

Sway Brace Fitting Designs

Should Correspond to NFPA 13 System Piping

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AFCON patented its first NFPA 13 sway brace fitting in 1968. The AFCON model A was the only sway brace fitting listed by Underwriters Laboratories per UL 203A for the next 20 years.

The mechanics of this original AFCON lateral sway brace fitting are compressive in nature. The pipe brace element is compressed against the system pipe within the fitting by a bracket, atop the brace element, engaged by nuts attached to the threaded elements of the fitting body formed by rod. The described mechanics creates a point load at the nexus of the brace pipe and system pipe, due to the minimal dimensions of this contact interface.

These early AFCON lateral sway brace fittings, including the many subsequent variations by other manufacturers, rely on the structural rigidity of the system pipe to achieve the required resistance to the seismic load. Fittings of this design were appropriate because heavier wall system pipe (i.e. Sch. 10 and 40), which was common to NFPA 13 sprinkler systems, provided the necessary durability.

In subsequent years, the NFPA 13 standard recognized additional types of system pipe which limit and conflict with the application of compressive fittings. Now, fire sprinkler systems incorporate a greater variety of pipe types including light wall steel, CPVC and copper pipe.

NFPA 13 Chapter 9 has gone through numerous changes including the creation of a specific Technical Committee for Hanging and Bracing. In 2007, Chapter 9 was aligned to conform to ASCE 7 and its text formally identified the NFPA 13 system as an emergency system. Chapter 9 has expanded the required criteria of seismic force, to more thoroughly quantify and thoroughly define the parameters of sway brace installation. Now, the specific design and installation of sway braces is strictly correlated to system pipe type and size.

In conformance to NFPA 13, the criteria of product listing and approval has become more rigorous and thorough, necessitating evolving design of sway brace fittings and components. Sway brace application is further complicated because building codes, state by state, may reference different editions of NFPA 13. Our latest model AFCON sway brace fittings incorporate advanced features which promote versatility and enhanced pipe compatibility using patented mechanics of application.



Kraig Kirschner is a third generation fire sprinkler contractor and a journeyman fitter. He is a Principal Member of NFPA 13 - Hanging and Bracing Technical Committee and serves on Standard Technical Panels of UL 203, UL 203A and FM 1950. Kraig is a Life Member of the National Fire Protection Association and was named Person of the Year in 2009 Fire Protection Contractor Magazine. He holds dozens of patents that enhance the installation and application of hangers and sway braces.