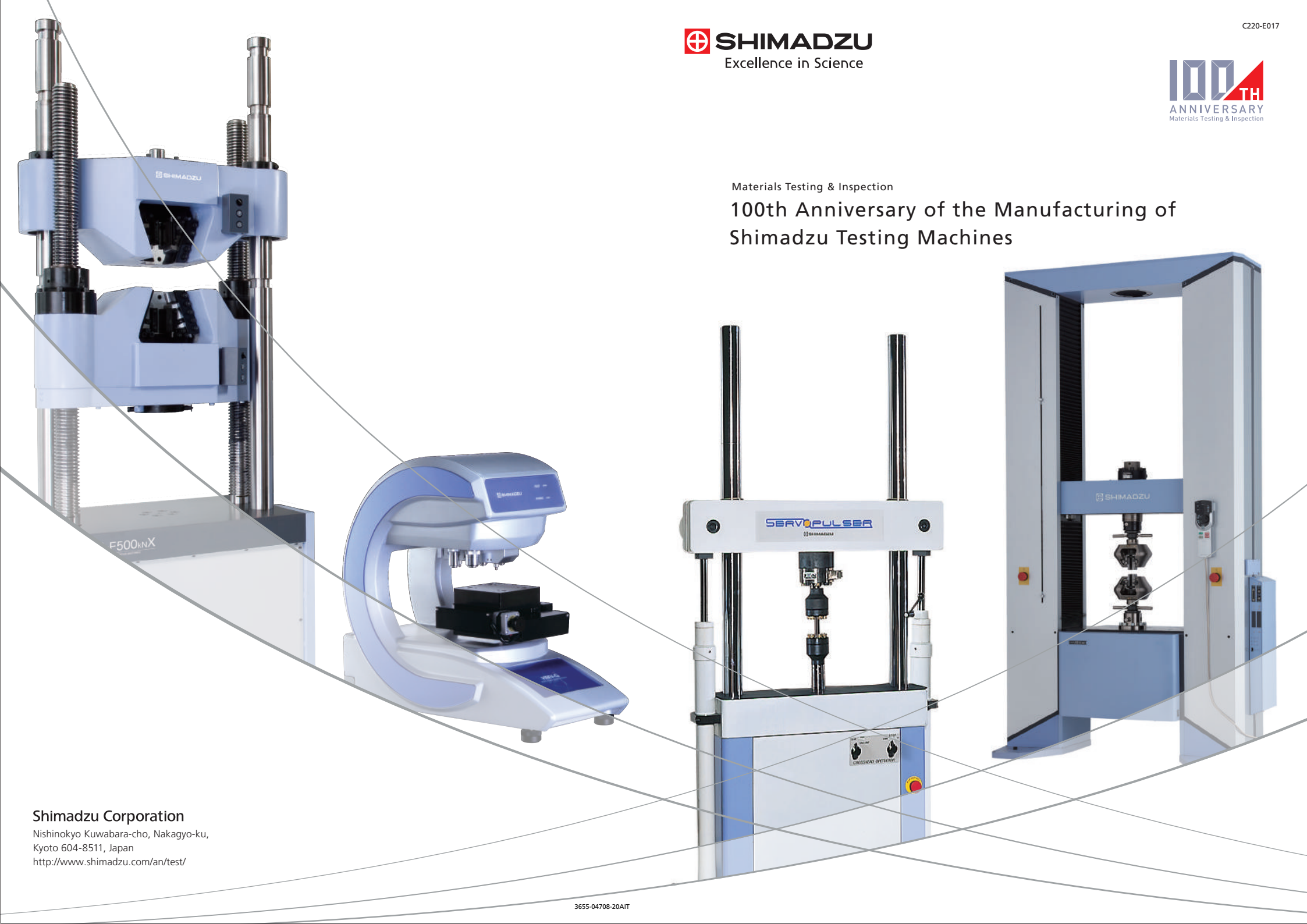
C220-E017

SHIMADZU
Excellence in Science

100TH ANNIVERSARY
Materials Testing & Inspection

Materials Testing & Inspection

100th Anniversary of the Manufacturing of Shimadzu Testing Machines



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3655-04708-20AIT

100TH ANNIVERSARY
Materials Testing & Inspection

Supporting manufacturing in the future,
utilizing 100 years of experience
and knowledge

Innovation and Collaboration

Shimadzu began manufacturing testing equipment in 1917. Throughout this 100-year history, we have been at the forefront of providing precision, quality solutions for the most challenging R&D and QA/QC requirements.
Our steadfast customer-focused commitment and unwavering dedication to technical excellence are both hallmarks of our history and the principles that guide us into the future.

Analysts want to know the mechanical properties of any number of items used in a variety of fields, at scales ranging from the micro to the macro. At Shimadzu, continuously responding to these needs is our mission.

Application Fields

Testing Force Overall Height

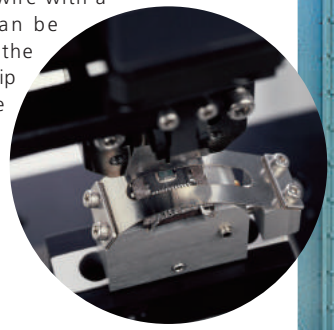
30MN/30m

This machine measures actual structures. It checks partial or overall weight, loading, and loads from earthquakes, wind, or snow, as well as strength characteristics and other properties.
This type of machine tests the safety and endurance of structures, a process even more vital now with the increasing size of buildings and civil engineering projects.

Breaking Testing Force A Testing Sample's Diameter

55mN/30μm

This machine tests the bond strength of bonding wires in integrated circuits. Rather than hanging the bonding wire from a hook, bonding wire with a diameter of 30 μm can be gripped and pulled, so the strength values at the chip end and lead end can be evaluated. The bonding wire is gripped and pulled using a micro chuck engineered especially for minute samples.



To Better
Understand Materials

Materials Changing the Manufacturing Process

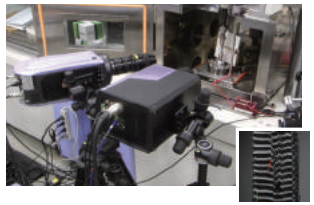
Understanding materials is the starting point for all types of manufacturing.
New test methods are developed daily in an effort to better understand the mechanical characteristics of materials. At Shimadzu, we will continue to create testing machines to meet the cutting-edge needs of materials researchers worldwide.

Fully Automatic Tensile Testing Machines for Iron and Steel Materials

The evaluation of mechanical characteristics is indispensable for quality control of iron and steel materials. To ensure the on-time shipment of multiple kinds of materials produced simultaneously, a system is required to enable the rapid testing of a large number of samples at any time. Using automatic machinery makes it possible to automate the entire process, including sample measurement, test preparation, testing, data acquisition, and the disposal of samples, thus enhancing production efficiency. It also can reduce differences between operators, which improves the quality of results.

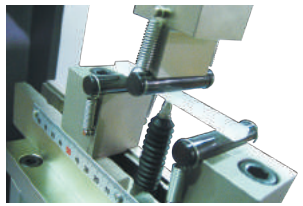
CFRP Impact Tensile Strength Tests and Fracture Behavior Observations

With the aim of making practical use of CFRP, evaluations and tests of composite materials are implemented from a variety of perspectives. In this context, observing the process by which CFRP fractures is important in terms of improving the strength of components, and for quality control.



Bending Tests for Plastics

These tests evaluate the bending elastic modulus and bending strength of plastics. With the aim of improving the accuracy of designs, ever more accurate measurements are needed. Utilizing a bending displacement gauge, the bending elastic modulus can be measured with even greater accuracy.

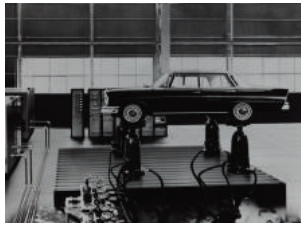


Safe and Comfortable Vehicles

Vehicles manufactured with high safety standards provide peace of mind when traveling. Ensuring these standards requires knowing the strength and endurance of the materials, parts, and products used during the manufacturing process. Shimadzu supports this process from behind the scenes with an array of technologically advanced testing machines.

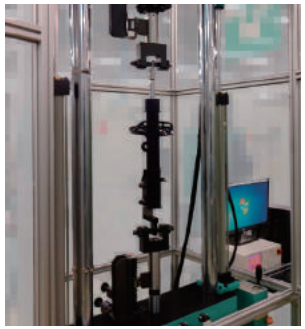
Travel Simulators, Developed in Response to the Demands of Automobile Manufacturers

In 1967, we created our first travel simulator, which was developed in response to the demands of automobile manufacturers. Based on information on the unevenness of roads recorded when travelling on bad roads, four platforms are raised and lowered hydraulically in order to apply the same shocks to a vehicle as when travelling on a road. Acceleration tests that recreate travelling data in quick succession can also be performed, thereby contributing to high-efficiency durability improvement tests.



Evaluating the Damping Characteristics of Shock Absorbers

The damping force is measured as test frequency is varied. Shock absorber performance can be confirmed by measuring the relationship between velocity and damping force or the response to a Lissajous or other waveform.



Infrastructure Protecting Human Lives

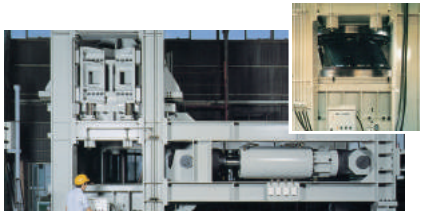
The development of safe, sound infrastructure is of paramount importance in order to mitigate damage from earthquakes and other disasters.
For this reason, methods used to increase the strength of materials continue to be developed.
Shimadzu offers a variety of large testing machines for measuring the strength of bridges, tunnels, roads, houses, office buildings, and other structures, ensuring infrastructure is engineered to the highest standards.

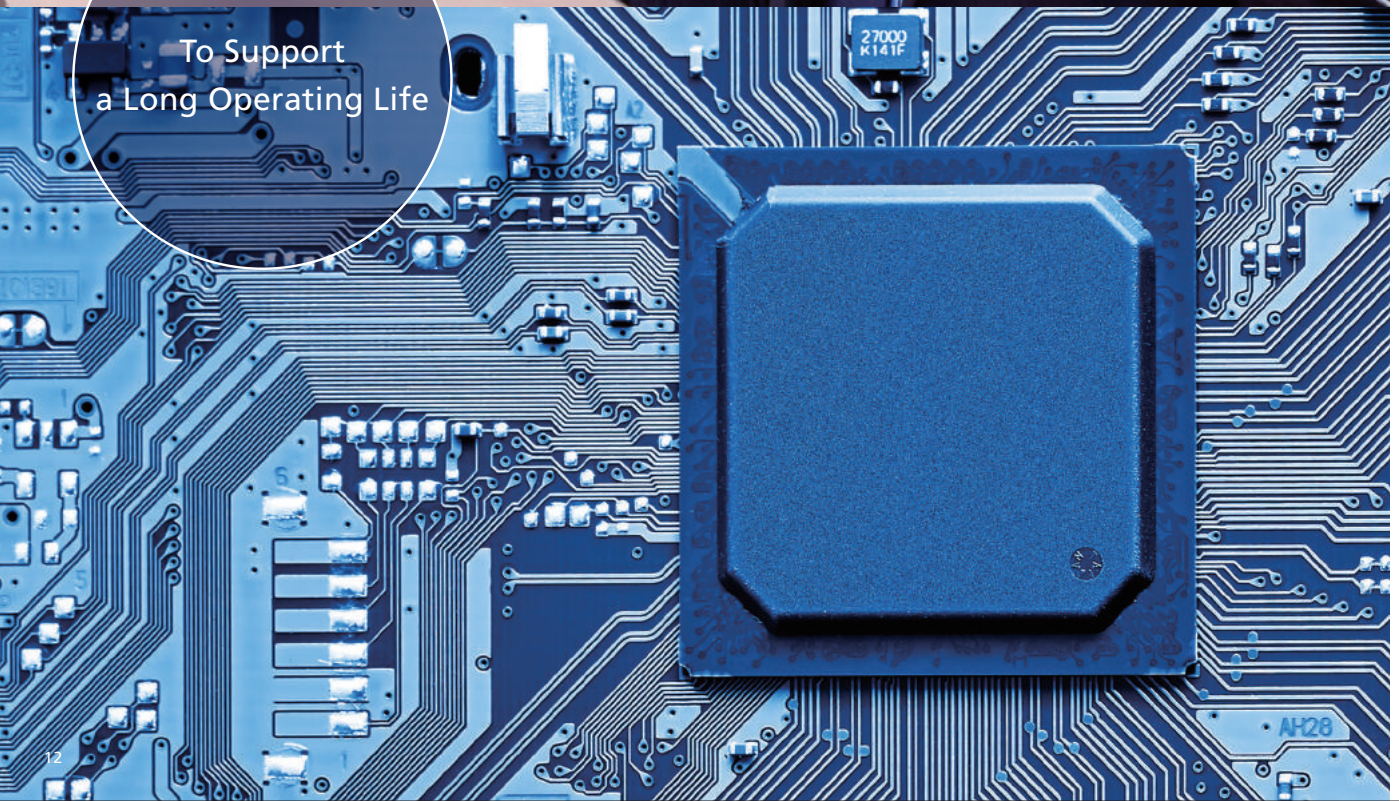
10 MN Structural Member Testing Machine

This structural member testing machine, which has a 10-m bed length and weighs 30 tons, is one of the largest testing machines that can be assembled at the Murasakino Works. It is used for strength tests of bridge components.

Seismic Isolation Rubber Characteristics Evaluation

This testing machine is for seismic isolation rubber, which is incorporated into the foundations of buildings and bridges.
It can perform tests related to the restoring force characteristics, rigidity, and other basic characteristics, primarily of laminated seismic isolation rubber. Jacks are incorporated for sample movement; this ensures that during vertical loading, the center of the sample always matches the load axis. As a result, no bending load is applied to the sample, enabling high-accuracy testing.





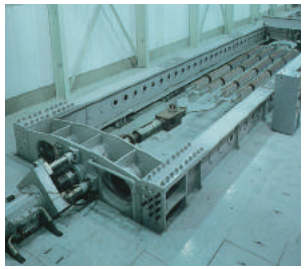
To Support
a Long Operating Life

Electronics Supporting a Comfortable Lifestyle

Product designers continually test devices, such as cell phones, under harsh conditions to ensure finished products have longevity. As a result, electronic components are small but resistant to failure, and large generator plants can continue to produce power reliably for dozens of years. Shimadzu supports this technological progress by providing designers and engineers with the testing machines needed to estimate the operating life of various products.

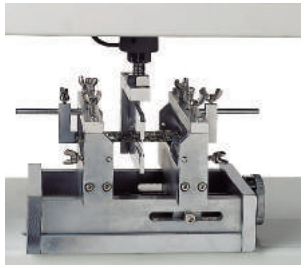
Tensile Evaluations of Power Transmission Brackets

This testing machine performs tensile tests of structural members and power line insulators for high voltage transmission. A primary feature is the large width of the in-frame testing space.



Cyclic Bending Tests for Mounted Circuit Boards

This test jig is for cyclic bending tests of printed circuit boards. Properties such as resistance fluctuations due to the application of cycle loads can be evaluated. Repeated expansion and contraction from the heat of solder can be reproduced and tested.



Safe and Delicious Food Products

The texture of foods, including such characteristics as chewiness and ease of swallowing, is one aspect in how consumers measure the deliciousness of food.
Providing testing machines that can quantity texture characteristics is just one way that Shimadzu ensures the good taste of food for everyone from infants to the elderly.

Viscoelasticity Evaluations of Gelatin

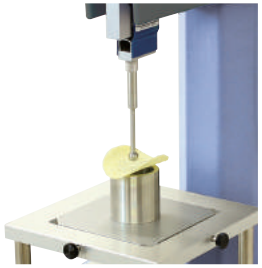
Gelatin testing (JIS K6503), jelly strength evaluation testing in accordance with the Japanese Pharmacopoeia, and viscosity testing for a variety of jelly-like samples can be performed.
The tests evaluate the jelly strength of orally administered jelly preparations in relation to how easy they are to swallow, as well as the texture of fruit jelly and other gelatins. Hardness, ease of mastication and other indices specific to texture evaluations are utilized.

Sausage Shear Evaluations

This jig can perform cutting and shear tests with a blade.
In addition to a V-shaped cut for Warner-Bratzler tests, other blades with a variety of tip shapes can be used for shear evaluations of meat, sausage, cheese, vegetables, and snack bars.

Potato Chip Breakage Test

This jig is for performing penetration tests of snack foods and potato chips. Measuring the test force at the time of breakage provides values that can be used as indices of brittleness and crispness.



Safe and
Delicious Foods

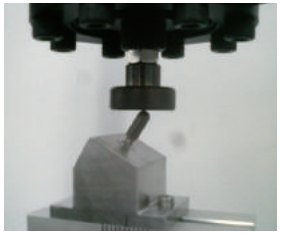
To Deliver Stable Medical Treatment

To Improve Quality and Reliability of Medical Products

Measuring the strength of materials and components, ranging from packaging to artificial bones and medical equipment, is essential to delivering medicine and providing healthier lives. Testing machines are indispensable tools in this effort, and Shimadzu's systems provide the precision performance to meet both R&D and QA requirements.

Implant Fatigue Evaluations

Fatigue and endurance tests are performed by fastening a sample at 30 degrees, and then loading it with a vertical test force from an upper actuator. The purpose of this test is to simulate a functional load on the implant itself, presupposing an extreme case.



Tablet Push-Out Evaluations

The force when tablets or capsules are pushed out of a press-through package (PTP) is evaluated.
A variety of PTP shapes can be accommodated by replacing the adapter.

Evaluation of Syringe Extrusion Force

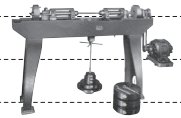
It is possible to evaluate the force required when extruding a medicinal liquid from a syringe needle.

Supporting a Safe Society for 100 Years

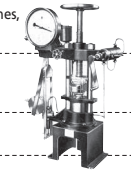
We will continue to aim for the highest quality,
with a sense of gratitude to our customers,
who take this journey with us.

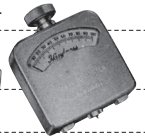
A 100 Year History of Shimadzu Testing Machines

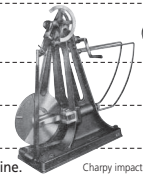
	Main Product	Main Discoveries in Physics
1917	Started manufacturing material testing machines (fiber and cement testing machines).	
1919	Manufactured metal testing machines.	Correspondence principle
1921	Manufactured Ono rotary bending fatigue testing machines from about this time.	Magnetic moment of atoms
1923	Started the manufacture and sale of a variety of material testing machines, beginning with the Amsler compression testing machine.	Concept of matter waves
1931	Manufactured Brinell and Rockwell hardness testers at about this time.	Semiconductor theory Neutrino hypothesis Electron microscope
1936	Delivered a 1-t creep testing machine to a steel mill.	Nuclear fission of uranium Second sound wave in helium II
1939	Developed the Vickers hardness tester.	Electron spin resonance Existence of π mesons
1947	Developed rubber hardness testers, later adopted in the JIS standards.	Lamb shift Discovery of V particles
1948	Released the Elmendorf paper testing machine. Released the McKenzie fiber testing machine.	Theory of holography Artificial creation of mesons
1950	Released the Charpy impact testing machine.	Renormalization theory Direct observation of the magnetic domain
1951	Released the Amsler universal testing machine.	Separated oscillatory field method
1952	Delivered a 500-t wire rope tensile testing machine. Developed the Mooney viscometer. Released a Custom cloth abrasion testing machine. Commercialized the elevated flow tester. Delivered an ultra-large Ono fatigue testing machine to a heavy electric machinery manufacturer.	
1954	Commercialized the micro Vickers hardness tester. Manufactured a large rotary bending testing machine (7.8 tm).	Invention of the maser Confirmation of the neutron
1955	Manufactured the first hydraulic universal testing machine (RH-10).	Creation of antiprotons Confirmation of antineutrons
1957	Delivered a rotary bending fatigue testing machine for crankshafts to a steel manufacturer. Released the RS universal testing machine.	Nonconservation of parity Mössbauer effect Theory of superconductivity
1958	Released the IS series AUTOGRAPH. Released the REH universal testing machine.	Tunnel effect in semiconductors
1959	Manufactured the first AUTOGRAPH IS precision universal testing machine. Delivered it to a synthetic fiber manufacturer. Released the RET torsion testing machine. Delivered an REH electron tube universal testing machine to a government research organization.	Demonstration of electron antineutrinos
1961	Received a Gold Business Performance Award for the development of the RH universal testing machine. (Exceeded production of 500 universal testing machines.)	Manufacture of a superconductive magnet
1962	Manufactured the REH-400, a 400-t large universal testing machine, and delivered it to a steel research institute.	Two types of neutrinos Superconductor tunnel junctions
1964	Released the S series AUTOGRAPH. Sales of the RH universal testing machine exceeded 1,100 units since its release.	Quark theory Clarification of the genesis of mass Theory of electric resistance in dilute alloys
1965	Completed a wing for the assembly of structural member testing machines. Manufactured a 500-t structural member testing machine, and delivered it to a university. Delivered a 200-t 3-axis testing machine to a university civil engineering department.	3K cosmic background radiation
1966	Delivered a 30-t seatbelt testing machine to Australia.	Transmission by optical fiber

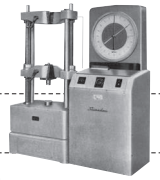

Ono rotary bending fatigue testing machines


1-t creep testing machines

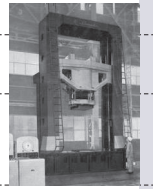

Brinell hardness testers


Rubber hardness testers

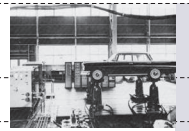

Charpy impact testing machine


Hydraulic universal testing machine


AUTOGRAPH IS precision universal testing machine


500-t structural member testing machine

	Main Product	Main Discoveries in Physics
1967	Manufactured the first fatigue testing machine (EVH), and delivered it to an automobile manufacturer. Delivered a 1200-t large chain tensile testing machine to a chain manufacturer.	Pulsar Unified theory
1968	Delivered a fully automatic Charpy testing machine to a steel manufacturer.	Multiwire proportional counter Deep inelastic scattering of electrons
1969	Delivered a 2000-t horizontal testing machine to a steel manufacturer. Delivered a 1000-t structural member testing machine to a steel manufacturer. Delivered the RES-200 universal testing machine to a university.	
1970	Delivered a 6 m × 6 m large horizontal vibrating table to an electric machinery manufacturer.	Invention of CCD sensors
1971	Delivered five 300-t Servopulsers for structural members to construction companies.	Clarification of the quantum structure of electroweak interaction
1972	Delivered the AWS fully automatic crankshaft balancing machine to an automobile manufacturer. Delivered an ultra-high-vacuum Servopulser (10-10 torr) to a university. Manufactured a hydraulic lifting clamp type Servopulser unit.	^{3}H superfluidity
1973	Delivered the EHF-05/05 biaxial vibration testing machine to a university.	Third generation quarks Discovery of a new particle (J/φ)
1975	Released the UMH and UEH universal testing machine. Released the SERVOPET Lab-5.	Discovery of a new type of pulsar Discovery of the τ particle
1976	Delivered the 3000-tf structural member testing machine to Nihon University (1976) and the Public Works Research Institute (1978). Released the DSS series AUTOGRAPH. Delivered a fully automatic universal testing system to a steel manufacturer.	
1978	Delivered the first high-speed tensile testing machine to a steel manufacturer.	
1979	Released the DCS series AUTOGRAPH.	
1980	Released the CFT-500 flow tester. Released the 9200/9300 porosimeter.	Discovery of the quantum Hall effect Scanning tunneling microscope
1982	Delivered an automatic tensile testing system to a steel manufacturer. Released the SA and CP2 particle size analyzer. Released the EHF-EC Servopulser.	Discovery of quantum fluid with fractional-charge excited states
1983	Released the AG-A and AG-B series AUTOGRAPH. Released the AGS-A/B series AUTOGRAPH. Released the UDH universal testing machine.	Discovery of the W and Z particles
1984	Released the EHF-ED series Servopulser.	
1985	Released the DUH-50 dynamic ultra micro hardness tester. Released the SMV-201 Mooney viscometer. Released the EHF-FB Servopulser. Released the F series universal testing machine.	Cooling and trapping of atoms via laser light
1986	Released the HMV-2000 micro Vickers hardness tester. Released the 4880 controller for Servopulser. Released the HTM-1 Hydroshot high-speed impact testing machine. Delivered a fully automatic balancing machine for motor rotors to an automotive parts manufacturer. Delivered a large mobile balancer to a heavy electric machinery manufacturer.	Discovery of an oxide superconductor Discovery of a semiconductor that glows blue when excited via a current
1987	Released the UH-A universal testing machine. Released the SALD-1000 particle size analyzer.	
1988	Released the AG-D series AUTOGRAPH. Released the SEM Servopulser. Released the DUH-200 ultra micro hardness tester. Started updating the universal testing machines.	


First fatigue testing machine


Fully automatic Charpy testing machine


Delivered a fully automatic universal testing system to a steel manufacturer.


AG-A series AUTOGRAPH

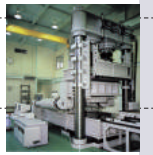

SALD-1000 particle size analyzer

A 100 Year History of Shimadzu Testing Machines

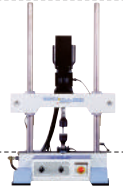
	Main Product	Main Discoveries in Physics
1989	Released the AG-E series AUTOGRAPH. Released the CFT-500C flow tester. Released the PCT-200 micro compression testing machine. Released the SST-100 scratch tester.	
1990	Released the HTH horizontal hydraulic testing machine.	
1991	Released the AGS-D series AUTOGRAPH. Released the SAX-10 X-ray fluoroscopic AUTOGRAPH. Released the CCH compression testing machine.	
1992	Released the CHA-4 Charpy impact testing machine. Released the SD/HD balancing and measurement device. Delivered the AUTOGRAPH automatic machine with hardness tester to a steel manufacturer.	
1993	Released the 48000 controller for Servopulser. Released the HSV-20 semi-Vickers hardness tester. Released the SALD-3000 particle size analyzer.	Development of high luminance blue LEDs
1994	Released the CCM compression testing machine. Released the SHiKiBU software for controlling AUTOGRAPH. Released the AGS-D series AUTOGRAPH. Released the SMV-202 Mooney viscometer.	
1995	Released the AG-G series AUTOGRAPH. Released the AGS-G series AUTOGRAPH. Released the SHIKIBU testing software.	Achieved Bose-Einstein condensate
1996	Released the MMT microservo. Released the CFT-500D flow tester. At about this time, orders for the biaxial fatigue testing machine for seismic isolation rubber became active.	
1997	Released the EZ Test compact table-top tester. Released the AGS-H series AUTOGRAPH. Released the SALD-200V particle size analyzer. Released the HMV-1/2 micro Micro Vickers hardness tester.	
1998	Released the 4826 controller for Servopulser. Released the SALD-2100 particle size analyzer. Released the TriStar 3000.	Discovery of the accelerating expansion of the universe
1999	Released the AG-I series AUTOGRAPH. Released the DUH-W201 ultra micro hardness tester. Released the SALD-300V particle size analyzer.	
2000	Released the UH-I universal testing machine. Released the TRAPEZIUM testing machine software. Released the SALD-7000 particle size analyzer. Released the AutoPore 9500 series. Released the ENT-150 endurance testing machine. Released the DBM-G balancing and measurement device.	
2001	Released the SMV-300 Mooney viscometer. Released the 4890(M) controller for Servopulser. Released the EHF-L table-top Servopulser. Released the CONCRETO2000 fully automatic concrete compression testing machine.	
2002	Released the SALD-3100 particle size analyzer. Released the AGS-J series AUTOGRAPH. Released the TRAPEZIUM2 testing machine software. Released the AUTOGRAPH EZ Graph.	


CCH/CCM compression testing machine

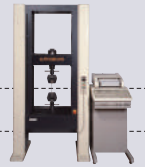

CFT-500D flow tester


Biaxial fatigue testing machine for seismic isolation rubber


EZ Test compact table-top tester


EHF-L table-top Servopulser


AUTOGRAPH EZ Graph


AG-E series AUTOGRAPH


MMT microservo


HMV-1/2 micro Micro Vickers hardness tester


CONCRETO2000

	Main Product	Main Discoveries in Physics
2003	Released the HITS-T10 Hydroshot high-speed tensile testing machine. Released the ASAP-2020 specific surface area/pore distribution analyzer. Released the MST-I micro AUTOGRAPH micro strain tester.	
2004	Released the USF-2000 ultrasonic fatigue testing system. Released the AG-50KNISD 50 kN table-top AUTOGRAPH. Released the SALD-2200 particle size analyzer. Released the TEOS automatic spring tester.	
2005	Released the 4830(V) controller for Servopulser. Released the HyperVision HPV-1 high-speed video camera. Released the AIR SERVO ADT-A series fatigue testing machine. Released the Gemini V 2380 automatic specific surface area measurement system.	
2006	Released the SALD-7100 nanoparticle size analyzer. Released the DUH-211/211S dynamic ultra micro hardness tester. Released the AccuPyc 1330TC dry-process pycnometer. Released the EZ-L/S series compact table-top tester.	
2007	Released the AG-X series AUTOGRAPH. Released the ASAP-2420 pore distribution analyzer. Released the TRAPEZIUM X testing machine software.	
2008	Released the HyperVision HPV-2 high-speed video camera. Released the AccuPyc II 1340 series dry-process pycnometer. Released the IG-1000 single nanoparticle size analyzer.	
2009	Released the TriStar II 3020 pore distribution analyzer. Released the AGS-X series AUTOGRAPH. Released the EMT series electromagnetic fatigue and endurance testing machine.	
2010	Released the Gemini VII 2390 automatic specific surface area measurement system. Released the ESZ series external sensor amplifier. Released the AG-Xplus AUTOGRAPH. Released the TRViewX video extensometer.	
2011	Released the UH-X and UH-FX universal testing machine. Released the ECU series energy saving unit.	
2012	Released the EZ-X compact table-top tester.	Discovery of the Higgs boson
2013	Released the HMV-G micro Vickers hardness tester.	
2014	Released the precision universal testing machine biaxial tensile testing system. Released the Aggregates Sizer aggregation analysis system for biopharmaceuticals. Released the CONCRETO X concrete compression testing machine. Released the TTM-X CCH-X torsion testing machine. Released the CFT-500EX series constant test force extrusion type capillary rheometer flowtester.	
2015	Released the SMV-301 series Mooney viscometer. Released the HyperVision HPV-X2 high-speed video camera.	
2016	Released the NJ-SERVO series electric motor-driven actuator.	
2017	Celebrated 100 years of testing machine manufacture.	


MST-I micro AUTOGRAPH micro strain tester


USF-2000 ultrasonic fatigue testing system

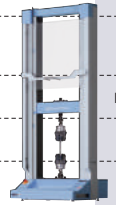

TEOS automatic spring tester


4830(V) controller for Servopulser

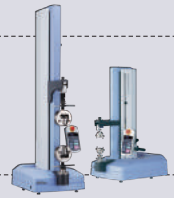

EMT series electromagnetic fatigue and endurance testing machine


AG-X series AUTOGRAPH


HMV-G micro Vickers hardness tester


AGS-X series AUTOGRAPH


HyperVision HPV-X2 high-speed video camera


EZ-X compact table-top tester


NJ-SERVO series electric motor-driven actuator