

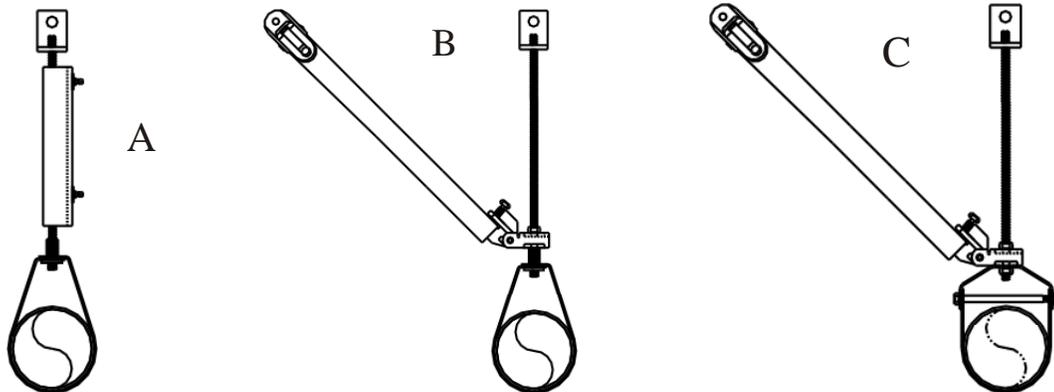
NFPA 13 Sway Brace Standards

Do Not Confuse With Other Bracing Standards

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Care should be taken to avoid incorrectly applying the sway brace criteria of other standards to the sway bracing of NFPA 13 fire sprinkler systems. I believe that NFPA 13 chapter 9 is the only appropriate standard applicable to the sway bracing of fire sprinkler systems. Chapter 9 criteria specifies the permanence and robustness required of the sway bracing which enhances fire sprinkler system performance and conforms to the emergency nature of a fire sprinkler system.

I have recently seen two sway brace installation details that are problematic to me. They are purported to be required in lieu of NFPA 13 sway brace criteria by other standards on fire sprinkler systems. The first detail requires installation of a stiffener on the hanger rod of a hanger assembly to resist vertical seismic force - see drawing A. The second details require installation of a lateral brace on the hanger rod of a hanger assembly to resist horizontal seismic force - see drawings B & C. I object to both of these sway brace details, as they do not conform to NFPA 13. They incorrectly promote the use of hanger components instead of sway brace components in NFPA 13 sway brace assemblies. NFPA 13 hanger components are listed per UL 203, while NFPA 13 sway brace components are listed per UL 203A. NFPA 13 and UL require installation of each component according to the differing characteristics unique to each of their individual product listings. If we scrutinize each of these assemblies per the NFPA 13 standard chapter 9 criteria it becomes evident that they are deficient.



In drawing A, this hanger assembly is not a sway brace per NFPA 13. The 2007 NFPA 13 chapter 9 hanging and bracing committee specifically rejected proposals to allow the use of a rod stiffener on a hanger assembly as a sway brace. The committee stated that vertical seismic force should be resisted with sway brace assemblies installed per NFPA 13 chapter 9. I would point out, that the hanger components shown are not listed per UL 203A as sway brace components as required by NFPA 13. Additionally, NFPA 13 fastener requirements for hangers are different than the fastener requirements for sway braces.

In drawings B & C, the lateral brace element attached to a hanger rod of a hanger assembly does not constitute a sway brace per NFPA 13. This assembly is not a sway brace because it does not conform to the following sections of NFPA 13 chapter 9. It violates "Bracing fittings and connections ...shall be listed." – per section 9.3.5.10.2 because the ring hanger is not a listed sway brace component per UL 203A. This assembly further violates chapter 9 criteria of "Sway bracing shall be tight." – per section 9.3.5.8.1 and "Bracing shall be attached directly..." – per section 9.3.5.11.1 as the ring geometry is loose and the brace element is not mounted directly to the sprinkler pipe per NFPA 13. Manufacturers who lack UL listed sway brace fittings for CPVC fire sprinkler pipe incorrectly promote this sway brace assembly contrary to the NFPA 13 standard and risk their reputation and integrity.

I believe these three bracing details suggest installing the wrong products to implement the wrong solutions. They may be appropriate sway bracing on other piping systems but they are not appropriate sway bracing per the NFPA 13 fire sprinkler standard. Various codes reference standards for piping systems other than fire sprinklers. It's important to note that these same codes reference the NFPA 13 standard for the installation of fire sprinkler systems. The 2007 NFPA 13 chapter 9 sway brace section was aligned with ASCE 7 and NEHRP further confirming the importance placed by these bodies on the NFPA 13 fire sprinkler system. NEHRP and ASCE 7 saw value in the conservative engineering assumptions use to simplify design, installation and inspection of NFPA 13 sway braces. NFPA 13 fire sprinklers are emergency systems having a high importance factor, unlike other piping systems. Adherence to the NFPA 13 sway brace standard is critical to guarantee performance of the fire sprinkler system by enhancing permanence and thus subsequent system reliability.

In my opinion, any recommendations, contrary to the NFPA 13 sway brace standard should be strongly resisted. Lacking agreement, I suggest the contractor request justification of the recommendation in writing.