Making Your Loading Dock Safer

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Forklift accidents and fatalities are a serious reality at the loading dock. The trailer is an extension of the warehouse floor that can unexpectedly separate from the dock if the proper safety precautions aren't taken.

Choosing the appropriate vehicle restraint to help prevent these tragedies can be difficult. It is important to understand that site-specific factors may limit options for making sure a trailer safely stays in place — and more importantly — which restraint will deliver the highest level of safety possible given each unique dock application.

The available options

The three types of devices used to secure trailers at a dock include wheel-based vehicle restraints, Rear Impact Guard (RIG)-based vehicle restraints (rotating hook and vertical barrier), and industrial wheel chocks. Wheel- and RIG-based restraints work in different ways to provide a high degree of safety based on the specific application, and both provide clear communication at all times. Chocks are not recommended as a way to prevent trailer movement at the dock due to their safety limitations.

Wheel-based restraints are an accepted solution throughout the world because they engage the wheel of a trailer to safely secure the vehicle in place. A RIG-based restraint with a full rotating hook provides an extremely high level of protection because the hook has the upward reach necessary to wrap up and over the widest range of RIG-shapes and sizes and hold them firmly in place. Unfortunately, rotating hook RIG-based restraints won't always match every application. The main reasons include:

- Trailers with missing or damaged RIGs.

- Trailers equipped with hydraulic lift gates that prevent access to trailer's RIG.
- Trailer designs or components, such as flaps, that interfere with the ability to engage a RIG.
- Areas of the world with no RIG regulations or standards, which creates doubt as to whether a RIG-based restraint will suffice in all circumstances.
- Dock approaches that won't support the use of a RIG.

When a rotating hook RIG-based restraint isn't an option, companies must decide on whether to use wheel-based restraints or chocks. Knowing how chocks measure up to wheel-based restraints weighs heavily on the decision.

The limitations of chocks

Wheel chocks are wedge-shaped blocks that are manually placed behind the wheels of a trailer to keep it from rolling out of a stationary position. Chocks are available in a wide range of sizes to match the sizes of tires. Under standard 29 CFR 1910.178 issued by the Occupational Safety & Health Administration (OSHA), operators must set the brakes of their trucks and trailers and block their wheels to prevent vehicle movement.

The OSHA standard makes it clear that something needs to be done to prevent trailer movement. However, many safety experts and most dock equipment manufacturers agree that chocks offer only minimal protection against trailer movement. In the worst-case scenario, the devices create a false sense of security that all is safe for trailer loading and unloading. The reality is that chocks:

- Slip on ice and snow, allowing the trailer to creep or walk away from the dock.
- Lack a communication system to relay vitally important signals to truck drivers and forklift operators about the status of the device.
- Don't provide enough restraining force to minimize the potential for early departure, which is a situation that occurs when a truck driver pulls way from the dock during loading or unloading.
- Create confusion about the person responsible for placing chocks.
- Require enforcement of policies to verify the devices are in use.
- Are frequently damaged, misplaced, or stolen.
- Create other safety concerns, such as back injuries when the chocks are set in place.

Rite-Hite introduced the concept of a rotating hook RIG-based vehicle restraint in 1981 to offer a more effective solution to chocks. OSHA later recognized the device as an acceptable alternative to chocks. Shortly thereafter, wheel-based restraints arrived on the scene as users discovered RIG-based restraint weren't always applicable and something more than chocks were needed.

Advantage wheel-based restraints

Wheel-based restraints are used throughout the world to properly secure trailers to the dock. They also provide much needed flexibility at facilities with multiple docks that are set up to service virtually any trailer at any time — including those with lift gates and potentially missing or damaged RIGs.

The most common wheel-based restraint mounts to the surface of the dock approach directly in front of the dock opening. It engages one of the trailer's rear tires with a barrier that locks in place and prevents the vehicle from moving forward when parked at the dock. The restraint protects against different types of trailer separation including early departure, trailer creep and dock walk. Users can choose between an automatic or manually-operated device.

A host of factors are incorporated into the safe design of technically advanced wheel-based restraints. Among them are variables such as trailer tire dimensions, barrier heights, and trailer weight — all of which impact the pullout resistance of the restraint. Pullout resistance refers to the energy required for a trailer to pull over a barrier. There is no standard for pullout resistance, although the frequently quoted guideline is 32,000 pounds. An important caveat is that a trailer can pull over a barrier under certain conditions, namely an empty trailer can more easily pull over a barrier than a full trailer.

Communications systems are another major design component integrated into most wheel-based restraints. The systems clearly signal when it's safe for the lift truck

operator to begin unloading or loading and when it’s safe for driver to pull away from the dock after the process of servicing a trailer is completed and the vehicle is unlocked. These systems also include an audible alarm that sounds if the restraint is prematurely disengaged.

The use of communication systems virtually eliminates communication breakdowns associated with chocks. One common problem with chocks occurs when forklift operators and truck drivers get their signals crossed and mistakenly think the other person has verified that chocks are in place. The recommended practice is for forklift operators to take responsibility for their own safety and verify that the trailer is safety secured before servicing a trailer. A communication system eliminates confusion because it automatically signals when the barrier is safely engaged and it’s safe to service the trailer.

Some restraints are equipped with advanced systems to further to enhance the safety of trailer loading and unloading. These communication systems provide clear, constant communication of the restraint control box to the forklift driver when entering and exiting the trailer, which is essential to safety at the loading dock.

Finding the right solution

A variety of variables associated with the dock will dictate whether it’s feasible to use a full-range rotating hook RIG-based restraint, or whether another option is needed. Given the goal to achieve the highest possible level of safety, it’s more than just a good idea to table the thought of chocks as a potential solution and seriously consider the use of manual or automatic wheel-based restraints to secure trailers at the dock. The best place to start is to fully understand the options and seek advice. There is no substitute for a working relationship with local dock equipment experts who can guide the process of proper restraint selection and installation anywhere in the world.

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