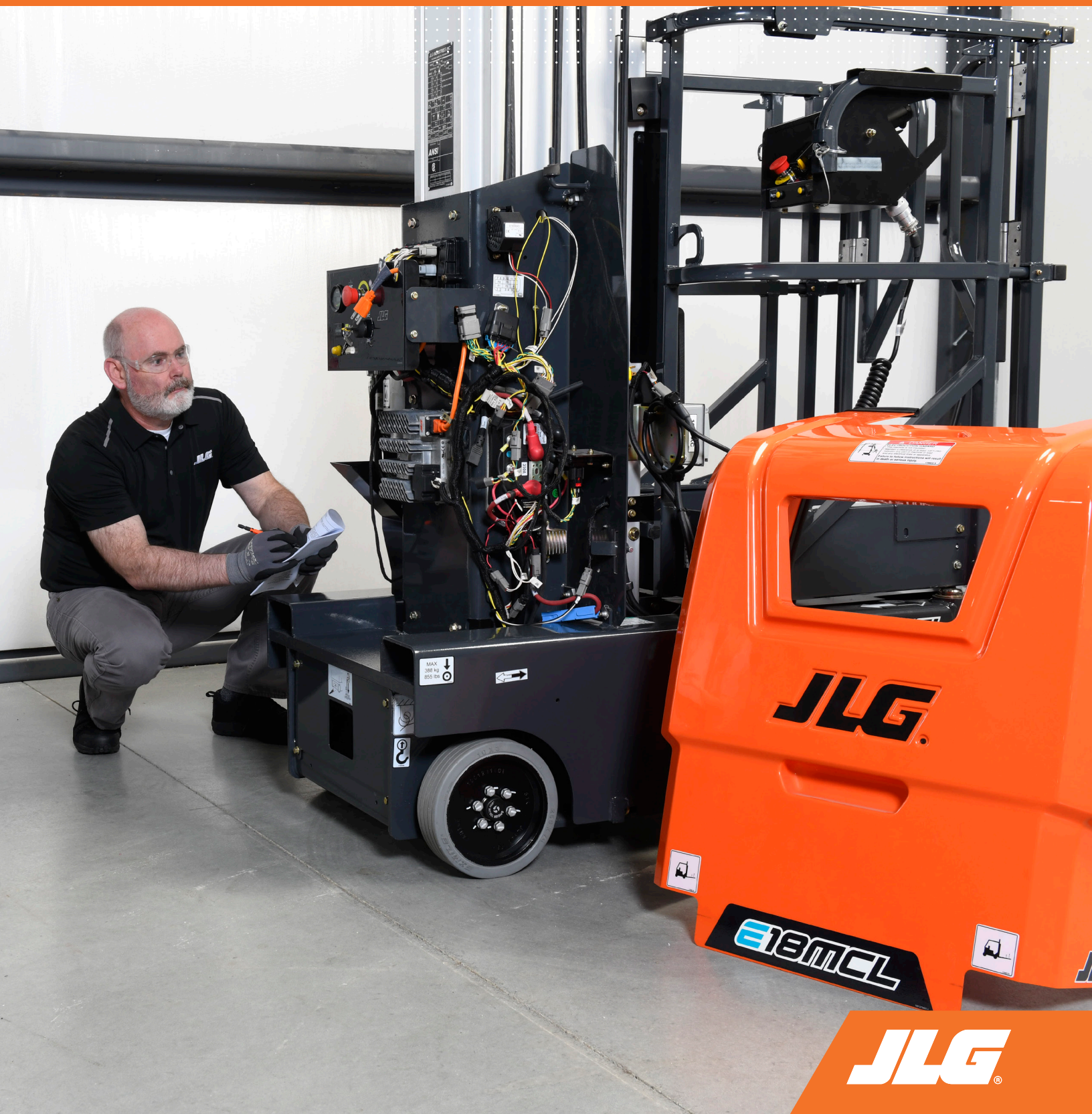
UPTIME MATTERS

6 FAQs About Maintenance, Parts and Service and Their Impact on TCO



Equipment downtime can set you behind schedule and over on budget. Bottom line: Uptime matters.

To keep your fleet up and running efficiently, you need to take care of the machines. One way to do that is by regularly servicing and maintaining your equipment.

Why is that important? Because well-maintained equipment will have a longer lifespan overall, as will its different components.

Equipment care involves several to-do's, including preventive and predictive maintenance, equipment inspections and replacing parts. In this whitepaper, we highlight six frequently asked questions about equipment maintenance, parts and service.

The answers to these questions can help you increase the lifecycle of your machines, reduce the total cost of ownership (TCO) and maximize your investments.

Let's take a look...

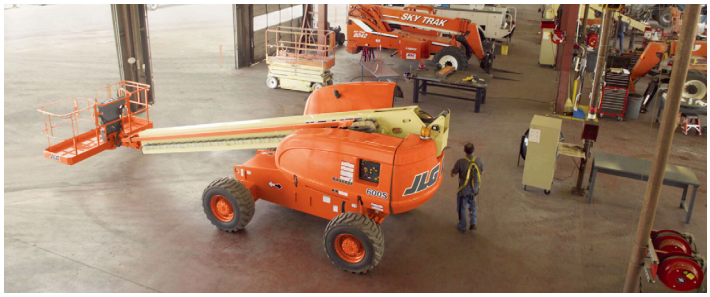
1 Question 1: What's the Difference Between Preventive Maintenance and Predictive Maintenance?

A proactive approach to equipment maintenance, through preventive and predictive actions, can help prevent unexpected breakdowns. Here's a look at these two types of maintenance practices — and why each should be part of your maintenance practices.

Preventive Maintenance

Preventive maintenance falls between reactive and predictive maintenance, focusing on preventing equipment issues and downtime. Simply, regular, routine maintenance based on proven best practices and identified intervals gives you the best chance of catching an issue before it starts.

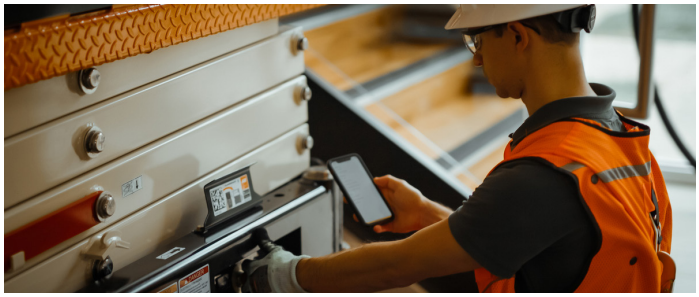
Preventive maintenance can occur at different intervals within your business, like a list of items to check daily, semi-annually and annually. These checklists, which are included in your machine's Operation & Safety Manuals, should include an inspection, repair/replacement, calibration and cleaning of the equipment and its different components — and when each should be completed (daily, weekly, monthly, etc.).



The machine will be down during these checks, so performing the maintenance before and/or after the workday is ideal for equipment currently in use on jobs. Preventive maintenance should be performed whether or not there are identifiable issues.

Predictive Maintenance

As technology continues to evolve, so should your maintenance practices. Equipment can now alert you when there's a potential issue before any downtime occurs. Having the ability to flag issues before ever looking at the machine can be a game changer — and, you can do that with predictive maintenance.



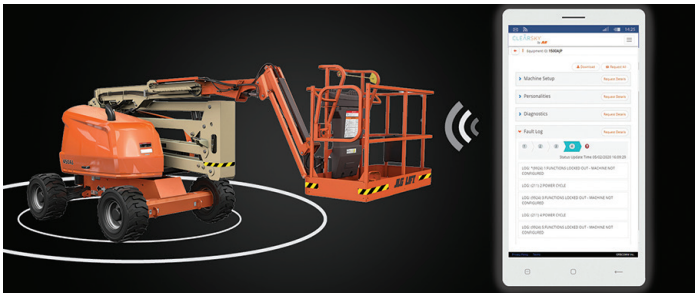
As the name suggests, this type of advanced maintenance predicts equipment issues while the machine is on the job site and sends notifications for your team to address as needed, allowing you to prevent costly downtime.

Predictive maintenance uses real-time data from equipment with condition-monitoring technologies to indicate potential issues before they occur. This proactive, data-driven approach assesses the machine's performance while it's operating, which reduces the downtime needed for unplanned replacements or repairs.

This type of maintenance requires machines and technologies with interconnected measurements and data collection systems — along with team members who can analyze the data received from the machine. It's important to establish baselines for the equipment before you start using predictive maintenance so you can identify issues when the machine operates outside of those parameters.

Predictive Or Preventive Maintenance?
The best maintenance plans include a mixture of both predictive and preventive practices. While both maintenance strategies focus on being proactive to reduce unexpected downtime and equipment failure, the two have some distinct differences.

Unlike preventive maintenance, predictive maintenance:
- Can be performed while the machine is in operation
- Occurs as needed based on data, instead of following a schedule
- Has targeted downtime if an issue is detected
- Focuses on real-time equipment data — not solely on an inspection

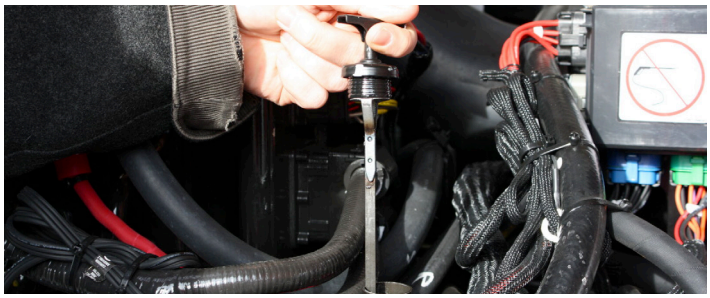


The goal of predictive maintenance is to remotely identify issues before they turn into larger ones. Instead of an operator or technician signaling there's a red flag with the equipment, the data being sent will show when there's a potential issue.

Both preventive and predictive maintenance position you for success because they give you the best chance of catching issues before they start, potentially leading to bigger problems. To ensure your machines are receiving the proper maintenance, JLG recommends you follow manufacturer recommendations outlined in the machine's Service & Maintenance Manual, including guidance on equipment inspections.

2 Question 2: What Are The Different Types of Machine Inspections I Should Conduct on My Equipment?

Before operating any JLG machine, it is important to complete these five important inspections:
1. A pre-start inspection
2. A walk-around inspection
3. Function tests
4. Annual machine inspections



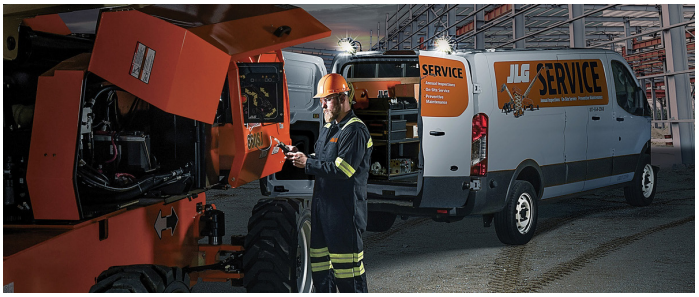
#1: Pre-Start Inspections
A pre-start inspection of the machine should be conducted to ensure that the machine is safe to operate. This type of inspection includes, but is not limited to:

- Cleanliness – Check all surfaces for leakage, debris, slippery substances and/or foreign objects
- Structure – Inspect the machine's structure for dents, damage, weld or parent metal cracks, as well as any other discrepancies
  - Platform Gate – Verify the gate closes properly
  - Lanyard Attach Points – Check the condition of all authorized lanyard anchorage points
- Decal & Placards – Check for cleanliness and legibility, make sure none are missing. Clean or replace as needed
- Operation & Safety Manuals – Make sure a copy of the Operation and Safety Manual, AEM Safety Manual and ANSI Manual of Responsibilities is enclosed in the weather-resistant storage container
- Battery – Charge as required
- Fuel – Add the proper fuel, as necessary
- Engine Oil – Make sure the oil level is at the Full mark on the dipstick

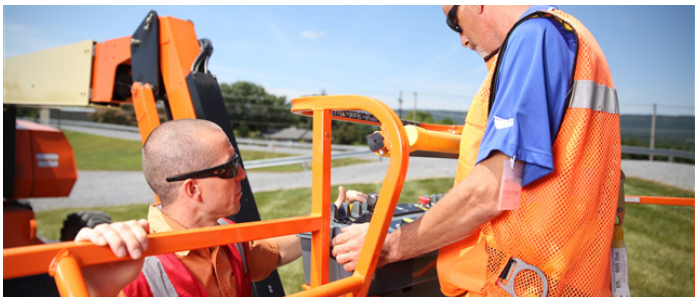
- Hydraulic Oil – Check the hydraulic oil level, and add as required
- Walk-Around Inspection – Perform as instructed by the machine's Operations and Safety Manual
- Function Check – Following the walk-around inspection, perform as instructed by the machine's Operations and Safety Manual

A pre-start inspection should also include a check to make sure that all safety devices are operating properly, as well as a check for modifications to the machine's components. It is important at this point to verify that any modifications on the machine have been approved by JLG to avoid safety violations.

#3: Walk-Around Inspection
Aerial equipment gets a lot of use throughout the work week, and things do happen — items get damaged, cracked or worn out. These discrepancies may start small, and may not even be noticeable at first, but over time, as they get bigger, they could affect the safe operation of the machine. Taking time each day to do a 360-degree walk-around of the machine will help locate these discrepancies as soon as possible.

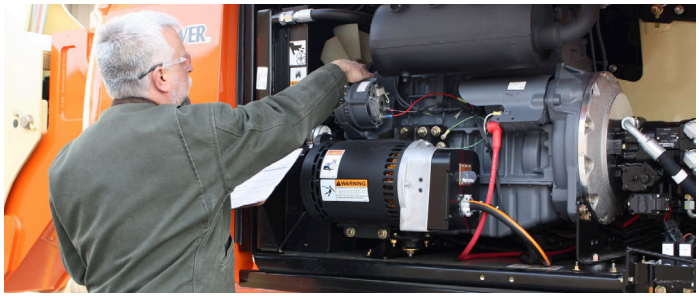


The walk-around needs to include a thorough, visual inspection of all the machine's critical components, including (but not limited to) the chassis, engine compartment, electrical connections, scissor stack or boom assembly, control systems and stations and so on. A machine's Operations and Safety Manual is the best resource to consult on how to conduct a proper walk-around inspection.



#4: Function Tests
Once the walk-around inspection is completed, perform a function check on all the machine's systems to ensure they operate properly. These should be done in an area free of overhead and ground-level obstructions.

#5: Annual Machine Inspection
Once a year (no later than 13 months from the previous one), ANSI and CSA guidelines require equipment owners and fleet managers to conduct annual machine inspections (AMI) on every aerial lift in their fleets, regardless of brand, make or model. An AMI can help verify that each piece of equipment, and all the machine's components, are in good operating condition. It also can verify that the machine is registered with the OEM and that any open safety-related bulletins are addressed as part of the inspection.



Following the manufacturer's recommendations and specific guidance on inspecting procedures and criteria is important when conducting an annual inspection. A machine should not be placed back into service until all malfunctions and problems identified in the inspection have been corrected.

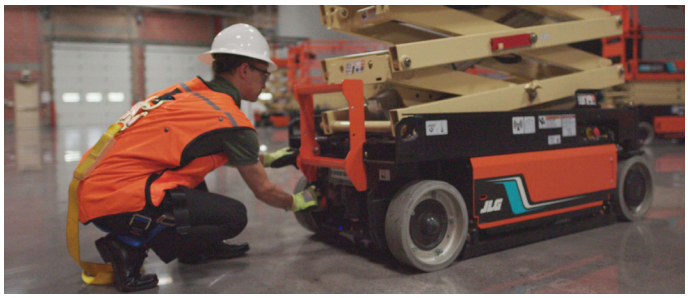
For machine inspections and maintenance required by JLG, also refer to the appropriate Service & Maintenance manual for the specific model.

3 Question 3: Should Machine Wear Parts be Included in Inspections?

Yes, all parts on these machines need to be thoroughly inspected and serviced regularly to help prevent operator injuries, major repairs and unplanned downtime.

While each component on a machine should be inspected following the OEM's recommended maintenance schedule, some parts require more frequent attention. Get to know which wear parts are important to inspect — and what signs suggest it's time to replace them.

Parts To Check Regularly
Any part that affects the safety or productivity of a machine should be checked often. Using a combination of hands-on and data inspections, be sure you regularly check these wear parts to ensure operator safety and equipment efficiency.



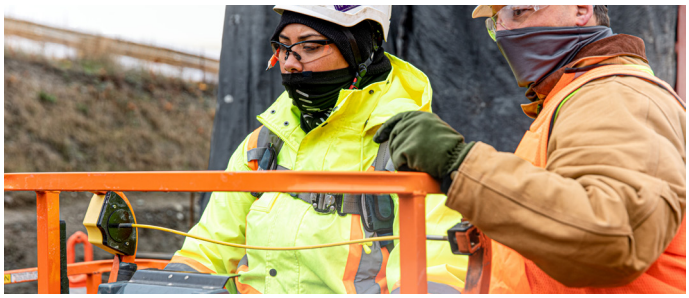
Some of the easiest components to check are also ones that can have the most severe consequences if they have issues. For example, a walkaround of a telehandler before use should include the machine's tires and fluid levels (hydraulic, oil, DEF, fuel, etc.), as well as steering and brake (emergency and parking) systems, headlights, taillights, brake lights, horn and windshield wipers. If any of those aren't functioning properly, it could cause injuries to your crew or damage to other equipment.

On a MEWP, it is important to check the work platform carefully, including the operator's controls (ex. switches and buttons), guard rails, fasteners, locking pins, harnesses, welds, cables, stabilizers and outriggers to ensure they aren't damaged, loose or missing parts. Issues with any of the parts could cause the operator to fall or parts to fall off from an extended height, which could seriously injure someone below.

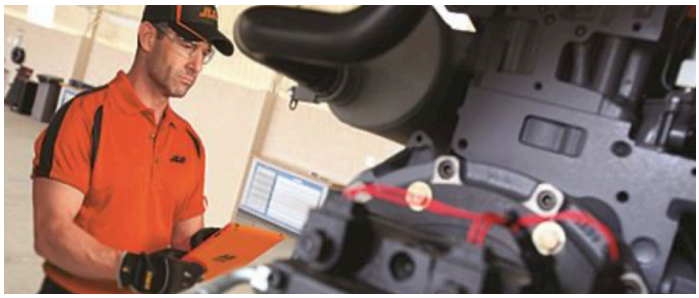
Tires and tracks also play an important role in keeping a MEWP or telehandler reliable on the job site. These can be damaged by surface materials, incorrect installation, heat and other job site conditions.

Additional inspection items can be found in a machine's Operation and Safety Manual, which may be stored in the manual storage box or the operator's cab. Manuals for JLG® MEWPs and telehandlers can also be accessed here or in the technical publications section on Online Express, the company's online parts purchasing system and resource center.

In addition to planned inspections for these worn parts, it's also important to ask for operator feedback about how the machine is functioning. They might notice a slight change in the equipment — whether that's a rattling or reduction in efficiency — that will help you identify potential issues before you visually notice them.

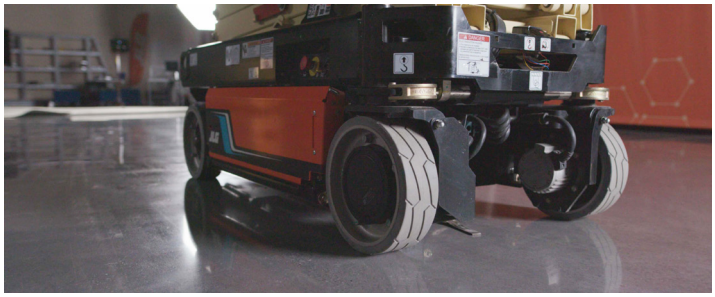


When Is It Time To Replace It?
While each type of part will present its own signs that it's worn, here are some general guidelines that it's time to replace.



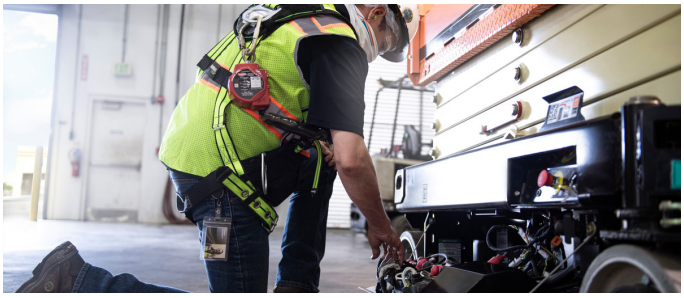
If any of the lights or the horn on a piece of equipment fails to work, it's time to replace them — and remove the machine from service until they are fixed. Always make sure that all of the machine's operation switches, buttons and controls work properly.

Watch for tires that have bulges or broken belts, damaged or loose lug nuts, chunking treads, low pressure, punctures (cuts, rips or tears), exposed sidewalls or the fill becomes compromised.



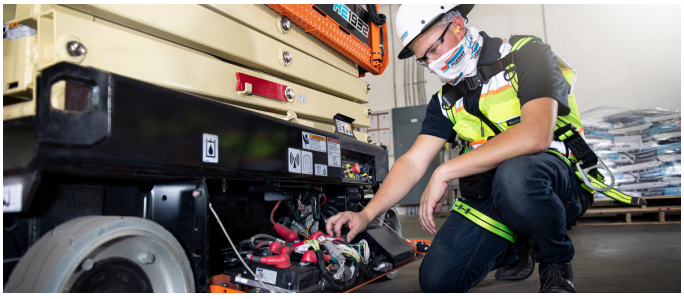
Signs that tracks need to be replaced include finding visible steel cording, cracks, worn sprockets, loss of tension, missing or loose lug nuts or if they become nearly flat. Keeping tracks free of debris can help prevent damage and extend their life.

Work platforms and their components that have dents, damage, excessive rust or cracks in the welds need to be addressed before operation. Ensure nothing is missing or damaged before use, as well.



If any of these wear parts appear to be worn — but aren't to the point of needing to be replaced yet — check them daily. Even if they haven't had issues yet, they may begin affecting the machine's level of efficiency and productivity and need to be replaced. Always consult the OEM-approved Operation and Safety Manual and Parts Manual for the machine for additional guidance on replacing worn parts.

Stick To The Inspection Checklist
Regularly inspecting wear parts could be the difference between a routine replacement and costly repairs. How and where the machine is used also contributes to its ongoing productivity and efficiency. It's important for crews to also check for environmental job site hazards like uneven terrain, severe weather, debris and other obstructions in their daily workplace inspections.



Incorporating these inspections into the preventive maintenance schedule will ensure that they are conducted before the components wear out. Following the manufacturer's suggested schedules, listening to operator input and tracking operational data can flag any potential issues.

4 Question 4: When It's Time to Replace Machine Parts, What Are the Options?

When your equipment's parts become worn or damaged, you will need to find a replacement to get you back up and running in peak condition. However, before you can do that, you need to know that there are four types of parts available: Genuine, Aftermarket, Competitive, and Remanufactured. While these may seem similar, they aren't. And, it is essential to understand the differences, and where to source them, before making a purchase.

Genuine Parts
A factory-approved part that is supplied by the original equipment manufacturer (OEM) in their packaging is known as a genuine part. Genuine parts are the exact replacement parts for your equipment, so you don't have to worry if they will be as effective as the previous one. They will most likely come with a manufacturer's warranty, improving the confidence level you can have in the parts and maximizing the resale value of the equipment.

Aftermarket Parts
As the name suggests, aftermarket parts come out after the equipment has come to the market. These parts follow the same designs as the original versions; however, they might be slightly enhanced or use different materials after producers see what did or didn't work in the initial versions. Aftermarket parts can also come from a different manufacturer than the one who originally produced them.

While not always the case, aftermarket parts tend to cost less than genuine parts — but remember that quality varies by manufacturer. With aftermarket parts, there is always the risk of counterfeit or low-quality parts, which is why purchasing them from a reputable manufacturer is important. Using these parts can also affect or void the coverage on the equipment, but the competitor may offer a parts warranty, as well. Like with any purchase, it's good to do your homework.

Competitive Parts
When a manufacturer offers replacement parts for its competitor's machines, these components are called competitive parts. Competitive parts have evolved to become more comparable to OEM parts with the same form, fit and function as the originals. They are crafted to look and function like genuine parts from other original equipment manufacturers, but if they are not sourced directly from the OEM, they may be offered in different, custom variations than the original part.

Remanufactured Parts
Designed to be an economical option that will keep your machines in working order, remanufactured parts are ideal for repairing older equipment. These parts start as worn components that are restored to a like-new condition. Then, remanufactured parts are tested to ensure they match OEM specifications and perform to a high standard.

While many commonly referred to these as used parts in the past, contractors have become more educated about the thorough testing and environmentally friendly processes involved to create them. Manufacturers like JLG offer reliable, factory-approved remanufactured parts that come with a one-year warranty and remanufactured competitive parts.

5 Question 5: Are Remanufactured Parts Reliable?

Two common things equipment owners ask about when they need to purchase a part are its reliability and cost. It's important to know about the type of part you're putting in your equipment to determine if it will provide the desired efficiency and lifespan within your budget.

One option to consider when it comes time to make a replacement is a remanufactured part.

As technology and standards continue to improve, remanufactured parts have become a cost-efficient option for parts replacement. Let's take a deep look at what remanufactured parts are, how they are produced, where to find them and how to know if they are reliable.

What Are Remanufactured Parts?
A remanufactured part — also referred to as a reman part — is a used OEM part that has been stripped down, and all of its worn components have been replaced back to the original factory specifications. The process is similar to how the part was originally manufactured, but instead of all new parts, some of the components have been previously used. Remanufactured parts are especially ideal for repairing older pieces of equipment.

These aren't to be confused with refurbished, used or rebuilt parts. Those other parts might have only been fixed for a specific problem, instead of being disassembled to find the core issue and then brought back up to like-new condition.

How Are These Parts Produced?
Before a remanufactured part is shipped, it goes through a standardized process to bring it up to spec. The part is disassembled, and each component is then inspected following OEM specifications to determine whether it can be used or if it needs to be replaced. Common wear parts like O-rings, washers and gaskets are also replaced.

Producing remanufactured parts saves on materials, compared to what is needed to manufacture new parts, which means they cost 30-70 percent less than a new one, adding up to savings for users.

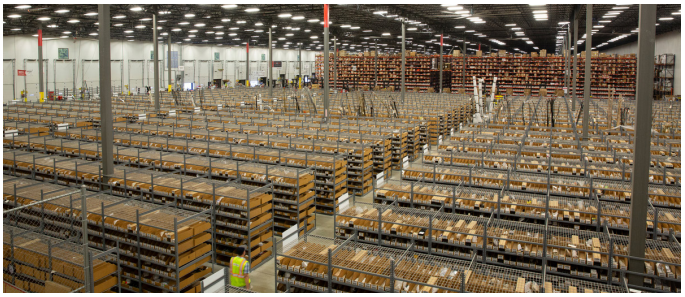
Are Remanufactured Parts Reliable?
While these parts provide a low-cost alternative, their quality and reliability are comparable to a new part if they are purchased from a trusted manufacturer. Each component must pass the same level of inspection as a new one. Many remanufactured parts also come with a warranty similar to those offered with new parts, helping ease any concerns owners might have.

Using remanufactured parts eliminates the need for labor-intensive rework, getting the equipment back on the job site sooner and saving maintenance time.

JLG® Reman parts, available for purchase through Online Express, offer reliable, factory-approved parts that come with a one-year warranty — including remanufactured competitive parts. That allows you to find all of your remanufactured parts in one place, even if you operate a mixed fleet.

6 Question 6: Why Should I Consider Stocking Common Wear Parts?

Getting replacement parts quickly — especially common wear parts — can significantly reduce the amount of time needed to get a machine back to work. The most efficient and economical way to do this is to proactively stock common wear parts in your fleet inventory.



Before you start shopping, though, ask yourself these questions:

- What equipment(s) is critical to our services — and
- what common wear parts does it use?
- What are the common wear times for parts we use?
- How would I characterize the parts?

The answers will give you a better idea of what parts are critical to keeping your fleet up and running.

Tips For Stocking Common Wear Parts

Once you have an understanding of what parts you will need to maintain your equipment, start breaking down the specifics of the type of inventory you should stock. For machines that are integral to your services, you will want to have fully stocked spare parts. Even if a machine is new, that doesn't eliminate the need for spare parts.

Maintaining an inventory list with lead time and delivery information is also important. If there are parts that are regularly difficult to source or with known delays, those should be kept in your inventory. For example, they may only be available from a single vendor or must be shipped from overseas.

You should also set aside a space for the inventory and organize the parts to save time when you need to find one. The system you use should be shared with anyone who needs access to the parts. Make sure they follow the check-out/in process so you keep an accurate record of parts and know when it's time to order.

The organization process should include classifying parts. For example, designating parts as critical will help you prioritize them for ordering. You can create these classifications and prioritizations however best fits your parts, equipment and needs. A critical part would greatly affect your machine's performance if it fails.

Regularly review these designations as they could change over time. Also, check your inventory for any excess to help lower costs. That will allow you to see if there are any inaccuracies with the inventory records, as well.

Stock Up On Parts

Incorporating a stocking process for common parts is taking a proactive approach — as opposed to reactively ordering when they need to be replaced immediately, which can bring major results. As you learn to track and better manage the spare parts, you'll also be able to increase your savings and benefits.

Use Trusted Parts And Service

To figure out which type of part is best for you, consider the manufacturer's reputation and the product's quality, warranty, availability and price. The parts you use will significantly affect the equipment's overall efficiency and safety, so figuring out which option best meets your needs is worth researching.

JLG offers customers a variety of these parts, providing options for a range of equipment, needs and budgets to choose from. Online Express offers three lines of parts for purchase: JLG Genuine, MaxQuip and JLG Reman.

A line of factory-approved parts, JLG Genuine replacement parts have been tested by JLG engineers to ensure the original specs are met.

MaxQuip by JLG allows you to purchase high-quality parts for your entire mixed fleet, with products for 71 popular brands.

If you're looking for remanufactured parts, you'll find reliable, factory-approved parts from JLG Reman that come with a one-year warranty.

Find and Order Parts Fast with JLG Online Express

Equipment uptime directly impacts a company's revenue. This means that when downtime does occur, whether for planned maintenance or unexpected issues, convenient access to aftermarket parts and services can get a machine back to work as quickly as possible.

In today's on-demand world, equipment owners and users have come to expect the "Amazon effect" from OEMs (original equipment manufacturers) and parts suppliers — 24/7 convenience of getting the replacement components they need, when they need them.

So, convenience is exactly what JLG's Online Express, a fully stocked, easy-to-use online parts ordering and inventory system, is designed to deliver.

Online Express is an efficient, user-friendly e-Commerce site that's open for business around the clock. It gives customers the ability to search for parts by serial number, description or part number via mobile, tablet and desktop devices, providing a quick, convenient purchasing experience.

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