

Keys to Improved Tire Wear in All-Terrain Cranes

In the course of service calls to all-terrain cranes it is almost impossible to not notice the tires on these machines. After all, that is what most people see right away - those machines have big tires! What most do not see is the tire wear that can occur from running these big cranes.

Many times customers have asked - why are my tires wearing funny and what can I do about it. To tell the truth most AT cranes I see have some sort of unusual tire wear on at least one of the tires on the crane. I have been asked many times what causes this wear and what can I do to correct this problem before a blow out or before I put new tires on the crane.

Tire wear problems can be very costly, one customer recently told me a blow out on his German crane cost him over \$15,000 USD in parts and repairs and this is not to mention downtime! I suppose this is cheap if the blow out would have caused an accident then the cost of tire problems probably could not have been calculated with the possibility of personal injury.

So you say what can I do to try to get better tire life and provide a safer and more profitable business approach to this problem. After all some of the larger AT tires can cost upwards of \$2000 USD per tire!

I will try to compile a list of suggestions to follow that might help in this effort. I am sure you may have your own ideas and tips but these items are surely the best to consider and implement first.

In the order of what I consider to be most important here is my attempt to help you save money and downtime in this area.

- 1) **Correct tire pressure is always the number one place to start.** The correct pressure in the tire is most critical to good long tire life. This should be checked weekly with a gauge and visually during the daily walk around inspection of your crane. Looking at the bubble at the bottom of the tire, they should all look equal. You may not see a difference in 1-2 bars (15-30 psi) of pressure but your tire will know it!

- 2) **Exceeding the load range of the tire.** Exceeding the load range of the tire will build heat in the tire, break down the tire construction and severely shorten tire life. In areas where cranes carry all their counterweight tire problems abound. Make sure the load rating matches the conditions in which the crane is traveled. Also make sure one tire is not loaded up more than the others.
- 3) **Keep the suspension leveling system working properly.** All-terrain cranes have auto-leveling systems that should always be kept working properly. In the case of solid axle drive cranes the steering and tracking alignment is based around the road level point of the crane. This is the point in which the steering geometry is meant to track the crane straight going down the road. Not keeping this leveling system working means the tires are not aligned as intended and this will scrub off more rubber AND burn more fuel than necessary. This costs you more than just the tires but burning more fuel as well!
- 4) **Keep the suspension nitrogen accumulators charged.** The hydraulic accumulators used on all-terrain cranes are the springs for your vehicle. If the springs are worn (low accumulator charge) then the suspension travel will be more than designed for. This means the suspension is traveling out of its designed range having the same effect as in item number 3 above.
- 5) **Make sure all connecting parts are in good solid condition.** Tie rod ends, torque rods, mega-strut collars, king-pin bearings and other connecting links that attach the steering system to the tires/wheels need to be tight as intended. Just as on a car, worn tie rod ends and drag link ends causes the tires/wheels to not track true and will cause excessive tire wear not to mention driving control problems. This can be critical in over the road safety and driving comfort. Regularly inspect these parts and the rubbers used in them. Having someone wiggle the steering wheel while you check all steering parts is a good starting point. Be careful in this!
- 6) **Check and correct wheel alignment as soon as noticed.** During the daily walk around inspection having the wheels/tires straight eyeball the alignment of the tires. Are all the tires in alignment with the next tire and are they all parallel with the center line of the chassis? Broken parts and changed out parts in this area can affect alignment. If you want to truly reduce tire and fuel expense this is one item that will really help. The basics of alignment is to have the tires run parallel with the center line length of the chassis.
- 7) **Tire rotating helps.** Rotating tires regularly depending on kilometers driven is a good effort in keeping tire wear down. Rotate from drive to non-drive wheels. Check the cranes maintenance manual for this topic as well.

I'm sure you can probably think of some other ways to help improve tire life. Remember that once a tire starts to wear unusually it will continue to wear in that pattern. Keep an eye on this in newly purchased cranes.

Yes, there are many steps to better tire life but it is worth the cost. Once on a regular schedule of checks and maintenance it will be easier and less time consuming as well. This will be a sign of commitment to your operators and customers that you are serious about safety and care for your crane.

Worn tires stick out like a sore thumb!

Remember, tires are what the customer is probably going to see first when he walks around your crane on the job!

Written by Mark Krajci - over 25 years of field service in all-terrain cranes and motion control hydraulics as applied to cranes.