



COMMERCIAL FLEET TIRE DIGEST

The authoritative guide to reducing commercial tire expenditures from Pressure Systems International, the global leader in Automatic Tire Inflation Systems

VOLUME 11 ISSUE 1

JANUARY 2017

Measuring Tire Tread Depth

Learn about the impact of Greenhouse Gas Phase 2 and its impact on tires by attending the technical session being held on Wednesday, March 1, at 2:30 during the 2017 Technology and Maintenance Council Annual Meeting in Nashville, TN.

Contact acohn@psitireinflation.com for more information

Why is measuring tire tread depths important? The DOT has minimum tread depth standards for commercial tires. These standards are dependent on wheel position as follows: The legal limit in the fastest wearing groove is 4/32" for steer tires and 2/32" for drive, trailer and dollie tires.

Tires are expensive, making the casing quite valuable when it comes to retreading. Retreads are one third to one half the price of a new tire so protecting the casing from stone damage, cuts and tearing is a number one priority for fleets. Waiting to remove tires until they reach the legal tread depth limit will leave the casing more susceptible to damage. It is always a good idea to remove tires somewhere between 6/32" to 8/32" of remaining rubber to get the most life out of the casing. It makes sense for trailer tires which have been retreaded for the last time to run down to the 2/32" legal limit.

Fleets should establish a tire performance baseline by calculating miles/32" of rubber for the various specific tire makes and models running in their operation. Treadwear is measured either in actual tire removal miles or in miles/32". Miles/32" is the more accurate measurement when comparing tire models with different starting tread depths. A steer tire may have 18/32" when new while a different design steer tire may begin with 22/32" of rubber. Typically the deeper tread depth tires have a higher initial cost because more raw materials are required for manufacture.

Tires that see pure linehaul service (e.g. California to New York in a straight shot) can see anywhere between ten and twenty thousand miles/32". But the same tires running in pickup and delivery city service

with lots of turning may only get five or six thousand miles/32". Service vocation is the number one variable affecting treadwear. Assuming that all tires are running in similar service vocations on the same route with similar loads, the next largest variable affecting tire wear is the driver.

There was an interesting study done at a fleet in Virginia where ten identical vehicles with the same route and load on a dedicated run were tracked closely for one year. New tires of the same make/model were mounted on the ten tractors within a few weeks to minimize any variation because of the seasons (winter versus summer). Tire performance measured in miles/32" varied by 35% between the ten trucks. The only significant variable was the driver. Analysis of the driver data was most interesting. The older, more experienced drivers delivered the best tire performance. The younger drivers were scrubbing the tread off at a much more rapid pace. These young drivers drove faster and more aggressively than their more experienced counterparts.

Heat is a tire's worst enemy so driving faster leads to higher rubber temperatures and the rubber will scrub off more readily. Tie that in with more aggressive braking and turning, and the result was early tire removals.

This particular fleet, after reviewing the data, implemented a driver incentive program which rewarded drivers that met target tire removal miles; and their tire cost/mile has improved considerably.

Training drivers on Tires-101 and how to maximize their tire mileages will go a long way to a fleet's bottom line. At P.S.I., we offer a class for drivers and mechanics about tires with that goal in mind.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. How often should I be inspecting my tires?

A. Depends on service vocation. Mixed service and pickup and delivery require a higher frequency compared to tires running in line haul service since those tires have are more prone to punctures and damages. At least once per week is recommended for line-haul tires plus daily driver visual inspection.

UPDATE: Greenhouse Gas Emissions – Phase 2 for Trailers

The rulemaking along with its ancillary rules comprise over 7,700 pages



The entire rule can be downloaded at the EPA website:

[here](#)

In October 2016, Greenhouse Gas Emission – Phase 2, better known as GHG-2, became law with an effective date of January 1, 2018. The goal of this rulemaking is to improve commercial vehicle fuel economy in order to continue reducing greenhouse gasses into the atmosphere. The rulemaking is a 10-year rule increasing in stringency every 3 years. Over the 10-year period, the total fuel economy savings estimated by EPA is approximately 196 billion dollars.

Under GHG-2 the responsibility is on the vehicle manufacturers to meet the new guidelines. Tractor and trailer OE's are obliged to meet their vehicle fuel economy targets or be subject to significant financial penalties. Trucking fleets can spec their tractors and trailers with various fuel efficient options to meet and/or exceed the guidelines.

The Corporate Average Fuel Economy (CAFE) are regulations in the United States, first enacted by the U.S. Congress in 1975 in the wake of the Arab Oil Embargo, and were intended to improve the average fuel economy of cars and light trucks. 2005 is the baseline year the EPA uses for fuel economy values. By 2025, greenhouse gasses target reduction is 28% from the 2005 levels. And by year 2050, the target is for an 80% reduction. Because cars represent about 61% of the total transportation "pie", they have been targeted by CAFE standards for many years. The second largest slice of the pie is commercial heavy duty vehicles representing 23%, which is why trucking is now in the crosshairs.

GHG-2 is the first time that emission reduction requirements have been placed on trailer equipment. Both box (including reefers) and non-box trailers are covered and each has a different target. Non-box trailers are primarily composed of flat beds, tankers, and container chassis. The only trailers excluded from the regulation are those trailers with four or more axles and trailers under 35' in length.

Since non-box trailers are considered "working" vehicles, they will be obliged to use low rolling resistance tires and either automatic tire inflation systems (ATIS) or tire pressure monitoring systems (TPMS) to meet their targets. Since TPMS solutions still require human intervention to address the problem, the fuel economy credit is less than that of ATIS. Fleets should take this into account when selecting which solution to choose. Many of these solution providers have online tools to calculate the return on investment, with variable inputs that can be tailored to the individual fleet parameters.

Box trailers have a much wider range of options to increase fuel efficiency:

- Side skirts
- Nose cones
- Low rolling resistance tires
- Automatic tire inflation
- Tire pressure monitoring
- Lightweight materials
- Gap reducers between tractor and trailer
- Wheel covers

It is important for fleets to be proactive in spec'ing their trailers for the future as the trailer OE's will be pushing more fuel efficient equipment.

One last important point:

- The standards do not provide incentives for manufacturers to shift employment between domestic and foreign production **because the proposed standards will apply to vehicles sold in the U.S. regardless of where they are produced.**

An excellent resource to evaluate many of these technologies is the North American Council for Freight Efficiency (NACFE) and Trucking Efficiency. Their website www.truckingefficiency.org, has an array of Confidence Reports on many of the technologies referenced by the legislation, and they are available at no-charge.

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VOLUME 11 ISSUE 3

MARCH 2017

Understand Tire Load/Inflation Tables

The Tire and Rim Association (T&RA), established in 1903, is comprised of tire manufacturers, wheel manufacturers, and allied part supplier members who produce rim valves and rubber grommets. The association issues five annual publications covering tires and wheels. It is critical that the engineering standards for a given tire size and load range is the same regardless of manufacturer. This is also true for wheels and valves.

The "Year Book" from T&RA includes all of the load/inflation tables for every passenger, light truck, truck-bus, off-road, agricultural, industrial, and motorcycle tire & wheel. Their website to order publications is www.us-tra.org. They are based in the rubber capital of the world, Akron, Ohio.

Choosing the proper tire inflation pressure is always determined using the worst case load the tire will see under real world conditions. The "cold" inflation pressure is listed in all of the tables. Cold inflation pressure is determined at 68F ambient temperature and does NOT include any inflation pressure build-up due to vehicle operation.

Typical truck tire pages from the Year Book have been recreated for clarity and shown below:

Tire and Rim Association Standard												
TIRE LOAD LIMITS (lbs.) AT VARIOUS COLD INFLATION PRESSURES (psi)												
Tire Size	Usage	70	75	80	85	90	95	100	105	110	115	120
11R22.5	Dual	4380	4580	4760	4950	5205(F)	5415	5625	5840(G)	5895	5950	6005(H)
	Single	4530	4770	4990	5220	5510(F)	5730	5950	6175(G)	6320	6465	6610(H)

General Data (Inches)														
Tire Size		Design New Tire					Maximum Grown Tire					Minimum Size	Minimum Dual Spacing	Approved Rim Contours
Designation	Rim	Section Width	Highway Tread	Traction Tread	Deep Trac Tread	Overall Width	Highway Tread	Traction Tread	Deep Trac Tread	Factor	Spacing	Contours		
11R22.5	8.25	11.00	41.48	41.70	41.94	11.88	42.34	42.57	42.82	51.77	12.50	7.50, 8.25		

Every tire size is listed on two separate pages as shown in the above charts. One chart shows the load/inflation table for a given tire size and the second page or chart shows information about the approved rim along with section width, overall diameter, and minimum dual spacing data.

When using the load/inflation table, first pick your tire size and then locate the specific line if the tire is going to be used as a single or dual configuration. We've shown the example of a 11R22.5 tire size.

As you view the load limits chart from left to right, for each tire size and usage (single or dual), choose the worst-case tire load for the particular situation you have. Once you have identified that, navigate to the top of the chart to view the appropriate tire inflation pressure for that load. A load limit that is shown in BOLD will also have a load range letter designation which lets the user know that, as shown in the chart example, a load range G tire has a maximum load of 5840 lbs. for dual usage and would require a cold inflation of 105 psi. The higher the load range letter designation, the more load the tire can carry for a given size.

For the 11R22.5 dual tire we've shown as an example, you first determine what pressure you should be running in that tire on the drive position? If you know that in your fleet, you have 20,000-pound drive axle and your loads typically gross out, the worst case load the drive tire will experience is 5,000 pounds. According to the load/inflation table, a 11R22.5 run as a dual at 5,000 pound loads would require a minimum cold inflation of 90 psi. By viewing the table, you could see that 85 psi cold inflation would be too low a pressure because the maximum load for 85 psi is only 4,950 pounds. Additional information in the General Data table for a 11R22.5 shows that the recommended design rim width is 8.25" but that a 7.50" rim is also approved.

April 1, 2017
North American
Standard
Out-of-Service
Criteria
(Handbook &
Pictorial)
Available to
Purchase
[Here](#)

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VOLUME 11 ISSUE 4

APRIL 2017

Understanding Tires and Tire Pressure

Road alligators can be from either a new tire or a retread. All tires require air otherwise they will eventually fail.



Commercial truck tires are complicated so choosing the best tire for your specific service vocation is not straight forward. There are many varied tire makes/models available for each wheel position: steer, drive, trailer, and dolly.

Tire tread depths vary depending on wheel position and specific design criteria for the tire. If the tire is designed to maximize fuel economy, tread depths will be in the lower range, because the deeper the tread depth, the more heat will be generated as the tire is rolling down the highway. Excess heat leads to higher rolling resistance and lower fuel economy.

For fleets that run under a high amount of on-off road conditions, and therefore wanting to maximize traction, a deep lug tread design is required. Fuel economy is not great on these tires but it solves the issue of required traction.

Weight savings is usually important for fleets that gross out their loads; so choosing wide-base tires may be the solution. One widebase tire replaces two duals. Widebase tires that are specified on drive and trailer wheel positions, in combination with aluminum wheels, can save up to 1,000 pounds.

There are many examples of different load ranges associated with the same size tire. A good illustration is the common 295/75R22.5 size tire. This size tire may be available in three different load ranges (LR): F, G, and H (per the Tire & Rim Association Load/Inflation Table). See table below for ratings and psi recommendations for each LR for the example tire size:

295/75R22.5	Load Ranges		
Dual Application	LR F	LR G	LR H
Max Load (lbs.)	5070	5675	6005
psi	95 psi	110 psi	120 psi

Regardless of the tire load range, the tire dimensions are exactly the same. What is different between the three load range tires is the type and gauge of the steel cord used in the tread belt package and in the casing. A heavier and more expensive wire is used in the LR H versus, for comparison, the LR G tire. If a fleet knows the worst case load the tire will see in their specific service vocation, then it only makes sense to specify the proper LR tire. There is a big cost savings if you can run a LR G tire versus a LR H design.

Since air is what carries the load, it is critical to run the proper tire inflation pressure. All of the tire companies publish load/inflation tables for every tire size. When the tire pressure is correct for the load, tire traction and treadwear are optimized, because the contact patch, or more commonly called "tire footprint", is optimal. Tire underinflation is always a much worse scenario than running a little overinflated. When a tire is run underinflated only bad things will result: The tire footprint becomes longer when running underinflated; more rubber is on the road which leads to excessive heat buildup; sidewalls are also flexing more severely generating additional heat. Heat is a tire's worst enemy and will lead to irregular tire wear, fast wear, and even a blow-out. Tires that are run with reduced air for an extended period of time will eventually fail leaving rubber debris along the nation's roads.

Always work with your tire professional in choosing the proper tire design, load range and inflation pressure for your specific service vocation.

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VOLUME 11 ISSUE 5

MAY 2017

Reducing Fuel Costs & Improving Fuel Economy

NACFE announces 'Run on Less', the first-of-its-kind cross-country roadshow to showcase advancements in fuel efficiency. The 3-week event in September will track fuel efficiencies of the participants, culminating at the NACV show in Atlanta. See RunOnLess.com for more information

During the recent National Private Truck Council (NPTC), annual meeting held in Cincinnati, we attended an informative session on reducing fuel costs and improving vehicle fuel economy. Private fleets discussed what they have implemented that helps with both fuel and fuel economy. Some of what we learned:

It is important to work with your fuel suppliers to work out the best agreements at the best pricing. The truck stop channel is of course the most logical supplier of fuel. However, drivers usually prefer certain truck stop locations over another for a variety of reasons. Shower is better at Truck Stop A; more healthy food options at Truck Stop B; better service at Truck Stop C. It is important to have agreements with many fuel suppliers for this reason. With the continued shortage of qualified drivers, keeping drivers happy is a priority.

Many fleets offer cash bonuses to drivers who frequent truck stops where the fuel taxes are lowest. Fuel taxes vary by municipality and by state. Integrating routing software and fueling software will point the driver to the recommended fuel supplier. Fleets spoke about saving as much as \$200/week per truck if drivers just used the suggested fuel supplier in their travels. One fleet stated if a driver reached a threshold of 90% of the recommended truck stops for fueling, the driver would receive a \$100 monthly cash bonus. This was a big incentive in their driver retention efforts.

Hauling light loads over straight roads will always generate the best vehicle fuel economy. Driving over the mountains with fully

loaded trailers is the worst scenario for fuel economy. Another consideration is the weight of fuel. A fully loaded trailer may not be able to take on a full load of fuel at the truck stop because that could put the truck/trailer combination over the vehicle and highway load limits.

A big topic of conversation was the use of automatic transmissions. Fleets reported automatic transmissions generated anywhere between .5 and 1.5 mpg improvement in fuel economy. Older drivers, who are reluctant to operate a truck outfitted with automatic transmissions, can be an issue. The best solution brought forth by the fleets was to inform the driver that his current vehicle is going out of service for two weeks. The driver would then be given a vehicle spec'd with automatic transmission. In every case, after the two-week period, the driver will ask dispatch if he can keep running the truck with automatic transmission. Everyone loves them once they have had a chance to experience them.

Paying a driver a bonus for exceeding his baseline miles/gallon was also reviewed as the best way to improve vehicle mpg. Many fleets have found that paying quarterly mpg bonuses goes a long way. If, for example, the driver can save the company \$500/month in fuel by increasing vehicle mpg from 6.5 to 7.0 mpg, then the \$500 savings is split between the company and the driver. Other fleets pay drivers a bonus for reducing idling time.

Low rolling resistance tires in combination with automatic tire inflation, where air is added automatically to any low tire, was also discussed as a simple and quick payback for fleets to increase vehicle mpg.

Q&A PSI ANSWERS YOUR QUESTIONS

Q. When does the new greenhouse gas regulations go into effect for trailers ?

A. Calendar year January 1, 2018 is when GHG-2 is effective on new trailers. GHG -2 is a 10 year regulation that becomes more stringent during the 10 year period.

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VOLUME 11 ISSUE 6

JUNE 2017

Understanding Why Tires Lose Air & Tire Inflation Solutions

Tires are usually one of the first items a law enforcement officer will check during a roadside inspection. See Al Cohn's tips for maintaining proper inflation and reducing penalties [here](#).

There are really only four (4) reasons why commercial truck tires lose air:

1. Osmosis
2. Leaking valve stems/cores
3. Slow leaking punctures
4. Impact breaks

Tires are similar to a balloon. You inflate a balloon and it may stay inflated for several hours, a day, or sometimes even a couple of days. The osmosis rate depends on the gauge of the balloon material plus the actual materials used to manufacture the balloon. The osmosis rate also changes depending on the ambient temperature. An inexpensive balloon will always lose air more rapidly compared to the more expensive balloon.

Tires are not all simply black and round. A tire manufactured with several layers of chlorinated butyl rubber innerliner compound tends to trap the air inside the tire/wheel cavity very well so they have a very slow rate of osmosis. They also will have a higher price tag associated with the combination of heavier gauge innerliner and the better compound that is less prone to osmosis. This is only one of several reasons why tire prices vary.

Commercial truck tires typically lose between one and three psi per month just sitting there. Dynamically, the osmosis rate increases by about 60% when the tire is running at 65 mph resulting in actual loss of up to five psi per month. Trailer tires typically are not seen for many months at a time and inspected only yearly. As the

monthly osmosis rate accumulates on these tires, they can end up with some of the lowest air pressures.

Leaking valve cores and stems also lead to an additional loss of air pressure. Over tightening of valve cores is a common problem. Valve cores have a torque spec of only 4 inch-lbs. Too tight or too loose will lead to loss of air. Slow leaking nail hole punctures primarily in the tread area is a huge industry problem. In addition to losing several psi per month because of osmosis, a 20-penny nail can cause a tire to lose several psi per day.

Since air is what carries the load, running 10, 20, or 30% underinflated will lead to all negative issues with the vehicle and the tire. Underinflated tires will decrease fuel economy, increase punctures because of the longer tire footprint, reduce retreadability because of the increased heat generated by the casing, and total mileage for the tire will be reduced because of irregular wear.

There are several options available to monitor and keep tires properly inflated. TPMS (tire pressure monitoring systems) advise the driver that a tire has low inflation pressure. They are only effective if the driver reacts, finds air and then repairs the tire. Automatic tire inflation systems (ATIS) not only let the driver know that he or she has a low tire, but air is automatically added while the vehicle is rolling down the highway. The advantage is that the driver is always running the correct air pressure and not stuck on the side of the road.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. How often should I be checking if my tire pressure gauges are calibrated correctly?

A. The typical stick truck gauge is not very accurate even when brand new. Accuracy is in the +/- 3 psi range out of the box. Dropping on the hard concrete will only decrease the accuracy. Check your gauges at least weekly using a calibrated master air station.

Balancing Truck Tires with Weights



Example of cupping/scallop/wavy wear due primarily to a tire being out of balance.

Radial truck tires for class 8 vehicles weigh around 135 pounds for the common 295/75R22.5 drive tire size and in the 180-pound range for the 445/50R22.5 widebase tires. Having one of these excessively out of balance will have negative effects on tread wear and vehicle handling. Today's truck tires are built around the world with state of the art hi-tech manufacturing equipment. Tires are not always in perfect balance brand new out of the factory but they are pretty close. When radials were first introduced in the 70's, most fleets balanced steer and drive tires but only a very few balanced trailer tires. If a tire does not run "true", irregular wear and vibration will develop leading to premature tire removals. In addition to reducing the safety of the vehicle, fuel economy also drops significantly if the tire is hopping over the highway due to an imbalance condition.

The vast majority of fleets today will spend the time and money to balance their steer tires primarily because of the driver. With the driver shortage, fleets exert a lot of effort to keep the driver happy so they will stay with the company long term. Steer tires when out of balance will cause a vibration that the driver will feel.

The TMC of the American Trucking Association recently updated their recommended practice on balancing the tire wheel assembly with balance weights (RP 245A) which contains detailed information on this subject.

Prior to 2009, lead was the most commonly used material for balancing weights. Later that year, the EPA began an initiative called NLFWWI. This unusual and not very creative acronym identifies the National Lead-Free Wheel Weight Initiative. This was a joint initiative among government, industry and environmental groups and is strongly encouraged. However,

er, there are NO regulatory controls restricting the use of lead weights.

Everyone recognizes that lead is bad and very toxic. Some interesting statistics about lead weights:

- 50 million pounds of lead is/was used annually to produce tire weights around the world
- 1.6 million pounds of lead weight is estimated to be lost when wheel weights fall off during driving

If your fleet still uses lead weights, it is very important to be careful in the disposal and handling of these weights. Any employee who handles lead weights must wash their hands before eating or smoking. Even trace amounts of lead is very bad. Old wheel weights should be sent to the recycler and not be reused. Reused wheel weights are prone to falling off when the clips are sprung or not matched to the rim flange.

Wheel weights have different designs depending upon whether the wheel is aluminum or steel. There are several different styles of clip-on flange wheel weights. Work with your tire professional to insure your wheel weights clip-on contour matches the contour of your rim flange.

When it comes to aluminum wheels, the recommended practice is to first deflate the tire to 50% of the recommended tire pressure and apply mounting lubricant to the lower sidewall before attaching the weight. Also, the aluminum wheel producers recommend the use of coated wheel weights to protect the wheel finish from the effects of corrosion.

It is always a good idea for trucking fleets to stay away from using lead weights if possible. There are alternative materials now available in the marketplace.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. What is a good source of information to diagnose irregular tire wear conditions?

A. The TMC publishes the Radial Tire Conditions Analysis guide which is considered the Bible of the industry. To order click [here](#).

Fleet Tire Data – What is Important?

ANALYZE YOUR
SCRAP TIRE PILE
TO DETERMINE
IF YOUR TIRE
PROGRAM
IS REALLY
SUCCESSFUL



Every fleet manager understands how important it is to have a serious tire program because commercial truck tires are expensive and make a big impact to a fleet's bottom line. Tires play a major role in vehicle fuel economy and traction. Keeping a close eye on tire cost/mile is very important. Understanding how to maximize tire removal miles, protecting the tire casing for retreading, keeping tires properly inflated, and knowing when to remove/rotate tires are the keys to success.

One of the most important metrics any tire program would be to track tires that are related to roadside service calls. Vehicles stuck on the side of the road because of tire issues is costly and unproductive. You can also be subject to citations from the highway police due to safety concerns. In many cases, the vehicle load in the trailer may have a "just-in-time" delivery schedule; and if that schedule is not met, significant financial penalties will result. Emergency road service calls average over two and half hours and can be very expensive, especially after-hours. Additionally, the cost of the replacement tire or wheel in this circumstance is typically higher than the normal purchase price.

It is critical for a fleet to track why a tire failed on the road. Was it due to a slow leaking nail puncture or did the driver have shoulder/sidewall impact damage? Maybe the tire was a retread that had a nail hole repair failure. It may have been the tire was just worn down to the belts which led to the tire failure. Developing a database with this type of information will help the fleet manager determine what is required to reduce the roadside service calls. Maybe one tire make/model is simply more susceptible to punctures and damage. Fleets report a significant drop in tire-related roadside service calls with the use of automatic tire inflation systems on their trail-

ers. Industry studies over the years clearly show that tire failure due to running under-inflated is the most common cause of tire roadside service calls.

Driver education programs about tires are always an excellent idea for every fleet manager to implement. Part of the pre-trip inspection includes a visual inspection of all tires, looking for early signs of problems. These can include side-wall damage, punctures, uneven wear or under-inflated tires. The use of an accurate pressure gauge is critical, as some that have been knocked around the shop can vary by +/- 5 or more psi! Tires should be checked for any signs of damage/punctures and irregular wear. Air pressure should be measured with an accurate gauge. The TMC of the American Trucking Associations publishes both a Bias and Radial Tire Wear Conditions book. If a driver or technician sees a tire that is not wearing smoothly and evenly, these manuals will help identify exactly what condition probably led to the specific irregular wear issue. Tires which develop irregular wear will be removed early and the tire cost/mile will go up.

Implementing a good retread program will also help reduce overall tire cost/mile. Depending on the specific retread tread depth, compound, and design, retreads cost one third to one half compared to a new tire. Protecting the tire casing from cuts, snags, and stone damage will ensure that the casing will survive the retread process. Increased heat will develop in tires running underinflated because of the excessive flexing of the tire sidewall. Heat will lead to casing degeneration and a significant drop in retreadability. It is always a good idea to work with your local retreader who can supply data about every casing that you send over for retreading. Analysis of this data is very important to the overall success of your tire program.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. My fleet is comprised of container chassis. With the new GHG-2, Greenhouse Gas Emission rulemaking, am I obliged to be using tire inflation on my chassis?

A. Effective 1/1/2018, container chassis fall under the category of non-box trailers. As a result of the new rulemaking, low rolling resistant tires, in combination with either automatic tire inflation systems or tire pressure monitoring systems, will be mandated on new equipment. Existing chassis do not require upgrades to tire inflation systems and fuel efficient tires.



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VOLUME 11 ISSUE 9

SEPTEMBER 2017

Common Fleet Questions:

P.S.I. representatives will be at the following September events:

- Booth #4556 at the new NACV show in Atlanta September 24-28
- IANA Expo in Long Beach, Sept 17-20 in the Meritor Booth #738
- Judging at the TMC Annual Skills Competition in Orlando Sept 16-21

In our travels to fleets across the country, we get many questions about tires – here are a few common ones with our recommendations:

How often should we check the pressure of our tires?

The best answer is "it depends". For instance, it depends on how frequently you see the vehicles. Do they come back to the terminal every day, week, or only during their preventive maintenance scheduled time? It also depends on the specific service vocation. Pre-trip Inspection calls for drivers to check tires for any signs of punctures or damages and low pressure tires. Tires running on vehicles that are in city pickup and delivery service or in mixed service operations require more frequent inspection compared to tires running in line haul service. City and mixed service operations have much higher rates of sidewall damage and punctures. The other variable is the driver. Do you trust your drivers to use calibrated tire pressure gauges to check all eighteen tires during their daily vehicle walk-around?

What pressure should I be running in my tires?

Recommended tire pressure is first based on the specific tire make/model and load range. Is it running a single or dual configuration? And what is the heaviest load that the tire & wheel position will see in the real world? With that information, the recommended tire pressure can be found in load/inflation tables published on the website of all the tire companies. Air carries the load, so the heaviest load scenario is critical to determining the recommended tire pressure.

What is the recommended pull point for steer tires?

The DOT legal limit is 4/32" for steer tires.

However, this is not usually recommended for fleets who retread. Since retreads cost somewhere between one-third and one-half of a new tire depending on make/model, it is in the fleet's best interest to protect the tire casing so it can survive the retread process. That means running tires down to about 6/32" tread depth range, which will give plenty of rubber protection to the casing from cuts, snags, and stone drilling.

Why do my tires lose air?

There are several reasons why tires lose air. Tires are like balloons, just sitting they will lose anywhere between 1-3 psi per month through osmosis. Tires that are produced with innerliner compounds that trap air inside the casing are the best for keeping tires inflated. Tires also lose air from leaking valve cores. Over and under tightening a valve core will lead to air leaks. Valve cores should be torqued to 4 inch pounds, using a proper valve core torque tool. These tools are readily available in the industry and are typically inexpensive. The leading cause of pressure leaks are tread punctures in the tread area. A common #20 penny nail puncture will create a loss of several psi per day. The result would be a serious inflation issue in just a few days.

What should drivers look for on tires and wheels during their daily vehicle walk-around?

Check tires for any that are worn down to the DOT legal limit of 4/32" for steers and 2/32" for the other wheel positions. Look for any signs of irregular or uneven tire wear, which would be possible indicators of alignment and/or improper tire pressure. Identify any tires with punctures and sidewall cuts/snags. Replace any missing valve caps. Check wheels for any evidence of cracking, as well as wheel nuts for any signs of loosening or missing nuts.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. What is California EPA (CARB) planning to implement if any federal GHG-2 rulemaking is rescinded?

A. On August 31 in Sacramento, CARB hosted a full day workshop regarding GHG-2 implementation. Regardless of any changes to the current national GHG-2 rulemaking, CARB plans to move ahead and continue to implement. Regardless of any changes to the pending EPA/NHTSA GHG-2 legislation, CARB plans to move ahead with implementing their own version that will be equivalent or even more stringent.



COMMERCIAL FLEET TIRE DIGEST

The authoritative guide to reducing commercial tire expenditures from Pressure Systems International, the global leader in Automatic Tire Inflation Systems

VOLUME 11 ISSUE 10

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What are Important Tire Attributes for Your Fleet?

GHGII regulations go into effect Jan 1 2018. Make sure you know how it will impact your fleet. Go to [here](#).

When it's time to select the best tire make/model as well as retreads that work best for your fleet, there are many questions which need to be answered. Every fleet is faced with different issues when making this determination based upon their specific operation. Most fleets have vehicles which run under various service vocations, which of course will require specific tires depending on wheel position.

Let's address the various considerations:

- Initial tire buying price
- Retreadability of the tire casing
- Fuel economy
- Removal miles
- Susceptibility to developing irregular and uneven wear
- Tire traction

It is only logical that a low purchase price would make the choice easy for a fleet manager and their finance person. However, fleets should understand their full cost of ownership in terms of total cost/mile including retreads; and that the purchase price is only part of the cost equation. Historically, even though all tires are black and round, they are not created equal. Tread depth, compounds, steel wire gauge and tread design will significantly affect fuel economy, mileage, traction and retreadability. The lowest priced tire may only achieve one retread per casing compared to the higher priced tires which will get two or three retreads. Fuel economy could be improved as much as 3% with the more expensive tire designs.

Tracking cost/mile over multiple retreads takes some serious effort. It is not simple. The cost calculation should include the initial purchase price, cost of each retread, casing credit, scrap disposal fees, mounting & dismounting charges, tire repair charges and any rebates offered from your tire suppliers. Tracking miles of the original

casing and each retread also becomes challenging. Branding every tire with a unique tire identification number is essential to this process. It is a lot for a fleet to record odometers when a tire is installed or comes out of service. If a tire is repaired and then reapplied on another wheel position, a new set of complexities enter into the equation. Unless a trailer is equipped with a hubometer or an ABS that tracks mileage, determining mileages of trailer tires is almost impossible. Many fleets simply estimate trailer tire miles based on the installation and take-off dates.

Tracking vehicle fuel economy is always very difficult. 95% of the time, tractors are NOT married to trailers. With many fleets running a 3:1 trailer-to-tractor ratio and various tractor models/specifications, the results become complicated. In addition, a misaligned trailer will have a serious negative impact on vehicle fuel economy. Underinflated tires will play a major role in vehicle fuel economy as well as the specific tire make/model that's chosen and its tread depth, design and compounds.

Some tires are less susceptible to developing irregular wear. When tires develop irregular wear conditions such as shoulder cupping, heel/toe wear and depressed ribs, they will be bouncing as they roll down the highway. The result is fuel economy drops and tire removal miles are dramatically reduced.

Tire traction can be an issue when tires are worn close to the minimum DOT limits of 4/32" for steer and 2/32" for drive and trailer tires. Traction is always the best with new rubber.

The fleet manager must take all of these variables into consideration when making the ultimate decision on what is the best overall tire combination to be running in their fleet. It is always recommended to work with your local tire professional in making tire decision choices.

Q&A PSI ANSWERS YOUR QUESTIONS

Q. What should my drivers be checking in their morning walk around when it comes to tires?

A. Checking tire pressures with a calibrated tire gauge (not a baseball bat), looking for any sidewall cuts/tears, identifying tires with irregular wear and inspecting tread for punctures are all important.

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the global leader in Automatic Tire Inflation Systems*

VOLUME 11 ISSUE 11

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Setting Your Tire Pressure with Automatic Tire Inflation Systems

How do your
tire costs
stack up?

To find out, see
ATRI's (American
Transportation
Research Institute)
analysis of the
operational cost
of trucking,
[here](#)

Automatic tire inflation systems, better known as ATIS, have been around for almost 25 years. ATIS is primarily used by the trailer and chassis industry to keep tires properly inflated ALL the time, even when the trailer is moving. Air is added directly to the tires whenever one or more drop below the cold pressure setting set by the regulator in the control box. The driver is notified by an indicator light mounted on the trailer or chassis, visible through the side view mirror. When the light is illuminated, the driver should then find a place to safely pull over and inspect the tire for the cause. Providing that nothing catastrophic has occurred, the driver can continue with their delivery and alert maintenance that they have a tire requiring attention.

Until the inclusion of trailers in the Green-House Gas Regulation – Phase II (currently on hold pending resolution of a Stay order by the US Court of Appeals), ATIS remains an optional feature available on all trailers. However, ATIS is so popular that most estimates put over 60% of all new trailer and chassis production for N.A. are built with ATIS. For the fifth straight year, ATIS was also included with the TMC SuperTech competition, acknowledging this continued upward trend.

Adopting ATIS for the first time provides the perfect opportunity to revisit your trailer tire cold pressure setting. When asked what setting the system should be set to, most quickly respond with "The same pressure as we have been running", which in many cases is not optimal for one of the following reasons;

- It was set to compensate for air loss because the equipment may not be seen for a long time
- It is easier for maintenance to have a single pressure for all steer, drive, and trailer tires
- It was based on maximum trailer loads that may have since changed

The use of ATIS will provide significantly better control over the pressure operating

range, as well as optimizing pressure for a given tire position (trailer vs. drive vs. steer). The correct pressure is based on the worst case load the tire will see in actual service. Air is what carries the load so you cannot base the pressure on light or average loads. All tire manufacturers publish load/inflation tables, and you should consult your tire provider to help identify the correct pressure.

Consider the following example: In a case where the maximum load corresponds to an optimal cold pressure of 90 psi, but the trailer does not have ATIS. To compensate and allow for air loss, the cold pressure is set to 100 psi, 10 psi above what the load tables specify. If the fleet had previously seen numerous situations where the tire was found to come back at or below 80 psi, then the total operating range can easily be over 35 psi (assuming a hot pressure of 115 psi) and a mid-point of 97.5.

The same trailer equipped with ATIS and with a control box setting of 100 psi will never have a low tire (excepting a catastrophic issue such as a sidewall tear). The resulting pressure range would be 100 (cold) to 115 (hot) for only a 15-psi spread and effectively raising your average pressure over the duty cycle. Therefore, using ATIS allows the fleet to set the system for the maximum load (90 psi) by not having to compensate for pressure decreases.

This chart summarizes the differences between the three scenarios:

	Original Setting Before ATIS	Original Setting with ATIS	Adjusted Setting with ATIS
Cold Pressure	100	100	90
Air Loss	20	0	0
Max Pressure	115	115	105
Min Pressure	80	100	90
Range	35	15	15
Average Pressure	97.5	107.5	97.5

Always work with your tire professional to assure your fleet is running the correct pressure to carry the load.

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