



Trailer Stands: 100,000 lbs. of Prevention

**Making the Loading Process
Safer and More Efficient**

White paper prepared by Ideal Warehouse Innovations, Inc.,
February 15, 2020

Trailer Stands: 100,000 lbs. of Prevention

The push to increase productivity, shrink turnaround time, and provide just-in-time inventory has heaped ever-growing pressure on the shipping industry and its workforce. The loading dock area in particular is constantly asked to meet new, more demanding targets. Larger trailers, shorter loading windows, and tighter deadlines have increased the safety risks workers deal with in this crucial area of the warehouse. Just take a look:

- 25% of all industrial accidents occur at the loading dock¹
- More than 1 in 10 forklifts are involved in an accident each year²
- More than 96,000 injuries from forklift accidents annually in North America³

The evidence is clear, the loading dock is one of the riskiest places in the warehouse. One little-known but high-risk circumstance is created by the everyday (every hour) occurrence of forklifts loading/offloading cargo from trailers in the loading dock. Many loading dock operations use “Spotted” or “Dropped” trailers, whereby the cab detaches from the trailer, leaving it at the dock supported only by the trailer landing gear. In these situations, two potentially devastating accidents can occur: **Trailer tip-over** and **Trailer up-ending**.

Each accident poses a grave and real threat to personnel, equipment, and operations.

INSIDE THE TRAILER:

When a trailer tips or upends, the forklift driver within can be tossed, crushed, injured or worse. The result can be anything from a bad scare to serious or tragic injury.

OUTSIDE THE TRAILER:

Workers in the yard outside the trailer, with no warning, can find themselves in harm’s way when a trailer collapses in their direction. And a disastrous domino effect with one trailer colliding into the next can put many dock workers at serious risk.

BEYOND INJURY:

While avoiding harm to personnel is paramount, and keeping the workplace safe is always our first priority, there are also critical business consequences that accompany trailer failure.

- Dock disruption
- Forklift, trailer and equipment damage
- Lost cargo
- Legal costs
- Employee morale

Add in the potential cost of business disruption due to ‘down’ dock positions and potentially lengthy investigations, and it’s easy to see how this can turn any business’s day-to-day operations upside-down.

Let’s examine each of these types of accidents closely, so as to better address them and mediate risk.

Trailer Tip-Over

A trailer tipping during the loading process may seem an unlikely event, but these accidents occur more often than most realize. Typically caused either by landing gear collapse or sinking pavement, businesses have reported as many as 6 trailer tip-overs in a single year.

LANDING GEAR FAILURE

A trailer's landing gear, while sturdy when new, is subject to undermining wear-and-tear. The side-to-side forces generated by heavy forklifts loading and unloading within, along with the routine hauling of trailers along the pavement, puts incredible stress on the landing gear. And, as trailers age and rust, the integrity of the landing gear assembly can deteriorate, a process that isn't easily visible in normal inspections.

Over time, one, or both, of the legs can fail, bringing the trailer crashing down, often with an unsuspecting forklift operator inside.

In the event a single leg of the landing gear collapses, the result is the trailer rolling to one side (putting nearby trailers at risk too); and if both legs collapse, the trailer topples forward.

ASPHALT SINKING

Landing gear dropping into a hidden sink hole or sinking into hot asphalt can cause similar issues and catastrophic consequences.

Trailer Up-Ending

This frightening accident occurs when heavily loaded forklifts at the nose of the trailer cause it to tip forward, bringing the rear end up and away from the dock. With freight, workers, and a forklift in the trailer, there is significant risk of serious injury, not to mention damage to goods and machinery. Even workers up on the dock are in peril as the open end of the trailer tips up.

In Search of Support – Available Solutions

EFFECTIVE BUT OFTEN IMPRACTICAL.

While “Live Loading” – leaving the truck’s cab attached to the trailer – provides the greatest stability during the loading process, this solution is often impractical from an efficiency perspective and in busy dock operations trailers are often detached from their rigs and shunted to and from dock positions. This is called trailer spotting.

EFFECTIVE EXCEPT WHEN IT’S NOT.

A trailer restraint device that captures the ICC bar at the back of a trailer is another effective way that can help to prevent up-ending though often offers less protection against trailer tip-over. Styles that rotate over the ICC bar, instead of just up against it, are more effective. However, since positive engagement with the bar is not always possible, trailer restraint devices are best not to use in isolation. Extra support at the trailer’s nose is always recommended.

EFFECTIVE. AND SIMPLE.

Two risks. One solution. For spotted trailers (with rigs detached), where load imbalance and landing gear weakness can be exposed, the best remedy is to employ a supporting device, at the nose of the spotted trailer.

Typically referred to as Trailer Stands, these supporting devices are positioned under a trailer’s nose and offer a simple, strong safeguard against the risks of trailer tip-over and upending.

One Solution – Many Ways

Available in several configurations and with a variety of features to meet the needs of different dock environments, the Trailer Stand is an easy, cost effective solution to potentially devastating and costly accidents. Modern trailer stands have evolved through research and trial, from the use of trailer jacks (designed for maintenance and changing tires) to the engineered and tested solutions we use today.

1) TRAILER JACKS ARE NOT SUBSTITUTES FOR TRAILER STANDS

It was once a fairly common practice to use a trailer jack to provide support at the trailer's nose. However, designed for trailer maintenance, using a trailer jack for this type of support introduces many risks.

- With small contact plates offering no weight distribution, placing one (or two) post-type trailer jacks under a trailer's nose can cause the trailer floor to fail with jacks crashing through and resulting in tip-over.
- Wide-plate jacks (typically with a 30" contact plate) can distribute weight better but can hide landing gear failure until the jack is lowered at which point, tip-over remains a risk with the jack operator in mortal danger.
- All jacks have the ability to lift a trailer off its landing gear creating a false sense that the landing gear is OK.
- Small wheels found on most jacks, make them difficult to deploy in rough conditions.

ALERT: It is strongly recommended that trailer jacks only be used for the maintenance operations for which they are designed and not for trailer support during loading and unloading.

2) PIN-STYLE POST TRAILER STANDS

The first development in trailer stands design drew heavily on the trailer jacks that preceeded them. While avoiding the risks created by a jack's lifting function, the pin-style stand still employs a small contact plate and would normally be recommended only to be used in pairs – making them time consuming and complicated to deploy.

3) TRAILER STANDS – CRANK STYLE

A dramatic increase in dock safety and efficiency came with the next advance in Trailer Stand design. These next-gen stands used a wide top & base to distribute weight better – similar to the wide-plate jacks mentioned above but featuring a design that, importantly, is unable to generate lifting capacity. The stand's sole purpose is to support the trailer in case of tip-over or up-ending. This eliminates risks that are created by lifting the trailer off its landing gear. Additionally, many trailer stands have large tires, making them easier to maneuver in weather and difficult conditions.

With the crank variety, the height is adjusted as the user turns the crank handle (which can be anywhere from awkward to uncomfortable) to 'snug-up' the top plate to the underside of the trailer.

4) TRAILER STANDS – AUTOMATIC RAISING

The next major improvement brought increased efficiency and a more ergonomic design. Crank-less trailer stands were developed with internal gas shocks that allowed the top plate to automatically rise to the underside of the trailer and engage safely with a pin/lever combination. This enables faster positioning of the trailer stand and eliminates the wear-and-tear caused by the bending and cranking required with the previous option.

In this phase of development, debate centered around whether a trailer stand needed to be 'snugged up' to the underside of the trailer or whether a gap was permissible. Overloaded 'free-fall' testing has proved that a trailer stand with the right capacity can stand up to such a dynamic load with as much as a 6" gap between the trailer and the top-plate of the stand.

Unlike a trailer jack, when a trailer stand is supporting a trailer with failed landing gear or load imbalance, it cannot be accidentally removed and will support the full weight of the trailer and cargo until the trailer can be safely emptied and/or repaired.

5) TRAILER STANDS – EXTRA-WIDE

As trailers grew from 48' to 53', loads became heavier, forklifts moved faster, and trailers continued to tip and tumble – even with a wide footprint trailer stand in use.

To combine better side-to-side support with quicker deployment in extra heavy-duty applications such as found in the automotive, paper, food, and beverage industries, extra wide stands were developed. These units, at more than double the width of their predecessors, eliminated the need to position two smaller jacks or stands beneath each corner of the trailer.

Initially developed in a manual design employing a crank handle, a more ergonomic option followed as electric powered models were introduced. These powered models came with a significantly increased cost – both in initial price and ongoing maintenance.

These models were followed by the development of a manually-positioned (non-electric) option, secured simply, by the use of a foot pedal. This stand combines a more ergonomic design with better efficiency at a fraction of the cost of the electric models.

6) SHUNT TRUCK-POSITIONED TRAILER STANDS

With the increased use of trailer stands, the number of dock attendants required to deploy them grew correspondingly. Traffic and collision related injuries began to increase, as well as slip-and-fall accidents from getting in and out of shunt trucks to place the stands. These growing safety issues led to some organizations adopting a "No-boots-on-the-ground" safety policy, but such a policy created a conundrum. Conventional trailer stands could no longer be deployed, leaving the forklift operator in increased danger inside the trailer.

An early solution involved the use of a truck-positioned trailer jack, set in place by a shunt truck to capture the “king pin” of the trailer, as a truck cab would. While these models ensure the driver does not touch the ground, they remain expensive, require frequent service, and take 5 to 6 minutes to put in place. For this solution, the initial investment for a large company with hundreds of loading docks would be massive, not to mention the ongoing labor cost to place and remove.

The development of a more cost-effective solution followed, where a simpler trailer stand was put into position using the shunt vehicle. Due to this shutable stand’s stepped design, the driver can easily position the stand delivering hands-free trailer tip-over protection. This model also reduces the average positioning time to less than 2 minutes, more than halving the ongoing cost of its use. And, the lack of moving parts in these Shutable stands significantly reduces their initial price and ongoing maintenance costs.

The Best Solution?

The wide variety of Trailer Stand designs described are available in the market at prices ranging from under \$100 to over \$10,000. The choice of stands, while seemingly endless, can be narrowed by considering the various workplace and dock traffic criteria.

How to Choose the Stand for You

Selection Criteria

1) WHAT TYPE OF LOADING IS PRACTICED ON YOUR DOCKS?

“Live Loading”: The truck cab does not decouple from the trailer. This is the most stable condition, requiring no extra trailer support.

“Spotted Loading”, or “Dropped Trailers”: The risk of trailer tip-over or up-ending looms. *A trailer supporting device is required.*

2) WHAT IS THE LEVEL OF YOUR LOADING DOCK TRAFFIC?

Low frequency: If spotted loading occurs infrequently or the loading dock receives a low volume of trailers, a trailer stand device that takes more time to position but costs less may be all that is needed.

To prevent injuries and save time, the ergonomics and ease of use of a stand must be considered as loading frequency increases.

High frequency: In busy loading dock areas, the initial lower cost of a less-efficient solution leads to greatly increased costs over time, and likely a growth in user injuries as well. The easiest to deploy and most ergonomically friendly system is always the best choice, but particularly in high-traffic dock environments.

3) WEIGHT OF LOADING

Note: The weight of the product being loaded PLUS the weight of the loading device itself should always be taken into consideration.

Light loading: A person walking into the trailer with handheld packages, like in a courier operation, is an example of light loading. This type of loading does not entail much risk of weight shifts or trailer movement. A lighter-duty trailer stand can be considered.

That said, a quality trailer stand product rated at 100,000 lbs or greater to ensure protection in any uncertain loading environment is a great investment in safety.

Heavy loading: Forklift loading of full pallets is an example of extremely heavy loading. In these situations, there is a critical risk of trailer tip-over or up-ending accidents. A heavy duty, extra-wide trailer stand is an essential component of loading dock safety in these environments.

Protecting your People

(and trailers, and forklifts, and cargo, and dock area...)

Loading dock safety starts with the desire to deliver a safe workplace for all employees. Using a trailer stand that is easy to deploy and gives strong, wide support delivers a safer loading dock for all, while also maximizing productivity. With trailer stands like these in place, you can secure the safety of your people and assets, avoiding downtime and tragedy.

Choosing the right Trailer Stand helps your people and your business grow together in safety.

1 *Safety & Health Magazine, Dec. 2017*

2 *Optimum Safety Management, 2017*

3 *Safety in Numbers, Accident Statistics*