



State of Good Repair: Is Your Rail Shop Equipment Reliability Program Off Track?

White Paper



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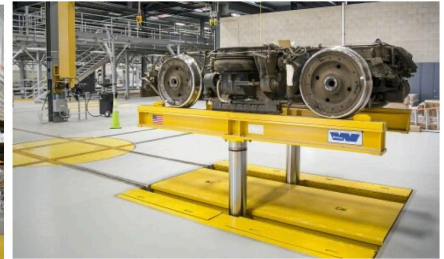
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Rail Maintenance Equipment Defined

What is Rail Maintenance Equipment? Simply put, it is the equipment located in your rail car or locomotive maintenance shop that is used to lift, turn, or raise / lower the rail cars or wheel trucks.

Examples of this equipment include portable car jacks (electric or hydraulic), truck repair hoists, car hoists, turntables, or drop tables.



Rail Equipment Options

Why “State of Good Repair” of your Rail Maintenance Equipment Matters



Your Rail Maintenance Equipment serves a vital role in maintaining the operational efficiency of your rail cars and locomotives. The availability of these cars to haul goods is crucial in running a profitable operation.

While performing the work needed on rail cars and locomotives, the safety of your personnel matters even more. The operations performed are

typically executed with the car above the worker. Keeping the load suspended in the air is the purpose for your jack, lift table etc. Knowing this equipment is in good working condition, per the original design intent, provides your workers with the peace of mind they need to do their job safely.



Where to Start?

Maintenance on any equipment typically starts with a thorough inspection. With an inspection completed by a knowledgeable technical source, you will have a clear understanding of the current condition of your equipment. Any good inspection will take into consideration both the safety and reliability aspects of your equipment.

Developing, and properly executing, a reliability-centered maintenance program will provide your work force with a safer environment, increase productivity (better equipment availability), and ultimately save you money.

It is always recommended to consult the OEM's manual for their guidelines on inspections and repairs.

Typical Items for Inspection:

1. Operational test of the equipment to insure safe and proper working conditions.
2. Check for proper warning and capacity labels, along with any warning lights / sirens.
3. Check for deterioration or leakage in lines, tanks, valves, drain pumps and other vital parts of all air and hydraulic systems.
4. Upper and lower hoist travel limit switches for proper operation.
5. Mainline disconnect switch for safe operation and code compliance.
6. Jack screws, nuts, lifting brackets, bell cranks, and wheels for wear or defects.
7. Gear cases drained of oil, gearing inspected, and refilled with proper lubricant.
8. Controls checked to assure all speed points, contacts, relays, and timers are totally functional. All contacts for proper operation and wear.
9. Motors and couplings for wear and proper lubrication. Motor brushes, brush holders, and slip rings for deterioration and pitting.
10. Limit switches for general condition of operation both electrically and mechanically.
11. Brakes for proper operation and air gap adjustment. Brake linings and drums for wear and proper alignment. All hydraulic and air operated brakes for leaks and proper fluid levels.
12. All master switches, pendant stations, and radio controls for damage, wear, proper operation, and directional markings.



13. All structural load bearing members and connections for cracks and loose connections.
14. All shafts and couplings for loose or worn keyways, misalignment, wear, loose bolts, worn keys or key ways, and proper lubrication.

Companies should also consider performing a preventative maintenance inspection at the same time to maximize efficiency. This inspection typically includes:

1. Topping off of gearboxes with proper lubricant.
2. Greasing all lubrication points.
3. Adjustment of all brakes.
4. Adjustment of upper and lower hoist travel limit switches.
5. Adjustment of other miscellaneous travel limit switches.
6. Checking controls to assure all speed points, contractors, relays, and timers are totally functional.
7. Lifting and / or jack screws, nuts, lifting brackets, bell cranks, and wheels.

Sometimes an inspection will uncover that modernizing or repairing the equipment is NOT the best course of action. If significant mechanical, electrical or structural defects are uncovered, the cost of repairing them, along with the modernization cost, could be prohibitive. If this is the case, you should consider replacing the unit with a new piece of equipment or upgrade. This will be covered in a separate white paper.

Modernizations

Modernizations can take on many forms, but essentially, it involves altering or making an enhancement to the original design of the equipment. These changes could be mechanical, electrical or structural in nature. Examples include a controls upgrade, an increase in duty cycle or lifting capacity, the addition of safety features, automating the movement of the equipment, zone detecting, operating methods, etc. A modernization is typically more cost effective than replacement of the entire unit and delivers many of the same great advantages, while extending useful life for capital depreciation.

Have you experienced gearbox, braking system or other hardware failures? Perhaps you are seeing frequent failure of the existing control system (contact failure, obsolete components, etc). Replacing these items with new state-of-the-art components that function more efficiently and provide a safer work environment is the smart choice. Let's examine a few examples of each.

Electrical

Legacy controls often utilize mechanical starters for motor control, pneumatic and mercury timers for speed and positioning, spring tensioned cord reels for power delivery, and mechanical switches to limit arms. Converting a mechanical starter to inverter motor controls as part of a modernization provides smoother operation and more precise control of your equipment. PLCs reduce mechanical components, minimizing failure and downtime. HMIs improve visibility to the operation. These modernizations all help to improve the safety for both workers and other equipment.

Mechanical

Mechanical enhancements may include things such as lengthening or modifying approach pads to accommodate newer car designs. Body supports could be replaced with body lifts to minimize hoist failure. Another option is to incorporate newer engineering and manufacturing enhancements for improved reliability and safety. These OEM improvements are usually done on site with engineered drawings and components specific to your equipment design instead of workarounds that can put workers and equipment at risk.

Structural

Over time the structural integrity of your equipment can be compromised due to rust, metal or weld fatigue, damage etc. Evaluating the worthiness of these items through an inspection, or possibly an engineering study, can assure your team greater safety conditions and equipment reliability. Damaged or fatigued items can be retrofitted with new ones, prolonging the life of your existing equipment.





Summary

When was the last time you re-evaluated your current program for inspecting, servicing and modernizing your rail maintenance equipment? Or even more so, do you have a documented and established program? Periodic review of your processes to ensure they are current, in line with the latest technologies, and are being properly executed, is the best place to start.

Whiting has been inspecting and manufacturing Rail Maintenance Equipment for decades. As the OEM for a large fleet of equipment in use today, we are uniquely positioned to not only engineer and manufacture new systems, but to be your trusted source when it comes to inspection, rebuild, or repair of your existing equipment. Our Rail Health Inspection Program (RHIP) analyzes all of the recommended inspection items to ensure that you have a thorough and clear understanding of the health of your equipment along with our recommended action(s). Based on your strategy, we are uniquely positioned to implement the repairs, modernizations, or new equipment as desired. The comprehensive RHIP Program paired with our world-class service helps you improve the safety and productivity of your rail maintenance equipment while lowering your total cost of ownership.

For more information on our RHIP program visit our [website](#) or contact the [location](#) closest to you.



About Whiting Services Inc

Whiting Services Inc specializes in the maintenance and inspection of not only Whiting overhead cranes and railcar maintenance equipment, but of similar equipment made by other manufacturers as well. For all the products Whiting manufactures, and for all other brands of similar equipment, Whiting and Whiting Services provide complete engineering, sales, support, parts and maintenance and inspection services to our customers along every step of the way.

About Whiting Corporation

Whiting overhead cranes serve a variety of industries including steel mills, automotive plants, foundries, fossil fuel plants, metal service centers, refuse facilities, hydro-electric plants and nuclear power plants. Additionally, Whiting is a trusted name for railcar maintenance and lifting equipment for the freight and commuter railroad industries, municipal transit authorities, railcar builders and independent maintenance shops.

Our state-of-the-art manufacturing facility houses the Whiting corporate offices, as well as almost 170,000 square feet devoted to manufacturing. Our facility is a fully-equipped, integrated manufacturing facility with a complete machine shop for material preparation, fabrication, machining and component assembly and testing. We are ISO 9001:2015 certified, committed to 10 CFR 50 Appendix B & NQA-1 and understand and comply with 10 CFR 21. We are a proud U.S. manufacturer.

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