INNOVATION. NOT DUPLICATION.™

H-E PARTS INTERNATIONAL

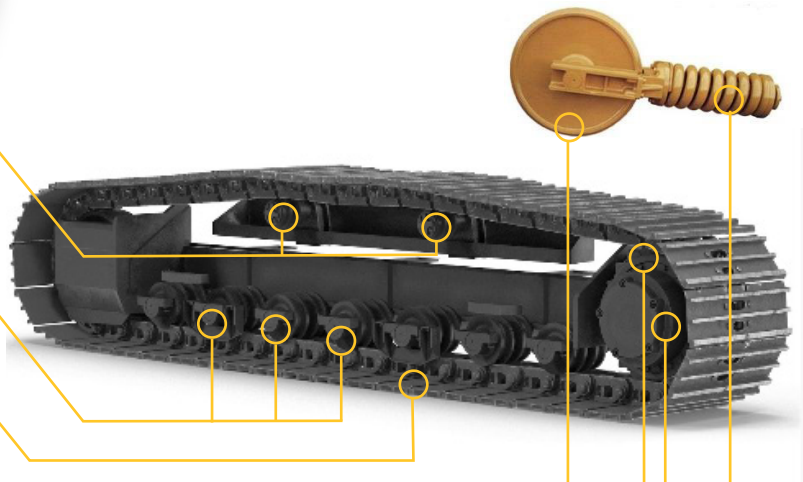
HOW TO KILL YOUR UNDERCARRIAGE

H-E PARTS INTERNATIONAL WAS FOUNDED IN 2006 WITH A CORE MISSION TO STRATEGICALLY. COMBINE LEADERS IN THE AFTERMARKET PARTS AND COMPONENTS INDUSTRY.

It's no secret that 50% of the operation cost of track equipment is maintaining the undercarriage. Even with this widely known fact, many individuals do not have a good understanding how to significantly reduce wear and increase component life by following 4 simple steps. Worse yet, some are experts on the subject and ignore at great cost and peril. So, if you want to kill your undercarriage, here's how to do it.

Basic terminology and component understanding is required. Though there are many different types of undercarriage, all have the same basic components regardless. Below are the critical components and the functions for a standard oval type track assembly and Sealed And Lubricated Track (SALT).

OVAL TRACK COMPONENTS



CARRIER (TOP) ROLLERS

Support the weight of the track and keep the track chain in alignment with the sprocket and the front idler.

TRACK ROLLERS

Support the weight of the machine.

TRACK RAIL

Keeps the track aligned with the rollers, idlers, and drive sprocket. Include links, pins and bushings.

DRIVE SPROCKET

Transmits motion and torque from the final drive to the track bushings.

FINAL DRIVE

Provides the gear reduction and torque needed to drive the drive sprocket.

FRONT IDLER

Serves as a guiding support for the track chain at the front of the track roller frame.

RECOIL SPRING

Absorbs shock from the front idler. The system includes a track adjusting cylinder for adjusting the track tension.

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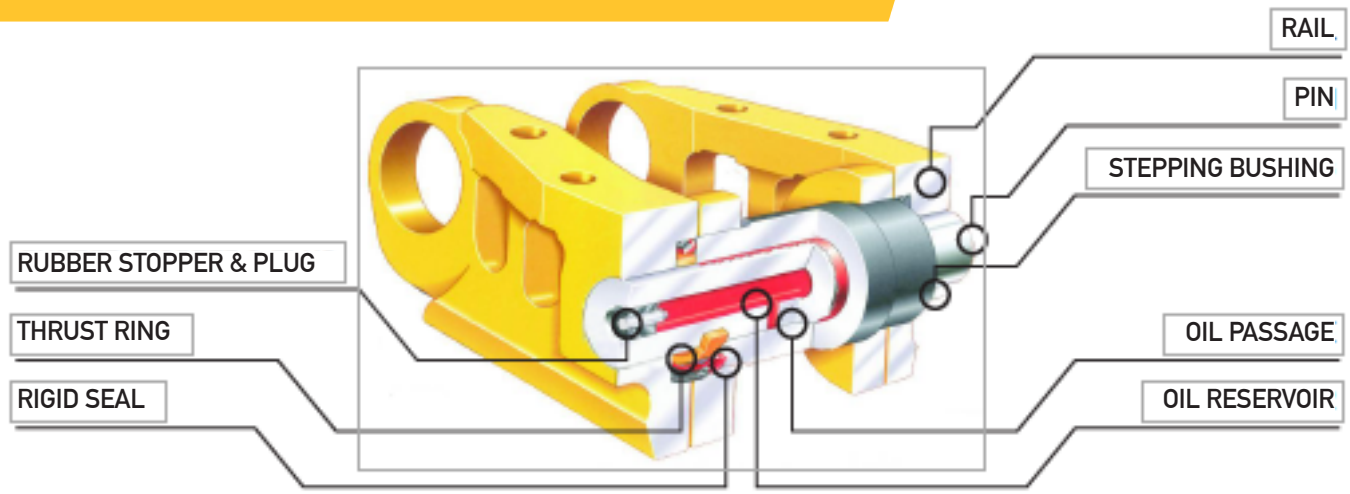
- OUR INTEGRATED ORGANIZATION OFFERS SOLUTIONS IN SUPPORT OF SURFACE MINING EQUIPMENT FLEETS, CRUSHING AND MATERIALS PROCESSING AND MOBILE CONSTRUCTION EQUIPMENT FLEETS.

SEALED AND LUBRICATED TRACK (SALT) COMPONENTS



TRACK KILLER NO. 1: TRACK TENSION

When the undercarriage is clean and chain tension properly adjusted, each bushing seats against the sprocket tooth. Bushings will gradually wear into the forward side of the sprocket teeth.

Tight track creates greater stresses that are felt throughout the whole undercarriage, in particular wear on the reverse-drive side of the sprocket tooth (as well as on the forward-drive side). These stresses eat away bushings, sprockets, carrier rollers and idlers, greatly decreasing track life and resulting in higher operating costs. Some of the main reasons include improper adjustment, or because material from the jobsite has packed into the sprocket's teeth.

For example, a conventional oval chain exhibiting 1/2 inch of sag will be running with nearly seven times the tension, compared with the same track running with the recommended 2 inches of sag.

When a chain that is overly tight is operated in forward, the bushings actually are forced into initial contact with the reverse-drive side of the sprocket tooth, and then slide through the tooth until engaging the forward-drive side. In similar fashion, the bushings in a too-tight track running in reverse tend to make first contact with the forward-drive side of the sprocket tooth, and then slide under load to the reverse-drive side.

Sprockets packed with mud force the bushing to seat high on the tooth, and a single bushing carries nearly all of the drive power. Following bushings strike the back side of the teeth, rounding off the tops and reverse side. Loosen track tension to reduce some wear. Relieved sprockets can allow mud to squeeze out of the sprocket roots. For best results, adjust track on the jobsite - not in the shop.

RACK TENSION TOO LOOSE?

Pitch extension allows the track to elongate, becoming loose and "snaky," that is, the portion of the track on the ground can move back-and-forth like a snake on the move. Pitch extension also results in the bushings no longer contacting the sprocket teeth at the correct spot, resulting in accelerated wear of both the sprocket tooth and the bushing's outer diameter.

IN SUMMARY... Perhaps the greatest wear-saving practice you can employ is to frequently visually check track tension when working in material that packs in the sprocket teeth. If the chains are tightening, readjust them on the spot.

Considering the wear you'll save — and the fuel you'll save by relieving the engine of this extra load — it'll be like putting money in your pocket!

TRACK KILLER NO. 2: OPERATOR BAD HABITS

The second killer of undercarriage is your operator. If your operator is a speed demon or a creature of habit, they will become best friends with your part vendor. It is important that your operator understands balance. It is not about conquering terrain but working with the terrain. The top operator contributions to killing your undercarriage are:

SPEED. Speed may be your friend in productivity, but it's one of your track's biggest enemies. As speed increases, so does the wear rate on

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link rollers, idlers, bushings and the sprocket. High-speed reverse travel especially wears bushings and sprockets. Use higher tractor speeds only when needed to maintain production levels.

TURNING. Rail sides, rollers and idler flanges are affected by machine turns. When operators constantly turn to one side, wear greatly increase on that side. If you can't change your work path to "even out" turns, regularly check for wear on the turn side. You can get longest life by rotating tracks when wear on one side is noticeable.

SLIPPING TRACKS. Grousers take the most abuse from slipping track. When your track begins to slip, decrease load.

SITE SPECIFICS. If possible, don't work against terrain. You can get better track life and increased productivity if you work downhill instead of up On side hills, don't favor one side of the machine over another. Pay special attention to inside track component wear if you constantly work crowns you constantly work depressions, watch for outer track component wear.

UNDERSTAND FORWARD AND REVERSE WEAR. When a crawler machine is moving forward, little wear occurs assuming that the chain is properly adjusted. In forward, the only point at which the bushing rotates or slides in the sprocket tooth is at about the 12 o'clock position, just before exiting the sprocket. But at this point, the bushing is under virtually no load, and the significance of the relative motion between the two parts is minimal. In forward, most of the load is on the few bushings between the six and eight o'clock positions at the bottom of the sprocket, where no relative motion occurs between the two parts.

When the machine moves in reverse, however, 85 percent of the load on the track chain is concentrated near the top of the sprocket, just where the bushing must rotate against the sprocket tooth. As a result, more wear normally will occur on the reverse-drive side of the sprocket tooth.

REVERSE WEAR. Driving the machine in reverse twists bushings against the sprocket teeth and the front idler, accelerating bushing wear. It will eventually grind a pocket into the base of each sprocket tooth, while reverse tip wear rounds off the tips. Limit backing, especially when making repetitive passes, and slow down to control reverse drive wear. Reverse wear erodes the lower front of the bushing. Reverse tip wear tends to flatten the bushing, but most tracks get enough reverse drive wear to round the edges.

Lastly, TIP WEAR / FORWARD WEAR on the reverse side of sprocket teeth actually happens while the machine is driving forward. Sprockets packed with mud force the bushing in the track chain to seat high on the tooth. Following bushings strike the back side of the teeth, rounding off the tops and reverse side of both the sprocket teeth and the bushings.

Loosen track tension to reduce wear when mud starts packing in sprocket teeth. Relieved sprockets can allow mud to squeeze out of the sprocket roots.

TRACK KILLER NO. 3: IGNORING UNDERFOOT CONDITIONS

The third deadly killer of undercarriage is what lives underfoot. Wet soil with sharp sand wears away undercarriage components. Packed dirt between track components increases track tension and wear. You cannot control the underfoot conditions but you can use the following adjustments to manage the varying soil conditions. Use center-punched shoes and clean out the undercarriage as often as possible. Use roller guards only for high impact underfoot conditions and remember that slipping the track reduces production and especially impacts the wear on grouser bars.

TRACK KILLER NO. 4: IMPROPER SHOES

The fourth way to kill your undercarriage is running wide shoes in high-impact conditions. In wet, muddy conditions, wide shoes cause high track wear and structural problems. On hard surfaces, wide shoes cause tremendous strain on track shoes, pins and bushings. Use wide shoes wisely as they shorten track life.

The extra flotation afforded by wide shoes in wet, mucky conditions translates into the potential for high track wear and structural problems in high-impact conditions. The leverage effect of the wider track on a hard surface puts tremendous strain on track shoes, pins and bushings. If you must operate with wide shoes on a machine in these conditions, keep in mind that it can dramatically shorten track life.

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