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Designing Door Closers for Real World Environments

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Many building owners, facility managers and other end users don't realize the full impact of real world door operating conditions on their desire for improved security, safety and low maintenance costs. Known problems that include improper installation, sagging doors and frames, abusive behavior and harsh environmental conditions can affect door controls and the entire opening.

Door closers in particular are exposed to many different types of abuse in real world applications. Improper installation and sagging doors and frames can lead to side loading, which can cause excessive wear and premature failure of the closers. Other problems such as abusive behavior and harsh environmental conditions can lead to forced openings and closings of a door. These forced openings and closings can cause severe damage to doors, frames and supporting hardware.

These problems not only damage the opening; they also can create significant risks that pose a threat to business objectives. Reduced security, high maintenance costs, fire code violations, property damage and personal injury are just of the few risks that business owners face when the closers on their doors cannot withstand the abuse of real world conditions.

Schools, hospitals, shopping malls and sports arenas are just a few of the types of facilities that experience this potentially high degree of use and possible abuse. The openings within these facilities, as with all public facilities, must enable traffic to flow smoothly while also maintaining security, safety and the overall facility experience for its visitors.

Going Beyond the Minimum

The door closer is the heart of the opening. It not only protects the opening, but also the safety and security of its users. That's why a durable, reliable closer that can consistently perform as intended in real world conditions is a critical component of the overall facility experience. Although many closers look alike on the outside, the internal design, components and materials are what determine closer performance.

Unseen internal components are one of the keys to reliability, extended service life, and low maintenance. The pinion, for example, is an absolutely, critical component that should not be taken for granted. Just like the closer is the heart of the opening, the pinion is the heart of the closer. The size and design of the pinion matter. Larger double heat-treated steel pinions with a wider pinion journal help to reduce wear and provide a wider bearing surface to reduce the load.

Such considerations raise the questions of whether standard tests go far enough in evaluating door closer performance in the real world. Although a door closer must be tested to 1.5 million cycles to meet the ANSI/BHMA (A156.4) minimum industry standard, many high-use door openings could reach up to 1.8 million cycles in one year alone.

This data points to the need to look beyond the minimums. Some manufacturers certify models of their door closers to pass a 10 million cycle test, providing a margin of performance more than six times the industry standard. For any application where high levels of traffic or the potential for abuse exists, it makes sense to choose a door closer with the extra capacity to protect against the problems that can otherwise occur.

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