

FORCE MEASUREMENT IMADA Product Catalog

Force Gauges & Associated Equipment

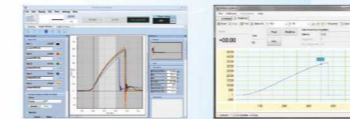
DIGITAL FORCE GAUGE
MECHANICAL FORCE GAUGE
MOTORIZED TEST STAND

2018-11



Force Gauges

IMADA force gauges can be used for tensile tests, compression tests, peel tests, and unlimited force testing applications. We offer a wide range of gauges such as mechanical models (easy to handle), digital models (various functions equipped), and a variety of sensors.



Software

Software records force transitions graphically, calculates the statistics automatically, and equips various functions to enable you to analyze the data in detail.



Test Stands

A test stand achieves greater accuracy since it provides constant test angle/speed. Combined with a digital force gauge, a motorized test stand can activate useful functions to protect sensors from breakdown, streamline measurement, and more.



Attachments

We provide a wide range of grips and fixture to meet your force measurement needs. One force gauge can be combined with various attachments to handle a wide range of force testing applications.



Force Testing System

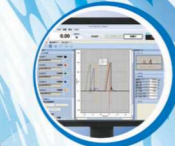
We provide various force testing system below to improve your productivity and meet a variety of force testing needs.

- Force-displacement analysis system
- Specialized testers for peeling etc.
- Automated force testing system
- And more



IMADA's force testers are used worldwide in R&D and quality control of every industry to assess and ensure the quality.

IMADA offers a wide range of force testing products and know-how accumulated for many decades, enabling you to measure a huge variety of "force" such as mechanical strength (breaking/deformation force), tactile sensation (softness/hardness), functionality of operational physical force, and more.



FORCE MEASUREMENT IMADA

IMADA CO.,LTD
99 Jinnoshinden-cho aza Kanowari Toyohashi 441-8077 Japan
Telephone:+81-(0)532-33-3288 Telefax:+81-(0)532-33-3866
E-mail:info@forcegauge.net

The further information is on our website.
<http://www.forcegauge.net/>



Agency

You can see our website on your tablet.

- The contents will be changed without any notices.
- We can custom design and manufacture to meet your particular requirements.
- Please feel free to contact us or our distributor for further information of our products.
- The colors and shapes might be slightly different from the actual products.
- We show specifications partially, so please see full specifications on our website or contact us before purchase.

The best force measurement solution by IMADA

We are an expert of force measurement.

IMADA force gauges have been used worldwide for more than 70 years to assess and ensure quality by professionals in every industries.

IMADA gauges can be used for a wide range of force testing applications such as tensile, compression, peel, and more.

They can even measure ambiguous things such as "cheese stickiness" and "switch pressing force." We provide the best force measurement solutions with our know-how and a wide range of products.

The industries using our force gauges



IMADA offers the best force measurement solution.

Force changes shape and speed of objects. Force is defined as $\text{Mass} \times \text{Acceleration} = \text{Force}$. There are many types of forces such as Tension/ Compression/Shearing/ Bending, and more. Below you can see force measuring instruments called "force gauges," which quantify the force in units of "Newton," "Kilogram," and "Pound." We provide a wide range of force gauges and related equipment to fit your measuring needs.

70 Years History of IMADA Force Gauge



The Latest Force Gauges
Capable, Functional and User-friendly force gauge, ZT series are released.

Before-sales services

Test Method Consulting

We provide the best measurement solution based on our 70 years knowledge and experiences. Please feel free to contact us for any measurement concerns, for example, measurement in accordance with standards, effective measurement ways, improvement of measurement repeatability and so on.



Custom-made Orders

We also provide custom-made orders which are based on your measurement conditions and samples. Please let us know your requests such as installing a force gauge in equipment, looking for a fixture which can grip a unique shape sample, and the like.



After-sales services

Repair

We and some of our sales partners provide repair services. We are dedicated to short-term delivery.



Calibration

We and some of our sales partners also provide calibration service to keep the accuracy. Some of our products can be provided calibration services in accordance with ISO/IEC 17025:2005.



Publishing Various Certifications

Many types of certifications can be published in short terms such as Calibration Certificate, Traceability Chart and so on.



● Pull force



● Insertion force



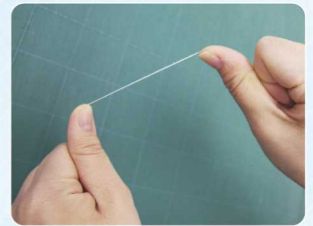
● Pushing force



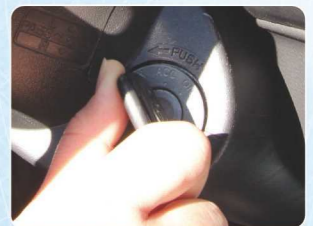
● Extraction force



● Peeling/adhesive force



● Shearing force/Tension force



● Rotating/Twisting force



● Crashing force



● Opening force



● Bending force



● Closing force



● Frictional force

From simple testing to professional one, you can easily conduct force measurement anytime, anywhere.

Force measurement is conducted to assess safety, durability, functionality, operability, and more. We offer a wide range of force gauges and related equipment to fit your measurement needs.

For use by hand

You can easily measure compression and tension force.



For use as a simple testing machine

You can combine a force gauge with a test stand to achieve high repeatability.



A Force gauges (Push Pull Scales)

They measure compression, tension, peeling force, and more. You can readily conduct a test by hand, or you can combine it with a test stand to create your own testing machine.



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B Attachments

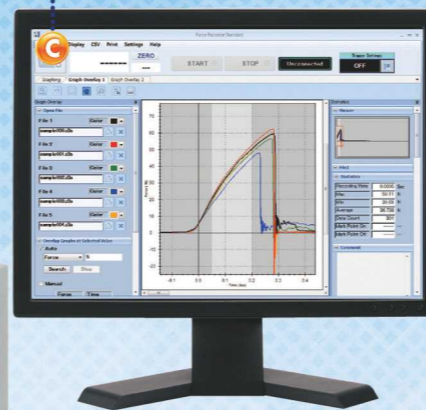
Attachments are integral components to be combined with a force gauge or a test stand, enabling compression, tension, peeling and other force measurement.



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C Software

Software draw graphs of the relationships between Force and Time or Force and Displacement. Utilize it for detailed analysis.



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D Test Stands

Test stands move a force gauge vertically or horizontally. It helps High-repeatability measurements by keeping the speeds and the angles.



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E Connecting Cables

A cable connects a force gauge and a test stand, activating the force controlling function and the preventing overload function. Besides, cables are also used to connect external equipment like PC.



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Measurement Examples

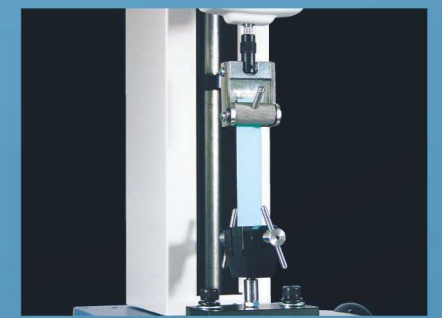
Compression Test

IMADA compression testers handle a wide range of compression testing applications such as, durability, bending, sticking, and more.



Tension Test

IMADA tension testers handle a wide range of tension testing applications such as tearing, extracting, pull-off, and more.



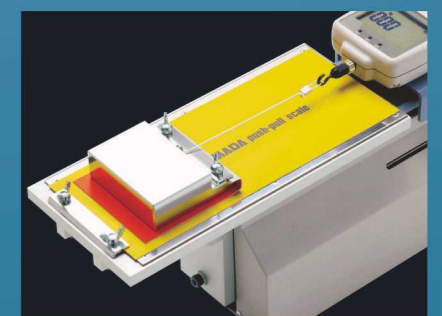
Peeling Test

IMADA peel testers handle a wide range of peel testing applications of such as adhesive tape, film, and more.



Coefficient of Friction Test

IMADA COF testers calculate coefficient of static Friction and average of coefficient of kinetic Friction automatically.



Other Product Line-up

FSA Force-Displacement Analysis Unit

Easy graph drawing of force and displacement relationships

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Automatic crimp tester ACT-1000N

A specialized tester for tensile strength test of crimped terminal

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180 Degree Peel Tester IPTS-5N/20N/50N

A specialized tester for peeling test of such as cover film of electric components and tapes

To page 49



Texture Analyzer FRTS

Digitizing food texture such as stickiness, hardness and more

See another catalog, "Catalog for Torque testers and Food testers."



Torque Gauges

For rotating and twisting force measurement

See another catalog, "Catalog for Torque testers and Food testers."



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Force Gauges (Push Pull Scales)

Measuring instruments for compression/tension/peeling force

You can use a force gauge by hand, or combine a test stand to create your force testing machine. They are also called for "push pull scales" or "push pull gauges."



Digital Force Gauges

Strong Points

- You can easily read force values.
- You can connect it with a PC to analyze data particularly and manage it easily.
- Digital functions are available such as OK/NG judgment, and more.
- It is suitable for impact tests and breaking tests.

Weak Points

- You need to charge batteries.
- It is difficult to read force transition without graphing software.

DST To page 14

- Capacity: 2N~1000N
- Sampling speed: 1000Hz
- Accuracy: $\pm 0.2\%F.S. \pm 1$ digit



- It is ideal for simple measurements by hand.
- With its peak hold function, you can easily detect a peak value.

DSV To page 15

- Capacity: 2N~1000N
- Sampling speed: 1000Hz
- Accuracy: $\pm 0.2\%F.S. \pm 1$ digit



- Tilt-sensing-function improves the repeatability by handheld measurement.

ZTS To page 09

- Capacity: 2N~5000N
- Sampling speed: 2000Hz
- Accuracy: $\pm 0.2\%F.S. \pm 1$ digit



- You can capture a peak value accurately due to its high sampling rate.
- It has a clear display.
- You can manage data easily with included software.

ZTA To page 11

- Capacity: 2N~5000N
- Sampling speed: 2000Hz
- Accuracy: $\pm 0.2\%F.S. \pm 1$ digit



- Advanced Functionality Model
- It outputs and inputs displacement using a linear scale together.
- It saves data in a USB flash drive.

Simple

Functional Accurate

Mechanical Force Gauges

Strong Points

- They work without battery.
- They have durable bodies.
- You can read force transition easily.

Weak Points

- It is not suitable for impact tests and breaking tests.
- It may cause human reading error.

FB To page 25

- Capacity: 10N~500N
- Accuracy: $\pm 0.3\%F.S$ or less



- This is the most economical model

PS To page 26

- Capacity: 5N~500N
- Accuracy: $\pm 0.1\%F.S$ or less



- This is high accuracy model.
- When measuring high capacity more than 500N: PSH→To Page 26

PSM To page 26

- Capacity: 20N~500N
- Accuracy: $\pm 0.1\%F.S$ or less



- This is the most accurate model with high resolution dial.

Digital force gauges

A digital force gauge has an internal sensor. It has 2 remarkable features; 1. Its digital indication prevents human reading error. 2. Connecting it to a PC, you can easily manage or analyze test data.



How to Use Digital Force Gauges (Using Example Model: ZT series)

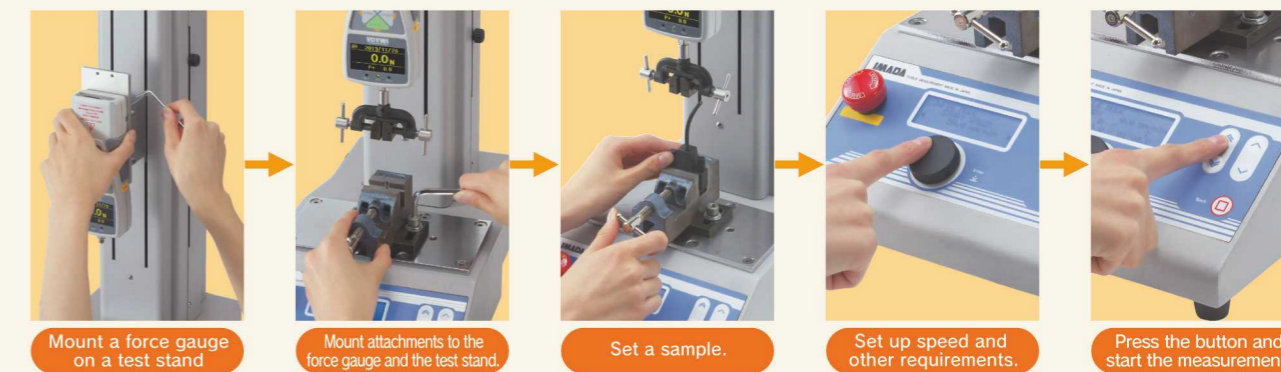
Simple Method

You can readily measure force by hand.



Reproducible Method

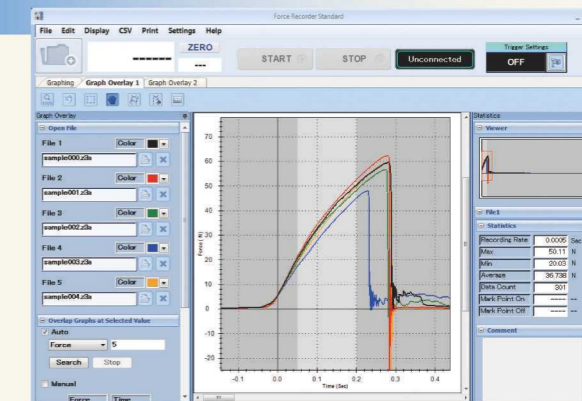
Combining a digital force gauge with a test stand (page 28), you can conduct a highly repeatable test since the test stand provides constant test speed and angle.



Graphing

With software (page 20), you can see the force transition graphically on a PC.

Connecting a digital force gauge with a PC, you can see force transition graphically and analyze data in detail.



Standard Type with High Reproducibility

ZTS series (Basic Model)

This is user-friendly and functional model. This series of gauges can be used for a wide range of measuring purposes from peak measurement to highly repeatable measurement. The gauges come with data capturing software.

Accurately / Precisely

- High Speed Sampling: 2000Hz
It follows rapid force change, capturing peak values more accurately.
- High Accuracy: ±0.2%F.S. ± 1 digit

User-friendly

- High Luminance Organic EL Display
Clear organic display has excellent readability.
- 8 languages available
Setting menu in 8 languages helps easy operation.

Making efficient

- OK-NG Judgment Function
You can pick out defective products easily. (+NG or -NG light goes on when the force is over or under the borderline that you have decided.)
- 3 Line Indicator
A force value is indicated in the middle tier, and you can select information as required in the upper and lower tiers.
- Connect and Link to Various External Equipment.

Compression and Tension Compatible

Size: Approx. W75×D34×H191mm
Weight: Approx. 490g

Check Force Transition on Graphs
Software Force Recorder ——— To Page 21

Print The Results
Printer DP-1VR ——— To Page 24
+Cable CB-308 ——— To Page 23

Connect with External Devices
Cable Using Applications ——— To Page 24

Easy Data Management on PC

Data Capturing Software ZT Logger is included.

- It sends 10 data/sec to PC.
- It automatically detects maximum and minimum values.
- It saves data in CSV format.

Graphing by Optional Force Graphing Software

The software shows force vs time graphically on PC in real time (at Max.2000Hz). The detail is in Page 20.



Standard Type Model List

Model	Capacity	Display	Thread
ZTS-2N	2N	2.000N/2000mN(200.0gf)	M6
ZTS-5N	5N	5.000N/5000mN(500.0gf)	
ZTS-20N	20N	20.00N(2.000kgf)	
ZTS-50N	50N	50.00N(5.000kgf)	
ZTS-100N	100N	100.0N(10.00kgf)	
ZTS-200N	200N	200.0N(20.00kgf)	
ZTS-500N	500N	500.0N(50.00kgf)	
ZTS-1000N	1000N	1000N/1.000kN(100.0kgf)	

ZTS series specifications

Accuracy	+/-0.2%F.S./±1 digit(Excepted sensor separated model)
Unit of measurement(※1)	N, kgf, lbf (※1)
Display	4-digit Organic EL
Sampling rate	2000Hz (2000 data / sec) at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display
Output	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Operating environment	USB, RS232C, Mitutoyo digimatic (※2), ±2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm
Battery	8 hours (2 hours full charge)
Accessory	Attachments(※3), AC adapter, Inspection certificate, CD-driver(including simple software for data logging), USB cable, Carrying case.

※1 The model less than 5N can be displayed mN, the model more than 1000N can be displayed kN. Japanese domestic model does not indicate kgf and lbf units.
 ※2 Not always available for Mitutoyo digimatic products.
 ※3 Please refer to Page 35 for the detail of accessory attachments.
 ©The weights are slightly different by the ranges.

ZTS series (High Capacity Model)



Compression and Tension Compatible

Size: Approx. W83×D44.5×H221mm
Weight: Approx. 1100g

High Capacity Model List

Model	Capacity	Display	Thread
ZTS-2500N	2500N	2500N (2.500kN)	M10
ZTS-5000N	5000N	5000N (5.000kN)	

- The load capacity ranges from 2500N to 5000N.
- This model has the same functions and performance as ZTS series basic model.

Check Force Transition on Graphs
Software Force Recorder ——— To Page 21

Print The Results
Printer DP-1VR ——— To Page 24
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Improve Measuring Repeatability
Test Stands ——— To Page 28

Connect with External Devices
Cable Using Applications ——— To Page 24

ZTS series (Separated Sensor Model)



Size (the indicator only): Approx. W75×D34×H188mm
Weight (the indicator only): Approx. 490g

Sensor separate type Model List (When selecting load cell DPU series)

Model	Capacity	Display	Thread
ZTS-DPU-2N	2N	2.000N (2000mN)	M6
ZTS-DPU-5N	5N	5.000N (5000mN)	
ZTS-DPU-10N	10N	10.00N	
ZTS-DPU-20N	20N	20.00N	
ZTS-DPU-50N	50N	50.00N	
ZTS-DPU-100N	100N	100.0N	
ZTS-DPU-200N	200N	200.0N	
ZTS-DPU-500N	500N	500.0N	

- It is ideal for installing into facilities or measuring under special circumstance due to an external sensor.
- We offer a wide range of sensors such as waterproof, wide temperature range, pen shape, and more to meet your force measurement requirement.
 ※ Please select one load cell from page 17 to 19.
 ※ Sensor interchangeable model eZ Connect (page 16) is recommended for those who change load cells.

This model has the same functions and performance as ZTS series basic model. (Accuracy and testing direction is determined by the sensor combined with the indicator.)

Check Force Transition on Graphs
Software Force Recorder ——— To Page 21

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Connect with External Devices
Cable Using Applications ——— To Page 24

(When selecting load cell DPU series [High capacity model])

Model	Capacity	Display	Thread
ZTS-DPU-1000N	1000N	1000N (1.000kN)	M10
ZTS-DPU-2000N	2000N	2000N (2.000kN)	
ZTS-DPU-5000N	5000N	5000N (5.000kN)	
ZTS-DPU-10kN	10kN	10.00kN	
ZTS-DPU-20kN	20kN	20.00kN	
ZTS-DPU-50kN	50kN	50.00kN	

※ Please refer to Page 17 for the detail of load cell DPU series

An example of separated sensor model combined with a load cell **ZTS-LM-500N** Load cell model Choose ZTS or ZTA
 ※ In the case where you combine ZTS with a load cell, LM-500N

On our website, you can see a wide range of force testing applications, and download a specification sheet of each product. Please feel free to contact us.

IMADA service group telephone number: +81(0)532-33-3288

IMADA Search <http://www.forcegauge.net/en/>

High-functional Type with Various Functions

ZTA series (Basic Model)

This series have the highest functionality. They have 2 remarkable points; 1. They input or output displacement. 2. They can connect to USB flash drive to save the original graph data.



ZTA has all the functions of ZTS(Page 09) with a few more additional features, including I/O for displacement, saving data to USB flash drive, and more.

ZTA series features

Input and Output Displacement

Force vs displacement data management on PC

You can use FSA series (Force-Displacement Analysis Unit) [Page 45] to manage force-displacement data on PC.

Showing displacement on a force gauge with a test stand

You can use a FA version test stand [Page 29.30] together to show displacement on a force gauge. You need an optional cable [Page 23] for that.

Measuring force-displacement with external facilities.

You can use built-in linear scale [Page 24] together with ZTA.



Force-displacement measurement unit FSA series

Data Saving to a USB Flash Drive

Data Saving into a USB Flash Drive at 100Hz.

Series of data can be saved without PC.



Compression and Tension Compatible

Size: Approx. W75×D34×H191mm
Weight: Approx. 490g

Check Force Transition on Graphs

Software Force Recorder To Page 20

Print The Results

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Connect with External Devices

Cable Using Applications To Page 24



ZTA set

Improve Measuring Repeatability

Test Stands To Page 28

Apply Stable Force by Hand

Handle FOH-1 To Page 43

Analyze Force-Displacement Relation

Force-Displacement Analysis Unit To Page 45

ZTA series model list

Model	Capacity	Display	Thread
ZTA-2N	2N	2.000N/2000mN(200.0gf)	M6
ZTA-5N	5N	5.000N/5000mN(500.0gf)	
ZTA-20N	20N	20.00N(2.000kgf)	
ZTA-50N	50N	50.00N(5.000kgf)	
ZTA-100N	100N	100.0N(10.00kgf)	
ZTA-200N	200N	200.0N(20.00kgf)	
ZTA-500N	500N	500.0N(50.00kgf)	
ZTA-1000N	1000N	1000N/1.000kN(100.0kgf)	M10

※1 The model less than 5N can be displayed mN, the model more than 1000N can be displayed kN. Japanese domestic model does not indicate kgf and lbf units.
 ※2 Not always available for Mitutoyo digimatic products.
 ※3 Maximum 100 data/sec capturing series of data with a USB flash drive.
 ※4 A USB flash drive and a linear scale consume more battery.
 Thus, when you combine ZTA with the USB flash drive or the linear scale, the battery runs out faster.
 ※5 A USB flash drive is not included.
 ※6 Please refer to Page 35 for the detail of accessory attachments.
 ◎The weights are slightly different by the ranges.

ZTA series specifications

Accuracy	+/-0.2%F.S. +/-1 digit
Unit of measurement(※1)	N, kgf, lbf(※1)
Display	4-digit Organic EL
Sampling rate	2000Hz (2000 data / sec) at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgement of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, 1st/2nd peak, Displacement detection at force peak value, Displacement zero reset at selected force
Output	USB, RS232C, Mitutoyo digimatic (※2), 2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm, Sub comparator 2 steps (output of large or small judgment), USB flash drive(※3), Displacement(※4)
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Battery	8 hours (2 hours charge)
Accessory(※5)	Attachments (※6), AC adapter, Inspection certificate, CD driver (including simple software for data logging), USB cable, Carrying case, Adaptor for USB flash drive.

ZTA series (High Capacity Model)



ZTA (High capacity model) set

Compression and Tension Compatible

Size: Approx. W83×D44.5×H221mm
Weight: Approx. 1100g

- ◎The load capacity ranges from 2500N to 5000N.
- ◎This model has the same functions and performance as ZTA series basic model.

- Check Force Transition on Graphs
Software Force Recorder To Page 21
- Print The Results
Printer DP-1VR To Page 24
+Cable CB-308 To Page 23
- Improve Measuring Repeatability
Test Stands To Page 28
- Connect with External Devices
Cable Using Applications To Page 24
- Analyze Force-Displacement Relation
Force-Displacement Analysis Unit To Page 21

High Capacity Model List

Model	Capacity	Display	Thread
ZTA-2500N	2500N (250kgf)	2500N/2.500kN (250.0kgf)	M10
ZTA-5000N	5000N (500kgf)	5000N/5.000kN (500.0kgf)	M10

ZTA series (Separated Sensor Model)



ZTA (Separated sensor model) set

Size (the indicator only): Approx. W75×D34×H188mm
Weight (the indicator only): Approx. 490g

- ◎It is ideal for installing into facilities or measuring under special circumstance due to an external sensor.
- ◎We offer a wide range of sensors such as waterproof, wide temperature range, pen shape, and more to meet your force measurement requirement.
 ※ Please select one load cell from page 17 to 19.
 ※ Sensor interchangeable model eZ Connect (page 16) is recommended for those who change load cells.



- ◎This model has the same functions and performance as ZTA series basic model. (Accuracy and testing direction is determined by the sensor combined with the indicator.)

- Check Force Transition on Graphs
Software Force Recorder To Page 21
- Print The Results
Printer DP-1VR To Page 24
+Cable CB-308 To Page 23
- Connect with External Devices
Cable Using Applications To Page 24
- Connect with a Linear Scale
Built-in Linear Scale Unit To Page 24

Sensor separate type Model List
(When selecting load cell DPU series)

Model	Capacity	Display	Thread
ZTA-DPU-2N	2N	2.000N (2000mN)	M6
ZTA-DPU-5N	5N	5.000N (5000mN)	
ZTA-DPU-10N	10N	10.00N	
ZTA-DPU-20N	20N	20.00N	
ZTA-DPU-50N	50N	50.00N	
ZTA-DPU-100N	100N	100.0N	
ZTA-DPU-200N	200N	200.0N	
ZTA-DPU-500N	500N	500.0N	M10

(When selecting load cell DPU series [High capacity model])

Model	Capacity	Display	Thread
ZTA-DPU-1000N	1000N	1000N (1.000kN)	M10
ZTA-DPU-2000N	2000N	2000N (2.000kN)	
ZTA-DPU-5000N	5000N	5000N (5.000kN)	
ZTA-DPU-10kN	10kN	10.00kN	M18P1.5 Depth 22 Torque 2.2
ZTA-DPU-20kN	20kN	20.00kN	

◎Please refer to Page 17 for the detail of load cell DPU series.
 An example of separated sensor model combined with a load cell **ZTA-LM-500N** Load cell model Choose ZTS or ZTA
 ※In the case where you combine ZTA with a load cell, LM-500N

ZT series Advanced Measurement Examples

Force Gauge

ZTS ZTA Separated Sensor

Motorized Test Stand

MX2 EMX MH2

+

Connecting them via Force Control Cable CB series,

you can maximize the functions such as the following.

※Please contact us for the combinations. (Our service group: +81-(0)532-33-3288)

Preventing Overload

◎For reducing overload risks, a test stand stops when a force gauge senses too much force over its capacity.



If the motorized stand goes beyond the overload value during its operation, it will not continue to operate.

※You cannot prevent overload in some cases.

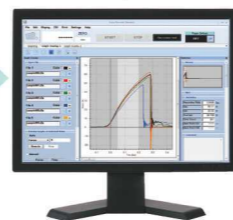
Making Efficient



◎It automatically starts graphing and recording data.

※Graphing software is sold separately.

Automatically it starts graphing.



Force Control Functions

◎Improve operating efficiency

- The force gauge automatically returns to starting point after reaching a pre-set force limit.
- It can change the test speed when a force gauge senses a set point. Using this function, you can move the force gauge quickly until it touches a test sample, which reduces the time taken for measurement.



Go slowly when a force gauge senses 0.1N.

Pause for 60 seconds, applying 500N pressure constantly.

◎Fit for pressure/endurance tests
It can automatically regulate the load so as to be in a pre-set range for a pre-set time period, which is fit for pressure/endurance tests.

Digital Force Gauge

Affordable & Simple Type

DST Series

Covering measurement of low, medium force area, from 2N~1000N. It features simple functions and easy handling with light weight and compactness.

Ideal for hand use

- ◎Hand fitting design
It has an easy gripping shape.
- ◎Light weight
Approx. 460g, light enough to measure with one hand
- ◎Long lasting
You can use up to 30 hours continuously (when backlight off).
- ◎USB power supply available
You can charge it from a PC or mobile battery.

Easy data management on PC

- ◎Connect via USB easily
- ◎Data capture software (Force Logger) included
 - Transfer 10 data / second to PC
 - Automatic detection of max. and min. values
 - Can be saved in CSV format



▲ Supplied force acquiring software Force Logger

Easy quality control

- ◎Pass (OK) judgment function
Easy checking for defects (It indicates OK when a force is within acceptable range.)
- ◎Notice of calibration schedule
You can set the calibration date and notify 30 days before the scheduled date
- ◎Overload alarm
Notify with a warning when the measured value approaches capacity

Compression / Tension compatible

□Size: Approx. W72 × D32 × H181mm
□Weight: Approx. 460g



Check force transition on graphs

Software ZLINK4 To Page 22



Apply Stable Force by Hand

Handle FOH-1 To Page 43



Improve Measuring Repeatability

Test Stand To Page 28

Model table of DST series

Model	Capacity (N)	Display	Thread
DST-2N	2N	2.000N (2000mN)	M6
DST-5N	5N	5.000N (5000mN)	
DST-20N	20N	20.00N	
DST-50N	50N	50.00N	
DST-200N	200N	200.0N	
DST-500N	500N	500.0N	
DST-1000N	1000N	1000N (1.000kN)	

Specifications of DST series

Accuracy	+/-0.2%F.S./+/- 1 digit
Unit of measurement	N(mN/kN), kgf(gf), lbf (※1)
Display	4-digit
Sampling rate	1000Hz (1000 data / sec.) at maximum
Battery	Approx. 30 hours (backlight off); Approx. 14 hours (backlight on) (4.5 hours full charge)
Power	Built-in Ni-MH battery, USB power supply (PC, mobile battery, AC adapter)
Operating environment	Temperature: 0 - 40° C Humidity: 20 - 80% RH
Function	Peak hold (tension and compression)/Comparator (judgement of acceptance or rejection)/Setting sensitivity (3 Levels)/Reversible display/Reversible symbols/Setting lock/ Date time setting/Off timer/ Calibration time notice
Output	USB/RS232C
Overload alarm	Advance notice alarm: Range 90% or above Overload warning (Alarm/Display): Range 110%
Accessory	Force Logger (Data capturing software)/USB cable/AC adaptor/ Attachment (※2)/Carrying/Operation manual/Inspection certificate

※1 kN is available at 1000N, mN and gf are available at 2N and 5N ranges.
The available units are different from Japanese domestic model and international one.
※2 Please refer to Page 35 for the detail of accessory attachments.
◎Weight are slightly different by the ranges.
◎Specifications for international models only.
Specifications for Japanese domestic models vary on functions and performance.

Load Cells

<p>Special Use Load Cell Closing Force of Car Windows SKM-1000N</p> <p>Exclusively for automatic closing force of car windows.</p> <p>IP65</p>  <p>Put this sensor between a car window and its frame to measure the closing force.</p> <table border="1"> <tr><td>Capacity</td><td>1000N</td></tr> <tr><td>Accuracy</td><td>±1.0%F.S. or less</td></tr> <tr><td>Size</td><td>Approx.W70XD50XH30mm</td></tr> <tr><td>Cable Length</td><td>Approx.200mm(Flexible arm)</td></tr> </table> <p>This product is united to the indicator. The united model: ZTS-SKM-1000N/ZTA-SKM-1000N</p> <table border="1"> <tr><td>Model</td><td>Capacity</td></tr> <tr><td>SKM-1000N</td><td>1000N</td></tr> </table>  <p>※You cannot combine it with FA Plus due to its flexible arm.</p>	Capacity	1000N	Accuracy	±1.0%F.S. or less	Size	Approx.W70XD50XH30mm	Cable Length	Approx.200mm(Flexible arm)	Model	Capacity	SKM-1000N	1000N	<p>Special Use Load Cell Handbrakes Force of Two-Wheelers PK1-500N</p> <p>Exclusively for gripping hand breaks force of two-wheelers.</p> <p>IP65</p>  <p>Put this sensor on hand breaks and grip them together to measure the force.</p> <table border="1"> <tr><td>Capacity</td><td>500N</td></tr> <tr><td>Accuracy</td><td>±1.0%F.S. or less</td></tr> <tr><td>Size</td><td>Approx.W102XD35XH40mm</td></tr> <tr><td>Cable Length</td><td>Approx.1.5m</td></tr> </table> <table border="1"> <tr><td>Model</td><td>Capacity</td></tr> <tr><td>PK1-500N</td><td>500N</td></tr> </table> 	Capacity	500N	Accuracy	±1.0%F.S. or less	Size	Approx.W102XD35XH40mm	Cable Length	Approx.1.5m	Model	Capacity	PK1-500N	500N	<p>Special Use Load Cell Foot Brakes Force of Cars PK2-1500N</p> <p>Exclusively for stepping foot brakes of cars.</p> <p>IP65</p>  <p>It measures footbrake manipulating force by putting the load cell on foot breaks and stepping them together.</p> <table border="1"> <tr><td>Capacity</td><td>1500N</td></tr> <tr><td>Accuracy</td><td>±1.0%F.S. or less</td></tr> <tr><td>Size</td><td>Approx.W50XD70XH27mm</td></tr> <tr><td>Cable Length</td><td>Approx.1.5m</td></tr> </table> <table border="1"> <tr><td>Model</td><td>Capacity</td></tr> <tr><td>PK2-1500N</td><td>1500N</td></tr> </table> 	Capacity	1500N	Accuracy	±1.0%F.S. or less	Size	Approx.W50XD70XH27mm	Cable Length	Approx.1.5m	Model	Capacity	PK2-1500N	1500N	<p>For Torque(only for eZ connect) Torque Load Cell eHT series</p> <p>It measures turning/twisting force.</p>  <p>It measures torque using optional attachments such as pin chuck, socket holder, torque driver etc. Please see another torque catalog for the details of the attachments.</p> <table border="1"> <tr><td>Capacity</td><td>0.5N-m~10N-m</td></tr> <tr><td>Accuracy</td><td>±0.5% F.S. or less</td></tr> <tr><td>Size</td><td>φ38×138mm</td></tr> <tr><td>Cable length</td><td>Approx.0.5~1m (curl cable)</td></tr> </table> <table border="1"> <tr><td>Model</td><td>Capacity</td></tr> <tr><td>eHT-0.5N</td><td>0.5N-cm(※1)</td></tr> <tr><td>eHT-2N</td><td>2N-m(200N-cm)</td></tr> <tr><td>eHT-5N</td><td>5N-m(500N-cm)</td></tr> <tr><td>eHT-10N</td><td>10N-m(1000N-cm)</td></tr> </table> <p>※1 Displayed unit is "N-cm" only. ※You can switch N-m(N-cm) to kgf-m(kgf-cm) or lbf-in(ozf-in).</p>	Capacity	0.5N-m~10N-m	Accuracy	±0.5% F.S. or less	Size	φ38×138mm	Cable length	Approx.0.5~1m (curl cable)	Model	Capacity	eHT-0.5N	0.5N-cm(※1)	eHT-2N	2N-m(200N-cm)	eHT-5N	5N-m(500N-cm)	eHT-10N	10N-m(1000N-cm)
Capacity	1000N																																																								
Accuracy	±1.0%F.S. or less																																																								
Size	Approx.W70XD50XH30mm																																																								
Cable Length	Approx.200mm(Flexible arm)																																																								
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SKM-1000N	1000N																																																								
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eHT-5N	5N-m(500N-cm)																																																								
eHT-10N	10N-m(1000N-cm)																																																								

※Load cells with the mark (eZ) can be combined with eZ Connect series. eZ Connect series are comprised of a sensor interchangeable amplifier and a load cell. Put "e" at the head of a load cell model for eZ Connect to tell it apart from normal model. Please see the page 16 for the details.

What is IP?

IP (International Protection) is a standard which is based on IEC Standard 529 for solid foreign materials, electric devices for water and cabinet.

(Explanation of the IP code)

IP X X

- The second code (IP 0 to 8 for water penetration)
- The first code (IP 0 to 8 for human body and sold foreign materials)

(Some IMADA load cells are IP67 or IP65.)

IP 6 7

- Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion for 30 minutes.)
- No ingress of dust; complete protection against contact (dust tight)

IP 6 5

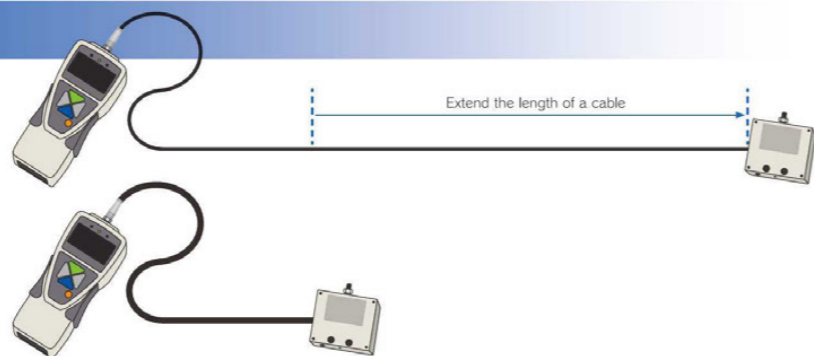
- Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects at least for 3 minutes 100 liter per minute.

The load cell itself comply with IP.
Amplifier (indicator), connecting parts and connector parts do not comply with IP.

Custom Order Examples

[Example:Extend the length of a cable]

We can extend the length of a cable for gauge-PC connection or loadcell-amplifier connection.



[Example:Enhance flexibility of a cable]

We can offer high-flex cable to reduce risks of disconnection.
※We cannot offer it in some cases Contact us for further information.

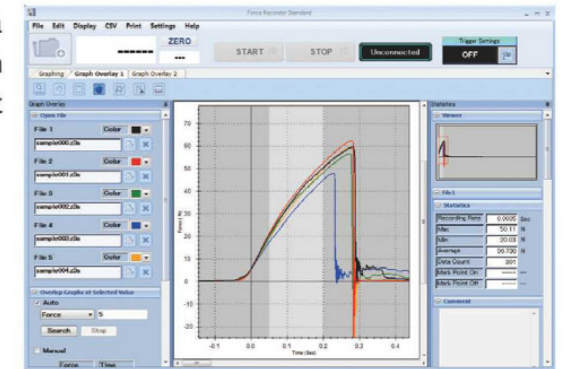
Data Collection and Analysis Software

With software, you can transfer load data from a force gauge to PC via USB or RS232C cable and see force transition graphically in real time. Software allows easy data management and analysis.






Advantage of Using The Software

With software, you can transfer data from a force gauge to a PC in real time via a cable. It shows test data graphically on a PC, and you can see force transition visually. Moreover, it automatically calculates the statistics and stores recorded data, enabling you to manage data with ease.

※All software is available in English or Japanese.



Software Lists

CD	Name of software	Purpose	Compatible model	Connecting port	Max. sampling rate
	Force Recorder Light	for drawing Force-Time Graph This software is moderate-priced edition.	ZTS, ZTA, eZT, HTGS/HTGA, DTXS/DTXA, FA Plus2	USB	Max. 2000Hz
	Force Recorder Standard	for drawing Force-Time Graph	ZTS, ZTA, eZT, HTGS/HTGA, DTXS/DTXA, FA Plus2	USB	Max. 2000Hz
	Force Recorder Professional	for drawing Force-Displacement Graph	ZTA, eZT, HTGA, DTXA, FA Plus2	USB	Max. 2000Hz
	Force Logger Plus	for acquiring data from up to 4 force gauges	ZTS, ZTA, eZT, DTXS/DTXA, FA Plus2	USB	Max. 10Hz
	ZLINK4	for drawing Force-Time Graph	eZT, DTXS/DTXA	USB	Max. 50Hz

 **Force Recorder Light**
Force-Time Graphing Software (Moderated Price Model)

Compatible models: ZTS, ZTA, eZT, HTGS/HTGA, DTXS/DTXA, FA Plus2

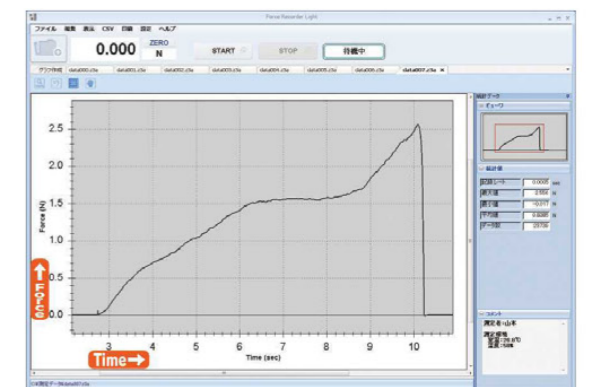
Affordable model focusing on graph acquisition

Acquire measuring data accurately and precisely

- It graphs measurement accurately and precisely at high sampling rate, up to max. 2000Hz.

Create report instantly

- You can easily save data in Word, Excel and PDF format, reducing time to create reports.
- It automatically inputs graphs, dates & time, and statistics. You can also input comments manually.



•Please refer to the [Operating Environment] in Page 21 for details.

Force Recorder Standard

Force-Time Graphing Software

Compatible models: ZTS (to Page 09), ZTA (to Page 11), eZT (to Page 16), HTGS/HTGA (See a torque catalog), DTXS/DTXA (See a torque catalog), FA Plus2 (To Page 16)

Analyze data easily and accurately, and create report with ease

- **Make efficient by simple manipulations and useful functions.**
 - Easy steps for recording: Connect a force gauge and PC with a USB cable, and click START.
 - You can compare data easily due to plural tabs.
 - It automatically calculates Max/Min/Ave values.
 - You can insert comments.
 - Maximum 5 graphs can be overlaid in a table, allowing easy comparison and accurate analysis.
 - **Capture measuring data accurately.—**
 - It graphs the measurement accurately due to high sampling rate, at Max.2000Hz. A peak value can be captured more precisely due to the higher sampling rate.
 - Comparison of 2000Hz and 100Hz. 2000Hz is more to capture peak value than 100 Hz.
 - **Create reports quickly**
 - You can easily save data in Word, Excel, and PDF format, reducing the time to create reports.
 - It automatically inputs graphs, date & time, and statistics. You can also input comments manually if necessary.
- Please refer to the right [Operating Environment 1] for the details.

Force Recorder Professional

Force-Displacement Graphing Software

Compatible models: ZTA (To Page 11), eZT (To Page 16), HTGA (See a torque catalog), DTXA (See a torque catalog), FA Plus2 (To Page 16)

Draw and analyze force vs displacement graphs (FS curve)

In force-displacement measurement, a dedicated device measures force and travel amount (compression, tension) of the force gauge on the motorized stand as displacement at the same time.

- **You can draw force vs displacement graphs**
 - Force-displacement graph can be created by connecting the linear scale (Page 24) or test stand with inbuilt linear scale (FA model) (Page 33) together with force gauge.
 - FSA series (Page 45) include this software.
- **Professional is basically the same as Standard in performance&function.**
 - See the [Operating Environment] for the detail.

Operating Environment for Force Recorder series, Force Logger Plus, ZLINK4 [Operating Environment]

OS	Windows 7/8/8.1/10
Hardware	CPU: Pentium4 (1GHz more) more recommended Memory: 2GB more recommended Hard disk: 10GB(Data storage area) more
Platform	.NET Framework4.6 later
Execute environment	Microsoft Internet Explorer6.0 later Windows Installer 3.1 later
Image size	1024×768 pixel more (ZLINK4 Resolution 1280x768 pixel or more)
Connection port	USB1.1, USB2.0 connector (RS232C is available when connected to old models of IMADA force gauges)※

※Compatible force gauges: DS2, Z2, HTG2, DTX2 series. (RS232C cable is required.)

Force Logger Plus

Multiple Gauges Managing Software

Compatible models: ZTS (to Page 09), ZTA (to Page 11), eZT (to Page 16), DST (to Page 14), DSV (to Page 15), HTGS/HTGA (See a torque catalog), DTXS/DTXA (See a torque catalog), FA Plus2 (To Page 16)

Manage data up to 4 force gauges

- **Acquire data up to 4 force gauges, by connecting to the supplied USB hub**
 - Easy USB connection
 - Acquire single data or synchronized data (up to 10 times/sec)
 - **Simple data management**
 - You can record data by each serial number of the force gauge, together with the date & time of recording and person in charge.
 - You can register the force gauge by each serial number and manage the force gauge with an operator's name and a department.
 - **Force gauge setting**
 - You can easily set functions of the force gauge by the software.
- Please refer to the left [Operating Environment 2] for details. of operating environments.

ZLINK4

Force-Time Graphing Software for DST/DSV

Compatible models: DST (to Page 14), DSV (to Page 15)

Draw force-time graph easily

- **Graphing at Max. 50Hz**
 - You can open multiple graphs with tabs
 - Zoom specific parts in detail easily with zoom function
 - **High operability by trigger function**
 - Automatic recording by setting the force value of when to start and end. You can also set the recording time.
- Please refer to the left [Operating Environment 2] for details of operating environments.

Comparison Table Function Comparison

Software	Light	Standard	Professional	Force Logger Plus	ZLINK4
Feature	Graphing only	With editing functions	Force-displacement graphing	Connect up to max. 4 force gauges	Simple Graphing
Graph	Force-time	Force-time	Force-time; Force-displacement	N/A	Force-time
Data transferring speed (Max)	2000 data/sec	2000 data/sec	2000 data/sec	10 data/sec	50 data/sec
Recording data point (Max)	7.2 million	7.2 million	7.2 million	65 thousand	7.2 million
Displacement output	N/A	N/A	✓	N/A	N/A
Graph overlaying function	N/A	✓	✓	N/A	N/A
Trigger function	N/A	✓	✓	N/A	✓
Point marking	N/A	✓	✓	N/A	N/A
Border line function	N/A	✓	✓	N/A	N/A
Capture function	N/A	✓	✓	N/A	N/A
Graph scaling	✓	✓	✓	N/A	✓
Statistics output	✓	✓	✓	✓	✓
Comment	✓	✓	✓	N/A	✓
Print	✓	✓	✓	✓	✓
CSV file converting	✓	✓	✓	✓	✓
Preview saving (PDF/Word/Excel)	✓	✓	✓	N/A	✓
Force gauge setting	✓	✓	✓	✓	✓
Test condition	N/A	N/A	N/A	✓	N/A
Managing force gauge	N/A	N/A	N/A	✓	N/A

※Old models of force gauges may not be compatible partially or wholly. Contact us for the detail about old models.

Cables/Printer

Cables expand the functionality of digital force gauges and test stands. We also provide a printer.



ZTA To Page 11	ZTS To Page 09	eZT To Page 16	DSV To Page 15	DST To Page 14	FA Plus2 To Page 16
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The Cables to Connect a Force Gauge to an External Devices

RS232C cable Connects a PC to a force gauge, enabling to record the measurement and transmit command signals from the PC to the gauge.	CB-208 Length:Approx.3m	CB-208 Length:Approx.3m	CB-208 Length:Approx.3m	CB-203 (9P)*1 Length:Approx.3m	CB-203 (9P)*1 Length:Approx.3m	Contact us.
Digimatic cable Connects Mitutoyo Digimatic Mini Processor (a portable printer) to a force gauge for printing the measurement.	CB-308 Length:Approx.3m	CB-308 Length:Approx.3m	CB-308 Length:Approx.3m			Contact us.
Analog cable Connects analog devices such as a pen recorder to a force gauge, enabling to record force transition. ※CB-118 works for "-AN" option. ※1	CB-108 Length:Approx.3m	CB-108 Length:Approx.3m	CB-108 Length:Approx.3m			Contact us.
Open End cable Connects a force gauge to a special device.	CB-908 Length:Approx.3m	CB-908 Length:Approx.3m	CB-908 Length:Approx.3m			Contact us.
External Contact Point cable Enables to measure external contact points.	CB-808 Length:Approx.3m	CB-808 Length:Approx.3m	CB-808 Length:Approx.3m			Contact us.

The Cables to Connect a Force Gauge/an Amplifier to a Test Stand

Force Control cable ※2 Connects a test stand (MX/MH) to a force gauge/an amplifier, activating motion control by set force values and an overload-preventing function.	CB-508 Length:Approx. 1.5m	CB-508 Length:Approx. 1.5m	CB-508 Length:Approx. 1.5m			
Force Control cable ※2 Connects a test stand (MX2/MH2/EMX) to a force gauge/an amplifier, activating motion control by set force values and an overload-preventing function.	CB-518 Length:Approx. 1.5m	CB-518 Length:Approx. 1.5m	CB-518 Length:Approx. 1.5m			
Displacement cable (MX2-FA/MH2-FA connecting) ※3(※2) Allows displacement output by connecting a force gauge/an amplifier to a test stand equipping a linear scale (MX2-FA/MH2-FA).	CB-718 Length:Approx. 1.5m		CB-718 Length:Approx. 1.5m			
Displacement cable (EMX-FA connecting) ※3(※2) Allows displacement output by connecting a test stand equipping a linear scale (EMX-FA) to a force gauge/an amplifier.	CB-728 Length:Approx. 1.5m		CB-728 Length:Approx. 1.5m			

The Cable to Connect a Test Stand to an External Device

External Signals I/O Cable Connects a test stand (MX2-CN/MH2-CN/EMX), activating the external control.	CB-706 Length:Approx. 1.5m
--	--

※1 ZTS/A series force gauges output raw sensor data as fast analog voltage without conversion with -AN option.
 ※2 Please refer to "ZT series Advanced Measurement Examples" on Page 13
 (A test stand stops when a force gauge senses force beyond its capacity(overload-preventing function) however, it cannot prevent overload completely. We do not guarantee the complete overload-prevention.)
 ※3 It also activates motion control by set force values and an overload-preventing function.

Printer DP-1VA

(Mitutoyo Digimatic Mini Processor)



※The actual product may differ from the picture.

- Prints out the display value (※)
- Calculates maximum value, minimum value, average value, standard deviation, etc. and prints them out.

※Contact us for the details of force gauge setting

Compatible models
ZTA/ZTS/eZT/HTGS/HTGA/DTXS/DTXA

The Cables for Past Models

If you need a cable for past-model force gauges/torque gauges, please refer to the right list. If your model is not mentioned in the list, please contact us.

	ZP.22 series	HTG2,DTX2 series	DS2 series
Analog cable	CB-104	CB-104	CB-101
RS-232C cable	CB-204	CB-204	CB-203
Digimatic cable	CB-304	CB-304	CB-301
Force Control cable	CB-501(Connect with MX series)		

Examples of Cable Applications

- **with Digital Force Gauge ZT series**
It enables you to
 - detect abnormalities using a buzzer / light / your equipment together. (Using the functions of comparator and overload output)
 - record the force value of contact point in a switch tactile test or broken point in a cable strength test. (Using the function of the external contact point output)
 - show the point at the moment contact point of switch tactile test or a broken point of cable strength test on a graph using software (Force Recorder Standard/Professional). (Using the mark point function)
 - control an external device when the force gauge senses a set point. (Using sub-comparator function; Available only in ZTA/eZT series)
- **with Motorized Test Stand EMX, MX2(MH2) series (Option-CN version)**
It enables you to
 - Operate externally from a foot switch and the like.
 - Improve equipment safety with an interlock mechanism.
 - Link wire conduction and test stand activities.



Built-in Linear Scale Unit

You can connect this linear scale to ZTA(P11) series/eZT(P16) series to measure force and displacement. You can mount it on your equipment easily.

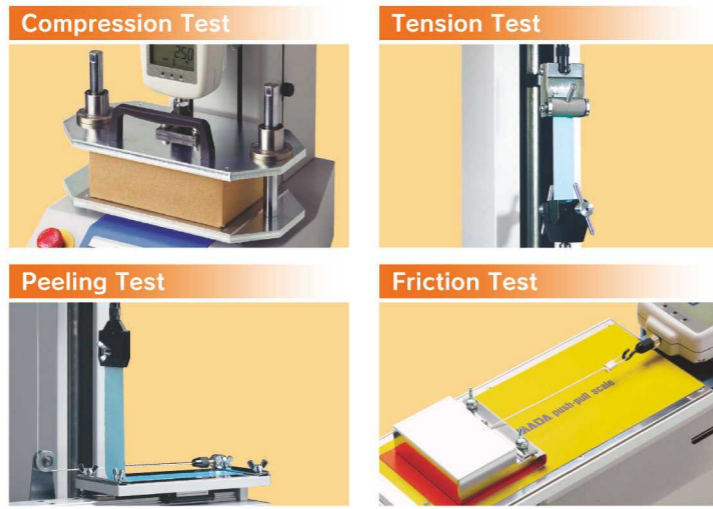
Model	DMK-100	DMK-300	DMK-500	DMK-800
Stroke(mm)	Max.100	Max.300	Max.500	Max.800
Size(mm)	254X21	454X21	654X21	954X21
Fixing screw	M4	M4	M4	M4



Motorized Test Stands

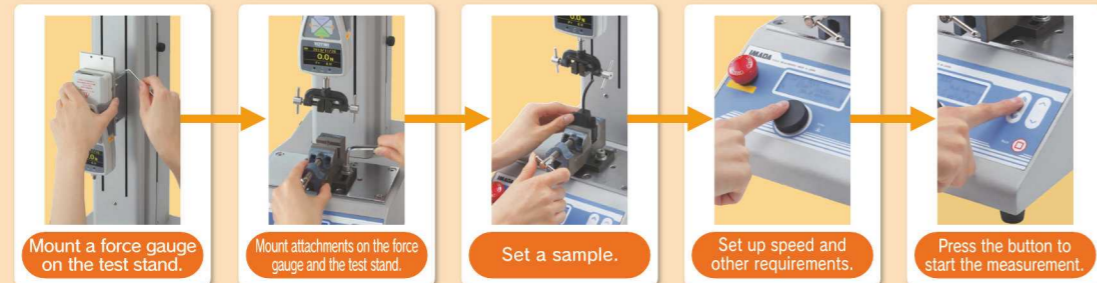
They provide constant test speed and apply force straight. They realize the high-repeatable measurement.

Combining a test stand with a force gauge and attachments, you can create a testing machine to meet your testing needs.



How to Use Motorized Test Stand

(Using Example: MX2 series)



As options, we can extend stroke, change speed range, and more to meet your measurement needs. Some models can equip a liner scale (FA version) to measure / analyze the relationships of force and displacement. The details are on Page 33.

Standard Type

- Measuring speed can be set digitally.
- This type of stands have a monitor to show measuring conditions, so that you can set them easily.
- You can conduct a durability test using its timer function, and repeat test using its counter functions.



MX2 series

Connect with External Devices
Application examples of how cables are used
To Page 13 and Page 24

Analyze Force-Displacement Relation
Force-Displacement Analysis Unit
To Page 45

- Option**
- Length Scale
 - FA version
 - Long Stroke
 - Speed Range Change
 - Output and Input External Signal
- Please refer to Page33



Lists	MX2-500N	MX2-1000N	MX2-2500N
Capacity	500N	1000N	2500N
Speed	10-300mm/min	10-300mm/min	10-300mm/min
Maximum Sample Height(※1)	Approx.235mm	Approx.300mm	Approx.320mm
Weight	Approx.18kg	Approx.19kg	Approx.26kg
Size	Approx.W220xD380xH562mm	Approx.W260xD410xH660mm	Approx.W260xD410xH644mm

MH2-500N

●Horizontal Type

Connect with External Devices
Application examples for using cables
To Page 13 and Page 24

Analyze Force-Displacement Relation
Force-Displacement Analysis Unit
To Page 45

- Option**
- Length Scale
 - FA version
 - Speed Change
 - Output and Input External Signal
- Please refer to Page33



Lists	MH2-500N
Capacity	500N
Speed	10-300mm/min
Maximum Sample Length(※1)	Approx.245mm
Weight	Approx.14kg
Size	Approx.W554xD220xH219mm

Advanced Type EMX-1000N

- The wide range of speed (0.5-600mm/min) and travel setting function fulfill various measuring requirements.
- It has the highest rigidity, offering greater accuracy.
- You can set travel digitally, equalizing measuring conditions.
- It stores maximum 5 measuring patterns in itself, improving measuring efficiency.
- It equips I/O connector to allow for communications with external devices, so that you can build it into your equipment to improve measurement efficiency.



■Specification

Lists	EMX-1000N
Capacity	1000N
Speed	0.5-600mm/min
Maximum Sample Height(※1)	Approx.320mm
Weight	Approx.23.5kg
Size	Approx.W280xD410xH643mm

Simple Type

- This type is the simplest.

MX series

Option

- Speed/ Length Meter
 - Length Scale
 - Long Stroke (except MX-5000N)
 - Speed Change
- Please refer to Page33



■Specification

Lists	MX-500N	MX-1000N	MX-5000N
Capacity	500N	1000N	5000N
Speed	10-300mm/min	8-240mm/min	10-300mm/min
Maximum Sample Height(※1)	Approx.235mm	Approx.420mm	Approx.340mm
Weight	Approx.13kg	Approx.24kg	Approx.30kg
Size	Approx.W214xD426xH573mm	Approx.W263xD368xH903mm	Approx.W250xD420xH161mm

Note: ①A force gauge is separately sold. ②Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's capacity. (※1)The maximum height or length means the distance between the test stand table and the thread of the force gauge ZT series general type(1000N or less)at the highest position of the test stand. The distance does not include attachments. The distance of MX-5000N or MX2-2500 is in case of mounting ZT series high capacity type.

Motorized Test Stand

Connect with External Devices
Application Example for using cables
To Page 13 and Page 24

Analyze Force-Displacement Relation
Force-Displacement Analysis Unit
To Page 45

- Option**
- FA version
 - Long Stroke
- Please refer to Page33



EMX-1000N

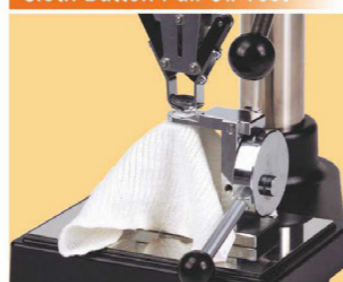
Manual Test Stands

They provide constant test angles, offering higher repeatability than measurement by hand.

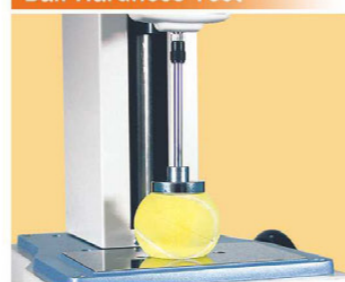


Combining a test stand with a force gauge and attachments, you can create a testing machine to meet your testing needs.

Cloth Button Pull Off Test

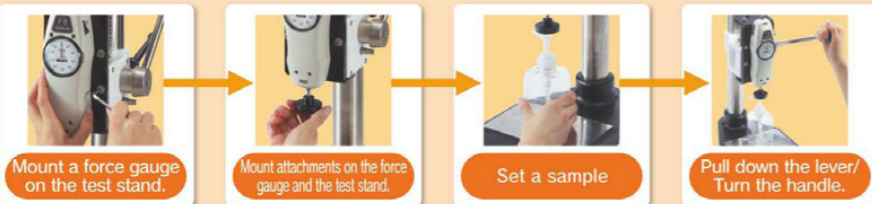


Ball Hardness Test



How to Use Manual Test Stand

(Using Example: SVL-1000N)



As options, we can extend its stroke or mount a length scale. The detail is on Page 33.

Simple Type SVL-1000N/SVH-1000N

○The lever type improves the measuring efficiency. The handle type realizes stable measurement.

■Specification

Lists	SVL-1000N (Lever type)	SVH-1000N (Handle type)
Capacity	1000N	1000N
Maximum Sample Height(※1)	Approx. 225mm	Approx. 225mm
Maximum Stroke	60mm	60mm
Feed Amount	60 mm / 170 degree turn of the lever	3mm/1 turn
Weight	Approx. 7.3kg	Approx. 7.7kg
Size	Approx. W200xD280xH410mm	Approx. W200xD280xH410mm

※A Maximum stroke means maximum traveling distance of a force gauge.
 ※B GF-1/2: These are necessary adapters for mounting a chuck fixture on the tables of the stand. (Separately sold)



Long Stroke Type HV series

○HV series have a long stroke, ideal for testing extensible or large specimens.
 ○They are operated by a handle.

■Specification

Lists	HV-500NII	HV-1000N	HV-3000N
Capacity	500N	1000N	3000N
Maximum Sample Length(※1)	Approx. 240mm	Approx. 375mm	Approx. 415mm
Feed Amount	2mm/1 turn	1.2mm/1 turn	0.6mm/1 turn
Weight	Approx. 1.0kg	Approx. 1.8kg	Approx. 2.4kg
Size	Approx. W327xD309xH597.5mm	Approx. W305xD275xH730mm	Approx. W355xD310xH744mm



Note: ○A force gauge is separately sold. ○Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's capacity. (※1) The maximum height or length means the distance between the test stand table and the thread of the force gauge ZT series general type (1000N or less) at the highest position of the test stand. The distance does not include attachments. The distance of HV-3000N or SH-3000N is in case of mounting ZT series high capacity type.

Manual Test Stand

Low Capacity or Small Type

○This type is ideal for measurement in capacity up to 50N. ○You can move a force gauge at light feed.

FCA-50N

○You can decide a travel distance to move a force gauge, and measure the force value to the distance.

■Specifications

Model	FCA-50N
Capacity	50N
Distance	0~45mm (Adjustable with the limit knob)
Measuring Space	50~80mm (※1)
Weight	Approx. 3kg
Size	Approx. W75xH296xD178mm
Compatible force gauge	ZTS ZTA DST DSV (※2)

※1 The measuring space means the distance between the test stand table and the thread of a force gauge. The distance depends on where you put the force gauge.
 ※2 You cannot combine high capacity model force gauges with this stand.
 ※We also offer a food testing unit including this FCA-50N. For further information, please see "Catalog for Torque testers and Food testers."



KV-50N

○It is a desktop type.
 ○It can move a force gauge at light feed (1.0mm/1 turn).

■Specification

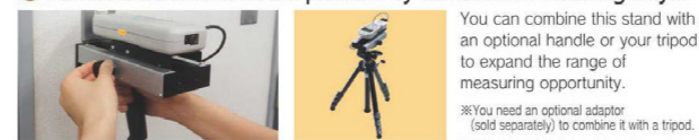
Lists	KV-50N
Capacity	50N
Maximum Sample Height(※1)	Approx. 63mm
Feed Amount	1.0mm/1 turn
Weight	Approx. 2kg
Size	Approx. W140xD180xH220mm

Option
 ●Length Scale
 Please refer to Page 33



MS series

○Various measurements are possible by the different installing ways.



Analyze Force-Displacement Relation
 Force-Displacement Analysis Unit
 To Page 45

■Specification

Lists	MSF-50N	MSL-50N
Type	Standard	FA version (Page 33)
Capacity	50N	
Maximum Sample Height(※1)	Approx. 44mm	
Feed Amount	1.8mm/1 turn	
Weight	Approx. 1.2kg	
Size	Approx. W110xD81xH204mm	



Horizontal Type SH series

○Horizontal type: You can set sample easily.

■Specification

Lists	SH-1000N	SH-3000N
Capacity	1000N	3000N
Maximum Sample Length(※1)	Approx. 250mm	Approx. 355mm
Feed Amount	1.2mm/1 turn	0.6mm/1 turn
Weight	Approx. 1.5kg	Approx. 2.2kg
Size	Approx. W560.5xD265xH219.5mm	Approx. W696.5xD285xH225mm





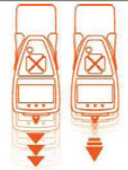
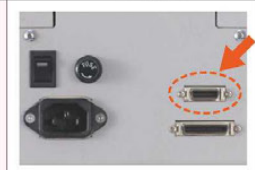


Option
 ●Length Scale
 Please refer to Page 33



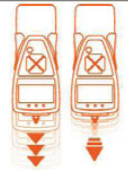
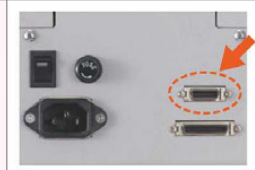
Options for Test Stands

You can add the options below to expand functionality of test stands or improve measuring efficiency.

Options for The Manual and Motorized Test Stands

Length Scale (-S) It digitally indicates travel distance of a force gauge. (We recommend another option [FA version] below if you need to analyze the relations of force and displacement.)		Long Stroke (-L) We extend the stroke of stand's column. (Maximum stroke differs among models. Besides, some models could decrease their force capacity. Please contact us for further information.)	
Speed / Length Meter (-E) It displays the measuring speed and travel distance of force gauges.		FA version (-FA) We build a linear scale into a test stand to output travel distance of a force gauge, and you can utilize it for analysis of force-displacement relations. For further information of force-displacement analysis unit, please see page 45.	
Speed Range Change (-V○○) We can change the range of measuring speed. (The customizable range differs among models. Besides, some models could decrease their force capacity. Please contact us for further information.)		Output and Input External Signals (-CN) We can equip a connector for external input and output. For example, you can connect a footswitch with the stand via the connector to operate it by the footswitch (like step on it to start measurement). Please contact us for further information.	

Limited Options for The Motorized Test Stands

Speed / Length Meter (-E) It displays the measuring speed and travel distance of force gauges.		FA version (-FA) We build a linear scale into a test stand to output travel distance of a force gauge, and you can utilize it for analysis of force-displacement relations. For further information of force-displacement analysis unit, please see page 45.	
Speed Range Change (-V○○) We can change the range of measuring speed. (The customizable range differs among models. Besides, some models could decrease their force capacity. Please contact us for further information.)		Output and Input External Signals (-CN) We can equip a connector for external input and output. For example, you can connect a footswitch with the stand via the connector to operate it by the footswitch (like step on it to start measurement). Please contact us for further information.	

Options Available for Motorized Test Stands

	Model	MX-500N	MX-1000N	MX-5000N	MH-1000N	MH-300	MX2-500N	MX2-1000N	MX2-2500N	MH2-500N	EMX-1000N
Speed/ Length Meter	-E	○	○	○	○	○	○	○	○	○	○
Length Scale	-S	○	○	○	○	○	○	○	○	○	○
FA Specification	-FA	○	○	○	○	○	○	○	○	○	○
Long Stroke (mm)	-L	○ +200 ※1	○ +250 ※1	○	○	○	○ +200	○ +300	○ +300	○	○ +300
	-2L	○	○	○	○	○	○ +400 ※2	○	○	○	○
Output and Input External Signals	-CN	○	○	○	○	○	○	○	○	○	○ ※3
Speed Range Change (mm/min) ※4	-V●●	○ 40~1200 20~600 2~60	○ 40~1200 27~800 20~600 15~400 4~120	○ 5~150	○ 30~900 30~600 15~450 3~90 3~80	○	○ 30~900 30~600 15~450 3~90 1.5~45	○ 35~1000 25~750 5~150 2.5~75	○ 2.5~75 5~150	○ 30~900 30~600 15~450 3~90 1.5~45	○

※1 It may decrease its capacity. ※2 The -2L option is incompatible with length scale (-S option). Additional charge for wooden packaging is required for shipping.
 ※3 It is already installed as the standard function. ※4 Some models could decrease their force capacity. Please contact us for further information.

Examples of Model with Options

- When you want to extend the stroke of MX2-500N → Choose the option "Long Stroke (-L)" = **MX2-500N-L**
- When you want to change the speed range of MX2-500N → Choose the option "Speed Range Change (-V●●)" = **MX2-500N-V600**

※ In ●●, we put figure of speed. → Example) When the speed range changes into the fastest speed 20~**600** mm/min The number is here.

Options Available for Manual Test Stands

	Model	SVL-1000N	SVH-1000N	HV-500NII	HV-1000N	HV-3000N	KV-50N	MSF-50N	SH-1000N	SH-3000N
Length Scale	-S	○	○	○	○	○	○	○	○	○
Long Stroke (mm)	-L	○ +200 ※1	○ +200 ※1	○ +200 ※2	○ +150 ※2	○	○	○	○	○

※1 We can extend the column length, but travel distance of force gauge does not change. ※2 It may decrease its capacity.

Examples of Model with Options.

- When you want to see the travel distance of a force gauge using SVH-1000N → Choose the option "Length Scale (-S)" = **SVH-1000N-S**

The Helpful Functions of Motorized Test Stand

The optional functions can be activated by connecting a force gauge ZTS/ZTA series to a motorized test stand via the suitable cable.

① The Overload Preventing Function

② Force Control Functions

For further information, see page 13

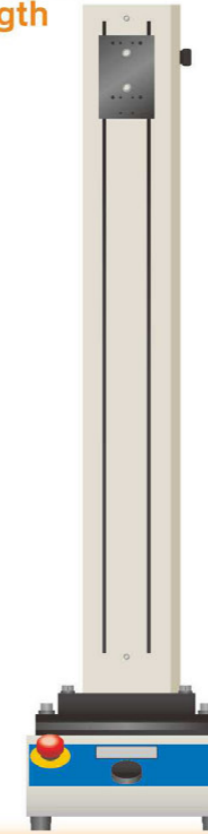
Examples of Customized Test Stands

We provide made-to-order test stands to fit your needs.

Changing Test Speed Range / Extending Column Length

[This is recommended when you...]

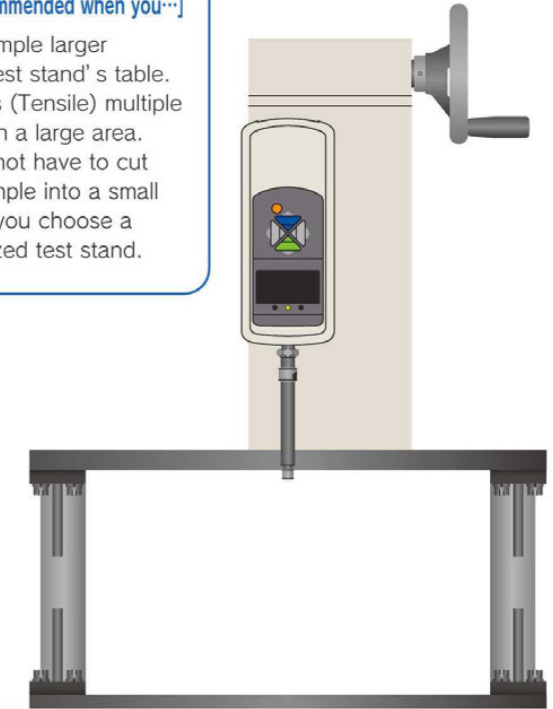
- Test stretch samples.
- Compress (Tensile) long.
↑ We can extend column length of both horizontal and vertical test stands.
- Test speedily.
- Test slowly.
↑ We can change the range of measuring speed.



Testing Large Samples

[This is recommended when you...]

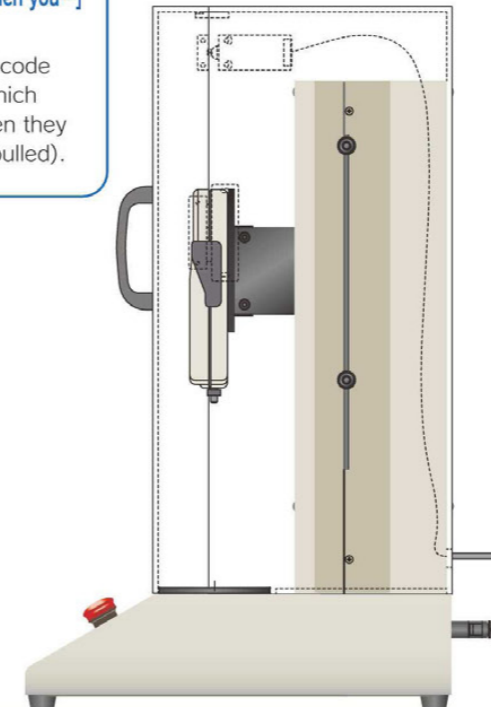
- Test a sample larger than a test stand's table.
- Compress (Tensile) multiple points on a large area.
→ You do not have to cut your sample into a small piece if you choose a customized test stand.



Carrying Interlock Equipment to Improve Safety

[This is recommended when you...]

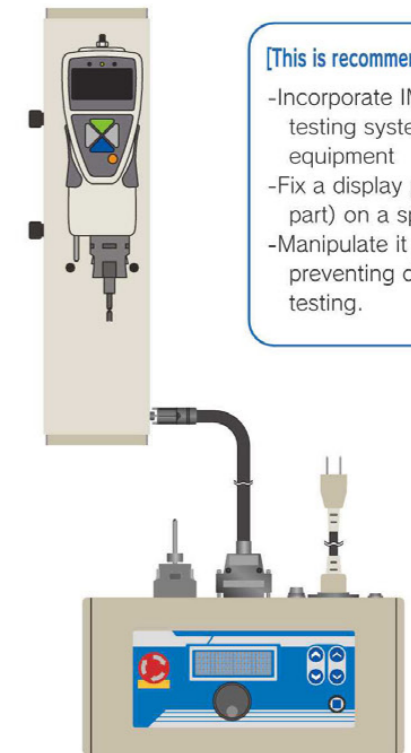
- Comply with your company's safety code
- Test the samples which could fly apart when they are compressed (pulled).



Separating a Display Part from a Drive Part for Built-in

[This is recommended when you...]

- Incorporate IMADA force testing system into your equipment
- Fix a display part (a drive part) on a specific place
- Manipulate it apart, preventing dangers in testing.

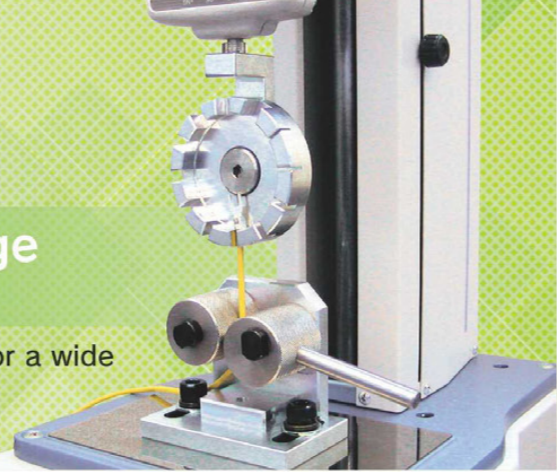


Please feel free to contact us about made-to-order issues. We will provide the best solution for you.

Attachments

The fixtures mounting on a force gauge thread or a test stand table.

Attachments are integral components of testing systems, designed for a wide variety of force testing applications for tension, compression, peeling, COF, and more.



The Attachment Types and How to Use

IMADA attachments are separated to 2 types generally.

1 Attachments to be mounted on a force gauge.

A force gauge's thread is **M6** or **M10** screw, and type **1** attachments are designed to fit into the thread. You can choose one from a wide range of attachments, and mount it on a force gauge's thread to complete a force tester.

2 Attachments to be mounted on a test stand table.

Type **1** can be mounted on a test stand with a grip mounting adapter.※

※It is attached with test stands (except some models).

- ⚠ Weight of an attachment is applied as force to a force gauge, therefore, please choose an attachment whose weight is 10% or less of the force gauge's capacity.
- ⚠ Please contact us before purchase to choose the most appropriate attachment for your testing. Some samples cannot be tested appropriately due to their shapes or materials. We are pleased to help you choose the best attachment to meet your testing needs.
- ⚠ Some attachments are in accordance with Japanese Industrial Standard(JIS). A force gauge and a test stand are required for measurements complying with JIS. Please feel free to contact us for the details. When you need other standard such as ISO or ASTM, please contact us as well.

Accessory Attachments

The IMADA force gauges come with attachments below for basic compression/tension tests.

Standard Type **M6**
(Accessory attachments for the force gauges whose capacities are 1000N or less)

Force gauges whose capacities are 100N or less come with aluminum made attachments (A-type). Steel made attachments (S-type) are included in force gauges whose capacities are from 200N to 1000N.

A-1/S-1/SR-1 	A-2/S-2 	A-3/S-3 	A-4/S-4
A-5/S-5 	A-6/S-6 	A-7/S-7 	A-8/S-8

The number of attachments varies by models.
ZTS/ZTA Basic model:①~⑧, ZTS/ZTA-DPU-2~500N:①~⑧,
DST/DSV:①~⑥,PS/PSM:①~⑧,FB:①~⑥
For 1000N capacity, SR-1 is included instead of S-1.

High Capacity Type **M10**
(Accessory attachments for the force gauges whose capacities are higher than or equal to 1000N)

B-1 	B-2 	B-3 	B-4
B-5 	B-6 	B-7 	B-8

The number of attachments varies by models.
ZTS/ZTA-2500N/5000N:①~⑧,
ZTS/ZTA-DPU-1000~5000N:①~⑧,PSH:①~⑧

On our website, you can see a wide range of force testing applications, and download a specification sheet of each product. Please feel free to contact us.
IMADA
●IMADA service group telephone number: +81(0)532-33-3288 <http://www.forcegauge.net/en/>

Attachments for Compression Testing

We offer fixtures for a variety of compression testing such as a durability test, a bending test, a sticking test, and more.

Compression Test Fixture for Small Spots PG-2/3/4/5

Ideal for compression and penetration tests of small samples.

PG-2

○Representative applications
Plastic injection components, Switch, LCD panel, Food

Sponge hardness test with PG-2.

Models	PG-2	PG-3	PG-4	PG-5
Capacity(N)	100	100	200	200
External diameter(mm)	Approx.φ2	Approx.φ3	Approx.φ4	Approx.φ5
Weight(g)	Approx.2	Approx.3	Approx.4	Approx.5
Mounting screw			M6	

Puncture Test Fixture TKS-20N/250N

Designed for puncture strength test of thin samples such as film.

TKS-20N

○Representative applications
Film, Metal foil, PET bottle, Cloth, Fiber material

Film sticking test with TKS-20N

Models	TKS-20N	TKS-250N
Capacity(N)	20	250
Pin diameter(mm)	Approx.φ1	Approx.φ1
Pin weight(g)	Approx.22.2(Pin+Pin vice)	Approx.1.6
Mounting screw		M6

In accordance with a part of JIS Z 1707(1998)

Bending Test Fixture GA-10N/5000N

Designed for 3 points bending tests for metals, glasses, and more.

GA-10N

○Representative applications
Metal board, Plastic board, Carbon, Wire net, Wood board, Ceramic

Metal material bending test with GA-10N.

Models	GA-10N	GA-5000N
Capacity(N)	500	5000
Weight(g)	Force gauge side:Approx.100	Force gauge side:Approx.120
Mounting screw	M6	M10

Durability Test Fixture PR-500N/2500N

Designed for durability tests for retort pouch, heat sealed packages, box and so on.

PR-2500N

○Representative applications
Retort pouch, Packing box, Food pack, Tube container

Cardboard box durability test with PR-2500N.

Models	PR-500N	PR-2500N
Capacity(N)	500	2500
Measurable size(mm)	W194XD120XH105	W200XD140XH105
Weight(g)	Force gauge side:Approx.900	Force gauge side:Approx.3100
Mounting screw	M6	M10

PR-2500N: In accordance with a part of JIS Z 0238(1998)

Compression Test Fixture A-40/60, S-40/60

Ideal for crushing tests. Type A is made of aluminum and Type S is made of steel. Type A is for low capacity force gauges.

S-60

○Representative applications
Cushioning materials, Cushion, Tablet, Ball, Spring

Ball compression test with S-40.

Models	A-40	A-60	S-40	S-60
Capacity(N)	200	200	500	500
External diameter(mm)	φ40	φ60	φ40	φ60
Weight(g)	Approx.38	Approx.84	Approx.110	Approx.238
Mounting screw			M6	

Compression Test Fixture UR-8S/8M

Hemisphere shaped fixture made of urethane. It produces finger-touch.

UR-8S

○Representative applications
Switch, Electrical component, Touch panel

The switch tactile test with UR-8S.

Models	UR-8S	UR-8M
Capacity(N)	50	50
Weight(g)	Approx.5.4	Approx.5.2
Hardness	ShoreA50	ShoreA70
Mounting screw		M6

※ Please note the fixture does not react to capacitance touch panels.

For High Capacity[Disc type] PC series

Ideal for high capacity compression/ breaking testing up to 5000N. They can contact a test sample closely due to a free joint design.

PC series

○Representative applications
PET bottle, Ball, Tablet, Plastic

PET bottle compression strength test with PC-5060.

Models	PC-5040	PC-5060	PC-5100
Capacity(N)	5000	5000	5000
External diameter(mm)	φ40	φ60	φ100
Weight(g)	Approx.160	Approx.330	Approx.820
Mounting screw			M10

For High Capacity[Rectangle type] SQ series

Ideal for high capacity compression/ breaking testing up to 5000N. They can contact a test sample closely due to a free joint design.

SQ series

○Representative applications
Tablet, Plastic, Plastic capsules

Tablet strength test with SQ-5060.

Models	SQ-5030	SQ-5075	SQ-5150
Capacity(N)		5000	
寸法(mm)	30X20	75X50	150X100
Weight(g)	Approx.65	Approx.500	Approx.1560
Mounting screw		M10	

For High Capacity[Spherical type] SP series

Ideal for high capacity compression/ breaking testing up to 5000N.

SP series

○Representative applications
Cushioning materials

Models	SP-5010	SP-5020	SP-5030
Capacity(N)		5000	
External diameter(mm)	φ10	φ20	φ30
Weight(g)	Approx.26	Approx.55	Approx.135
Mounting screw		M10	

Attachments for Compression and Tension Testing

These attachments can be used for both compression and tension testing.

Pin Grip **CP-150N**

For gripping thin wire shaped samples. You can utilize it in measurement at narrow spaces.

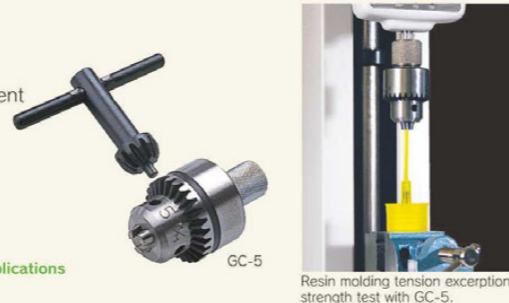


○Representative applications
Wire

Models	CP-150N
Capacity(N)	150
Aperture opening width(mm)	Approx. ϕ 0~3.2
Weight(g)	Approx. 22
Mounting screw	M6

Jacob's Chuck **GC-5/15**

Ideal for gripping round cylindrical shaped samples. Designed to prevent the samples from slipping.

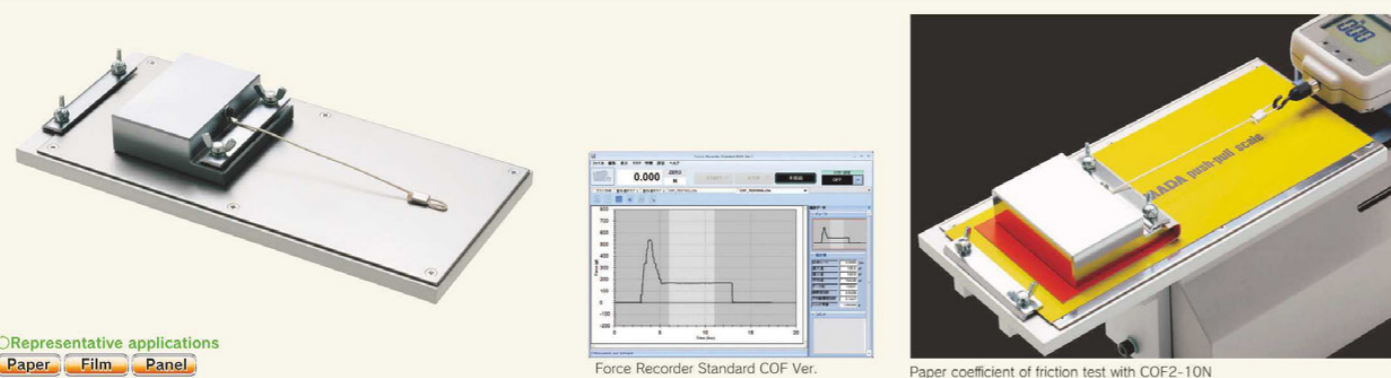


○Representative applications
Plastic

Models	GC-5	GC-15
Capacity(N)	500	1000
Aperture opening width(mm)	Approx. ϕ 0.5~6.5	Approx. ϕ 2.0~13
Weight(g)	Approx. 235	Approx. 500
Mounting screw	M6	

Attachments for Coefficients of Friction Testing

The included software automatically calculates Coefficient of Kinetic friction and coefficient of Static friction and draws graphs.



○Representative applications
Paper, Film, Panel

Models	COF2-2N	COF2-10N	COF2-N-V	COF-10N-V
Compatible test stand	Horizontal type MH2		Vertical type #1	
Weight of the weight cart(g)	200	1000	200	1000
Measurable size(mm)	Thickness: Max. 1.5 Length: Max. 150			

※ You need A-1 or S-1 (Page 35) to attach the weight to a force gauge.

※ 1 Some vertical test stand can not be combined with the fixture. Please contact us if you need the details.

COF-2N, COF-2N-V: In accordance with a part of JIS K 7125(1999).

Fixture for Shear Test

A Set of Fixtures for Shear Test **LF**

This set is designed for shear test of QFP lead and chip components, including jigs and a XY stage. The stage can manually adjust a test position precisely at light feed.



○Representative applications
QFP lead, Chip component

Models	LF
The set content	For QFP lead strength test: ① Hook attachment / QFP-45-1 ② 45 degree table / QFP-45-2 For soldered chip shearing test: ③ 90 degree chip shear attachment / TIP90-1 ④ 90 degree table / TIP90-2 For QFP lead strength test and soldering shearing test: ⑤ XY table / QFP-1
Capacity(N)	100
Table dimensions	200X150
Weight(g)	① QFP-45-1: Approx. 60g ③ TIP90-1: Approx. 50g

It is in accordance with JIS Z 3198-6(2003), JIS Z 3198-7(2003)

Chip Peel Fixture **GT-10/20**

Ideal for peel (shear) testing for soldered or adhered electric components.



○Representative applications
Electrical components, Flange cap

Models	GT-10	GT-20
Applying force	for Tension	for Compression
Capacity(N)		500
Weight(g)		Approx. 34
Mounting screw		M6

Attachments for Wire Harness Testing

Combining these attachments with a force gauge and a test stand, you can create a wire harness testing machine. These attachments are designed to grip different sizes of harnesses.

~500N Accessory Attachments for A Manual Wire Clamp Pull Tester [LH-500N(P48)]

Terminal clamp jig

It is designed to secure a crimp terminal easily and quickly. For engaging it, you only have to hook it between its jaws.



Wire clamp jig

It is designed to secure the ends of wire/cable tightly and easily. For engaging sample, you only have to pull its lever and put your sample on.



Models	CH-500N
Capacity(N)	500
Aperture opening width(mm)	Max. 6
Weight(g)	Approx. 210
Mounting screw	M6

Models	CW-500N
Capacity(N)	500
Aperture opening width(mm)	Max. 5
Weight(g)	Approx. 220
Mounting screw	M6

~1000N Attachments for Vertical Test Stands

Rotary wire terminal jig

The grip secures wire terminals, cables, connectors, and other samples. It has grooves of different sizes to accommodate a wide range of wire diameters up to 8mm. You only have to rotate the wheel to the desired size.



Wire clamp jig

It is for securing the end of wire/cable. Knurled cam mechanism reduces the possibilities of breaking samples.



Models	FW-12
Capacity(N)	1000
Measurable diameter(mm)	ϕ 1~8
Weight(g)	Approx. 380
Mounting screw	M6

Models	GP-30
Capacity(N)	1000
Aperture opening width(mm)	Max. 10
Weight(g)	Approx. 880

~5000N Attachments for High Capacity

Wire terminal jig

It engages terminals from ϕ 4 to ϕ 12mm diameter.



Wire clamp jig

It is designed for preventing wire coating from breaking.



Models	CH-5000N
Capacity(N)	5000N
Measurable diameter(mm)	ϕ 4~12 (Internal diameter of the terminal hole)
Weight(g)	Approx. 315
Mounting screw	M10

Models	CW-5000N
Capacity(N)	5000
Measurable diameter(mm)	Max. ϕ 30 (Cable diameter)

You can conduct a test complying with a part of JIS C 2805 (2010) using CH-5000N and CW-5000N together.

Attachments for Peel Testing

We offer fixtures for peel testing (adhesive testing) of sticky tapes, coating surfaces, and more.

90 Degree Peel Test Fixture **P90-200N/200N-EZ**

Ideal for 90 degree peel testing for adhesive tape and the like. P90-200N keeps the peeling degree at 90 degree.
The moderated price model is P90-200N-EZ.

Representative applications

Adhesive tape, Copper foil, Magnetic card, Poultice

Models	P90-200N	P90-200N-EZ
Measurable force(N)	~200	0.4~200
Measurable size(mm)	Length:Max.155 Width:Max.80	

P90-200N is in accordance with a part of JIS Z 0237(2009) and JIS C 5016(1994)
*We provide a film cutter (P41). With the cutter, you can cut film in constant-width.
*We also provide a rubber roller according to JIS (See P41 for further information).



P90-200N

Adhesive tape peeling strength test at 90 degree with P90-200N.

180 Degree Peel Test Fixture **P180-200N**

Ideal for 180 degree peel testing for adhesive tape and so on.

Representative applications

Adhesive tape

Models	P180-200N
Measurable force(N)	0.5~200
Measurable size(mm)	Length:Max.150 Width:Max.40

It is in accordance with a part of JIS Z 0237(2009).
*We provide a film cutter (P41). With the cutter, you can cut film in constant-width.
*We also provide a rubber roller according to JIS (See P41 for further information).



Adhesive tape peeling strength test with P180-200N.

45 Degree Peel Test Fixture **P45-50N**

Ideal for peel testing of cup container's film covers. It standardize the peeling degree at 45 degree which is similar to practically opening a cup container.

*You cannot open the full lid of the container.

Representative applications

Film for cup container

Models	P45-50N
Capacity(N)	50
Measurable size(mm)	Height:Approx.10~100 Diameter:Approx.20~140
Chuck opening width(mm)	Max.2

It is in accordance with a part of JIS S 002(2001).
*We provide an optional tray to receive outflowing contents. (See P41 for further information.)
*You need A-1,S-1, or SR-1 (Page35) to attach the upper part of the fixture to a force gauge.



Cup container cover peeling strength test with P45-50N.

Jig for opening pull-tab of beverage can **PTD-100N**

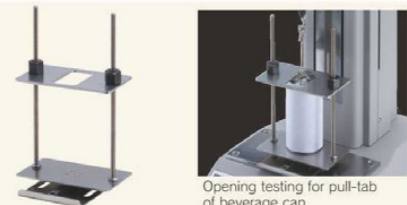
Designed to pull up aluminum beverage can's pull-tab to 90 degree.

Representative applications

Pull-tab of beverage can

Models	PTD-100N
Capacity (N)	100
Maximum sample size (mm)	Height:170 Width:90

PTD-100N is in accordance with a part of JIS S 0021-2(2018).
*We provide an optional tray to receive outflowing contents. (See P41 for further information.)
*You need A-1,S-1, or SR-1 (Page35) to attach the upper part of the fixture to a force gauge.



Opening testing for pull-tab of beverage can

Jig for opening pull-tab of canned food's container **PTF-100N**

Designed to pull up a pull-tab of canned food's container to 90 degree to measure force opening the container's lid.

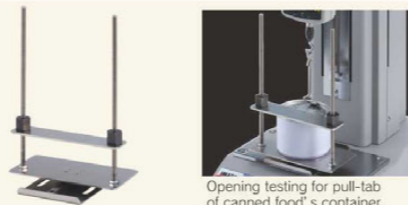
*You cannot open the full lid of the container.

Representative applications

Pull-tab of canned food's container

Models	PTF-100N
Capacity (N)	100
Maximum sample size (mm)	Height:170 Width:110

PTD-100N is in accordance with a part of JIS S 0022 (2001).
*We provide an optional tray to receive outflowing contents. (See P41 for further information.)
*You need A-1,S-1, or SR-1 (Page35) to attach the upper part of the fixture to a force gauge.



Opening testing for pull-tab of canned food's container.

Surface Coating Pull-Off Test Fixture **TH-1000N/5000N**

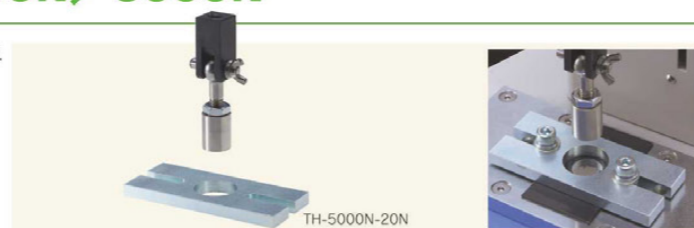
Ideal for pull-off testing of surface coating. It comes with 5 peeling heads(10 peeling heads for TH-1000N-7).

Representative applications

Painted surface

Models	TH-1000N-7	TH-1000N-20	TH-5000N-20
Capacity(N)	1000	1000	1000
Upper fixture Adhesive area shape	Diameter7mm	Diameter20mm	Diameter20mm
(Force gauge side) Weight(g)	Approx.40	Approx.90	Approx.195
Mounting screw	M6	M6	M10
Lower fixture The center hole diameter(mm)	Diameter30	Diameter30	Diameter30

TH-1000N-7 is in accordance with a part of JIS K 5600-5-7 (2014).
TH-1000N-20 and TH-5000N-20 are in accordance with a part of JIS K 5600-5-7 (1999).



TH-5000N-20N

Rubber Roller for Peel Test **APR-97**

With this roller, you can apply stable pressure to stick samples, improving repeatability.



APR-97

Models	APR-97
The roller weight(g)	Approx.2000
The sample contacting part material	Rubber(Hardness A80)

It is in accordance with a part of JIS Z 0237(2009)

Film Cutter **FSC-1525**

This cutter enables you to cut film in constant-width, improving measurement efficiency. It comes with 2 sets of spare edges.



Model	FSC-1525
Width to cut	15~70mm
Width adjustment block	15mm/1 inch

FSC-1525 is in accordance with ASTM F88, JIS Z 0238 (1998), and JIS Z 1707 (1997).

Optional tray **PTW-10IN**

For receiving outflowing contents. It is attached on an IMADA test stand.



You can use the tray like this.

Model	PTW-10IN
Size (mm)	264 x 178
Attachments using with this tray	P45-50N, PTD-100N, PTF-100N

*Even though you combine the tray with a test stand, remember that the stand is still weak in water.

Attachments for Medical Equipment

Attachment for Probe Tack Test **MED-IS-20N**

Attachment for measuring adhesiveness of sticking plaster etc. by tack test.

Representative applications

Sticking plaster

Model	MED-IS-20N
Capacity (N)	20
Surface diameter of contact (mm)	5
Weight (g)	Force gauge mounting side: Approx. 70g
Mounting screw	M6

Complies with a part of ASTM D 2979 (2016)
In compliance to 6.12.3.4 of the Probe Tack Method by the Japanese Pharmacopoeia



Sticking plaster adhesion test with MED-IS-20N

Attachment for Needle Boring Strength Test **MED-NPT-200N**

Attachment for testing pull out strength of a needle from a needle base.

Representative applications

Needle

Model	MED-NPT-200N
Capacity (N)	200
Measurable needle diameter (mm)	0.3-20
Measurable length diameter (mm)	above 10
Weight (g)	Force gauge mounting side: Approx. 210g
Mounting screw	M6

Complies with a part of JIS T3209(2011)/T3220(2011)/T3221(2011)/T3222(2011)/T3223(2016)/T3228(2011)/T3229(2011)
Complies with a part of ISO 7864(2016)/10555-5(2013)/11608-2(2012)



Needle pull out strength test with MED-NPT-200N

Attachment for Compression Test of Syringe **MED-SCT-500N**

Attachment for Compression Test of Syringe.

Representative applications

Syringe

Model	MED-SCT-500N
Capacity (N)	500N
Measurable capacity(ml)	0.5~50
Diameter of attached outer cylinder (mm)	10/15/24/33
Installation	Mounting on the stand

Complies with a part of ISO 7886-1(2017)
*We provide an optional tray to receive outflowing contents. (See P41 for further information.)
*You need S-2 (Page35) to push syringe.



Syringe compression test with MED-SCT-500N

Other Attachments

Vice Grip **GT-30/2000N**

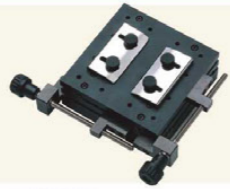
Wide opening range accommodates different sizes or shaped samples. Use with vertical test stands. (Contact us for models available with this grip.)



Models	GT-30	GT-2000N
Capacity(N)	1000	2000
Aperture opening width(mm)	Max.38	Max.66
Mounting	to Test stand table	

XY Table **XY-500N**

You can put a sample at the center using this XY table since the stage can be moved manually in X and Y directions at light feed. Use with vertical test stands. (Contact us for models available with this table)



Models	XY-500N
Capacity(N)	Tension:500 Compression:1000
X-Y movement amount	±30
Mounting	to Test stand table

Optional Handle for Force Gauges **FOH-1**

Combining a force gauge with this handle by screws, you can apply force stably.



Models	FOH-1
Compatible model	1000N or less range of ZTA/ZTS/DSV/DST/PSS/PS/PSM/FS/FB series
Weight(g)	Approx.500

Hand Grip Belt **HGB-1**

Designed to prevent a force gauge slipping from hand. It enables you to apply force easily.



Models	HGB-1
Compatible model	200N or less range of ZTA/ZTS/DSV/DST/PSS/PS/PSM/FS/FB
Weight(g)	Approx.45

Attachment Adapter **JF/EJ series**

The mounting adapter for grip type attachment for tension test. They help smooth sample fixation and precise adjustments of gripping positions and angle.

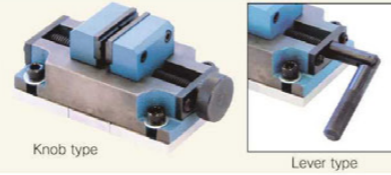


Models	JF6-50N	EJ6-1000N	EJ10-5000N
Capacity(N)	50	1000	5000
Mounting screw for a force gauge	—	M6	M10
Mounting screw for a chuck holder	M6	M6	M10
Weight(g)	Approx.8	Approx.29	Approx.140

※Please contact us for the detail that which attachment is available.
※A-1/S-1/SR-1(Page 35) is required to mount JF6-50N on a force gauge.

Self-centering Vice Grip **GTW-50R/50L**

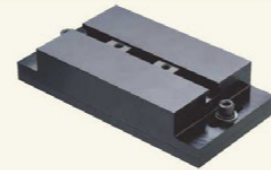
Self-centering vice. 2 models are available: 1. Knob model (high operability type) 2. Lever model (Strong clamp type) Use with vertical test stands. (Contact us for models available with this grip)



Models	GTW-50R	GTW-50L
type	Knob type	Lever type
Capacity(N)	500	1000
Aperture opening width(mm)	Max.66	
Mounting	to Test stand table	

T-Slot Table **TS-5000N**

It is for holding attachments, being utilized to mount/remove attachments quickly. You can also center your sample readily since the table moves in X/Y directions.



Models	TS-5000N
Capacity(N)	5000
Diameter of T-nut hole	M8
The space between T-nuts	Max.125
Movement amount(mm)	X: ±64 Y: ±15
Mounting	to Test stand table

Optional Handle for Fire Door Closing Measurement **HDC-1**

Specialized for fire door closing force measurement according to the Building Standard Law of Japan.



Models	HDC-1
Compatible model	1000N or less range of ZTA/ZTS/DSV/DST/PSS/PS/PSM/FS/FB
Weight(g)	Approx.330

Conversion Adapter **CA series**

Gauges' threads (a part to mount an attachment) differ in size among models, thus you can use these adaptors to combine a force gauge and a desired attachment even if their sizes are different.



Models	Screw diameter	Capacity	Purpose
CA-F6T4	M6 (Female Screw) → M4	1 000N	When mounting a M4 screw attachment of FRTS to a M6 screw thread of a force gauge.
CA-F6T10	M6 (Female Screw) → M10	1 000N	When mounting a M10 screw attachment to a M6 screw thread of a force gauge.
CA-F10T6	M10 (Female Screw) → M6	1 000N	When mounting a M6 screw attachment to a M10 screw thread of a force gauge.
CA-F4T6	M4 (Female Screw) → M6	1 000N	When mounting a M6 screw attachment to FRTS series.
CA-F5T4	M5 (Female Screw) → M4	1 000N	When mounting a M4 screw attachment to a M5 screw thread of Load cell LMU series.
CA-F5T6	M5 (Female Screw) → M6	5 000N	When mounting a M6 screw attachment of FRTS series to a M5 screw thread of a load cell LMU series.
CA-8T4	M8 → M4	1 000N	When mounting a M4 screw attachment of FRTS series to M8 screw thread of a load cell LU series attachment.
CA-8T6	M8 → M6	5 000N	When mounting a T nut / M8 screw thread of load cell LU series to M6 screw attachment.
CA-8T10	M8 → M10	2 000N	When mounting a T nut / M8 screw thread of load cell LU series to M10 attachment.

Eye Bolt and Eye Nut for Load Cells

Hoisting attachment for tension test by load cells (Page 17).

for Load Cell DPU series

Eye Bolt **EB series**

It hangs a test sample or a load cell by hooking chain, rope, hook etc.

Models	EB-500N-M6	EB-2000N	EB-20kN
Compatible load cell	DPU-5N~500N	DPU-1 000N/2000N	DPU-10kN/20kN
Capacity	500N	2000N	20kN
Weight(g)	Approx.18	Approx.137	Approx.1100
How to mount	M6 Male Screw	M12 Male Screw	M18 Male Screw



Rod End(for shafts) **RE-20kN**

A shaft can be put through it.

Models	RE-20kN
Compatible load cell	DPU-10kN, DPU-20kN
Capacity (kN)	20
Weight (g)	Approx.300
Mounting screw	M18 Male Screw



for Load Cell LU series

Eye Bolt **EB-500N-M8**

It hangs a test sample or a load cell by hooking chain, rope, hook etc.

Models	EB-500N-M8
Compatible load cell	LU series
Capacity(N)	500
Weight(g)	Approx.39
Mounting screw	M8 Male Screw



for Load Cell LMU series

Eye Nut **EN-500N**

It hangs a test sample or a load cell by hooking chain, rope, hook etc.

Models	EN-500N
Compatible load cell	LMU series
Capacity(N)	500
Weight(g)	Approx.11
Mounting screw	M5 Female Screw



Custom Order Examples

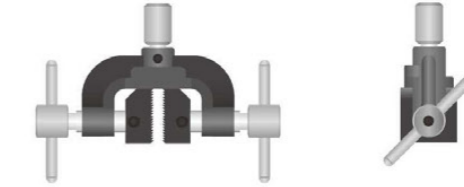
1.Resizing Ready-Made Attachment

[Example. GC-1200 series Length change of grip part]

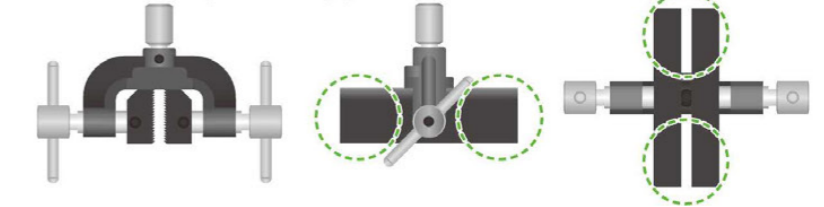
We can resize the width and the length of the grip part.

We flexibly change sizes (width, depth) of fixtures and grips to fit your testing needs. Please contact us for the details.

Standard



Custom made example of wider grip of GC series



2.Changing Specifications to Fit Your Testing Needs

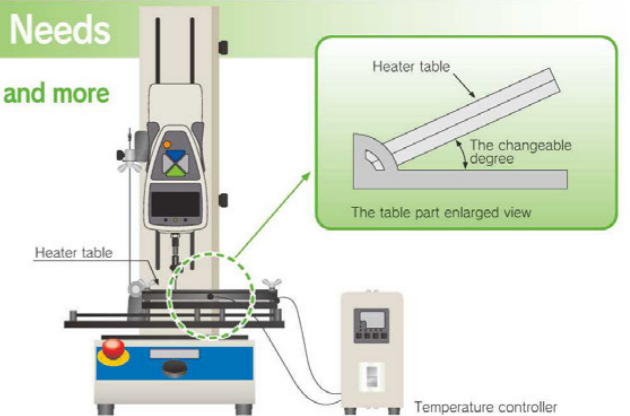
● Changing conditions such as measuring angles, temperatures, and more

[Example: Specification change of peeling test fixture]

We can offer a degree changeable table for peel testing. Besides, we can combine a heater with a table of a test stand.

● Measurement in accordance with standards such as Japanese Industrial Standard, ISO or ASTM.

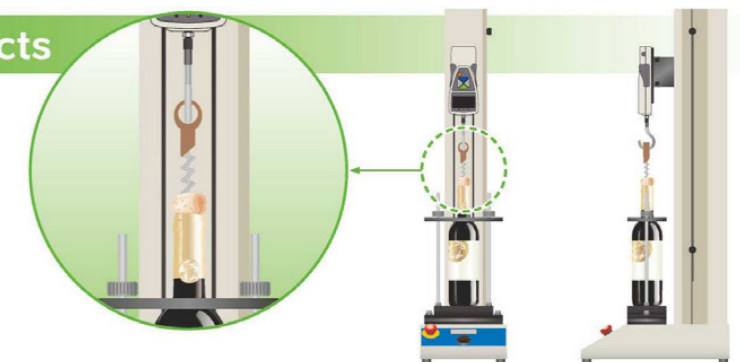
We offer force measuring instrument complying with standards' requirement (measuring speed, fixture design, etc).



3.Completely Original Products

[Example: Cork excerpption measuring unit]

We offer the special use fixture for your sample to improve measuring repeatability and efficiency.



FSA series Force-Displacement Analysis Unit

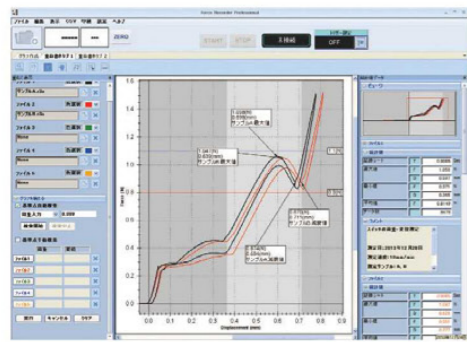
Simple but High-performance Measurement Unit for Force and Displacement Analysis.

With this unit, you can measure deformation amount (displacement) to compression (tension) force.

It is ideal for tactile test and material characteristic evaluation.



It draws Force vs Displacement graphs in real time at Max.2000Hz



Basic Functions of Force-Displacement Measurements

- Easy connection to PC by USB
- Smooth graphing performance at 2000Hz
- Graph zooming function
- Comment insertion on graphs
- Quick data export to WORD, EXCEL, PDF

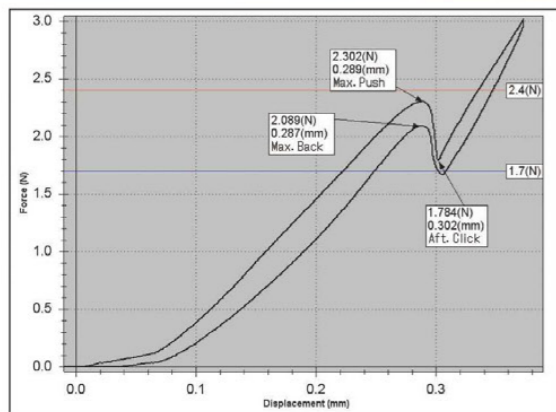
Useful Functions for Measurements and Analysis

- Graph comparing function Max 5 graphs.
- Reference line function
- Statistical calculation (maximum/ minimum/ average values).
- Automatic displacement reset at the measurement start (when the force reaches the set force value)
- Test trigger function (when the force reaches the set displacement value)

The Advantage of Measuring Displacement and Force Together.

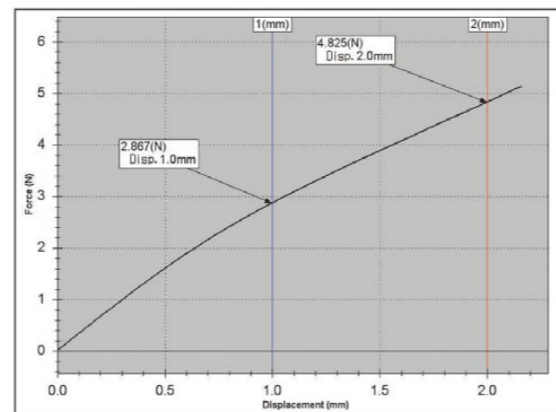
Since you can see force transition with reference to displacement, this unit is perfect for tactile testing, material characteristic evaluation, and more.

Example of A Switch Characteristic Evaluation



Curves in force-time graphs constantly goes from left to right, and never come back to left. On the other hand, curves in force-displacement graphs come back to left since it is drawn based on displacement. Therefore, force-displacement analysis method is better choice to identify the hysteresis(zero reversion).

Example of Plastic Bending Test



Measuring displacement means identification of deformation amount. It is easy to check "How much force does it need to transform a testing sample(dent a sample at ○○mm)?"

Other Test Examples

- Simple evaluation of spring characteristic
- Simple evaluation of rubber product characteristic
- Cushioning material repulsion test
- Car cushion hardness test
- Fitting quality test of cosmetic containers
- Extract test of connectors
- Peel test with distance of tape and films
- Compression and Breaking test for electric components
- Pulling test for slide structures.
- Repulsion test for sport equipment (Tennis ball)
- Food texture test
- LCD panel strength test

Configuration

A Force Gauge

It measures force, and indicates force and displacement values. You can combine it with different attachments to handle a wide range of force testing applications. You can easily put it on (off from) a test stand by screws.

A Test Stand

It is a machinery to move a force gauge up and down (left and right). You can move it with up/down (left/right) buttons. You can easily set up test requirement such as test speeds, pause and more with its dial.

A Cable

It connects the force gauge and the test stand for control. (FSA-MSL does not include this cable since it operates manually.)

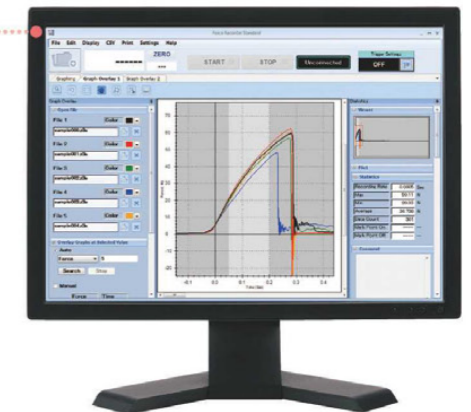
Standard Attachments

Attachments are integral components of this testing system. Although this testing system comes with some basic attachments, you can combine optional attachments as required. We offer a wide range of optional attachments to fit various measurement needs.



Software

This software can draw force-displacement graph. It captures force and displacement values at Max. 2000/sec, and draw them into graphs smoothly. It automatically starts graphing using Trigger function. ※MSL-FSA does not have this Trigger function.



Measurement unit	Force	N, kgf, lbf ※
	Displacement	mm, inch ※
Range		2N(200gf), 5N(500gf), 20N(2kgf), 50N(5kgf), 100N(10kgf), 200N(20kgf), 500N(50kgf), 1000N(100kgf), 2500N(250kgf)
Resolution	Force	4 digit (e.g. Resolution of 5N force gauge is 0.001N)
	Displacement	0.001mm (on software; Force Recorder Professional) 0.01mm (on force gauge display)
Accuracy	Force	+/-0.2% F.S. +/-1 digit
	Displacement	+/-0.1mm +/-1 digit (with no load)
Sampling rate		2000 data/sec
Output		USB, Serial(RS232C), Analog(Approx. +/-2V), Comparator, Overload, Sub comparator, USB flash drive * USB flash drive is not included.
Accessories		Instruction manual, Inspection certificate, Power cable, 2 pcs of spare fuses, Driver CD-ROM(including software for data log "ZT-Logger"), Graphing software "Force-Recorder Professional".

Note: ①A force gauge is separately sold. ②Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's capacity. (※1)The maximum height or length means the distance between the test stand table and the thread of the force gauge ZT series general type(1000N or less)at the highest position of the test stand. The distance does not include attachments. The distance of FSA-2.5K2 is in case of mounting ZT series high capacity type. ※The unit is different from Japanese domestic models.

We provide a wide range of testing system to fit your needs.

Easily

- You can digitally set up test requirements such as speed, pause, a number of times, and more with simple operation (Except FSA-MSL).
- You can start graphing by one click or record data automatically.

Precisely

- You can capture data accurately due to its high sampling rate (Max. 2000Hz).
- You can overlay graphs for detailed analysis.

Portable (Knob operation, Up to 50N)

- Capacity: 2~50N (※1)
- The sample maximum height: 80mm (※2)



With a tripod, you can use it for wider range of testing applications. You need an optional adaptor to mount it on a tripod.

Since it is lightweight, you can carry it to various places. You can also fix it on wall by screws.

Models: **FSA-MSL- 2~50N**

Compact and Vertical (Motorized, Up to 500N)

- Capacity: 2~500N (※1)
- The sample maximum height: 235mm (※2)
- Speed: 10~300mm/min (Standard)



You can set up testing speed digitally. It is compact enough to be put on a desk.

Models: **FSA-0.5K2- 2~500N**

Compact and Horizontal (Motorized, Up to 500N)

- Capacity: 2~500N (※1)
- The sample maximum height: 245mm (※2)
- Speed: 10~300mm/min (Standard)



You can set up testing speed digitally. It is compact enough to be put on a desk.

Models: **FSA-0.5HK2- 2~500N**

Multifunctional and Accurate (Motorized, Up to 1000N)

- Capacity: 2~1000N (※1)
- The sample maximum height: 320mm (※2)
- Speed: 0.5~600mm/min (Standard)



You can set the travel distance to move a force gauge digitally. You can also store test requirements in it.

Since this test stand has high intensity, you can measure force and displacement more accurately.

Models: **FSA-1KE- 2~1000N**

High Capacity (Motorized, Up to 2500N)

- Capacity: 2~2500N (※1)
- The sample maximum height: 320mm (※2)
- Speed: 10~300mm/min (Standard)



You can set up testing speed digitally. You can measure force up to 2500N.

Models: **FSA-2.5K2- 2~2500N**

Special Testers

Automatic crimp tester

ACT-1000N

[You can carry out the test in accordance with a part standards UL 486A-486B and JISC2805.]

- The start button provides smooth flow from testing to saving data including OK/NG judgment.
- You can save test conditions up to 26 patterns in it, which is useful for multiple tests. You can recall a suitable setting easily and instantly.
- 2 test modes are available; "BREAK mode" and "KEEP mode". With BREAK mode, you can detect the force when a crimp terminal is broken. With KEEP mode, you can test the tensile durability at a set point.

ACT-1000N provides speedy test due to its ease of use.



Optional attachment



ACT-T-01
Jig for round terminals:
You can easily fix round terminals.



ACT-T-02
Jig for rod terminals:
You can grip a small terminal such as a rod terminal.

Model	ACT-1000N	ACT-1000N-V300
Capacity	1000N	
Accuracy	+/-0.5% F.S +/- 1 digit	
Unit	N, kgf, lbf (※1)	
Sampling rate	2000Hz	
Measuring speed	10/25/50/100 mm/min (Choose from 4 steps)	25/50/100/300 mm/min (Choose from 4 steps)
Stroke	Approx. 50mm	
Allowable sample diameter	Terminal side: 1~8mm	Harness side: 1~8mm
Allowable sample length	100mm or more	
Mode	BREAK mode / KEEP mode	
Output	USB/RS232C/pass or fail decision signal (OK/NG)	
Security lock	Emergency stop button and Overload prevention (at the power on)	
Power supply	AC100~240V	
Operating environment	Temperature: 0~40 degree Celsius Humidity: 20~80%RH	
Accessory	Software, USB cable, Power cord, Inspection Certificate	

※1 This is the specifications for International model. Please note Japanese domestic model shows force in N only.



- Size: W400XD240XH150mm
- Weight: Approx. 1.1kg



Test Lever Stand

LH-500N

- It is ideal for tensile strength test of crimped terminal.

Designed exclusively for wire harness testing = Easy manipulation → Improve measurement efficiency



Accessory Attachment



CW-500
Wire Clamp fixture:
Wedge type. You can grip wire/cable easily by pulling the lever.



CH-500
Terminal Clamp fixture:
It is wide size fixture as gripping a crimp contact.

- Size: Approx. W155XD450XH182mm
- Weight: Approx. 1.1kg

Model	LH-500N
Capacity	500N
Accessory	Terminal Clamp Fixture: CH-500N Wire Clamp Fixture: CW-500N * Force gauge is not included.



※1 Force gauge's capacity decides the capacity of testing system.
 ※2 The sample maximum height means the distance between the test stand table and the thread of the force gauge ZT series general model (1000N or less) at the highest position of the test stand head. The figure for FSA-2.5K2 is in case of ZT series high capacity model combined.

Peel Tester

IPTS-5N

- It enables peel test of embossed carrier tape complying with IEC.
- It graphs the measurement accurately due to its high sampling rate, at Max. 2000Hz.
- It handles a wide range of test speed up to 1500mm/min.
- One-click Operation: The start button provides smooth flow from testing to data saving.



Size: Approx. W665 × D300 × H140mm
Weight: Approx. 11 kg

Related Standards

- A part of JIS C0806-3(2014) [Packaging of components for automatic handling-Part 3: Packaging of surface mount components on continuous tapes]
- A part of IEC 60286-3(2013) [Packaging of components for automatic handling - Part 3: Packaging of surface mount components on continuous tapes] (Peel test part)



Peel test of embossed carrier tape

High Speed Peel Tester

IPTS-20N/50N

- It graphs the measurement accurately due to its high sampling rate, at Max. 2000Hz.
- It handles a wide range of test speed up to 1500mm/min.
- One-click Operation: The start button provides smooth flow from testing to data saving.
- It enables to test samples at a thickness of up to 0.5mm.



Size: Approx. W665 × D300 × H140mm
Weight: Approx. 11 kg

Related Standards

- A peel test part of ISO 29862:2007 [Self adhesive tapes - Determination of peel adhesion properties] (A peel test part of JIS Z0237:2009)
- A peel test part of ISO 8510-2:1990 [Adhesives - Peel test for a flexible-bonded-to-rigid test specimen assembly - Part 2 : 180° peel] (A peel test part of JIS K6854-2:1999)
- A peel test part of Japanese Pharmacopoeia

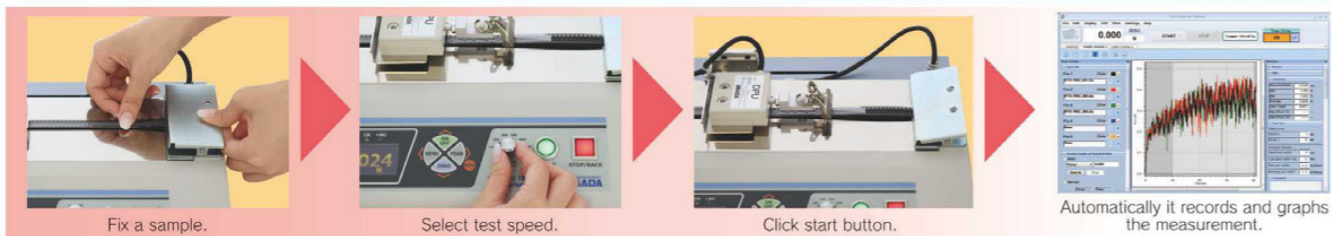
Test Samples

Label, adhesive tape, stickers, screen protector sheet, laminated package, adhesive tape for first-aid, postcard, magnetic tape, foil laminated film, electrode's line of solar cell, copper foil of circuit board.



Peel test of copper foil

IPTS series is specialized for 180-degree peel test. =It ensures the high performance of your works and accurate test.



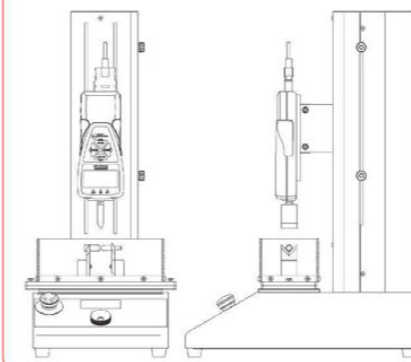
Model	IPTS-5N	IPTS-20N	IPTS-50N
Capacity	5N	20N	50N
Resolution	0.001N		0.01N
Unit	N, gf, ozf		N, kgf, lbf
Accuracy	±0.2%F.S. ±1digit		
Overload	Approx.150%F.S (It warns with light flashing and buzzer when the force is over 110% of capacity.)		
Sampling rate	Max.2000 data / sec (2000Hz)		
Test speed	120, 200, 300, 500, 1000, 1500mm/min(Switchable)		
Stroke (length)	Travel of load cell: Approx. 400mm(Peel length : Approx.200mm)		
Peel angle	165°-180° (Height and angle are adjustable.)		
Max. sample width	Adhesion: 88mm(Film clip: 40mm, Sample clip: 95mm)	Adhesion: 88mm(Grip: 20mm, Clamp: 50mm)	
Max. sample thickness	Cover film: 0.5mm	Grip: 3mm	Clamp: 13mm
Safety device	Emergency stop button, Overload prevention (Valid only when the power is ON) (※1)		
Power	AC100~240V free input(※2)		
Weight	Approx. 11kg		
Operating environment	Temperature: 0~40°C Humidity: 20~80%RH		
Accessories	Force Recorder Standard(graphing software), USB cable, Power cable, Film grip, Inspection certificate, Instruction manual		

※1 You cannot prevent overload in some cases.
 ※2 Please specify the voltage when you order.(Accessory varies depending on voltage.)
 ※3 The film grip attachments for IPTS-5N and IPTS-20N/50N are different.
 ※ Japanese domestic models do not indicate g/kgf/ and ozl/lbf.

We provide semi/full customized testers to comply with your desired standards. IMADA's products are highly evaluated because of the quality and the fact that they have been used worldwide in every industry for many decades, making your quality control a success.

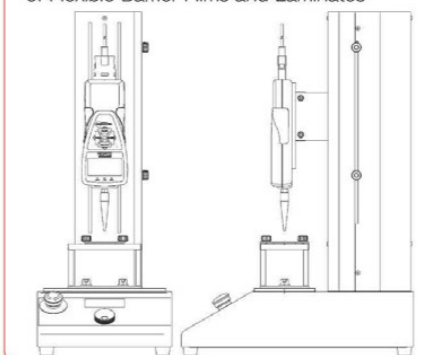
In Medical industry

Standard: **ISO9187-1**
Measurement abstract:
Injection equipment for medical use -- Part 1: Ampoules for injectables



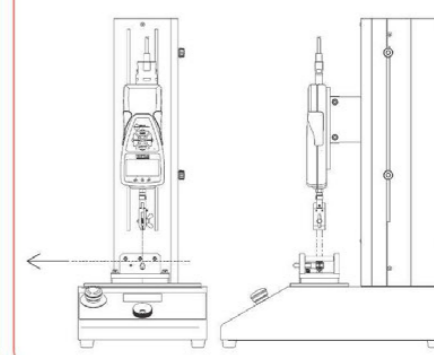
In Plastic industry

Standard: **ASTM F 1306-90**
Measurement abstract:
ASTM F1306 - 90(2002) Standard Test Method for Slow Rate Penetration Resistance of Flexible Barrier Films and Laminates



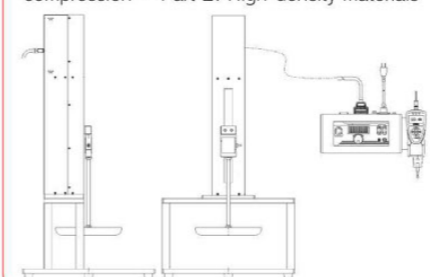
In Electric industry

Standard: **IEC249-1**
Measurement abstract:
Base materials for printed circuits. Part 1 : Test methods



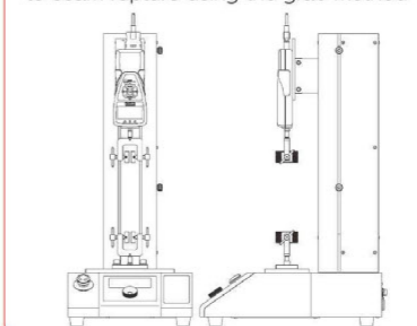
In Furniture industry

Standards: **ISO3386-1, ISO3386-2**
Measurement abstract:
(-1) Polymeric materials, cellular flexible -- Determination of stress-strain characteristics in compression -- Part 1: Low-density materials
(-2) Flexible cellular polymeric materials -- Determination of stress-strain characteristics in compression -- Part 2: High-density materials



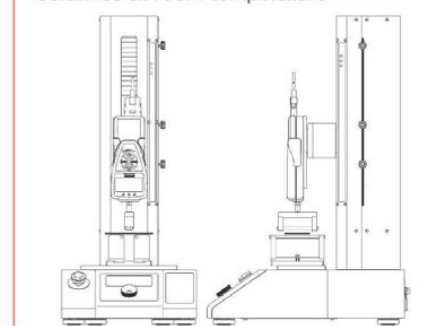
In Textile industry

Standard: **ISO13935-2**
Measurement abstract:
Textiles -- Seam tensile properties of fabrics and made-up textile articles -- Part 2: Determination of maximum force to seam rupture using the grab method



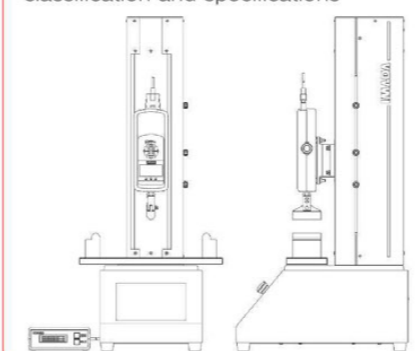
In Ceramic industry

Standard: **ISO 14704**
Measurement abstract:
Fine ceramics (advanced ceramics, advanced technical ceramics) -- Test method for flexural strength of monolithic ceramics at room temperature



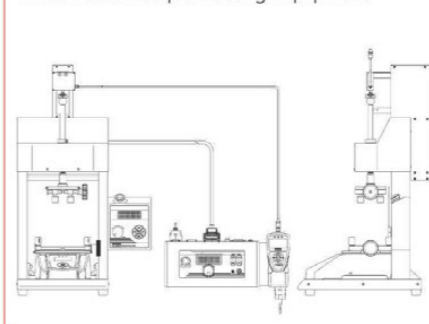
In Architecture industry

Standard: **ISO16894**
Measurement abstract:
Wood-based panels -- Oriented strand board (OSB) -- Definitions, classification and specifications



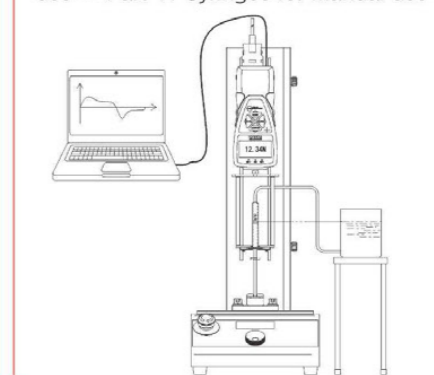
In Medicine industry

Standard: **ASTM D7860-14**
Standard Test Methods for Measurement of Torque Retention for Child Resistant and Non-Child Resistant Packages with Continuous Thread Closures Using Automated Torque Testing Equipment



In Medical industry

Standard: **ISO7886-1**
Measurement abstract:
Sterile hypodermic syringes for single use -- Part 1 : Syringes for manual use



Standards are revised periodically, therefore, we will make a maximum effort to offer solution complying with the latest version, however, we may not catch up and we cannot to offer solution depending on what is revised.