

How Gaskets Can Enhance School Security

By Jacob Wexler, FDAI

In the wake of tragedies like

Columbine and Sandy Hook, educational facilities all over the country have been working diligently to enhance their security. They have relied heavily on the architectural openings industry, which has been proactive in designing and producing new classroom locks and electronic access control systems that will ensure their doors are closed and latched securely. However, in the rush to upgrade security with new doors and hardware, one item that is frequently overlooked is gasketing.

Gasketing, or weather stripping, has typically been an afterthought when specifying any openings, despite the vital role it plays in ensuring doors function properly. Specifiers would be wise to take note of the innovation that has taken place in gasketing products in recent years and understand how essential they are to enhancing not only security, but also the life safety of school students and faculty.

Gasketing Evolves

Architectural hardware has changed more in the past three decades than it has throughout the whole of human history. From electrified hardware to biometric access control systems, the industry has come a long way from traditional mechanical keys and hinges. Such dramatic advances have only



Figure 1: The mounting hardware used for the door closer and strike has been properly specified and installed.

Photos courtesy of Legacy Manufacturing

heightened the disparity between high tech hardware and gaskets, pushing them further into the periphery of the industry.

Discussion about gaskets have typically been limited to their role as a life safety or an acoustical product. Yet just as building openings have been undergoing a transformation, so too are gaskets. For years, they have played a vital, albeit invisible, role in enabling acoustical, fire-rated, electro-magnetic interference and hurricane doors to function properly. However, the evolution of electronic hardware in our industry has opened the door of possibility to engineer and modify existing gasketing options, thus allowing gasketing to become a more integrated part of securing the opening.

An excellent example of this is can be seen in *Figure 1* (opposite page). This picture was taken on the inside of a secured opening. The mounting hardware used for the door closer and strike has been properly specified and installed. In addition, it is important to note the location of the door position switch on the upper right and upper left jamb of the paired opening respectively. The door position switch location is now clearly known, and somebody attempting to access the door without credentials from the outside may be able to avoid or bypass this switch. As a result, the possibility to conceal the switch into the permanent gasketing is now a preferred option.

Implementing a security system that uses a pressure-sensitive ribbon switch inside of the required gasketing allows for a more effective way to supervise the status of the opening. The switch will be activated upon the release of force applied to the gasket. When the door is open and there is no force against the seal, the contact will be open. When the door closes, the contact will close. Configurations can vary based on use of the product.

Another area where the evolution of gasketing is offering an impressive solution can be seen in concealed



Figure 2: A good representation of how hardware should be mounted to gasketing in a school application.

automatic door bottoms. Thresholds can often pose difficulties when specifiers are unsure of the type flooring being used in the opening. A poor selection can result in a significant amount of space between the bottom of the door and the finished floor, which can result in ineffective fire or acoustic doors. Concealed automatic door bottoms offer an elegant solution to the problem.

While the configurations of this type of secure seal are endless, the automatic door bottom can be activated in one of two ways. The first is the traditional opening and closing of the door. When a door is closed, the threshold will act as a latch, activating the door bottom and allowing the seal to drop down. When the door is open, the pin that hits against the stop will retract into the door bottom and the seal will be concealed into the housing.

The more innovative approach is to have an electronically retracting door bottom that can be activated with a switch. The switch can be either a keypad, a key switch, or a standard momentary switch with no credential requirements. This feature could be very useful in school settings where sound control is particularly important, from the music room to the nurse's office, where privacy issues are a concern.

Proper Specification and Installation

While recent innovations in gasketing products can aid in enhancing the security of educational facilities, their effectiveness is dependent on proper specification and installation. When specifying gasketing for educational facilities, here are some points to keep mind:

- Ensure the gasketing specified does not interfere with any other hardware on the door (pivots, cylindrical locks, electronic hardware, surface mounted closers, concealed vertical rods).
- Ensure that mounting hardware locations are adjusted for any brackets that must be used on perimeter gasketing.
- Mounting brackets should always be used when there is surface mounted hardware that will interfere with gasketing.
- Specify gasketing that is appropriate for use in a school setting such as anti-ligature and anti-microbial gasketing.
- Finger guards and finger protection hardware on both the hinge and lock side are imperative for the protection of children.

Although specifications are an important element, many of the errors involving gasketing are the result of improper installation.

In addition, the extra seal protecting the hinges can provide additional security by preventing tampering.

- Fire exit hardware or panic hardware must be properly undersized to allow for the mounting bracket over the seal. This is typically an instruction to be given to the contractor or installer as this type of hardware is generally field modifiable.

Although specifications are an important element, many of the errors involving gasketing are the result of improper installation. The following are some tips to ensure gasketing integrity is not compromised in the field:

- When using gasketing in schools, it is imperative to avoid frames without stops, also known as cased open frames. Due to the design of these frames, the gasketing can be easily removed with a screwdriver, leaving the door unsecured. In a situation where a cased open frame is already installed, the heavy-duty rated gasketing that acts as the stop should be mounted with security fasteners to inhibit tampering.
- A magnetic lock should only be used with the proper mounting bracket recommended by the manufacturer to avoid interference with the continuous seal.
- The mounting of other hardware onto or overlapping gasketing must be looked at carefully to ensure the seal has not been compromised, particularly in highly secure openings. *Figure 2* (previous page) is a good representation of how hardware should be mounted to gasketing in a school application.
- The practice of notching out gasketing for other hardware is dangerously common as many specifiers and installers either ignore or are unaware of the need for a continuous seal and therefore notch out an appropriate space within the gasketing for other hardware. This notching of gasketing creates two potential risks to occupants. The first is a security issue, as the break in the gasketing creates an access point to the secure side of the opening. The second is an even more serious threat to life safety as the door assembly was not tested with that type of modification. This is of particular concern with fire doors, where any breaks in the seal are likely to result in leakage of smoke into a room.

- The integrity of the seal is immediately lost once the seal has been cut to allow for a strike or a surface mounted closer. For this reason, it is mandatory to use security brackets over any type of perimeter seal. *Figure 3* (below) shows the proper way to install a security bracket to allow for a surface mounted roller strike to be installed. The security bracket allows for a continuous seal around the opening, which is consistent with the test that was successfully performed on the opening prior to rating. In addition, the security bracket makes it difficult for the hardware to be tampered with.

These are just a few of the many issues involving door gasketing in educational facilities. Specifiers can find additional details on these issues in NFPA 105 (2016)—*Standard for Smoke Door Assemblies and Other Opening Protectives*, and NFPA 101 (2015)—*The Life Safety Code*.



Figure 3: The proper way to install a security bracket to allow for a surface mounted roller strike to be installed.



Figures 4 and 5 detail the results of poor specification and installation of hardware on an opening. The picture shows that the seal was notched out to accept the surface-mounted closer and the strike.

It is vital that the gaskets are specified, coordinated and installed properly to ensure the opening is secure and will function properly, especially in the event of an emergency.

Conclusion

Gasketing, as shown, can be an integral part of the security of the opening. Both existing gasketing products and the ongoing expansion and engineering of new gasketing products, can and should be used to secure openings in any type of facility, including schools.

However, it is vital that the gaskets are specified, coordinated and installed properly to ensure the opening is secure and will function properly, especially in the event of an emergency. Schools are among the most vulnerable public spaces for security and ensuring the appropriate hardware is installed in these types of openings is essential to ensuring the life safety and security of both students and faculty. ■



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