Spring Hinges: the Evolving Requirements for UL Certification

by Matthew Schumann

IN THE PAST FIVE YEARS, DOOR AND door hardware trade associations such as the Steel Door Institute (SDI) and the Builders Hardware Manufacturers Association (BHMA) have worked to increase the level of performance required by ANSI standards for doors, locks, hinges and other door hardware to encourage the development and creation of a new generation of products that have greater durability and strength while improving life safety and security of doorways.

The spring hinge product UL certification program has been affected by the increased levels of performance in various ANSI/BHMA standards. According to the 2007 edition of NFPA 80, Standard for Fire Doors and Other Opening Protectives, a spring hinge is defined as “a closing device in the form of a hinge with a built-in spring used to hang and close the door.” Spring hinges, as defined in NFPA 80, are usually used on smaller swinging fire doors that have a self-closing requirement instead of arm-type closers or floor springs. It is typical to find spring hinges used as part of fire-rated door openings in hotels, apartment buildings, condominiums and private homes where the doors are no more than 3 feet wide by 7 feet tall.
Because they are considered a closing device for swinging doors, spring hinges have traditionally been Listed by UL under the Swinging Fire Door Closers Category in the UL Fire Resistance Directory. Prior to 2001, spring hinges were treated like arm-type door closers or floor springs found in this category and were tested in accordance with UL 228, the Standard for Safety of Door Closers-Holders, With or Without Integral Smoke Detectors. The testing required by UL 228 included 100,000 cycles of operation, closing force and closing time tests with accompanying conditions of acceptance for minimum closing force (based upon door size), maximum closing time and completion of the cycling test without breakdown or excess wear.

With significant input from industry members and the BHMA, UL revised its testing method for spring hinges in December 2001. For spring hinges, UL adopted the ANSI/BHMA A156.17, Standard for Self Closing Hinges & Pivots, in lieu of UL 228 as the minimum requirements for UL certification. The ANSI/BHMA standard increased the number of testing cycles required for a spring hinge and included other requirements concerning wear, closing force, latching and static loading of hinges. As part of this change, the number of successful cycles a hinge had to meet increased from 100,000 cycles to 250,000 cycles.

In 2004, a new edition of ANSI/BHMA A156.17 was published. This edition requires that spring hinges used in fire door assemblies comply with the Standard’s Grade 1 specifications. The 2007 edition of NFPA 80 also adopted the ANSI/BHMA A156.17 Grade 1 specifications as the minimum requirements for spring hinges when they are used on swinging fire doors. The result of the change in requirements in the NFPA and ANSI/BHMA standards was that any spring hinge tested by UL had to meet the ANSI/BHMA A156.17 Grade 1 requirements to receive or maintain its UL Listing. As of June 1, 2007, all products Listed by UL as spring hinges in the UL Fire Resistance Directory meet the Grade 1 requirements of ANSI/BHMA A156.17.

Through the UL Online Certifications Directory, regulators (specifiers and consumers) can easily confirm that any hinges being installed meet current requirements. Hinges complying with the Grade 1 requirement can be viewed online by searching for a company name in addition to the search term “door closers.”

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### SUMMARY OF SPRING HINGE LISTING REQUIREMENTS

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