CellScale
biomaterials testing

UNIVERT

CATALOGUE

2026

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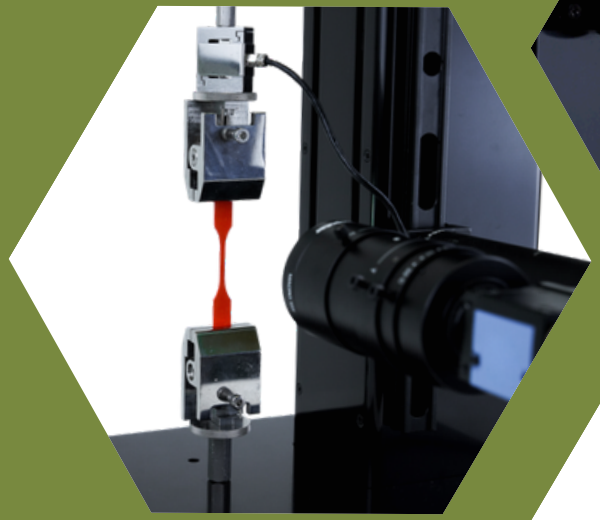
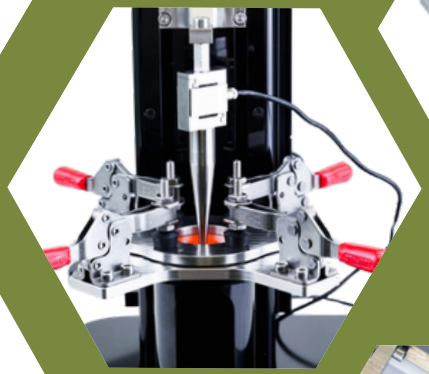
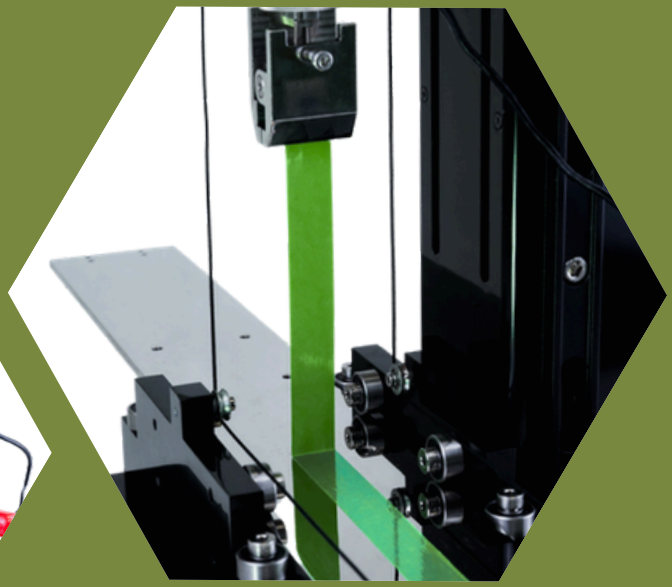
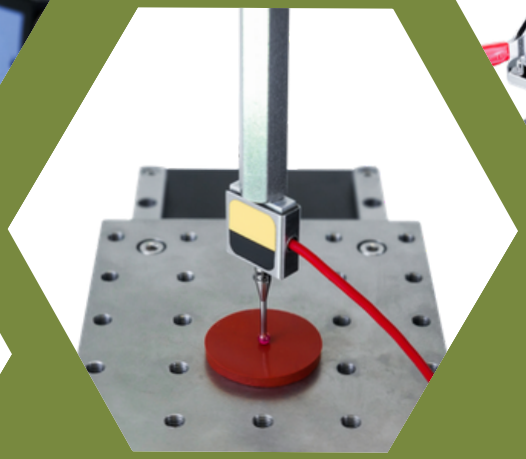
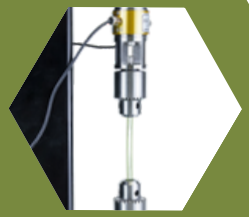
A Precision Mechanical



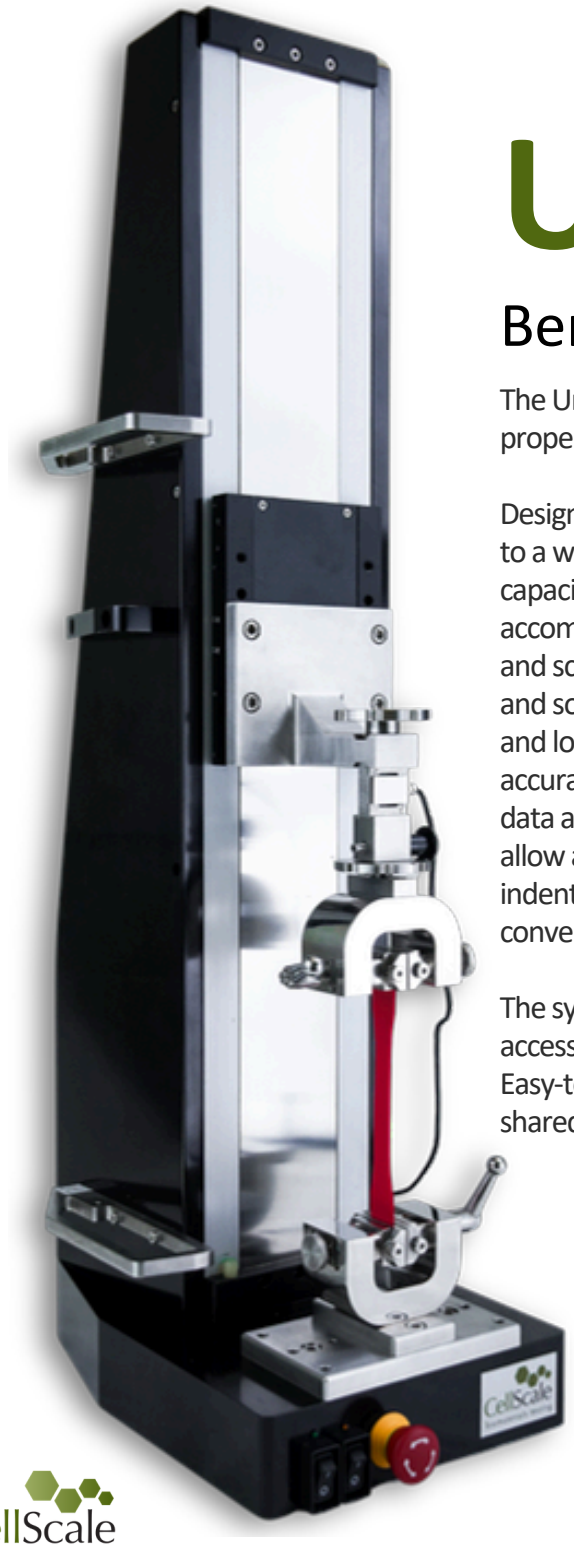








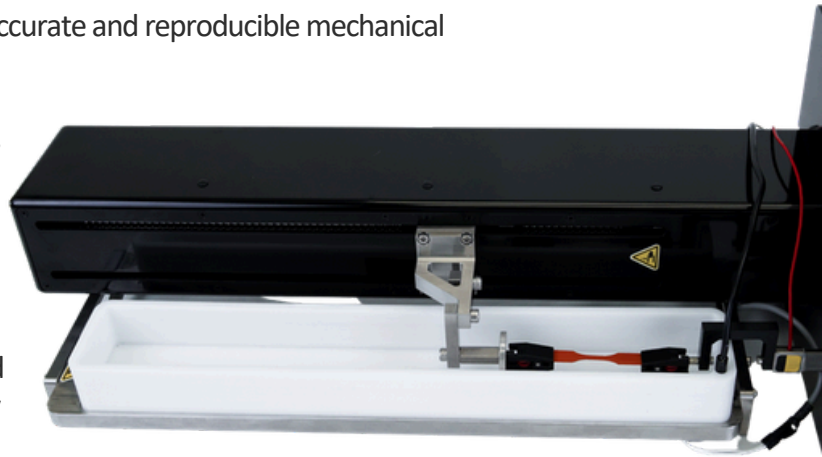
Tester for Your Lab Bench



UniVert Series

Benchtop Universal Mechanical Testing Instrument

The UniVert series of instruments are designed to deliver accurate and reproducible mechanical property data for natural and engineered soft materials.



Designed for versatility and ease of use, the UniVert adapts to a wide range of experimental needs. With a force range capacity spanning 0.02N to 1000N, the system accommodates everything from natural tissues, hydrogels, and scaffolds, to 3D printed structures, orthopedic devices, and soft robotics materials. Interchangeable force sensors and load cells allow users to quickly optimize sensitivity and accuracy for their specific application, ensuring high-quality data across the full testing range. Swappable test fixtures allow a wide range of testing modalities including compression, tension, torsion, inflation, indentation, and more. Re-orientation of the test frame (vertical or horizontal) allows the most convenient test setups for tension and compression tests in air or media.

The system's compact footprint and cost-effective design make advanced mechanical testing accessible to laboratories with limited space or budget, without compromising performance. Easy-to-change fixtures enable rapid transitions between test types, maximizing productivity in shared or multi-user environments.

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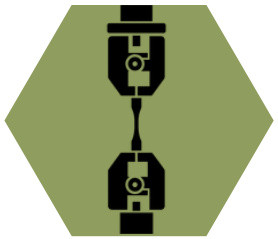
Capabilities


Tension

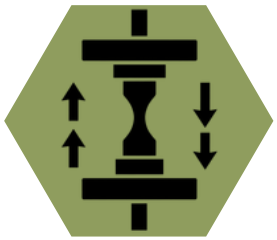

Compression


Ultra-Low Force


Hydrated & Temperature Controlled

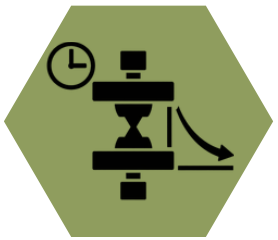

Digital Image Correlation

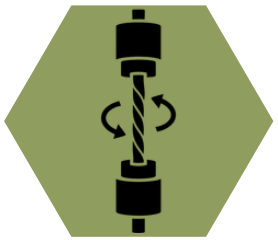

Flexural & Bending


Fatigue


Viscoelastic & Time-Dependent


Creep


Stress Relaxation


Torsion

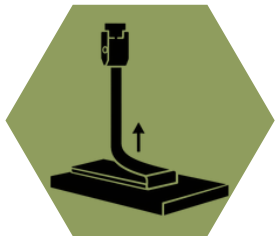

Shear


Fiber


Pressure


Puncture


Indentation


Peel

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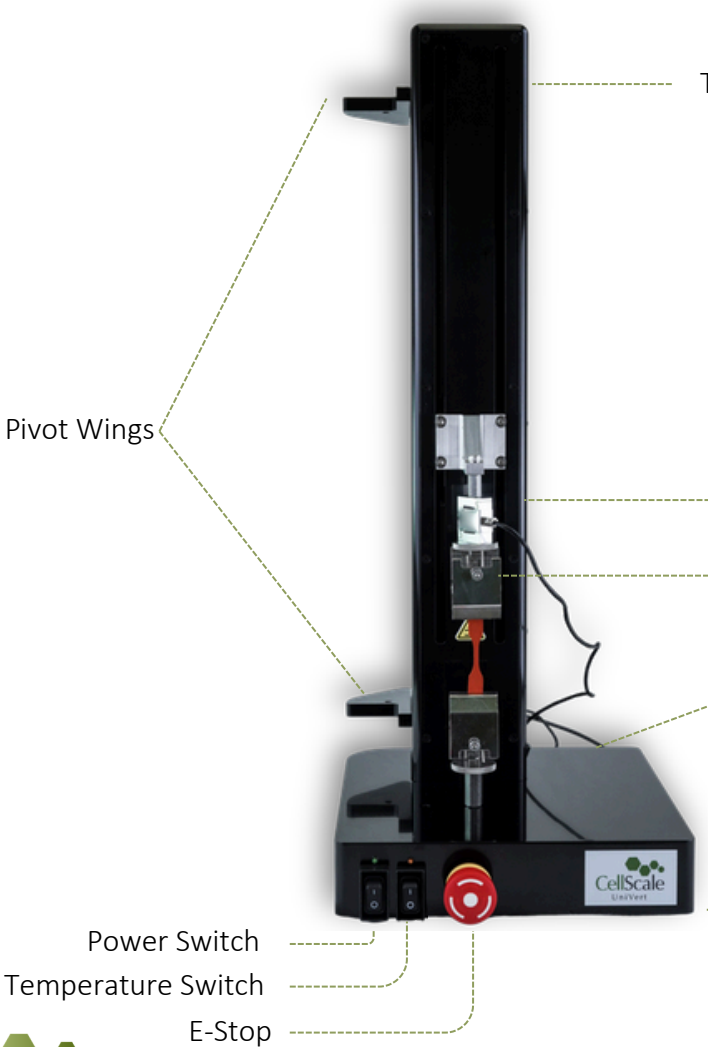
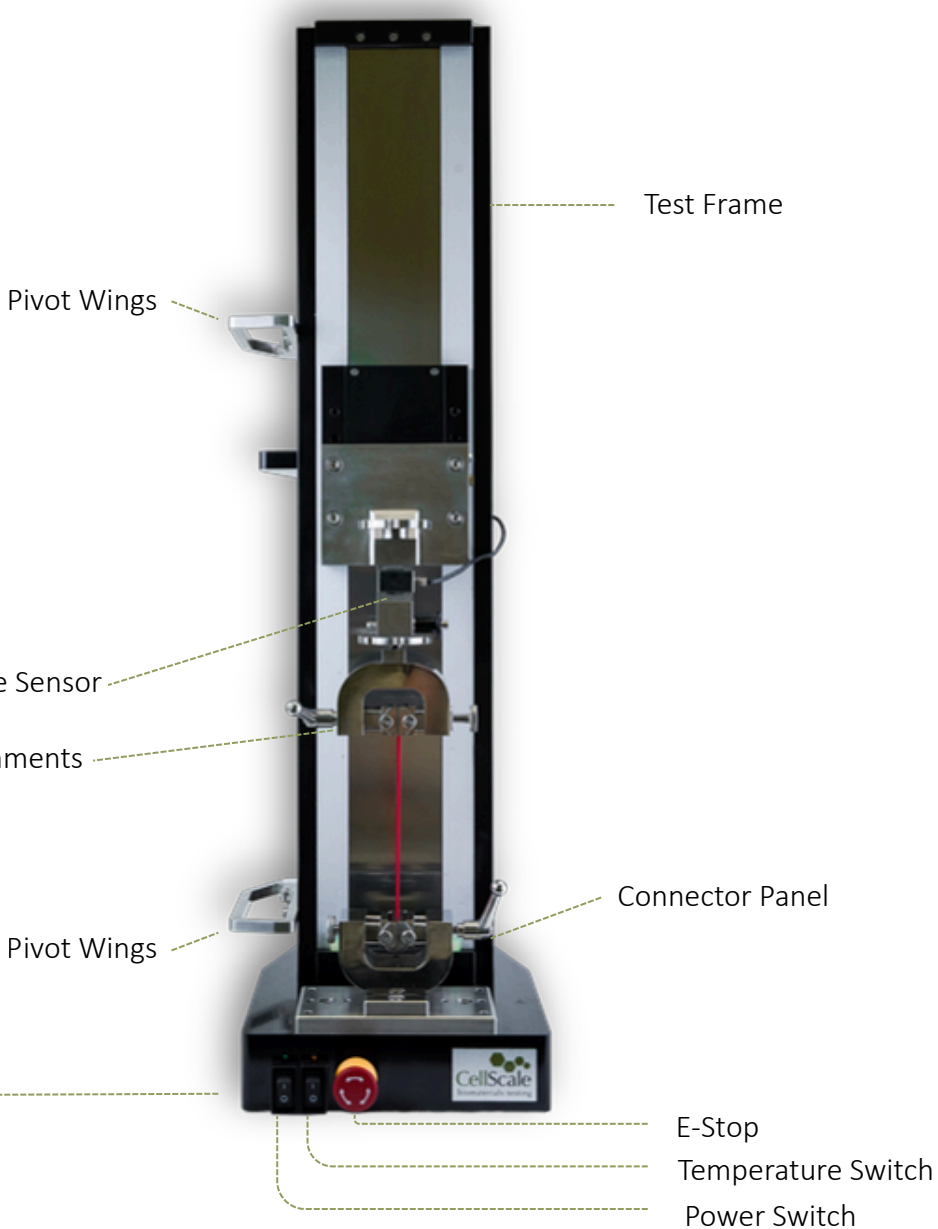
UniVert S



UniVert 1kN

*500mm extended stroke displayed on the 1kN below



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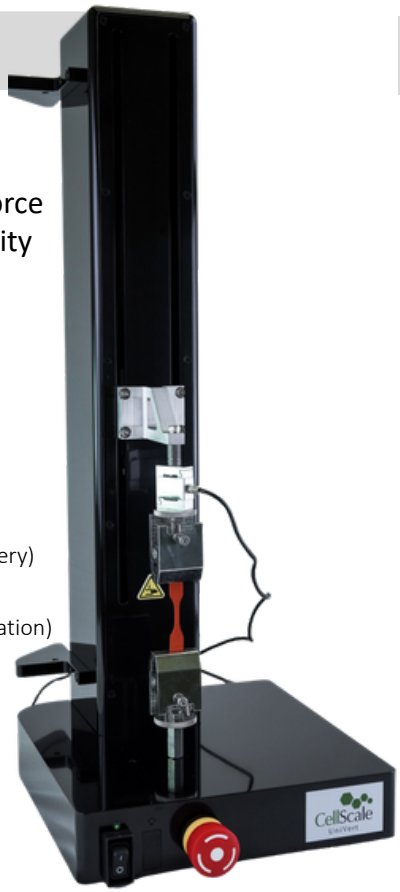
UniVert Series

Choose the Right Device for Your Testing Needs

The UniVert series comprises two different models: UniVert S and UniVert 1kN. The two models share the same core design, fixture, and accessory compatibility, but with different speed and force range capabilities to suit user application demands.

UniVert S

The UniVert S is a compact, cost-effective benchtop mechanical tester for low to medium force mechanical testing, with a force range from 0.02 N to 200 N. Actuator velocity upgrade available. Compatible with the full range of UniVert accessories and fixtures.

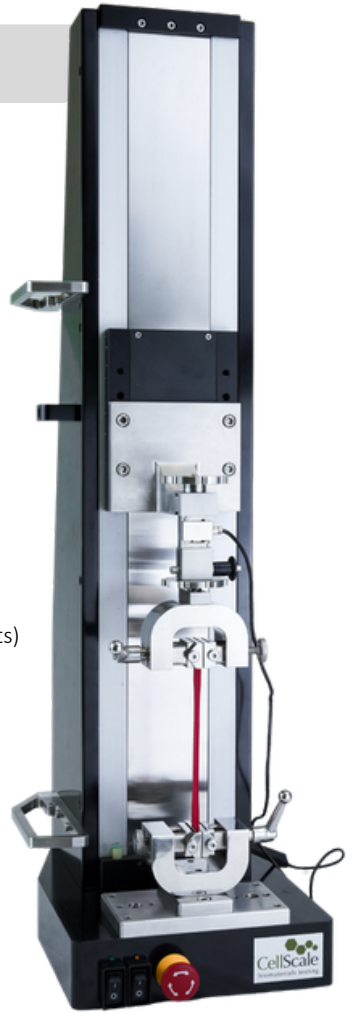


Application Examples

- Hydrogels
  (discs, gel strip stiffness/strength comparisons)
- Cardiac Tissue
  (vascular grafts, heart valve durability & elastic recovery)
- Membranes
  (thin films/sheets, patch-like material strength/elongation)
- Scaffolds
  (aerogels, sponge-like construct testing)
- Corneal & Neural Tissue
  (engineered tissue stiffness and durability)
- 3D Bioprints
  (printed tissue, scaffold, and graft durability)

UniVert 1 kN

The UniVert 1kN provides an extended force range compared to the UniVert S, with a force capacity from 0.02 N to 1000 N. Compatible with the full range of UniVert accessories and fixtures at the highest force level.



Application Examples

- Tendons & Ligaments
  (tensile/strength and stiffness tests)
- Elastomers & Polymers
  (PDMS, rubber specimen tensile testing)
- Adhesives
  (sealants, bonded assemblies for peel or shear tests)
- Muscle & Connective Tissue
  (load-bearing tissues for viscoelastic testing)
- Bone Tissue
  (osteogenic composites for torsion or tension)
- Implant Materials
  (implantable patches, graft-like construct testing)

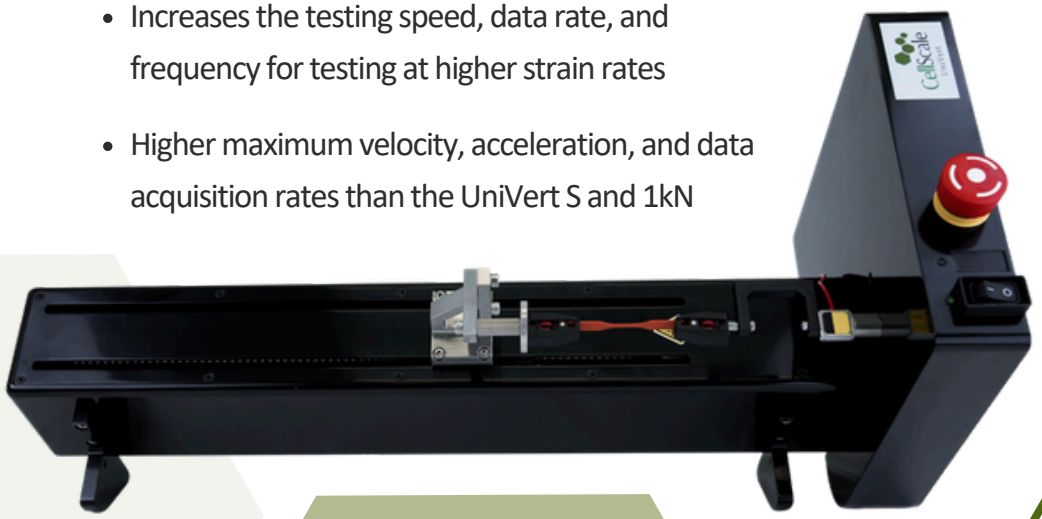
***Both UniVert models support interchangeable fixtures & load cells, integrated imaging, environmental control, and optional additional axes for shear, torsion, and pressure testing. The key differences are the speed and force range capabilities.*

S2 Upgrade

The S2 Upgrade is an optional hardware enhancement to the UniVert S, increasing the testing speed, maximum velocity, and data acquisition rate capabilities.

Speed Upgrade for the UniVert S

- Upgrade the UniVert S to S2 with enhanced actuator performance
- Increases the testing speed, data rate, and frequency for testing at higher strain rates
- Higher maximum velocity, acceleration, and data acquisition rates than the UniVert S and 1kN



When selected at the time of purchase, the S2 Upgrade is integrated so your UniVert S2 arrives ready to use. For existing UniVert S systems, the S2 Upgrade requires the instrument to be shipped back to CellScale for installation and verification.

UniVert Comparison

Specification		S (S2)	1kN
Dimensions	(cm)	22 x 22 x 54	30 x 22 x 60
Weight	(kg)	8	20
Force Capacity	(N)	200	1000
Load Cell / Force Sensor Range	(N)	0.02-200	0.02-1000
Force Accuracy	-	0.2% of load cell capacity	
Stroke	(mm)	300*	300*
Max Velocity	(mm/s)	20 (100)	20
Max Acceleration	(m/s^2)	1(2)	1
Max Cycle Frequency	(Hz)	2 (10)	2
Max Data Rate	(Hz)	100 (500)	100

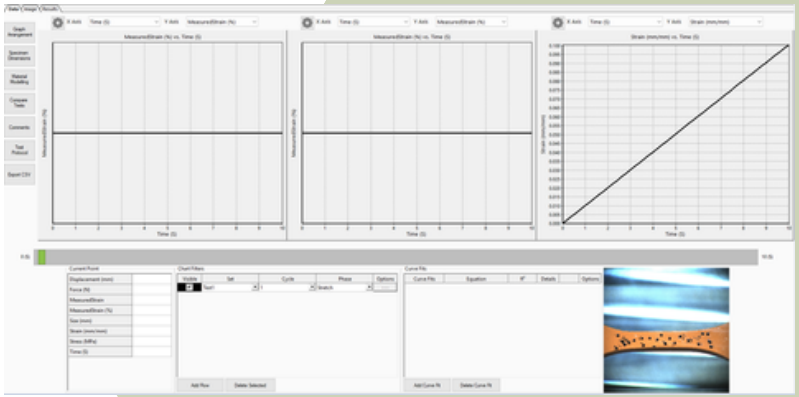
* Longer Stroke available on request (500mm stroke shown on the 1kN above)

STANDARD FEATURES

Every UniVert system is delivered as a fully integrated testing platform, equipped with a set of standard features to support setup, control, and analysis from day one. Each system includes lifetime software licenses, a 12 month warranty, 10 hours of remote installation and training, lifetime technical support, and the Standard Imaging System for synchronized image capture. Load cells, grips, and platens are selected separately and packaged to match your force range and specimen geometry.

Included with the UniVert

- UniVert Test Frame & Controller
- Standard Imaging System
- 10 Hours of Remote Installation and Training
- Lifetime License to LabJoy Test Control Software
- Lifetime License to Data Analysis Software
- Lifetime Technical Support
- 12 Month Warranty



Standard Imaging System

The UniVert's Standard Imaging System is a portable camera used to record images during mechanical tests for visual review, qualitative feedback, and reporting. The standard camera supports time-synchronized image capture alongside test data, but it does not support image tracking, strain mapping, or digital image correlation (Upgrade Available). Images are captured into a buffer and written to the test output directory at a user-selected extraction frequency, with logging available when precise timing differences matter.

What It Is:

- Logitech HD 1080p webcam (USB 3.0)
- Intended for recording and reviewing images during tests (qualitative imaging)

Performance:

- Resolution: 1900 × 1080 pixels
- Capture capability: up to 5 frames per second (FPS) for image review and playback

Upgrade Available:

- For image tracking, strain mapping, and digital image correlation workflows, upgrade to the **Scientific Imaging System**

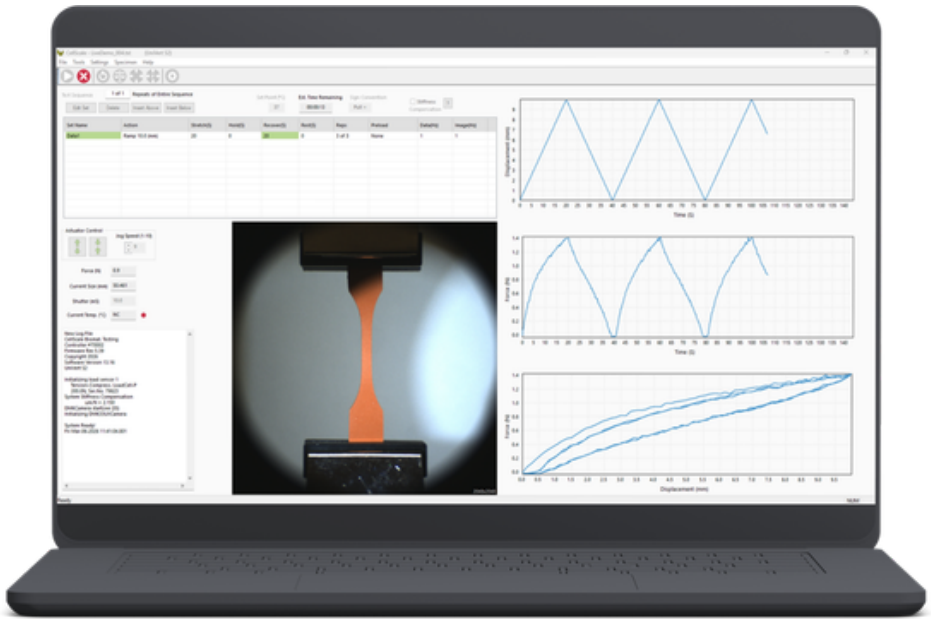
LabJoy Test Software

Our LabJoy test control software is the test execution environment used to design, run, and monitor mechanical testing protocols on the UniVert. It is separate from Data Analysis Software and focuses on protocol setup, real-time control, and synchronized data capture during testing.

NOTE: A Windows 11-based PC with 2x USB 3.x ports is required to run LabJoy software and connect to the UniVert

What It Does:

- Creates and runs standard and custom test protocols using a table-based parameter editor
- Provides real-time monitoring of force and displacement during setup and testing
- Saves repeatable methods using protocol files and reusable templates



Protocol Design and Control:

- Supports common test phases such as ramps, holds, and cyclic segments for viscoelastic workflows
- Control modes include displacement control and force control

Imaging & Data:

- Optional image capture stored alongside test data for playback and documentation
- Captures time-stamped data to CSV, with synchronized image capture

Data Analysis Software

The UniVert Data Analysis Software is a post-test analysis environment for interpreting mechanical testing results, turning time-synchronized force and displacement data into stress–strain values, curve fits, and publishable material properties. It streamlines comparison across repeated tests with side-by-side visualizations and customizable graphs, and can synchronize mechanical datasets with captured images for clearer interpretation and reporting.

What It Does:

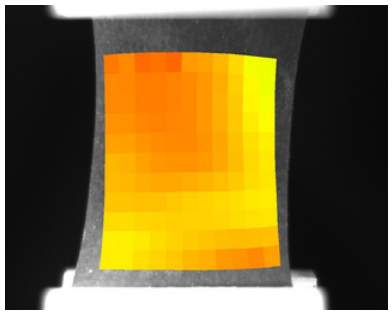
- Post-test mechanical testing data analysis for force, displacement, stress, and strain
- Generation and comparison of force-displacement and stress–strain curves across multiple tests
- Material property extraction tools, including calculation of stiffness and modulii
- Viscoelastic analysis support: creep, stress relaxation, and cyclic testing

Visualization and Comparison:

- Side-by-side viewing of repeated tests or grouped datasets
- Customizable graphs for clearer comparisons and reporting
- Synchronized playback of mechanical data and captured images

Imaging and Export Tools:

- Feature measurement and annotated video export
- CSV and image/video export for data sharing, reporting, and publication workflows



With Scientific Imaging System Upgrade:

- Non-contact strain measurement using DIC-based image analysis
- Full-field strain visualization and localized deformation mapping

FORCE PACKAGES

To perform mechanical testing on the UniVert, select a Force Package matched to your specimens and expected force range.

Each package bundles the core hardware needed for testing:

- A load cell/force sensor matched to your force range
- Tension grips and compression platens designed for the specimen type, size, and force capacity

Eclipse Ultra Low Force Package

Designed for ultra low-force testing of delicate specimens, combining the Eclipse Force Sensor with lightweight tension grips and compression platens optimized for sub-newton workflows.

NOTE: Compatible with both UniVert S and 1kN models

Eclipse Ultra Low Force Sensor

Select force capacity:

- 0.02 N
- 0.05 N
- 0.1 N
- 0.2 N
- 0.5 N

Ultra Low Force Tension Grips

Lightweight slim polymer design with 0.5 N force capacity and spring closure, ideal for precise low-force testing

Ultra Low Force Compression Platens

Polymer platen with 0.5 N force capacity, designed for ultra-low force compression testing of delicate or soft specimens

CellScale

1-5 N Force Package

Ideal for precise low-force tension and compression testing, with a selectable low-range load cell and polymer grips and platens suited for soft or fragile samples.

NOTE: Compatible with both UniVert S and 1kN models

1 Low Force Load Cell

Select 1 Load Cell:

- 1.0 N
- 2.5 N
- 5.0 N

Low Force Tension Grips

Lightweight slim polymer design with 5 N force capacity and spring closure, ideal for precise low-force testing

Low Force Compression Platens

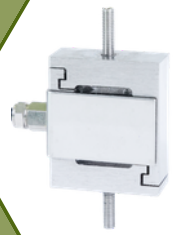
Polymer and stainless steel platens with 5 N force capacity, designed for low force compression testing of delicate or soft specimens

CellScale

10-200 N Force Package

A versatile mid-range option for a wide variety of soft materials tests, featuring both stainless steel and polymer grips and platens built for repeatable performance up to 200 N.

NOTE: Compatible with both UniVert S and 1kN models



1 Medium Force Load Cell

Select 1 Load Cell:

- 10 N
- 20 N
- 50 N
- 100 N
- 200 N

Medium Force Tension Grips

Stainless steel and polymer grips with 200 N force capacity and combination screw/spring closure with 3 spring stiffnesses. Also includes interchangeable grip jaw liners.

Medium Force Compression Platens

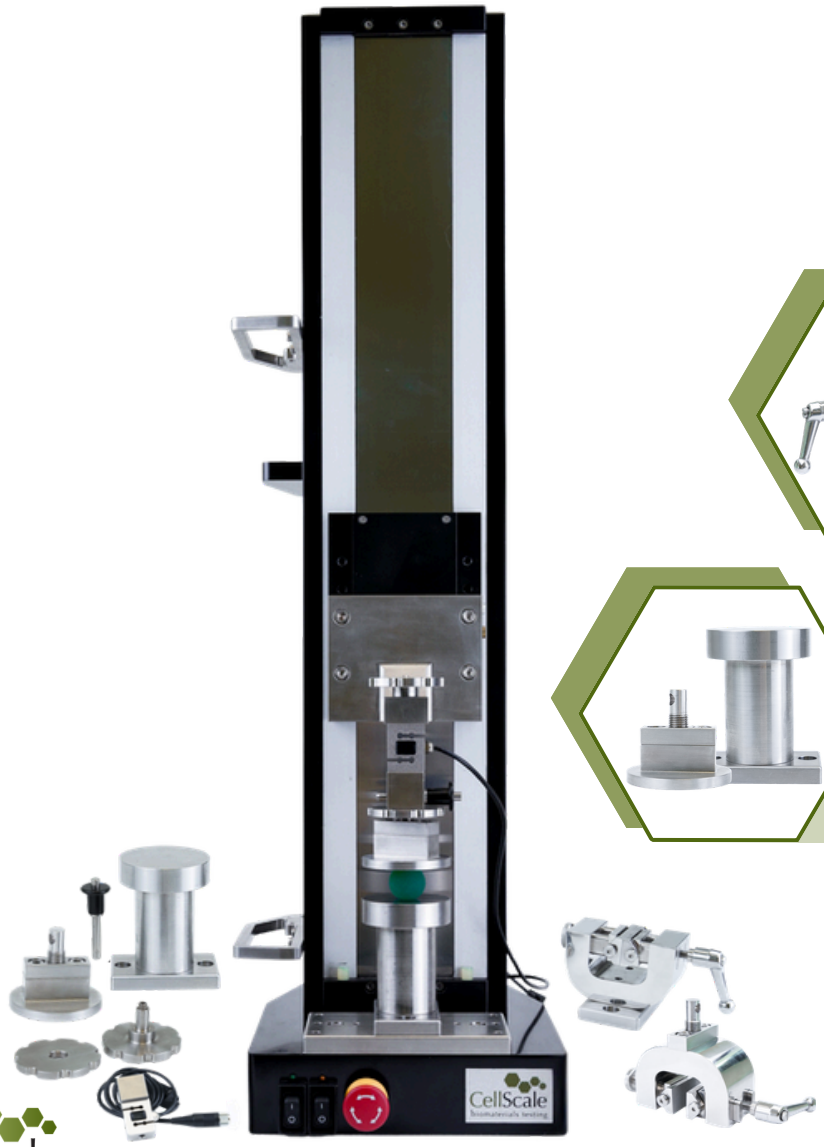
Stainless steel and polymer platens with 200 N force capacity and durable construction for medium-force compression testing

CellScale

500-1000 N Force Package

Built for higher-load tensile and compressive testing, using robust stainless steel grips and platens to support stiffness, strength, and failure testing up to 1000 N.

NOTE: Only compatible with the UniVert 1kN model



1 High Force Load Cell

Select 1 Load Cell:

- 500 N
- 1000 N

High Force Tension Grips

Stainless steel design with 1000 N force capacity and screw closure for precise measurements.
Three grip face patterns: Flat, Horizontal, and Diamond.

High Force Compression Platens

Stainless steel design with 1000 N force capacity to measure stiffness, strength, viscoelastic behaviour, and structural failure at higher compressive forces

CellScale

Package Comparison

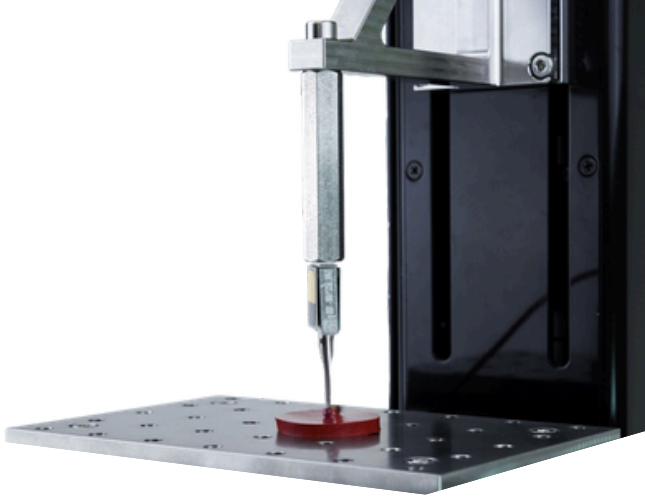
	Eclipse Ultra Low Force Package	1-5 N Force Package	10-200 N Force Package	500-1000 N Force Package*
Load Cell / Force Sensor	Eclipse Force Sensor Choice of 0.02 N, 0.05 N, 0.1 N, 0.2 N, or 0.5 N force capacity	Low Force Load Cell Choice of 1.0 N, 2.5 N, or 5.0 N force capacity	Medium Force Load Cell Choice of 10 N, 20 N, 50 N, 100 N, or 200 N force capacity	High Force Load Cell Choice of 500 N or 1000 N force capacity
Tension Grips	Lightweight slim polymer design with 0.5 N force capacity and spring closure, ideal for precise low-force testing	Lightweight slim polymer design with 5 N force capacity and spring closure, ideal for precise low-force testing	Stainless steel and polymer grips with 200 N force capacity and combination screw/spring closure with 3 spring stiffnesses. Also includes grip jaw liners.	Stainless steel design with 1000 N force capacity and screw closure to generate precise measurement data at higher tensile forces
Compression Platens	Polymer platens with 0.5 N force capacity designed for ultra-low force compression testing of delicate or soft specimens	Polymer + stainless steel platens with 5 N force capacity, designed for low force compression testing of delicate or soft specimens	Stainless steel and polymer platens with 200 N force capacity and durable construction for medium-force compression testing	Stainless steel design with 1000 N force capacity to measure stiffness, strength, viscoelastic behaviour, and structural failure at higher compressive forces

* Only compatible with the UniVert 1kN model

BUILD UPGRADES

Build Upgrades are optional hardware enhancements to the standard UniVert platform that require in-house installation of controller upgrades and additional connectors. When selected at the time of purchase, the upgrade is integrated before shipment so your UniVert arrives ready to use. For existing UniVert systems, Build Upgrades require the instrument to be shipped back to CellScale for installation and verification.

XY Stage



The UniVert XY Stage is a multi-axis motion fixture that adds motorized, software-controlled positioning to the UniVert, enabling automated multi-point tests for mechanical property mapping.

NOTE: Controller Upgrade Required

Capabilities

- Automates X-Y positioning for multi-location tests and repeatable point-to-point spacing for property mapping
- Converts single-point testing into a location-aware workflow, enabling higher throughput by removing manual steps
- Includes positioning and mapping software to run defined grids, region comparisons, and location-tagged datasets
- Integrates with UniVert reporting so force sensing and test outputs remain consistent while X-Y motion is automated
- Supports stiffness and indentation mapping across heterogeneous specimens, gradients, and patterned regions
- Well-plate footprint support for plate-style layouts and screening routines
- Breadboard footprint included for sample fixation or custom fixtures

Common Uses

Example Specimens

- Hydrogels
  (cell-laden, crosslink gradients, regional differences)
- 3D bioprinted constructs and patterned biomaterials
  (indentation mapping, for example)
- Soft polymers and thin films
- Planar tissue sections and other heterogeneous planar samples

Example Applications

- Mechanobiology
  (including Cancer Mechanobiology for stiffness heterogeneity studies)
- Tissue Engineering and Soft Tissue Biomechanics
- 3D Bioprinting and Bioink Materials Testing
- ECM and Decellularized Matrix Mechanics
- Organoid and Tissue-Mimetic Systems

Key Features

Stage speed: up to 10 mm/s

Travel range: 100 × 150 mm

Position accuracy: ±50 µm

Max load capacity: 200 N

Repeatability: ±5 µm

Media Baths

UniVert media baths enable hydrated and temperature-controlled mechanical testing by surrounding the specimen in a controlled fluid environment during testing. There are two media bath orientations: vertical and horizontal, each with different fluid capacity options, depending on the UniVert model.

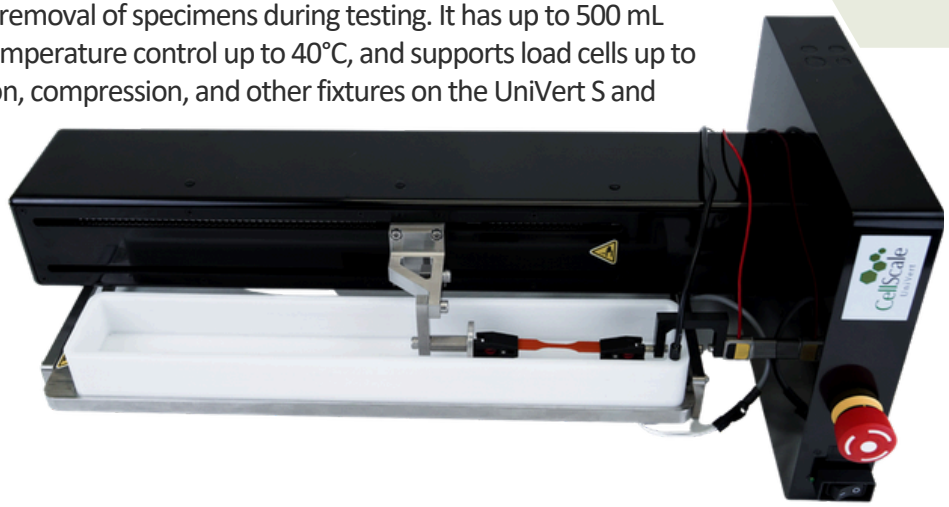
NOTE: Controller Upgrade Required

Vertical Bath

The Vertical Media Bath is a high-capacity option for larger specimens, with 600 mL capacity (UniVert S and 1kN compatible) or 1000 mL capacity (UniVert 1kN only). It provides temperature control up to 40°C, supports load cells up to 200 N (or up to 1000 N on the UniVert 1kN), and includes a raise/lower function plus an integrated drain tube for easier handling.

Horizontal Bath

The Horizontal Media Bath is a compact, pivoting bath designed for efficient immersion and removal of specimens during testing. It has up to 500 mL capacity with temperature control up to 40°C, and supports load cells up to 200 N for tension, compression, and other fixtures on the UniVert S and UniVert 1kN.



Key Features

Hydrated mechanical testing with temperature control up to 40°C

Two configurations:

- Horizontal (300 or 500 mL)
- Vertical (600 or 1000 mL)

Fixture compatibility for tension, compression, and other UniVert test setups

Common Media Bath Uses

Hydrogel mechanical testing in physiologic-like environments
(PBS, saline, or other media)

Tensile testing of soft, hydrated scaffolds
(including collagen-based constructs)

ECM and decellularized matrix mechanics studies

Viscoelastic protocols in liquid including creep, stress relaxation, and cyclic loading

Compression testing of hydrated biomaterials for bulk stiffness and compressive strength

Polymers, elastomers, membranes, and thin films tested in hydrated setups

Fatigue and durability testing in fluid

Secondary Axes - Torsion

The UniVert Torsion Axis adds controlled rotational loading through the Multi Axis Upgrade controller and the Torsion Axis fixture. This secondary axis enables torsional stiffness and shear response measurements under twist, extending the UniVert beyond standard uniaxial loading.

NOTE: Controller Upgrade Required

Torsion Axis

The Torsion Axis applies controlled rotation to quantify torsional stiffness and shear response in specimens that experience twisting *in vivo*.

Key Features

- Controlled rotational deformation for torsional stiffness and shear response measurement
- Rotation rates up to 90° per second
- Includes a torsion actuator, 1 N-m torsion / 200 N linear force load cell, stage fixture, and specimen holder/grips

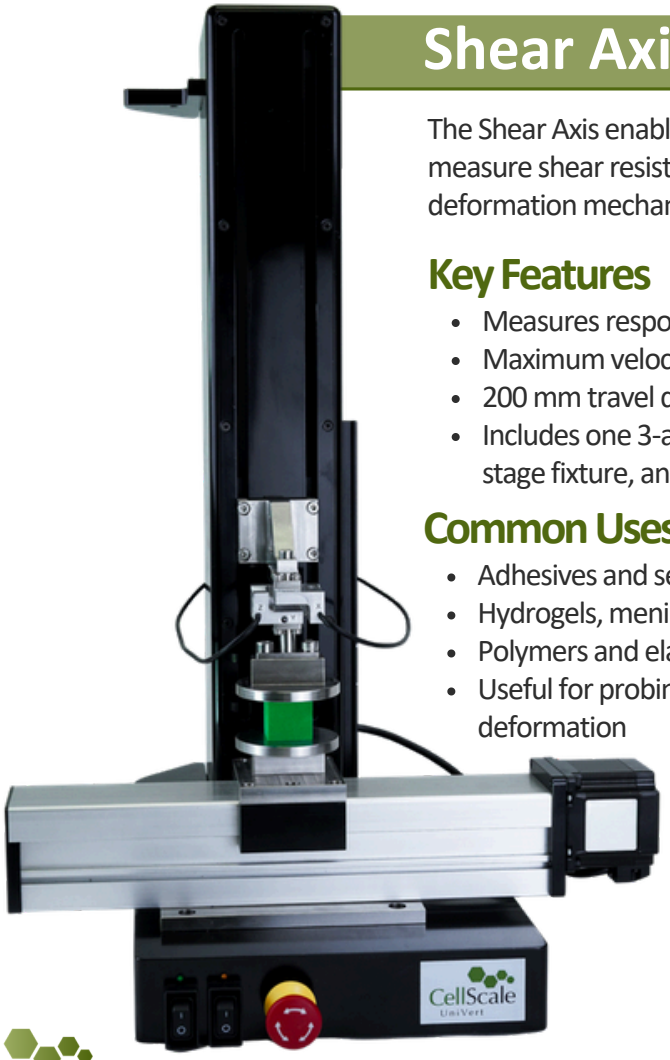
Common Uses

- Scaffolds, membranes, and hydrogels (for wound healing, bioelectronics, medical devices, and drug delivery)
- Polymers and elastomers testing
- Well-suited for tissues and materials where twisting loads are physiologically relevant

Secondary Axes - Shear

The UniVert Shear Axis adds controlled parallel (sliding) motion through the Multi Axis Upgrade controller and the Shear Axis fixture. This secondary axis enables shear deformation and interfacial mechanics testing, extending the UniVert beyond standard uniaxial loading.

NOTE: Controller Upgrade Required



Shear Axis

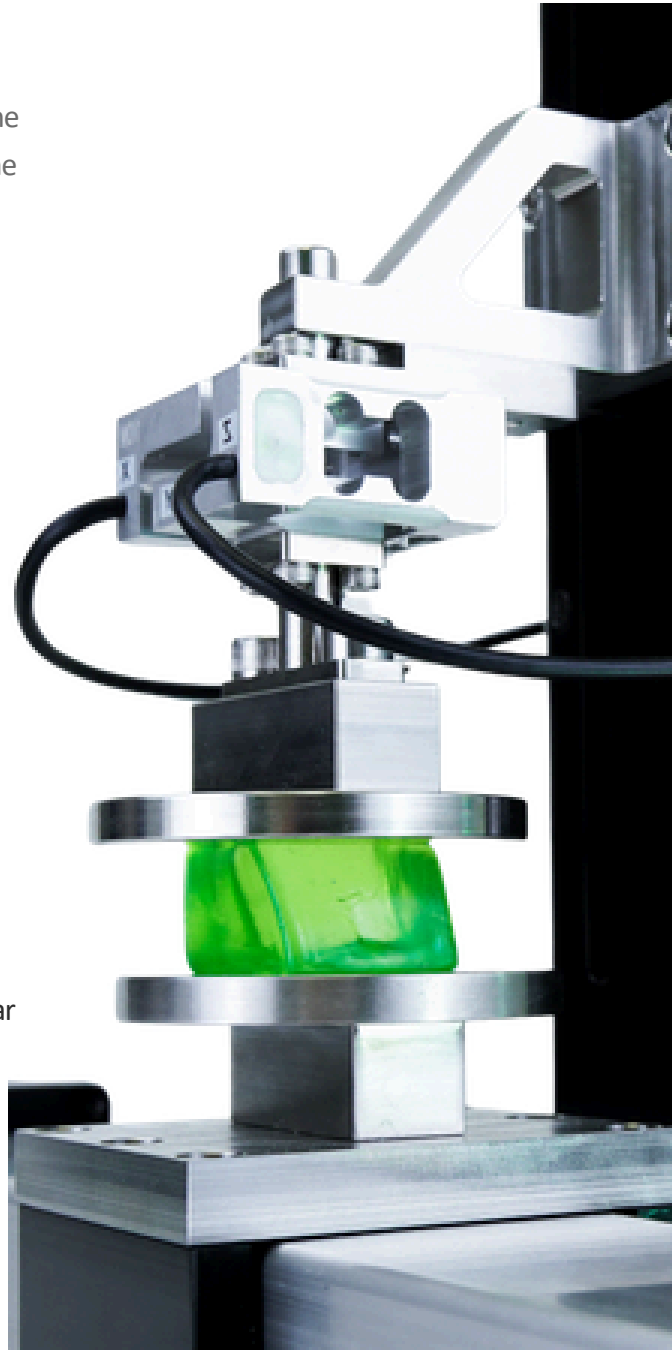
The Shear Axis enables controlled parallel or sliding motion to measure shear resistance, interfacial behaviour, and deformation mechanisms.

Key Features

- Measures response to parallel or sliding forces (shear loading)
- Maximum velocity of 20 mm/s for precise motion control
- 200 mm travel distance with force capacity up to 50 N
- Includes one 3-axis load cell (choose 10 N, 20 N, or 50 N), shear stage fixture, and platens/specimen holder

Common Uses

- Adhesives and sealants
- Hydrogels, meninges, cartilage, meniscus
- Polymers and elastomers testing
- Useful for probing failure modes, interfacial bonding, and tissue-level shear deformation



Secondary Axes - Pressure

The UniVert Pressure Axis enables controlled internal pressurization through the Multi Axis Upgrade controller and the Pressure Axis fixture. This secondary axis supports inflation-style and pressure-driven deformation studies, extending the UniVert beyond standard uniaxial loading.

NOTE: Controller Upgrade Required

Pressure Axis

The Pressure Axis evaluates specimen response to controlled internal pressurization for inflation-style testing and pressure-driven deformation studies.

Key Features

- Internal pressurization capability for pressure response characterization
- Pressure capacity up to 70 kPa
- Includes one pressure sensor coupled with a pressure piston and actuator

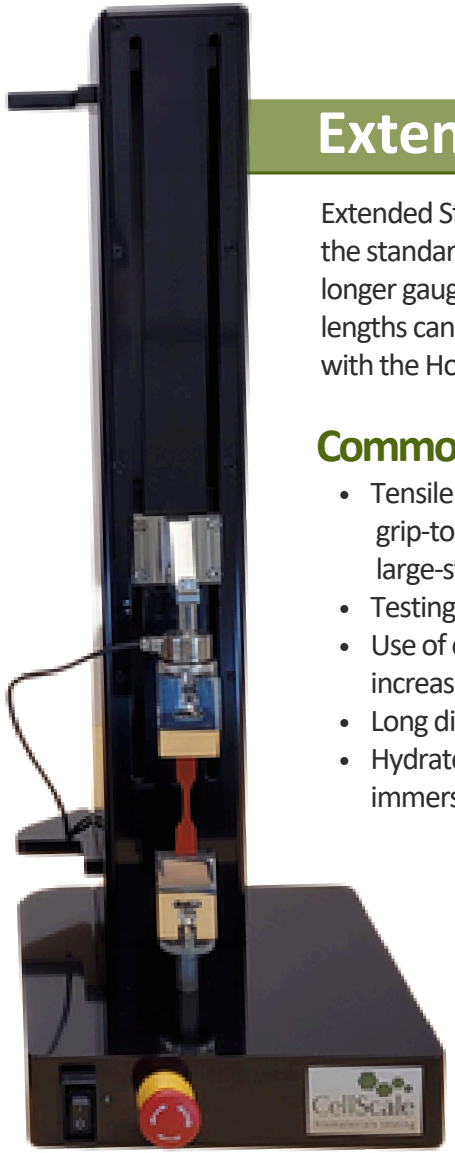
Common Uses

- Vascular and tissue engineered vessel compliance testing
- Cardiac tissue pressurization studies
- Pressure–diameter response and pressure-driven deformation with imaging options

Extended Stroke Length

The Extended Stroke Length upgrade increases the UniVert's travel capabilities to support larger specimens, longer gauge lengths, and taller fixture stacks without sacrificing usable displacement during a test.

NOTE: Extended Stroke is a hardware upgrade that must be integrated at the time of purchase



Extended Stroke Length

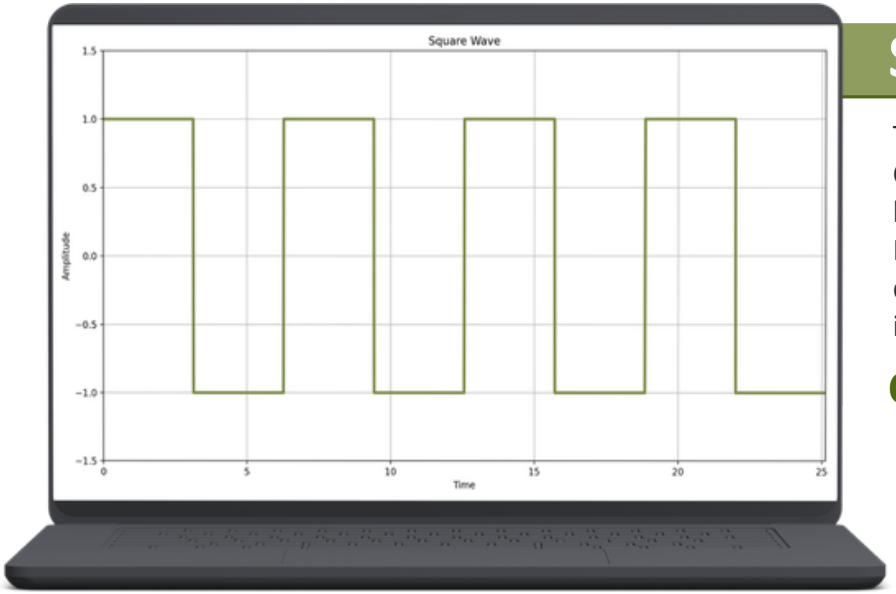
Extended Stroke Length increases the UniVert's travel capabilities from the standard 300 mm to 500 mm, to accommodate larger samples, longer gauge lengths, and taller or more complex fixtures. Custom stroke lengths can also be provided on request, and the upgrade is compatible with the Horizontal Media Bath on both the UniVert S and UniVert 1kN.

Common Uses

- Tensile testing of longer specimens or setups requiring extended grip-to-grip spacing (longer gauge length, slack take-up, or large-strain protocols)
- Testing larger tissue strips, engineered scaffolds, or polymer specimens
- Use of custom fixturing, environmental setups, or specialty mounts that increase stack height and reduce usable travel
- Long displacement compression protocols
- Hydrated testing workflows where added travel improves handling, immersion clearance, or fixture flexibility

Sync Pulse

The Sync Pulse upgrade adds a sync pulse output and programmable virtual COM port to enable precise timing alignment between UniVert tests and external equipment. It is intended for integrated experiments where mechanical loading must be triggered or synchronized with imaging, sensors, DAQ systems, or automated rigs, and can be installed at purchase or retrofitted to an existing UniVert.



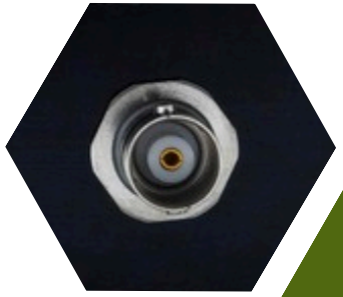
Sync Pulse

The Sync Pulse Upgrade adds a sync pulse output and virtual COM port to the UniVert S or UniVert 1kN, including the hardware and software needed to trigger external equipment. It enables time-aligned experiments where UniVert load and displacement data must be synchronized with other instruments.

Common Uses

- Synchronizing UniVert tests with external cameras, sensors, or data acquisition systems
- Aligning UniVert test timing with third-party measurement equipment
- Triggering external image acquisition or recording devices during a test
- Coordinating mechanical test data with electrical, optical, thermal, or physiological measurements
- Integrating the UniVert into custom automated lab setups
- Enabling communication with external instruments through the programmable virtual COM port
- Simplifying multi-instrument experiments by improving timing alignment across devices
- Supporting custom research workflows that require synchronized control and data logging

View of the Sync Pulse port



FEATURED ACCESSORIES

Featured Accessories highlight two useful add-ons that expand UniVert capability: the unique Eclipse Ultra Low Force Sensor for sub-newton force measurement, and the Scientific Imaging System for strain mapping and DIC-based analysis. These accessories are typically selected at the time of purchase so your UniVert ships configured for your workflow, but they can also be added later to an existing system.

Eclipse Force Sensor

The Eclipse Force Sensor is designed for ultra-low force tension and compression testing when force resolution and overload protection are critical for reliable results. This unique, patent-pending force-sensing technology extends UniVert testing into the tens of milliNewtons force range while keeping the same uniaxial workflow.

NOTE: Available as an add-on or part of the Eclipse Ultra Low Force Package

Eclipse Force Sensor

The Eclipse detects forces down to 40 µN and is available in various force capacities (20, 50, 100, 200, and 500 mN) so you can match sensitivity to delicate specimens without amplifying noise. With 10,000% safe overload protection and dedicated ultra-low force tension and compression fixtures, it is built for practical low-load testing, not just sensor specs.

Key Features

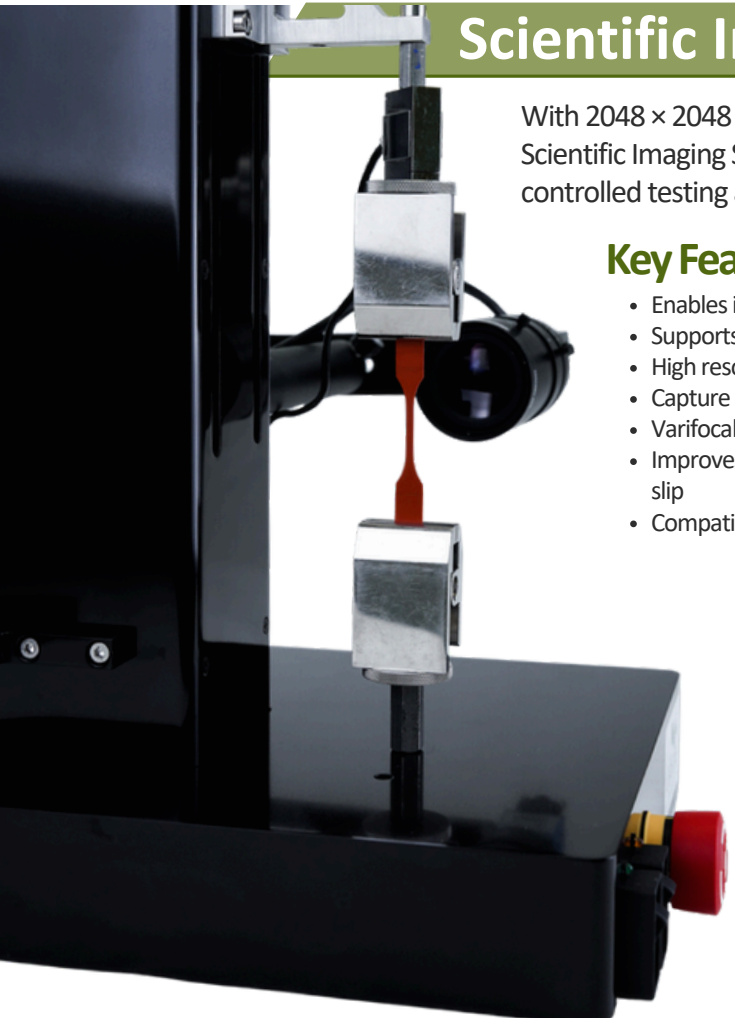
- Designed for both tension and compression with dedicated ultra-low force grips and platens
- Force detection to 40 µN for high-quality ultra-low force measurement
- Force capacities of 20, 50, 100, 200, and 500 mN
- 10,000% safe overload protection to reduce risk during setup, alignment, and handling
- Compatible with UniVert S and UniVert 1kN
- Easily interchangeable with higher-force UniVert load cells

Common Uses

- Hydrogel mechanical testing where small stiffness differences occur before conventional load cells reach an informative range
- 3D bioprinting and bioink materials testing, including toe-region behaviour and early-stage stiffness
- Viscoelastic characterization at low loads: creep testing, stress relaxation testing, and cyclic protocols
- Membranes and thin films mechanics where alignment and gripping can dominate results if force resolution is limited
- Microtissues, spheroids, organoid-scale samples, and other delicate specimens prone to slip or damage
- Organ-on-a-chip systems and compliant scaffolds where subtle mechanical changes are meaningful

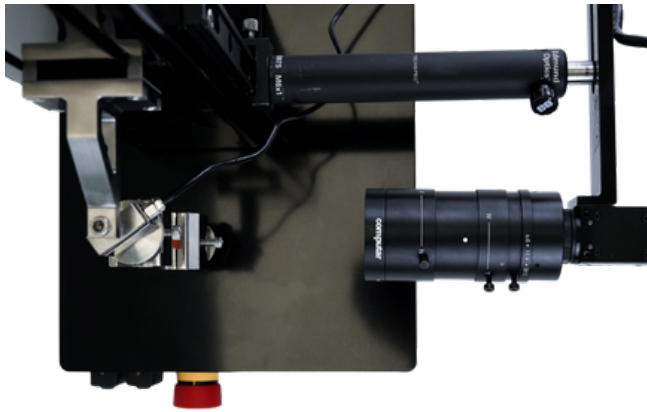
Scientific Imaging System

The Scientific Imaging System is a high performance camera and optics package that upgrades UniVert imaging from basic image capture to quantitative image tracking. It enables image-based strain measurement and strain mapping in CellScale's LabJoy software for workflows where optical deformation data matters.



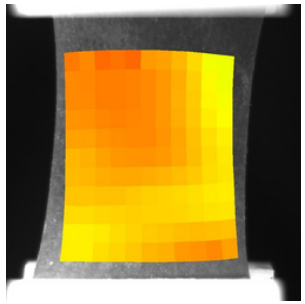
Scientific Imaging System

With 2048 × 2048 pixel imaging and up to 15 FPS full-frame capture, the Scientific Imaging System supports real-time strain analysis for strain-controlled testing and repeatable reporting across users and protocols.



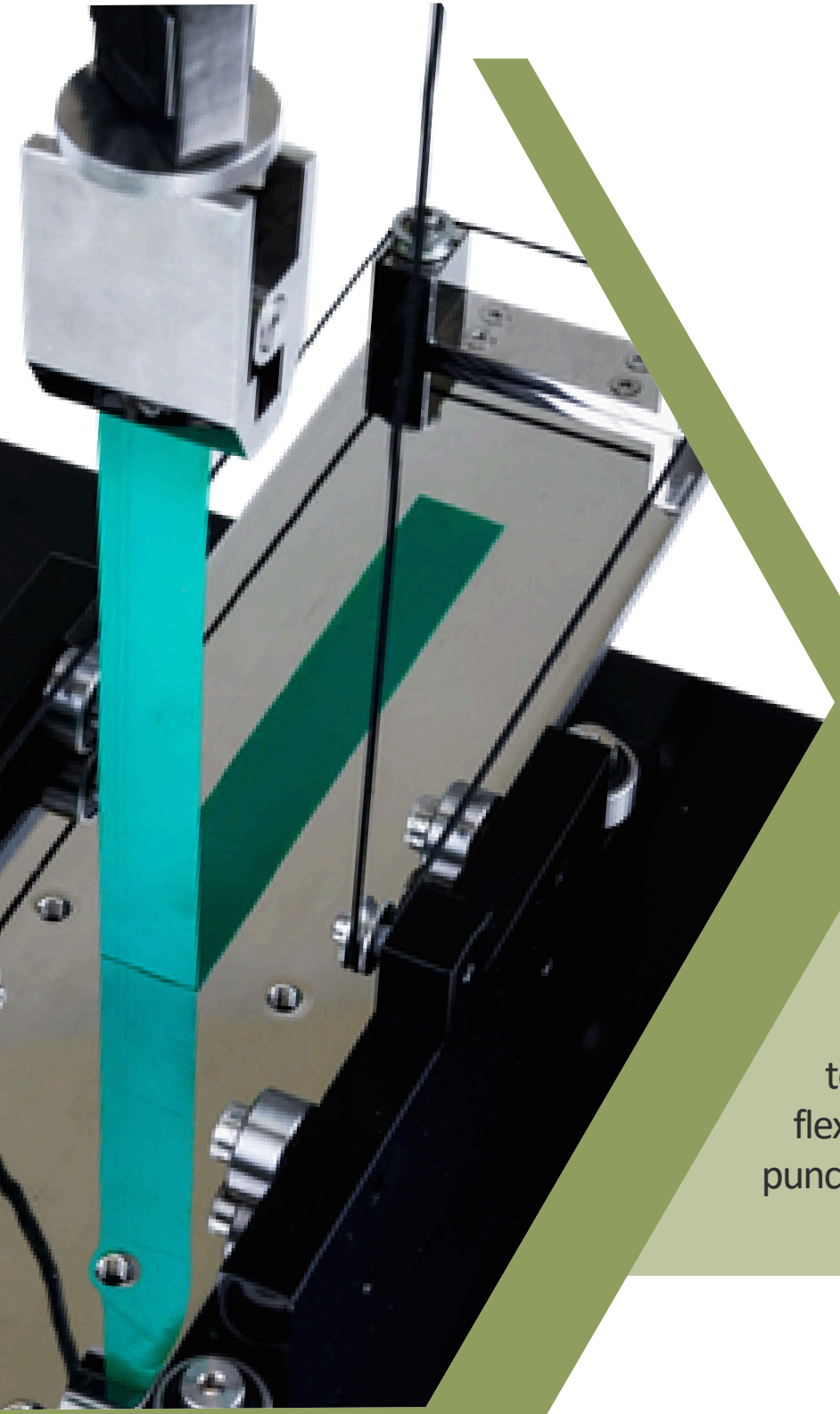
Key Features

- Enables image-based strain measurement and strain mapping directly in LabJoy
- Supports real-time strain analysis for strain-controlled testing protocols
- High resolution scientific camera: 2048 × 2048 pixels, USB 3.0 connectivity
- Capture performance: up to 15 FPS full-frame, with higher rates for regions of interest
- Varifocal lens (13 to 130 mm) with manual adjustment for flexible field of view
- Improves confidence in results by revealing non-uniform deformation, rotation, and grip slip
- Compatible with media bath use where consistent optical tracking is needed



Common Uses

- Digital Image Correlation (DIC) and image-based tracking for non-contact deformation measurement and ROI strain mapping
- Tensile testing with image-derived strain to validate alignment, detect grip slip, and improve reporting quality
- Compression testing where strain mapping helps quantify non-uniform deformation in soft or heterogeneous specimens
- Creep and stress relaxation studies where optical strain improves confidence when displacement is not representative of specimen strain
- Hydrated and temperature-controlled testing in baths or environmental setups while computing strain at defined intervals
- Common specimen types: compliant tissues, hydrogels, bioinks, scaffolds, thin films, soft polymers, micro-scale constructs, and engineered specimens



ADDITIONAL FIXTURES

Additional Fixtures are purpose-built UniVert add-ons that enable specific mechanical testing methods beyond tension, compression, and the secondary axes. Each fixture integrates cleanly with the UniVert S and UniVert 1kN to support repeatable, standards-aligned protocols, including flexural bending, spherical indentation, 90° peel testing, and puncture resistance testing for research and quality workflows.

3-Point Bending

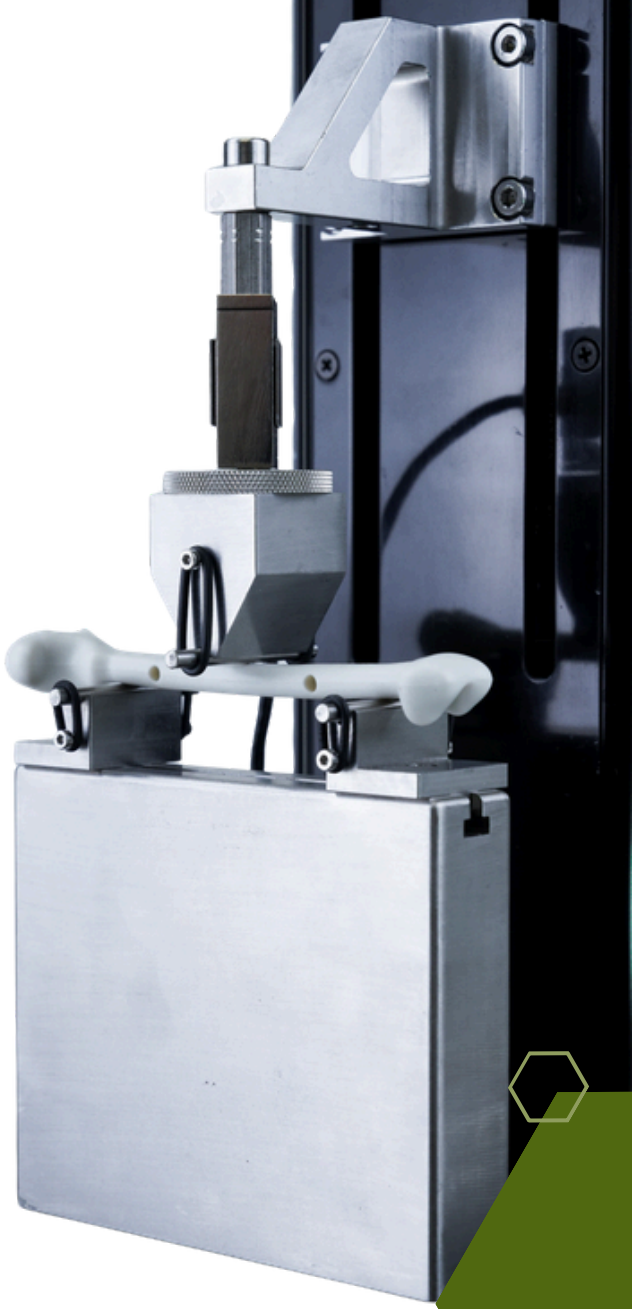
The UniVert 3-Point Bend fixture enables controlled flexural testing in a three-point bending configuration to quantify bending stiffness, strength, and failure behaviour in beam-like specimens.

3-Point Bend Fixture

The UniVert 3-Point Bend fixture enables controlled flexural testing using a three-point bending configuration with stainless steel components. It is designed to quantify bending stiffness, strength, and failure behaviour in beam-like specimens, with repeatable flexural and bending testing on the UniVert S and UniVert 1kN.

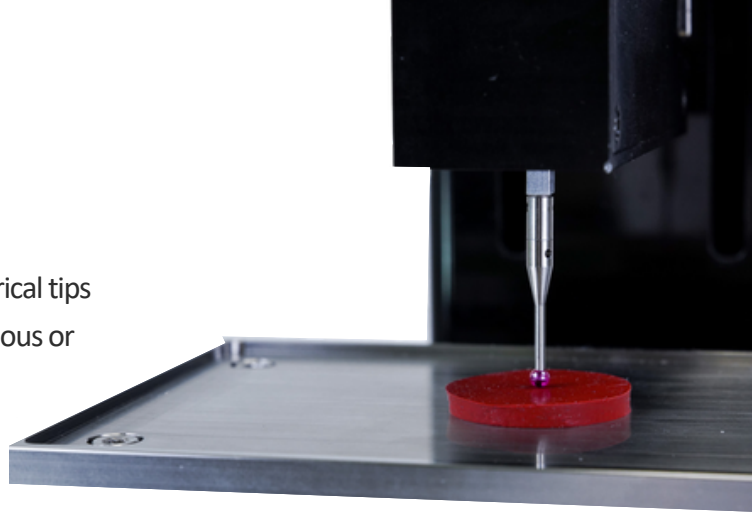
Common Uses

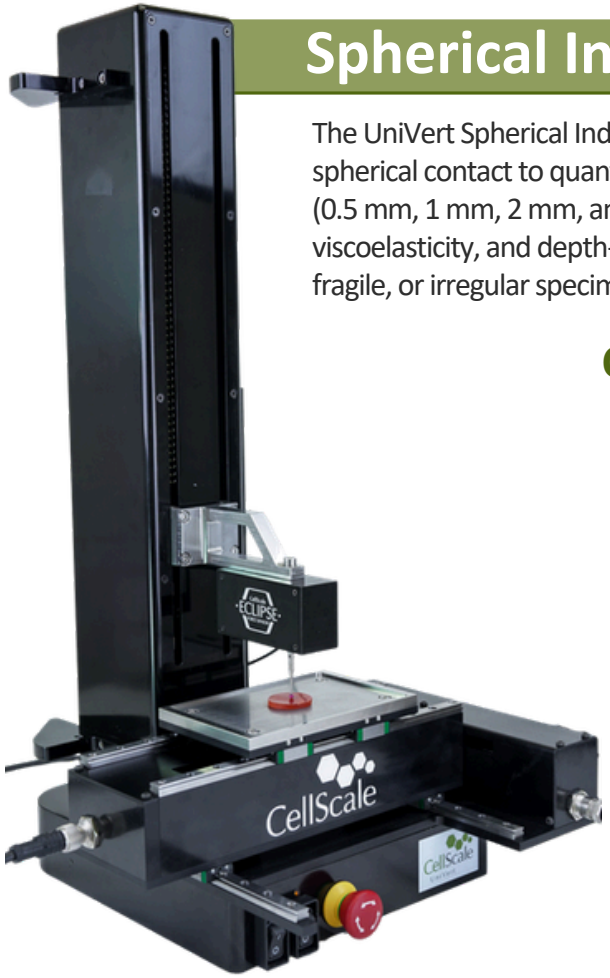
- Whole-bone biomechanics in small animal models (mouse femur and tibia, for example) to quantify flexural stiffness, strength, and fracture behaviour
- Bone healing and regeneration studies (for example, osteotomy or defect models) by comparing bending strength recovery across groups and timepoints
- Musculoskeletal disease and biology research where genetic, pharmacologic, or biomaterial interventions are evaluated through changes in bone structural performance (stiffness, maximum load, work-to-failure)
- Comparative mechanical phenotyping across cohorts (control vs treatment, knockout vs wild-type) using standardized load–deformation or stress–strain outputs from bending tests
- Flexural durability of flexible devices and soft systems, including cyclic bending to assess mechanical robustness of wearable sensors and bioelectronics under repeated deformation
- Characterization of engineered and composite materials where bending response is a key performance metric (flexural stiffness and failure response), especially for thin or beam-like specimens



Indentation Testing

The UniVert Spherical Indentation fixture applies precise, localized loading through interchangeable spherical tips to measure local stiffness, viscoelasticity, and depth-dependent mechanical behaviour across heterogeneous or delicate specimens.





Spherical Indentation Fixture

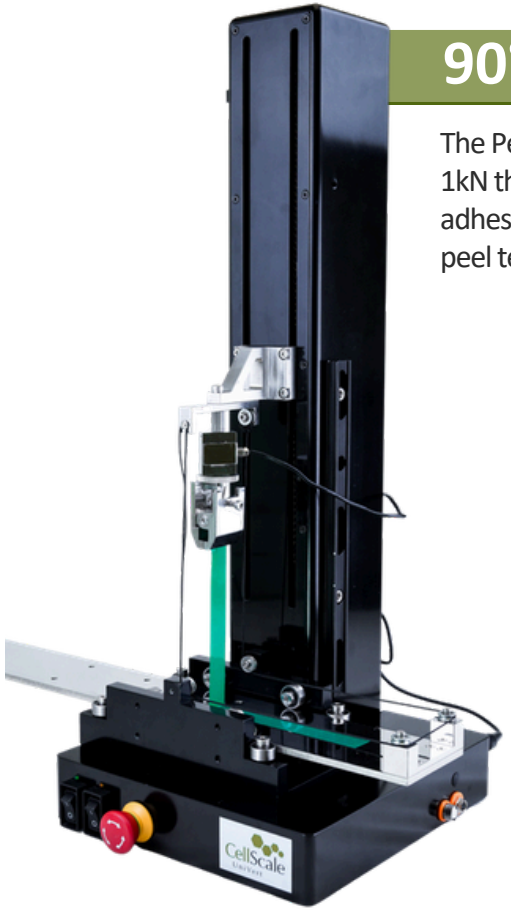
The UniVert Spherical Indentation fixture applies controlled force or displacement through a small, spherical contact to quantify local mechanical response. Using interchangeable spherical indenters (0.5 mm, 1 mm, 2 mm, and 5 mm), it supports indentation-based measurements of local stiffness, viscoelasticity, and depth-dependent behaviour, and can be used to map spatial variations across thin, fragile, or irregular specimens on the UniVert S and UniVert 1kN.

Common Uses

- Automated multi-point indentation mapping with the XY Stage Upgrade to generate repeatable stiffness or hardness maps across surfaces and gradients, minimizing manual repositioning error and enabling higher-throughput spatial testing
- Spatial mapping of thin, fragile, or irregular specimens using small-radius spherical tips on the Eclipse Force Sensor to probe multiple locations without complex gripping or specimen machining
- Local stiffness and hardness mapping on heterogeneous materials, where bulk compression averages out meaningful spatial differences (for example, across surfaces, cross-sections, or layered regions)
- Surface vs cross-sectional property comparisons to evaluate gradients from processing, aging, coatings, or environmental exposure (UV, humidity, chemical exposure, sterilization, thermal cycling)
- Quality control and durability validation of engineered polymers and composites, confirming that service conditions do not cause near-surface embrittlement, softening, or damage
- Viscoelastic indentation protocols (hold segments, creep-style indentation, relaxation) to quantify time-dependent response in soft materials and biomaterials
- Comparative studies across treatments or manufacturing variables, using displacement-controlled indentation to detect subtle changes in local mechanical response between groups

Peel Testing

The UniVert Peel Testing fixture enables controlled 90° peel measurements to quantify adhesive strength and interfacial mechanics of bonded materials using repeatable peel protocols.

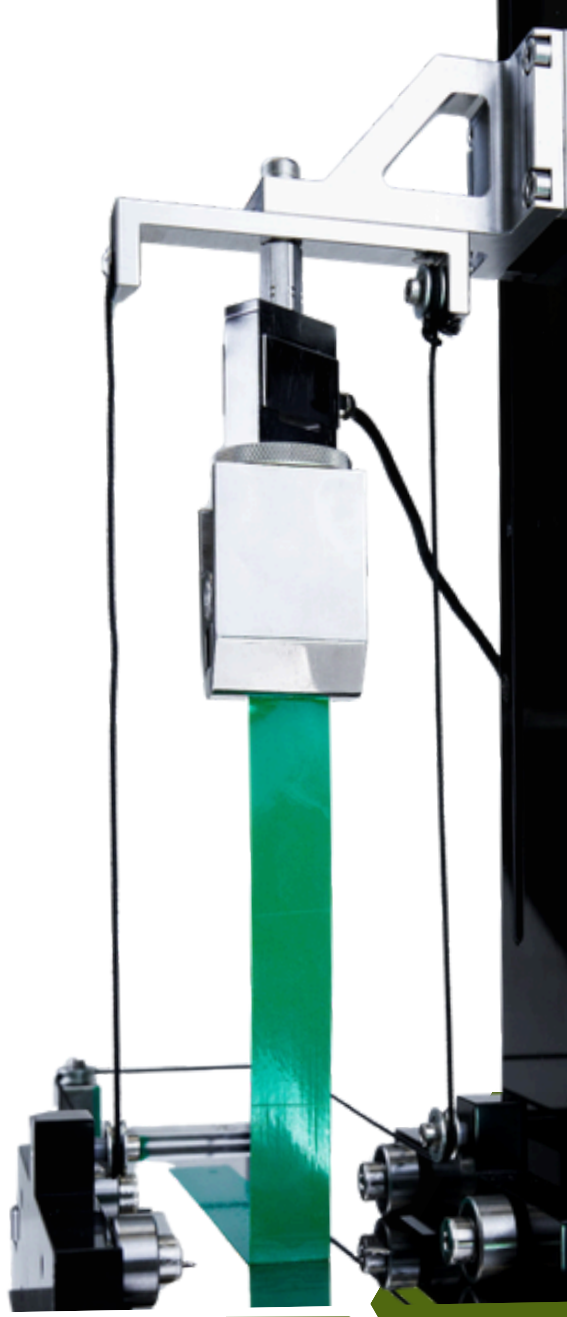


90° Peel Test Fixture

The Peel Test fixture is a 90° peel setup for the UniVert S and UniVert 1kN that measures peel force versus displacement to characterize adhesion and debonding behaviour. It supports ASTM D3330-style peel testing for consistent, comparable results.

Common Uses

- Adhesives and sealants testing to compare peel strength across formulations, cure conditions, and processing variables
- Surface treatment and interface optimization studies (primers, coatings, plasma, roughening) by measuring changes in peel force and failure mode
- Membranes and thin films mechanics, including peel strength of bonded laminates and membrane-substrate interfaces
- Wearable bioelectronics and skin-contact devices, where peel adhesion helps validate attachment reliability during handling, motion, or extended wear
- Soft robotics materials and layered assemblies, evaluating bond integrity between elastomers, films, and functional layers under peel loading
- Bioadhesives and wet or hydrated adhesion concepts, where peel testing reveals interfacial performance in more application-relevant conditions
- Directional or anisotropic adhesive designs, using controlled peel geometry to quantify direction-dependent adhesion performance
- Durability and failure behaviour screening, tracking debonding, cohesive vs adhesive failure, and consistent peel performance across repeated builds or batches



Puncture Testing

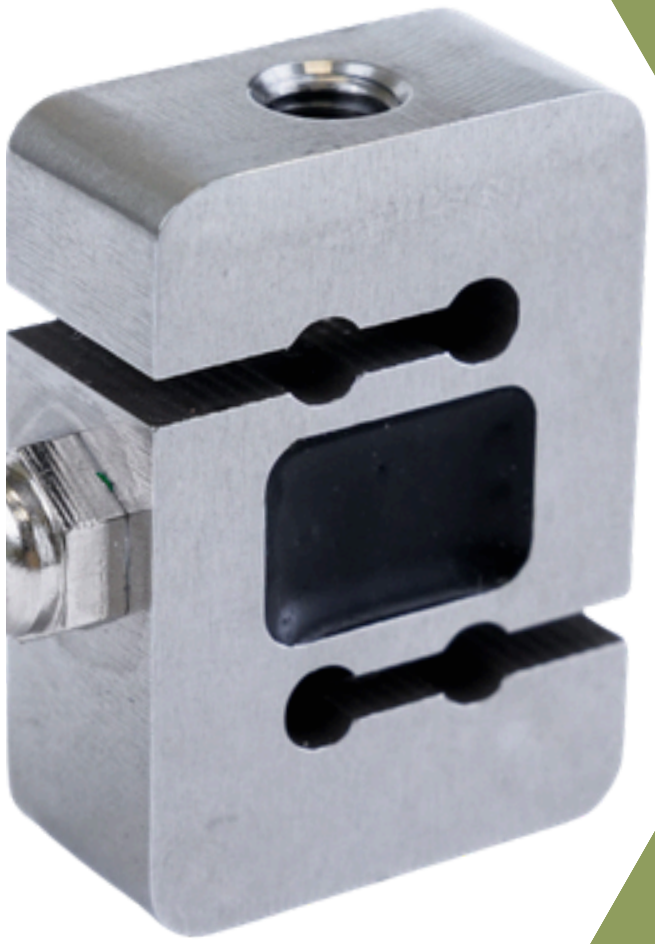
The UniVert Puncture Testing fixture measures puncture resistance by driving a controlled probe into a specimen to quantify penetration force and failure behaviour in membranes, tissues, hydrogels, thin materials, and other soft specimens.

Puncture Test Fixture

The Puncture Test fixture enables localized penetration tests on the UniVert S and UniVert 1kN to evaluate membrane integrity, peak puncture force, and deformation-to-failure under a defined probe geometry and loading rate. It supports standards-aligned puncture resistance testing (ASTM F1306 and ASTM D6797-24) for repeatable, comparable puncture datasets.

Common Uses

- Membrane integrity and barrier performance studies for thin films, laminates, and engineered membranes, including comparisons across thickness, processing, and material formulations
- Hydrogel puncture resistance to quantify robustness during handling, implantation-like insertion, or contact with sharp features
- Soft tissue penetration mechanics to evaluate puncture force and failure in biologic tissues or tissue-mimetic constructs where localized tearing or perforation is relevant
- Needle or probe interaction screening for device-adjacent biomaterials (packaging films, protective layers, coatings)
- Fracture and failure mechanism studies in compliant materials, using force–displacement curves to compare brittle puncture, ductile tearing, and progressive damage modes
- Aging, hydration, and environmental exposure effects on puncture performance (soak time, temperature conditioning, sterilization, UV exposure)
- Batch-to-batch or process validation in research-scale manufacturing of membranes and films



FORCE SENSORS & LOAD CELLS

Force Sensors and Load Cells define the measurable force range and sensitivity of a test on the UniVert, and are selected to match specimen stiffness, fixture type, and expected peak loads. Options span the Eclipse Ultra Low Force Sensor for sub-newton work, low to high force load cells for tension and compression, and dedicated sensors for secondary-axis shear, torsion, and pressure testing, supporting clean, repeatable datasets from delicate biomaterials through higher-load specimens and protocols.

Eclipse Force Sensor

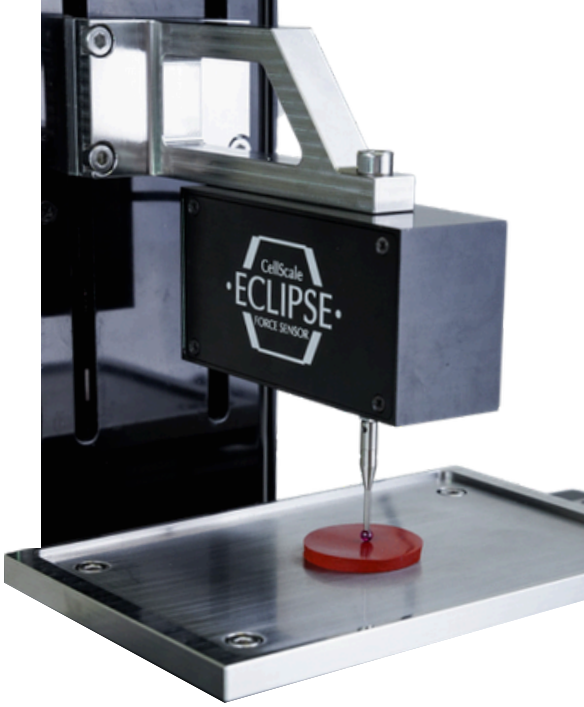
The Eclipse Force Sensor extends the UniVert into ultra-low force testing when specimens are so compliant that standard load cells cannot resolve meaningful changes. The novel, patent-pending force sensing technology is designed for sub-newton tension and compression workflows where force sensitivity and gentle handling are critical for clean, repeatable data.

Eclipse Force Sensor

The Eclipse Force Sensor extends the UniVert into ultra-low force regimes for experiments down to 0.02 N capacity, helping quantify early-stage stiffness, toe-region behaviour, and time-dependent response without saturating noise. The Eclipse detects forces as small as 40 µN, is available in different ranges (20 to 500 mN), and is designed for practical tension and compression workflows with dedicated ultra-low force fixtures.

Features & Specifications

- Detects forces down to 40 µN for high-sensitivity measurements
- Force capacity selection:
  20, 50, 100, 200, and 500 mN
- Designed for practical ultra-low force tension and compression workflows (with matching grips and platens)
- 10,000% safe overload protection to reduce risk during setup and handling



Eclipse Force Sensor Options

- **0.02 N**
- **0.05 N**
- **0.10 N**
- **0.20 N**
- **0.50 N**

Also available as part of the **Eclipse Ultra Low Force Package** (with grips & platens)

Low Force Load Cells

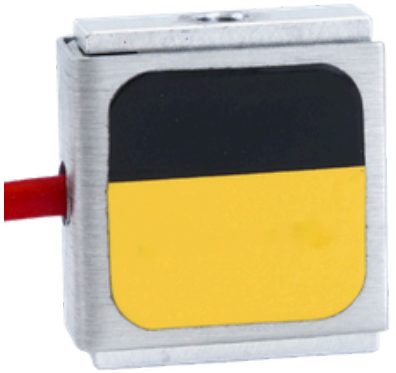
Low Force Load Cells provide interchangeable axial force sensing for delicate mechanical testing when you need more capacity than the Eclipse while maintaining strong sensitivity. These load cells are specified at overall accuracy ±0.2% full-scale and are commonly selected to match specimen stiffness and expected peak loads in low-load UniVert protocols.

Low Force Load Cells

Low Force Load Cells provide interchangeable force sensing for low-load testing. Available in 1 N, 2.5 N, and 5 N capacities, they are specified at overall accuracy ±0.2% and are well-suited to soft biomaterials where clean force curves depend on the right load cell capacity.

Features & Specifications

- Overall accuracy: ±0.2% full-scale
- Safe overload protection: 1000% of rated output
- Linearity & Hysteresis: ±0.1% of rated output
- Repeatability: ±0.05% of rated output
- Durability: 500 g shock rating, 20–2000 Hz vibration resistance



Low Force Options

- **1.0 N**
- **2.5 N**
- **5.0 N**

±0.2% accuracy

Also available as part of the **1-5 N Force Package** (with grips & platens)

Medium Force Load Cells

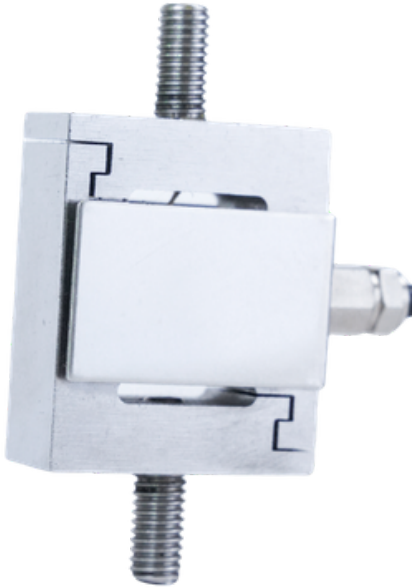
Medium Force Load Cells are the workhorse sensors for many UniVert experiments, balancing capacity and resolution for tension, compression, cyclic, viscoelastic, and other mechanical tests. They are specified at overall accuracy ±0.2% full-scale and support repeatable datasets across a wide range of biomaterials and polymer specimens.

Medium Force Load Cells

Medium Force Load Cells are commonly chosen for mechanical testing workflows where loads exceed low-force sensing but do not require 1kN-class sensors. Available in 10 N, 20 N, 50 N, 100 N, and 200 N, they provide overall accuracy ±0.2% full-scale and are designed for tension, compression, and other testing workflows.

Features & Specifications

- Overall accuracy: ±0.2% full-scale
- Safe overload protection: 150% of rated output
- Linearity & Hysteresis: ±0.05% of rated output
- Repeatability: ±0.03% of rated output
- Creep (30 min): ±0.05% of rated output



Medium Force Options

- **10 N**
- **20 N**
- **50 N**
- **100 N**
- **200 N**

±0.2% accuracy

Also available as part of the **10-200 N Force Package** (with grips & platens)

High Force Load Cells

High Force Load Cells enable higher-load axial testing on the UniVert 1kN for stiffer specimens and more demanding protocols. They are specified at overall accuracy ±0.2% full-scale and provide the measurement headroom required when mid-force sensors approach their capacity limits.

High Force Load Cells

High Force Load Cells enable higher-load mechanical testing on the UniVert 1kN when specimen stiffness or fixture loads exceed the medium-force range. The 500 N and 1000 N options maintain overall accuracy ±0.2% full-scale and use a compact stainless steel S-beam design for stable high-capacity measurement.

Features & Specifications

- Overall accuracy: ±0.2% full-scale
- Safe overload protection: 150% of rated output
- Linearity & Hysteresis: ±0.05% of rated output
- Repeatability: ±0.03% of rated output
- Creep (30 min): ±0.05% of rated output

High Force Options

- **500 N**
- **1000 N**

±0.2% accuracy

Also available as part of the **500-1000 N Force Package** (with grips & platens)

Torsion Load Cell

The Torsion Load Cell provides the dedicated torque sensing used with the UniVert Torsion Axis fixture to quantify rotational loading during torsional testing. It is supplied with the Torsion Axis fixture, and can also be ordered as a replacement load cell for existing UniVert torsion configurations.

Torsion Load Cell

The Torsion load cell enables torque measurement for controlled rotational testing on the UniVert Torsion Axis, supporting characterization of torsional stiffness and rotational loading response. It is designed for both static and continuous rotation style torque measurement in compact test setups.

Features & Specifications

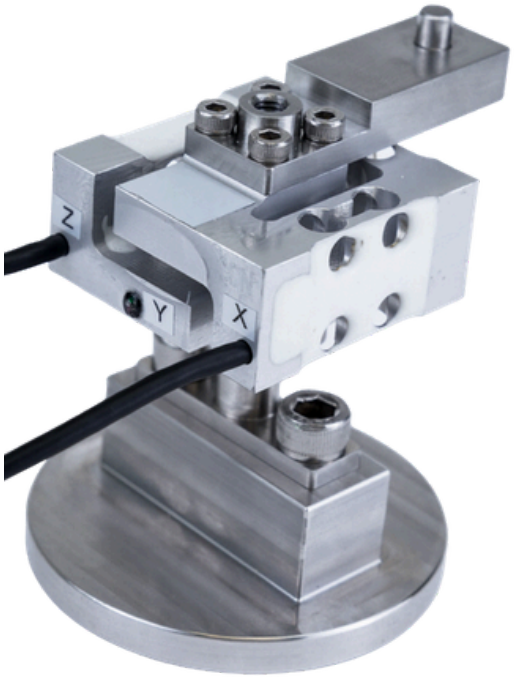
- Accuracy (nonlinearity): 0.1% full-scale
- Torque capacity: 1 Nm
- Tension/Compression Capacity: 200 N
- Sensitivity (rated output): 2.0 ± 10% mV/V
- Repeatability: 0.1% full-scale
- Safe overload: 120% (maximum overload 200%)

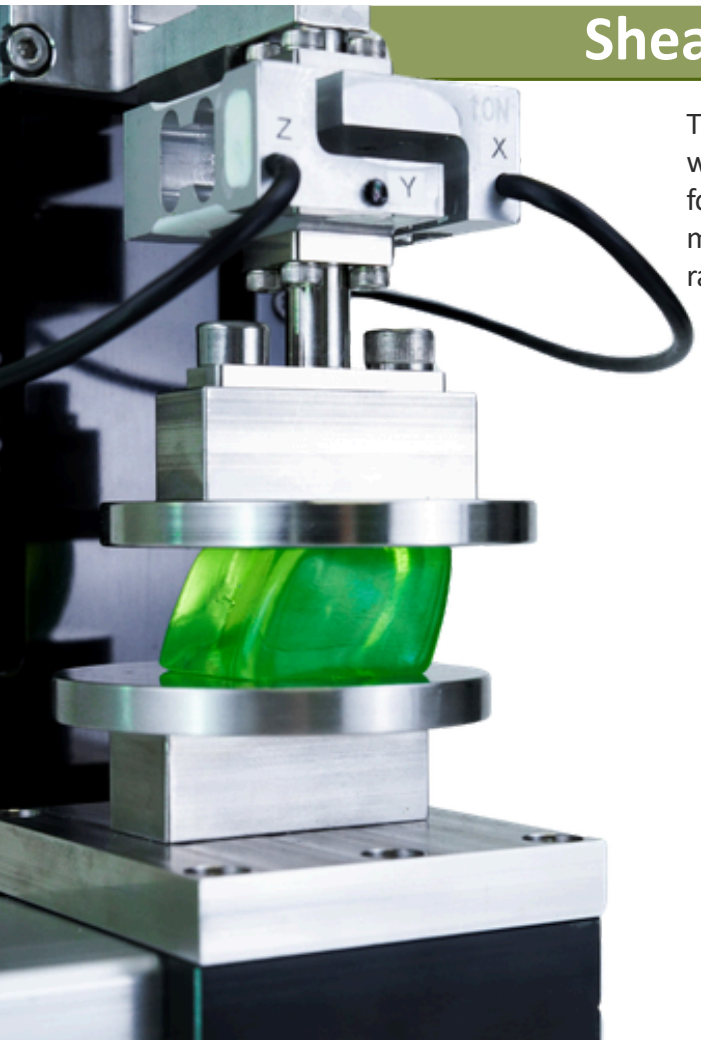
Common Torsion Axis Uses

- Torsional stiffness testing of materials and tissues that experience twisting or rotational loading
- Comparing rotational response across groups (formulations, treatments, processing variables) using torque–rotation curves
- Rotational cyclic testing for durability screening of twist-sensitive specimens and structures

Shear Load Cell

The Shear Load Cell provides the dedicated force sensing used with the UniVert Shear Axis fixture to quantify parallel or sliding loads during shear testing. It is supplied with the Shear Axis fixture, and can also be ordered as a replacement sensor for existing UniVert shear configurations.





Shear Load Cell

The Shear load cell is a compact parallel-beam sensor used with the UniVert Shear Axis to measure low-to-mid shear forces with stable, repeatable output. It is offered in multiple rated loads (10 N, 20 N, or 50 N) so the sensing range can be matched to your shear protocol.

Features & Specifications

- Comprehensive error: ±0.2% full-scale
- Rated loads: 10 N, 20 N, or 50 N
- Rated output: 1.0 ± 0.5 mV/V
- Safe overload: 150% full-scale

Common Shear Axis Uses

- Shear testing of bonded interfaces, laminates, and soft material interfaces to quantify interfacial mechanics and shear failure
- Sliding or lap-shear style protocols where force response vs displacement is used to compare formulations, surface treatments, or processing conditions
- Tissue-level shear deformation studies where controlled parallel motion is needed to probe failure modes and deformation behaviour

Pressure Sensor

The UniVert Pressure Sensor is a 70 kPa pressure transmitter supplied with the Pressure Axis for controlled internal pressurization experiments, and it can also be ordered as a replacement sensor for existing pressure-enabled UniVert systems. It converts pressure into a standard electrical output for synchronized acquisition alongside UniVert test data.

Pressure Sensor

The UniVert Pressure Sensor is a 70 kPa pressure transmitter supplied with the Pressure Axis to measure controlled internal pressurization during testing, and it can also be ordered as a replacement sensor. It converts pressure into a standard electrical output for synchronized acquisition alongside UniVert test data.

Features & Specifications

- Pressure range: 70 kPa
- Overload pressure: 200% full-scale
- Linearity: 0.03% of measurement range
- Accuracy: 0.5% full-scale

Common Pressure Axis Uses

- Inflation and internal pressurization studies to measure pressure response during controlled volume or flow inputs
- Pressure-driven deformation testing of compliant specimens (membranes, soft chambers, tissue-like constructs) where synchronized pressure data is required
- Repeatability studies comparing how geometry, material formulation, or processing changes shift pressure–response behaviour
- Long-duration or cyclic pressurization protocols where stable sensing and overload tolerance improve reliability

GRIPS & PLATENS

Grips and Platens are the primary UniVert fixtures that hold specimens (tension) or provide controlled contact surfaces (compression) during testing. Selecting the right grip and platen set improves alignment, reduces slippage or specimen damage, and helps produce repeatable force–displacement and stress–strain data across soft biomaterials through higher-load applications.

Ultra Low Force Grips & Platens

Ultra Low Force Grips and Platens are designed for extremely delicate specimens where contact mechanics and clamping force must be carefully controlled. These fixtures pair with the Eclipse Ultra Low Force Sensor to support stable tension and compression testing in the sub-newton range while minimizing tearing, crushing, and grip-induced artifacts.

Ultra Low Force Grips & Platens

Ultra Low Force Grips and Platens are polymer fixtures designed for gentle handling of fragile specimens in ultra-low load testing (up to 0.5 N force capacity). They pair exclusively with the Eclipse Force Sensor to enable clean tension and compression data when forces are in the sub-newton range.

Key Features

- 0.5 N force capacity, designed for ultra-low force workflows with the Eclipse Force Sensor
- Polymer materials designed for delicate samples
- Spring closure with interchangeable springs to tune clamping force (grips)
- Gentle, precise contact surfaces for low-load compression (platens)
- Helps reduce damage, slip, and handling artifacts in very soft specimens
- Included in the Eclipse Ultra Low Force Package

Common Uses

- Cell-laden hydrogels, weakly crosslinked gels, and very soft biomaterials
- Thin hydrogel films or fragile sheets that tear under conventional grips
- Low-load viscoelastic holds (creep and relaxation) where stable contact matters
- Early-stage tissue-engineered constructs and compliant scaffolds
- Soft polymer samples where meaningful differences occur below 1 N

Low Force Grips & Platens

Low Force Grips and Platens are intended for soft specimens that require gentle handling but need more force capacity than ultra-low force setups. They pair with Low Force Load Cells (1-5 N) to deliver repeatable tension and compression data for compliant biomaterials while reducing slip and specimen damage at the grip or platen interface.

Low Force Grips & Platens

Low Force Grips and Platens support repeatable tension and compression testing of soft specimens when you need more capacity (up to 5 N) than ultra-low force fixtures but still want gentle handling. The grip set uses spring closure with adjustable spring options, while the low-force platens provide stable, low-load compression contact.

Key Features

- 5 N force capacity, intended for low-load testing where preventing slip and damage is critical
- Slim polymer grips for balance of compliance and stability
- Grips are spring-closure design with multiple spring options to control clamping force
- Low-force polymer and steel compression platens with gentle, precise contact surfaces
- Included in the 1-5 N Force Package

Common Uses

- Tension testing of soft strips, films, and compliant scaffold materials
- Compression testing of hydrogels and soft constructs at low loads
- Comparing formulations or cohorts where subtle stiffness shifts matter
- Cyclic low-load testing where consistent gripping reduces drift and failure at the jaws
- Hydrated testing workflows where soft specimens are more compliant and slippery

Medium Force Grips & Platens

Medium Force Grips and Platens are built for mid-range loading where stronger clamping and rigid contact surfaces are needed to prevent slip and maintain alignment. They have a force capacity up to 200 N, and support reliable tension and compression workflows for a broad range of biomaterials and polymers, including cyclic and viscoelastic protocols.

Medium Force Grips & Platens

Medium Force Grips and Platens are stainless steel and polymer fixtures designed for stronger clamping and stable contact in mid-range force testing (up to 200 N force capacity). With configurable jaw liner options and durable platen construction, they support reliable tension and compression testing for a broad range of biomaterials and polymers.

**Grip has hard polymer jaw liners mounted on

Key Features

- Stainless steel and polymer options to suit your specimen and force capacity
- Designed for 10 N to 200 N force range
- Stable compression platens for repeatable mid-force contact
- Enhanced grip clamping to reduce slip under increased loads
- For grips, there are three jaw liner options:
  - Hard polymer liners
  - Soft liners for gentle hold
  - Sandpaper liners
- Included in the 10-200 N Force Package

Common Uses

- Tension testing of tougher scaffolds, polymers, elastomers, and composites
- Compression testing of denser hydrogels or stiffer biomaterials
- Strength and failure testing where low-force fixtures would slip
- Cyclic and fatigue-style protocols at moderate loads
- Specimens with varied surfaces requiring jaw liner selection (smooth polymer vs rubberized)

High Force Grips & Platens

High Force Grips and Platens are designed for higher-load testing on the UniVert 1kN when specimen stiffness or peak loads exceed the medium force range (up to 1000 N). With robust stainless steel construction and stable contact surfaces, they enable repeatable stiffness, strength, viscoelastic, and failure testing under elevated tensile and compressive forces.

High Force Grips & Platens

High Force Grips and Platens are robust stainless steel fixtures for higher-load tension and compression testing on the UniVert 1kN. They are designed to maintain stable contact and prevent slip during stiffness, strength, viscoelastic, and compression or tensile-to-failure experiments.

Key Features

- For the UniVert 1kN only
- Stainless steel construction for high-load stability
- Designed for 500 N to 1000 N force capacity
- High-force grips use screw closure for controlled clamping at higher loads
- High-force platens have flat, polished surfaces for accurate, repeatable compression
- Supports demanding protocols including failure testing and high-load viscoelastic workflows
- Included in the 500-1000 N Force Package

Common Uses

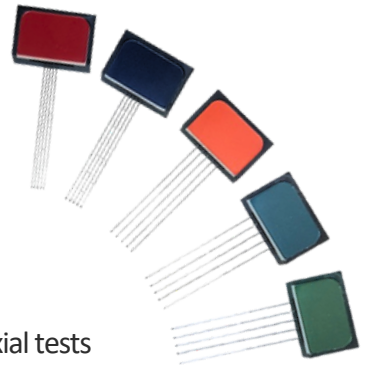
- Higher-load tension testing of stiffer polymers, composites, and structural materials
- Compression testing of thicker, denser samples requiring elevated forces
- Strength and failure testing where robust fixturing prevents slip and off-axis loading
- Cyclic compression or tension at higher forces for durability screening
- Protocols where consistent, polished contact surfaces improve repeatability

BioRakes

BioRake Grips are a patented gripping option designed for soft, slippery specimens that are difficult to clamp without introducing shear or tearing. By engaging the specimen with fine tines, they support tension testing while allowing natural lateral movement during loading.

BioRake Grips

BioRakes puncture and anchor the specimen so it can move in both X and Y directions during tension testing, reducing shear forces that can distort results or damage samples. A quick magnetic swap system and five size options make it easy to match tine spacing to specimen width, and the grips are compatible with load cells up to 20 N.



Key Features

- Patented tine-based engagement designed to reduce shear forces during uniaxial tests
- Punctures and anchors specimens to improve reliability on slippery or compliant samples
- Allows movement in X and Y directions during loading to minimize grip-induced artifacts
- Compatible with load cells up to 20 N
- Five sizes with quick magnetic swap system for fast changeover
- Multiple tine spacing options (from 0.7 mm to 2.2 mm) to match specimen geometry

Common Uses

- Soft tissue strips that slip or tear in conventional grips (for example, compliant biological tissues)
- Hydrated specimens where surface lubrication reduces friction at the jaws
- Fragile scaffolds and soft engineered constructs that clamp poorly
- Samples where reducing grip-induced shear improves repeatability and failure localization
- Comparative studies where consistent gripping is required across cohorts and timepoints

Fiber Grips

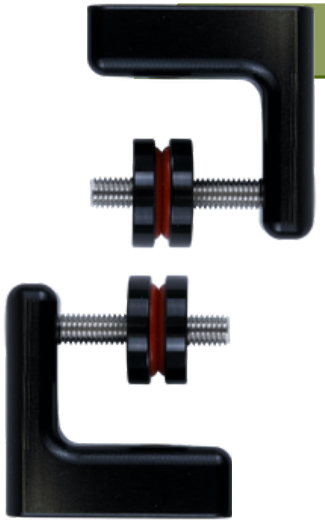
Fiber Grips are UniVert tension fixtures designed for long, slender specimens such as fibers, filaments, wire, and yarn where conventional jaws can cause slip or premature breakage. These grips help distribute clamping forces and improve repeatability for tensile characterization of high aspect-ratio specimens.

Capstan Grips

Capstand Grips are a high-force fiber gripping option for UniVert 1kN that reduce slippage and jaw-break failures by managing specimen contact and tension over the grip path. They include spring closure for secure gripping and can be customized for specialized fiber or filament workflows.

Key Features

- Designed for higher-force tensile testing of fibers, filaments, wire, and yarn
- Reduces slippage and breakage at the jaw during testing
- Spring closure for secure gripping
- Customizable for user applications
- For use on the UniVert 1kN only



Fiber-Filament Grips

Fiber-Filament Grips provide a lower force option for tensile testing of fibers, filaments, wire, and yarn when capstand-style high-force gripping is not required. They help reduce slippage and grip-induced breakage to produce cleaner stress–strain data on delicate or low-load specimens.

Key Features

- Designed for lower-force fiber and filament tensile applications
- Reduces slippage and breakage at the jaw during testing
- Suitable for high aspect-ratio specimens (long length relative to cross-section)
- Compatible with both Univert S and 1kN

Common Fiber Grip Uses

- Tensile testing of fibers, filaments, microwires, wire, and yarn
- Comparing processing variables (draw ratio, annealing, crosslinking, coating) via tensile properties
- Failure and strength testing where jaw breaks must be avoided to capture true material behaviour
- Screening fiber batches for stiffness, strength, and elongation-to-break
- Testing engineered fibers and textile-like constructs used in biomaterials and soft device assemblies

Needlenose Grips

Needlenose Grips are a fine-point tension gripping option for the UniVert, designed for specimens that are too small, narrow, or delicate for standard low-force grips. Their narrow contact geometry helps position and clamp fragile samples with better access and visibility during setup.

Needlenose Grips

These grips provide a smaller, more precise grip point for tensile testing of delicate specimens, helping reduce handling damage and improving alignment when working at small gauge lengths or limited specimen widths. They are a practical alternative when specimen size or shape makes conventional jaw-style grips difficult to use.

Common Uses

- Tensile testing of small biomaterial strips or narrow coupon specimens
- Thin films and hydrogel films where a compact grip face helps prevent tearing during setup
- Delicate soft tissue samples with limited width (small excised strips or dissected regions)
- Short gauge-length specimens where grip-to-grip spacing is constrained
- Microfabricated or patterned specimens that need precise placement to avoid damaging features
- Early-stage tissue engineered constructs and fragile scaffolds where large grips can induce local damage
- Any workflow where improved visual access to the clamping region helps alignment and repeatability

ACCESSORIES

UniVert Accessories include practical add-ons that improve day-to-day use, portability, and long-term support for your system. For UniVert S, options include the Hard Shell Case for secure storage and travel, as well as the Accessory Bundle that combines interchangeable load cells, a temperature-controlled media bath, protected transport, and extended warranty coverage to support repeatable testing across multiple workflows.

UniVert S Hard Shell Case

The UniVert S Hard Shell Case is a protective storage and transport case designed to safely carry the UniVert S system and key accessories.

NOTE: Only fits the UniVert S (or S2) model.

Hard Shell Case

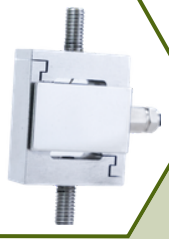
Built for routine lab movement and travel between facilities, the hard-shell case helps protect the UniVert S from impact and handling damage while keeping the instrument and accessories organized. It is a simple, practical option for shared equipment environments, teaching labs, or any workflow where the UniVert S needs to be moved and set up reliably in different locations.

Key Features

- Rugged hard-shell enclosure designed for safe storage and transport of the UniVert S and accessories
- Custom-cut high-density foam insert that cradles the instrument and creates dedicated compartments for components
- Egg-crate lid foam to help secure contents and reduce movement during transport
- Wheeled case with pull handle for easier movement between labs and facilities
- Multiple heavy-duty latches for secure closure during travel and handling
- Organized layout for repeatable packing, helping protect critical surfaces and reduce setup time when moving the system

UniVert S Accessory Bundle

The UniVert S Accessory Bundle is an add-on package that expands force range coverage, enables hydrated and temperature-controlled testing, and improves portability and long-term support at a better value than purchasing accessories individually. It includes four selectable load cells, one temperature-controlled media bath, a hard-shell travel case, and a one-year extended warranty.



Choice of 4 Load Cells

- 10 N
- 20 N
- 50 N
- 100 N
- 200 N

Choice of 1 Media Bath

- Horizontal temperature-controlled fluid bath with 500mL capacity

OR

- Vertical temperature-controlled fluid bath with 600mL capacity

Hard Shell Case

A durable, hard-sided storage and transport case protects your UniVert S system during traveling. Custom-fit for secure positioning, it safeguards critical components while enabling safe and convenient mobility.

1 Year Extended Warranty

Extends warranty coverage by an additional year beyond the standard one-year warranty for longer-term confidence and reduced downtime risk.

KITS

Kits bundle UniVert hardware, fixtures, curriculum, and specimen materials into complete, course-ready packages for teaching labs. Each kit is built to reduce instructor setup time while giving students hands-on experience with real mechanical testing methods and repeatable datasets.

UniVert Classroom Kit

Hands-On Mechanical Testing For Teaching Labs

In addition to its role as a research instrument, the UniVert is a practical platform for teaching mechanical testing in biomechanics labs, classes, and courses. The UniVert Classroom Kit is designed for undergraduate and specialized courses that want students to run real experiments, generate repeatable datasets, and connect force and displacement measurements to stress-strain interpretation across three core methods: tension, compression, and three-point bending.

The kit is built around a UniVert system that students can operate with minimal supervision once the workflow is introduced. An intuitive software interface and modular fixtures (grips, platens, and 3-point bend) help reduce the learning curve for new users, making the kit well suited for structured lab courses and open-ended project work.

The UniVert Classroom Kit includes course-ready curriculum resources and bundled laboratory solutions aligned to the included fixtures and specimen materials. Educators can deliver meaningful, hands-on learning experiences while maintaining reliability, repeatability, and efficient use of instructional time.

Key Features

- Compact system suitable for teaching labs and shared classroom spaces
- Includes lab curriculum for tensile, compression, and three-point bending experiments
- Includes modular fixtures plus specimen materials designed for repeatable classroom results
- Easy-to-use workflow for student-led testing with minimal supervision
- Additional accessories and extension modules available
- Built on either the UniVert S or UniVert 1kN depending on course needs

NOTE: A Windows 11-based PC is required to run the UniVert's LabJoy Software

Classroom Accessories

The UniVert Classroom Kit includes a set of accessories/specimens and sample-prep hardware for use in classroom labs, supporting repeatable tensile, compression, and bending experiments across many student groups. These items are selected to simplify setup while producing consistent, interpretable datasets.

Synthetic Skin Sheets

Synthetic Skin Sheets are soft, tissue-mimetic specimens for introductory tensile and viscoelastic testing exercises where students can observe large deformation and nonlinear stress-strain behaviour. The kit includes three sheets of synthetic skin material for repeated classroom use.

Sawbone Sheets

Synthetic Bone Specimens (Sawbones) are rigid, repeatable test samples for the compression and bending labs, helping students quantify stiffness, strength, and failure behaviour with low variability between groups. The kit includes 200 pre-cut 1 cm cubes plus one full brick for additional sample preparation.

Dog-Bone Die Cutter

The Dog-Bone Die Cutter is an ASTM D638 Type V cutter used to produce consistent tensile specimens for standardized stress strain calculations and fair comparisons between student datasets. It simplifies sample preparation by creating repeatable gauge geometry from sheet materials.

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