

## The Lowdown on Low-Energy Power Operators

by Gordon Holmes

Specifying door hardware can sometimes feel like a juggling act. Securing the building is often the first thought when considering door hardware. Determining who will have access to what areas and when can be confounding. On top of building and user requirements specifiers must also consider ADA laws, fire and life safety codes that dictate the types of hardware and how they are installed. Depending on the door opening several codes can interplay, and the door hardware must comply with every code and law.

Low-energy power operators have been designed with a few of these specific requirements in mind in order to provide easier accessibility through doorways. Functioning on the same principle as a door closer that controls the opening and closing of a door, “low-energy” refers only to the speed at which the door opens and closes. Low energy operators require a “knowing act. To open the door a person would need to push a button or pull on a handle, which engages control over the door.

The 2013 Builders Hardware Manufacturers Association (BHMA) Standard ANSI/BHMA A156.19 – American National Standard for Power Assist and Low Energy Power Operator Doors define a “knowing act” as follows:

“Consciously initiating the powered opening of a low-energy power door using acceptable methods including: wall or jamb-mounted contact switches such as push plates; fixed non-contact switches; the action of manual opening (pushing or pulling) a door; and controlled access devices such as keypads, card readers, and key switches.”

There are also “high-energy” operators that can be triggered by a “non-knowing act”. Walking on a pressure mat or triggering a motion sensor would be examples of a “non-knowing act”. A person isn’t specifically doing anything to open the door. High energy operators also require special sensors to ensure that individuals or objects are not in the way of the door. If a high-energy operator encounters an obstruction, it will reverse action. If a special sensor is used on a low-energy power operator it automatically changes it to a high-energy. High energy operators are typically found in high traffic areas like malls, grocery stores or high wind areas.

The American Association of Automatic Door Manufacturers (AAADM) conducted a survey of architects, specifiers, and manufacturers and asked where they preferred to use automatic door openers. The top answers were hospitals, airports, hospitality, and retail. These types of facilities are well served by automatic sliding doors, but where swinging doors are required by space or aesthetics, low-energy power operators are an ideal hardware choice.

Available for several types of door configurations including single, double, or double egress (double doors where each leaf swings the opposite direction) door openings, low-energy power operators are a good choice in low traffic areas where a door opening needs to comply with the American with Disabilities Act (ADA) regulations for door opening force, speed, and hold-open timing.

ADA 404.2.9 Door and Gate Opening Force, states:

*Door closers and gate closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.*

ADA 404.2.9 Door and Gate Opening Force, states:

*Fire doors shall have a minimum open force allowable by the appropriate administrative authority. The force for pushing or pulling open a door or gate other than fire doors shall be as follows:*

*Interior hinges doors and gates:*

*5 pounds maximum*

*Sliding or folding doors:*

*5 pounds maximum*

By activating a button, push bar, or simply tugging on a door handle, a door equipped with a low-energy operator will take over the opening cycle of the door. These buttons or bars are collectively called “actuators”. The actuator engages the operator by sending a signal to the auto operator, releasing the latching mechanism and engaging the auto operator to open.



Once engaged, the operator begins to slowly open the door, holds the door in the 90-degree position for at least five seconds and then begins to slowly shut and latch the door. The door opening must also comply with ADA stated maneuvering distances and clear width requirements that are required on most door openings.

The actuators also have location requirements as noted in ANSI/BHMA A156.19 A-5 Knowing Act Switches

- The switch should be located a maximum distance of 12 feet from the center of the door, remain accessible when the door is opened, and shall not be located in a position where the user would be in the path of the moving door.
- It is generally preferable for the switch to be located within one to five feet from the door. If located more than five feet from the center of the door, and additional time delay beyond the five second minimum is recommended. The additional time delay shall be a minimum of one second for each additional foot of distance.
- The switch should be installed a minimum of 34 inches (864mm) and a maximum of 48 inches (1219mm) from the floor, or as specified by the local building code.
- The switch should be mounted so the user can see the door when activating.

When specifying low energy power operators, signage also needs to be taken into consideration. Again, ANSI/BHMA A156.19 6 Signage weighs in.

*6.1 Doors shall be equipped with signage visible from either side of the door, instructing the user as to the operation and function of the door. The signs shall be mounted 50" +/- 12" (1270mm +/- 305mm) from the floor to the center line of the sign. The letters shall be 5/8 inch (16mm) high minimum.*

*6.2 Consistent with section 2.2.1 of ANSI Z535.4 – 2002 the “signage and warnings” guidelines of A156.19 are recognized, industry- specific standards that predate the adoption of Z535.4 and are not replaced by the standards set forth therein.*

Fire and life-safety codes must also be considered when specifying low-energy operators. NFPA 80 requires that any fire-rated opening must have fire-rated hardware, including low energy operators. NFPA 80 section 4.2.6 states:

*“A fire-door assembly shall consist of components that are separate products incorporated into the assembly and are allowed to have their own subcomponents... Except where restricted by individual published listing, a fire door assembly shall be permitted to consist of the labeled, listed, or classified components of different organizations that are acceptable to the Authority Having Jurisdiction (AHJ).”*



There are several UL-listed low-energy operators available for fire rated openings where opening assistance is required.

Coordinating hardware is an important consideration when using low-energy operators. Actuators that engage the operator can be wired, wireless, or even touchless. Most manufacturers offer a variety of shapes and sizes to coordinate with the building design or space constraints, like mullions.

Anyone who has taken DHI Hardware 101 knows ball-bearing hinges are the best choice for a door with door control hardware installed. The hinges may be required to be electrified. Electric strikes, magnetic locks on push/pulls, or exit devices can all be used with low-energy power operators.

Assisted living facilities, schools, libraries, childcare facilities and public buildings are all markets where low-energy power operators can provide an excellent hardware solution when easier accessibility is needed.



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