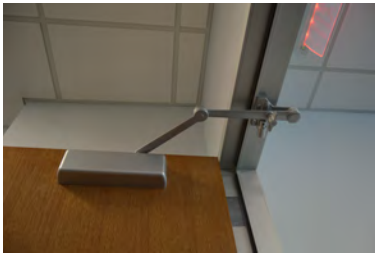


CONTROL THE DOOR

By Vince Butler

Installed at the top of the door and frame, door closers are purposely designed to not attract attention. An appropriate door closer, adjusted properly, will add to the safety of the building and the smooth operation both day-to-day, and during an emergency.

Today's door closers are not only functional, but also add aesthetic value to a myriad of commercial applications. Closer bodies have been redesigned to be sleeker and take up less space on the surface of the door or frame. They are meant to be inconspicuous, matching the style of their wood or metal environment. While they have been designed to blend in, door closers are an important piece of hardware that cannot be overlooked during the specification process.



It is important to select the right make and model for the door-opening conditions when specifying a door closer. Heavy duty surface mount closers made of cast iron or aluminum alloy are ideal for any high foot-traffic door application over a wide-range of temperatures. This includes entry doors, bathroom doors, or almost any door in commercial applications including schools, medical facilities, office buildings and hospitality buildings. Concealed closers are also available, which allow an almost "invisible" control over the door. Special templates are cut into the door and/or frame where the closer body will be installed, typically resulting in only the arm of the closer being visible, extending from the door to the frame when the door is in the open position. Concealed closers have similar features as standard closers and are an excellent choice for some projects. Due to certain limitations that apply when using concealed closers with fire doors, it must verify with the door manufacturer that the fire door has been tested and approved with concealed closers.

Circumstances can develop when the door closer no longer completely closes and latches the door, and this can be an issue for life-safety. The problem can develop when the building environment has changed, with the typical cause of failure being the HVAC system. For example, winter has arrived, and the heat is running almost constantly. Now, the door closer can no longer overcome the higher air pressure in the building, so adjustments will be required. Adjustments to the spring power and/or hydraulics in the closer will allow it to properly perform its function properly again.

Closer adjustments are accomplished through the passage of fluid through various chambers of the closer, creating pressure on the piston, and as such, great care must be taken to measure the fluid to exacting standards, while staking the external ports to limit their movement and provide leak-free performance. If the closer is going to be installed in extreme heat or cold, it is also important to consider that its hydraulic fluid is rated for the anticipated ambient temperature.

A door closer, this innocuous piece of hardware, can literally save the day if there is a fire. NFPA 80, the Standards for Fire Doors and Other Opening Protectives, requires that fire doors be self-closing and self-latching to contain and control a fire from spreading from one room to the next. Because fire and water from sprinklers or fire hoses tends to ruin electronic equipment, positive closing and latching must be accomplished by mechanical means, i.e. a door closer.

The Americans with Disabilities Act (ADA) identifies specific criteria for door closer compliance. Written into law in 1990, the ADA prohibits discrimination against individuals with disabilities. The law not only covers equal employment and services, but also includes access to buildings as well. Strict guidelines

govern door hardware to ensure it doesn't present a barrier to access for individuals with disabilities.

For example, thresholds must be less than ½" (12.7mm) tall, and hallways and doorways must have a clear width of at least 32" (812.8mm) to allow wheelchair access. Door closers must allow for minimum effort to meet the ADA requirement of five pounds of force to open a door for interior non-fire rated doors.

Adjustable closers have internal springs, modifiable via external ports, that allow adjustment in the pressure required to open a door. For closers, the ADA also requires the closing speed of a door be adjusted so that from a 90-degree open position, the time required for the door to close to a 12-degree open position be no less than 5 seconds to give individuals with mobility issues time to make their way through the door. Latching and sweep speed ports are typically standard on door closers; back check and delayed action options are often available, too.

A door opening in a high-wind area might be another condition in which a door closer may be helpful. High-speed wind can grab a door and wrench it open, destroying the hinges, the door, the door frame, the wall – posing an obvious safety hazard.

A heavy-duty door closer with a built-in stop in the closer arm, or a separate overhead stop, can resist the wind and protect the hinges, frame, and surrounding surfaces. Many closer manufacturers provide installation plates and templates that allow concurrent installation of an overhead stop with a door closer. These are recommended in high-wind or high-traffic openings.



There are many options to choose from when selecting a door closer. Closer arms can be specified with varying characteristics, such as heavy-duty, hold-open, and cushion stop. Choosing the right function closer and options for the opening is an important code consideration and can be a source of confusion for inexperienced specifiers. As this is an important part of fire code, life-safety, and ADA compliance, be sure to consult with an expert when specifying door closers for construction projects in new or existing buildings. In addition, selecting the appropriate door closer for the required functionality will prolong the life of the closer and enhance the user experience based on the environment and application specifics.

Another adjustable feature of many door closers is that it is possible to install them as a "top jamb mount", where the closer body is attached to the frame of the door, and the regular arm mount is attached to the push side of the door.

An alternate method of door control is an overhead holder/stop. These devices are fluid-free, and while they do not offer the adjustable back check of a closer, they typically provide varying degrees of compression prior to dead stop. They can be surface or concealed mounted and may offer stop or stop-and-hold open functions. It is important to note that any closer or overhead stop with a manual hold-open function is not appropriate for a fire door, as it would interfere with the door being self- or automatic-closing in case of emergency. Electro-magnetic door holders are available, which can be tied to the fire alarm system and will release the door if the fire alarm is activated. As specified by the architect or preferred by the end user, overhead holders and stops may also be used in conjunction with a closer – such as in high-wind areas, as we mentioned earlier.



Door closers walk a fine line between ADA requirements and fire codes. NFPA 80 does not address the amount of force required to open a door, but it does require that all swinging doors be closed and latched.

In general, life-safety takes precedence over the "five pounds of force" rule, although it can seem like every installation is different. For final authority – the final approval - on openings such as fire doors, it may be necessary to seek out the local Authority Having Jurisdiction (AHJ) over the project.

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