



The Importance of Loading Dock Preventive Maintenance

How a routine service schedule can improve the performance and safety of loading dock equipment, prevent injuries and avoid downtime from unplanned repairs

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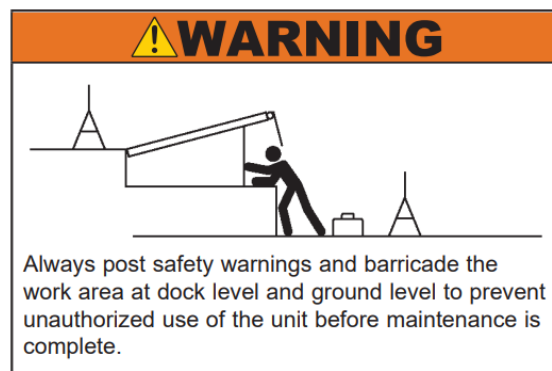
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Introduction

Although it may be tempting for facility managers to save a few dollars and a bit of time by skipping out on regular equipment lubrications and tune-ups, equipment failure and unplanned downtimes can increase a company's risk of personal injury and incur greater costs with lost productivity and substantial repairs or replacements. Regular maintenance at the loading dock can not only help prevent workplace accidents but can also help eliminate major repair costs, improve productivity and increase overall profitability.

In this white paper, we will examine how OSHA outlines preventive maintenance as a form of hazard control to prevent injuries and an employer's responsibility to keep equipment in good, functioning condition. We will also discuss the economic and safety benefits that preventive maintenance provides to industrial facilities over reactive maintenance and compare the costs of planned service and repairs against running equipment to the point of failure and replacement. We will go over the criteria needed for a successful preventive maintenance program and what factors to consider and actions to perform when evaluating dock levelers, vehicle restraints and seals/shelters so you can better assess potential hazards and identify issues early on to avoid emergency repairs or full-scale replacements at loading docks.

Loading dock equipment is designed to improve safety and efficiency during the material handling process, and it is important to invest in these critical assets to keep workers safe, enhance business operations, reduce costs and increase compliance with laws and regulations. By establishing a plan for scheduled maintenance, facilities will see numerous long-term benefits, such as improved work conditions and safety for employees, a decrease in unplanned equipment downtime, longer equipment life, fewer interruptions to productivity and better equipment efficiency. With an effective checklist, facility managers and technicians can inspect loading docks and evaluate the performance of dock levelers, vehicle restraints and dock seals or shelters to address potential hazards or defects promptly and prevent avoidable incidents.



Maintenance Overview and OSHA Recommendations

There are two main types of maintenance strategies used at loading docks: reactive and preventive. These are distinct approaches to equipment upkeep and have separate benefits and drawbacks. Reactive maintenance occurs only after something breaks, needs repairs or a worker gets injured, which can result in unexpected dock downtime, costly emergency repairs and fees or medical expenses. In contrast, preventive maintenance is run on a timely schedule that helps identify possible issues before a failure occurs or issues become hazardous. If a piece of equipment is noted to be weak, strained or needs servicing, the facility has time to plan and adjust business operations around that dock while maintenance is underway. Preventive maintenance aims to keep equipment in good working condition to reduce large-scale repairs, prevent injuries and reduce unplanned delays to productivity or dock use.

Aside from methodology, reactive and preventive approaches also differ in terms of cost. Reactive approaches defer all maintenance and instead allow equipment to run to the point of failure and the total unit needs to be replaced. This allows facilities to avoid all annual maintenance costs and only pay for major replacements and new equipment. However, running equipment to the point of failure can cost up to 10 times as much as a regular maintenance program and every \$1 worth of maintenance deferred could quadruple to \$4 in capital renewal costs later on.¹ Unlike the reactive approach, preventive maintenance has upfront costs for inspections and small repairs, but usually avoids large expenses or full replacements. Some costs associated with preventive maintenance include more man-hours needed for technicians to perform regular inspections or small repairs and adjustments throughout the year. However, the benefits of planned maintenance, including optimized equipment performance, increased productivity, safer working conditions for employees, fewer interruptions to business operations and following manufacturer requirements for warranty coverage, quickly outweigh the upfront costs.

The Occupational Safety and Health Administration (OSHA) considers preventive maintenance as a form of hazard control that can help prevent injuries. OSHA guidelines aim to ensure that safety equipment remains effective and prevents new hazards from developing because of malfunctioning non-safety equipment. At minimum, a good maintenance system should include written instructions for regular inspections of equipment with documentation of the date, time and type of equipment inspected, as well as who carried out the inspection. OSHA also notes the manufacturer's recorded maintenance must be followed, and any malfunctioning or inefficient equipment must be replaced immediately.² In addition to these guidelines, the Occupational Safety and Health Act (OSH Act) of 1970 is a US labor law that entitles workers to a safe workplace and requires employers to keep workplaces free of known health and safety hazards, including machines and equipment that are unsafe.

OSHA recommends inspecting the workplace regularly for safety hazards. By setting aside time to regularly inspect the workplace for hazards, employers can help identify shortcomings so they can be addressed before an accident occurs.³ OSHA recommends that employers conduct regular inspections of all equipment, document inspections to verify that hazardous conditions were corrected, use checklists to highlight and prioritize concerns to look for and follow all routine preventive maintenance practices of equipment, facilities and tools to help prevent incidents due to equipment failure.

Employers and facility managers must remember that laxity in terms of maintaining tools, equipment and the overall workplace can be dangerous and even criminal if it breaks federal labor laws like the OSH Act. Although it may be tempting to skip routine inspections or avoid minor repairs to save a small amount of money initially, an unsafe workplace can cost more in the long run in terms of employee injuries, loss of productivity, fines and total equipment replacements. In the next section, we will discuss the economic benefits of preventive maintenance and how consistent, planned service can improve the overall safety and performance of equipment at your facility.

Economic Benefits of Preventive Maintenance

While there is no way to pinpoint an exact budget for your maintenance program, you should anticipate allocating more man-hours towards servicing equipment and an increase in costs incurred from parts and items needed for routine adjustments and maintenance. In order to sustain a consistent strategy, some larger facilities may require additional staff on hand or an increase in service visits from external technicians. Keeping maintenance workers on a scheduled basis can help reduce overtime costs and routine tune-ups can prevent large-scale and costly replacements. Not only is it more cost-effective, but preplanned and preventive approaches can also increase safety for workers. Up to 30% of all manufacturing deaths are related to maintenance activity, and various fatality records show how dangerous maintenance at loading docks can be if done improperly or staff is unfamiliar with maintenance procedures.¹

In 2004, two maintenance workers in California were killed while replacing the steel plate on a dock leveler when it fell and crushed them. Upon investigation, it was found that the manufacturer-recommended maintenance procedures had not been followed and it was unclear if the employees had received any training specific to dock levelers.⁴ In 2017, an employee in Nebraska suffered fatal injuries when he was struck by a dock leveler that was undergoing maintenance. It was determined that the employer knowingly failed to comply with legal safety requirements, acted with indifference to employee safety and did not conduct an annual periodic review of maintenance procedures, which was a contributing factor that resulted in the death of the employee. While releasing details of this case, OSHA stated that employers are required to use



Always follow manufacturer-recommended safety procedures when conducting loading dock maintenance

appropriate hazard controls, such as more frequent maintenance practices and training, to ensure employee safety and prevent similar fatalities.⁵

Beyond the physical and emotional impacts of workplace accidents, the National Safety Council estimates that the average cost of a worker's death is \$1,220,000.⁶ However, the total can be even greater if an employer is found guilty of violating safety laws. In the case above from Nebraska, OSHA determined that the employer knowingly failed to comply with legal safety requirements and acted with indifference to employee safety. The employer was issued six serious safety violations totaling \$188,454 and the majority of that amount was for repeated offenses and laxity towards employee safety that was deemed willful.⁵ With 25% of all industrial accidents occurring at loading docks, employers must keep safety and non-safety equipment functioning properly and in good working condition to help limit employee hazards.⁷ When combining the dangers of industrial maintenance with the inherent dangers of material handling areas, it is no surprise that a recent survey found that 80% of maintenance personnel prefer regularly scheduled preventive maintenance over other maintenance strategies.⁸

In addition to being safer and the preferred choice of maintenance workers, preventive maintenance is also a smarter investment for loading dock assets. Only 10% of industrial equipment ever actually wears out, meaning the vast majority of mechanical failures are avoidable.¹ If companies do not keep equipment in good working condition, there is a high likelihood that its life will be shortened drastically, with docks having to undergo large-scale replacements instead of smaller periodic repairs. In order for warranty claims to be honored, manufacturers also require that the equipment is maintained according to their recommendations, including periodic lubrication, adjustment and inspection. Reactive and other poor maintenance strategies not only

cause expensive, time-consuming repairs, but they can also reduce a company's production capacity by as much as 20%.⁹ Every time a piece of equipment is run to failure, it needs to be replaced. At the loading dock, this can cause extensive, unplanned stoppages, as most dock equipment is vital to the material handling process and functions as a safety essential for forklift operators, aids in protecting the building or is necessary for creating a bridge from the dock to the trailer for cargo to travel over. If a dock cannot be used because of critical equipment failure, warehouses may be unable to ship or receive goods or have to redirect operations to a different dock, causing delays to productivity and bottlenecking trailers and shipments to one location. These types of delays and last-minute reorganizations occur more frequently than one might expect. Roughly 82% of companies experienced at least one instance of downtime in the last three years and these interruptions can cost an estimated \$50 billion every year, with most factories losing between 5% and 20% of their productive capacity.¹



Routine maintenance for the NOVA Truck Lock™ Vehicle Restraint requires replacing the Juice-E fluid annually

Utilizing a planned, time-based preventive approach allows technicians to evaluate equipment before it fails so facilities can avoid unplanned downtimes by scheduling repairs or adjustments whenever is most convenient. Along with helping operations run more smoothly, preventive strategies can also lead to a reduction in overall service costs, breakdowns and accidents. The reduction in maintenance costs can range from 15% to 98% and the return on investment is very favorable, with most facilities reporting significant savings as a result of investing in improved maintenance; reports include 35% to 45% reductions in downtime and 65% to 95% reductions in defects.¹⁰ Assets that are kept in good condition perform better and can lead to improved efficiency and longer life use, but not all dock equipment or products need the same frequency of inspections. In the next section, we will discuss how to use inspection checklists and the regularity that preventive inspections should be performed.

Inspection Checklist

Checklists are one of the easiest ways to ensure that preventive maintenance is conducted consistently and thoroughly at your loading dock. They provide step-by-step instructions for technicians to follow to ensure that all critical operating parts are inspected and that areas of potential hazards are addressed. It is important to remember that there is no one-size-fits-all checklist for equipment and each list should be specialized to each piece of equipment. Even items that fall under the same category, like dock levelers, require separate checklists due to the various components used in mechanical, hydraulic or air-powered models. Also, not all dock equipment will require the same frequency of maintenance as others. Preventive maintenance should be scheduled based on the amount of equipment usage; more frequently used equipment will require more servicing than items that are only used intermittently.

CUSTOMER		DOCK #	DOCK #	DOCK #	DOCK #
Dock Seal <input type="checkbox"/> or <input type="checkbox"/> Dock Shelter:		Serial #	Serial #	Serial #	Serial #
Model Number:					
DOCK SEALS					
1	Inspect condition of fabric and wear pleats				
2	Inspect all fasteners/perimeter anchors				
3	Inspect all seams				
4	Inspect foam core				
5	Inspect & adjust any counterbalance				
6	Inspect framework of pads				
7	Inspect bumper condition				

Preventive maintenance checklists should provide step-by-step instructions for technicians

According to OSHA, a good maintenance system should include written instructions for regular inspections of safety equipment. Inspections should be documented as to the date, time and type of equipment inspected, as well as who conducted the inspection.² Detailed records allow facility managers to check that the proper maintenance repairs or replacements were made or if the hazard still exists. All components that aid in the operation should be inspected to help determine if the equipment is in good working condition. OSHA regulations require employers to implement a maintenance system

that ensures safety equipment remains effective and prevents new hazards from developing due to malfunctioning non-safety equipment.² Outlined in their Recommended Practices for Safety and Health Programs, OSHA suggests the following for inspecting the workplace for safety hazards:

- Conduct regular inspections of all equipment
- Document inspections for later verification that hazards were corrected
- Use checklists that highlight things to look for; typical hazards fall into several major categories, including equipment operation and equipment maintenance
- Follow routine preventive maintenance practices of equipment, facilities and tools to help prevent incidents due to equipment failure

These guidelines are intentionally broad to fit any work environment or industrial machinery, but the same method of approach should be adopted when conducting evaluations on loading dock products and equipment. Checklists should focus on all aspects that influence product performance at the loading dock and each type of product should have instructions that are specific to the particular type of equipment.

Key Takeaways

According to OSHA, the main goal of proactive maintenance is to prevent workplace injuries and deaths, as well as the suffering and financial hardships these events can cause for workers, their families and employers. OSHA recommends practices that find and fix hazards before they can cause injury or negatively affect business operations and are a far more effective maintenance approach overall.¹¹

The savings from deferring routine maintenance, like lubricating moving parts or replacing worn components ahead of breakage, are quickly negated by costs associated with emergency services for unexpected breakdowns, equipment failure, void warranties and major replacements.

In this white paper, you learned:

- The differences between reactive and preventive maintenance
- Dangers and risks associated with poor maintenance strategies
- Why proactive approaches are necessary for safety and efficiency
- Various economic benefits of preventive maintenance
- Criteria for routine loading dock equipment inspections

Regular maintenance not only helps prolong the life of your assets but can also improve efficiency, circumvent accidents caused by equipment failure and prevent downtime to maximize facility productivity and profitability. Keeping proper maintenance documentation on all equipment allows facility managers to confirm that hazardous or faulty equipment was repaired. Although not all manufacturers include maintenance documents for their equipment, NOVA Technology provides a comprehensive preventive maintenance checklist to guide technicians during inspections. Our checklist follows OSHA recommendations for regular maintenance to increase worker health and safety, and each equipment model has a distinct inspection sheet to ensure the critical operational components for each item are thoroughly checked, cleaned and serviced.

The comprehensive NOVA Preventive Maintenance Checklist is readily available for free on our website at <http://www.novalocks.com/wp-content/uploads/NOVA-Preventive-Maintenance-Checklist.pdf>. It can be used to perform inspections on Mechanical Dock Levelers, Hydraulic Dock Levelers, Air-Operated Dock Levelers, Manual/Automatic Vehicle Restraints and Dock Seals and Shelters, and includes a sheet for Summary of Recommended Repairs for Loading Dock Equipment.

About NOVA Technology

NOVA Technology is an international manufacturer and distributor of loading dock equipment and accessories. For over 30 years, NOVA has provided the innovation, reliability and resources needed for our customers to handle the continuously evolving needs of the material handling industry. We offer a variety of dock levelers, seals and shelters, vehicle restraints, light communication systems, dock lifts, safety barrier products and a selection of aftermarket parts and accessories. All of our products are designed to maximize safety, productivity, security and environmental control at loading docks and throughout commercial facilities. Call us today at 1-800-236-7325 or send an email to sales@novalocks.com for more information or to find a dealer in your area.

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