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Vibration Levels for Edwards Rotary Gear Pump

The primary issue with fire protection pumps is that they are not meant to operate on a continuous or intermittent basis. Any fire protection pump is intended to operate in an emergency or a field test.

Vibration is not an issue in the design, selection or application of firewater or foam pumps. Often Edwards is asked to submit vibration data on foam pumps because of a specification or customer requirement. When typical vibration data is furnished, our pumps have never been rejected due to expected vibration levels. NFPA 20 "Standard for the Installation of Pumps for Fire Protection" makes no mention of vibration levels, nor does UL or FM, which both approve pumps for fire and foam service.

Although it is unusual to have excessive vibration levels, the vibration results, when taken on a test stand may be less than those in the field. However, it must be noted that pump vibration levels are affected by many factors. The foremost being the method of mounting the pump base plate to its supporting surface.

If the mounting surface is not flat and even, the base plate can distort or twist. This can compound the natural vibrations that are inherent in any rotating machine making the base plate amplify the vibration.

The coupling misalignment between the motor and the pump can also be a contributor to vibration. Proper coupling alignment should be checked prior to final start up to be sure it meets the specifications for the coupling.

Using flex connectors to isolate the pump inlet and outlet piping from the pump will also reduce vibration levels. In effect it isolates the piping from the pump. Often, piping strain or misalignment may be a source of additional vibration.

The Edwards rotary gear pump does produce some vibration. This is due to the hardened steel timing gears in the pump. (See the pump exploded view in the operating manual for details.) These hardened steel timing gears transmit the torque to the pump rotor. The timing gears are a crucial feature of the Edwards gear pumps. They allow the foam pump to run dry for up to 10 minutes without damage. This feature is more important to the fire protection engineer and end user than the subsequent vibration produced by the timing gears.

In order to reduce vibration levels as much as possible, it is highly recommended that the base plate be grouted in or filled with concrete. This acts as a dampening device and anchors the base plate to the supporting surface.

Edwards, Pentair Water, is the worldwide leader in the production of foam pumps and makes pumps to the exacting standards of NFPA 20, UL and FM for the worldwide fire industry. The vibration is a by-product of our pump design; but we have never had a foam pump fail during a fire.