

# 3400 Series

Universal Testing Systems





  
**INSTRON**

5kN

3417F-5

**Crush hazard**  
Always close lid first  
before touching any moving  
parts of the machine.  
Warning: After understanding  
operation & instruction  
before using the  
machine.

DISABLED    SET UP    TESTING



**Test**  
Create an exc...

**Method**  
Edit test me...

**Analysis**  
Replay, modify a...

**Admin**  
Configure the system

Powered by Bluehill® Univers...

0 Zero Displacement

Ongoing | Security off | Live machine | No test type | Sample Closed | Method Closed





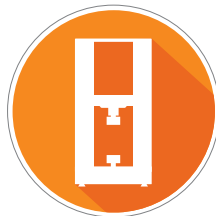
For over **75 YEARS** the Instron® brand has been widely recognized for producing some of the most advanced mechanical testing systems in the world. Our systems are designed by industry experts, vetted by active members of major standards organizations, and supported by a global network of skilled and experienced service technicians. This comprehensive approach allows us to back each Instron system with an unmatched level of industry and application expertise designed to support it throughout its lifetime.



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



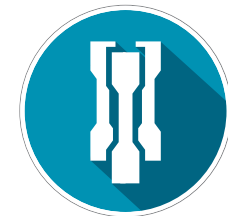
Representing **160 countries**, speaking **40+ languages**



**50,000+ systems** installed worldwide



**75+ years** of engineering and manufacturing testing systems



**Diverse product range** for nearly all global markets and industries

# SOLUTIONS FOR ALL OF YOUR TESTING NEEDS

## Application Based Testing Solutions

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.



### 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

### Table Model Testing Systems

For higher force applications, the 3400 dual column table model series provides up to 50 kN capacity available in standard and extra height options.



SCAN THE QR CODE to learn more  
and see the 3400 systems in action.



## Floor Model Testing Systems

For higher force applications, the 3400 floor model series provides up to 100 kN capacity available in short base and tall base options.

# HOW WILL THE 3400 MEET MY NEEDS?

## Application-Based Testing Solutions

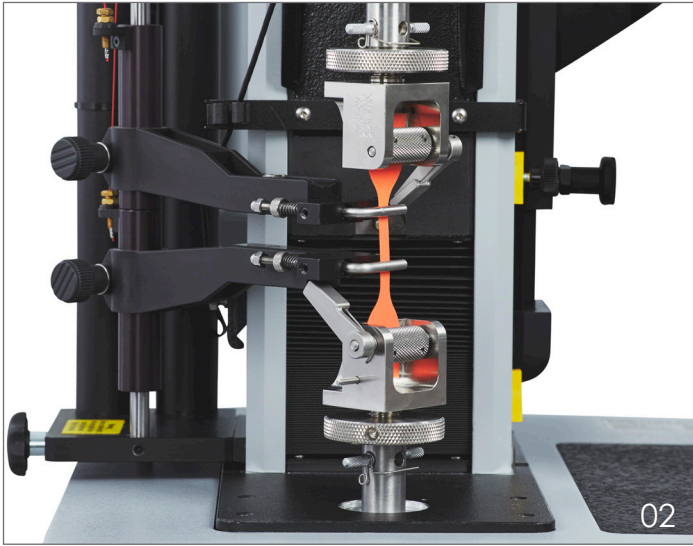
Instron® systems are routinely found in industries that require the testing of plastics, metals, elastomers and packaging. Some of our key applications can be found in the biomedical, automotive, electronics, and raw materials industries.

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.

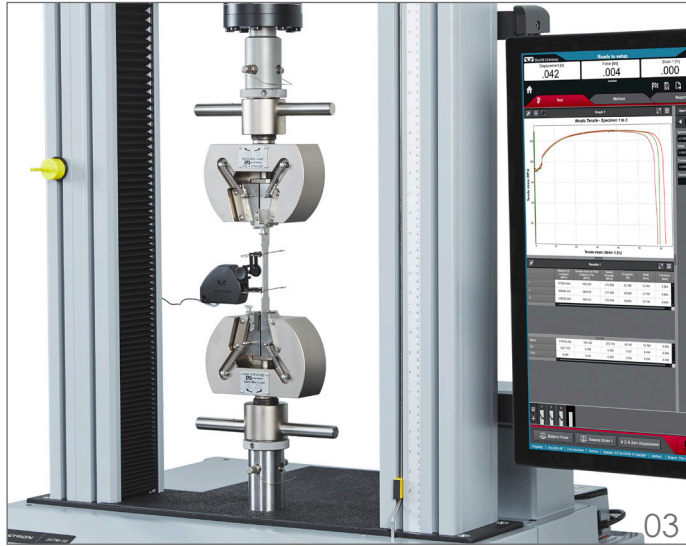
SCAN THE QR CODE  
to see Instron's full  
Accessories Catalog.



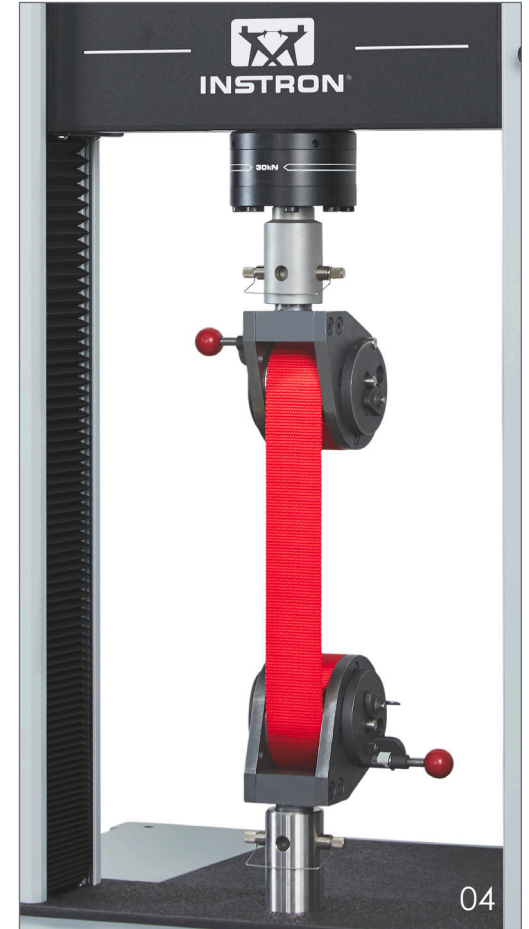




02



03



04



05



06



07

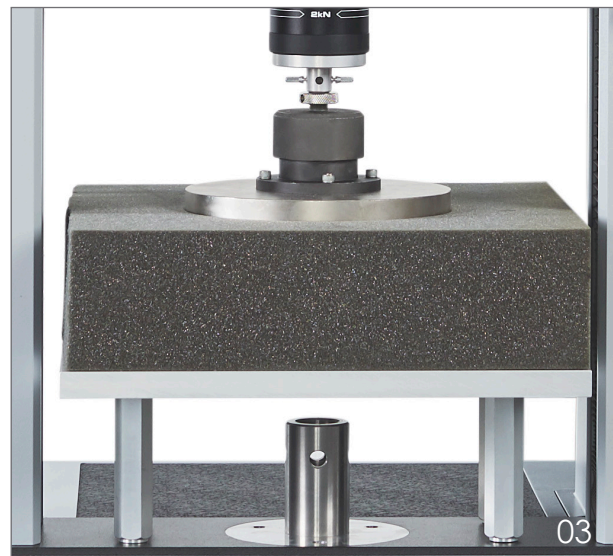
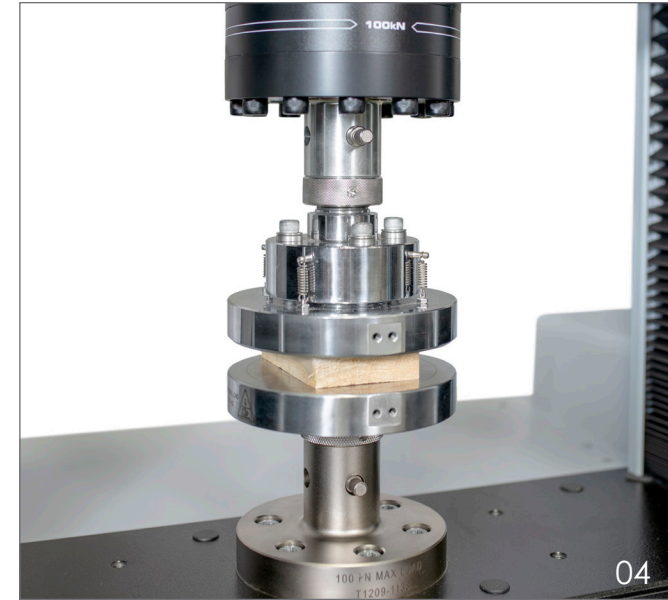
## Tensile Testing

- 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



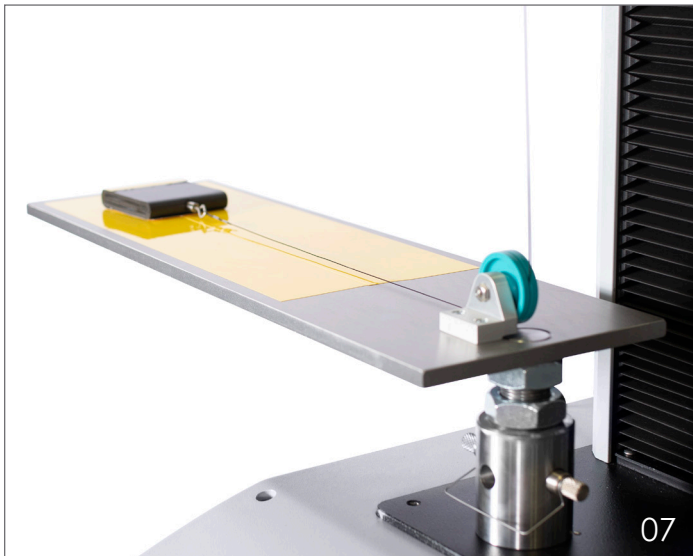
## Compression and Flexure Testing

- 01 Syringe Compression Fixture
- 02 Three-point Bend Fixture
- 03 Perforated Compression Fixture with Swivel Platen
- 04 Compression Platens
- 05 Component Test Plate and 3-Jaw Chuck

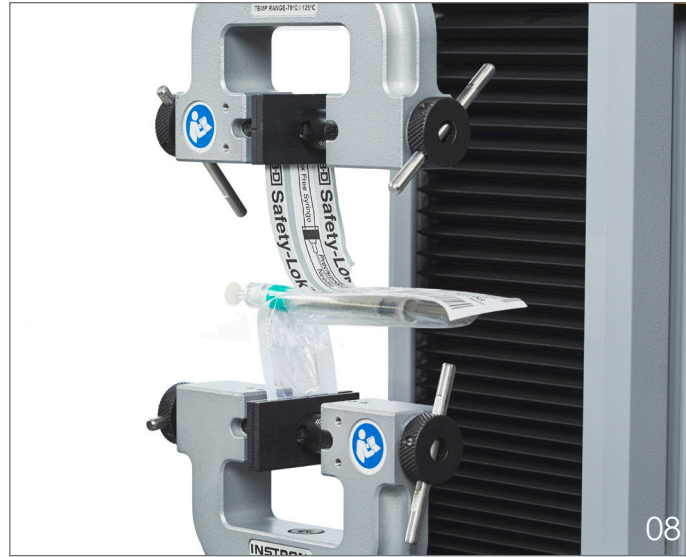




06



07



08



09



10

## 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



# Simpler

Powered by Bluehill® Universal

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

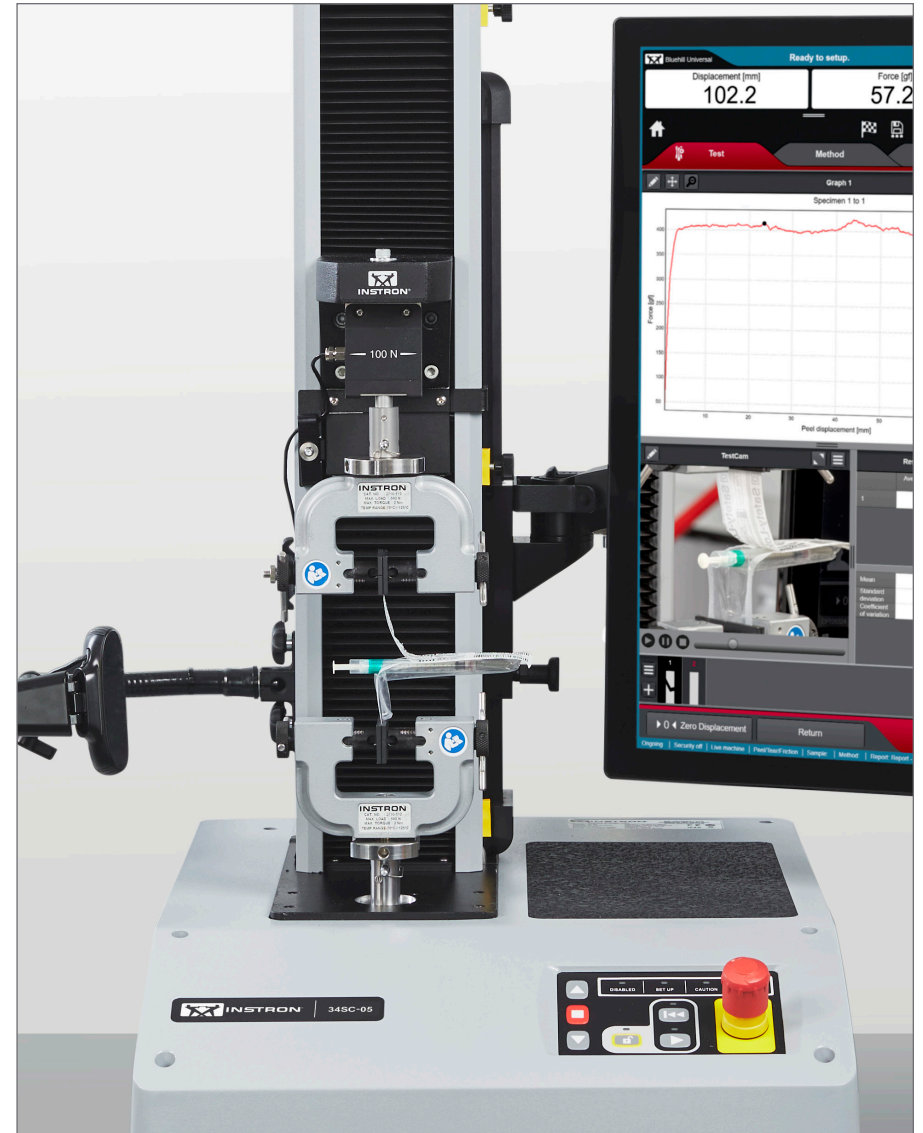
Users can be guided through the entire testing process with step-by-step instructions, ensuring that their tests remain repeatable, simple, and error-free. The prompts are customizable with your own text and images.





## 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.



# SUPPORT FOR THE LIFE OF YOUR EQUIPMENT

Protecting Your Investment



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 the 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

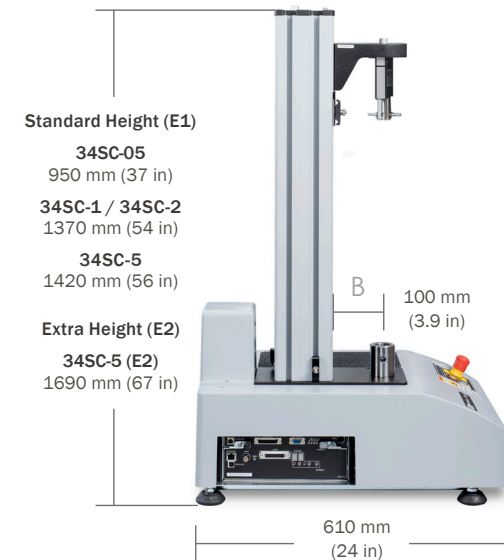
- Our state-of-the-art Calibration Laboratory offers a comprehensive range of accredited calibration and verification services complying with ASTM, ISO, and Nadcap standards for: force, speed, strain (extensometers), displacement, impact, temperature, torque, creep, strain gauge channel, and alignment.

# 3400 SERIES SPECIFICATIONS

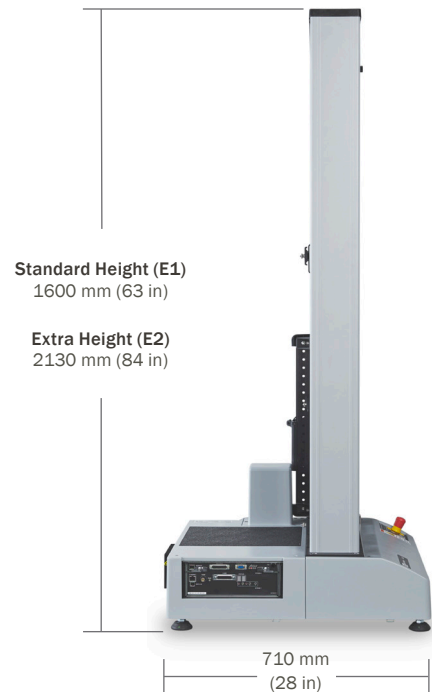
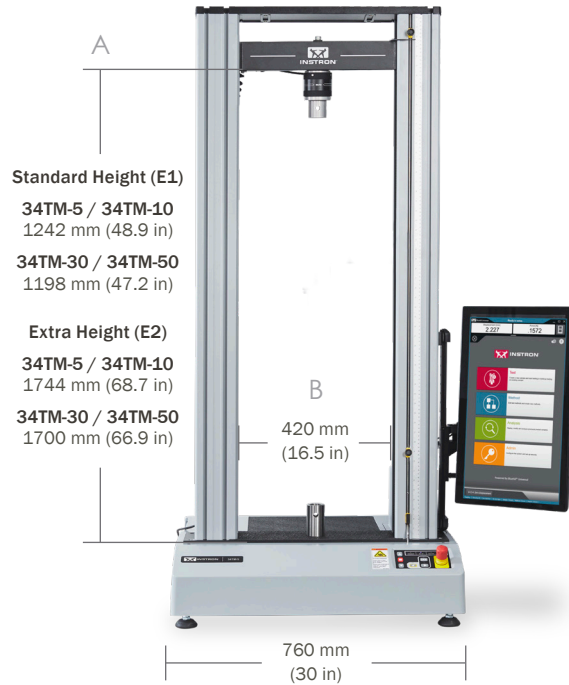
## 3400 Single Column Series

		34SC-05	34SC-1	34SC-2	34SC-5
Force Capacity	kN	0.5	1	2	5
	lbf	112	225	450	1125
Crosshead Travel	mm	482	867	867	868 (E1), 1112 (E2)
	in	19.0	34.1	34.1	34.2 (E1), 43.8 (E2)
Vertical Test Space (A)	mm	651	1050	1050	1118 (E1), 1375 (E2)
	in	25.6	41.3	41.3	44.0 (E1), 54.1 (E2)
Horizontal Test Space (B)	mm	100	100	100	100
	in	3.9	3.9	3.9	3.9
Maximum Speed	mm/min	1016	1016	1016	1016
	in/min	40	40	40	40
Minimum Speed	mm/min	0.05	0.05	0.05	0.05
	in/min	0.002	0.002	0.002	0.002
Maximum Return Speed	mm/min	1500	1500	1500	1500
	in/min	59	59	59	59
Footprint Dimensions (h × w × d)*	mm	950 × 460 × 610	1370 × 460 × 610	1370 × 460 × 610	1420 × 460 × 610
	in	37 × 18 × 24	54 × 18 × 24	54 × 18 × 24	56 × 18 × 24
Position Control Resolution	nm	125	125	125	125
	μin	4.92	4.92	4.92	4.92
Frame Axial Stiffness	kN/mm	2	2	2	8.5
	lb/in	11400	11400	11400	48500
Maximum Force at Full Speed	kN	0.5	1	2	5
	lbf	112	225	450	1125
Maximum Speed at Full Force	mm/min	1016	1016	1016	1016
	in/min	40	40	40	40
Weight	kg	50	54	54	63 (E1), 68 (E2)
	lb	110	120	120	138 (E1), 150 (E2)
Maximum Power Requirements	VA	256	256	256	366

\* 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

		34TM-5	34TM-10	34TM-30	34TM-50
<b>Force Capacity</b>	kN	5	10	30	50
	lbf	1125	2250	6750	11250
<b>Crosshead Travel</b>	mm	1172 (E1), 1651 (E2)	1172 (E1), 1651 (E2)	1128 (E1), 1607 (E2)	1128 (E1), 1607 (E2)
	in	46.1 (E1), 65.0 (E2)	46.1 (E1), 65.0 (E2)	44.4 (E1), 63.3 (E2)	44.4 (E1), 63.3 (E2)
<b>Vertical Test Space (A)</b>	mm	1242 (E1), 1744 (E2)	1242 (E1), 1744 (E2)	1198 (E1), 1700 (E2)	1198 (E1), 1700 (E2)
	in	48.9 (E1), 68.7 (E2)	48.9 (E1), 68.7 (E2)	47.2 (E1), 66.9 (E2)	47.2 (E1), 66.9 (E2)
<b>Horizontal Test Space (B)</b>	mm	420	420	420	420
	in	16.5	16.5	16.5	16.5
<b>Maximum Speed</b>	mm/min	1016	508	508	508
	in/min	40	20	20	20
<b>Minimum Speed</b>	mm/min	0.05	0.05	0.05	0.05
	in/min	0.002	0.002	0.002	0.002
<b>Maximum Return Speed</b>	mm/min	1500	610	610	508
	in/min	59	24	24	20
<b>Footprint Dimensions (h × w × d)*</b>	mm	1610 × 760 × 710	1610 × 760 × 710	1610 × 760 × 710	1610 × 760 × 710
	in	63 × 30 × 28	63 × 30 × 28	63 × 30 × 28	63 × 30 × 28
<b>Position Control Resolution</b>	nm	129	64.7	33.8	24.1
	µin	5.09	2.55	1.33	0.95
<b>Frame Axial Stiffness</b>	kN/mm	38	38	72	74
	lb/in	217,000	217,000	411,100	422,000
<b>Maximum Force at Full Speed</b>	kN	5	10	30	25
	lbf	1125	2250	6750	5620
<b>Maximum Speed at Full Force</b>	mm/min	1016	508	508	250
	in/min	40	20	20	10
<b>Weight</b>	kg	122 (E1), 136 (E2)	122 (E1), 136 (E2)	140 (E1), 154 (E2)	152 (E1), 166 (E2)
	lb	268 (E1), 299 (E2)	268 (E1), 299 (E2)	308 (E1), 339 (E2)	334 (E1), 365 (E2)
<b>Maximum Power Requirements</b>	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.

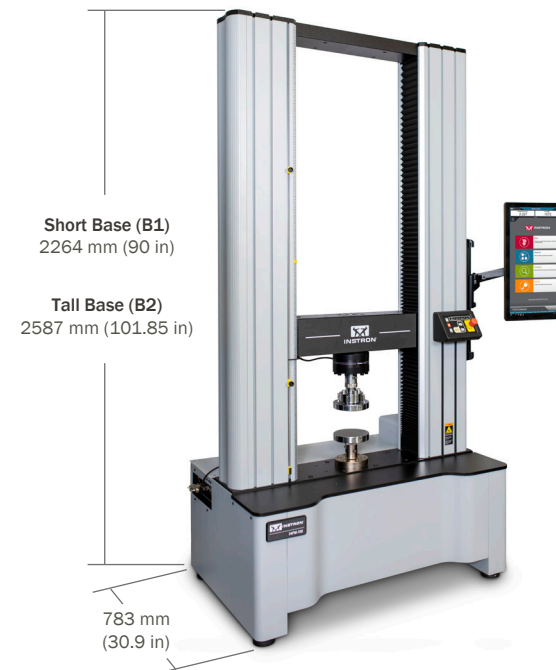
# 3400 SERIES SPECIFICATIONS

## 3400 Floor Model Series

### 34FM-100

Force Capacity	kN	100
	lbf	22480
Crosshead Travel	mm	1407
	in	55.3
Vertical Test Space (A)*	mm	1494
	in	58.8
Horizontal Test Space (B)	mm	575
	in	22.6
Maximum Speed	mm/min	508
	in/min	20
Minimum Speed	mm/min	0.005
	in/min	0.0002
Maximum Return Speed	mm/min	600
	in/min	23.6
Footprint Dimensions (h × w × d)**	mm	2264 (B1), 2587 (B2) × 1132 × 783
	in	90 (B1), 101.85 (B2) × 44.89 × 30.9
Position Control Resolution	nm	60
	µin	2.3622
Frame Axial Stiffness	kN/mm	300
	lb/in	1713044
Maximum Force at Full Speed	kN	50
	lbf	11240
Maximum Speed at Full Force	mm/min	254
	in/min	10
Weight	kg	786.2 (B1), 848.4 (B2)
	lb	1733 (B1), 1870 (B2)
Maximum Power Requirements	VA	2400

\* Standard height and short base dimensions only. See diagrams for additional variations. The footprint width is for the system only. The Operator Dashboard monitor may add 500 mm to the overall width of the frame.





# | SPECIFICATIONS & REQUIREMENTS

## 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.

## Three Phase Voltage:

208 to 240 VAC -5% / +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)

## Ingress Protection (IP) Rating:

IP 2X. Protective measures may be required if excessive dust, corrosive fumes, electromagnetic fields, or hazardous conditions are encountered.

## Humidity Range:

+10 to +90%, non-condensing at 20 °C

### 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.



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## THE WORLD STANDARD

We stake our reputation on the integrity of data. From the measurement of primary test data to result generation, we design and manufacture the full data integrity chain (e.g. load cells, sensor conditioning, and software). Additionally, we calibrate more than 90,000 of these sensors annually with the lowest accumulated uncertainty.

**30,000+**

We service and calibrate more than 30,000 Instron systems in active use worldwide every year.

**96%**

96% of the Fortune 100 list of the world's largest manufacturing companies use Instron test systems.

**18,000+**

Instron systems have been cited in more than 18,000 patents since 1975.

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