commonly used ASTM, ISO, and EN standards. The methods are packaged in modules that are specific to your testing application.

**Prompted Tests**

Users can be guided through the entire testing process with step-by-step instructions, ensuring that their tests remain repeatable, simple, and error-free. The prompts are customizable with your own text and images.
TestProfiler
Build simple cyclic tests that include ramps, holds, and triangle waves. Conditional logic allows users to create looping patterns that help re-create real-life scenarios within tests.

TestCam
Connect a USB webcam to experience point-by-point video playback, allowing you to view the test even after it has finished.
SAFER
Safety without Sacrificing Throughput

Operator Protect
The 3400 Series is built on Instron’s patent-pending Operator Protect architecture. An intelligent workflow keeps equipment and operators safer by controlling system status from setup to test completion.

Built-in Safety Coaching
The 3400 system provides clear direction to users about when it is safe to enter the test space and when they should stay clear of it.

Smart-Close Air Kit
Finger pinch hazards from pneumatic grips are reduced through lower grip-closing pressure and restricted speed during the set up phase of your test.
Operator Panel
The 3400 Series brings system controls closer than ever before with the all-new operator panel. Improve ergonomics and throughput by starting and stopping tests, jogging the crosshead, and returning to the starting position directly from the instrument.

Status at a Glance
Monitor the system status with indicator lights and corresponding Safety Coaching messages in Bluehill® Universal.

Variable Speed Jog
During set up mode, your system will default to a safe speed appropriate for an operator to work in the test space.

Virtual Interlock
With Instron’s patent-pending system architecture, the machine’s movement is restricted to prevent unintended motion of the crosshead.
**SMARTER Protecting Your Investment**

**Collision Mitigation**
Reduce damage to equipment and delicate specimens by stopping the crosshead if force is detected upon return or during a jog.

**Load Cell Overload Protection**
The 3400 series systems automatically stop when the load cell reaches maximum capacity to prevent damage to the load cell, system, and accessories.

**Built to Last**
Powered by maintenance-free brushless AC servomotors, the 3400 series is designed for longevity. All Instron® electromechanical systems are equipped with guidance columns in addition to preloaded ballscrews for increased robustness.
Instron® is the largest supplier of materials testing systems in the world. Our reliable testing systems can run 24 hours a day, 7 days a week, 365 days of the year. However, if something does go wrong, or if you have a question, we offer a variety of resources to ensure you receive the assistance you need as soon as you need it.

**Instron Connect**
- Instron Connect provides easy remote screen sharing and service request submissions to reduce support times
- Built-in verification reminders minimize the risk of delayed certifications
- Instron Connect allows simple test method and file transfers to keep systems up to date
- Expert consultants provide tailored solutions and traditional hotline access anywhere in the world
- Additional services like preventative maintenance, calibration, training, and emergency repair ensure maximum uptime for your equipment.

**Training**
- Training courses available on-site or in one of our Regional Training Centers
- Utilize our Applications Engineering Lab or Custom Solutions Group for the latest technological advances in materials testing

**Calibration**
- Our state-of-the-art Calibration Laboratory offers a comprehensive range of accredited calibration and verification services complying with ASTM, ISO, and Nadcap standards for: force, speed, strain (extensometers), displacement, impact, temperature, torque, creep, strain gauge channel, and alignment.
# 3400 SERIES SPECIFICATIONS

## 3400 Single Column Series

<table>
<thead>
<tr>
<th>Model</th>
<th>Force Capacity (kN)</th>
<th>Crosshead Travel (mm/in)</th>
<th>Vertical Test Space (A) (mm/in)</th>
<th>Horizontal Test Space (B) (mm/in)</th>
<th>Maximum Speed (mm/min/in/min)</th>
<th>Minimum Speed (mm/min/in/min)</th>
<th>Maximum Return Speed (mm/min/in/min)</th>
<th>Footprint Dimensions (mm/in)</th>
<th>Position Control Resolution (nm/µin)</th>
<th>Frame Axial Stiffness (kN/mm/lb/in)</th>
<th>Maximum Force at Full Speed (kN/lbf)</th>
<th>Maximum Speed at Full Force (mm/min/in/min)</th>
<th>Weight (kg/lb)</th>
<th>Maximum Power Requirements (VA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34SC-05</td>
<td>0.5</td>
<td>19.0</td>
<td>651</td>
<td>100</td>
<td>3.9</td>
<td>100</td>
<td>1500</td>
<td>950 × 460 × 610</td>
<td>19.1</td>
<td>2</td>
<td>2</td>
<td>0.5</td>
<td>112</td>
<td>40</td>
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<tr>
<td>34SC-1</td>
<td>1</td>
<td>34.1</td>
<td>1050</td>
<td>100</td>
<td>3.9</td>
<td>100</td>
<td>1500</td>
<td>1370 × 460 × 610</td>
<td>19.1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>225</td>
<td>40</td>
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<tr>
<td>34SC-2</td>
<td>2</td>
<td>3.9</td>
<td>41.3</td>
<td>3.9</td>
<td>100</td>
<td>1500</td>
<td>1370 × 460 × 610</td>
<td>19.1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>450</td>
<td>40</td>
<td>59</td>
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<tr>
<td>34SC-5</td>
<td>5</td>
<td>3.9</td>
<td>1118</td>
<td>100</td>
<td>3.9</td>
<td>1500</td>
<td>1420 × 460 × 610</td>
<td>19.1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1125</td>
<td>40</td>
<td>59</td>
</tr>
</tbody>
</table>

* The footprint width is for the system only. The Operator Dashboard monitor may add 300 mm (12 in) to the overall width of the frame. The extra height (E2) option for the 34SC-5 adds 270 mm (11 in) to the overall height of the frame.
## 3400 Table Model Series

<table>
<thead>
<tr>
<th>Force Capacity</th>
<th>34TM-5</th>
<th>34TM-10</th>
<th>34TM-30</th>
<th>34TM-50</th>
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</thead>
<tbody>
<tr>
<td>kN</td>
<td>5</td>
<td>10</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>lbf</td>
<td>1125</td>
<td>2250</td>
<td>6750</td>
<td>11250</td>
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</table>

<table>
<thead>
<tr>
<th>Crosshead Travel</th>
<th>mm</th>
<th>1172 (E1), 1651 (E2)</th>
<th>1172 (E1), 1651 (E2)</th>
<th>1128 (E1), 1607 (E2)</th>
<th>1128 (E1), 1607 (E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>46.1 (E1), 65.0 (E2)</td>
<td>46.1 (E1), 65.0 (E2)</td>
<td>44.4 (E1), 63.3 (E2)</td>
<td>44.4 (E1), 63.3 (E2)</td>
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</table>

<table>
<thead>
<tr>
<th>Vertical Test Space (A)</th>
<th>mm</th>
<th>1242 (E1), 1744 (E2)</th>
<th>1242 (E1), 1744 (E2)</th>
<th>1198 (E1), 1700 (E2)</th>
<th>1198 (E1), 1700 (E2)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>48.9 (E1), 68.7 (E2)</td>
<td>48.9 (E1), 68.7 (E2)</td>
<td>47.2 (E1), 66.9 (E2)</td>
<td>47.2 (E1), 66.9 (E2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horizontal Test Space (B)</th>
<th>mm</th>
<th>420</th>
<th>420</th>
<th>420</th>
<th>420</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>16.5</td>
<td>16.5</td>
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<table>
<thead>
<tr>
<th>Maximum Speed</th>
<th>mm/min</th>
<th>1016</th>
<th>508</th>
<th>508</th>
<th>508</th>
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<tr>
<td></td>
<td>in/min</td>
<td>40</td>
<td>20</td>
<td>20</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Minimum Speed</th>
<th>mm/min</th>
<th>0.05</th>
<th>0.05</th>
<th>0.05</th>
<th>0.05</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>in/min</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Return Speed</th>
<th>mm/min</th>
<th>1500</th>
<th>610</th>
<th>610</th>
<th>508</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in/min</td>
<td>59</td>
<td>24</td>
<td>24</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Footprint Dimensions (h × w × d)*</th>
<th>63 × 30 × 28</th>
<th>63 × 30 × 28</th>
<th>63 × 30 × 28</th>
<th>63 × 30 × 28</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1600 × 760 × 710</td>
<td>1600 × 760 × 710</td>
<td>1600 × 760 × 710</td>
<td>1600 × 760 × 710</td>
</tr>
</tbody>
</table>

| Position Control Resolution | nm | 19.7 | 9.9 | 5.2 | 3.7 |
|                            | µin| 0.78 | 0.39 | 0.20 | 0.14 |

| Frame Axial Stiffness | kN/mm | 38 | 38 | 72 | 74 |
|                       | lb/in  | 217,000 | 217,000 | 411,100 | 422,000 |

| Maximum Force at Full Speed | kN | 5 | 10 | 30 | 25 |
|                            | lbf | 1125 | 2250 | 6750 | 5620 |

| Maximum Speed at Full Force | mm/min | 1016 | 508 | 508 | 250 |
|                            | in/min | 40   | 20  | 20  | 10  |

<table>
<thead>
<tr>
<th>Weight</th>
<th>kg</th>
<th>122 (E1), 136 (E2)</th>
<th>122 (E1), 136 (E2)</th>
<th>140 (E1), 154 (E2)</th>
<th>152 (E1), 166 (E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lb</td>
<td>268 (E1), 299 (E2)</td>
<td>268 (E1), 299 (E2)</td>
<td>308 (E1), 339 (E2)</td>
<td>334 (E1), 365 (E2)</td>
</tr>
</tbody>
</table>

| Maximum Power Requirements | VA | 730 | 730 | 1000 | 1000 |

*The footprint width is for the system only. The Operator Dashboard monitor may add 300 mm (12 in) to the overall width of the frame. The extra height (E2) option adds 530 mm (21 in) to the overall height of the frame.
Data Acquisition Rate at the PC:
Up to 1 kHz simultaneous on force, displacement, and strain channels.

Load Measurement Accuracy:
±0.5% of reading down to 1/200th of load cell capacity. Meets or exceeds ASTM E4, BS 1610, DIN 51221, ISO 7500-1, EN 10002-2, JIS B7721, JIS B7733, and AFNOR A03-501 standards.

Strain Measurement Accuracy:
Meets or exceeds ASTM E83, BS 3846, ISO 9513, and EN 10002-4 standards.

Displacement Measurement Accuracy:
±0.02 mm or 0.15% of displacement (whichever is greater).

Testing Speed Accuracy:
(Zero or constant load) ±0.2% of set speed.

Single Phase Voltage:
100, 120, 220, or 240 VAC ±10%, 47 to 63 Hz.

Operating Temperature:
+5 to +40°C (+41 to +104°F)

Storage Temperature:
-25 to +55°C (-13 to +131°F)

Humidity Range:
+10 to +90%, non-condensing at 20°C

Ingress Protection (IP) Rating:
IP 2X. Protective measures may be required if excessive dust, corrosive fumes, electromagnetic fields, or hazardous conditions are encountered.

Notes:
These specifications were developed in accordance with Instron’s standard procedures and are subject to change without notice. All systems conform to all relevant European standards and carry a CE mark.
“True innovation occurs when product designers and developers show relentless curiosity towards the needs of their customers. This builds an understanding that allows them to anticipate and create a new suite of solutions that are Simpler, Smarter, and Safer.”

Yahya Gharagozlou
Group President
ITW Test & Measurement
(Instron is an ITW Company)