

Door Closer Basics

by Vince Butler

Door closers play an important role in the function of a door opening, especially on fire-rated doors. The NFPA 80 – Standard for Fire Doors and Other Opening Protectives requires that fire doors be self-closing and self-latching to contain and control flames and smoke.

For non-fire rated doors, the location (such as a door located in a very windy area) and use of the opening (such as a high security room) determines if a door closer is needed. The door closer can protect against the wind grabbing a door and wrenching it open, destroying the hinges, door and door frame. Openings into sensitive or highly secure areas use closers to ensure the door is consistently latched and locked after every use.

Mechanical Components of a Door Closer

When a door is opened, the arm moves and rotates the pinion, which moves the piston through the closer body. As the piston moves, it compresses the spring and displaces oil through a system of valves and channels (a hydraulic circuit). When the door is released, the spring pushes the piston back to the beginning. This also displaces the oil, but this time through a different set of valves and channels. The valves can

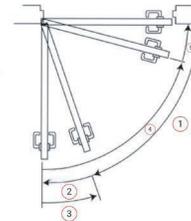
be regulated by the end user to control how fast oil can flow through the system. In addition, the spring tension can be adjusted to increase or decrease the closing power.

Grading (Accomplished by passing BHMA testing criteria)

Grade 1	2,000,000 Cycles* 60% Efficiency
Grade 2	1,000,000 Cycles* 60% Efficiency
Grade 3	500,000 Cycles* No Efficiency Test

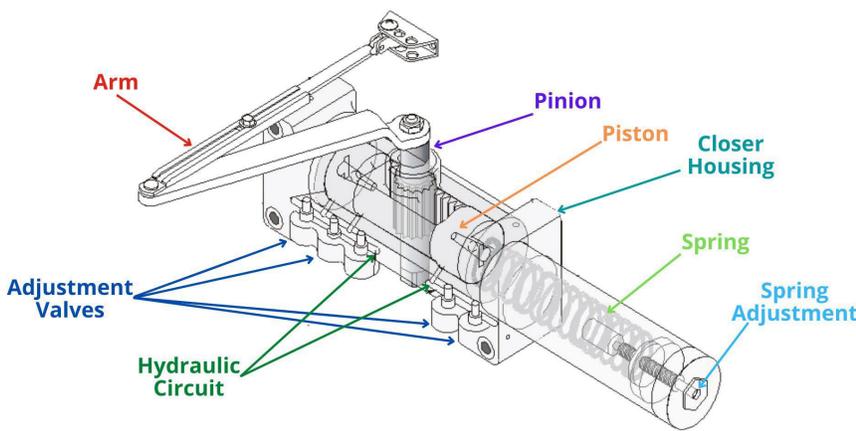
*Reduced by 25% when door closer has backcheck.

An efficiency rating of 60% means that if, for example, the door takes 10 pounds of force to open, the door closer must provide at least 6 pounds of closing force.



Closer Operation Terms & Descriptions

- Opening Cycle**
Controls the opening of the door from 0° to 75° while compressing the spring and directing the hydraulic fluid through internal channels in the closer body.
- Backcheck (adjustable)**
Slows the opening of the door between 75° and 90° so that it does not swing out of control and damage frames and adjacent walls.
- Delayed Action**
Delays the closing of the door between 90° and 75° degrees to allow traffic more time to move through the opening. (This is an option on most door closers.)
- Sweep or Closing Speed (adjustable)**
Controls the closing of the door (from the point the user releases the door) to approximately 12° to 15° at a consistent speed.
- Latch Speed (adjustable)**
Manages the last 12° to 15° of closing independently from the sweep speed so that the door positively latches in a controlled manner.



Door Closer Mounting Options

There are four common types of mounting options for a door closer. The location of the door opening, the head face dimension of the frame, the top rail of the door, and the expected door usage are all considerations when determining the best mounting option for a door closer.

Regular Arm Mounting (A)

Mounted to the pull side of the door, the closer body is installed on the top of the door and the closer arm is attached to the face of the frame head. Make sure the top rail of the door is wide, and is deep enough for installation of all the mounting screws. If not, a mounting plate will be needed.

Parallel Arm Mounting (B)

Mounted on the push side of the door opening, the closer body is mounted to the top of the door, and the parallel arm is fastened to the soffit of the frame. When the door is closed, the parallel arm folds parallel to the face of the door.

Top Jamb Mount (C)

Mounted on the head of the door frame, top jamb mounted door closers are typically used when the top rail of the door is narrow and the closer needs to be installed on the push side of the opening. On exterior doors, it is recommended to mount the closer on the inside (push side) to protect from weather and vandalism. Mounting plates are also available when the door frame is not tall enough to accommodate the closer body.

Track Arm Mount (D)

The track arm can be mounted on either the push or pull side of the door opening. There is a slider attached to the arm that runs inside the metal channel track as the door is opened. The closer body can be mounted to either the face of the door or the face of the frame, depending on the door and frame construction.

(A)



(B)



(C)



(D)



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