

GUIDE TO HANDS-FREE DOOR OPENING



Introduction

As if selecting door locks and hardware wasn't complicated enough, health and community spread concerns have added a new dimension. Previously this was the domain of those in the medical community; today, we recognize that providing a hands-free door environment will be expected by those returning to work, school, and all public spaces.

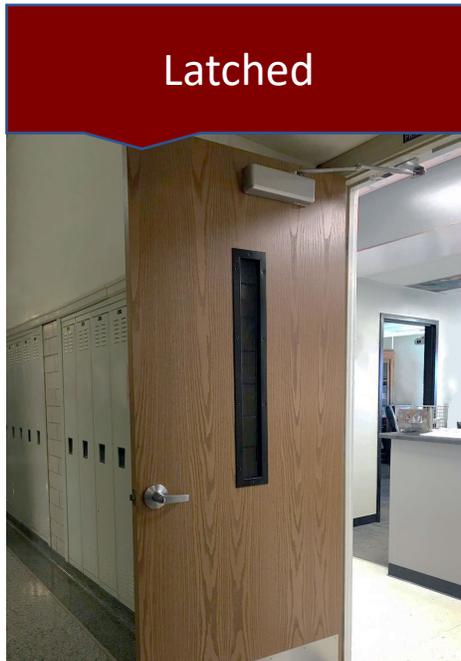
The goal of this guide is to familiarize you with the three main types of doors that are encountered daily:

1. Push/Pull
2. Latched
3. Automatic Opening

Push/Pull



Latched



Automatic Opening



Mechanical or Powered?

Before we dive into the types of doors, let's review the basic infrastructure of door-opening solutions.

Maybe Star Trek got it right after all. Remember how they approached doors that instantly parted like the Red Sea? This has certainly come true as we think about automatic doors at the supermarket, airport, and other free-entry, high-traffic doors.

But what about those doors we encounter every day within a building or in secured openings? How can those be adapted to avoid using our hands and touching doorknobs and levers?

To simplify the issue, we are going to separate our solutions into two categories:

1. Mechanical
2. Powered

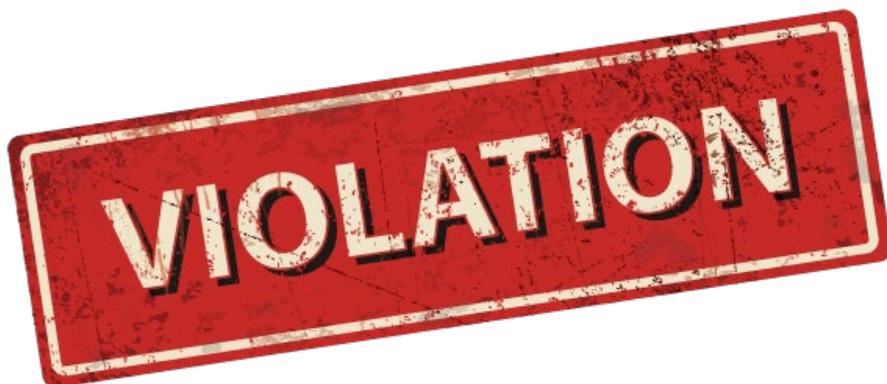
Mechanical

Mechanical solutions, particularly when it comes to reducing touchpoints in a facility, include items that can be added to an existing door and are operated by an arm or foot. Mechanical solutions are more cost-effective than powered options; however, they must be applied in accordance with life-safety codes and ADA accessibility requirements. Generally being a more affordable option, some mechanical products may even be removed without damaging the door, should there ever be a return to traditional door-opening methods.

Powered

As the name implies, powered solutions involve adding powered elements to a door so that physically pushing or pulling the door is not required. ADA-compliant entries have used powered solutions such as door operators and push plate activators for years, and high-traffic openings use peripheral items such as automatic openers and sensors for continuous operation. Powered solutions are being adapted for the touchless world; however, they require specialized installation and electrical hookup, and are more expensive than mechanical solutions.

A Word About Fire Code Compliance



We must adjust to hands-free door operation without sacrificing or disturbing fire code compliance in any way. Respecting the latched opening is critical. Any element added to a "labeled" door must not impair the latching operation. That means no taping over latches or strike plates, no screws jamming latches in, or propping doors open at any time.

How can you tell if the opening is fire-rated? The simplest way is to look for a label on the edge of the door and frame. You can also look for an "F" on the latch.

Mechanical Hands-Free Solutions

PUSH/PULL DOORS

Push/pull doors are used where free, unimpeded access is desired. They are not used in fire-rated applications but may be used in security applications in conjunction with an electric release (magnetic lock or electric strike).

The most common examples of push/pull doors in everyday use would be a public restroom, secondary vestibule door, or a store entrance.

So what options exist for reducing touchpoints on push/pull doors?



Mechanical Hands-Free Solutions



PUSH/PULL DOORS

Arm Pull

Arm pulls may be affixed to the "pull" side of the door, alongside an existing pull handle. Some arm pulls can be affixed to the existing door pull handle instead of the door. While there are antimicrobial pull handles and various germicidal coatings for existing pull handles, the desire to open the door without using your hand to grasp has created a category of products utilizing the forearm.

There isn't a standard height for a secondary arm pull, but utility and common sense have generally kept them within the standard grasping height. Depending on your facility's needs, the pull can be installed in the horizontal or vertical position, which might provide greater leverage to pull the door open.

Limitations:

Because they must be drilled to the door to install, an arm pull will leave holes on the surface of the door once removed, requiring filling or patching. Additionally, arm pulls cannot be used on latched doors (those with lever handles or knobs) or doors where exit devices are installed

Mechanical Hands-Free Solutions



PUSH/PULL DOORS

Foot Pull

Foot pulls have proliferated over the past year and are designed to provide the same functionality as an arm pull. Foot pulls are affixed at the bottom of the door. There is an extensive array of designs, with some having you place your shoe underneath the pull and others featuring a serrated edge to grab with the bottom of your shoe. A certain degree of dexterity might be required to open, and anyone with mobility issues (walker, cane, etc.) should not attempt to use.

Limitations:

Just like its cousin, the arm pull, foot pulls may not be used on latched doors. They are challenging to operate on doors with door closers since using a foot pull to overcome the closing force can be difficult. Further, there may also be issues with ADA compliance and code requirements. And finally, removing a foot pull will leave drill holes on the door that require patching.

Mechanical Hands-Free Solutions



PUSH/PULL DOORS

Push Plates

Push plates have been affixed to the push side of doors forever; most of us are accustomed to using our hips to push a door open to avoid touching the door or push plate. Many plates, especially those in hospitals and medical offices, may contain an antimicrobial finish that helps inhibit the growth of bacteria, germs, and mold. Newer plates comprised of – or coated with – copper alloys may reduce the time germs can survive on surfaces.

Limitations:

As of this date, we are not aware of any coatings or products certified as being effective against the spread of SARS-CoV-2.

A note about security doors with electric strikes:

Doors with electric strikes might be suitable for pulls, as the energized strike allows the moveable lip section of the strike to swing open, permitting the door to be pushed or pulled without retracting the latch. Such strikes can be confusing, as free exiting through the door requires operating the latch, thereby depressing the lever. In this case, an arm extender or lever adapter would be needed on the free egress side of the door.

Mechanical Hands-Free Solutions



LATCHING DOORS

Arm Extenders

Arm extenders affix to the lever shank and allow the upper arm or forearm to rotate the lever and push or pull the door open. The integrity of the lever is maintained and is free to operate by those who choose to do so. Arm extenders may be affixed to levers on the push or pull side of the door.

Arm extenders are designed for use with ANSI Grade 1 locksets. Collar inserts or spacers allow such extenders to be used on levers with different diameters. They have also been rated for use on fire-rated doors.

Limitations:

Non-Grade 1 locksets might have small diameter levers and weak latch and lever springs, making them unsuitable for arm extenders. Certain pushbutton locks may also have designs that prohibit the use of an arm extender

Mechanical Hands-Free Solutions



LATCHING DOORS

Lever Adapters

There are a variety of 3d printable devices that can wrap around levers, allowing the forearm or elbow to depress the lever and pull the door open. These devices can remove the ability to grip and use the lever normally. They may also be identified as a forearm shield, which also wholly surrounds the lever. Adapters can be handmade, and there aren't any that have been tested by independent laboratories.

Limitations:

Certain lever designs may not be suitable for adapters, and they cannot be used on round or oval doorknobs.

Powered Hands-Free Solutions

AUTOMATIC OPERATORS

Automatic door operators are very common for non-secured, high-traffic openings. They are available for swinging or sliding doors and are generally activated by overhead motion sensors for 100% touchless operation.

The use of operators has also become common for ADA-accessible entrances, with the typical push plate actuator installed on a wall or bollard on each side of the opening. These may also be used in security applications, with a card reader or keypad replacing the push plate.



Powered Hands-Free Solutions



AUTOMATIC OPERATORS

There is a wide variety of automatic door operators, from the traditional full-powered one to low energy operators. Their application can vary due to the size of the opening and the external conditions they may need to overcome (including strong winds). They all share the need for an electrical connection, operating devices on each side of the door (wave pads seem to be most popular today). When required for fire code compliance or security, there is also a need for either a latch lock and electric strike or an electromagnetic lock.

Limitations:

Adapting an opening for installing an automatic operator will require the addition of several elements and, in many jurisdictions, a licensed electrician or certified high-energy service technician for the power connection and installation. Automatic operators typically require maintenance agreements for continuing service. Operating signage may also be required, possibly in multiple languages. Checking with a local AHJ or code official may be necessary before selecting the elements needed to install an automatic operator in a code-compliant manner.