

# Getting the Most Out of Liftgate Conveyor Systems

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In my two and a half years working as a customer application engineer here at Dorner, I've never designed two identical liftgate conveyor systems. And I guess that's not surprising considering conveyor applications are rarely alike.

As implied by its name, a liftgate conveyor allows an operator to raise a section of the frame, much like a drawbridge, to let people pass through. Once people are safely in their work area, the conveyor is lowered, latched in place and resumes operation.

I view a liftgate conveyor somewhat as an option of last resort. During the design phase, when we see that the conveyor system is going to hinder normal employee traffic patterns, we first look for options to optimize production floor space.

Can the system be elevated above the employee pathway? Can it go below? Is there space available to install a foot bridge over the conveyor line? Our preference is to keep the line moving and free from interruptions. But if those alternatives are not practical, a liftgate conveyor fills the solution.

The overall operation of the liftgate conveyor depends largely on the application and what it's moving. Many are designed so that the belt continues to move when it's lifted. The entire frame, along with the motor and mounting package all tilt up as one unit. An operator simply waits for a clearing of product from the belt, raises the conveyor to pass through, and then lowers it back into place.

This type of design is better suited when the product moving on the conveyor system isn't fragile. As long as product won't get damaged by occasionally sliding back down the conveyor or bunching up at the pivot point when the liftgate is raised, this design works well. Also, it's generally less expensive than other options

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as it has fewer accessories and controls.

However, if the product is more fragile or delicate, there are controls that we can attach to a liftgate conveyor to help ensure product integrity. I like to think about it as moving eggs. A customer cannot afford to have eggs sliding down a conveyor or back into one another at the pivot point when the liftgate is raised. We can design interlock switches into the liftgate to not only control the conveyor's movement, but the entire system, if necessary.

An interlock switch can program the liftgate conveyor to stop and also coordinate timing of the in-feed conveyor so that the liftgate is free of product when it's raised. For example, when the operator engages the interlock switch, it can either stop or slow down the infeed conveyor line to help clear product from the liftgate. The liftgate, in turn, can operate for a few additional seconds until it is free from product and safe for the operator to raise.

In certain applications that call for precise timing between product and a packaging process upstream from the liftgate, an interlock switch also can control that interaction as well so nothing gets disrupted when the conveyor is raised.

I recently designed a liftgate for one of our AquaPrur sanitary conveyors. The application was a pharmaceutical packaging line. The process involved pill bottles passing a photo eye, which triggered pill dispensing by the customer's filling station. Bottles then travel through a second photo eye to ensure each has the proper level of pills; bottles that fail are rejected into a separate bin.

Movement continues across the liftgate to another conveyor system for packaging. Interlock switches on the liftgate automatically adjust the line speeds when the conveyor is raised and lowered. Liftgate conveyors with interlock switches and other related features are more expensive, but if the application calls for added control, such as the pharmaceutical line, this type of liftgate provides the best return on investment.

Balance is a critical component in the design of liftgate conveyors. The liftgate is raised by employees with gas-spring assistance. If the gas springs are too strong, the conveyor has a catapult-like effect when it's raised that can damage the conveyor. If the springs are too weak, the liftgate can close rapidly and endanger employees. This is why testing for the correct balance at our plant is critical for safety.

Liftgate conveyors can provide convenient and safe access to a work area without having employees duck underneath an existing line. By understanding the application and what you're looking for, a liftgate conveyor can add flexibility and enhance most processing and packaging lines.

For more information, please visit [www.dornerconveyors.com](http://www.dornerconveyors.com) [1].

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