

DOORS, GATES AND GRILLES

THE ANATOMY OF AN AUTOMATIC DOOR

A basic guide to the selection, operation and safety of automatic doors.

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All of us have walked through automatic doors at one time or another. For many of us, it's a daily occurrence. Doors that swing or slide open as we enter our favorite grocery store or restaurant automatically open and close more than 50 billion times every year in the United States alone.

If you've walked through an automatic door, chances are you've also wondered what makes these doors work. The doors themselves, the sensors that activate them, the mechanism that opens and closes the doors and the safety decals that are required to be displayed on automatic doors are all a part of the anatomy of an automatic door.

TYPES OF AUTOMATIC DOORS

There are three basic kinds of automatic doors — swinging, sliding and folding doors. Automatic swinging door systems have a variety of configurations, including a single door that swings in or out and is left-handed or right-handed, and a pair of doors that simultaneously swing in the same direction. The door operator is concealed or surface-applied. The doors are center-pivoted, offset hung, balanced or hinged.

No matter what the configuration or system, automatic swinging doors include guide rails, which are separators used with power-operated doors for traffic separation and control. The doors also feature sensors or control

mats and signage for the safety and convenience of the users.

Automatic folding doors are comprised of two or more separate panels; one panel swings, and the other panel slides in a guide, thus allowing it to slide as both panels swing into a "V" shape (the fold). Automatic folding doors may include a single folding door that folds in or out and is left-handed and right-handed; or a pair of doors simultaneously folding in or out, either left-handed or right-handed.

Automatic sliding doors are flat panels that slide horizontally and linearly, with a variety of configurations. Their other features are similar to the ones described for swinging automatic doors, and they also include sensors or control mats and safety signage.

The mechanism that opens and closes the doors, an automatic door operator, is a power mechanism attached to a door for the purpose of mechanically opening and closing it upon receiving an activating signal. Some operators and controls are housed in a continuous aluminum header; others are surface-attached. Proper setting of the closing speed, closing force and time delays are major factors in making the mechanism operate safely.

ACTIVATING DEVICES

Sensing devices are used to activate the automatic door's openings and closings; a motion sensor zone is en-



Automatic swinging doors are best suited for one-way traffic.

tered, a mat is stepped on or a push-button switch is depressed. The active area is the area where a mat or sensor detects presence or motion. The activating zone is the area created by sensors so that the doors will open when the person or object enters the space.

A similar space called a safety area exists on the other side of the door, opposite from the activating area. As a person moves through the door and steps onto the safety mat, the door remains open. When the person steps off the safety mat, after a brief time delay the door starts to close to 10 degrees from fully closed, then slowly closes the rest of the way.

The activating device completes an electrical contact to the operator's master control box. When the master control is activated, the main relay or circuit in the master control is switched to open, sending electrical currents to the power source and causing the door to open.

An electronic sensor activates when a person walks at a moderate speed toward the opening of an automatic door. The door begins opening when the person is about 4 feet away from it, swings or slides open smoothly and stops without impact. The door remains open as the person moves through it and then closes after a brief time delay.

Activating floor mats are used to trigger a door's opening. The mat, which should be the width of the door, is placed on the floor or the ground outside the door at a distance of about 4 feet from the threshold. Stepping on the "opening" mat activates the sensors, telling the door to open.

SAFETY DECALS

The familiar blue decals developed by the AADM (American Association of Automatic Door Manufacturers) were created for swinging, sliding and folding automatic doors, outlining a daily safety check procedure. These decals are on door packages distributed throughout North America. Proper decals and labels should be applied and maintained on all automatic doors. Decals that have been removed or cannot be read should be replaced.

All automatic doors should have decals properly displayed. There should be decals that include the statements "AUTOMATIC DOOR" in letters that are a minimum height of 0.5 inches and "IN EMERGENCY - PUSH TO OPEN." An AAADM safety information sticker should be

affixed to the doorframe in a visible, protected location.

An sign with a green circle surrounding a black arrow on a white background should be visible from the approach side of a folding door, mounted on the door at a height of 58 inches (± 5 inches) from the floor to the center of the sign. The sign's diameter should be a minimum of 6 inches.

If there is one-way traffic, an international "DO NOT ENTER" sign (a solid red circle with white lettering that reads "Do Not Enter") should be visible from the side of the door that would swing toward pedestrians attempting to travel in the wrong direction. The sign should be a minimum of 6 inches in diameter and mounted on the door at a height of 58 inches (± 5 inches) from the floor to the center of the sign.

Doors serving two-way traffic should be marked with a decal, visible from both sides of the door, with the words "CAUTION: Automatic Door." The words "Automatic Door" must be in letters that are at least 0.50 inches in height. They should be mounted on the door at a height of 58 inches (± 5 inches) from the floor to the center of the sign. The sign should be a minimum of 6 inches in diameter and have black letters on a yellow background.

Now that you know almost everything there is to know about automatic doors, the next time you approach a set of automatic doors, you might want to slow down a moment to observe how smoothly they operate. Automatic doors are just one of the many technological conveniences that make our lives a little easier.

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