C224-E045B

Access to your success
SHIMADZU

Autograph AG-X Series

Shimadzu
Precision Universal Tester

AG-X

The door to the future

http://www.ag-x.biz

Autograph AG-X Series

Shimadzu Precision Universal Tester

Reliable, stress-free workflow

Reliability

Experience unsurpassed reliability and operability with the new Shimadzu Autograph AG-X series. This revolutionary new model delivers high-level controlled measurement performance utilizing a combination of patented technology from earlier models and world-class innovations. Development of this series focused on intuitive operation and convenient support functions, resulting in standard equipment that includes both a color TFT touch panel screen for PC-free operation and the very popular Smart Controller operation featured on many of our earlier testing machines. The TRAPEZIUM X software has also been newly developed, using cutting-edge Microsoft.Net technology to enhance user-friendliness. Shimadzu's new AG-X series advances testing in three areas performance, operability and support.

01 Superior Performance pg. 4

High reliability ensures complete data collection. Confidently perform comparisons with unknowns.

02 Unsurpassed Ease of Use pg. 6

Easy-to-use functions ensure smooth, trouble-free testing.

03 Quest for Convenience pg. 8

TRAPEZIUM X streamlines testing and eliminates confusion.

01 Superior Performance

High Control resolution results in testing reliability

A high-level control resolution of 0.0208 microns ensures consistent delivery of desired testing results.

Easy control of stress and strain

Auto tuning of control parameters is now possible in real time, based on measured test force and strain data. Comparisons can be safely made with unknown sample data, without the need for preliminary tests.

Accurate S-S Curves are achieved with highly precise load cells

Improve testing efficiency and ensure that virtually all of your testing can be performed without switching the load cell or jig, as a result of the wide, guaranteed load cell precision range of 1/1000 to 1/1.

Ultrahigh-speed sampling ensures no missed strength changes

Ultrahigh-speed 0.2 msec. (5 kHz) sampling ensures that sudden test force changes often seen at the start of testing can all be recorded. Easily change sampling condition settings during testing to investigate important regions in detail.

Convenient testing of actual objects

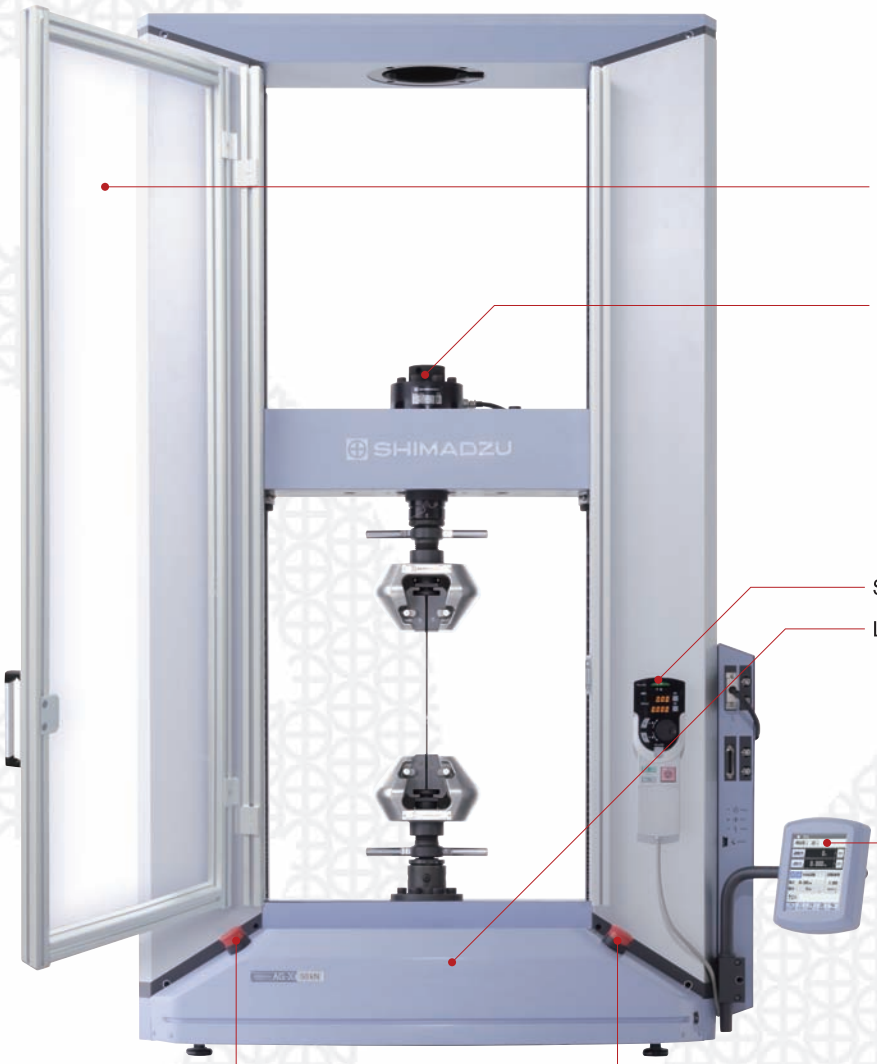
Up to 12 channels of data can be simultaneously read by a PC for immediate analysis. Test force readings along with data from multiple strain gauges may be collected during testing of actual objects.

Highly rigid frame guarantees Safety and reliability

The use of a crosshead guide provides high torsional rigidity to reduce movement and vibration of the machine,
Shimadzu is accredited (JIS Q 17025, ISO/IEC 17025), based on JCSS as a calibration agency for uniaxial testing machines.
JCSS cross-certifies with America's NVLAP and other certification standards throughout the world, providing world-wide traceability.
(MRA certificate is offered by Shimadzu Shikenki Engineering Co., Ltd.)

- These products are CE compliant.
- AG-X units are manufactured by professionals at ISO9001 certified factories, ensuring years of worry-free operation.

02 Unsurpassed Ease of Use



Safety cover (with Interlock)

One-touch load cell

Smart Controller (Standard)

Low table (Height: 205 mm)

LCD touch panel (Optional)

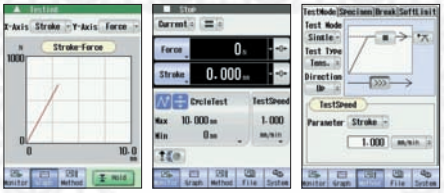
Dual emergency-stop switches

Control at your fingertips - easy operation and data confirmation

With the Smart Controller, confirmation of test force and position real-time data is at your fingertips. Easily perform Start, Stop and other basic operations via this controller, and use the convenient jog wheel to adjust jig position in fine increments during bending and compression. You can even open or close the air chucks during tensile tests and operate the automatic extensometer.

Perform testing without a PC

An optional LCD touch panel means you can quickly select testing methods without having to connect a PC. Easily view graphs of data directly on the LCD screen.

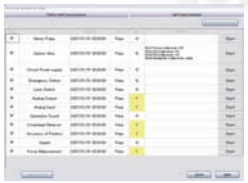


Store test methods in USB memory

After storing testing methods on a USB memory device, simply insert the device into the testing machine to perform testing without a PC. Measurement data can also be automatically saved to USB memory. After testing, bring your USB memory device back to your office PC to analyze data and create reports. (Requires LCD touch panel and TRAPEZIUM X software.)

Self-diagnostics help cover all bases

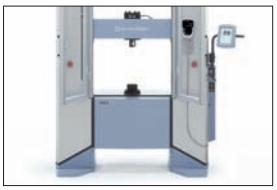
Self-check function (12 items, including motor pulse, sensor amplifier, and board power supply) confirms that the instrument is in perfect working order. If desired, notification of pre-set maintenance periods is also possible. (Some check items require a special jig.)



Simple load cell installation (option)

Use this load cell quick attach/release unit with the table-top type 10 kN capacity AG-X unit, which usually requires frequent load cell changes.
AG-X units with a capacity of 20 kN or more can attach the optional small-capacity load cell attachment plate to the bottom of the crosshead, eliminating the need to detach the original load cell.

Load cell attach/release
(10 kN type)



Floor model
(with small-capacity load cell attached)

Safety equipment

- **Safety cover**

This cover is designed to control scattering of the test specimen during testing and the interlock improves operation safety.

- **Safety functions**

If force changes exceed a certain level during specimen setting or return, the testing machine is stopped by the safety function.

- **Dual emergency-stop switches**

As a safety measure, emergency-stop switches are provided on both sides.

Safety cover (option) attached

03 Quest for Convenience

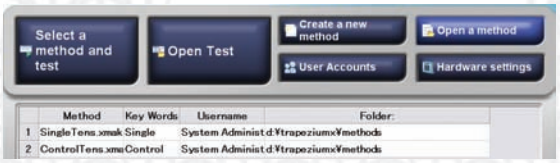
Materials Testing Operation Software

TRAPEZIUM X

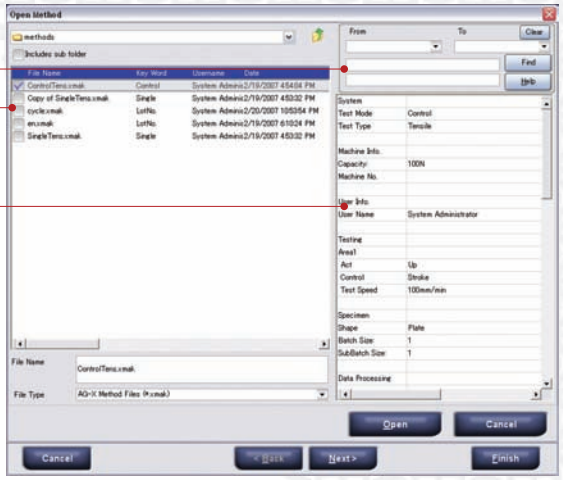
Intuitive machine operation

1. Perform high-efficiency, continuous testing because of fast data searches and one-touch method selection.

- Start testing in just one step after frequently-used methods are recorded in the Quick Method List.

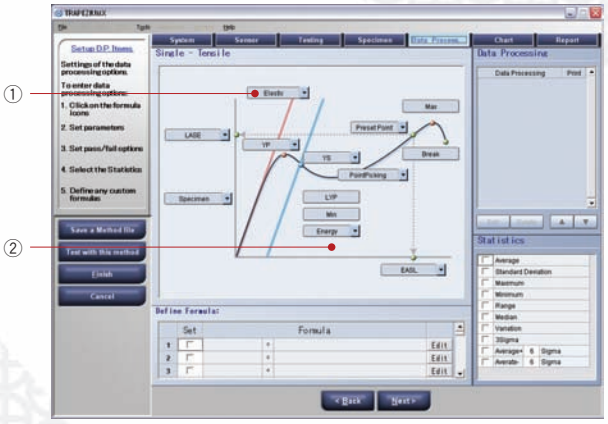


- Use a key word or date to quickly search for saved test results and Method files. Also, easily call up files using previews of reports and lists of settings.



2. Visual wizard guidance ensures trouble-free entry of method settings

- Complicated method settings can be entered using the Method Wizard, which provides an overview of the entire process.
- Setting entry guidance, linked to online help, is available in each window.
- Easy-to-understand illustrations are used in the [Testing], [Specimen] and [Data Processing] windows, greatly simplifying the entry of settings.



Data processing settings (single software: plastic material)

① General data processing items are prepared in advance.
Simply press buttons on the figure to select settings.

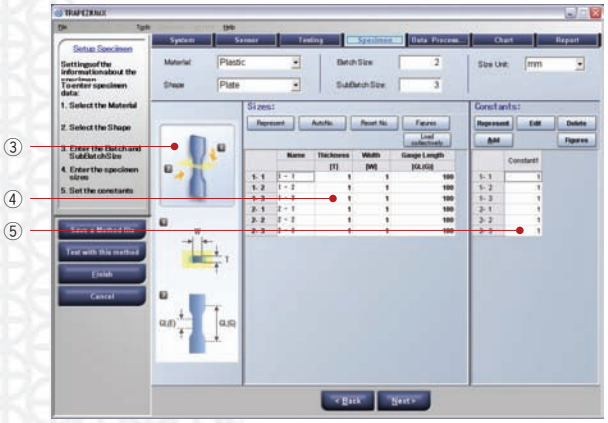
② Illustrations change according to the test mode and specimen material.
Use a key word or date to quickly search for saved test results and Method files.
Also, easily call up files using previews of reports and lists of settings.

Specimen quantity and size settings window

③ Illustrations are displayed for each specimen shape. A single glance shows which dimensions should be entered.

④ In addition to manual input, dimensions can also be set via [Excel batch reading] or [Automatic input via calipers].

⑤ Additional, non-dimensional information can also be entered for each specimen.



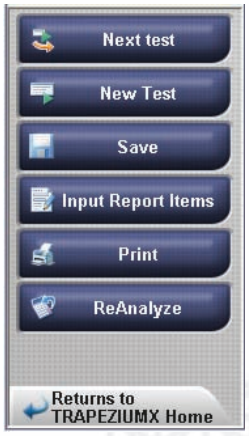
03 Quest for Convenience

Receive data quickly

1. Speed, dimension, and report information can be entered quickly and directly from the main window using the [Quick Panel].

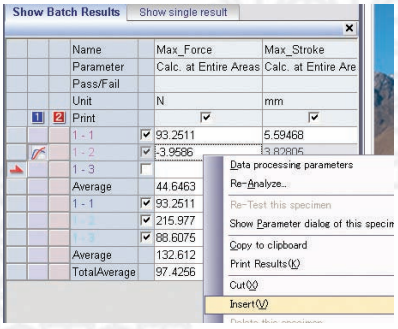
2. Advanced navigation system with learning functions

- AG-X is equipped with a Navigation Bar that shows only the functions required for a selected situation. This allows you to efficiently perform continuous testing using simple, straightforward procedures and by pressing large, easy-to-read buttons.
  AG-X is also equipped with a "Learning function" that records user actions for each situation and adds frequently-used functions to the Navigation Bar. This means that the more you use the machine, the better the "fit" is to your unique operation style, effectively speeding up your workflow.



3. Functions include re-test, file synthesis, as well as specimen insertion, addition and order changes in any position.

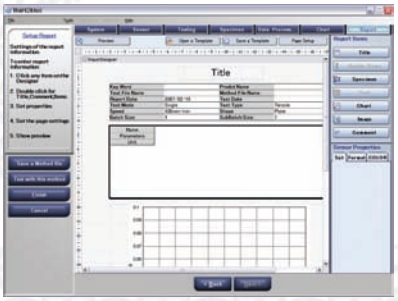
- Re-test: A portion of a batch test can be retested, and the prior test results replaced.
- Extra lot tests: batches (lots) can be added, increasing the total number of tests.
- A variety of setting changes are possible before and after testing. Specimens can be inserted in any position or added to only a specific batch, and the specimen order can be changed after testing is completed.



Generate detailed reports

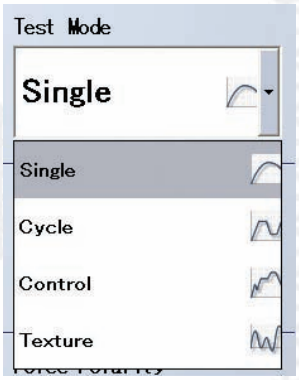
Richly expressive report creation includes free positioning of report elements and a wealth of web-compatible output functions.

- **Report Designer allows flexible layout**
  Create reports that include test data, charts, photographs and logos.
  Freely change report layout and element sizes.
  Use detailed settings for each element's font, color and ruled lines.
- **Reports can be output in PDF, Microsoft Word, Excel and HTML formats.**
  Output reports created with Report Designer in a wide variety of useful formats.
  (Charts and tables with ruled lines cannot be output in Word and HTML.)
  After export, use your everyday software to customize the report.
- **WebPlus function (option)**
  Installing the WebPlus option on your server PC allows reanalysis and printing via Internet Explorer, even on a PC not equipped with TRAPEZIUM X.



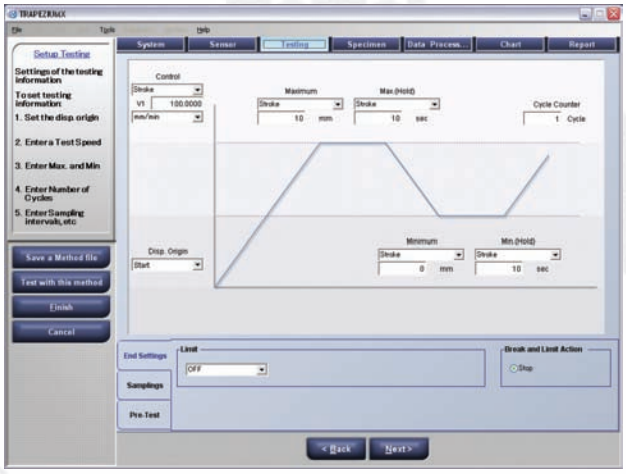
Choose from four software components to fit your specific application

TRAPEZIUM X includes four software components - Single, Cycle, Control and Texture.
This allows you to purchase only the components that meet your specific testing needs. When multiple software components are purchased, easily switch between modes at a single touch, without starting up separate software.



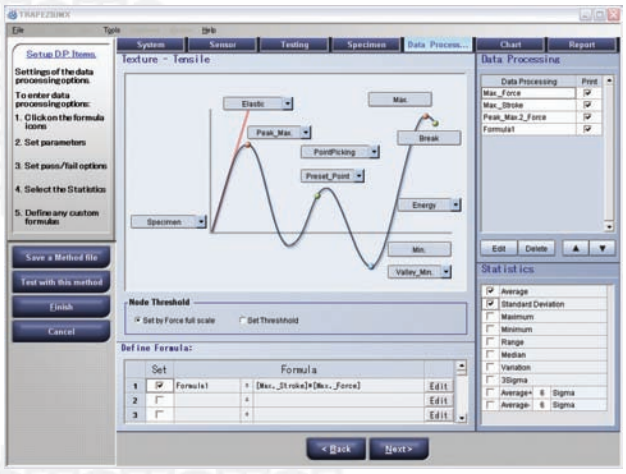
- **Single software**
  Performs general single-direction testing.
  Examples include tensile, compression, bending and peeling tests.

- **Cycle software**
  Similar to endurance testing, this software is used for testing where force is repeatedly applied and then released.



- **Control software**
  Create any testing machine operation pattern. Perform foam rubber compression and holding cycle tests.

- **Texture software**
  Measures the features (texture) of foods and pharmaceuticals. Produce special data processing results, including mastication, jelly strength and adhesion.



Accessories

[Experience the range of possibilities available with this full-featured system]

Accessories Lineup

Tensile tests

Combine grips and extensometers with the testing machine.

- **Grips**

Used to grip the sample, a wide variety is available to accommodate different specimen types and test force amounts.

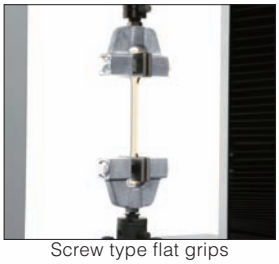
Non-shift wedge type grips <MWG> Applications: Plastics, Metals, Wood

Grip capacity	Standard grip face				Upper grip capacity (kg)	Part No.
	Grip face	Clearance (mm)	Grip width (mm)	Grip length (mm)		
250kN	File teeth for flat specimens	0 to 8.5	50	75	33	343-07979-12
100kN		0 to 7	40	55	10	346-52791-12
50kN		0 to 7	40	55	9.5	346-52791-11
20kN		0 to 7	25	55	3.6	346-52653-12
5kN		0 to 7	25	55	3.6	346-52653-11

Non-shift wedge type grips

Screw type flat grips <SCG> Applications: Rubber, Plastics, Textiles, Cloth, Paper

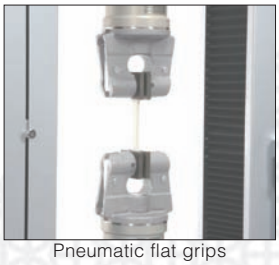
Grip capacity	Standard grip face				Upper grip capacity (kg)	Part No.
	Grip face	Clearance (mm)	Grip width (mm)	Grip length (mm)		
5kN	File teeth	0 to 16	60	50	2	345-52326-04
1kN		0 to 15	50	30	0.7	346-52327-04
50N	Flat	0 to 14	35	25	0.3	346-52328-04



Screw type flat grips

Pneumatic flat grips <PFG> Applications: Rubber, Plastics, Textiles, Cloth, Paper

Grip capacity	External dimensions (mm)		Grip width (mm)	Clearance (mm)	Upper grip capacity (kg)	Kit No.*1, *2
	W	L (upper/lower)				
10kN	154	268.5 / 278.5	60	0 to 10	—	346-53916-XX
5kN	154	224 / 235	60	0 to 6	5.7	346-53849-XX
1kN	102	163 / 174	50	0 to 6	1.7	364-53848-XX
50N	64	118 / 135	35	0 to 6	0.4	346-53847-XX



Pneumatic flat grips

*1 Grips with foot-valve units and crosshead–linked control functions are also available.
*2 Grips can be opened and closed via the Smart Controller when using the crosshead-linked control kit.

- **Extensometers**

Extensometers improve elongation measurement accuracy.

Strain gauge type one-touch extensometer <SSG-H Series>
SSG-H series extensometers conform to JIS B7741 Class 0.5 and JIS K7161 (SSG 50-10SH only).
They can be attached using just one touch.

Model	Gauge length (mm)	Measuring range (mm)	Kit No.
SSG25-50H	25	12.5 5.25 2.5 1.24	346-53875-23
SSG25-100H	25	25 12.5 5 2.5	346-53875-24
SSG50-10H	50	5 2.5 1 0.5	346-53875-51
SSG50-10SH	50	5 2.5 1 0.5	346-53875-56

* Calibration cables (for SGI) are included with each kit.
* Precision is JIS B7741 Class 0.5 or Class 1, depending on the conditions.

DVE series non-contact video extensometer

DVE series extensometers use two cameras to provide a wide measurement range and high measurement precision.

GL50 mm Maximum measurement range 30 mm
Absolute precision of indicated value ±3 μm (JIS B7741 Class 1)
Relative precision ± 1%

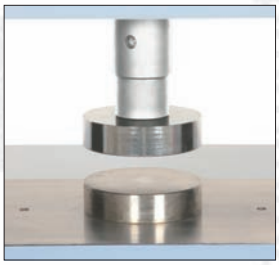
GL20 mm Maximum measurement range 140 mm
Absolute precision of indicated value ±6 μm (JIS B7741 Class 2)
Relative precision ±1%

(Elongation is measured via the PC monitor screen. Elongation measurement in an environmentally-sealed chamber is also possible.)

Compression tests

Simply attach the compression plate kit to the main unit to perform compression testing.

- **Compression plate kit** Applications: Plastics, Metals, Rubber, Wood, Cement
  Used to compress the specimen, several types are available to accommodate different specimen types and test force amounts.


Fixed type compression plates

Fixed type

Kit No.	Maximum capacity	Upper plate dimensions (mm) diameter by thickness	Upper plate mass (kg)	Operational temperature (°C)
346-53882-XX	250kN	ø100 x 25	1.6	0 to 40
346-53884-XX		ø50 x 25	0.5	
346-53885-XX		ø200 x 40	6.3	

Spherical seat type

Kit No.	Maximum capacity	Upper plate dimensions (mm)	Upper plate mass (kg)	Operational temperature (°C)
346-53883-XX	250kN	ø100	3.8	0 to 40

* With spherical compression plates, only the upper plate is spherical.
Spherical seat-type compression plates provide contact flexibility for uniform load application.
* Select the kit number that corresponds to the load cell used.

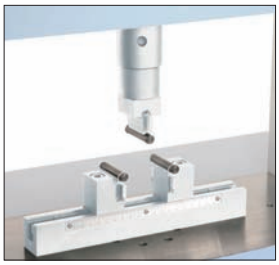

Spherical seat type compression plates

Bending tests

Simply attach the bending test jig kit to the main unit to perform bending testing.

- **Bending test kit**
  Select the kit number appropriate for the load cell used.

Kit No.	Max. test force	Punch tip radius x width (mm)	Support tip radius x width (mm)	Support spacing (mm)	Operational temperature (°C)	Applicable test standards
346-53887-XX	10kN	R5 x 34	R2 x 34	20 to 200	0 to 40	JIS K6911, JIS K6902*1, JIS C6481*2, JIS K7171, ISO 178, Specimens with thickness of 3 mm or less
			R5 x 34			JIS K7171, ISO 178, Specimens with thickness above 3 mm
		R1/8" x 72	R1/8" x 110	0.8 to 8"		ASTM D790 (Test method 1)
346-53888-XX	100kN	R5 x 72	R2 x 110	50 to 500		JIS K6911, JIS K6902*1, JIS C6481*2, JIS K7171, ISO 178, Specimens with thickness of 3 mm or less
			R5 x 110			JIS K7171, ISO 178, Specimens with thickness above 3 mm
		R1/8" x 72	R1/8" x 110	2 to 20"		ASTM D790 (Test method 1*3)


3-point bending test of plastic specimen

*1 Corresponds to bending strength. Compatible with support spacing from 20 mm to 200 mm.
*2 Corresponds to bending strength.
*3 Compatible with support spacing from 2 inches to 20 inches.

When the SIE or SES extensometer is used, the following adaptor is required.
346-55658-XX

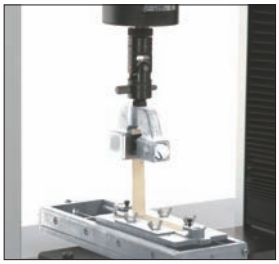
Adhesion test

- **Adhesive tape peeling test device** Applications: Plastics, Rubber
  Specimen table slides in accordance with upper grip movement to maintain a 90 degree peeling angle.

Upper grip: 1 kN Flat screw type, 1 unit

Kit No.	Capacity	Applicable specimen (width x thickness mm)	Operational temperature (°C)	Applicable test standards
346-53865-XX	1kN	50 x 5 to 2	-10 to +60	JIS Z0237 Adhesive tape Adhesive tape test method (90° peeling test) JIS Z1528 Double-sided adhesive tape adhesion

Mechanism differs from JIS example.
Select the kit number appropriate for the load cell used.
For details on test jigs not listed in this catalog, please refer to the separate Accessories catalog.



Accessories

Accessories Lineup

- Various grips
- Adhesion test devices
- Shearing test devices
- Tear test devices
- Devices for needle insertion resistance
- measurement
- Flow test devices
- Friction coefficient measuring devices
- Plastic bearing strength test devices
- Deep-drawing test devices
- Nail withdrawal resistance test devices (from wood)
- Lumber hardness test devices
- Lumber cleavage test devices
- Powder molding properties test devices
- Controlled atmosphere test devices
- Displacement measuring devices
- Test force measuring devices

Others

Grips and devices for testing actual objects

- **Pneumatic automatic grips PWG series**

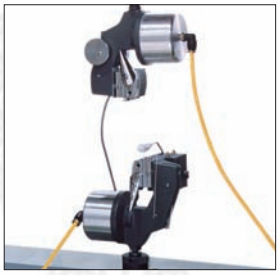
  Air motor opens and closes grips to shorten time required for testing.

- **Spring tensile test jig**

  Efficiently evaluates mechanical characteristics of tensile coil springs.

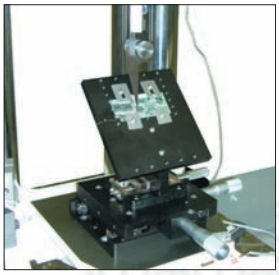
- **Pneumatic capstan type grips**

  Specimens such as threads and cords are held by the capstan. Initial tensile force can be maintained.



- **Printed Circuit Board 45-degree peeling test jig**

  Used for peeling tests of electronic parts on a printed circuit board.



Auto Extensometer

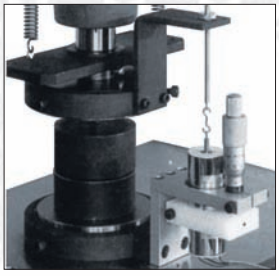
- **SIE-560S**

  This extensometer uses a high-precision strain-gauge sensor and magnetic induction sensor to automatically set the gauge marker positions. The extensometer can be automatically attached/removed.

  When used with bending test jigs, the following adaptor is required.
  346-55658-XX

- **Compression plate displacement measurement device**

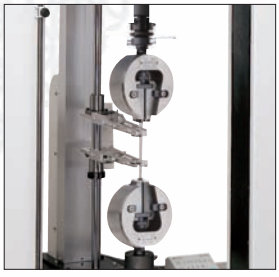
  Measures displacement of compression plates during compression tests.



- **Soft material extensometer SES-1000**

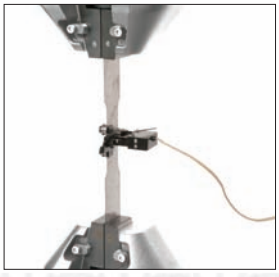
  Easily and accurately measures large elongation amounts.
  (PAT No. 3724136)

  When used with bending test jigs, the following adaptor is required.
  346-55658-XX

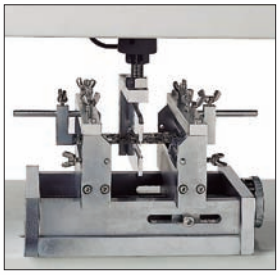


- **Strain gauge type width sensor**

  Measures changes in specimen width.



- **Jigs for cyclic bending tests of printed circuit boards**
  Allows cyclic bending testing of printed circuit boards containing parts. Combining this jig with the optional resistance meter increases test efficiency by quickly detecting internal damage and stopping the test.



- **Long-span 4-point bending test device for wooden specimens**
  Capacity: 100 kN
  Punch: width 1320 mm
  Punch distance: 100 mm to 1350 mm
  Support: width 1320 mm
  Support distance: 100 mm to 4000 mm

- **Silicon chip (die) 3-point bending test jig**
  Max. capacity: 500 N
  Punch dimensions: tip R0.3 x 20 mm
  Support dimensions: tip R0.3 x 20 mm
  Span: 1 mm to 20 mm

  Conforms to SEMI G86-0303
  * SEMI: Semiconductor Equipment and Materials International

- **PC card insertion and removal test jig**
  Allows repeated insertion and removal of PC cards (memory cards) and PC card adaptors.

Controlled atmosphere test device

- **Thermostatic chamber TCE series**
  This compact chamber enables testing across a wide temperature range of -70 °C to +280 °C.

- **Device for torsion test in thermostatic chamber**
  Temperature range: -60 °C to +250 °C
  Torsion capacity: 300 N-m
  Torsion speed: 1 rpm to 0.01 rev/min

- **Bellows-type long stroke thermostatic chamber**
  Bellows design is well-suited to testing of highly elastic materials.

- **In-chamber tensile test device**
  This specially-designed device passes the crosshead through a thermostatic chamber to assure a long effective stroke.

Specifications

[Table-Top AG-X]

1. Model Name		Table-Top AG-X					
		AG-10N / 20NX	AG-50N / 100NX	AG-500N / 1kNX	AG-5kNX	AG-10kNX	AG-20kN / 50kNXD
2. Capacity		10N / 20N	50N / 100N	500N / 1kN	5kN	10kN	20kN / 50kN
3. Loading Method		Direct, high-precision, constant-rate strain control using non-backlash precision ball-screw drive					
4. Test Force Measurement	Precision — High-precision unit 1/1000	Not available	Within ± 0.5% of displayed test force (for 1/100 to 1/1000 of load cell rated capacity) Within ± 0.3% of displayed test force (for 1/1 to 1/100 of load cell rated capacity) Conforms to JIS B7721 Class 0.5, EN 10002-2 Grade 0.5, ISO 7500-1 Class 0.5, BS1610 Class 0.5, DIN51221 Class 1, and ASTM E4*3				
	Precision — Standard-precision unit 1/1000	Within ± 1% of displayed test force (for 1/1 to 1/1000 of the load cell rated capacity) Conforms to JIS B7721 Class 1, EN 10002-2 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1, and ASTM E4*3					
	Precision — Standard-precision unit 1/500	Within ± 1% of displayed test force (for 1/1 to 1/500 of load cell rated capacity) Conforms to JIS B7721 Class 1, EN 10002-2 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1, and ASTM E4*3					
	Test force calibration	Automatic calibration Standard-precision type: Tensile and compression forces calibration High-precision type: Choose from calibration of tensile force, compression force, or both tensile and compression forces					
5. Crosshead Speed Range (mm/min)		Free step-less setting					
		0.0005 ~ 1000					
	Maximum Return Speed	1500					1200
6. Crosshead Speed Precision*1		±0.1%					
7. Position Control Resolution		0.025μm					0.0208μm
8. Crosshead Speed and Allowed Test Force		Maximum load capacity for all speeds					
9. Crosshead-Table Clearance (mm) (Tensile stroke) *2		Max. 1150 mm (850 mm)		Max. 1150 mm (850 mm)	Max. 1150 mm (780 mm)	Max. 1150 mm (600 mm)	Max. 1060 mm (655 mm): 20 kN (605 mm): 50 kN
10. Effective Test Width (mm)		420					500
11. Crosshead Position Detection	Measurement and display methods	Optical encoder measurement, digital display					
	Precision	Within ±0.1% of indicated value, however, ±0.01 mm when indicated value is below 10 mm					
12. Data Capture Rate		5000Hz					
13. Data Sampling Rate		300kHz					
14. Frame Rigidity (kN/mm)		42					120
15. Standard Functions		• Automatic reading of load cell properties • Fine adjustment of crosshead position • Test force and stroke display • External analog output (2 channels) • External analog input (2 channels) • External digital input (2 channels) • Internal amps - 4 ports (one is used for test force and another for analog input) • USB interface (for PC) / Host interface (for USB memory) • Recorder output (optional) • Dataletty output (optional) • Pneumatic grip interlock operation (optional)			• Automatic test force and strain control (with auto tuning) • Test force auto zero / auto calibration • Break detection / auto return • Crosshead speed free setting / cycle count display • Stress value display / extensometer value display • Soft limit detection / self diagnostics If only optional LCD touch panel is used: • Single testing control / Cycle testing control / Control of testing conforming to standards • PEAK and BREAK values display / Crosshead speed pre-setting • Method internal memory file (20 files) • Japanese/English switchover / S-S curve display		
16. Accessories	Load cell	For 10 N/ 20 N	For 50 N/100 N	For 500N/ 1 kN	For 5 kN	For 10 kN	For 20 kN/50 kN
	CAL. cable	For 10 N/ 20 N	For 50 N/100 N	For 500N/ 1 kN	For 5 kN	For 10 kN	For 20 kN/50 kN
	Others	Standard tool set, instruction manuals, limit warning labels					
17. Dimensions (approx.) W x D x H (mm)	Main frame	777 x 510 x 1580					955 x 579 x 1606
	Measurement controller	Housed in main frame					
	Smart Controller	80 x 50 x 250 (attached on right side of main unit - detachable)					

*1: Crosshead speed precision is calculated using crosshead transfer amount within a specified period of time for the crosshead speed of 0.5 mm/min to 500 mm/min under normal conditions.

*2: Tensile stroke is the value used when attaching the MWG (non-shift wedge type) grips.
Stroke can be extended.
Values under 5 kN are with SCG (screw type flat) grips attached.

*3: JIS B7721, EN 10002-2, ISO 7500-1, and ASTM E4 standards recommend re-verification after installation of testing machine.

*4: In conformity with CE Mark regulation

*5: Displayed units are by default expressed in SI system.
Other unit system is selectable as Metric or English imperial by a keystroke.

*6: Software is available in several languages (English,Spanish,Chinese,Japanese etc.)

* Values in this catalog have been measured based on separately-approved test standards.

Up to 10 kN table-top model

- Laptop PC and table are optional.
- Table used in image (for up to 10 kN table-top model) is not a Shimadzu product.

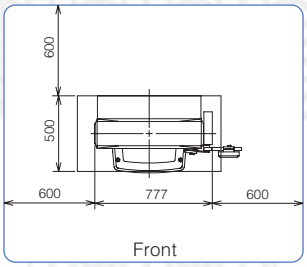
50 kN table-top model

- LCD touch panel, laptop PC, and table are optional.
- Table used in image is not a Shimadzu product.

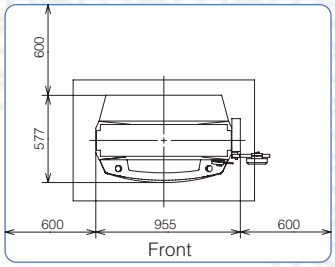
Installation Space

(Dimensions given for left, right and back of main unit are space required for maintenance.)

AG-1 10NX to 10 kNX



AG-20/50 kNX



Unit: mm

Model	Mass (approx. kg)	Power Requirement - consumed power is in ( )	Installation Environment
AG-10NX to 10kNX	135	Single phase 100 to 100/115 to 130/ 220 to 230/240 V (switching system) 50 to 60 Hz 1.5 kVA (450 W)	Temp.: 5 °C to 40 °C Humidity: 20% to 80% (no condensation) Voltage fluctuation: ±10% max. Vibration: Frequency 10 Hz max. Amplitude 5 μm max.
AG-20 / 50kNX	162	Single phase 200 to 230 V 50 to 60 Hz 5 kVA (1.2 kW)	

(NB) Grounding of 100W or more is required.

AG-X Capacity/Model Types and Kit Numbers

Kit Number (AG-X unit + load cell set + upper/lower joints)

346-567XX- X1

Capacity

05 : 50kN table-top model
06 : 20kN table-top model
07 : 10kN
08 : 5kN
09 : 1kN
10 : 500N
11 : 100N
12 : 50N
13 : 20N
14 : 10N

Testing force measurement rating and guaranteed range

5 : Class 1 1/500
6 : Class 1 1/1000
7 : Class 0.5 1/1000

(Ex.) Capacity 5 kN, test force measurement rating Class 1
Guaranteed range of 1/500: 346-56708-51

LCD touch panel unit (for table-top models)

P/N: 346-55227-51
Kit Number (AG-X unit + load cell set + upper/lower joints)

Load cell one-touch attachment unit (for 10 kN or less table-top models)

P/N: Load cell one-touch attachment unit 346-55042
Load cell attachment 346-55042-01

The Load cell one-touch attachment unit includes a load cell attachment.
One load cell attachment is required for each load cell attached.

Specifications

[Floor Type AG-X]

1. Model Name		**Floor Type AG-X**		
		AG-20kN / 50kNXD	**AG-100kNX**	**AG-250kN / 300kNX**
2. Capacity		**20kN / 50kN**	**100kN**	**250kN / 300kN**
3. Loading Method		Direct, high-precision, constant-rate strain control using non-backlash precision ball-screw drive		
4. Test Force Measurement	Precision: High-precision unit 1/1000 (1/250 for 250 kN and 300 kN models)	Within ± 0.5% of displayed test force (for 1/100 to 1/1000 of load cell rated capacity) Within ± 0.3% of displayed test force (for 1/1 to 1/100 of load cell rated capacity) Conforms to JIS B7721 Class 0.5, EN 10002-2 Grade 0.5, ISO 7500-1 Class 0.5, BS1610 Class 0.5, DIN51221 Class 1, and ASTM E4*3		Within ±0.5% of displayed test force (for 1/1 to 1/250 of load cell rated capacity)
	Standard-precision unit 1/1000	Within ± 1% of displayed test force (for 1/1 to 1/1000 of load cell rated capacity) Conforms to JIS B7721 Class 1, JIS B7733 Class 1, EN 10002-2 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1, and ASTM E4*4		
	Standard-precision unit 1/500	Within ± 1% of displayed test force (for 1/1 to 1/500 of the load cell rated capacity) Conforms to JIS B7721 Class 1, EN 10002-2 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1, and ASTM E4*3		
	Test force calibration	Automatic calibration Standard-precision type: Tensile and compression forces calibration High-precision type: Choose from calibration of tensile force, compression force, or both tensile and compression forces		
5. Crosshead Speed Range (mm/min)		Free step-less setting		
		0.0005 to 1000		0.0005 to 500
	Maximum Return Speed	1200		600
6. Crosshead Speed Precision*1		±0.1%		
7. Position Control Resolution		0.0208μm		0.0104μm
8. Crosshead Speed and Allowed Test Force		Maximum load capacity for all speeds		0.0005 ~ 250mm/min : 300kN 0.0005 ~ 500mm/min : 250kN
9. Crosshead-Table Clearance (mm) (Tensile stroke) *2		Max. 1265 mm (850 mm): 20 kN (800 mm): 50 kN	Max. 1250 mm (760 mm)	Max. 1440 mm (600 mm)
10. Effective Test Width (mm)		595		
11. Crosshead Position Detection	Measurement and display methods	Optical encoder measurement, digital display		
	Precision	Within ±0.1% of indicated value, but ±0.01 mm when the indicated value is below 10 mm		
12. Data Capture Rate		5000Hz		
13. Data Sampling Rate		300kHz		
14. Frame Rigidity (kN/mm)		175	300	400
15. Standard Functions		• Automatic reading of load cell properties • Fine adjustment of crosshead position • Test force and stroke display • External analog output (2 channels) • External analog input (2 channels) • External digital input (2 channels) • Internal amps - 4 ports (one is used for test force and another for analog input) • USB interface (for PC) / Host interface (for USB memory) • Recorder output (optional) • Dataletty output (optional) • Pneumatic grip interlock operation (optional)		• Automatic test force and strain control (with auto tuning) • Test force auto zero / auto calibration • Break detection / auto return • Crosshead speed free setting / cycle count display • Stress value display / extensometer value display • Soft limit detection / self diagnostics If only optional LCD touch panel is used: • Single testing control / Cycle testing control / Control of testing conforming to standards • PEAK and BREAK values display / Crosshead speed pre-setting • Method internal memory file (20 files) • Japanese/English switchover / S-S curve display
16. Accessories	Load cell	For 20 kN/50 kNX	For 100 kNX	For 250 kN/300 kN
	CAL. cable	For 20 kN/50 kNX	For 100 kNX	For 250 kN/300 kN
	Others	Standard tool set, instruction manuals, limit warning label		
17. Dimensions (approx.) W x D x H (mm)	Main frame	1186 x 752 x 2164		1186 x 752 x 2414
	Measurement controller	Housed in main frame		
	Smart Controller	80 x 50 x 250 (attached on right side of main unit - detachable)		

*1: Crosshead speed precision is calculated using crosshead transfer amount within a specified period of time for the crosshead speed of 0.5 mm/min to 500 mm/min under normal conditions.

*2: Tensile stroke is the value used when attaching the MWG (non-shift wedge type) grips.
Stroke can be extended.
Values under 5 kN are with SCG (screw type flat) grips attached.

*3: JIS B7721, EN 10002-2, ISO 7500-1, and ASTM E4 standards recommend re-verification after installation of testing machine.

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*5: Displayed units are by default expressed in SI system.
Other unit system is selectable as Metric or English imperial by a keystroke.

*6: Software is available in several languages (English,Spanish,Chinese,Japanese etc.)

* Values in this catalog have been measured based on separately-approved test standards.

http://www.ag-x.biz

20 kN, 50 kN floor model

• Laptop PC and table are optional.

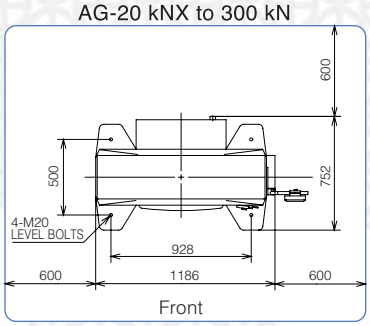
100 kN floor model

• LCD touch panel, laptop PC, and table are optional.

Installation Space

(Dimensions given for left, right and back of main unit are space required for maintenance.)

AG-20 kNX to 300 kN



Unit: mm

AG-X Capacity/Model Types and Kit Numbers

Kit Number (AG-X unit + load cell set + upper/lower joints)

346-567XX-X1

Capacity

00 : 300kN
01 : 250kN
02 : 100kN
03 : 50kN
04 : 20kN

Testing force measurement rating and guaranteed range

5 : Class 1 1/500
6 : Class 1 1/1000
7 : Class 0.5 1/1000

(Ex.) Capacity 100 kN, test force measurement rating Class 1
Guaranteed range of 1/500: 346-56702-51

LCD touch panel unit (for floor models)

P/N: 346-55227-52

Model	Mass (approx. kg)	Power requirement - consumed power is in ( )	Installation Environment
AG-20kN / 50kNX	620	Three phase 200 to 230 V 50 to 60 Hz 5 kVA (1.2 kW)	Temp.: 5 °C to 40 °C Humidity: 20% to 80% (no condensation) Voltage fluctuation: ±10% max. Vibration: Frequency 10 Hz max. Amplitude 5 μm max.
AG-100kNX	800	Three phase 200 to 230 V 50 to 60 Hz 7 kVA (2.0 kW)	
AG-250kN / 300kNX	920	Three phase 200 to 230 V 50 to 60 Hz 7.5 kVA (2.5 kW)	

(NB) Grounding of 100W or more is required.

Extensions to the main unit [Table-top models and floor models]

• Wide frame series

Models with wider effective test widths (975 mm, 1100 mm and 1375 mm) than the standard type (595 mm) are also available for testing large-size actual object specimens. (Floor models only.)

• Reinforced yoke series

Use this series when conducting tests between the crosshead and yoke.

• Ultralow-speed crosshead model

The crosshead speed range can be widened to include extremely low speeds.

	Ultralow-speed models
Speed Range (mm/min)	0.00005 mm/min to 1000 mm/min (250 kN and 300 kN models are limited to 500 mm/min.)
Part Number	345-50522

• Large capacity series

With maximum capacities of 500 kN, 600 kN and 1000 kN, these models are used for large-capacity testing in heavy-industry fields such as steel, construction, and shipbuilding. They can be customized upon request.

• Extended column models

Models with extended columns are useful for testing materials requiring long tensile strokes. (Clearance between the yoke and table is extended 250 mm, 500 mm, or 750 mm.)

• High-speed return models

Table-top models less than 2 kN can be equipped with drives that have a return speed of 3000 mm/min, and a crosshead speed range of 0.001 mm/min to 2500 mm/min.

Testing and Evaluation Machines

Table-top precision universal tester

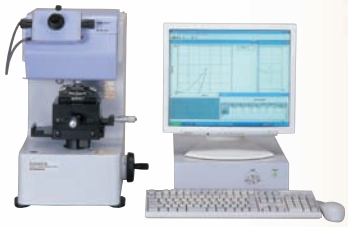
AGS-J

Small table-top tester

EZ-Test

Dynamic ultra micro hardness tester

DUH-211 / 211S



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