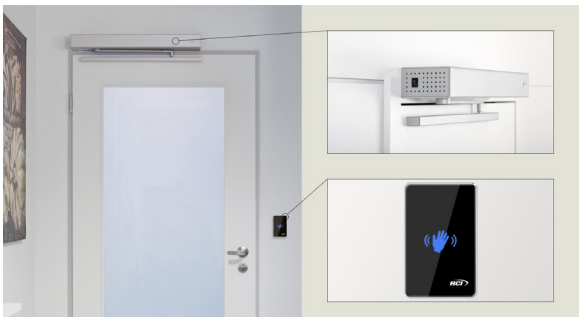
By: Amanda Gibney Weko based on content provided by dormakaba

DEVIL'S DETAIL

INTRODUCTION

As employees and guests return to places of work and entertainment following the Covid-19 pandemic, public health will remain top-of-mind. Just as more owners are incorporating interior glass partitions to balance views with health and safety, touchless entry systems afford similar combinations of accessibility and security. Touchless solutions reduce hand-to-door contact in high-traffic areas, minimizing the spread of germs. These also offer barrier-free universal access for people with disabilities. Mobile access options provide additional benefits of touchless, secure access controlled via mobile applications through the use of Bluetooth wireless technology. Not only do touchless options prevent dozens – or hundreds – of hands touching the same surfaces, but mobile access can mean people use their smartphones to check in and out of buildings, access elevators, or enter other areas with any programmable degree of security.

In this article, AGI explores touchless options manufactured in the U.S. and available through dormakaba, a Swiss-based company and one of the world's leading providers of doors and access controls.



Top: Touchless Access Door Closer and Sensor; Bottom: ED100 Low Energy Swing Door Operator (all images © dormakaba)

TOUCHLESS OPTIONS

Most manual door openings can be transformed into automatic using low-energy swing door operators, automatic sliders, or touchless actuators. Touchless actuators are mostly used with swing doors. Touchless activation can be used with sliding doors in low energy and in conjunction with sensors for full energy. Low-energy swing door operators can be used in new construction or retrofits. dormakaba's self-learning microprocessor controls adjust door swing speed for smooth opening and closing. Automatic sliding door options include those designed for interior and exterior applications with full and partial breakouts. Touchless actuators provide access control, door automation, alerts, and handicap accessibility. Motion-activated switches can be mounted at the door or in a remote location. Fully monitored overhead presence and activation sensors are used to meet certain standards. Touchless activation shall be installed in a location within view of the door; have an installation height of a minimum of 34 inches and a maximum of 48 inches.

Above: ESA400 Automatic Sliding Door

Below: ED100 Surface Applied Pair Swing Door Operator

LOW-ENERGY VS. AUTOMATIC

Principal differences between low-energy and automatic touchless entry systems are related to opening speed, traffic volume, and safety device requirements. Low-energy systems operate slowly with minimal force. These can also operate on-demand with touchless wave plates or touchless switches. As a result, low-energy entries do not require safety devices. Automatic or high-energy touchless entry systems operate quickly 100 percent of the time. These require added safety devices such as sensors and guard rails to meet appropriate ANSI standards.

Low-energy systems are typically used to provide enhanced accessibility where conventional door closers might have been used. Due to slow operating speeds, low-energy is not suitable for high-traffic areas. The low opening forces of low-energy systems also make them inappropriate for environments where the HVAC is not balanced. Although automatic doors are not ADA-mandated, if they are used, they must comply with the American National Standards Institute and Builders Hardware Manufacturers Association (ANSI/BHMA) Power Operated Doors Set Standard A156.19 or A156.10.

Low-Energy Openers	Automatic Openers
3 seconds to backcheck (4 seconds to fully open)	1.5 seconds to backcheck
No more than 15 lbs to stop	No more than 40 lbs to stop
Remain open for 5 seconds before closing	Remain open for 5 seconds before closing
No safety devices necessary	Requires guard rails, safety mats, and canceling scanners
Used for barrier-free, limited traffic environments: senior facilities, hospitals, offices	Used for high-traffic environments: transit, retail, ER, schools/universities
Benefits: • Less costly • Smaller/less visible • Easy install on typical frame • No maintenance required • Functions like standard closer: power only used to open • Self-closing under alarm/ power loss	**Benefits:** • Quicker passage: better for able-bodied users • 100% duty cycle for high traffic • More design choices: slide, swing, fold, revolve

Once it gets to 90 degrees, an automated door must remain open for a five-second minimum. This allows people with disabilities time to go through the door before it begins to close. Closing speed time begins at 90 degrees rather than at 70 degrees for a manual door. Opening forces listed above ensure that a person can push the door open in the event of a failure or power loss.

AUTOMATIC SYSTEMS

There are five primary types of automatic doors:

1. Sliding: single slide, bi-parting slide, telescopic slide
2. Swinging: low-energy or fully automatic
3. Folding: two- and four-panel
4. Manual: for intensive care/critical care spaces
5. Revolving: with two, three, or four wings

Sliding units can be surface-mounted above doors or concealed. Limited sight line sliding doors offer low profiles and more visible area. Telescoping sliding doors offer up to 33 percent wider openings that standard sliders, typically with full breakout. Most swing doors can be automated in new construction or retrofits with surface-mounted or concealed header closers. High-speed automatic swing doors require sensors, guard rails, and other safety devices. Folding doors require less floor space than swing doors and can provide wider openings in tight spaces. Manual/ automatic sliding doors used in critical care spaces may combine features of other styles – with two-, three-, and four-panel options and telescoping configurations.

Different door types offer different means of emergency egress. In full breakout systems, all doors break out when pushed. In fixed side lite or partial breakout systems, some panels remain in place for additional support. When designing vestibules with dual sets of automatic doors, bigger is always better – at least 12 feet between sets of doors is ideal. This allows for temperature regulation between indoor and outdoor conditions, permitting time for the exterior doors to close before the interior doors open.

REVOLVING SYSTEMS

Automatic revolving door systems typically come in small and large diameters providing security, access control, accessibility, and a dramatic aesthetic. Small diameter (8-12 feet) automatic revolving doors are an energy efficient, hands-free solution that provides accessibility within a minimum diameter. The maximum height of a small automatic revolving door is 8'-6". Small revolving doors may be three- or four-wing with emergency breakout panels and motion and safety sensors. Large diameter (12-16 feet) automatic revolving doors provide hands-free accessibility for higher traffic areas. Large revolving doors may be two-, three-, or four-wing with similar emergency breakout panels and safety devices as smaller doors. Large revolving doors may feature integrated sliding or swinging doors or display cases. For any size automatic revolving door, the motor, gearbox, and controls are typically located in the canopy.

Consider the following critical factors that impact automatic revolving door selection:

- Traffic/capacity
- Diameter
- Throat opening
- Compartment size
- Accessibility issues
- Whether luggage, equipment, or shopping carts will be transported through the door
- Access control requirements

REVOLVING DOOR CONCERNS

According to a 2019 article in The Construction Specifier, author Kevin Blaine emphasizes proper site conditions and readiness for revolving door installation. Recommendations include ensuring consistent level floor conditions. Uneven floors could lead to door seal gaps that lead to air or moisture infiltration. Uneven conditions can also place unnecessary stress on the bottom bearing of the door's center shaft, leading to out-of-plumb rotation and eventual failure. Blaine also points out that attention must also be paid to wall openings. Failing to properly tie revolving doors into adjacent structure diminishes lateral support and could cause the assembly to shake or sway during operation, leading to stress or eventual failure. Automatic revolving door power requirements typically

CRANE MOTION ASSIST 360

In addition to carrying multiple types of manual and automatic revolving doors for all application types, dormakaba offers the industry's only touch-free manual revolving door.

The Crane Motion Assist 360 offers three different operation modes adjustable at the turn of a key: manual, power-assist, and low-energy automatic. The safe, touch-free entry permits pedestrians of all abilities to use the doors. The system is available in semi-custom, fully custom, all-glass, retrofit (for existing Crane products), and rehab (for existing Crane revolving doors and competitor revolving doors).

For more information, visit:
Crane Motion Assist 360 on the dormakaba website

include 110-240 V ac, single-phase, 20-amp, and three-wire circuit with ground. Blaine recommends having power roughed in and functional to make it easy to test and commission the door during installation. Optional in-door lighting requires a dedicated circuit.

The ANSI/BHMA Power and Manual Operated Revolving Pedestrian Door Standard A156.27 provides detailed requirements for automatic revolving door sensors in sections 16-22.

HANDS-FREE ACCESS

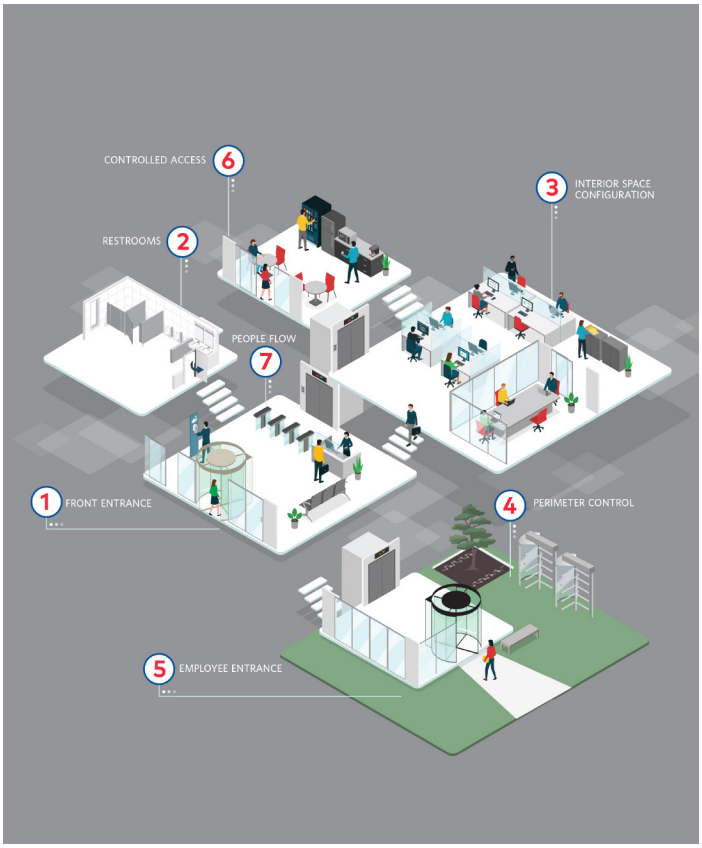
Regardless of the door style, providing hands-free access typically requires access controls. Touchless access controls include short-range touchless actuators, touchless switches, and mobile device controls. Speak with your product representative and glazing teammates to understand the best options for your aesthetic, performance, security, and accessibility objectives.

AGI CONTRACTOR BENEFIT

AGI member contractors are poised to meet the growing demand of touchless entries. The Finishing Trades Institute of the Mid-Atlantic Region (FTI) provides glazier apprentices and journeypersons with training in automatic doors and other touchless systems. According to FTI Glazier Instructor Steve Metzger, "We remain on top of trends in the industry, from interior glass partitions to touchless systems. Our LU252 glaziers are highly trained to respond to Covid-19 precautions and to anticipate and accommodate new glazing technology." Metzger advises that owners and design professionals engage with glazing contractors early and often to learn what's new and possible in glazing and how best to execute their objectives.

ABOUT DORMAKABA

dormakaba is one of the top three companies in the global market for access and security solutions. With strong brands such as Dorma and Kaba in its portfolio, the company offers a single source for products, solutions, and services related to doors and secure access to buildings and rooms. With around 16,000 employees and numerous cooperation partners, dormakaba is active in over 130 countries. dormakaba is headquartered in Rümlang (Zurich/Switzerland) and generates an annual turnover of over CHF 2 billion.



7 Critical Points to Enhance Hygiene

dormakaba

Learn more about dormakaba's touchless access technology and door systems in the e-book, 7 Steps to Creating a Safe and Secure Building. As pictured above, from front entrances to people flow, the document highlights options and recommendations to ensure safe, secure, accessible buildings.

Learn more about dormakaba at https://www.dormakaba.com.

About the Devil's Details

The AGI educational series illustrates and describes common glazing challenges as a means to communicate best practices for the design and construction industry, not as a sole source for design guidance. AGI recommends design professionals consult with an AGI contractor regarding specific project challenges. AGI contractor profiles may be accessed at www.theagi.org. To share a devilish detail of your own, contact info@theagi.org.