



The Keys to Undercarriage Health and Longevity



Undercarriage maintenance and upkeep is not a short-term effort. The only a time a machine's undercarriage is not experiencing wear is when it's standing still – and machines that stand still don't make money. The undercarriage also represents a high percentage of the total operating cost of the machine over its life. With dozers, approximately 20 percent of the purchase price and 50 percent of the maintenance cost sits in its undercarriage.

It's also the mechanism that gives tracked machines much of their power and stability. Proper operation and maintenance play a critical role in controlling operating costs over the life of the machine.

Author's note: this article is meant as a reference for key best practices. Please consult with your local heavy equipment dealer/service outfit before performing extensive work on your undercarriage.

Mandatory: Hard, Dirty Work

Undercarriage monitoring and upkeep is critical, and there are four important practices an equipment owner can engage in to extend undercarriage life.

One: operators should perform daily inspections of their machine's undercarriage, looking for excessive or uneven wear and damaged or missing components. Clearance between the track chain and idler roller too narrow? Are the drive sprockets particularly sharp? Track pads damaged? These and other wear issues are indicative of a larger problem, or can lead to additional wear, and should be immediately addressed.

Two: one of the most important things to monitor is proper track tension, ideally while the machine is in actual working conditions.

When steel tracks are too tight, it creates added load on areas of specific contact, such as the bushing to the tooth at the sprocket, the chain link to the roller, and the idler to the chain – all which can accelerate component wear. A track that is too tight also robs the machine of its power as it actually takes more effort to turn the track. If a track is too loose, it can create instability and potentially cause the tracks to derail – while also causing wear on other components of the undercarriage. For rubber tracked machines and applications, tracks that are too tight can stretch or break, with the addition of excessive roller and idler wear. Rubber tracks that are too loose can de-track, leading to a damaged track and extensive downtime.

Track tension should be checked daily, with the sag adjusted to the OEM-recommended measurement for each machine. If conditions change throughout the day, it would be wise to check track tension as the machine settles into that new working environment.



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When working in mud, snow and sandy conditions, the track tension should be checked more often. Material will pack on the undercarriage parts and cause the tracks to become too tight.

Three: Another important aspect for owners and operators is keeping the undercarriage clean. It's a dirty but necessary job. At the end of a workday, operators should clean out any mud or debris from the undercarriage. This is particularly important in northern climates where material can freeze inside the track during the winter months. Optional covers and guards are available to help keep the undercarriage clean.

Four: Correct track alignment is also required to prevent wear of the undercarriage components. Misalignment problems will affect more of the undercarriage components than any other cause of wear, such as the track links, idler flanges, track and carrier roller flanges, sprockets and rock guards.

Bonus: Equipment owners can better tackle undercarriage costs and needs if they know where they are in the life of their undercarriage. We recommend setting a benchmark – based on the type of environment the machine is engaged in – to measure the undercarriage. Measure the bushings and rollers and, if these components have been reduced to 85 percent of their original diameter, rotate them 180 degrees. Gauging this pace of wear over time will give the equipment owner insight into the life expectancy and wear patterns of the undercarriage.

Track Considerations

Owners and operators should always plan ahead – and that includes before the machine is even purchased. While there is no such thing as a “typical job”, having a good understanding of the environment a machine will work in and the types of jobs it will encounter should inform the purchase decision. Then, the owner can determine if they should use steel tracks versus rubber tracks depending on the machine type and the need to control ground pressure or navigate debris; they can choose the narrowest shoe width possible to meet required flotation; and they can outline preferred operating techniques that match the terrain. Knowing which track width is best for the job is an important consideration when it comes to undercarriage health.

For firmer ground conditions with minimal slope, long tracks are the best fit. With their narrow track gauge and narrow track shoes, they provide high ground pressure and the best traction. When it comes to firm ground conditions with more variety in terrain, wide tracks are the preferred track option. Their wide track gauge and wider track shoes provide lateral stability in sloped areas.

Low ground pressure tracks are the best suited for soft, swampy ground conditions. The wide track gauge and widest possible track shoes ensure lateral stability and the best flotation.

Some manufacturers, like CASE Construction Equipment, offer lubricated track designs. The CASE Extended Life Track (CELT) works best in low impact/highly abrasive ground conditions. The CELT has a hardened bushing placed over a standard type track bushing, which results in almost twice the wear life of a standard lubricated track design.

Best Practices

Proper operation is just as critical as maintenance when it comes to preventing and minimizing undercarriage wear.

For starters, higher speeds can affect the wear rate on pins, bushings and sprockets; the faster the speed, the faster the wear rate. It's important to note that wear rate is a function of speed and distance traveled, not

just hours worked. Operators should also avoid excessive use of reverse operation. It's not only a non-productive use of the machine, but it also accelerates bushing and sprocket wear. Counter-rotation, or pivot turns, can cause accelerated wear on the undercarriage. It also increases the potential for de-tracking on rubber-tracked machines. Operators should try to make wider, more gradual turns.

Another important practice for operators to follow is working up and down on slopes. Constant operation on hills in one direction can accelerate wear to idlers, rollers and guide lugs by placing greater force on one side. Minimizing time spent on the slope will pay off in reduced wear and load to the undercarriage. Some other key practices for operators include alternating turning directions, controlling track spinning and avoiding steep edges.

There are also proper procedures specific to excavators and digging that operators should follow to minimize wear and tear on the machine's undercarriage. It's recommended that operators dig over the front idlers, which properly transfers the vertical load that can otherwise cause damage. Avoid digging over the sprocket because it can cause bushings to crack or break. It's also important to avoid digging over the sides of the machine given the additional stress it places on track shoes and the track link assembly. These are just a few key considerations and observations for optimizing the life of the undercarriage of your tracked machine. With so much riding on the those tracks, it's important to consistently monitor track appearance, wear and performance – and never hesitate to contact your local dealer/equipment service partner with questions.

(Source: Case Construction)

