

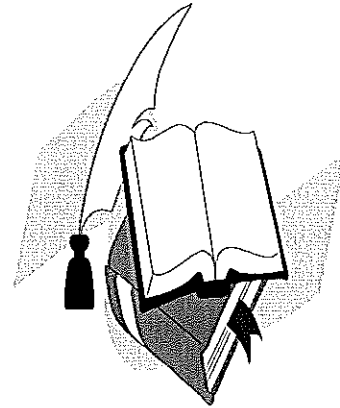
Office of State Fire Marshal

Topic: STORZ CONNECTION FOR AUTOMATIC FIRE SPRINKLER AND STANDPIPE SYSTEMS

February 2, 2010

General Information Notice 2010-01

The following code clarification was recently researched by Bureau of Engineering member, Terri Trenholm, Fire & Life Safety Specialist, from the Office of State Fire Marshal and is presented here for your general information.



Background:

The process of verifying the required listing of components for a newly designed automatic sprinkler system revealed a Connecticut Fire Safety Code violation and several fireground safety issues with the current practice of requesting Storz connections in place of the standard fire department connection. A full explanation of the issues is provided below.

Violations of Connecticut State Fire Safety Code and NFPA Standard Requirements:

Connecticut Fire Safety Code (CFSC), Part III, Section 912.1 requires fire department connections to be installed in accordance with the NFPA standard applicable to the system design. NFPA 13-2002, as adopted by the CFSC, is applicable for the automatic sprinkler system installations. NFPA 13-2002 Sections 6.1.1 and 6.1.1.5 require automatic sprinkler systems components be tested and listed by an independent testing laboratory per NFPA 13-2002 Section 3.2.3. Sections 6.8.1 and 6.8.3 continue emphasizing the requirement for listing of fire department connections specifically. NFPA 13-2002 Section 6.8.3 states; the use of threadless couplings shall be permitted where required by the authority having jurisdiction *AND WHERE LISTED FOR THAT USE*. The NFPA staff liaison to the NFPA 13 Committee has confirmed this listing is intended and required for the threadless coupling. As a result the use of non-tested and non-listed Storz connections on fire department connections for automatic sprinkler systems is a violation of the Connecticut Fire Safety Code.

Storz connections, regardless of the manufacturer, are not currently tested and listed by any independent testing laboratory for use on a fire department connection serving an automatic sprinkler or standpipe system complying with NFPA 13 or 14 respectively. This was confirmed by reviewing the UL Online Certification Directory for numerous known Storz coupling manufacturers as well as contacting the Fire-End Croker Technical Department regarding the specific model requested. Fire-End Croker indicated that their Storz connection is not tested and listed by UL, FM Global, or any other independent testing laboratory for use on a fire department connection. I received the same response from numerous other Storz connection manufacturers when I called and inquired about testing and listing of their product for a fire department connection with any independent testing laboratory.

The one exception was Harrington Incorporated. When I spoke with a gentleman at Harrington he indicated that they are currently working with UL now to list their "permanent sprinkler Storz"; however they do not have a test date. Their model for the fire department connection has a different thread configuration than that used on their fire hydrant listed model. Harrington has in-house tested their sprinkler Storz to the meet NFPA 13 and 14 rated pressure requirements and believe it will pass a UL fire department connection test.

There are numerous Storz connections with a UL Mark, however when the listing is verified it is for use on fire hydrants. The Mueller Company, American AVK, and several other manufacturers' have Storz connections tested and listed for use on a hydrant but not for a fire department connection. *If you know of a manufacturer that already has a tested and listed the Storz connection for a fire department connection please contact the OSFM Bureau of Engineering.*

The requirements of NFPA 14-2003 for standpipe systems were evaluated to determine if a similar issue applies to those systems as well. Per NFPA 14-2003, Sections 4.8.1 and 4.8.2 a listing for the intended use is in fact required on standpipe systems.

During the process of researching this issue it was noted that Storz connections were patented in the United States in 1893. Therefore these connections cannot be considered new technology not yet addressed by the current NFPA Standards for fire protection systems or fire department equipment. This eliminates the use of the Storz connections via *A Request for Modification of the Requirements of the Connecticut Fire Safety Code* for new technology.

Another substitution that appears to be related to the installation of the noncomplying Storz is the use of a single-outlet connection to supplement a required sprinkler and/or standpipe system. The single outlet is not permitted under any circumstances for a standpipe system per NFPA 14-2003 Section 4.8.2 which requires each fire department connection to have at least two 2½-inch internal threaded swivel fittings having NHS threads per NFPA 1963. Additionally NFPA 13-2002 limits the use of a single-outlet connection to systems piped to a 3-inch or smaller riser per 8.16.2.3(4). A dual-outlet connection has the benefit of allowing an immediate change over to the alternate inlet should debris obstruct the first inlet or if the hose at the first inlet becomes damaged and unusable. This assists not only in extinguishment of the fire but the safety of firefighters involved with an interior attack line.

Concerns for Firefighter Safety on the Fireground:

In addition, based upon the information found in the researching of this issue, the Office of State Fire Marshal's Bureau of Engineering has serious concerns for the safety of firefighters when the Storz or any other threadless connection is used on hose supplementing a building fire protection system via a fire department connection. Although further research and evaluation should be performed by the appropriate authority for fireground operations; the following is provided to identify this issue to your department in the interest of fireground safety.

As discussed above, Storz connections, regardless of the manufacturer, are not currently tested and listed by any independent testing laboratory for use on automatic sprinkler and standpipe system fire department connections. This is relative to the higher operating pressures required for automatic sprinkler and standpipe systems as well as related attack hose at this time.

NFPA 13-2002; Section 6.1.3 Rated Pressure states; system components shall be rated for the maximum system working pressure to which they are exposed but not less than 175 psi for components installed aboveground". The commentary following this requirement in the Automatic Sprinkler Systems Handbook 2002 further explains that each system must be evaluated on an individual basis because the presence of a fire department connection introduces the possibility of high pressures being applied by fire department apparatus.

Hose lines between the pumper and the fire department connection are considered attack rather than supply hose. This is supported by the definitions and requirements of NFPA 1961-2007; Standard on Fire Hose. Per Section 3.3.4.1/A.3.3.4.1; attack hose

is designed to convey water to handline nozzles, master streams appliances, portable hydrants, manifolds, *STANDPIPE AND SPRINKLER SYSTEMS*, and pumps used by the fire department. Attack hose is designed for use at operating pressures up to *at least 275 psi*. While supply hose is designed for the purpose of moving water between a pressurized water source and a pump that is supplying attack lines per Section 3.3.4.7. A.3.3.4.7 continues with the following; supply hose is designed to be used at an operating pressure *not exceeding 185 psi*. The NFPA staff liaison to the NFPA 1963 Committee made references to these same definitions and applications for attack hose requirements between the apparatus and the fire department connection in the NFPA 1961 Standard, as referenced by the NFPA 1963.

Additionally NFPA 1901-2009; Standard for Automotive Fire Apparatus Section 16.6.1.3 requires a sign be provided on the pump operator's panel that states the following; **WARNING:** Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics AND COMPONENT LIMITATIONS. This should in good practice be extended to address the *limitations of components* to which the discharge hose is connected which should include but not be limited to the fire department connections of an automatic sprinkler and/or standpipe system.

Conclusion:

As described above there are numerous reasons the Storz connection is *not permitted* in place of a standard threaded fire department connection at this time, the most critical of these is the current lack of a tested and listed device. The use of an untested and unlisted device creates a concern for not only fire protection system reliability but just as importantly firefighter safety.

Should you have any questions concerning this matter, please feel free to Contact Terri Trenholm, Ignatius Kapalczynski, or Ralph Miller at (860) 685-8350.

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