SafGuard®

UNIVERSAL MECHANIAL
SAFTEY TESTER

INSTRUCTION MANUAL

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A PRINCIPLE

In the past, all other systems had the following problems:

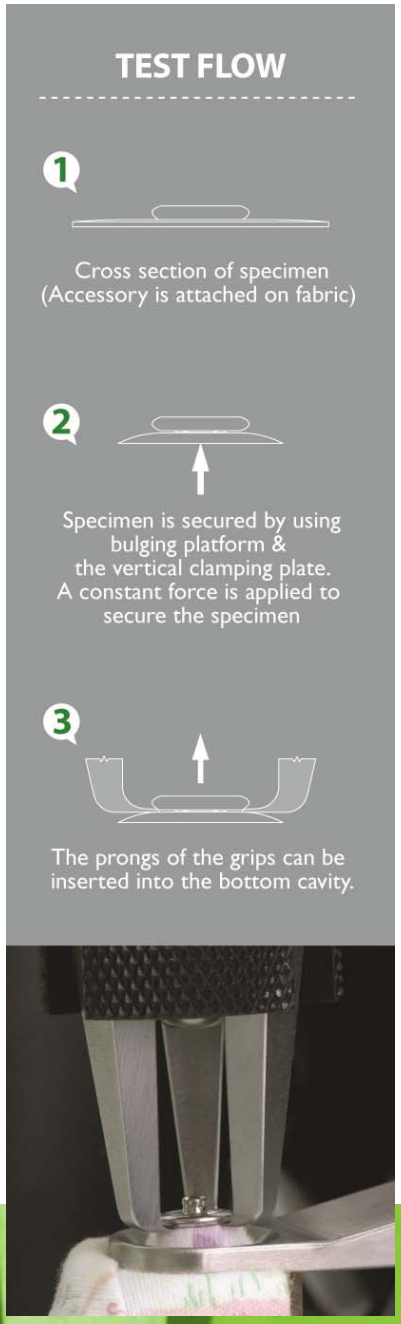
a) Upper grip always constrains the fabric together with the sides of an accessory being tested
b) A force applied to constrain an accessory varies, even done by the same operator.
c) To avoid slippage or setting free when testing, an overforce may be applied which causes deformation or damage to an accessory's integrity.
d) If the inner side of an upper grip inclines far from the vertical axis, an accessory cannot be secured.

All the above lead to test failure.

Unlike others, the outstanding advantage of our system, apart from a constant clamping force, is that a **standard griping force** can be applied. So, a meaningful test result can be achievable.

It provides standard mechanism that increases test capability and repeatability / reproducibility.

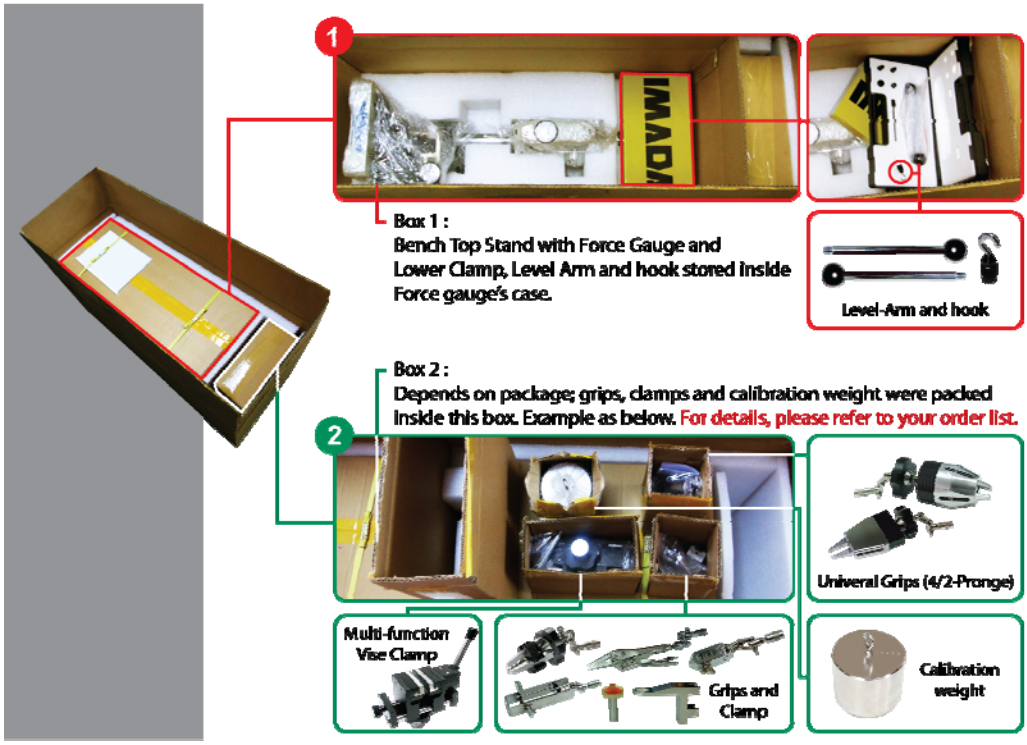
After a fabric attached with an accessory is fixed by lower fabric clamp, a small interspace will be formed between the accessory and the fabric. Then, the prongs are inserted and located into the interspace, thus holding the bottom end of the accessory, to pull it.



B HOW TO SET UP

B.1 Unpacking

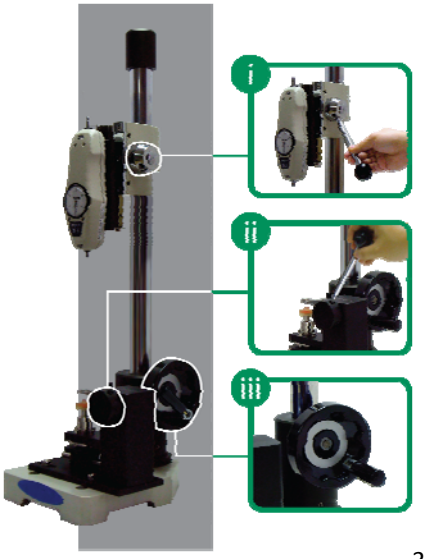
1. After unpacking, make sure that the tester is undamaged. If in doubt, please contact your local distributor.



2. Check that the standard accessories and supplied parts number are all present. Please see Check List (C.1). Optional accessories Check List (C.2), it needs to be ordered separately.
3. Place the Tester on a firmed working table.

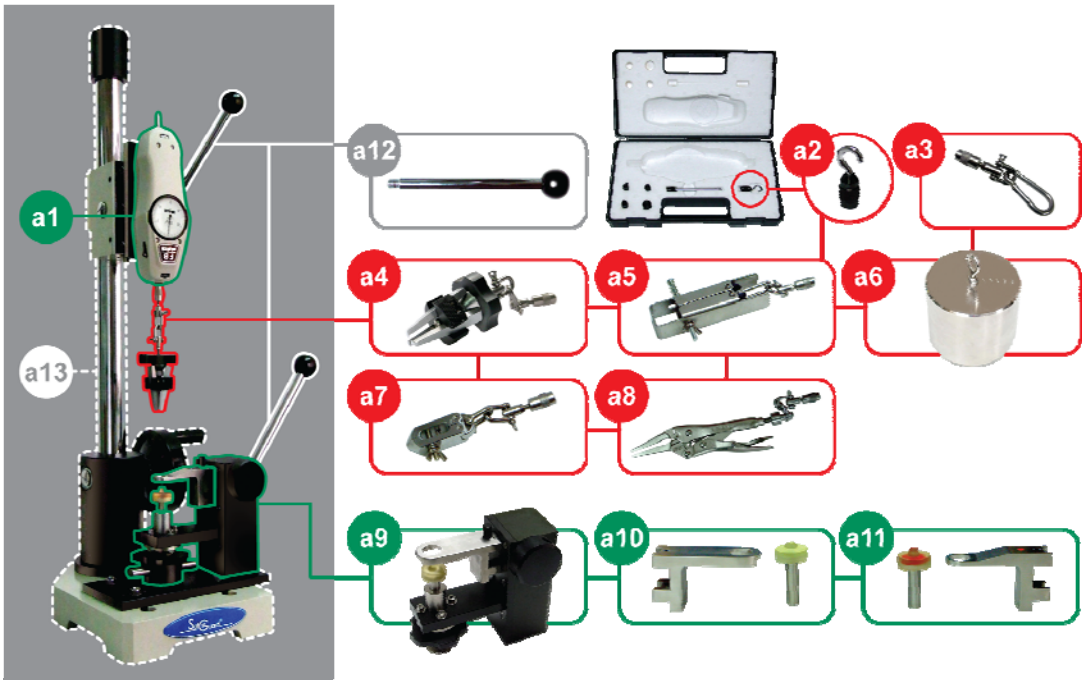
B.2 Setting up the tester

1. Screw the level arm " **i** " and " **ii** " onto the right position.
2. Extract the handle of flywheel " **iii** "onto the right position.



C CHECK LIST

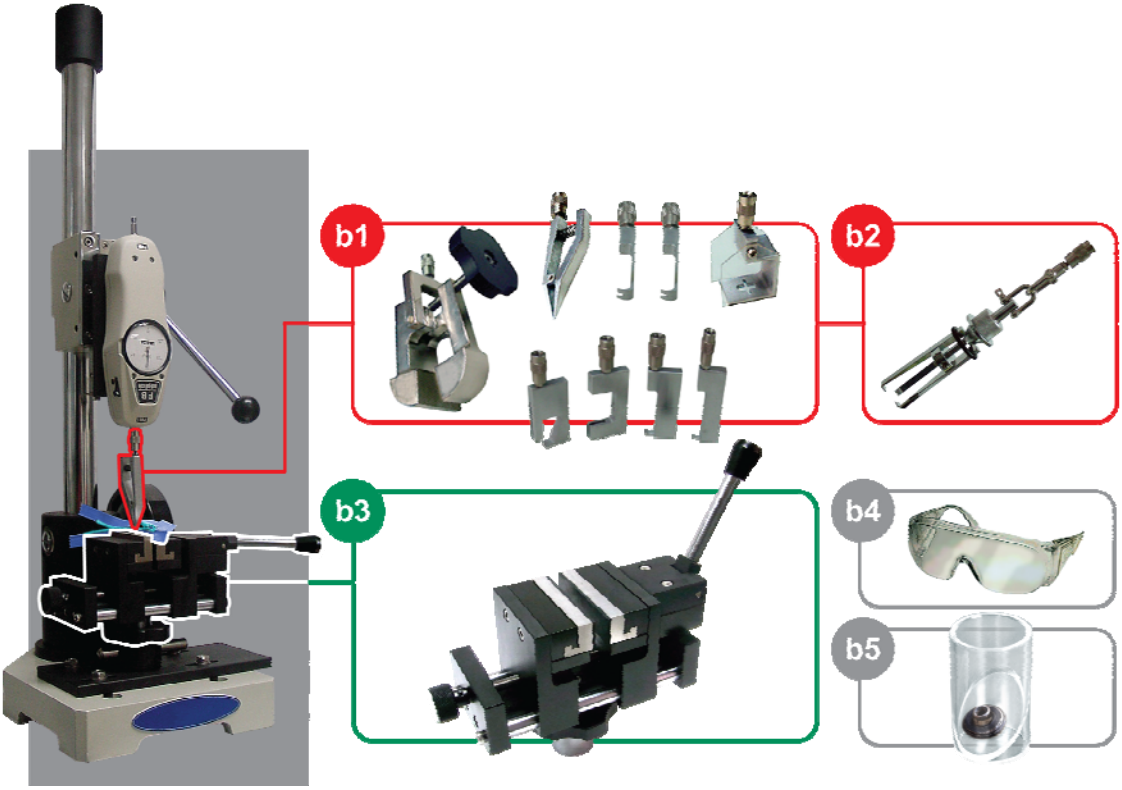
C.1 Standard Accessories



ITEM	PARTS NUMBER	DESCRIPTION	BRIEF EXPLANATION OF FUNCTION
a1	STA-0020	Imada Force Gauge FB-30K *(It mounted on the stand during assembly)*	Display the reading of pulling force
a2		Hook adapter	Fix the calibration weight into the Force Gauge
a3		Grip Carabiner	Enable to exchange the grips efficiency.
a4	STA-0118	Upper Tip-Top Grip	Test for female & male parts of buttons
a5	STA-0005	Upper Grasp Button Grip	Designed to gripping the grasp buttons or larger buttons, e.g. Jeans or Plastic Buttons up to 30 ligne
a6	STA-0004	Calibration Weight 15LB /~6.82kg	Routine checking the accuracy of the Imada Force Gauge
a7	STA-0002	Upper Stud Grip	Test for male part of baby button
a8	STA-0007	Upper Long Nose Vise Grip	Mainly used for trouser hooks and other smaller accessories
a9	STA-0042	Lower Fabric Clamp, Level Arm Locking *(It mounted on the stand during assembly)*	Fix the fabric specimen with buttons firmly, flatly & constantly so that fabric slippage can be minimized.
a10	STA-0006	Lower Grasp Button Accessory Kit	Convert the original Lower Fabric Clamp for testing the grasp buttons or larger buttons to 30 ligne and it is mainly used together with, STA-0005
a11	STA-0006E	Lower Grasp Button Accessory Kit *(for thin fabrics)*	General clamp for testing button with thin fabrics
a12		Lever Arm, set of 2	For operation the Tester
a13	STA-0040	Bench Top Stand with side-operated right-hand flywheel	For controlling the movement of Imada Force Gauge

C CHECK LIST

C.2 Optional Accessories



ITEM	PARTS NUMBER	DESCRIPTION	BRIEF EXPLANATION OF FUNCTION
b1	STA-0111	*Zipper test Kit	To test for the zipper Stops & D-rings
b2	STA-0008	Upper Three Pronged Grip	Test for four-hole buttons & Jeans buttons
b3	STA-0084	*Multifunction Vise Clamp	Fix the garment between the jaw faces and will use with other upper grip for testing other attachments such as Patch, Side Tab, Zipper Puller, etc
b4	STA-0035	Goggles	To protect the eye of operator
b5	STA-0037	Small Part Cylinder - Plastic	To test whether the garment accessories are classified as “Small Part” or not in accordance with EN71, CPSC, ASTM F963, ISO 8124, etc

*Zipper Test Kit set (STA-0111 and STA-0084)

With this optional kit, operator may evaluate the zipper strength as for reference result. Those grips and hooks can match for different kind of zipper slider and zipper chain.

D EXCHANGE UPPER GRIPS AND LOWER CLAMPS

D.1 Exchange Upper Grips

There are two methods for exchanging the grips

D.1.1. **General usage -**

Operator tests for same kind and size of button frequently

1. Choose a suitable grip that fit to the size of button.
2. On the other side of upper grip is a screw nut.
3. Just simply screw the nut anti-clockwise to the stud of Force Gauge.

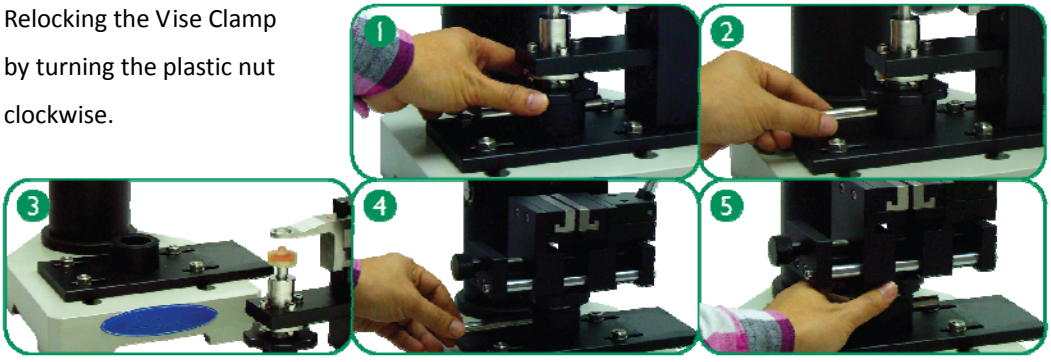
D.1.2. **Multipurpose usage -**

Operator tests for different kind and size of button frequently

1. Screw the Grip Carabiner anti-clockwise to Force Gauge's stud firstly.
2. Choose a suitable grip that fit for the size of button.
3. On the Carabiner, push the gate lock to open it up.
4. Put the grips' ring into the Carabiner.

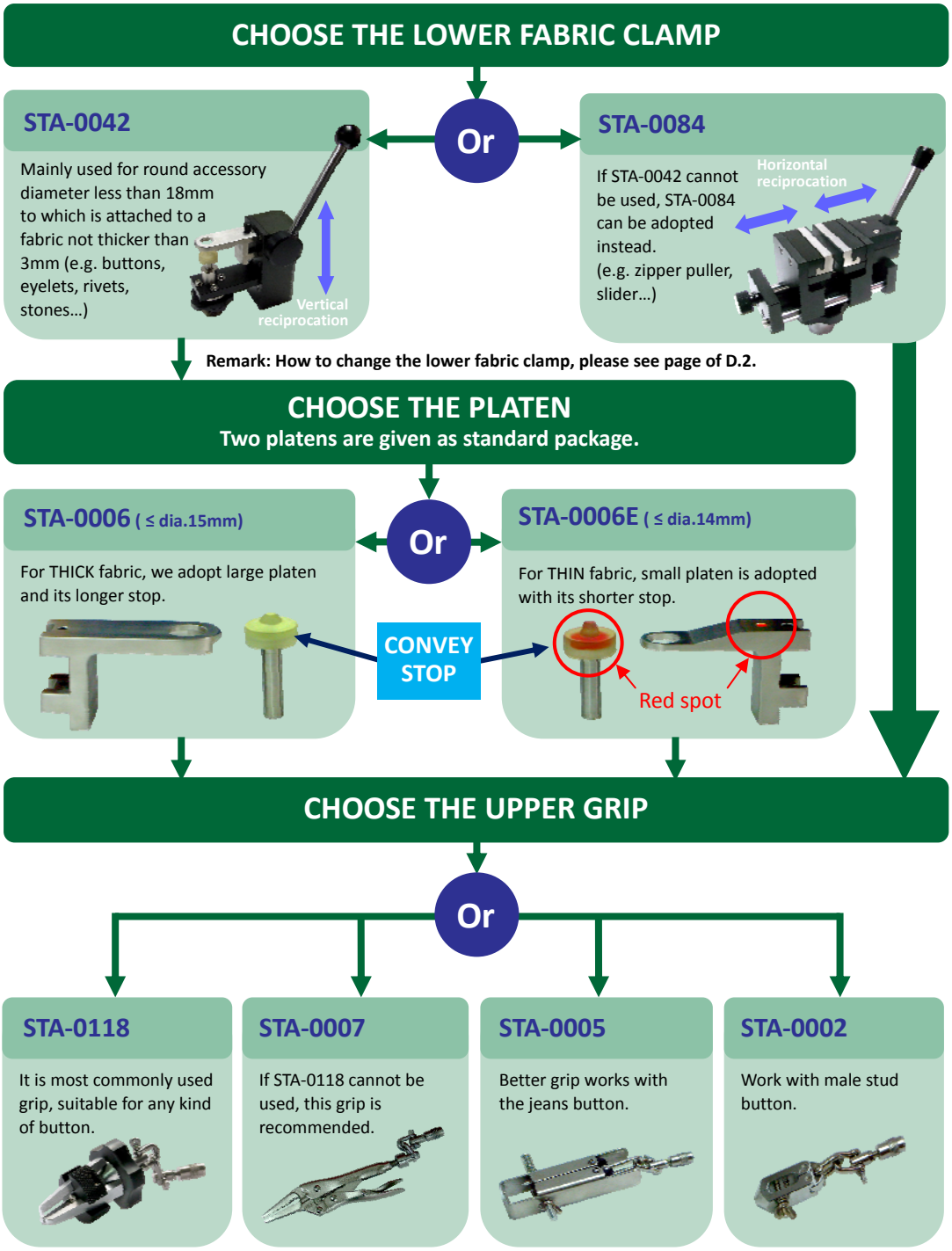
D.2 Exchange Lower Clamps

1. Loosen the plastic nut by turning it anti-clockwise.
2. Take out the locking rod horizontally to release the Lower Fabric Clamp.
3. Pull out the whole Lower Fabric Clamp
4. Put Multifunction Vise Clamp into the slot of Bench Top Stand, put back the locking rod between Clamp and Stand's slot.
5. Relocking the Vise Clamp by turning the plastic nut clockwise.



E CONFIRM THE CONFIGURATION REQUIRED FOR YOUR TESTS

E.1 Grips and Clamps to be chosen



However, there are a lot of upper grip available upon request, but not including in the standard package. Or customs made ones we can do for you.

E CONFIRM THE CONFIGURATION REQUIRED FOR YOUR TESTS

E.2 Choice of Upper Grip

TYPE OF BUTTON	TYPE OF GENERAL GRIPS			
				
	☆	✕	✕	✕
	☆	✕	✕	○
	☆	✕	☆	✕
	○	✕	☆	✕
	✕	☆	✕	✕
	☆	✕	✕	✕
	○	✕	☆	✕
	○	✕	✕	✕
	✕	○	✕	✕

☆ RECOMMENDED ○ WORK NORMAL ✕ NOT RECOMMENDED

F STANDARD TEST PROCEDURE

F.1 Calibration

The accuracy of the test result is largely depends on the accuracy of the (STA-0020) Imada Force Gauge, thus a routine “Weight Test” is necessary to ensure its accuracy.

Procedure:

1. Remove the ‘Upper Grip”.
2. Replace to “Hook Adaptor” on the Imada Force Gauge.
3. Set the pointer of Force Gauge to “ZERO” position by adjusting the Zero Tare Ring.
   (Remark: the Force Gauge is under “ON” visible position).
4. Hang a “Calibration Weight 15LB/~6.82kg on the hook of the scale and verify the accuracy of the force scale. Reading should fall within the acceptance tolerance, +/- 0.5% of full scale reading.
5. If the weight test failed, call for the repairing services for your local retailers.

F.2 Conditioning

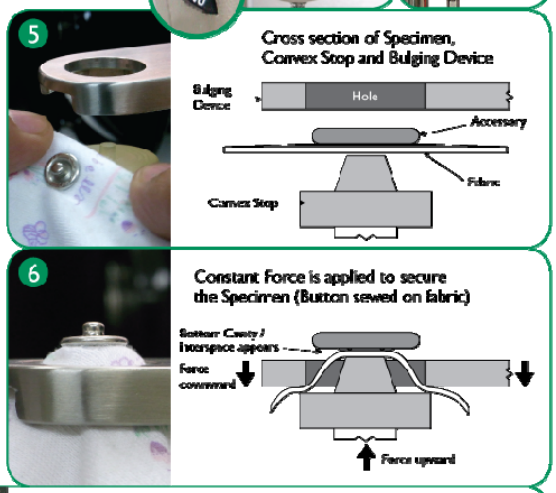
Before conducting test, conditioning the specimens by bringing them from dry side to approximate moisture equilibrium for testing in the standard atmospheric testing for textiles as directed in Practice D1776.

F STANDARD TEST PROCEDURE

F.3 Test Start

STA-0118, STA-0006E & STA-0042 are adopted for below procedure.

1. Verify by using 15LB (6.82kg) calibration weight (accuracy +/-0.5%). *Refer to step G.1*.
2. Attach appropriate Upper Grip to the hook of the Force Gauge.
3. Set the pointer of Pull Gauge to "ZERO" position by adjusting the "Zero Tare Ring".
   Remark: the Force Gauge is under "ON" visible position
4. Move the Lever upwards so that the Force Gauge Station can be held above Lower Fabric Clamp for specimen preparation
5. Place a test specimen on the Convex Stop of the bulging device
6. Once the fabric of the specimen is secured, a bottom cavity / interspace is formed between the fabric and the accessory



7. Move the Level next to Force Gauge down
8. Turn Flywheel anti-clockwise, and then locate the prongs of a upper grip to the bottom interspace
9. Move the upper grip upwards by rotate the Flywheel clockwise
10. To hold the test specimen at 7kg for 10 seconds and then release by using the Flywheel
11. If the accessory separates from the fabric or the specimen is broken, record the reading.

*Above graphic drawn not in correct scale.

G TEST RESULTS INTERPRETATION

Test Table Example

DATE _____ ENVIRONMENTAL CONDITIONS _____

TEMPERATURE _____ °C/°F RELATIVE HUMIDITY _____ %

OPERATOR _____ LABORATORY NAME _____

MATERIAL IDENTIFICATION _____

MANUFACTURER CODE, GRADE & FORM _____

TYPE AND DIMENSIONS OF SPECIMENS _____

SPECIMEN	BREAKAGE						PASS	FAIL
	ACCESSORY			FABRIC				
	Broken during procedure (6)	Hold 7kg force 10 seconds	Hold less than 7kg force 10 seconds	Broken during procedure (6)	Hold 7kg force 10 seconds	Hold less than 7kg force 10 seconds	Force applied without breakage	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

REMARK _____

_____

_____

_____

SIGNATURE _____

G TEST RESULTS INTERPRETATION

Test Table Example with result

DATE 11 June, 2013. ENVIRONMENTAL CONDITIONS ASTM D1776
TEMPERATURE 21 °C/°F RELATIVE HUMIDITY 65 %

OPERATOR Brenda C. LABORATORY NAME China Factory
MATERIAL IDENTIFICATION Shirt, Shell Shape Button
MANUFACTURER CODE, GRADE & FORM STY#1332, L#AG
TYPE AND DIMENSIONS OF SPECIMENS Button 15mm dia.

SPECIMEN	BREAKAGE						PASS	FAIL
	ACCESSORY			FABRIC				
	Broken during procedure ⑥	Hold 7kg force 10 seconds	Hold less than 7kg force 10 seconds	Broken during procedure ⑥	Hold 7kg force 10 seconds	Hold less than 7kg force 10 seconds	Force applied without breakage	
1							√	
2							√	
3				√		√		√
4	√		√					√
5	√	√						√
6							√	
7				√	√			√
8							√	
9							√	
10							√	
11							√	
12							√	
13	√		√					√
14				√	√			√
15							√	
16				√	√			√
17				√	√			√
18							√	
19								
20								

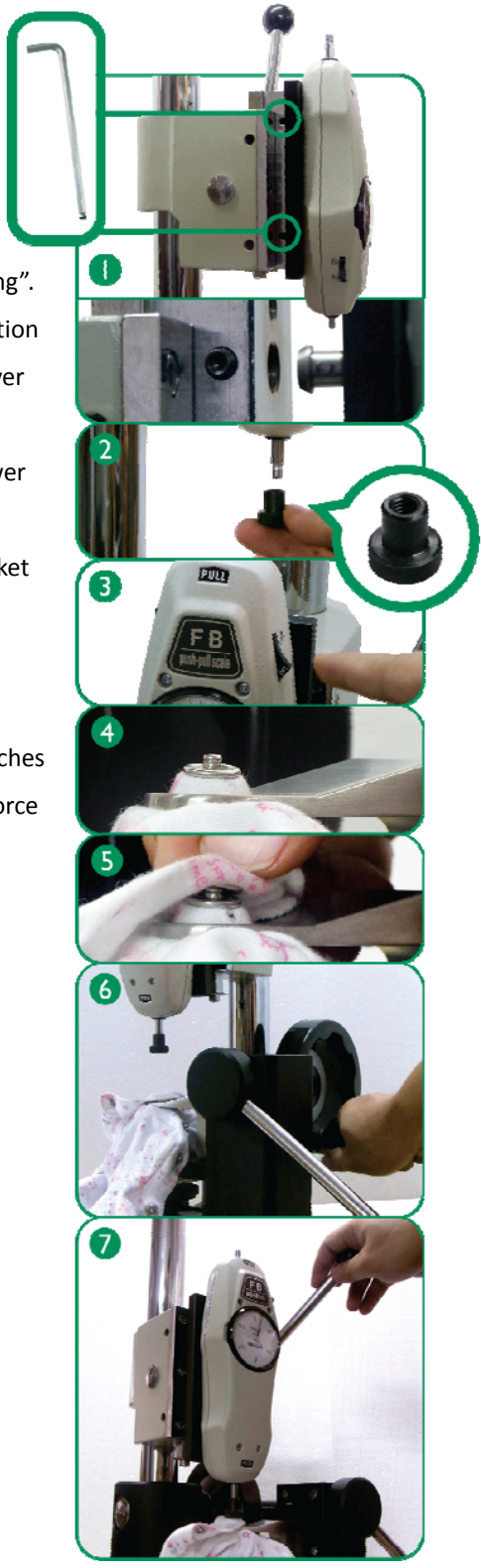
REMARK Test by Upper Grip (STA-0118) and Lower Fabric Clamp (STA-0042+STA-0006). 18 specimens had been tested, 3 buttons were damaged and 5 buttons' yarn broken. Near 45% of specimens failure in pull test.

SIGNATURE

H SNAPPING & UNSNAPPING TEST

H.1 Snapping Test

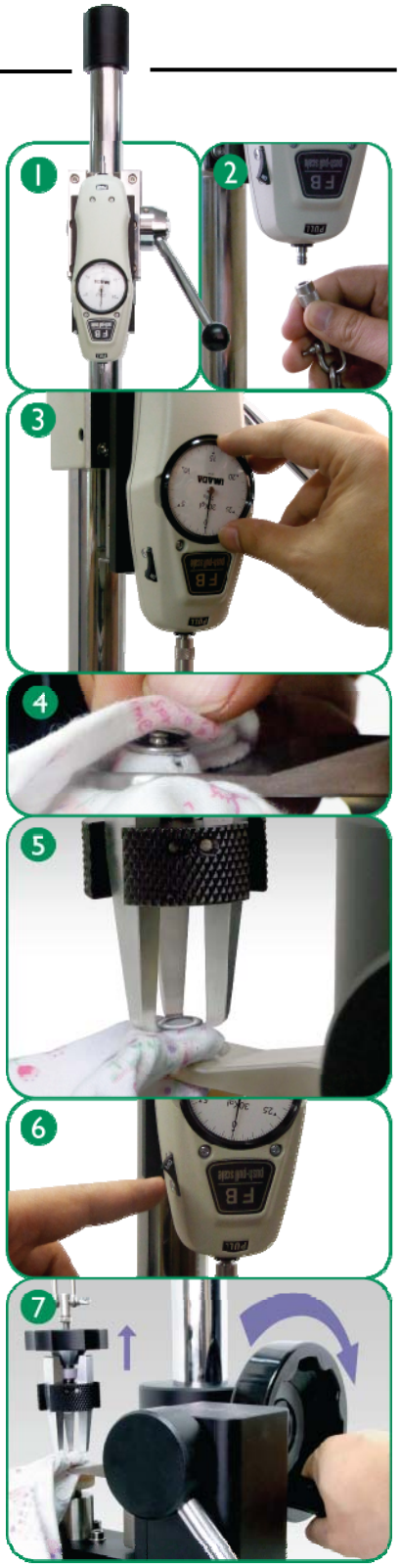
1. Normally, Force Gauge was installed upside down. Reverse it by using a Hex Key (not included).
2. Attach the Flat Adaptor (inside the Imada Force Gauge's pack) to the lower part of gauge, and then adjust gauge's pointer to "ZERO" by using "Zero Tare Ring".
3. Pull the Side button of Force Gauge to show "OFF" position to lock the maximum snapping value. Make sure the lever next to Force Gauge is pull up completely.
4. Placing the Snap Button A (e.g. Stud Button) on the Lower Fabric Clamp and mount it tightly.
5. Then place the opposite side of Snap Button B (e.g. Socket Button) over the top of Snap Button A.
6. Turn flywheel anti-clockwise to lower down the Force Gauge and reach the lower end.
7. Push the Lever and enclose the Flat Adaptor until it touches the surface of Snap Button B slightly. Move down the Force Gauge slowly. Stop at once when buttons snapped together.
8. Read the result from Force Gauge and mark it down.
9. Remove buttons, push side pointer "OFF" to reset the Force Gauge to "ZERO" and then repeat from step 3 for another test if need.



H SNAPPING & UNSNAPPING TEST

H.2 Unsnapping Test

1. Make sure the Force Gauge is installed in upside down position (Gauge's meter reversed). If not, use a hex key to turn it over (Refer to Snapping Test Step 1).
2. Choose a corresponding upper grip and lower clamp to match the Snap Button which needs to be test.
3. Set the pointer of Pull Gauge to "ZERO" position by adjusting the "Zero Tare Ring".
4. Mount one side of Snap Button (e.g. Stud Button) to the Lower Fabric Clamps tightly, and then place the other side of Snap Button (e.g. Socket Button) and snap both of them together.
5. Lower down the upper grip and then locate the prongs to the top of the interspace of Snap Button.
6. Set the side button of Force Gauge to show "OFF" position.
7. Slowly rotate the flywheel to move the grip upward, until separate the two Snap Buttons (Stud and Socket).
8. Mark down the result from the Gauge's meter.
9. Remove buttons from Lower Fabric Clamp, replace a new one for another test If need.



I OTHER RELATED SAFETY TESTERS

J.1 Physical and Mechanical Test Equipment

Toy-Master Tension Testing Kit

Determines if projections from the main body of a toy or article which may be grasped by the thumb and forefinger or teeth of a child can be removed by tensile force and thereby uncover an otherwise hidden hazard. A Force gauge is used in conjunction with a clamp to record the force applied.

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

Toy-Master Accessibility Probe A /Probe B

The probe simulates a finger of an infant or child touching the accessible points or edges of a toy, which may then be subject to tests of sharp points or sharp edges. Using the probe to determine where is accessible. Belonging to the test item of the toy safety is all foundations that the toys test.

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

Toy-Master Sharp Edge Tester

Used to rule out articles that present an unreasonable risk of injury by avulsion or laceration due to sharp metal or glass edges. A self adhesive PTFE tape is attached to a mandrel, which is then rotated for a single 360 degree revolution along the accessible edge being tested. If the tape is cut in half or longer in length (approx. 13mm), the edge is identified as a hazardous sharp edge.

Applicable Standard:
16 CFR 1500.49, ASTM F963, EN71, etc.

Toy-Master Sharp Point Tester

Aids in determining items that pose a risk of injury by puncture or laceration due to nonfunctional sharp points. If the accessible sharp point penetrates a specified depth into the small rectangular opening of the tester, the LED lamps is illuminated to indicate that the point is unacceptably sharp.

Applicable Standard:
16 CFR 1500.48, ASTM F963, EN71, etc.

I OTHER RELATED SAFETY TESTERS

I.1 Physical and Mechanical Test Equipment

Toy Master Small Parts Cylinder

This tester made of metal is utilized in identifying toys or other articles that present a choking, aspiration, or ingestion hazard because of small parts. If any objects can fit completely into the cylinder without compressing & in any orientation, it is defined as a "Small Part".

Applicable Standard:
16 CFR 1501, ASTM F963, EN 71, etc.

Toy-Master Flexure Tester

To determine whether metallic wires or materials used for stiffening or retention of form in toys can be easily bent or broken. Potential hazards of sharp points & sharp edges.

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

Toy-Master Bite Test Clamp

Identifies hazards associated with a toy (or component, or any accessible portion thereof) that has certain external dimensions and a design configuration that would permit a child to insert a portion into the mouth, in any orientation. Bite Test Clamp simulates the teeth of an infant or child biting the accessible area of toys.

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

Toy-Master ASTM Impact Media (without concrete)

A standardized surface onto which a toy can be dropped from a certain height to simulate possible damage which may occur by falling from a crib, table or counter top or other impact situations. After testing, the toy is examined for possible hazards such as sharp edges, sharp points and small parts.

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

I OTHER RELATED SAFETY TESTERS

I.1 Physical and Mechanical Test Equipment

Toy Master Pacifier Test Fixture

Identifies pacifiers that may cause choking or suffocation because their design permits them to enter an infant's mouth and become lodged in the throat. A pacifier is placed centrally in the opening of test fixture. The nipple is subjected to a tensile force of 2 lbs and held for 10 seconds. If the shield is pulled through the fixture, the pacifier has failed.

Applicable Standard:
16 CFR 1511, ASTM F963, EN 71, etc.

Toy-Master Torque Tes Kit

Determines if projections from the main body of a toy or article which may be grasped by the thumb and forefinger or teeth of a child can be removed by a certain torque force and thereby uncover an otherwise hidden hazard. A torque-measuring device is used in conjunction with a torque clamp to record the applied force.

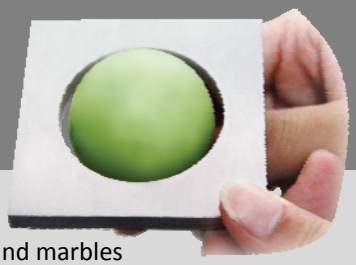
Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

Toy-Master Rattle Test Fixture

Used to determine if rattles may cause chocking or suffocation because their design permits them to enter an infant's mouth and become lodged in the throat. If any part of the rattle can pass through the opening without being pushed or pulled, the rattle has failed. For other rattles incorporating nearly spherical, hemispherical or circular flared ends, a Supplemental Rattle Test Fixture is available.

Applicable Standard:
16 CFR 1510, ASTM F963, EN 71, etc.

Toy-Master Small Ball Test Fixture



Identifies small balls and marbles that could cause a chocking or suffocation hazard. A ball which can pass through the test fixture is determined to be a "Small Ball".

Tooling:
- Small Ball Test Fixture
- Optional Calibration Certificate for Small Ball Test Fixture

Applicable Standard:
16 CFR CPSC USA, ASTM F963, EN71, etc.

I OTHER RELATED SAFETY TESTERS

I.2 Flammability Testing Equipment

Labtex 45° Flammability Tester (Apparel Textiles) Model: TC45-1610

Labtex 45° Flammability Tester (Apparel Textiles) Model: TC45-1610
Mandatory tester for all USA apparel fabrics. Measures rate of burning. Also specified for upholstery component.

Applicable Standard:
16 CFR 1610, ASTM D1230, F963, CA TB 117C and E, NFPA 702, etc

Labtex 45° Flammability Tester (Vinyl Plastic Film) Model: TC45-1611

Mandatory U.S.A. tester for all vinyl apparel materials sold in the USA.

Applicable Standard:
16 CFR 1611

Toy-Master Vertical Flammability Tester (Children's Sleepwear) Model: TC90-1615

Measures ignition resistance properties of children's sleepwear, draperies, cubicle curtains, upholstery foams, tents.

Applicable Standard:
16 CFR 1615 & 1616, CA TB 117 A and B, NFPA 701, etc

I OTHER RELATED SAFETY TESTERS

I.3 Laundering / Washing Testing Equipment

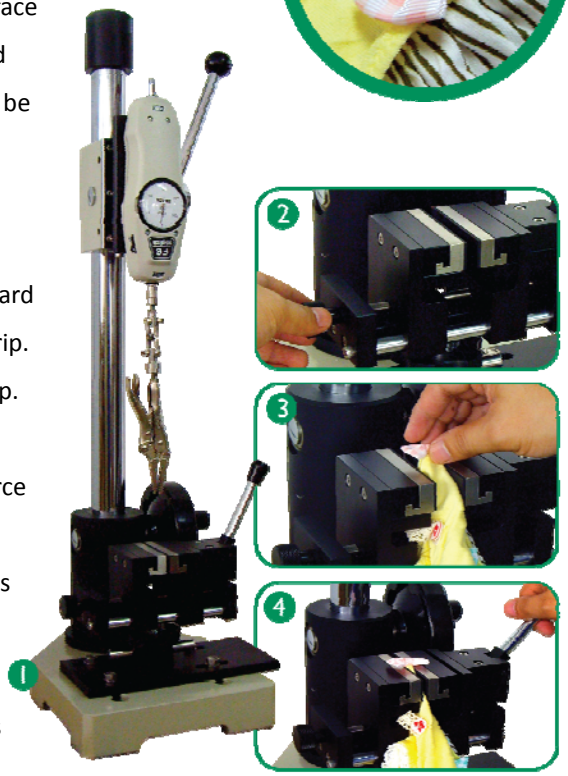
Testing Washing and Drying Machine

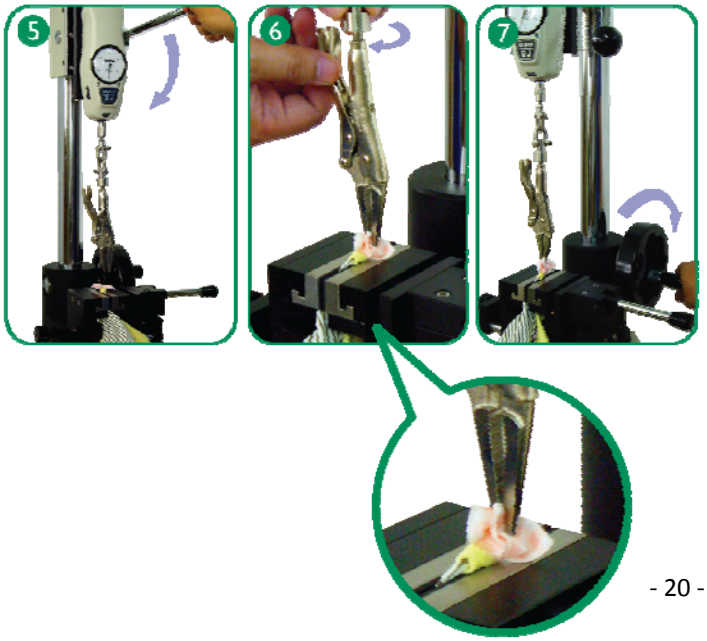
Many AATCC & BS EN ISO test method require washer and dryer. Furthermore, more and more major U.S. and Europe Retailers also need to conduct tests & regulations after home laundry procedures.

J EXAMPLES

J.1 Ribbon Accessory Test with Upper Long Nose Grip and Multifunction Vise Clamp

1. Refer to Step F.3.1. to F.3.4. to calibrate the Force Gauge and set up the Upper Long Nose Vise Grip. Set up the Multifunction Vise Clamp as Step D.2.
2. Loosen the Multifunction Vise Clamp's jaw face
3. Put the specimen between two jaw face and make sure the Ribbon Accessory should not be clamped.
4. Push the lever of Vise Clamp to lock the specimen firmly.
5. Move the lever next to Force Gauge downward to lower down the Upper Long Nose Vise Grip.
6. Clamp the Ribbon Accessory by the Vise Grip.
7. Move the upper grip upwards by rotate the Flywheel clockwise and apply the pulling force to Ribbon Accessory.
8. Hold the test specimen at 7kg for 10 seconds and then release by turning the Flywheel anti-clockwise.
9. Record the result. If the accessory separates from the fabric or the specimen is broken during test, record all the status.

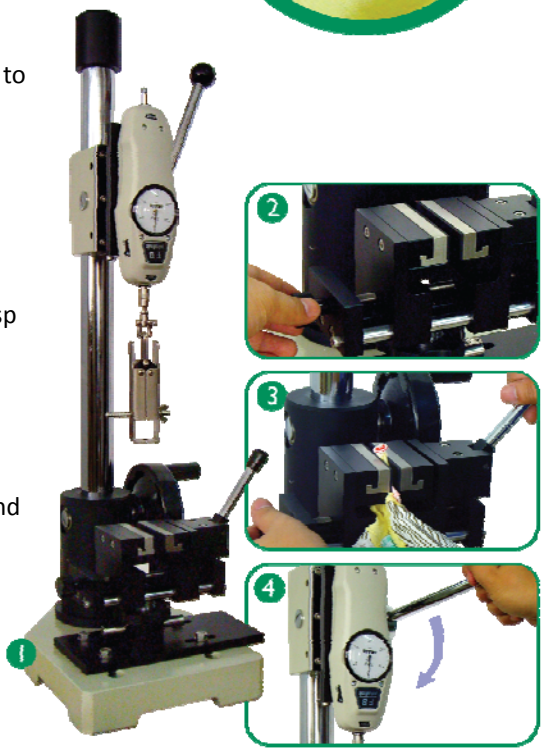


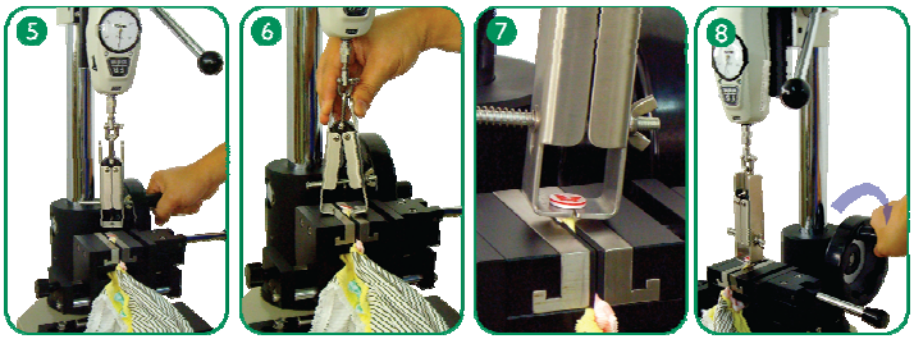


J EXAMPLES

J.2 Button Accessory test with Grasp Button Grip and Multifunction Vise Clamp

1. Refer to Step F.3.1. to F.3.4. to calibrate the Force Gauge and set up the Grasp Button Grip. Set up the Multifunction Vise Clamp as Step D.2.
2. Loosen the Multifunction Vise Clamp's jaw face
3. Put the specimen between two jaw face and make sure the Button Accessory should not be clamped. Push the lever of Vise Clamp downward to lock the sample firmly.
4. Move the lever next to Force Gauge downward to lower down the Grasp Button Grip.
5. Turn Flywheel to move the Grip downward and close to the Button.
6. Push the Grip and clamp the Button Accessory.
7. Clamp the Button Accessory and move the Grasp Button Grip upwards by rotate the Flywheel clockwise and apply the pulling force to Button Accessory.
8. Hold the test specimen at 7kg for 10 seconds and then release by turning the Flywheel anti-clockwise.
9. Record the result. If the accessory separates from the fabric or the specimen is broken during test, record all the status.



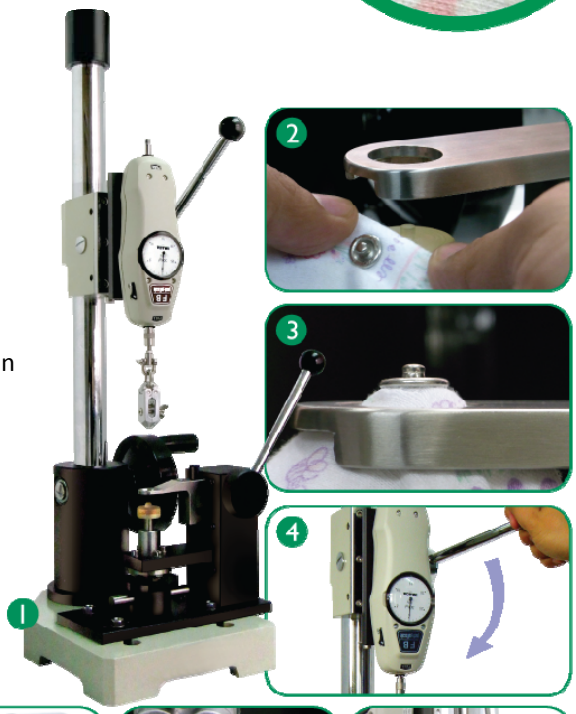


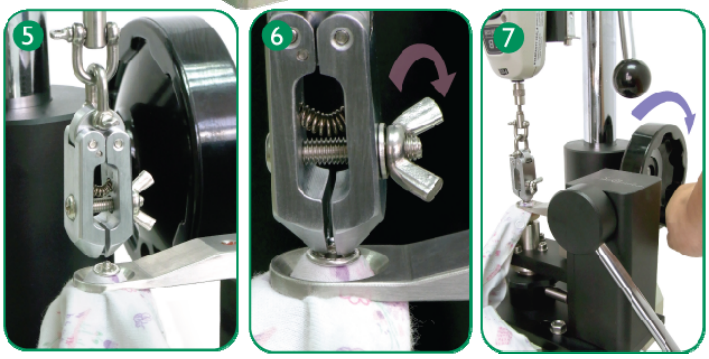
J EXAMPLES

J.3 Stud Button test with Stud Grip and Lower Fabric Clamp

Sometimes, the male stud button may fixed into the fabric deeply, so we may use the Upper Stud Grip to pull it

1. Refer to Step F.3.1. to F.3.4. to calibrate the Force Gauge and set up the Upper Stud Grip.
2. Place a specimen on the Convex Stop of the bulging device
3. Once the fabric of the specimen is secured, a bottom cavity / interspace is formed between the fabric and the accessory
4. Move the lever next to Force Gauge downward
5. Lower down the Upper Stud Grip near the accessory.
6. Fasten the Upper Stud Grip to the top of accessory by rotate the screw clockwise and hold it tightly.
7. Rotate the Flywheel clockwise and apply the pulling force to accessory.
8. Hold the test at 7kg for 10 seconds and then release by turning the Flywheel anti-clockwise.
9. Record the result. If the accessory separates from the fabric or the specimen is broken during test, record all the status.

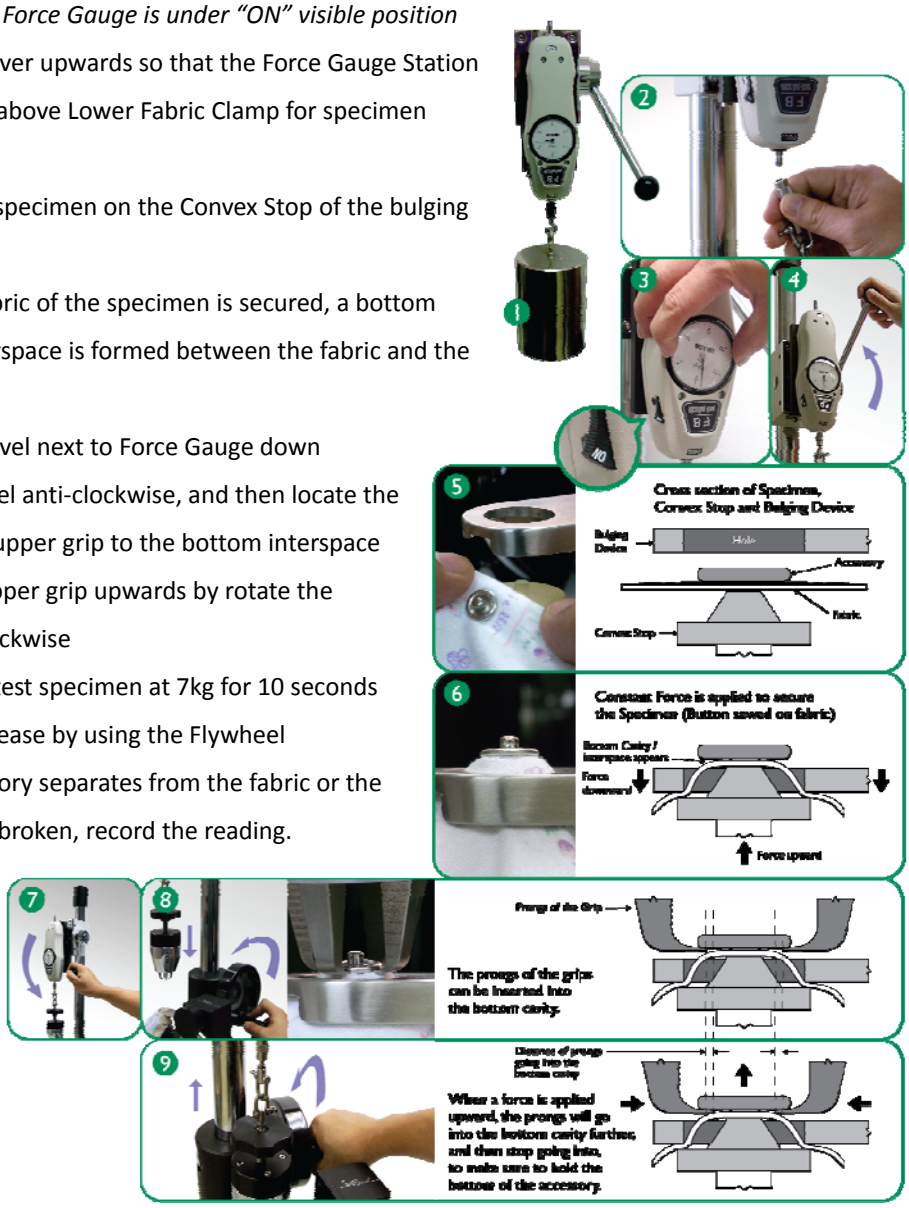




J EXAMPLES

J.4 Stud Button on Universal Upper grip STA-118 with Lower Fabric Clamp

1. Verify by using 15LB (6.82kg) calibration weight (accuracy +/-0.5%). *Refer to step G.1*.
2. Attach appropriate Upper Grip to the hook of the Force Gauge.
3. Set the pointer of Pull Gauge to “ZERO” position by adjusting the “Zero Tare Ring”.
   Remark: the Force Gauge is under “ON” visible position
4. Move the Lever upwards so that the Force Gauge Station can be held above Lower Fabric Clamp for specimen preparation
5. Place a test specimen on the Convex Stop of the bulging device
6. Once the fabric of the specimen is secured, a bottom cavity / interspace is formed between the fabric and the accessory
7. Move the Level next to Force Gauge down
8. Turn Flywheel anti-clockwise, and then locate the prongs of a upper grip to the bottom interspace
9. Move the upper grip upwards by rotate the Flywheel clockwise
10. To hold the test specimen at 7kg for 10 seconds and then release by using the Flywheel
11. If the accessory separates from the fabric or the specimen is broken, record the reading.



* Graphic drawn not in correct scale.

J EXAMPLES

STA-0118 & STA-0006

Upper Tip-Top Grip for female part of buttons

STA-0005 & STA-0042

Upper Grasp Button Grip for other accessories.

STA-0007 & STA-0042

Upper Long Nose Vise grip for zipper pullers or optional accessories

STA-0002

Upper Stud Grip for male part of buttons.

STA-0113

Upper Universal Grip for female part of buttons

STA-0115

Upper Universal Grip for accessories