

Flexible Couplings and Connecting Shafts for Stationary Fire Pumps

UL has been Listing stationary fire pumps and their drivers for a number of years. However, the critical device that is used to connect these two pieces of fire safety equipment had not been UL Listed until recently.

After an extensive evaluation, UL has investigated and Listed a range of sizes of both flexible couplings and flexible connecting shafts for Clarke Fire Protection Products, Inc.

These products are Listed under the product category for Flexible Couplings and Connecting Shafts for Stationary Fire Pumps (QYCA). This category covers flexible couplings and connecting shafts used to connect the shaft of a stationary fire pump to a fire pump driver. These products are intended to be installed and maintained in accordance with the manufacturer's

installation instructions; NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection; and NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

The speed and torque ratings for these products are noted in the individual Listings. For flexible connecting shafts rated for a speed range, the rated torque within the specified speed range is to be determined by the use of linear interpolation between the rated torque at the minimum and maximum speeds. As also noted in the individual Listings, these devices are

investigated for use with specific driver types including electric motors, engines or both electric motors and engines. A service factor, as referenced in the manufacturer's installation instructions, is to be applied to the calculated end-use application torque. The calculated end-use application torque, as adjusted by the service factor, should not exceed the torque rating of the flexible coupling or connecting shaft at the applicable speed.

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NFPA 20 Considerations

NFPA 20 indicates that the device typically used to connect the pump to the driver is either a flexible coupling or flexible connecting shaft. A flexible coupling incorporates mating power transmission elements that are designed to connect the shafts or other torque-transmission components of the driver and pump. A flexible connecting shaft has two flexible

joints and a telescoping element that also connects the pump and driver together. Both of these products permit some angular and parallel misalignment between the pump and driver as specified by the manufacturer.

Due to concerns related to the performance of flexible couplings in field installations, NFPA 20 has required the

use of listed flexible couplings since 1993. UL subsequently developed and published the first edition of Subject 448A in 1995. While these requirements have been published for many years, no manufacturers pursued UL Listing of these devices until recently and no Listed products were available for use in these applications.



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To investigate the ability of these products to perform under adverse field conditions, the requirements in Subject 448A, Outline of Investigation for Flexible Couplings and Connecting Shafts for Fire Pumps were developed, and include starting and endurance tests at the maximum rated torque and speed with alignment conditions that exceed the manufacturer's specifications.

Products covered under this category include the complete UL Listing Mark on the product or the smallest unit container in which the product is packaged. The UL symbol on the product is the only method provided by UL to identify products manufactured under its Listing and Follow-Up Service. The Listing Mark includes the UL symbol together with the word "LISTED," a control number, and the product name Flexible Coupling, Flexible Coupling Part, Flexible Connecting Shaft or similar name.



Courtesy of ITT A-C Fire Pump Systems and Clarke Fire Protection Products