

Shhh.

HIDDEN SECRETS OF CONCEALED DOOR CLOSERS

by Scott Welch

Out of sight, out of mind? With concealed door closers, that's hardly the case. Although gross sales of concealed door closers pale in comparison to their surface-applied brethren, that doesn't mean they have lesser stature. On the contrary: concealed door closers offer properties and benefits that surface-applied closers can not.

The most obvious advantage is aesthetics, especially with frameless glass doors. After all, glass doors are specified to provide a clear sight line through the doorway. A surface-applied closer would interfere with the unobstructed view, not to mention the troublesome (and somewhat awkward) task of securing a closer arm to the glass door and a closer body to the frame.

Of course, concealed door closers can be used on conventional narrow-stile glass storefront swing doors, rendering a clean, aesthetic look. They can also be used on conventional aluminum, hollow metal and wood doors, though use is dictated by the application.

Security is another benefit. Surface-applied closers are readily accessible to vandals and other destruction-minded people (high school students included). Concealed closers, on the other hand, are much more difficult for the everyday person to access. And, because they remain out of sight, they are not easily damaged.

In addition, concealed closers are protected from dirt, while being easy to reach for adjustment and regulation. Considering how long they last, they're economical as well.

Three Concealed Choices

Concealed door closers are classified based on where they are concealed: floor, overhead and door. Floor concealed closers allow installation in concrete subfloor construction and finished flat with the floor surface or as part of a threshold. Overhead concealed closers are installed in the header tube. Door concealed closers are embedded in the top door rail.

A majority of overhead concealed closers are compact and can fit into a 1 3/4-inch x 4-inch header for aluminum frames easily. Most are also easily adaptable to wood and hollow metal frame configurations. Most incorporate a single link arm that connects the door to the closer mechanism. The arm fits directly below the closer body when the

door is closed, leaving little or no evidence of a door closer.

Concealed floor closers are installed in the floor under a threshold or covered with a finished cover plate. Generally, these closers feature interchangeable spindles onto which the hinge edge of the door is placed. Hinges or pivots can be used to attach the door to the frame.

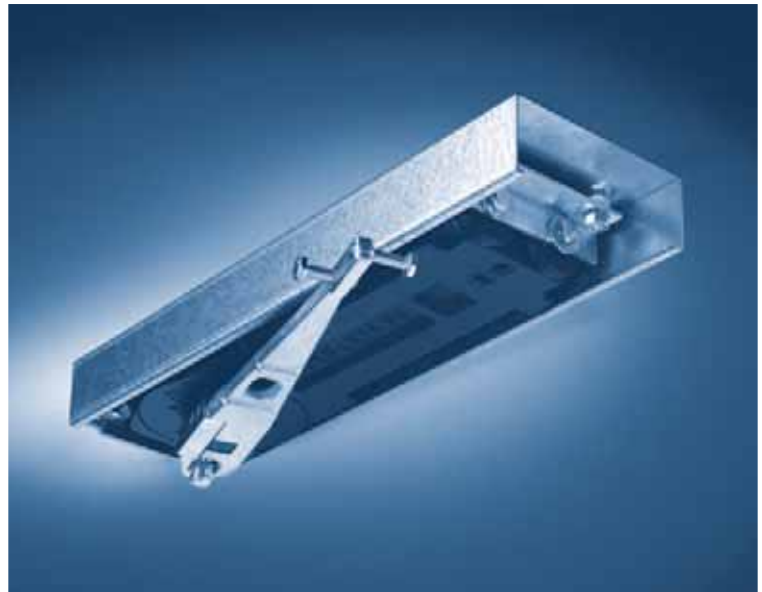
Door concealed closers place the closer body into the door itself. Like overhead concealed closers, they use a single link attachment between the closer body and the door frame. The arm sits atop the closer body when the door is closed, rendering a clean look that's free of obstructions.

Customize the Closer

As with all types of door closers, the application of the closer must be taken into account. Most concealed closers offer a variety of functions depending on their use. Some of the criteria to consider include:

- **Interior or exterior:** Wind loads and climate conditions must be considered before determining the ideal entrance system, and the type of door closer to be used. For example, large doors in windy environments have very special requirements; in some cases the only option to meet all of the specified criteria is to incorporate some type of automatic control. All glass or frameless doors are most subject to exterior restrictions.
- **Door size and weight:** The door must fit the door frame created and look aesthetically appealing when necessary. The larger and heavier the door, the more spring power necessary to ensure proper closing force. In addition, the structure must be able to support the door so weight must be taken into account.
- **Center hung or offset:** Center hung doors have the pivot point located in the center of the door thickness. The location of the jamb is typically 2 3/4 inches to the centerline. Offset hung doors have the pivot point located off the face of the door and in from the jamb. The two most common are 3/4-inch and 1 3/4-inches and are used in conjunction with butt hinges for wood and aluminum framed doors.
- **Single or double acting:** Single acting doors swing only one way while double acting doors swing both ways. Center pivoted doors swing both ways. Interior and exterior doors are generally double acting. Offset pivoted

Top: Overhead concealed door closers can be used for both interior and exterior doors, and are used on 60 percent of all glass doors. Middle: Door concealed closers are used for smaller interior doors where a minimum site line is required at the head. Bottom: Concealed floor closers are used for all door types (both interior and exterior) and are used on 40 percent of all glass doors.



doors will only swing one way.

- **Hold or no hold open:** Sometimes it is critical for the door to open and remain open for a significant period of time—mass egress at a meeting facility, for instance—so a hold-open option should be selected. Otherwise a no-hold-open will suffice.
- **ADA compliance:** ADA compliance applies to a variety of things including finished opening widths or door widths and opening forces bottom rail heights.
- **Fire rated:** There are floor closer models made with electromagnetic hold opens to allow doors to self-close upon the interruption of electrical current in the case of an emergency.

Overhead concealed door closers are used for all door types, both interior and exterior, and are used on 60 percent of all glass doors. Most overhead concealed door closers are size- and function-specific and require appropriate selection.

Concealed floor closers are used for all door types, both interior and exterior, and are used on 40 percent of all glass doors. Floor closers are used primarily on exterior applications or large doors. Floor closers come with many functions adjustable such as the hold open and open angle, delayed action and opening force.

Door concealed overhead closers are used for smaller interior doors where a minimum site line is required at the head. This type of closer is also used in top-hung sliding and stacking systems when double acting/sliding panels are featured.

Installation Varies Greatly

Because each of the closers is installed in different areas, the installation and door preparation process for each is completely different.

Door concealed overhead closers are installed into the top of the door and attached to the header with a single-link arm. These are very small closers and require only 1 ¾-inch thick door frame.

Overhead concealed closers require a tube or channels to house the closer and also serve as the opening header. The minimum size extrusion would be 1 ¾ inch x 4 inches. The closer is then attached to the door with an end load, side load or offset arm.



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continued

Concealed floor closers require the floor to be cut out for a steel pan to be recessed flush with the finished floor and to house the closer. Floor closers are offered with interchangeable spindles to allow for all of the various floor conditions. The closer is then attached to the door with an end load or offset arm.

Regardless of the brand or type of concealed door closer being installed (or the experience of the installer), always read and follow each manufacturer's instructions. Sidelite variations exist between manufacturers' products, so brand B might not be installed the same way as brand A. Further, an overwhelming majority of products returned to the factory stem from improper installation rather than defects.

Maintenance for concealed door closers is minimal. In most cases doors require only an annual inspection for adjustments including the closer for swing speed and proper closing pressure and angle.

Invisible and practical

Though purposely invisible to most people, concealed door closers play an important role in ensuring reliable door operation and pedestrian safety. When properly selected, installed and maintained, they are engineered to

Right: Concealed floor closers are installed in the floor under a threshold or covered with a finished cover plate.



Left: Overhead concealed door closers are installed in the header tube.

provide decades of unobtrusive service. With a variety of options available, concealed door closers are ideal for the aesthetic demands of glass doors and aluminum storefront entrances. ■

the author

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