

Loading Dock Solutions

Choosing the Optimum Dock Leveler

Loading docks are the first and last contact at any facility. It's the place where supplies first arrive and the place from where shipments leave. With today's modern, fast-paced loading docks, selecting and properly installing the best leveler for the job plays a major role in safety and productivity.

Creating safe and efficient bridges between facilities and the trucks and trailers that pull up to them is no easy task. With so many different kinds of dock levelers available today, in such a wide variety of sizes, shapes, and mounting styles, choosing the right one can be more complicated than ever.

"The reason there are so many choices in dock levelers," says Steve Greco, Director of International Sales and Marketing for Blue Giant, Brampton, Ontario, "is that there is such a huge variety of freight, vehicles, frequency of use, and loading conditions. These different operations place different demands on a dock leveler, so it is important to make sure that the leveler you recommend matches the individual requirements."

Use considerations

The first thing to consider is where and how the dock leveler will be used. Is it a replacement, a retrofit, or new construction? What types and variations of vehicles will be unloading and loading? What are the space limitations? Are environmental control and security prime considerations?

Oftentimes budget or space restrictions may unduly influence the decisions. This is where bringing in a dock professional can help the most. They have the knowledge and experience to analyze needs and sort out the many options and their resultant tradeoffs.

Following are some of the factors to be considered.

Types of levelers

Edge-of-dock

These levelers are mounted to the outside of the face of the loading dock. As such, they're the most economical and typically the easiest levelers to install. Their drawback is limited size and weight capacities.

These levelers are commonly used for truck terminal applications where a specific trailer is being serviced regularly. They can typically only accommodate trucks and trailers that are five inches above or below where the leveler is mounted. If your customer must accommodate refrigerated trailers or ocean containers, which tends to be higher, they may not be able to reach

Pit-mounted

These docks offer greater capacities and options to suit more demanding cross-docking applications. Because of more space above and below the leveler, pit-mounted levelers typically have greater working and service ranges and adaptability over edge-of-dock levelers.

One consideration is that the dock door rests on the leveler and may not provide the best seal. This can be a factor for cold-storage applications.

Recessed or vertical-storing

This type is recommended most for food and other applications where temperature control is a concern. They're better at keeping the elements and pests out and the temperature in.

They're also better for security because the trailer can fully back up to a dock while the door is closed, and the leveler is not put down until there is a fully sealed environment.



(Photo caption) Vertical or recessed levelers are designed for climate-controlled applications where the overhead door must be kept closed when not in use. This system is interlocked with the overhead door, interior dock light, hydraulic vehicle restraint system, and lights communication package.



(Photo caption) Vertical storing dock leveler is mounted behind the overhead door along a continuous pit. The fully hydraulic dock is stored in the vertical position behind the overhead door (shown in left photo), allowing for a complete, energy-efficient seal when the door is closed to minimize heating and cooling losses. Rigid-frame inflatable shelter forms a complete seal around the trailer.

Operation

There are three basic types of dock leveler operation: mechanical, hydraulic, and power-assisted.

Mechanical

These dock levelers are typically spring-biased upwards with a hold-down mechanism. The most common type in use relies on the dock operator using a pull chain to release the leveler from the parked position and extend the lip. The operator then walks onto the platform, using body weight to lower the leveler onto the trailer bed.

The disadvantages of these levelers are that they are not very ergonomic and present many opportunities for injury. They also require a lot of maintenance and adjustments.



(Photo caption) Heavy-duty mechanical dock levelers installed with mechanical vehicle restraints. Compression-style dock seals with adjustable header seal the back of the trailer.

Hydraulic

These levelers use an electric pump driving a hydraulic cylinder to automatically engage them and are typically controlled with a remote switch mounted on a wall near the dock. Hydraulic levelers are the choice for higher capacity, smoother and quieter operation, ease of use and maintenance, and overall lower lifetime operating costs.

They can also provide a wide range of safety features such as full-operating-range toe-guard protection, hydraulic fail-safe protection, and the ability to be interlocked with optional hydraulic truck restraint systems and driver safety communications packages.



(Photo caption) Fully hydraulic leveler interlocked with hydraulic vehicle restraint system and lights communication package. Rigid dock shelter accommodates a wide variety of trailers.

Power-assisted

These mechanical levelers use push-button controls to power counter-balanced springs or airbags that force the leveler up; gravity then brings the leveler into position on the truck bed. Pneumatic types typically incorporate a single push-button control with a high-volume, low-pressure air activation system.

Capacity

Leveler capacity simply means that the selected leveler has the structural strength to handle the weight, speed, and frequency of use of the material handling equipment.

Selecting the proper capacity for the leveler can be confusing due to the variables that must be addressed. To ensure proper capacity selection, consider these factors: gross vehicle weight (vehicle plus load), maximum height differential between trailer and dock (operating angle of dock), forklift speed and tire type, how many shifts at the facility, and how many trailers will be serviced per dock per day.

Capacity also means having an adequate number of docks. This means planning for how many trailers will be coming in and out and how long they will be occupying the docks. Layout of the facility, traffic flow patterns, and construction techniques also need to be considered.

Length

Material handling equipment used for loading and offloading has grade operating limitations, so it is important to consider this when determining the right length of dock leveler. As a rule of thumb, the greater the difference in height between dock and trailer bed, the longer the levelers should be to avoid steep and dangerous slopes with unusually high or low vehicles.

In addition, wider levelers provide better access, more maneuvering room for lift trucks, and greater flexibility to meet future needs.

Costs

Units range in price from under a thousand dollars for edge-of-dock levelers to several thousand for large-capacity hydraulic levelers. Initial cost, however, is just part of the picture when evaluating levelers.

Pit construction costs can vary significantly depending on the type of leveler. If selecting a pit-mounted leveler, the time and money advantages of using prefabricated pour-in pans integrated with the dock leveler rather than labor-intensive pit forming should be carefully considered.

Anticipated maintenance and repair costs are also vital factors for your customers to consider. They should consider the accessibility of components for servicing, simplicity of design, and the overall quality of construction, including under-deck supports, and the frequency of required maintenance, especially between hydraulic and mechanical models. Levelers can vary widely on these points, which all contribute to the overall lifetime ownership cost of the unit.

Additional Factors

The dock leveler makes up only one piece of a loading dock. Consideration must also be given to dock safety, communications, operator environment, and energy conservation.

Dock safety

In a busy shipping area, there can be up to 100 opportunities a day, per single loading dock, for serious mishaps to occur. A common cause of serious accidents is a worker or lift truck falling off the end of a dock. Vehicle restraints effectively prevent vehicle creep and unscheduled truck departures. Dock guards further protect against lift trucks from inadvertently running off empty levelers or into dock doors.

Driver Communication Systems

A combination of signal lights, controls, and signage advises both vehicle drivers and dock attendants of safe/unsafe and park/depart conditions. High-visibility safety systems are available for automated, integrated, and manual control situations.



Photo caption) Hydraulic dock leveler installed with roll-off barrier to prevent accidental forklift roll-off when the overhead door is open and no trailers are present. It also protects door panels when the door is closed. This dock is interlocked with a hydraulic vehicle restraint system and lights communication package for added security at the loading dock.

Dock seals and shelters

A good system provides protection from the outside elements for products, packaging, equipment, and employees, as well as reduces pilfering at the loading bay. It will also greatly improve energy conservation, internal temperature control, and worker comfort. Many configurations are available from basic types of compression dock seals, standard dock shelters, and inflatable seals to hybrid dock seal/shelter/inflatable designs.

“Dock levelers have evolved into much more than just a ramp between the loading dock and the transporter vehicle,” reports Greco. “Today they’re an integrated component of an entire loading dock system that allows for the safe and efficient loading and unloading of goods to and from transporter vehicles using forklifts or pallet trucks.”



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