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Prevention of Vehicle Tyre Blowouts.



Brief description of event:

Over time DBP has experienced a number of tyre failures – particularly blow-outs that had the potential to cause serious injury and extensive vehicle damage. The blow-outs have mostly been at speed and if road conditions had been different the outcomes could have been significantly worse.

Extent of injury/damage:

At present we have had only the damage to tyres and rims, but previous blow outs have left some personnel within the vehicle extremely shaken by the experience.

Contributing Factors:

The individual tyre blow out incidents have not clearly identified a single contributing factor however there are a number of well known factors which can contribute to tyre blowouts, the most common are:

- Under-inflation; subsequently causing over heating and separation of the tyre tread and sidewalls fibres.
- Mechanical Tyre damage; affecting the internal steel and fibre reinforcement.
- Overloading; creating excessive flexing and subsequent heat generation, again causing the separation of the reinforcement layers within the tread and sidewalls.
- Out of date tyres; Tyres have a 4 year validity period from date of manufacture which is displayed on the tyre side wall (week and the year manufactured). Time after this period increases the risk of tyre blow-outs. Side wall and tread area crazing or cracks also indicates a tyre with the increasing risk of failure.
- Incorrectly rated tyres. Tyres have ratings for Load, Speed, Temp, Traction and Wearing. A quick check can ensure that the tyres are rated to the work, load and operating conditions (ambient temperature, wet roads, gravel etc) required. The vehicle handbook for tyre specifications should also be consulted, to ensure that the tyres/wheels fitted are the correct size and profile for that vehicle. Variations from the vehicle manufactures sizes can create errors in speedometer accuracy and handling capabilities. Ensure all wheels including the spare are the same.

Local action to be taken:

The following checks will assist in the prevention of tyre blowouts. The first is the prestart checks of the tyres.

- Check tyre cold standing pressures, ensuring the load to be carried is taken into consideration. Many of the DBP vehicles are loaded to maximum capacity and as such the tyre cold operating pressures have to be increased to take the added weight into account. Most tyre manufacturers will recommend pressures above that of the vehicle manufacturer for maximum tyre wear, braking and steering abilities and prevention of tyre failure through over-heating. Most vehicles will tolerate a 50 kPa increase above the vehicles manufacturers' recommendation safely. A tyre check of any excessive sidewall bulge against the road surface is a quick indication of under-inflation. All DBP vehicles are required to carry a vehicle tyre pressure gauge.

Note: Do not exceed the max pressure warning on the tyre side wall.

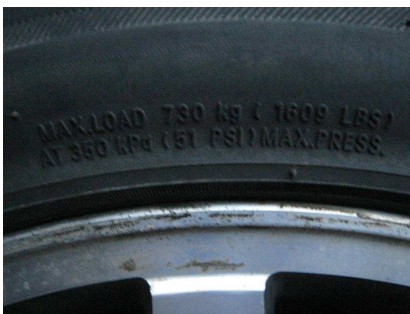
- Check tyres do not have any side wall and tread cuts or deformities which may indicate rock damage beneath. Check for any previous emergency tyre leak repair plugs. These are temporary leak repair only and tyres should be removed from the vehicle ASAP and arrangements made for permanent leak repair.
- Ensure the total vehicle weight, including fuel and passengers, does not exceed the tyre maximum rated weight load capacity for each wheel. Check that the tyre Load Rating capacity is sufficient for the loads carried when new tyres are fitted.
- Out of date tyres. All tyres carry a manufacture date or TIN (tyre identification number) – its current production date, stamped as a 4 digit number (post the year 2000) as week/year EG: 4209, manufactured on the 42 week of 2009. Tyres generally have a 4 year validity date from date of manufacture, tyres over the 4 year validity period have an increased risk of blow-outs. There is no fixed expiry date but most manufacturers of tyres believe 4 to 6 years past the manufactured date is reasonable. Ensure new tyres that are fitted are as close to the date of manufacture as possible. Check for crazing or cracking around the sidewall or within the thread groove depths, as an indication that the tyre is not affected by age, UV, heat and water penetration problems.

ZERO HARM Learning's:

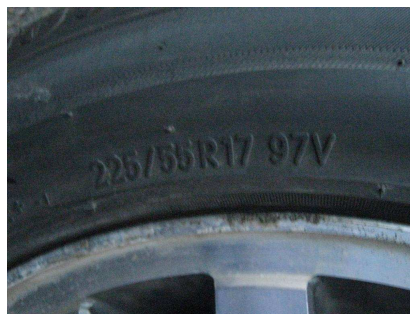
- Ensure pre start visual checks are completed of the tyres, including the spare before each journey.
- Regularly check tyre pressures.
- Visually check tyres during journey breaks.

There is currently a trial under way within DBP of a new on board vehicle tyre pressure monitor.

Typical passenger car tyre details



Typical Max load and pressure rating, 730 kg @ Max Pressure of 51 PSI



Typical size, load and speed rating
Tyre width 225 mm, 55% aspect ratio of height to width, R = radial tyre and 17 "dia wheel. 97 load code = 730 kg and Speed code V = max speed of 240 kmh



TIN 2609 – current production date 26 th week of the year 2009

FURTHER INFORMATION - Jeff Holt - HSE Field Advisor - 0408 138 072