C220-E056

SHIMADZU
Excellence in Science

Texture Analyzer

EZ Test

Creating Culinary Science

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Creating Culinary Science

Lightweight and Compact

The compact size fits easily on table tops.
An "open table" design provides open access from both sides of the table to ensure a large work space.

Convenient to Use

The table height was significantly lowered.
This makes it easier to exchange jigs and samples, and to perform a wide variety of operations.

Finger-Tip Operation

An adjustable controller, which enables finger-tip control of crosshead positioning and test start operations, is included standard.
This allows adjusting the control panel position and angle to match the posture of the operator.

High-Precision Testing System

High-Precision Load Cell with a Capacity of 5 kN Max. Guarantees Test Force Measurements

Compliance

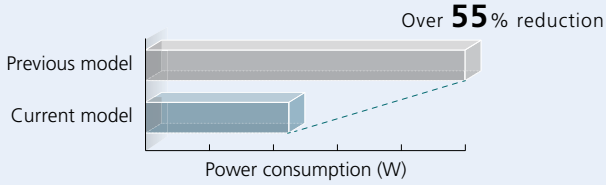
- JIS B7721 Class 1
- ISO 7500-1 Class 1
- EN 10002-2 Grade 1
- ASTM E4

Note: Shimadzu recommends validation at an installation site that meets the requirements specified in these standards.

The system uses a high-precision load cell that guarantees accuracy to within ±0.5% of the indicated value (high-precision type) over a wide range from 1/500 to 1/1 of the rated capacity. This helps ensure highly reliable evaluation tests over a wide range of loads.

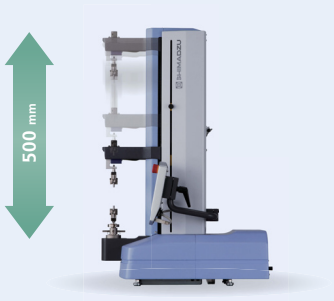
Environmental Measures

In response to environmental concerns, power consumption has been reduced by over 55% compared to previous models.



Ample Product Line to Meet a Wide Variety of Requirements

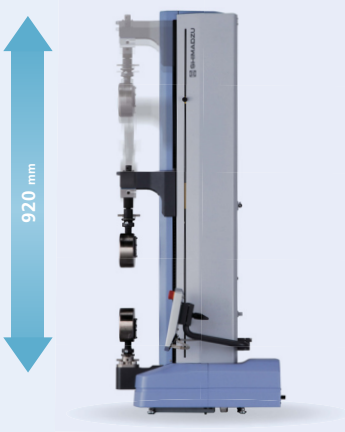
With 3 tester models and 12 types of load cells available, the optimal system can be selected from 32 possible combinations. Furthermore, a high-speed model with a return speed of 3000 mm/min significantly shortens test cycle times.



EZ-SX Short Model

This is ideal for testing food texture, pharmaceuticals and their packaging, and electrical/electronic parts. With a wide range of testing speeds, it can accommodate all sorts of evaluation testing applications.

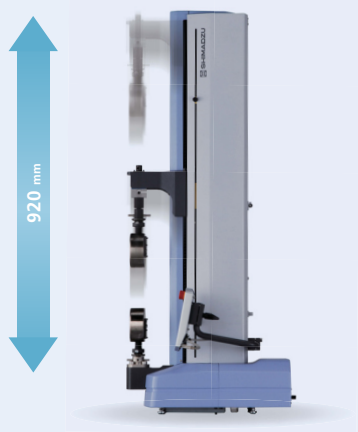
Max. Capacity	500 N
Max. Stroke	500 mm
Test Speed Range	0.001 to 1000 mm/min
Max. Return Speed	1500 mm/min



EZ-LX Long-Stroke Model

With a 5 kN maximum capacity, this is perfect for tensile testing and bend testing of plastics. The 920 mm stroke capacity also makes it perfect for testing rubber, film, and other materials with long elongation.

Max. Capacity	5 kN
Max. Stroke	920 mm
Test Speed Range	0.001 to 1000 mm/min
Max. Return Speed	1500 mm/min



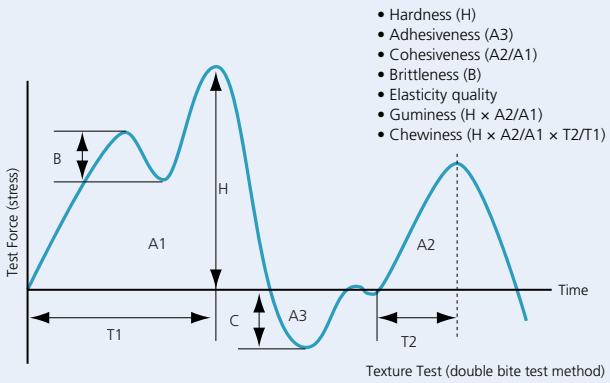
EZ-LX HS Long-Stroke and High-Speed Model

The long stroke improves productivity. The 3000 mm/min return speed significantly reduces the wait time between tests, even for tests with long displacements.

Max. Capacity	2 kN
Max. Stroke	920 mm
Test Speed Range	0.001 to 2000 mm/min
Max. Return Speed	3000 mm/min

What is Food Texture?

Food texture is the sense of touch when food is handled, the visual sense recorded by eye, the oral touch sensation and palatability.



Texture Test (double bite test method)

Explanations of Terms

1. Hardness (H)
This is the maximum test force (N) loaded on food products using a plunger.

2. Adhesiveness (A3)
This is the force (N) required to remove food that has bonded to the hands during handling or to the teeth, tongue and roof of mouth during eating.

3. Cohesiveness (A2/A1)
This is the deformation and destruction of a food product when a load is added to it.
The load is added twice to draw comparisons of load areas (energy) for first and second loads.

4. Brittleness (B)
This is the breakdown force (N) of food in the mouth.

5. Elasticity quality
This is the comparison of indentation and displacement when a load is added twice in succession to a food product using a plunger.

6. Guminess (H × A2/A1)
Hardness × elastic quality × cohesive quality.... Dry food product

7. Chewiness (H × A2/A1 × T2/T1)
Hardness × cohesive quality.... Semi-dry food product

Szczesniak Texture Profile Analysis

Characteristic	1st characteristic	2nd characteristic	General Term	Characteristic content
Mechanical characteristics	Hardness		Soft - teeth resistance - hard	Required force for even deformation and internal binding power providing food product shape
	Cohesive quality	Brittleness	Crumbly - Munchy - Brittle	Related to the force, hardness and cohesive quality when chewing a food product
		Masticable quality	Soft - tough	Relation between energy, hardness, cohesive quality and elastic quality required for mastication up to the point of swallowing a compressed food product
		Gum quality	Easy loss of shape - powder state - paste state - rubber state	Relation between energy, hardness and cohesive quality, required for mastication up to the point of swallowing a semi-compressed food product
	Cohesiveness		Dry - cohesive	Degree of fluidity at force for displacement
	Elastic quality		Plasticity - elasticity	Rate at which food that is deformed by an external force but returns to original shape after external force is released
	Adhesiveness		Glutinous - adhesiveness - stickiness	The force required to overcome traction between the surface of a food product and items such as tongue teeth, and palate

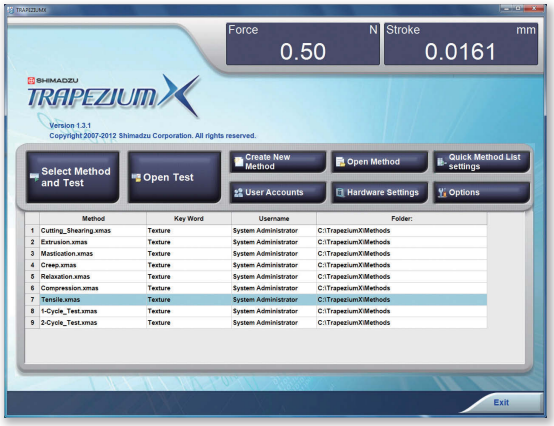
Developed by Alina Szczesniak who first organized and systemized the properties related to texture

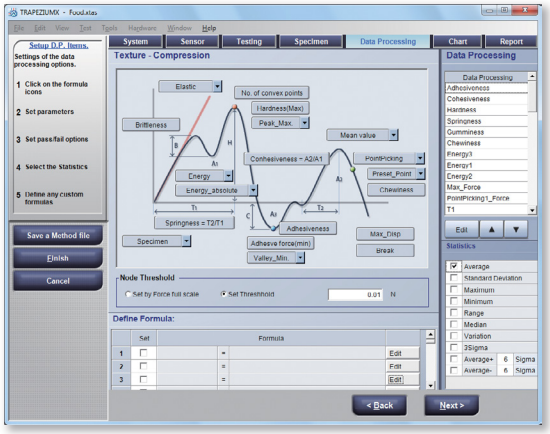
TRAPEZIUM X

Material Testing Operation Software TRAPEZIUM X

Texture Analyzer Software

Supported by a Thoroughly Refined Operating System

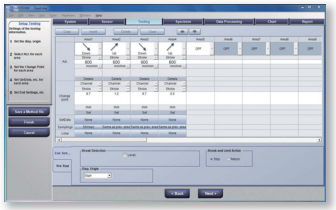




- **Customized Reports with Flexible Layouts and a Wide Selection of Web-Compatible Output Functions**
  Create reports that include test results, graphs, photographs, logos, or other graphical content.
- **Output reports in Adobe Acrobat*, Microsoft Word*, Excel*, or HTML file formats**

- **Complete Software Packages for Cycle, Penetration, Compression, Shearing, Creep, Stroke Hold, and Relaxation.** Pre-Installed settings are available for various texture analysis tests for **Baked goods, Cereals, Confectioneries, Snacks, Meats, Poultry, Fish, Fruits and Vegetables, Cheeses etc.**
- By registering Frequently Used and Customized Test methods in the Quick Parameter List, tests can be started in one single step.
  File searching by keywords or dates: Reports and Settings lists can be previewed to recall files easily.

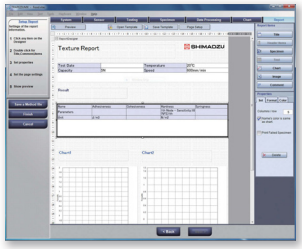
- **Control of Crosshead settings by Visual Wizard**
  Simply choose each parameter: crosshead speed, load rate, displacement rate control, load duration, crosshead displacement duration.

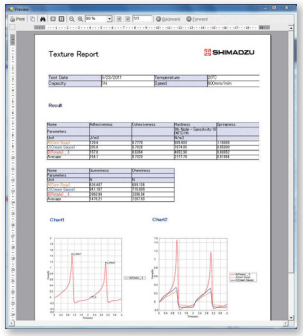


- Precise and consistent measurements are guaranteed by the height detection function for every sample and by the ***high-speed data capturing rate.***

- **Visual Wizard provides Guidance for setting Data Processing**
  Various data processing functions related to Texture analysis, such as Hardness, Brittleness, Cohesiveness, Elasticity, Adhesiveness etc., are standardized in the software.
- **Data and Statistical Processing can be customized** by defining formulas for re-analysis (or repeat analysis) and evaluation.
- **Guidance for Operating Procedures is linked to the software's Help function that is displayed on each screen.**

- **Real Time Test Display**
  Graph overlay, changing the energy calculation graph overlay, average graph for batch test, mouse cursor control for changing the energy calculation area, data picking on arbitrary points on the graph, re-analyzing and changing set parameters from testing display, re-testing, adding test, are subsets of the data processing function.
- **Advanced Navigation with Teaching Function**
  Only the function needed for the given test situation are displayed as Navigation buttons. The Teaching Function learns from users' operation in each situation by adding new buttons to the navigation bar as frequently used functions.





Ideal for All Sorts of Evaluation Testing Currently Required by Customers

Physical evaluation testing is now required in more fields than ever before.
EZ Test testers offer an ample selection of specialized jigs and applications to support a wide variety of customer requirements.

Evaluating Food Texture

In addition to food flavor, another important factor that affects how good a food tastes is food texture, such as crispiness, glutinousness, tooth feel, and tongue feel. Food texture is conventionally evaluated by means of sensory testing, which has poor repeatability, due to the differences in sensation experienced by different people and variability in their physical state.
EZ Test testers provide a way to obtain objective numerical results that can supplement sensory testing in food development and quality control applications.

Evaluation of Bread by Compression Test

25 mm thick bread was compression tested using a 36 mm diameter cylindrical jig. Stress was measured at 40% deformation at a test speed of 100 mm/min, in accordance with standard AACC test methods.

Evaluation of Apple Surface by Hardness Test

Piercing test jigs are used for piercing and penetration tests. They make it possible to evaluate the surface hardness (yield point) of peelings, coatings, etc. on samples such as vegetables, fruits, and jelly beans.

Evaluation of Butter by Hardness Test

Conical press jigs are used for compression or piercing testing of samples that exhibit thermal plasticity, such as butter, margarine, and bar soap. They are used to evaluate characteristics such as the hardness and spreadability of specimens.

Evaluation of Jam by Piercing Test

Multi-piercing jigs make it possible to evaluate the hardness or cohesiveness of samples containing food pieces (large number of small pieces with varying shape) or air bubbles dispersed throughout the sample, such as jam with pieces of fruit, ice cream with cookie pieces, or vegetables. To minimize measurement differences between locations tested, this jig enables evaluation of average characteristics.

Evaluation of Potato Croquette by Teeth Shear Test

This jig is designed to simulate the shape of various types of teeth. It is used to test the compressive, shear, crush, and other characteristics of food specimens. It enables comparative testing of crispiness, brittleness, chewiness, and other characteristics.

Jig Platform

The upper plate portion can be replaced with various jig attachments including a tray for catching extruded or spilled samples and a waterproof tray. Without any attachments, the platform can be used as a table.

Evaluation of Gelatin by Viscoelasticity Test

This makes it possible to perform gelatin tests (JIS K 6503) or viscosity tests of other gelatinous samples. It uses a 85 mm tall glass container with a 60 mm internal diameter and a 0.5 inch (12.7 mm) compression plunger (cylindrical jig).

Evaluation of Asparagus by Shear Test

The Volodkevich bite jig simulates a human incisor tooth biting through a sample. This jig is used to measure the softness or hardness of meat, the shear force required to bite through asparagus, celery or other fibrous fruits or vegetables, or for piercing testing.

Evaluation of Sausage by Shear Test

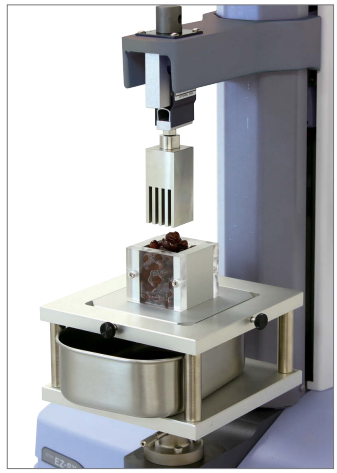
This jig enables shear tests of cutting with a blade. In addition to V-cuts for Werner Platzer tests, it also allows replacing blades with other edge profiles. It is used to evaluate shearing of foods such as meats, sausage, cheese, vegetables, and snack bars.

Evaluation of Cereal by Compression Shear Test

The Kramer shear cell is a specialized jig that uses multiple blades to perform compression, shear, and extrusion tests. It allows evaluation of cereals, beans, sauces containing food pieces, and other samples with non-uniform shapes with good repeatability.

Evaluation of Beans by Compression Shear Test

This specialized mini-Kramer shear cell allows testing of smaller sample quantities. As with the standard size jig, this is used to evaluate samples by shearing, compressing, and extruding the samples.

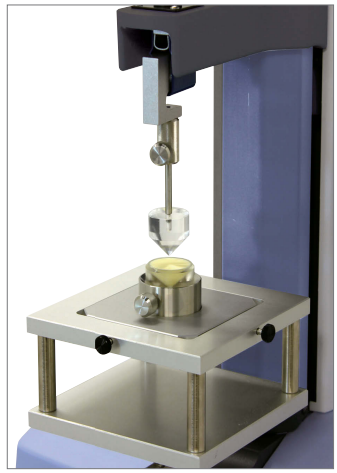


Evaluation of Butter by Shear Test

This wire cutter jig uses a 0.3 mm diameter stainless steel wire for shear testing of samples such as butter, margarine, cheese, and noodles. It makes it possible to evaluate the surface and internal firmness of samples.

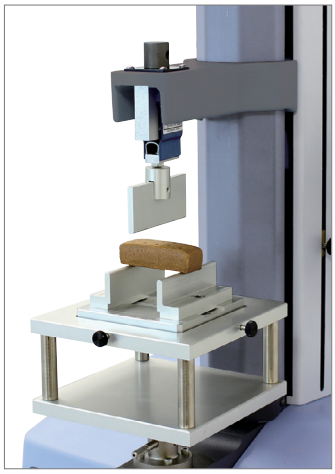
Evaluation of Margarine by Spreadability Test

This jig set is used to evaluate how easy it is to spread samples that are normally spread in a thin layer, such as margarine. The jig set measures the test force required to spread a sample between the upper and lower jigs.



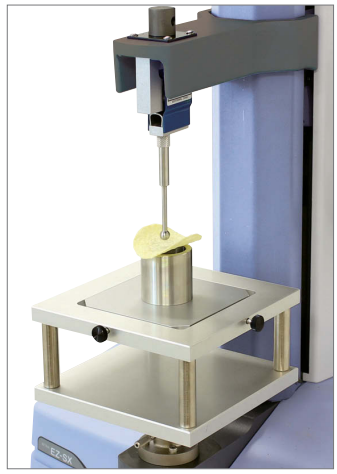
Evaluation of Cookies by Three-Point Bending Test

This makes it possible to evaluate the breaking strength or brittleness of samples by performing a bending test. It is ideal for testing the three-point bending strength of samples such as biscuits or chocolate bars. Different types of upper punches or supports can be selected based on the sample.



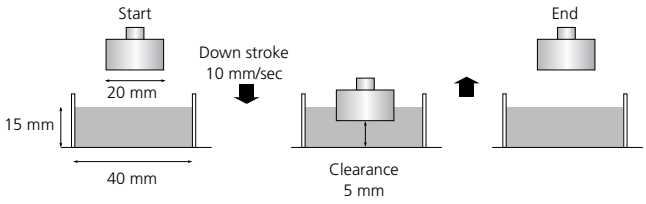
Evaluation of Potato Chips by Break Strength Test

This jig is used for penetration testing items such as snack foods and potato chips. Measuring the test force required to break samples allows the measurement values to be used as an index for evaluating brittleness or crispiness.



Evaluation Tests of Nursing Care Foods

This jig set is used to test foods intended for people with difficulty swallowing, based on the notification issued by the Japanese Consumer Affairs Agency, or to test "universal design foods" advocated by the Japan Care Food Conference. It is designed to accurately measure even small test force profiles obtained from soft foods.
A 40 mm diameter container is filled to a depth of 15 mm with the sample, which is then compression tested with a 20 mm diameter plunger.



Load cell attached to lower jig

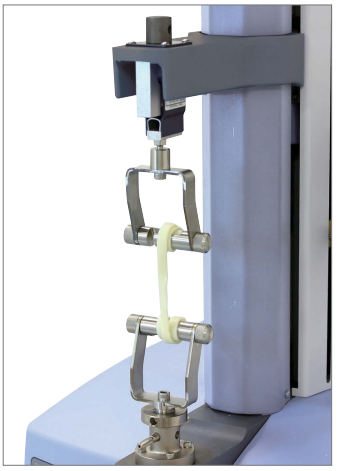
Load cell attached to crosshead

Evaluation of Fruit by Crush Test

Ottawa cells are specialized jigs that compress samples and measure the compressive or extrusion force required to extrude the sample through a slit in the bottom. They are used to evaluate samples such as vegetables, fruits, beans, and cereals.

Evaluation of Noodles by Tensile and Shear Tests

This jig is used to tensile-test various types of noodles, such as udon (thick wheat noodles), soba (buckwheat noodles), or spaghetti. Two jig types can be selected: one secures the noodles by pinching them between two surfaces and the other secures the noodles by wrapping them and using the tightening force of the noodle itself. It allows evaluation of characteristics such as the tensile strength and elongation of noodles.



Evaluation of Liquids by Extrusion Force Test

This jig makes it possible to measure the test force required to extrude samples through a hole. The extrusion hole size can be changed based on the concentration and viscosity of the sample. It is used to evaluate liquids such as sauces, pastes, and gels.

Evaluation of Liquids by Viscoelasticity Test

This is used to evaluate the viscosity of viscous samples, such as yoghurt, cream, sauces, ground fruit, or vegetables.
Different compression plates are used based on the viscosity, content of food pieces, or sample size.

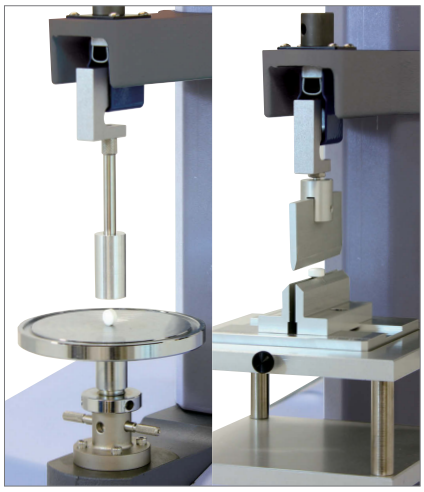
Evaluation of Pharmaceuticals, Medical Devices, and Household Goods

Medical device manufacturers evaluate a variety of strength characteristics so they can guarantee the functionality, performance, and safety of products. Pharmaceuticals and their packaging are tested in detail with respect to their physical properties, ease of loading, ease of removal, ease of ingestion, and other characteristics.

Note: EZ Test testers are compatible with IQ/OQ requirements (but not with ERES).

Evaluation of Pills by Compression and Splitting Tests

By compression testing, pills, tablet candies, and other such items are evaluated in terms of hardness, powder molding, and surface coating characteristics. The type of compression plate and spherical press jig can be selected based on the tablet size.



Evaluation of Tablets by Press-Dispense Test

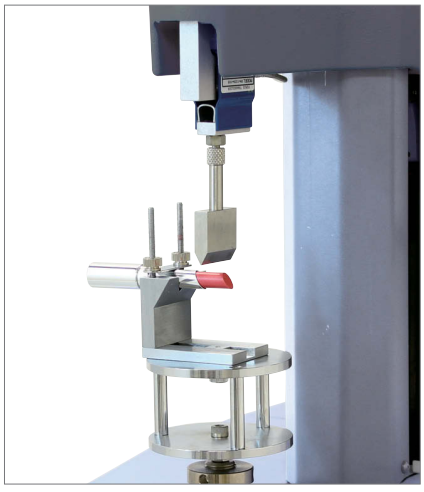
This is used to evaluate the force necessary to press tablets or capsules out of press-through packaging (PTP). By replacing adapters, it can accommodate various shapes of PTP packaging.

Evaluation of Syringe Needles by Injectability Test

This is used to evaluate the test force required to pierce a vial cap, film, or other material with a syringe needle. The inserted portion of the needle is designed in accordance with dimensions specified in regulations, which makes it possible to reproduce installation of the needle into the syringe.

Evaluation of Lipstick by Hardness Test

This jig is used to evaluate the hardness of lipstick. The lipstick is secured in a horizontal position and compressed in a vertical direction for evaluation.



Evaluation of Adhesive Bandages

The physical properties of adhesive bandages are evaluated by testing the force required to peel open the bandage packaging, its adhesiveness, tensile strength, and so on.

Evaluation of Springs by Compression Test

The compression strength of springs can be measured by compressing the spring between upper and lower compression plates. The lower compression plate is designed so that fine adjustments can be made to the parallelism of the plates.

EZ Test Specifications/Options

Specifications

Name		EZ Test		
		EZ-SX	EZ-LX	EZ-LX HS
Tester Load Capacity (note 1)		Max. 500 N	Max. 5 kN	Max. 2 kN
		The load cell type can be selected from 9 types; 1 N, 2 N, 5 N, 10 N, 20 N, 50 N, 100 N, 200 N, and 500 N.	The load cell type can be selected from 12 types; 1 N, 2 N, 5 N, 10 N, 20 N, 50 N, 100 N, 200 N, 500 N, 1 kN, 2 kN and 5 kN. (Up to 2 kN for EZ-LX HS)	
Load Method		High-precision constant-speed strain measurement using backlash-free ball screw drive		
Test Force Measurement	High-Precision Type (note 2)	±0.5 % of indicated value (within 1/500 to 1/1 of load cell rated capacity)		
		Conforms to JIS B 7721 class 0.5, ISO 7500-1 class 0.5, EN 10002-2 grade 0.5, and ASTM E4.		
	Standard-Precision Type (note 2)	±1 % of indicated value (within 1/500 to 1/1 of load cell rated capacity)		
		Conforms to JIS B 7721 class 1, ISO 7500-1 class 1, EN 10002-2 grade 1, and ASTM E4..		
	Range	1 range (rangeless)		
	Test Force Calibration	Automatic calibration using calibration cable		
Crosshead Speed Range		0.001 to 1000 mm/min		0.001 to 2000 mm/min
Maximum Return Speed		1500 mm/min		3000 mm/min
Crosshead Speed Accuracy		Within ±0.1% of test speed		
Crosshead Speed and Allowable Test Force		Up to the capacity of the load cell used at all speeds		
Distance Between Crosshead and Jig Mounting Surface		500 mm	920 mm	
Maximum Grip Space		Maximum Grip Space 395 mm (500 N max. load cell + tensile jig)	700 mm (5 kN load cell + 5 kN screw type flat grips)	
			755 mm (1 kN load cell + 1 kN screw type flat grips)	
			860 mm (500 N max. load cell + tensile jig)	
Depth of Test Space		100 mm (table section)		
Crosshead Position Detection	Measurement & Display	Optical encoder measurement, digital display (display resolution: 1 µm)		
	Accuracy	0.1% of indicated value or 0.01 mm, whichever is greater		
Crosshead Control		Single test control (single-direction tension or compression test), cycle test control (repetitive tension or compression test)		
Sampling Speed		1 ms MAX (TRAPEZIUM X/TRAPEZIUM LITE X is needed for this function)		
Standard Functions Included		Constant test force (creep) control (note 3)		
		Auto-stop and auto-return functions when specimen fracture is detected (crosshead auto home-position return)		
		Test condition file function, user-settable crosshead speed function		
		Display function: Actual test force display or stress display (user settable)		
		Crosshead displacement display in mm or %/GL (user selectable)		
		Peak point test force and stroke		
		Test force and displacement analog output: 0 V to 5 V DC full scale, respectively (for external recorder)		
		USB interface		
		Manual crosshead position fine adjustment		
		Adjustable controller		
		Touch load alarm		
Dimensions and Weight		W400 × D530 × H885 mm, Approx. 33 kg	W400 × D530 × H1315 mm, Approx. 55 kg	
Input Power Supply Voltage (Note 4)		Single phase, 100 V to 150 V AC, 50/60 Hz, or 200V to 230V AC, 50/60 Hz		
Power Capacity		700 VA	850 VA	
Installation Environmental Conditions		Temperature: 5°C to 40°C, Humidity: 20% to 80% (no condensation)		
		Power voltage fluctuation: Within ±10%, Vibration: 10 Hz max., Amplitude: 5 µm max.		

Note 1: When the load cell capacity is smaller than the tester load capacity, the former is the maximum test force.
Note 2: Shimadzu recommends validation at an installation site that meets the requirements specified in these standards.
Note 3: The test force is kept constant at 70% or less of the tester load capacity, for within 12 hours.
Note 4: Ground resistance should be 100 Ω or less.

Additional Load Cell Kits

Select a load cell kit if load cells are to be added to the tester unit kit. The additional load cell kit comprises a cell set (load cell and calibration cable), cell bolt (if required), and upper joint jig (if required).

LOAD CELL SET

CLASS	EZ-TEST	EZ-LX											
		-	EZ-LX HS										
		-	EZ-SX										
	P/N	5 kN	2 kN	1 kN	500 N	200 N	100 N	50 N	20 N	10 N	5 N	2 N	1 N
1	346-55939-XX	10	14	9	13	12	07	06	05	04	03	02	01
0.5	346-55942-XX	10	14	9	13	12	07	06	05	04	03	02	01

Jig P/N List

*1 An upper adapter jig is necessary to allow smooth probe replacement.

Upper jig	346-52280-01

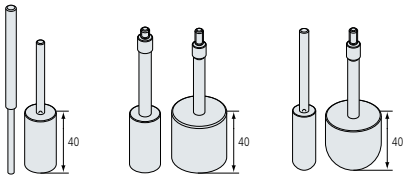

Upper jig

Material notation: SS = Stainless steel, Al = Aluminum

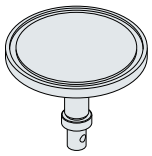
Jig P/N List

Probes

Indentation Elasticity Test Jig / Cylindrical Press Jig



Indentation elasticity test jig / cylindrical press jig


Lower compression plate

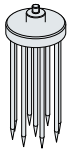
Indentation elasticity test jig set		346-52284-01
Breakdown	Indentation elasticity test jig dia. 3 mm	346-51687-01
	Indentation elasticity test jig dia. 5 mm	346-51687-02
	Lower compression plate dia. 118 mm	346-51687-12

List of P/N by Size and Material

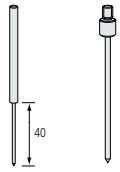
ø1	SS	346-57829-02 *1
ø2	SS	348-38504-02 *1
ø3	SS	348-38504-03 *1
	SS	346-51687-01
ø4	SS	348-38504-04 *1
ø5	SS	348-38505 *1
	SS	346-51687-02
ø6	SS	348-38506-01 *1
ø7	SS	348-38506-02 *1
ø8	SS	348-38506-03 *1
ø9	SS	348-38506-04 *1
ø10	SS	348-38506-05 *1
	acrylic	346-57801-04 *1
ø11.3 (cross section: 1 cm²)	SS	346-57801-03 *1
	acrylic	346-57801-07 *1
ø15	Al	346-57801-08 *1
	acrylic	346-57801-09 *1
ø20	Al	346-57801-01 *1
	acrylic	346-57801-05 *1
	Al	346-57802-09
	acrylic	346-57802-18
ø25	Al	346-57802-01
	acrylic	346-57802-11
ø30	Al	346-57802-20
	acrylic	346-57802-21
ø35	Al	346-57802-02
	acrylic	346-57802-12
ø36	Al	346-57802-03 (AOAC, bread compression test)
ø40	Al	346-57802-04
	acrylic	346-57802-13
ø45	Al	346-57802-05
	acrylic	346-57802-14
ø50	Al	346-57802-06
	acrylic	346-57802-15
ø6.4(ø1/4")	SS	348-38506-06 *1
ø12.7(ø1/2")	Al	346-57801-02 *1
	acrylic	346-57801-06 *1 (JIS/ISO, gelatin test)
ø25.4(ø1")	Al	346-57802-07
	acrylic	346-57802-16
ø38.1(ø3/2")	Al	346-57802-10
	acrylic	346-57802-19
ø50.8 mm(ø2")	Al	346-57802-08
	acrylic	346-57802-17
ø1/2"R tip R	SS	346-57803-01 *1
	acrylic	346-57803-11 *1
ø1"R tip R	SS	346-57803-02
	acrylic	346-57803-12

Multi-Piercing Jig

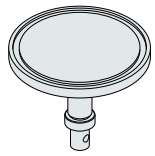
Multi-Piercing Jig	346-57804


Multi-Piercing Jig

Piercing Needle Jig / Indentation Test Jig



Piercing needle jig / indentation test jig


Lower compression plate

Indentation elasticity test jig set		346-52283-01
Breakdown	Indentation elasticity test jig dia. 3 mm	346-51813-01
	Indentation elasticity test jig dia. 5 mm	346-51813-02
	Lower compression plate dia. 118 mm	346-51687-12

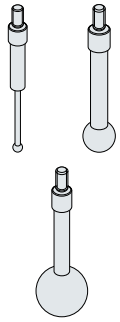
List of P/N by Size and Material

ø1(60°taper)	SS	346-57829-02 *1
ø2(60°taper)	SS	348-38503-02 *1
ø3(60°taper)	SS	348-38503-03 *1
	SS	348-38502-01
ø4(60°taper)	SS	348-38503-04 *1
	SS	348-38502-02
ø5(60°taper)	SS	348-38503-05 *1
	SS	348-38502-03

Spherical Press Jig / Viscosity Test Jig

List of P/N by Size and Material

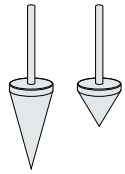
ø3	SS	348-38511-01
ø4	SS	348-38511-02
ø5	SS	348-38511-03
ø6	SS	348-38511-04
ø7	SS	348-38511-05
ø8	SS	348-38511-06
ø9	SS	348-38511-07
ø10	SS	348-38511-08
ø15	SS	348-38512-01
ø20	SS	348-38512-02
ø25	SS	348-38512-03
ø3.2(ø1/8")	SS	348-38511-09
ø6.4(ø1/4")	SS	348-38511-10
ø12.7(ø1/2")	SS	348-38511-11
ø19.1(ø3/4")	SS	348-38512-04
	acrylic	348-38555-01
ø25.4(ø1")	SS	348-38512-05
	acrylic	348-38555-02


Spherical press jig / viscosity test jig

Conical Press Jigs

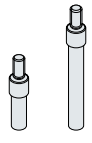
List of P/N by Size and Material

90°(M3 adapter)	acrylic	346-57806-01 *1
60°(M3 adapter)	acrylic	346-57806-02 *1
45°(M3 adapter)	acrylic	346-57806-03 *1
	SS	346-57806-04 *1
40°(M3 adapter)	acrylic	346-57806-05 *1
	SS	346-57806-06 *1
30°(M3 adapter)	acrylic	346-57806-07 *1
	SS	346-57806-08 *1


Conical press jig

Probe Extension Adapter

Probe 30-mm extension adapter	348-38500-03
Probe 60-mm extension adapter	348-38500-04
Probe 30-mm extension adapter (with lock nut)	348-38500-01
Probe 30-mm extension adapter (with lock nut)	348-38500-02

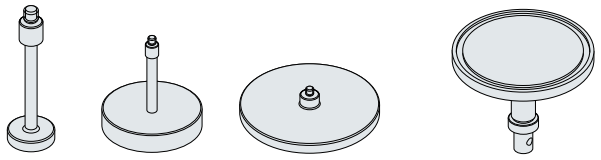

Probe extension adapter

Jig P/N List

Jig P/N List

Compression Jigs

Compression Plate



Upper compression plate　　Lower compression plate

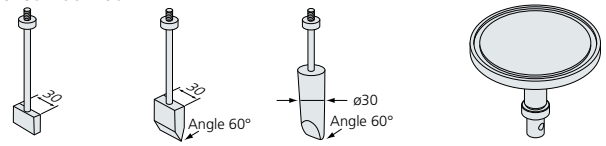
Compression jig set			346-52282-01
Breakdown	Upper compression plate	ø8	346-51687-03
		ø10	346-51687-04
		ø15	346-51687-06
		ø20	346-51687-08
		ø30	346-51687-10
		ø118	346-51687-11
	Lower compression plate	ø118	346-51687-12

List of P/N by Size and Material

Upper compression plate	ø8	SS	346-51687-03
	ø10	SS	346-51687-04
	ø11.3 (cross section: 1 cm²)	SS	346-51687-05
	ø13	SS	348-38554
	ø15	SS	346-51687-06
	ø16	SS	346-51687-07
	ø20	SS	346-51687-08
	ø25	SS	346-51687-09
	ø30	SS	346-51687-10
	ø50	Al	346-57815-01
	ø75	Al	346-57815-02
	ø100	Al	348-38556
	ø118	SS	346-51687-11
	ø200 (for 1 kN to 5 kN load cells)	Al	346-57816-01
Lower compression plate	ø118	SS	346-51687-12
	ø118 (markings at every 20 mm)	SS	346-51687-32
	ø200	Al	346-57816-02
	ø200 (markings at every 30 mm)	Al	346-57816-12

Shearing and Cutting Jigs

Toothed Pushrod



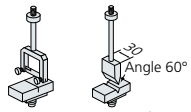
Toothed pushrod A　Toothed pushrod B　Toothed pushrod C　Lower compression plate

List of P/N

Toothed pushrod A (flat end face)	SS	346-52258-02
Toothed pushrod B (60° cut end face)	SS	346-51814-02
Toothed pushrod B (60° cut end face)	SS	346-51815-02

Toothed pushrod set		346-52285-01
Breakdown	Toothed pushrod B	346-51814-02
	Toothed pushrod C	346-51815-02
	Lower compression plate dia. 118 mm	346-51687-12

Cutting force test jig	346-51817-01
Razor blade cutting jig	346-51816-01

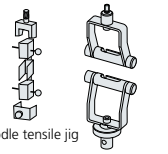


Razor blade cutting jig　Cutting force test jig

Tensile and Peeling Test Jigs

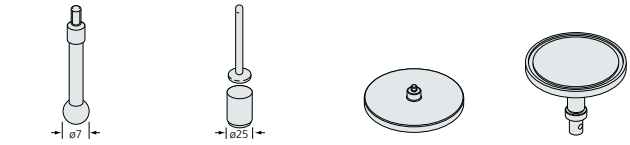
Noodle Tensile Jig

Noodle tensile jig	346-52264-01
Roller type noodle tensile jig	346-57826



Noodle tensile jig　Roller type noodle tensile jig

Oblong Fish Paste Test Set



Spherical press jig dia. 7 mm　Oblong fish paste sampling type　Upper compression plate　Lower compression plate

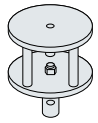
Oblong fish paste test set		346-52286-01
Breakdown	Spherical press jig dia. 7 mm, 1 pc	346-52252-03
	Oblong fish paste sampling type, 1 pc	346-52267-02
	Upper compression plate dia. 20 mm, 1 pc	346-51687-08
	Lower compression plate dia. 118 mm, 1 pc	346-51687-12

Jig Mounting Adapters, Attachment Type Jigs

Lower jig	346-52281-02

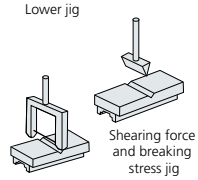
Attaching a probe to the upper jig and an adapter to the lower jig allows smooth replacement of different types of test jigs.

- Jigs from Sun Scientific Co., Ltd. can be attached as well.



Lower jig

Shearing force and breaking stress jig (upper and lower jig in a set)	Tip 60°	346-51817-02 *1
Cutting force jig (upper and lower jig in a set)		S346-51815-02 *1



Shearing force and breaking stress jig　Cutting force jig

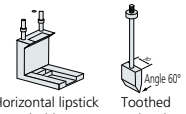
Cutting stress test jig (upper and lower jigs in a set)	0.3 mm SS wire	346-51815-02 *1

Cutting stress test jig

Fixing base for chewing gum breaking stress test	346-52274-01

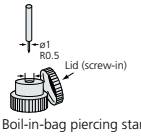
Breaking stress

Lipstick test jig set		346-52294-01
Breakdown	Horizontal lipstick holder	346-52022-01
	Toothed pushrod B, 1 pc	346-51814-02



Horizontal lipstick holder　Toothed pushrod B

Boil-in-bag piercing stand	346-52271-01
Boil-in-bag piercing rod	347-52778 *1

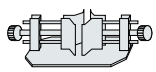


Boil-in-bag piercing stand

Peeling test (cell) jig	346-52265-01

Peeling test (cell) jig

Beaker fixing base	346-51819-02



Beaker fixing base

Base for food elasticity test	346-52275-02

Base for food elasticity test

*1 An upper adapter jig is necessary to allow smooth probe replacement.

Upper jig	346-52280-01


Upper jig

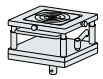
Material notation: SS = Stainless steel, Al = Aluminum

Jig Platform Attachment Jigs

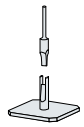
*Jigs that can be attached to jig platforms

Jig platform (with standard plate)	346-57823

Can be used for various tests by removing the plate on the platform and replacing the jig with a different type.

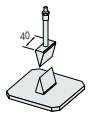

Jig platform

Volodkevich bite jig set	346-57805 *1


Bortkiewicz bite jig

Wedge type jig (30° tip, 40 mm wide)	346-57812
Wedge type jig (45° tip, 40 mm wide)	346-57812-01
Wedge type jig (60° tip, 40 mm wide)	346-57812-02

Different wedge type jig tip angles can be selected.



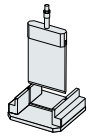
Wedge type jig

Blade shear jig set (60° cut end face, 3 mm thick, with blade)	346-57807

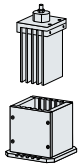
Individual Blade P/N

Flat end face, 3 mm thick	348-38521
60° cut end face, 3 mm thick	348-58522-03
45° cut end face, 3 mm thick	348-38522-01
30° cut end face, 3 mm thick	348-38522-02
Round end face (R1.5), 3 mm thick	348-38523
45° V-cut flat end face	348-38524-02
60° V-cut flat end face	348-38524-03
90° V-cut flat end face	348-38524-01

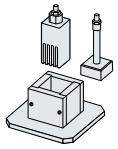
Different blade edge profiles and V-cut angles can be selected.


Blade shear jig

Kramer shear cell, 5-blade type	346-57808-01
Kramer shear cell, 10-blade type	346-57808-02

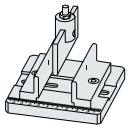

Kramer shear cell

Kramer shear cell, 5-blade type	346-57811

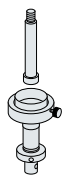

Mini Kramer shear cell

Three-point bending test jig Punch/Support R0.1 mm (0 to 100 mm between supports, 80 mm wide)	346-57820-01
Three-point bending test jig Punch/Support R0.1 mm (2 to 100 mm between supports, 80 mm wide) *A punch (15 mm wide) that allows fine adjustment between supports is included.	346-57820-02
Three-point bending test jig Punch/Support R1 mm (2 to 99 mm between supports, 80 mm wide)	346-57820-03
Three-point bending test jig Punch/Support R2.5 mm (5 to 95 mm between supports, 80 mm wide)	346-57820-04

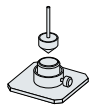
Different punch (upper pressing side) and support (lower two points) tip profiles can be selected.


Three-point bending test jig

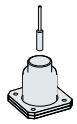
Nursing care foods testing set (with 10 sample cups (H15))	346-57825
Additional sample cups (H15)	346-57825-11
Additional sample cups (H20)	346-57825-11


Universal-design food test set

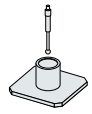
Spreading jig (with 5 sample containers)	346-57810 *1
Additional sample container, 5 pcs	346-57810-01


Spreading jig

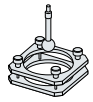
Gelatinous sample strength evaluation set (0.5'' dia. cylindrical jig, with 10 glass bottles)	346-57824 *1


Gelatinous sample strength evaluation set

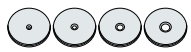
Snack break test jig set (with 8 mm dia. spherical press jig)	346-57809

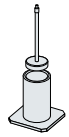

Snack Break Test Jig Set

Tortilla break test set, 80 mm dia. hole	346-57814
Tortilla break test set, 60 mm dia. hole	346-57814-01
Tortilla break test set, 40 mm dia. hole	346-57814-02

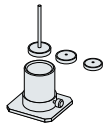

Tortilla break test set

Forward Extrusion jig (I.D. 50 mm) (with discs with 3, 5, 7 and 10 mm dia. holes)	346-57818

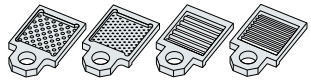


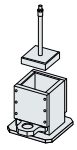

Tubing test jig

Back Extrusion jig set (I.D. 50 mm) (with 35, 40 and 45 mm dia. compression plates)	346-57813 *1


Overflow test jig set

Ottawa cell set (accessories) Plate with 3 mm dia. hole Plate with 6 mm dia. hole Plate with 3 mm dia. wire Plate with 6 mm dia. wire	346-57821

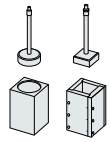



Ottawa cell set

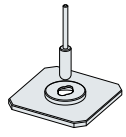
Option

Inner product reduction adapter (dia. 46 mm)	346-57821-11
Inner product reduction adapter (37 × 37 mm)	346-57821-12

Inserting the adapter in the Ottawa cell can reduce the inner product.
The Ottawa cell comes in a set with compression plates.


Inner product reduction adapter

Tablet press-dispense jig set		346-57819 *1
Accessories	Adapter with 17 mm dia. hole	348-38604-02
	Adapter with 12 mm dia. hole	348-38604-01
	Adapter with 17 mm dia. hole + R5 /L23 mm slotted hole	348-38567
	R5 /L23 mm slotted hole (Applicable to No. 1 to 5 capsules)	348-38603


Tablet press-dispense jig set

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