

## COMMERCIAL FLEET TIRE DIGEST

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# COMMERCIAL FLEET TIRE DIGEST

*The authoritative guide to reducing commercial tire expenditures from  
Pressure Systems International,  
the manufacturer of the Meritor Tire Inflation System by PSI™*

VOLUME 4 ISSUE 1

JANUARY 2010

## Truck Drivers and Tires

Contact  
Al Cohn  
at  
210-508-6260  
to setup your  
Tires 101  
Class for  
Drivers/  
Mechanics

Drivers certainly can play an enormous role in how long tires last; and with tire companies continuing to raise prices on a regular basis due to the soaring costs of natural rubber and the oil based raw materials, tires will continue to be the #1 maintenance cost for fleets. Tire education, especially in light of these escalating costs, is absolutely critical for any fleet.

I made an effort over the holidays to visit my local truck stop several times for morning coffee and to chat with drivers about tires. Since all drivers are tire experts, it made for very interesting conversation.

Owner/Operators have a completely different mindset when it comes to tires versus the company driver. The cost of tires for an O/O is substantial since they are only purchasing a few tires at a time, so they typically pay top dollar. Additionally, when those dollars come out of your own pocket, you want the best value for your money. Owner-Operators base their tire purchase decisions on cost/mile or miles/32". Initial tire buying price is important, but O/O's fully understand that a low cost/mile is the better way to make the decision about which tires to purchase. During my trips to the truck stops I did not find even one O/O that bought the lowest price tire for his rig. However, I suspect if he or she is having a difficult time making ends meet, then the lowest price tire may be the only option for their short-term survival.

I asked all the drivers that I met a very simple question during our conversations...assuming that the cost/mile for individual tire brands was equal, which tire would you purchase? Every driver had their own "theory" as to why they like one brand over another....better traction, better miles, less prone to irregular wear. All of these are great reasons to pick one tire brand over another, but drivers forget some important facts: (1) Tires can perform very differently depending on the vehicle make/model (2) The route & load will affect tire performance as well and (3) Irregular wear can just as easily be caused by vehicle alignment issues as it can because the tire brand is somehow deficient. So, if irregular wear is obvious on individual units, fleets and O/O's need to look beyond just whether a particular brand might be right for their operation.

Owner-Operators tend to baby their tires much more than company drivers. Some O/O told me that they rotate their tires on a regular basis and check air pressures every morning. Fleets seldom rotate tires and checking pressures may occur only during a PM.

For fleets employing company drivers, a great idea would be to put on a Tires 101 course for them on a regular basis, not only on the first day that they join your company. Drivers know which tires have the best traction in the rain and snow; and their early input in identifying irregular wear can save your company big dollars. Getting your drivers' input on how tires are performing is critical to making intelligent tire purchase decisions.

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** Some of my trailer tires last 200,000 miles and are worn smooth & evenly when I take them out of service but other trailer tires barely make it to 100,000 and they have cupping and depressed wear. What can I do to get all my trailer tires to last 200K?

**A.** There are many factors that lead to irregular wear in trailer tires. One of the biggest reasons is that trailers have variable loads..they may go out fully loaded and during the day the loads become lighter. When tires are lightly loaded they tend to bounce up and down the highway which leads to uneven wear. Of course, low inflation pressure will also lead to severe irregular wear. Low tire pressure is a huge issue for trailers since trailers do not typically return back to the shop to be checked on a regular basis.



# COMMERCIAL FLEET TIRE DIGEST

*The authoritative guide to reducing commercial tire expenditures from  
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VOLUME 4 ISSUE 2

FEBRUARY 2010

## Adding Stuff Inside Tires

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Class for  
Drivers/  
Mechanics

We get many questions from fleets on a regular basis about enhancing tire performance through a plethora of after-market products available in the market.

These products are typically balance materials, puncture sealants, and coolants.

There are many excellent products that can be put inside a tire-wheel assembly but you really need to do your homework before taking the plunge to add any "stuff" to your tires.

Tires properly balanced will lead to a smoother ride and more even treadwear. Today's hi-tech radial tires are made with state-of-the-art production equipment which makes for a very consistent tire. If you checked either the static or dynamic balance of a new tire you would be very impressed as to how good these tires really are built. The issue is that balance will change over time as the tire wears. Uneven wear conditions, vibration, and early tire removals are a possible result of tires out of balance. So, there are "balancing" materials on the market that are added inside tires and are designed to flow into the low spot of the tire and improve ride. Some balancing materials even include golf balls but trust me on this one, golf balls will flatten out over time and its sharp edges will damage the sidewall.

Tire puncture sealants are very popular with those fleets that do a significant amount of off-road driving or even with those fleets whose vehicles hit the back roads only occasionally. One tire company offers a sealant built into the tire during manufacture. Aftermarket tire sealants are added typically through the tire valve. These aftermarket sealants have a high viscosity so if a nail punctures and stays in the tire, the goal is for the sealant to surround the hole and stop the leak. If the nail comes out, the sealant material should flow inside the hole and prevent

the tire from further air loss. If you retread your tires and use these compounds, you need to realize that you will have to clean up the sealant material prior to the retread process. If you do choose to add sealants to your tires, it's always good practice to verify that the tire valve stem assembly is not contaminated with sealant material, which could lead to loss of air pressure.

The last type of material that can be added to tires are coolants to keep the tire running cool to maximize treadwear and increased retreadability. Adding coolants should not be necessary if tires are running at the proper inflation all the time because the tire will run at the design operating temperature. However, if the tires run underinflated, tires will heat up causing early tire removals. Many fleets now use automatic tire inflation systems which add air automatically while driving down the highway to keep the tires running cool and preventing tire related roadside service calls. If you do add some sort of coolant material, make sure it has been tested and does not damage the tire innerliner.

It is very important to determine if you add ANY material inside the tire that it does NOT ADVERSELY affect the tire innerliner. The innerliner is typically a butyl rubber compound that protects the casing from air migration. There are many chemical compounds that can attack the butyl rubber and cause damage which could lead to premature tire removals. So if you are adding material into your tires, you need to check the specification sheets provided by the supplier to be sure the material will not interfere with the innerliner. You should also check with your tire provider to get their approval that the material being added inside the tire is OK. However, because there are so many products available today (and more being added all the time) your tire manufacturer may not have evaluated the specific material for your tires. Do your homework and check with other fleets for their experience. Be sure to gather as much information as possible before making a final decision.

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## Tire Responsibility



How do you dispose of old tires?"  
We like this creative example  
of a "green" way to do it!

Tire responsibility – whose is it anyway? Is it my technicians, my drivers, director of maintenance or is it my tire program manager? The answer is all of the above. The director of fleet maintenance typically oversees the program but requires input from his entire team. It may appear easy to create a successful tire program, but unfortunately it can be a complicated task. The initial step should be meeting with all individuals working directly or indirectly with new tires and retreads. In the very beginning of the process, it's also important to get your outside tire professionals involved. As you begin the process, many questions need to be asked and testing implemented if you cannot answer them. Some of those questions will be:

- Which tire design is best for each of my wheel positions? You need to define what is important to your fleet: Is it final removal mileage, is it traction in the wet & snow, is it maximizing retreadability, or is fuel economy #1. For instance, you can have a drive tire last over 300,000 miles in a long-haul operation. But what if you had a drive tire that lasted 20% less miles or 240,000 miles. However, those same tires have increased your fuel economy by 2%. You need to stop and put a pencil to the equation. It may work out that the increase in fuel economy offsets the low mileage by a fairly large percentage which can easily justify the loss in removal miles.
- How are the tires performing? Getting driver input about tire performance is a key piece of the puzzle. Only the driver can really know if the tire handles well and has great

traction in a variety of weather and road conditions.

- What about retreading? Retreading is really critical to a successful tire program. A retread is typically one third the price of a new tire, so it's very clear why 90% of fleets retread. To maximize retreading there are two keys to success: #1 is to have a tread depth pull point which is not so low that the casing can easily become damaged by stones and debris. Removing the tire at the legal limit of 2/32" for drives and trailer tires will reduce your retreadability of the tire casing. And #2 - you need to work with your retread professional to help analyze your tire casings to determine exactly the reasons why a particular casing could not be retreaded. Having this knowledge will help you mitigate whatever the situation was causing the problem allowing you to maximize retreadability of more casings in the future.
- How frequently do I need to visually check tires and do pressure checks? The more frequently tire inspections occur will give you an early warning system for identifying vehicle alignment issues, irregular tire wear, and puncturing objects. You should also determine the bottom-line advantage of keeping your tires running at the correct pressure all the time so you can maximize fuel economy, removal miles, and uneven tire wear. Running your trailers with automatic tire inflation systems will certainly insure that your tires are running at the correct operating pressure all the time.

It takes a total team approach to have a successful tire program.

Tires continue to be the #1 maintenance cost for fleets. With the average price of new tires and retreads continuing to rise at an alarming rate, creating a serious tire program is critical to the fleet bottom line.

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VOLUME 4 ISSUE 3

APRIL 2010

## Tire Pressure Gauges - Why the Variance?



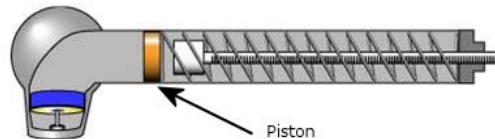
Recycled Tire Sculpture

Common stick or pencil type tire pressure gauges are primarily used to check the air in passenger cars. When the air is checked in commercial truck tires a stick gauge is also used, but one with a higher pressure range. Since you are likely relying on these types of gauges to check air pressure on your fleet vehicles it's important to know: Are they any good? Are they accurate? Do they change over time?



Common Stick Pressure Gauge

To understand gauge accuracy, it needs to be taken apart to check the components.



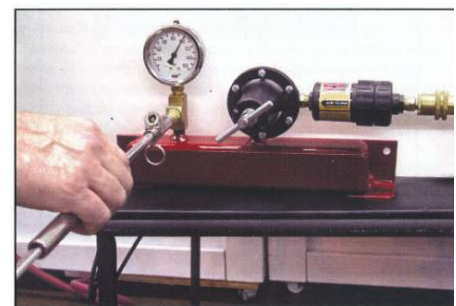
How a stick or pencil gauge is put together and how it works:

- **Calibrated stick with numbers fits inside the helical spring**
- **When gauge is applied to the tire valve stem, pressurized air rushes in and pushes the piston to the right and the spring is pushing back...calibrated rod (stick) moves to the right**
- **When pressure is released, piston moves back to the left but the measuring stick stays in place so you can read the measurement**

There are 2 key components of the gauge: the spring and the stick with the numbers. A good gauge will have been calibrated properly & the pressure numbers marked appropriately at the factory to match the spring. However, even a brand new reasonably priced gauge will only be accurate to +/-3%. Over time, this inaccuracy increases.

For instance, the spring constant or spring stiffness will change significantly based on the ambient temperature. Most pressure gauges are calibrated at a room temperature of 68° F. If you are checking tire pressures in the middle of winter and it is 20° F, the spring stiffness will increase and any readings you take may be significantly lower by several PSI or more. Conversely, when you do a tire survey in Phoenix during the summer, the spring stiffness decreases and the pressure results will be higher by several PSI. Another factor affecting accuracy is that this type of gauge gets dropped (on hard shop concrete floors) and over time, the stick will not sit properly inside the spring causing additional error. And of course, there is error associated with reading the correct number on the stick, especially with bifocals!

Utilizing a master air gauge check station is the best way to verify your stick gauges for accuracy. But you need to be aware that even a master gauge is only accurate to +/- 2% when brand new.



In the May issue of PSI's Commercial Fleet Tire Digest we will review stick versus dial type pressure gauges.

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VOLUME 4 ISSUE 5

MAY 2010

## Tire Pressure Gauges - Accuracy of Dial versus Stick

Wabash  
National  
Trailer  
Wins PSI's  
2009  
Athena Award

In the April 2010 edition of PSI Tire Digest we took apart a stick pressure gauge to analyze why there is variation from gauge to gauge. You may be able to get more accuracy if you purchase and use a pressure gauge that has a dial indicator. However, even though these gauges are almost always more expensive their accuracy is not always guaranteed either.



Dial gauges have two different accuracy ratings based on taking a reading in the middle half of the scale versus the upper/lower one quarter of the scale. If a dial gauge has a range of 0 to 160 (common for truck tire gauges), the middle half of the scale would be readings from 40 to 120 PSI. In the middle of the gauge, Grade A has the best accuracy of +/- 1%. Grade B is +/- 2%, Grade C +/- 3%, and Grade D +/- 4%. Measuring tires outside the middle range decreases the accuracy to +/- 2% for Grade A. Grade D gauges would only have an accuracy of +/- 5% in the upper/lower one quarter of the gauge. +/- 5% accuracy does not sound so bad until you realize that a truck tire with 100 PSI could read anywhere between 95 – 105 PSI using a Grade D accuracy gauge.

The ANSI standard also talks about the incremental units on a dial gauge. If the gauge is graduated in single PSI increments, you might think that the gauge is accurate to +/- 1%, but that would be incorrect as the PSI increments on a gauge are not necessarily reflective of the accuracy grade as described above. For a gauge that has a range of 0 to 160 PSI, the ANSI standard says that a Grade B gauge should be in PSI increments of five. Industry standards aren't always followed by gauge manufacturers – as my recent experience bears out – I purchased several dial type pressure gauges and each had different PSI increments. If you are shopping for a dial pressure gauge and there is **no information** regarding the accuracy on ones you are looking at, you need to reconsider your purchase and find a gauge that clearly mentions the grade of the gauge or actually lists the accuracy as a percentage.

Next time you go to purchase a tire pressure gauge with a dial indicator, take a close look at the packaging for information regarding gauge accuracy. A common gauge accuracy is ANSI B40.1 Grade B. What does that mean? ANSI is the acronym for the American National Standards Institute. It is a private non-profit organization that oversees the development of voluntary consensus standards for products in the United States. B40.1 is the specific standard that has been issued for pressure gauges. Dial pressure gauges have four grades of accuracy: A, B, C, and D (A is the highest).

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** I see more and more fleets using widebase tires (445/50R22.5) on trailers. What is the big advantage?

**A.** Weight savings and fuel economy are the two(2) biggest advantages of widebase tires versus duals. One tire is replacing 2 duals so you have a significant weight savings, especially if you use aluminum wheels. Most fleets also see a nice advantage in fuel economy when using these tires, especially when diesel is around \$3.00 per gallon.



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VOLUME 4 ISSUE 6

JUNE 2010

## CSA 2010 & Your Tires

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.gov/about/  
basics.aspx](http://csa2010.fmcsa.dot.gov/about/basics.aspx)  
(click on SMS).

The new Comprehensive Safety Analysis (CSA) program managed by FMCSA (Federal Motor Carrier Safety Administration) is being rolled out in 2010 with full implementation now scheduled for sometime in 2011. This initiative is being implemented to improve the effectiveness of FMCSA's compliance and enforcement programs using data to identify high-risk carriers and drivers. Currently FMCSA uses SafeStat to measure carrier and driver performance. SafeStat will be replaced with the Safety Measurement System (SMS). The difference with SMS is that every inspection counts, not just the previous two years of roadside violations and crash data. At the heart of SMS is the Behavioral Analysis Safety Improvement Category (BASIC) scoring system. SMS assigns weights to each carrier and driver violation in each of the seven BASIC groups, which are: Unsafe driving, fatigued driving, driver fitness, drug and alcohol use, vehicle maintenance, load securement, and crash history.

For the vehicle maintenance BASIC category, there are seven specific areas of maintenance to be monitored:

- Lights not working
- Conspicuity marking inadequate
- Brakes
- Suspension
- Steering
- Tires
- Periodic Inspections

Violations are weighted based on the relationship to crash risk. In the case of tires, if the tread depth is below the legal limits, tires are damaged, tires are flat or underinflated, then the carrier would be penalized X number of points. The CSA 2010 scoring

system is quite complex. Events are severity weighted as follows:

1. Violations are ranked 1 - 10 plus 2 points are added for the "bad" stuff which includes driver fatigue/fitness, vehicle maintenance, and cargo loading issues. Accidents are scored 1 -3.
2. Events then are time weighted. 3 points for <6 months, 2 points for 6 - 12 months, and 1 point for >12 months.

So where do you find the severity ratings? In a document published by FMCSA called SMSMethod.PDF. You can download the ninety-five page publication at [http://  
csa2010.fmcsa.dot.gov/about/basics.aspx](http://csa2010.fmcsa.dot.gov/about/basics.aspx) (click on SMS).

Tires have one of the higher severity ratings. It is an 8 (out of 10) when the tire is damaged or flat or the tread depth is below the legal tread depth limit. If the tire is found to be underinflated, it is given a severity level of 3.

Once you know the severity level, then you plug those values into several equations. In the case of an underinflated tire with a 3 severity rating you would calculate as follows:

- Add 3 (severity level) plus 2 (maintenance related) = 5 total severity rating (#1 above).
- Then multiply 5 times 3 (since it occurred in last 3 months) = 15 (#2 above)

A fleet rating is determined by doing similar calculations for all the BASICS. Then the total score is normalized and compared to other fleets within your peer group (based on number of power units). The higher the value (measured in percent) the more likely that your fleet will come under closer scrutiny.

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** I keep reading that running tires with low inflation hurts fuel economy but would like to know by how much?

**A.** Rule of thumb is that for every 10% that a tire is underinflated equates to about 1% in poorer fuel economy....that assumes you are in a line haul service vocation.



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VOLUME 4 ISSUE 7

JULY 2010

## More on CSA 2010

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.gov/about/  
basics.aspx](http://csa2010.fmcsa.dot.gov/about/basics.aspx)  
(click on SMS).

In last month's issue of PSI Tire Digest we covered the new CSA 2010 regulations and how they will impact your fleet's tire program. As discussed, the BASIC scoring system within CSA 2010 uses severity ratings to compound violation scores reflecting their relationship to crash risk and the more current the event the more impact the data will have on your overall score. Flat tires, damaged tires, and below the legal tread depth limit all have an (8) severity rating which means that those violations impact your fleet safety score tremendously. Additionally, tires found to be underinflated during roadside inspections will have a (3) severity rating. You can see that it will not take very long for poor tire practices to have a negative effect on your operation's safety scores under the new system.

Every seminar or conference that I attend on the subject of CSA 2010 begins by these comments from the speaker. "CSA 2010 is a game changer for the trucking industry including individual motor carriers as well as drivers". The speakers continue "if you currently have a safe fleet, take safety seriously and have well trained safe drivers, then you will have nothing to be concerned about with the new regulations". CSA 2010 will generate two distinct reports based on data that has been input into the system from roadside inspections and crashes: A motor carrier report and a separate report for each driver.

CSA 2010 has the potential to assist a carrier in his driver recruitment efforts. If a driver worked for five different carriers in the last four years and had an incident or

accident at each of those carriers, all that information will be available for a fleet to view before they decide if this driver would be a good candidate for their operation. CSA 2010 will NOT have the power to revoke a driver's CDL based on the score generated in the report (only the state can revoke a CDL based on specific incidents in that particular state). However, CSA 2010 driver intervention will take place when a specific driver's score is in the lowest 10 percentile as compared with other drivers.

The fleet report generated by CSA 2010 will compare similar-size fleets. For you as a carrier, when you reach the 77<sup>th</sup> percentile based on total points the intervention process begins. Of course the intervention process becomes progressively more stringent if corrections are not made. The first step in the intervention process is a letter to the carrier notifying them that there are safety issues within their fleet that they must address and correct. Failure to correct will lead to the next phase which is a red flag for increased roadside inspections. That is followed by on-site inspections. At this point a Corrective Action Plan Agreement is published. If these corrections are not met the last phase is a "cease operations order".

A common question is what about Canada and Mexico. At the moment CSA 2010 does not take into account incidents that occur when a driver is driving north or south of the border. Canada and Mexico do not record DOT numbers so it is currently impossible to keep track of the data into one common database. But this may change.

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** How do I decide what is the recommended air pressure for my trailer tire which is a 295/75R22.5 LR G? The tire sidewall says its maximum pressure is 120 PSI.

**A.** The recommended tire air pressure is based on your worst case load scenario. Let's assume you have a 17,000 pound axle and there are 4 tires across the axle.  $17,000 / 4 = 4250$  pounds per tire. If that is your worst case load then you need to look at a load-inflation chart which is found on the internet (every tire company publishes the chart). Match up the tire size to the load and you will see the recommended air pressure.





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VOLUME 4 ISSUE 8

AUGUST 2010

## Tire Surveys: Are they worth the time and effort?

On July 5, PSI began shipping MTIS™ with new green Thru-T's and green striped delivery hoses to illustrate the true environmentally friendly benefits of the product.

Whenever I visit a commercial fleet, regardless of the fleet size, one of the first questions is "can you walk around the yard and see what you think about how my tires are performing?" Of course it is great to take the opportunity to scan your tires by doing a walk-around but it is better to do a serious tire survey on a regular basis.

A good tire survey includes measuring tread depths, looking for any signs of irregular tire wear, checking air pressures using calibrated pressure gauges, and recording any sidewall cuts/snags and punctures in the tread area. It is strongly recommended that you also include a scrap tire pile analysis in your tire survey. Why, because you can learn more from looking at tire removal reasons and remaining tread depth than you can from doing a walk-around survey on tires currently running. Tire surveys should be consistent and performed on a regular basis; once every quarter is a good rule of thumb. A good survey team would include associates from your tire maintenance department and also from your tire servicing dealer. Working closely with your "tire professional" will always be a benefit.

Tires perform quite differently depending on the vehicle make/model and service vocation so your database needs to include these data points along with specific wheel positions. Most fleets use a numbering system for wheel positions moving from left to right down the vehicle to make data entry simple. It is very typical to discover many correlations with wheel position and tire removal mileage/irregular wear, so lumping all the tire data into a single pot will not help you analyze survey results correctly.

Recording as much information regarding the tires as well as the specific vehicle is

important. A simple excel spreadsheet will allow you to analyze the results and look for trends within your tire data.

Your results may show that a specific tire performs particularly well on the steer position of your Kenworth tractor produced after 2008 but not nearly as good as they did on your older Kenworth's. Or you may find that the tires on trailers with the 10' spread axles are scrubbing the rubber so quickly that you should just go with the least expensive tire or retread to help reduce your tire budget. Identifying tire wear conditions directly related to vehicle alignment can solve a lot of tire irregular wear issues. For example toe-in and toe-out steer axle alignment conditions typically manifest themselves as fast shoulder wear on both outside tire shoulders or both inside shoulders or one outside and one inside steer tire

But don't forget that scrap tire pile analysis in your survey. The best scrap tire pile for analysis would have tires that have been removed from service because they have been worn down to the minimum tread depth (or pulled at your specified tread depth specification). Tires should have nice smooth wear. And of course, if you run retreads, 95% of the scrap tires should be retreads and not new tires. A good example of learning something from a scrap tire pile is when you find out that most of the retreads in the pile have most of their tread rubber remaining. This would indicate that you may be retreading either too many times and the casing is just not durable enough or it could be that there is an issue with the retread process.

Bottom line is that data analysis with regular comprehensive tire surveys is the key to success in reducing your tire expenses.

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** I heard that CSA 2010 is being replaced by a new program called just "CSA". What's going on?

**A.** CSA 2010 is the new Comprehensive Safety Analysis program managed by the Federal Motor Carrier Safety Administration. It is currently being rolled out (slowly) and will be mandated in 2011. Since the new program actually goes into full effect in 2011, the new name is simply "CSA".



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VOLUME 4 ISSUE 9

SEPTEMBER 2010

## Optimizing Your Tire Program

PSI has chosen FedEx as their MTIS by PSI Customer of the Year for the second consecutive time. The 2009 Award was presented to Dan Umphress of FedEx Freight in August.

Because tire prices continue to climb (primarily because of the price increases in the plethora of raw materials used to produce a single commercial radial truck tire), optimizing your tire program will affect your fleet's bottom line in a dramatic fashion. The type of questions you need to address to determine what makes sense for your own tire program include:

- Are weekly tire inspections and air pressure checks helpful?
- Is measuring tread depths and recording tire mileages useful?
- Can I learn anything from recording final removal tread depths and recording tire removal reason conditions?
- What about tire evaluations of tire brand A versus tire brand B in my fleet? Is it worth the time and the effort?
- What about adding materials into my tires that may reduce punctures?

Every fleet has the same goal which is to maximize tire removal mileages while maximizing fuel economy, minimizing roadside service calls and, of course, (if you're so disposed) to get the most retreads out of your casings. Sounds pretty straightforward until you have to put the whole program together and then be able to quantify & analyze the results.

Recording lots and lots of data on every tire in a fleet is not very practical and is certainly labor intensive. For example, it can

be overwhelming if you are trying to record tread depths, wheel position, vehicle ID and removal reasons for only the tires that have been removed due to roadside service calls. How can you minimize very expensive roadside service calls if you don't have serious data on why tires are failing on the road? Were the tires worn too low and picked up a nail? Did the tire run with little or no air for a long time which eventually led to a failure? If you are going to have a successful tire program you must generate enough data on your tires to help you.

A good option is to closely track and record data on a statistically relevant number of specific vehicles in your fleet in order to extrapolate likely results for the entire fleet. All the important tire information such as pressures, tread depths, removal reasons, and roadside service call information is recorded for your control group of vehicles. This is much more manageable than trying to record every event associated with every tire running in your fleet. The Technology Maintenance Council (TMC) of the American Trucking Association (ATA) recommends that tire data on 30 vehicles would be a statistically valid number; however, if you are operating a small number of vehicles, a lesser number would suffice just as long as it's a significant percent of your total fleet.

Every fleet has a different vision of the definition of the perfect tire program. It all depends on what works for your vehicles, at your facilities, and with your mechanics and of course your drivers. We always recommend that working with your tire professional and your service providers will help optimize your tire program.

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## Q&A PSI ANSWERS YOUR QUESTIONS

**Q.** I have been running retreads on both my steer and drive tire positions (my fleet is pickup and delivery). Is there any laws prohibiting the use of retreads on steer?

**A.** Retreads can be used on all wheel positions including steer. The only exception is that there is a federal regulation that does NOT allow retreads to be run on the steer position of busses. A good source of information about retreads can be found at [www.retread.org](http://www.retread.org)



# COMMERCIAL FLEET TIRE DIGEST

*The authoritative guide to reducing commercial tire expenditures from  
Pressure Systems International,  
the manufacturer of the Meritor Tire Inflation System by PSI™*

VOLUME 4 ISSUE 10

OCTOBER 2010

## What Pressure Should I Be Running?

PSI reports record sales for MTIS™ though September with ThermALERT™ option now 41% of production

The most common question being asked by fleets today is: "What pressure should I be running my tires?" It sounds pretty simple but the choice for tire pressure can have significant impact on a fleet's tire budget. Commercial truck tires are designed so that the optimum tire footprint is the key to long tread life and good fuel economy. However, the tire footprint changes once the tire is put into operation depending on the actual tire load. Air is what carries the load and as a result the recommended tire pressure must be based on the worst case load that the tire will actually carry. The important piece of the puzzle is that a fleet must determine the actual worst case load per tire, not vehicle, for steer, drive, and trailer positions.

As an example, let's say you are running a typical 18 wheeler with a maximum load of 80,000 pounds GVW. You will need to run over a scale to determine how the 80,000 pounds is distributed across each axle. Then you'll need to divide by the number of tires on each axle to determine the actual tire load. A typical distribution for an 80,000 pound GVW load is:

- Steer 12,000 lbs or 12,000/2 tires = 6,000 lbs/tire
- Drive 34,000 lbs or 34,000/8 tires = 4,250 lbs/tire
- Trailer 34,000 lbs or 34,000/8 tires = 4,250 lbs/tire

In this scenario, assuming all tires are the same size (295/75R22.5), the steer tires will have a different pressure specification than the drives and the trailer tires. There still are many fleets that want to spec a single pressure for all their tires because it is easy.

However, this is not the recommended solution since it won't give you the best value for your tire dollars.

Once you have the lbs/tire calculation, the next step is to look up the recommended pressure in the load-inflation tables that are published on the websites of all the tire manufacturers. To use these tables, you must know the worst case load and the tire size. There are also different pressures depending on whether the tire is being run as a single (usually steer) or a dual (usually drive and trailer). You just need to be careful in reading the chart. Example chart below:

In our example, the steer tire maximum load is 6,000 lbs. When you look at the "single tire line" on the chart you would see that 105 psi would be too low for these tires since the max load is only 5980 pounds. The correct pressure is 110 psi because that pressure will carry up to 6175 pounds. For the drive and trailer tires, the worst case tire load is the same for all tires on those axles - 4250 pounds each. You need to look at the dual tire line to determine the correct pressure. Surprisingly, all you would need is 75 psi in each tire to carry the load. Many fleets run as high as 105 psi in drive and trailer tires. But you can see from the load/inflation table below that 105 psi is not required to carry the load, and would not give you the best results. The tire footprint becomes shorter at the higher pressures so the tire shoulders will not be in full contact with the ground leading to fast shoulder wear and early tire removals. Understanding load/inflation tables will help you make the correct decision in choosing the optimum tire pressure for your fleet.

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### EXAMPLE LOAD INFLATION TABLE

PSI	70	75	80	90	100	105	110	120
DUAL (lbs)	4095	<b>4300</b>	4540	4885	5260	5440	5675	6005
295/75R22.5---								
SINGLE (lbs)	4500	4725	4940	5370	5780	5980	<b>6175</b>	6610

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## Troubleshooting Trailer Tire Wear



**Happy Holidays**  
from everyone at  
PSI and  
Commercial Fleet  
Tire Digest.

May you and your  
family have a  
joyous holiday  
season.

Trailer tires are the most prone of all the wheel positions to develop irregular or uneven tire wear patterns. Irregular wear will lead to early tire removals and increase your cost/mile. Load and air pressure are two important factors that come into play. Because most fleets do not have a consistent and constant load, trailer tires will not always have the optimum air pressure. When trailers are full, each trailer tire may be carrying 4,250 pounds (17,000 pounds per axle /4 tires = 4,250 lbs/tire) and considerably less when the trailer is empty for the return trip. When the trailer is empty, the tire footprint becomes very small because air pressure is set for the full load weight (proper tire inflation must always be based on the worst case load scenario). The result is that the tire shoulders will not be spending much time on the road surface. When you run on only the center of the tread like this, cupping and fast shoulder wear will develop. Even if you are only fully loaded 10% of the time, the recommended tire pressure must be set to accommodate the weight of the full load. The result is that the tires have the perfect air pressure when fully loaded, but will be significantly overinflated for the rest of the time. Over inflation will lead to fast shoulder wear on both shoulders. This is a very common issue with trailer tires.

What else can happen with trailer tires? Diagonal wear patterns are also a common condition. Diagonal wear is defined by localized flat spots worn diagonally across the tread at 25 – 35 degree angles which often repeat around the tread circumference.

This situation is aggravated by high speeds and empty/light loads. Additional probable causes of this condition include:

- improper bearing adjustment
- toe out
- brake skid

If your trailer tires are developing fast shoulder wear but only on one shoulder, then the typical causes are excessive camber, misaligned axle, or improper bearing adjustment. Tire pressure is not the major variable in this case.

In just about all scenarios, the trailer tires on the front axle will have longer tread life than those tires on the rear axle. This is even more prominent on those trailers that see more city driving and are turning frequently. The front trailer axle is the pivot point when the vehicle turns and the result is that the tires on the rear axle will drag and scrub the tread off faster. We have seen up to a 35% difference in wear rates between the front and rear trailer tires.

If the trailer tires look just plain ugly all around the tire...cupping, depressed ribs, random wear spots, then low tire pressure for an extended period of time is the primary culprit. Of course other factors such as the outside dual being run at 100 psi while the inside dual is at 60 psi will also aggravate the situation.

Maintaining the proper tire inflation based on your actual loads is the key to maximizing fuel economy and tread life.

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## Q & A PSI ANSWERS YOUR QUESTIONS

**Q.** Do I need to manually check my trailer tire pressures if I am using the MTIS by PSI automatic tire inflation system?

**A.** There is a significant labor saving in not having to check the air pressure on your trailer tires on a routine basis unless the PSI warning light has been illuminated and the driver has informed maintenance that the light came on during the most recent trip. Having an automatic tire inflation still requires that tires should be visually inspected during the normal morning walk-around and during all PM's.