

**U.S. Consumer Product Safety Commission
LOG OF MEETING**

SUBJECT: Garage Door Safety

DATE OF MEETING: October 8, 1999

LOG ENTRY SOURCE: John R. Murphy, ESME

DATE OF LOG ENTRY: October 25, 1999

LOCATION: Room 715

CPSC ATTENDEE(S): Ronald L. Medford, EXHR
Andrew G. Stadnik, ES
Nicholas V. Marchica, ESME
John R. Murphy, ESME
Robert Ochsman, ESHF
Suad Nakamura, HS

NON-CPSC ATTENDEES(S): Joseph R. Hetzel, P.E. , DASMA
Alan R. Leist, DASMA
Naomi Angel, DASMA Counsel
Larry Martin, DASMA
Albert W. Mitchell, DASMA

SUMMARY OF MEETING:

The meeting convened at 1:30 PM. The meeting was requested by the Door & Access Systems Manufacturers Association, International (DASMA) to present a new "Standard for Section Interfaces on Residential Garage Door Systems" (DASMA 116) to the Consumer Product Safety Commission (CPSC) staff. A copy of DASMA 116 is attached. This standard addresses a hazard identified by the CPSC staff which involves finger injuries that occur when a consumer gets one or more fingers caught in the joint that is created between garage door sections as the sections rotate to the vertical position near the top of the door. The injuries include amputation, fracture, and crushing. Alan Leist, Chairman of the technical committee that drafted the standard provided an explanation of the standard. The standard contains a performance test for pinch resistant section joints. The performance test follows previous CPSC recommendations and goes further to provide a test method for guarded section interfaces and possible future innovations in garage door design. As an alternative to pinch resistant joints the standard allows lift handles or gripping points provided they are installed on, or incorporated into, both the inside and the outside of the door.

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The staff provided comments, at the meeting, that the standard did not have provisions that would ensure that garage door handles are installed on the garage door. The standard is vague as to who has the responsibility to install the garage door handles. Mr. Medford indicated that the two approaches are not equal and that it was our view from the beginning that handles were just an interim step and that the provisions allowing handles in lieu of pinch resistant section interfaces should have a limited life in the standard. Mr. Medford said that there should be a required warning label with handles since the hazard of hand and finger injury in the section interface still exists with this option. The CPSC agreed to provide written comments to DASMA by October 13, 1999. The meeting adjourned at 3:00 PM.

DASMA 116-1999

Standard for Section Interfaces on Residential Garage Door Systems

1. SCOPE

- 1.1 This standard defines performance-based and prescriptive-based methods of evaluating section interfaces.
- 1.2 Without limitation, DASMA does not represent or imply that this standard relates to any component or system other than section interfaces expressly identified and described herein.
- 1.3 Inclusions: This specification is intended to cover residential garage door systems generally used for vehicular traffic.

2. DEFINITIONS

- 2.1. **Section Interface:** The section to section interface defined by the horizontal door section edge surfaces that move relative to each other as the door opens and closes.
- 2.2. **Finger Probe:** JFP-10 Jointed Accessibility Probe
- 2.3. **Residential Garage Door System:** Sections, tracks, counterbalance, and other components necessary to produce an operational residential sectional garage door per ANSI/DASMA 102.
- 2.4. **Pinch Point:** A point where an opening can be created in a section interface when the door is moved either from the closed-to-open position or from the open-to-closed position such that an object placed in the opening may be held captive or damaged.
- 2.5. **Lift Handle:** Handle installed on, or incorporated into, a door system that may be used to manually open or close the door.
- 2.6. **Gripping Points:** Point at which a person may be able to take hold of the door and be able to manually open or close the door.
- 2.7. **Pull Point:** A point at which a door system may be manually moved to the open or closed position.
- 2.8. **Guarding:** A means by which an object is kept from being inserted into a pinch point.

3. SECTION INTERFACE COMPLIANCE – ACCEPTABLE ALTERNATIVES

- 3.1. Residential door systems shall meet this standard by at least one of the following means:
 - 3.1.1. Testing of section interfaces in accordance with the provisions of Sections 4-6.
 - 3.1.2. Handles or suitable gripping points in accordance with the provisions of Section 7.

4. TEST SAMPLE REQUIREMENT – SECTION INTERFACE COMPLIANCE

- 4.1. Doors tested under these performance requirements shall be regular production doors of a manufacturer's standard construction, materials and design.
- 4.2. The test door shall be the configuration allowing the highest degree of interface rotation.

5. TEST APPARATUS – SECTION INTERFACE COMPLIANCE

- 5.1. A door frame fixture comprising jambs and headers suitable for mounting the test door.
- 5.2. Probe #1: Finger Probe
- 5.3. Probe #2a: A probe consisting of a 0.35 inch (9 mm) diameter metal rod, with a full spherical 0.175 inch (4.5 mm) radius end, sufficiently long to insert into door section interfaces, as shown in Figure 2.
- 5.4. Probe #2b: A probe consisting of a 1.00 inch (25 mm) diameter metal rod, with a full spherical 0.50 inch (12.5 mm) radius end, sufficiently long to insert into door section interfaces, as shown in Figure 2.
- 5.5. Probe #3a: A 3/8 inch (10 mm) diameter, full spherical 3/16 inch (5 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.6. Probe #3b: A 1/2 inch (13 mm) diameter, full spherical 1/4 inch (6.5 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.7. Probe #3c: A 5/8 inch (16 mm) diameter, full spherical 5/16 inch (8 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.8. Probe #3d: A 3/4 inch (19 mm) diameter, full spherical 3/8 inch (9.5 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.9. Probe #3e: A 7/8 inch (22 mm) diameter, full spherical 7/16 inch (11 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.10. Probe #3f: A 1 inch (25 mm) diameter, full spherical 1/2 inch (12.5 mm) radius end, polyurethane probe with a Shore Hardness of 90-A, as shown in Figure 3.
- 5.11. Pull Force Scale: Scale that measures manually applied tensile force of a minimum of 35 lbs. (156 N), with an accuracy of plus or minus 2 lbs. (9 N) at 35 lbs. (156 N), when attached to a fixed object.

6. TEST PROCEDURE – SECTION INTERFACE COMPLIANCE

6.1. Finger Probe

- 6.1.1 The door shall be opened and closed manually and the finger probe shall be attempted to be inserted without appreciable force into the pinch point areas on the front and back of each section interface for each interface up to 96 inches (2438 mm) from the floor during the full motion.
- 6.1.2 Insertion shall be defined as a minimum of 0.25 inches (6.1 mm) oriented as shown in Figure 1, moving the finger joints through their full range of articulations.
- 6.1.3 If the finger probe is inserted beyond a depth of 0.25 inches (6.1 mm), the area(s) shall be subject to the testing in Section 6.2.
- 6.1.4 If the finger probe cannot be inserted to a depth of more than 0.25 inches (6.1 mm), the area(s) shall be deemed compliant with this section, and no further testing is required.

6.2 Maximum/Minimum Diameter Rod Testing

6.2.1 Remove or cut holes in the door or guard as needed to gain access to the area(s) identified by Probe #1.

6.2.2 If the area(s) identified by Probe #1 admits the full diameter of both Probe #2a and Probe #2b, or rejects both Probe #2a and Probe #2b, at the position and orientation identified by Probe #1, such area(s) shall be deemed compliant with this section, and no further testing is required.

6.2.3 If Section 6.2.2 cannot be complied with, the area(s) shall be subject to the testing in Section 6.3.

6.3 Probe Retention Testing

6.3.1 For Probes #3a through #3f, move the door to a position where the probe can be inserted into the area(s) identified by Probe #1 to a maximum penetration without appreciable force.

6.3.2 Beginning with Probe #3a, holding the probe in place with minimal force, and within the orientation shown in Figure 1, move the door into a position where the probe is most difficult to remove.

6.3.3 Attach the pull force scale to the probe

6.3.4 Exert a steady, constant force, parallel to the orientation of the probe, to attempt to remove the probe

6.3.5 Record the force required to remove the probe.

6.3.6 Repeat Sections 6.3.2 through 6.3.5 for Probes #3b through #3f.

6.3.7 If the force required to remove each probe is not greater than 35 pounds (156 N), such interface shall be deemed compliant with this section.

7. LIFT HANDLES OR GRIPPING POINTS

7.1. Lift handles or suitable gripping points for manually raising and lowering the door shall be installed on, or incorporated into, both the inside and the outside of the door as follows:

7.1.1. On the bottom section within 6 inches (152 mm) of the bottom edge of the section and located in line with the device listed in Section 7.1.2.

7.1.2. On the second or third section from the bottom of the door at least 20 inches (508 mm) above, and no more than 30 inches (762 mm) above, the lower handle or gripping point.

7.1.3. Lift handles that are installed within 4 inches (102 mm) of a section interface shall promote vertical orientation of the hand.

7.2. Other means, devices, or combination of devices that will provide the function equal to Section 7.1 as a method for manually raising and lowering the door without the assistance of a section interface pull point.

APPENDIX A - TEST PROBES

A.1 Specifications

A1.1 The test probes as described in Sections 5.5, 5.6, 5.7, 5.8, 5.9 and 5.10 shall be as follows:

- A1.1.1 Polyether-polyurethane rods, Uniroyal LF-900A or equivalent
- A1.1.2 Shore hardness of 90-A, +0/-5, tested in accordance with ASTM-D2240
- A1.1.3 Linear thermal expansion of $.015 \times 10^{-5}$ in/in/degrees F
- A1.1.4 Low temperature brittleness of -80 degrees F
- A1.1.5 Tensile strength of 4500 psi minimum
- A1.1.6 Specific gravity of 1.10, +/- .05
- A1.1.7 Surface finish of 32 or better

REFERENCES

- ANSI/DASMA 102-1996, *Specifications for Sectional Overhead-Type Doors*
- ASTM-D2240-97, *Standard Test Method for Rubber Property - Durometer Hardness*

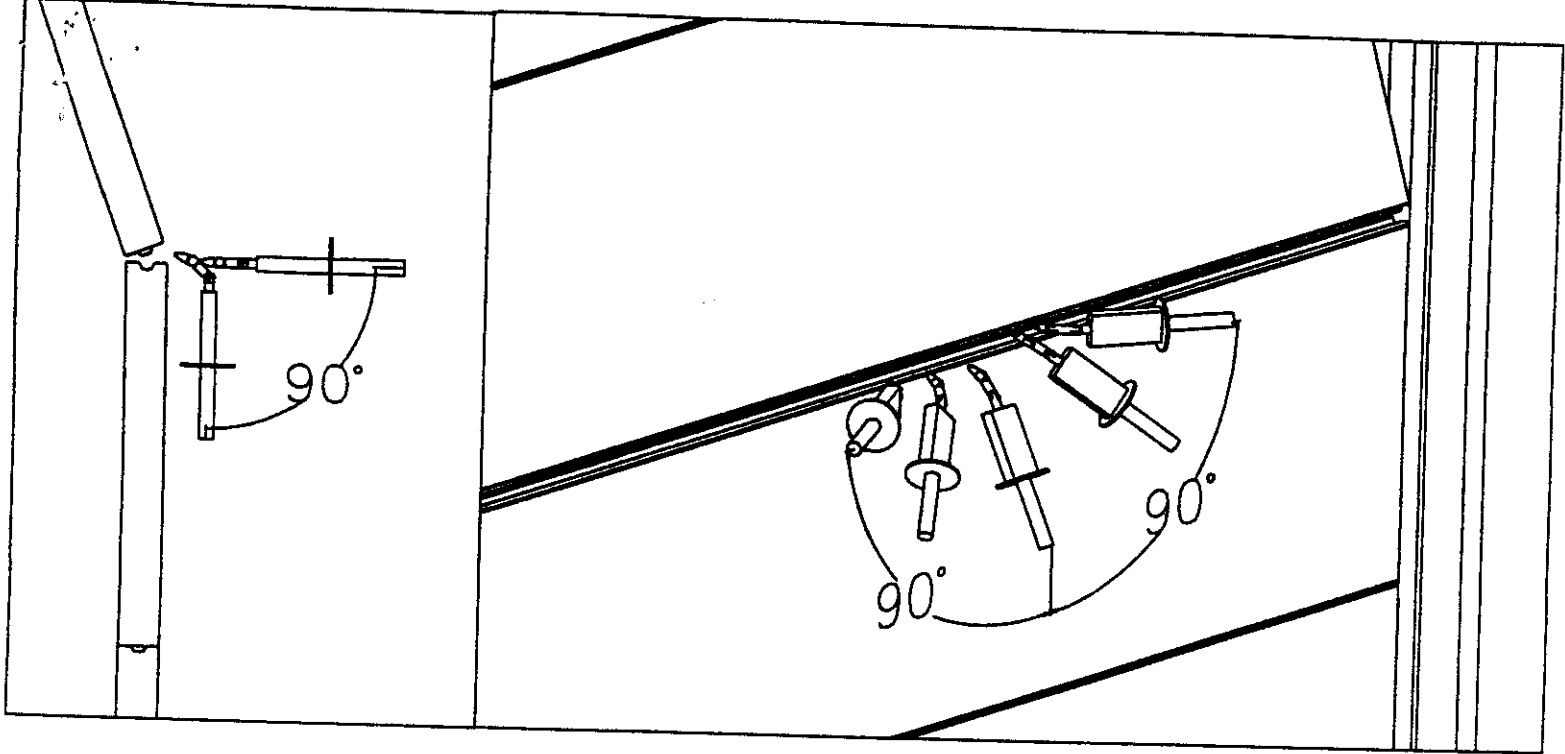


Fig 1

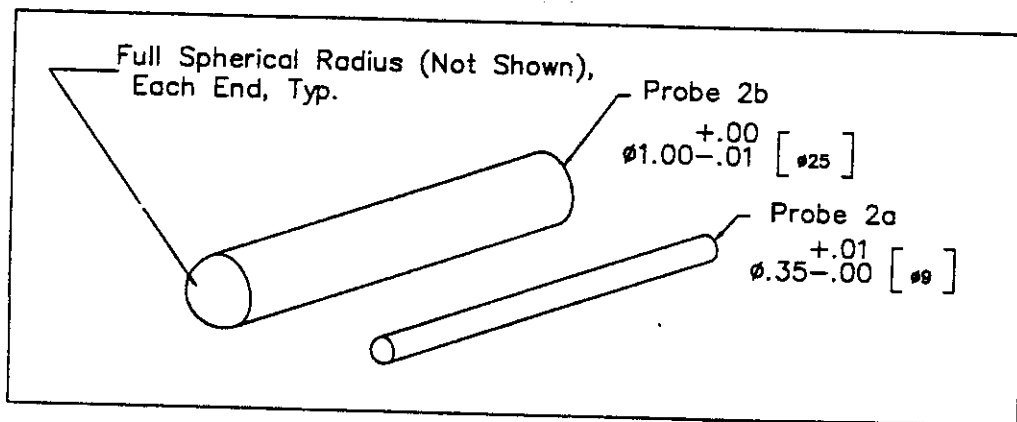


Fig. 2

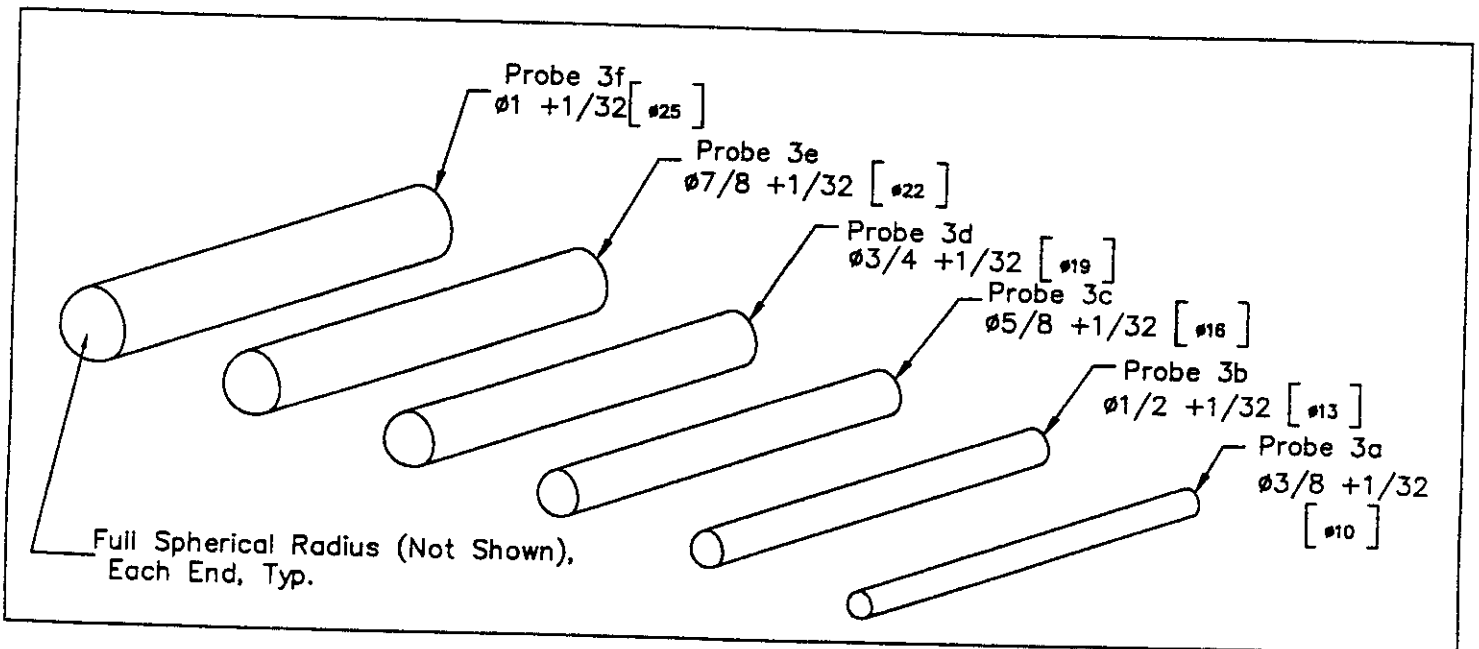


Fig. 3