

# USER MANUAL OF **SHARP EDGE TESTER**



STA-0012



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# SHARP EDGE TESTER

MODEL: STA-0012

## 1. Introduction

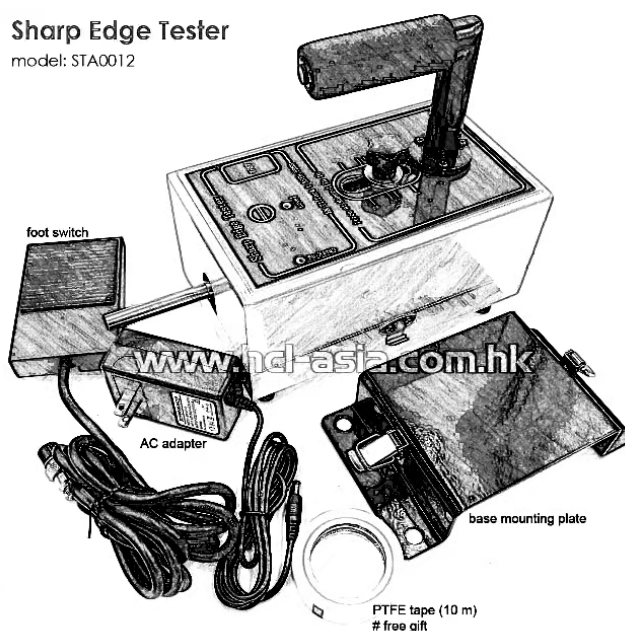
The sharp Edge Tester is used to determine whether accessible edges of toys for use children are liable to cause injury to the child.

It complies with the requirements of EN71: Part 1:1998 and ASTM F963-03, both relating to the safety of toys with regard to mechanical and physical properties. The instrument must be used in accordance with the requirements specified within the standards.

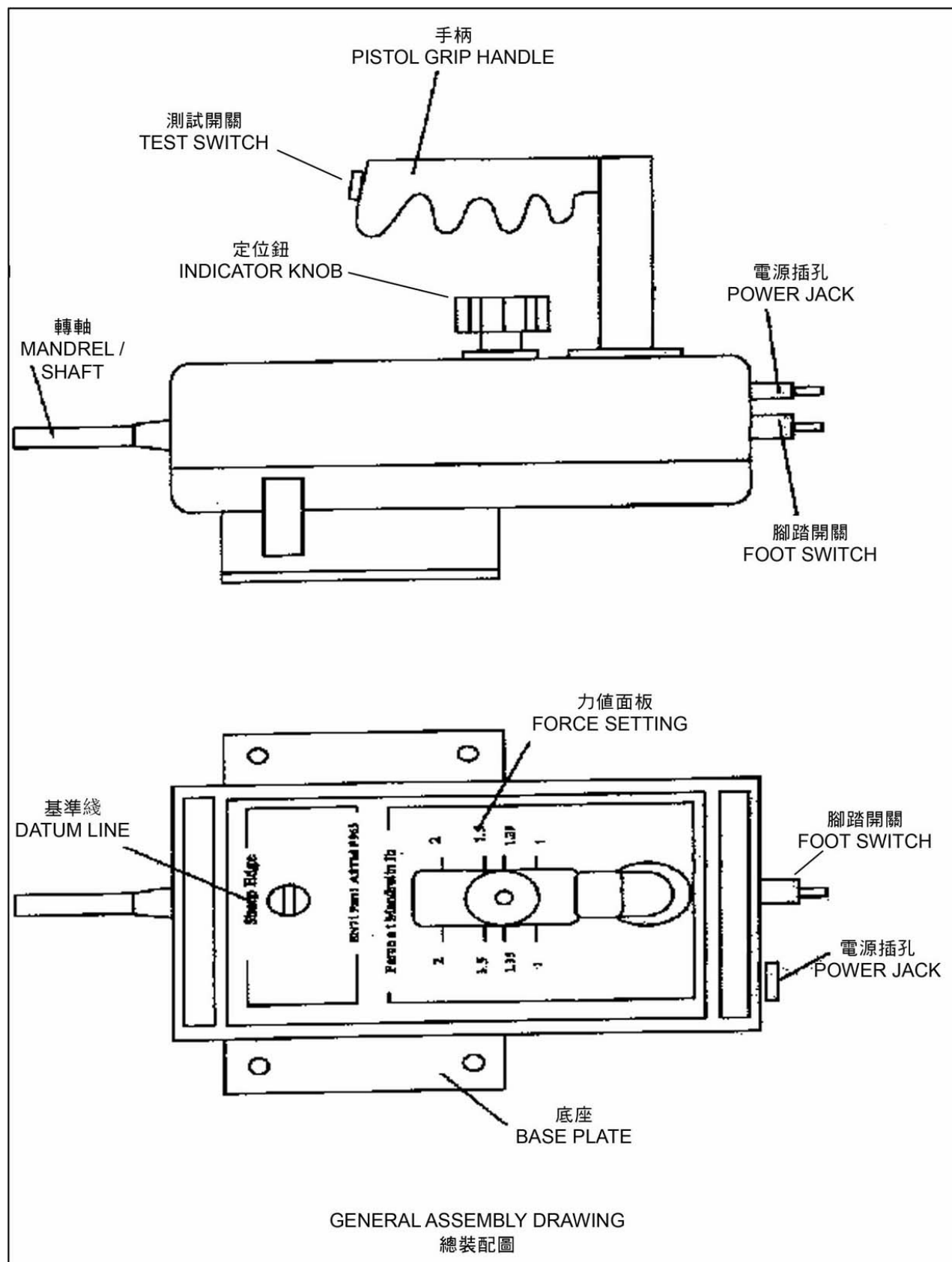
## 2. Packing list

The sharp edge tester is supplied with the following standard accessories:-

1. 1x Sharp Edge Tester
2. 1x Base mounting plate
3. 1x Foot Switch
4. 1x User manual
5. 1x PTFE Tape (10m of length)
6. 1x AC adapter



### 3. General assembly drawing



## 4. Sharp Edge Testing Method

1. **Purpose:** To determine if any toy has hazardous sharp edges that may cause potential piercing or puncturing damage.

2. **Scope:**

2.1 This test is applied to the accessible parts of toys and articles used by children under 8 years old before and after normal use and abuse tests (excluding bite force tests) - ASTM/CPSC.

2.2 This test is applied to the accessible parts of toys and articles used by children under 14 years old before and after normal use and abuse tests (excluding bite force tests) - EN71.

3. **Exemption scope:**

3.1. Bicycles (16CFR 1508).

3.2. Cribs without size markings and cribs with size markings (16 CFR 1509, 1512).

3.3. Due to the function and purpose of the toy, it must have sharp metal or glass edges, but no non-functional sharp edges. Such toys and articles must be clearly labeled when they are sold; for example: toy scissors (16 CFR 1500.49).

3.4. In addition to toys, other children's products must have sharp metal or glass edges, but no non-functional sharp edges due to their function and purpose. For example: children's ice skates, children's knives and cutlery (16 CFR 1500.49).

3.5. The excess edge of soft polymers (such as polyolefin) are not considered burrs (EN71 Part 1 4.7C).

3.6. When the function of the toy (such as the cover glass of a microscope) requires it, sharp edges can be used on toys for children over 36 months old, but the user must be reminded of the potential dangers caused by sharp edges (EN71 Part 1 4.7d).

3.7. Toys for children between 48 months and 96 months that contain potentially hazardous edges must be labeled with a warning label if they are an essential part of the toy. Toys for children under 48 months cannot contain accessible hazardous sharp edges that are required for their function (ASTM).

4. **Definitions**

4.1. Touchable edge - any edge on a toy that can be touched using the touch probe described in 16 CFR 1500.49 or EN71 Part 1 8.10.

4.2. Toy - refers to any toy, game or other plaything that is indicated by any design, label, advertisement or other factors as being intended for children.

4.3. Sharp edge - a toy or article that has a metal or glass edge that can cause the adhesive tape to break at least 1/2 inch in length due to a force of 1.35 pounds is identified as a "sharp edge".

4.4. Inaccessible edge - before and after the abuse test (excluding the bite force test), if the gap between the adjacent surfaces of the metal or glass edge does not exceed 0.02 inches, the edge is an inaccessible edge.

4.5. Glass - a brittle, non-crystalline substance made by melting silica and silicates containing soda and lime.

5. **Equipment used:**

5.1. Touch probe A

5.2. Touch probe B.

5.3. A gauge capable of measuring a clearance of 0.02 inches.

5.4. Sharp edge tester.

The working principle of the sharp edge tester is as follows:

The sharp edge tester has a cylindrical axis with uniform rotation speed, which allows the polytetrafluoroethylene (PTFE) tape to wrap around its perimeter, and the edge can withstand a force of 1.35 lbs for testing in the middle of the tape width. When the uniform force is maintained on the test edge, the axis can rotate a full circle, but the edge is prevented from moving linearly on the axis. If the tape is broken by at least 1/2 inch under the force of 1.35 lbs, the edge is identified as a "sharp edge".

5.5. Polytetrafluoroethylene (PTFE) tape.

## 6. Test method:

6.1. **Sample preparation:** Before testing, each sample needs to be at a temperature of: 20-250 C, relative humidity Place in an environment with a temperature of 20-70% for at least 4 hours.

### 6.2. Procedure:

6.2.1. The sample to be tested should maintain its shape and cannot move during the test.

6.2.2. Part of the sample to be tested needs to be removed to allow the sharp edge tester to test the accessible edge. When removing the part, the original rigidity of the sample to be tested should be maintained, but it should not exceed the rigidity when combined.

6.2.3. A layer of PTFE tape is wrapped at the end of the axis. The ends of the tape can be close or overlapped but not more than 0.1 inches and cannot be extended.

6.2.4. Start the tester and start the axis rotation. The test edge passes through PTFE, and the center of the tape width is used as the contact axis point. The axis line and the straight edge line are kept 90 +/-50 or contact the curved edge at the tangent point.

6.2.5. Apply 1.35 lbs of force to the test edge, and the indicator light will light up after the force is applied.

6.2.6. Press the test switch to rotate the axis for one circle, and prevent the test edge from rotating with the axis.

6.2.7. After the axis rotates one circle, the axis and the test edge are separated.

6.2.8. Carefully remove the PTFE tape from the axis, and prevent the cut from being further enlarged or the marking from being broken.

6.2.9. Check the PTFE tape. If the tape is scratched for more than 1/2 inch, it is identified as a sharp edge.

7. **Test results:** If the edge being tested has a sharp edge, it is unqualified.

8. **Report:** Report the edge being tested and its position on the sample to indicate whether it is qualified or not.

## 9. Data/Comments:

9.1. If the axial force of 1.35 lbs causes the test edge to bend, apply the maximum force to prevent the test edge from bending and the operator should choose the edge that is most likely to break the tape for testing.

9.2. From the beginning of the axis rotation to the end of the rotation, the tangential speed of the test axis in 75% of its rotation is 1.00 +/- 0.08 inches/second (25.4 +/- 2.0mm/s).

9.3. The temperature for sharp-edge test tape is 70-800F (21-270C).

9.4. There are no dents, scratches or burrs on the surface of the axis.

9.5. The tape width is at least 1/4 inch.

## 10. References:

10.1. USA 16 CFR 1500.49.

10.2. Item 4.7 of ASTM F963-96a.

10.3. EN71: Part 1 1998, item 4.18.

## 5. Maintenance & Calibration

1. Keep the instrument clean and dry.
2. Do not allow PTFE tape to build up on the mandrel / shaft. Clean off after each test prior to applying a new piece of tape.
3. Replace the mandrel / shaft if scratches. Nicks or burrs are present.  
The mandrel / shaft is secured to the motor shaft adaptor with a LEFT HAND THREAD. ROTATE CLOCKWISE TO REMOVE.
4. The force applied by the mandrel / shaft and rotational speed should be verified each year.
5. The condition of the mandrel / shaft should also be verified each year.

### **Note:**

1. Hold the test switch, check the velocity of the mandrel / shaft.
2. If the mandrel / shaft can't run a circle, press the power switch and reset it.
3. Annual replacement for the mandrel / shaft is recommended in order to ensure its conformity if frequency of use is high.

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