



# **Tire Pressure Management Systems TPMS**

2013 National HDT Rally

**TPMS:**

**Don't become an  
Unintended Pedestrian**

# TPMS: Unintended Pedestrian

- The way law enforcement refers to people who find themselves on a highway then didn't plan to be there
- Like when you have a flat tire
- Road shoulders are not big enough to park on and have you out of the traffic

# TPMS

- Nothing can prevent road shrapnel cutting a tire
- But tire pressure leakage can be detected in advance of a tire failure and give you time to exit the highway to a safer place to take corrective action.

# TPMS

- A Tire Pressure Management System (TPMS) monitors the pressure in your tires and give you a warning to avoid being an unintended pedestrian.

# TPMS



- But I thump my tires every time I stop
- It is hard to thump your tires at 55 MPH.

# TPMS - Benefits

- Checking tire pressure without stooping
- Checking tire pressure without releasing pressure
  - Less air pressure loss over time

## How Important is Temperature Sensing?

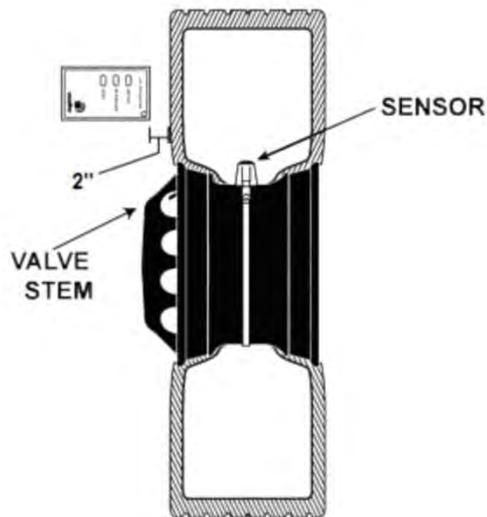
Gas Law -  $PV = nRT$

In simple terms, an increase in Temperature will increase the Pressure

(A tire is a fixed Volume if the tire is not collapsed)

- P = Pressure
- V = Volume
- n = amount of substance
- R = Universal Constant
- T = Temperature

# TPMS – Temperature Sensing



Temperature is most valuable in sensing wheel hub problems.

SmartTire was probably the best sensor system for measuring temperature.

The sensor is attached to the wheel and can sense temperature build from wheel bearing and brake issues.

Of course SmartTire is no longer available.

# TPMS - Systems

Some of the systems in alphabetic order

- Doran
- PressurePro
- TireTraker
- TST

# TPMS - Sensors



Typical Wheel sensor similar to the ones from:

- Doran
- PressurePro
- TireTraker
- TST

# TPMS - Sensors



Some systems offer replaceable batteries

- Electronics are epoxy sealed
- Seal is subject to failure during battery change
- Battery contacts are not sealed

# TPMS - Sensors



## Pass-thru sensors

- Offered by TST
- Adds length to the tire stem
- Can be a problem on Toad wheels

# TPMS - Sensors



## OEM Like wheel Sensors

- Offered by TST
- For Toad wheels only
- Needs to be removed to change battery

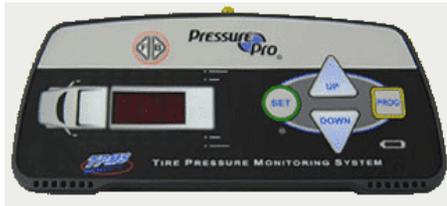
# TPMS - Monitors



## Doran Monitor

- Up to 22 sensors
- Uses DC power
- Cigarette Lighter
- Hardwired

# TPMS - Monitors



## PressurePro Monitor

- Up to 34 sensors
- Uses DC power
  - Cigarette Lighter
  - Hardwired

# TPMS - Monitors



## TireTraker Monitor

- Claims 30 days on one charge
- not recommended to be hardwired

# TPMS - Monitors



## TST 510 Monitor

- Up to 34 sensors
- Uses DC power
- Cigarette Lighter
- Hardwired
- Note sensors not battery changeable

# TPMS - Monitors



## TST 507 Monitor

- Up to 22 sensors
- 5-7 days on charge
- can be hardwired but not recommended

# TPMS - Monitors

Monitor observations:

- LCD displays can be hard to read in bright lights, typical in HDT cab
- Non-hardwired power can lead to forgetting to recharge monitor
  - Lower cost systems for battery systems

# TPMS - Monitors



Why 34 sensors display?

- Truck (6)
- Trailer with spare (7)
- Toad with Spare (5)

# TPMS - Repeaters

Most of the TPMS system have come to the realization that many RV configurations require extending the signal reception for the monitors.



One option is an external antenna



A second option is a signal repeater located between the monitor and the farther sensors (Toad)

# Discussion



# Tire Pressure

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# Tire Pressure - Cold

Tire pressure is set when the tires are cold

- This does not mean thermometer cold
- It means before moving, i.e. first thing in the morning
- Don't change the pressure the rest of the day

## Tire Pressure – Max PSI

Should I always fill my tires to Max PSI?

- If you know the actual load on your tires, you can set the tire pressure to a value for your load
- If you don't, then set to Max PSI

## Tire Pressure – Over Max PSI

The Max PSI on the tire sidewall is for Cold setting

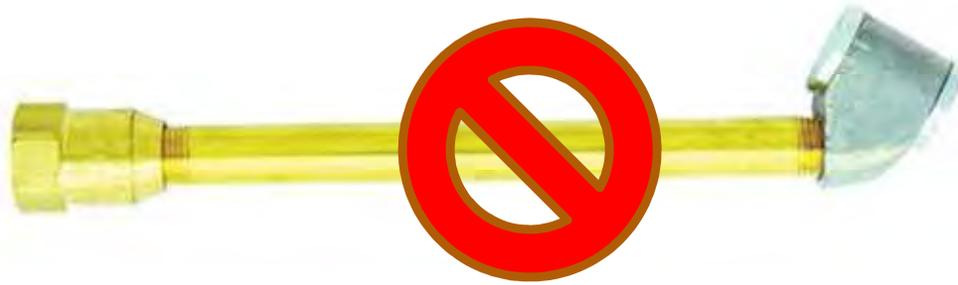
- The 20+ degrees pressure rise as the tire is being used is calculated into the Max Cold numbers

## Tire Pressure – Over Max PSI

What if my pressure goes way too high

- Determine what is going on.
- If you bleed air pressure out, you may under-inflate your tire

# Tire Pressure – Air Chuck



Get a long  
chuck

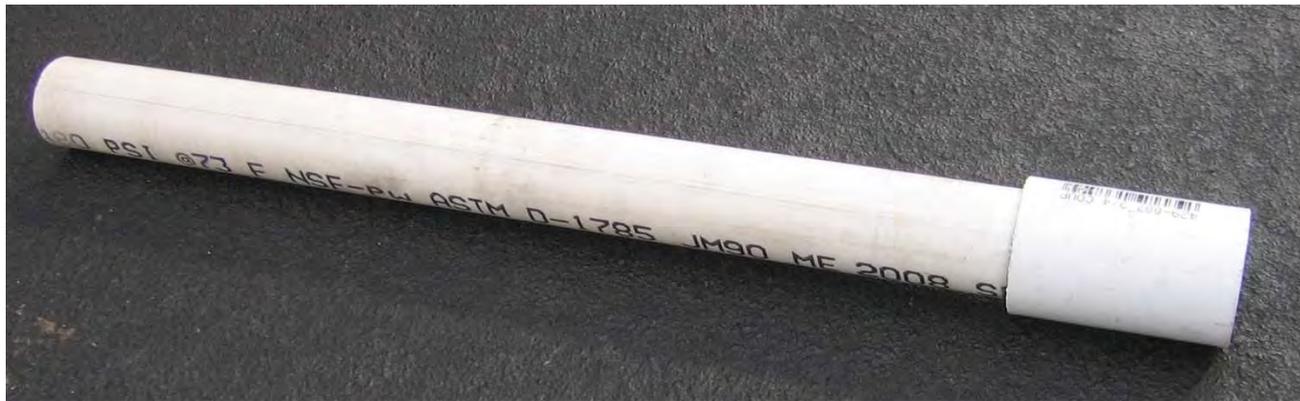
Straight ahead  
for inner dual  
stem



Straight back  
or angled for  
outer dual  
stem

# Tire Pressure – Sensor Mount

Its too hard to install a TPMS sensor on in inner dual stem.



Make a tool from 1" PVC

# Discussion