

# Risk Control Bulletin: Dock Safety



We can show you more.®

RISK CONTROL



Various handling products can move materials and supplies in and around the dock area, and to and from storage areas. Various equipment can be used to load, unload, transport and manually handle product around the dock area.

Our ergonomic direction and philosophy on the dock is to eliminate or reduce the manual handling of materials and products to the greatest extent possible.

## In & Out of the Trailers

The majority of the products and materials that are moved are either strapped or stretch wrapped to the pallet. A motorized forklift truck, in which the employee sits and operates the unit, is the most common method of moving the material. Because the operator may be on the unit for 8 to 10 hours a day, it is imperative that the operator has a good ergonomic work environment.



### Typical Forklift

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

The seat is a critical component of an ergonomic forklift truck. These seats should have good adjustable back support, be contoured to fit the operator, swivel for easy access in and out of the unit, float (incorporate shock absorbers) and not be directly bolted to the frame of the forklift.

Battery operated pallet jacks reduce the forces on the back, shoulders and legs when moving palletized material. Battery power eliminates the use of high forces to initiate or sustain the movement of the palletized material. The use of ride-on pallet jacks further reduces the fatigue level and exposure to musculoskeletal disorder (MSD) risk factors by eliminating walking on concrete floors by employees.



### Rider Pallet Jack

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

The manual pallet jack is the least desirable piece of equipment to use for moving palletized material. Use of this type of equipment results in significant force levels associated with the initial movement of the pallet jacks as well as a higher force to sustain its movement. As a rule of thumb, the pallet jack should not be loaded with more than 500 pounds of material, which includes the weight of the pallet jack itself. If the floor is smooth and the pallet jack uses roller bearing wheels, the weight on the pallet jack could be increased.



### Manual Pallet Jack

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

The manual pallet jack should not be pulled, but pushed, if possible, which allows the back to be in a more neutral position and reduces the forces on the soft tissue, vertebrae and disc.

To achieve a reduction in manual material handling of palletized material, consider these business solutions:

- Use motorized forklifts to handle the palletized stock
- Use a motorized forklift with a special attachment to handle slip sheets
- Use a battery powered ride-on pallet jack
- Use a battery powered walkie pallet jack to move palletized stock
- Use a manual pallet jack to move the material.

### Stacking Floor-to-Ceiling

One of the most fatiguing and high-risk jobs on the dock is loading and unloading trailers that are stacked floor-to-ceiling with case product, materials and supplies. These employees place their bodies into repetitive awkward positions, including overhead lifting and lowering, and forward bending. Poor body postures can lead to the development of MSDs in the shoulders, back and legs. This type of manual labor can be highly fatiguing depending on the ambient air temperature in the trailer, which can exceed 100° F in the summer.

The telescoping extending powered conveyor has an attached platform that the employee can stand on to raise/lower the conveyor and go in/out as the product comes down the conveyor. This allows the employee to stack at the top of the trailer without overhead reaching and reduces forward bending and the overall MSD risk factor exposures associated with loading from floor to ceiling.



### Shown Without the Standing Platform

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

The flexible powered conveyor is one of the best tools for moving product into or out of a trailer that is stacked from floor to ceiling. Each piece of product can move down the flexible conveyor without being manually pushed, which can reduce the development of MSDs in employees. Furthermore, these units can be routed around obstacles and changed on a daily basis to meet the needs on the dock for the day.



### Powered Flexible Unit

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

The manual conveyor systems reduce the amount of walking in and out of the trailer, especially when loading. Although it can be hard to push the product, multidimensional rollers that can reduce the push forces when moving the product.

To achieve a reduction in manual material handling, consider these business solutions for stacking and unstacking materials from floor to ceiling in the trailer:

- Use a telescoping extending powered conveyor to load and unload the trailer (one model allows employee to stand on it and go up/down and in/out, and employee can stand next to another model)
- Flexible powered conveyor that can be moved in and out of the trailer
- Manual flexible conveyor
- Sectional fixed skatewheel/multidimensional roller conveyor
- Belted fixed conveyor system.

## Moving Material from the Dock to the Storage System

When the material is received off the trailer it can temporarily be staged on the dock and later sent to the warehouse for storage in a rack system. Conversely, product can be taken out of the storage system and sent to the shipping dock. To get the material from the dock to the storage system, or from the storage system to the dock, there are various types of materials handling equipment that can be used. Depending on the layout of the storage system, the aisles can range from narrow aisles — where a typical forklift could not operate to wide aisles that can accommodate a normal forklift.

Furthermore, loads can vary in weight from very heavy to light. Having the correct type of equipment to meet these variables is imperative for good efficiency and a reduction in MSD risk factor exposures. A counter-balanced lift can handle heavy loads without tipping when the load is extended into the storage system.



### Counter-balanced Lift

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

A turret truck can load full pallets into the rack system or individual case product onto existing palletized stock, which allows the worker to elevate themselves to any height in the racking system. These types of trucks can also be used to work both sides of the aisles.

The battery-operated walkie stackers are one of the more common pieces of equipment used to move material to and from the racking systems, and they can come in multiple configurations. These eliminate the manual moving of the stock and easily place palletized material into the storage racks.

The manual pallet jack is the least attractive way move product as it can result in high forces being applied to the back, shoulders and legs, leading to the development of MSDs. It also is inefficient, because pushing or pulling accelerates fatigue and can exacerbate soft tissue injuries.

To achieve a reduction in manual material handling, consider these business solutions when moving material from dock to racks or rack to docks:

- Motorized forklifts
- Counter-balanced rider trucks
- Ride-on turret truck for unloading and loading pallet loads or individual cases from a pallet (forks will turn into rack while unit stays straight in aisleway)
- Ride-on stock picker (best platform for operator)
- Narrow aisle ride-on battery powered trucks
- Battery powered walkie stacker
- Manual pallet jack.

## Break Down of Pallets

Breaking down pallets is manually performed, which places the worker's body into very poor postures and exacerbates the forces being placed on the back and shoulders, especially when placing product on the first few layers of the pallet.

It is imperative from both a risk factor and efficiency perspective that the pallet be elevated, bringing the product off the ground and close to waist height. By elevating the pallet, the forward and lateral flexion of the back is reduced, which also decreases back pain. In addition, it reduces the fatigue level, enhances efficiency and reduces the risk factors associated with high labor-intensive job tasks.

The tools discussed in the subsequent list will allow the pallets to be moved off the ground or floor. The portable lift with a turntable is invaluable as it can be moved on a daily or hourly basis as the product changes on the dock. In many cases, materials will be repackaged into bins that create a need for reaching and bending. Using a portable lifter and tilter allows the worker to get close to the bin, reduces reaching and brings the material to an excellent working height.



### Portable Lifter & Tilter

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education



In some cases, pallet breakdown may be in a designated area and lift tables — with or without turntable tops — can be used for manually transferring the stock. In this case, the product is kept at a good working height, which eliminates the forward and lateral flexion of the back, increases productivity and reduces exposure to MSD risk factors.



### Lift Table with Turn Top

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

One of the simplest methods for getting pallets or material off the floor is to strap two to four pallets together and put the working pallet on top of the strapped unit. There is no cost as most companies have pallets lying around. This places the worker in a more neutral posture, reducing the cumulative trauma from repeated bending.

To achieve a reduction in manual handling and reduce poor postures while building or breaking pallets down, consider the following business solutions:

- Provide portable pallet lifts with turntables to easily move off and on the dock on a daily basis
- Provide portable pallet lifter/tilter, which allows product to be brought closer and reduces reach distance
- Use low-profile lifts so that a loaded pallet jack can be easily rolled on and off
- Strap two to four pallets together (depending on height of load) and place the work pallet on the other pallets, elevating the work height.

## Picking Stock

Once the product has been put into inventory, it will be pulled either by the pallet or individual case or stock item. Picking stock is manually intensive and creates awkward postures, such as forward torso flexion and reaching, especially on the lower racks.

There will be occasions where individual material may have to be picked on a second or third level. Rolling lock down stairs should be used to access stock and bring it down to the cart or pallet.

To achieve a reduction in manual material handling, consider these business solutions for manually picking stock:

- Ride-on turret truck, which can be used to pick individual case stock on higher or lower racks
- Battery-operated stock pickers (fork or table design) to raise and lower the pallet to good working height.
- Manual cart with turntables
- Manual pallet jack
- Manual carts.

## Dock Plates/Levelers

Many of the docks are provided with metal or aluminum dock plates, which bridge the dock to the rear of the trailer. These dock plates have to be manually maneuvered into position by the worker. These dock plates weigh at least 62 pounds and create high forces to the back, shoulder and legs, if moved manually.

To eliminate the need for manual handling, the dock plate should include fold down lifting loops or a lifting chain in which a forklift can lift and position the dock plate.

The manual dock leveler must be extended manually, which brings the upper torso to a forward flexed posture and places large forces on the lower back. Consider systematically replacing these manual types with a hydraulic or compressed air dock levelers.



### Hydraulic Lift

Courtesy of Material Handling Industry of America and College Industry Council on Material handling Education

## Websites for equipment that can be used in and around the dock

### Lift tables:

[www.southworthproducts.com](http://www.southworthproducts.com)

[www.bishamon.com](http://www.bishamon.com)

[www.vestilmfg.com](http://www.vestilmfg.com)

### Powered industrial trucks:

[www.nissanforklift.com](http://www.nissanforklift.com)

[www.toyotaforklift.com](http://www.toyotaforklift.com)

[www.mit-lift.com](http://www.mit-lift.com)

### Powered pallet jacks:

[www.pallettruck.com](http://www.pallettruck.com)

[www.gilmorekramer.com](http://www.gilmorekramer.com)

### Carts, dollies:

[www.globalindustrial.com](http://www.globalindustrial.com)

[www.graininger.com](http://www.graininger.com)

[www.chdist.com](http://www.chdist.com)

### Assortment of equipment that can be used on docks:

[www.mhia.org](http://www.mhia.org)

To learn more about how CNA Risk Control can help you manage risk, keep your organization safe and be more productive, visit the CNA Risk Control page at [www.cna.com/riskcontrol](http://www.cna.com/riskcontrol).

