

UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared by UL LLC. It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): VGMI, VGMY

Standard Number: UL 203A

Standard Title: Standard for Sway Brace Devices for Sprinkler System Piping

Edition Date: December 18, 2015

Edition Number: 1

Section / Paragraph Reference: Revised Clauses, 5.5, 9.1, Table 9.1, 9.2, 9.8, & 9.14

Subject: Safety Factor Revision

DECISION:

5.5 LOAD RATING, NONRIGID ASSEMBLY – The published load rating maximum force to be applied to a non-rigid assembly, which is less than or equal to the manufacturer's specified minimum breaking strength of the cable divided by ~~1.5~~ 2.2

9.1 Rigid sway brace devices installed in accordance with the manufacturer's installation instructions on the appropriate pipe are to be installed in a tension-compression test apparatus in a manner duplicating as closely as possible their intended field installation. Rigid sway brace fittings, brace members, the simulated system pipe, or any other part of the brace assembly shall withstand ~~1.5~~ 2.2 times either the manufacturer's rated load or the load specified in Table 9.1, whichever is greater, for one minute in both tension and compression without movement in excess of the criteria identified in 9.3. When the maximum installation angle is less than 90 degrees, the minimum rated load shall be equal to the test load at the maximum angle divided by the sine of the test brace angle, then divided by ~~1.5~~ 2.2.

Exception: Structural attachment fittings and adapters shall withstand ~~1.5~~ 2.2 times the manufacturer's rated load, without reduction of the test load for one minute in both tension and compression.

Table 9.1
Minimum rated load

Sprinkler system pipe size, NPS	Minimum rated load,		Minimum test load ^a ,	
	lb-f	(Newtons)	lb-f	(Newtons)
4 and smaller	~~1000~~ <u>680</u>	(~~4448~~ <u>3025</u>)	~~1500~~ <u>1496</u>	(~~6672~~ <u>6655</u>)
5,6	~~1600~~ <u>1090</u>	(~~7117~~ <u>4849</u>)	~~2400~~ <u>2398</u>	(~~10676~~ <u>10667</u>)
8	~~2015~~ <u>1370</u>	(~~8963~~ <u>6094</u>)	~~3023~~ <u>3014</u>	(~~13447~~ <u>13407</u>)
10	~~2765~~ <u>1885</u>	(~~12299~~ <u>8385</u>)	~~4148~~ <u>4147</u>	(~~18451~~ <u>18446</u>)
12	~~3740~~ <u>2550</u>	(~~16636~~ <u>11342</u>)	5610	(24954)

^a This is the minimum test load at 90 degrees

9.2 Sway Brace devices installed in accordance with the manufacturer's installation instructions on the appropriate pipe are to be installed in a tension test apparatus in a manner duplicating as closely as possible their intended field installation. Non rigid fittings, cable, and any other part used in non-rigid sway brace assemblies shall be capable of maintaining ~~1.5~~ 2.2 times the rated load applied in tension for one minute without movement in excess of the criteria identified in 9.3. The rated load shall be equal to the minimum breaking strength of the cable divided by ~~1.5~~ 2.2. The minimum breaking strength of the cable shall be as specified in 6.10.

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9.8 Structure attachment fittings and adapters shall have the maximum test load applied at each angle. For all other products, the load to be applied at each angle (y) shall be determined by dividing the maximum test load (L) by sine at the maximum test angle (x) times sine of the angle being tested (y). The following equation shall be used:

$$\text{Test load at angle } y = (L / \text{Sine } x^\circ) * \text{Sine } y^\circ$$

Example – 4-inch Sway Brace Fitting

maximum test angle = 90° (x) and load rating of ~~1000~~ 680 lb (L). Test load = ~~1500~~ 1496 lb. To test product at 30° (y), the following equation would be used:

$$(\text{1500 } \underline{1496} \text{ lb/Sine } 90^\circ) * \text{Sine } 30^\circ = 750 \underline{748} \text{ lb}$$

Therefore the load to be applied at 30° = 750 748 lb.

9.14 The rated load for a rigid sway brace component shall not be less than the loads specified in Table 9.1 for the intended system pipe size, except for structure attachment fittings and adapters. The published rated load shall be that specified in Table 9.1 or a greater rating as determined by conformance with the testing requirements of this standard, referenced in 100 pound-force (444.8 N) increment values above Table 9.1 minimums. For example, a product approved for an 8 inch pipe size shall be at least ~~2100~~ 1400 pound-force (~~9341~~ 6228 N) to achieve a greater rating.

RATIONALE FOR DECISION:

This certification requirement decision (CRD) revises the safety factor used in the load rating of a product from 1.5 to 2.2 for UL 203A, Sway Brace Devices for Sprinkler System Piping in order to maintain alignment with the 2019 edition of NFPA 13, Standard for the Installation of Sprinkler Systems.

The previous 2016 edition of NFPA 13, Standard for the Installation of Sprinkler Systems, Section A.9.3.5.2.3 refers to a safety factor of 1.5 for the load rating of a product. NFPA 13 also references UL 203A as the test Standard for sway braces, so the same safety factor requirement was also incorporated in UL 203A.

The 2019 edition of NFPA 13 has been revised to incorporate a safety factor of 2.2 instead of 1.5. This CRD makes the appropriate revisions in UL 203A to align with the revised safety factor in NFPA 13.

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