



Tyre Care & Safety for Agricultural Tires

Operating Instructions

Some Points Worth Remembering;

The BKT Agricultural tires are designed for Agricultural tractors, Trailers & Implements. Before using them for any other type of work, consult the manufacturer. Improper handling, poor maintenance and improper driving habits can harm these costly tires and consequently raise the operating cost of your equipment substantially. Therefore, please read carefully and follow all:

1. Tyre selection

When selecting a tyre, look for the one most suitable for the job. Tyre size and PR should be determined after weighing the loads on each wheel according to accepted procedures or calculating the loads. Generally it is recommended to choose the tyre that carries the load with lowest the inflation pressure. After selecting the tires and mounting them do not overload the vehicle, for example, by adding sideboards.

2. Load capacity

- When determining the minimum tyre size necessary for any particular wheel position of a vehicle, the approved load and the maximum design speed of the vehicle must always be used as a basis.
- All tyre pressures refer to the “cold” tyre which has been standing outdoors or several hours, not exposed to intense sunlight

3. Proper Driving

To get the maximum service from your tyre, it is essential to adopt proper driving habits . Avoid chuck holes, tyre damaging hazards and refrain from strong spinning , sudden starting or braking maneuvers, high speed cornering, locking one wheel for sharp turns etc. All of these may harm your tires and shorten their service life.

General information on mounting of Farm tires

Mounting & Demounting

- Always practice correct mounting & demounting procedures.
- Before mounting the tires on the vehicle, check the wheels & rims & make sure that the vehicle is in good condition.
- Bead of the tyre to be correctly positioned on the rim.

- Agriculture tires are used basically for traction & these tires have a relatively low inflation pressure,
- therefore it is necessary to ensure correct position of the tyre bead when fitting the tyre under higher pressure.
- After the completion of the mounting process check the clearance between the wheels & the vehicle.
- Dual spacing
- Dual should not vary in their overall diameter more than 6 mm for tires of up to 8.25" cross section, and 12mm for tires with cross section of 9.00" and above. If this is not adhered to, the larger tyre is likely to fail prematurely.

For More Details on Mounting & Demounting of Tires, Please view Mounting & Demounting Procedures.

Storage

- Do not store tires for longer periods.
- tires/ tubes must not get exposed to direct sunlight during storage.
- Storage area must be free from dirt & oils & away from electric engines.
- The tires are to be stored in vertical position.

Dimensions

- Dimensions and tolerances are based on nominal ETRTO & T&RA standards.

Liquid Ballasting

- Water filling is done to increase traction power.
- Fill the tyre with water up to 75% of the tyre volume i.e. up to to the valve level, which leaves an air pocket of 25%.
- Inflating the tyre to the prescribed pressure, the tyre retains its flexibility.
- Done correctly this practice will not harm the tyre or influence its driving properties.
- In cold areas, add anti freeze substances, the recommended substances are calcium chloride 80% or Magnesium chloride 47%.

For More Details on Liquid Ballasting, Please view Liquid Ballasting.

Off –the –Highway tires are designed to operate with certain deflection OR 'Bulge'.

Correct air pressure ensure proper deflection which in turn assures proper traction, flotation, support of load and prevents excessive flexing of the tyre sidewalls.

Flexing is caused due to any (or a combination of) the following factors:

- Degree of deflection
- Load
- Frequency of deflection
- Speed
- Catalyst to deflection
- Inflation pressure

Inflation Pressure

Proper inflation pressure is the single most important feature of a good tyre maintenance programme.

'Published'- Inflation pressures are for Standard Loads.

Inflation pressures should be checked daily. Recommended inflation pressures based on total load on tires should be used. Always use valve caps to prevent loss of air.

Over Inflation – Over inflated tires do not flex as designed, do not absorb shocks, makes too much tension on both rubber & fabric making tyre more vulnerable to cuts, snags, impact breaks, concussion & rapid tread wear.

- Reduces the amount of tread contact with ground.
- In soft soil – digs deeper into the ground.
- Provides less flotation & traction.
- Tends to spin & skid due to less contact patch.
- Center of tread wear faster.
- Vehicle rides harder & vibrates more
- Causes more spillage & excess wear & tear of vehicle components / parts.

Under Inflation – Under inflation results in excessive flexing of tires, excessive heat generation, rapid shoulder wear or uneven wear.

Underinflated tires flex too much on sidewall, causing excessive internal temperature. This can cause permanent tyre damage, such as: –

- Flex breaks / Casing break up.
- Radial Cracks
- Tread OR Ply Separation
- Loose cords in band ply.
- Excessive bead rocking in the flange area.

It is very important to maintain the Tyre inflation Pressure. Tyre life varies depending on the inflation pressure.

Over inflation decreases Tyre life, however – under inflation tends to cause various premature failures which result in much greater decrease in tyre life.

Proper Inflation – tires are designed to carry loads up to the maximum specified at the inflation pressure for desired deflections, road contact, tread wear. Any neglect of inflation pressure will result in one or more of serious tyre failures or loss of tyre life potential.

Sound Inflation Program:-

- Cap on every valve.
- Accurate Pressure Gauges & should check against a master Pressure gauge regularly.
- Cold Inflation check whenever possible – Ideally weekly.
- Hot Inflation pressure checks – Daily.

Factors Influencing Tyre Life:-

Dual Tyre Assembly:-

- Same diameter Size Tyre
- Same construction Tyre.
- Preferably same manufacture.

Overall diameter should not vary more than 1 to 1 ½ inch, depending on the tyre size. The tolerance must be maintained or the larger tyre will be overloaded & may fail prematurely. Inflation pressure should not be increased or reduced to match the tires.

Overloading Kills tires:-

- To ensure maximum tyre life, never load off-the- highway tires above the recommended maximum limit.
- Before increasing the vehicle load capacity, be sure that tyre with adequate load capacity to be applied (Larger size and (or) higher ply rating.)
- Load is closely related to Inflation, Speed and Length of Haul.

Speed:-

tires should not exceed the maximum speed classification in relation with the load. Excessive speed results in higher heat generation, due to increase in the rate of flexing that takes place. This can result in tires failing due to heat separations, casing fracture due to impact & increased rate of tread wear.

Driving Habits (AVOID ...)

- Sudden braking.
- Sudden acceleration.
- Cornering at high speeds.
- Still load on tires.
- Spinning of drive wheels.

Few common premature Tyre failure & its causes:-

Impact Break / Tread Concussion:-

CAUSE - TYRE BURST OR CASING FRACTURE REASONS:-

- Mainly due to over inflation – excessive air pressure in tyre, in relation to load. Carcass or ply cords are overstretched and any slight impact or cut result in tyre blow out.
- Badly maintained road with potholes & spillage also can lead to tread concussion or casing fracture.

Deflation Damage / Run Flat:-

CAUSE - LOSS OF AIR FROM TYRE.REASONS:-AIR LEAK IS DUE TO,

- O' Ring
- Valve core / Valve assembly
- Defective Rims – Bent rim / Pitted rims
- Damage on the tyre bead seat area incase of Tubeless tyre.
- Through cut on tyre.

Bleeding of tyre / slow loss of air from the tyre – result in excessive compression of cords or plies on sidewall and the cords are pulled out or broken.

HOW TO AVOID SUCH FAILURES:-

- O' RING
- Always use new O-ring on every fitment.
- Lubricate O-ring with mild vegetable oil soap solution.
- Never use grease / petroleum based oils to lubricate rubber components.
- Never use a used or damaged / deformed O-ring.
- Always use a standard company O-ring as replacement.
- VALVE CORE / VALVE ASSEMBLY

- Always use valve cap. It avoids mud / dust & small stone particles entering valve core pin.
- Metallic valve cap also arrest minor air leak if any through valve core.
- Check valve core & valve assembly joints with soap solution, if any leak found rectify immediately.
- RIMS
- Old or poorly maintained rims will lead to corrosion / rusting due to humidity / water content in the air, inside tyre. Over a period of time, small pits / holes are formed on the inner surface of the rim.
- Periodically all rims should be cleaned & give anti-corrosive treatment (primer & painting) by which the life of the rims also can be increased.
- IMPROPER BEAD SEATING
- Bent rim / severely run out rims, can have less contact with the bead seat – makes provision for air loss.
- Bead seat not properly seated on rim.
- To check the proper seating of the bead with rim centering lines.
- DAMAGED BEAD SEAT IN TUBELESS TYRE
- Happens due to improper handling of tubeless tires.
- Improper fitment.
- Defective rim.
- TYRE PUNCTURE & THROUGH CUTS
- Mainly due to poor / bad road surface conditions. Potential for tyre cuts & through cuts.

Tread Looseness (or) Heat failure:-

MAJOR CAUSE - EXCESSIVE HEAT BUILD UP IN TYRE.REASONS:-

- Under inflation or overloading.
- Mismatch of tires
- Speed

Uneven Tread wear:-

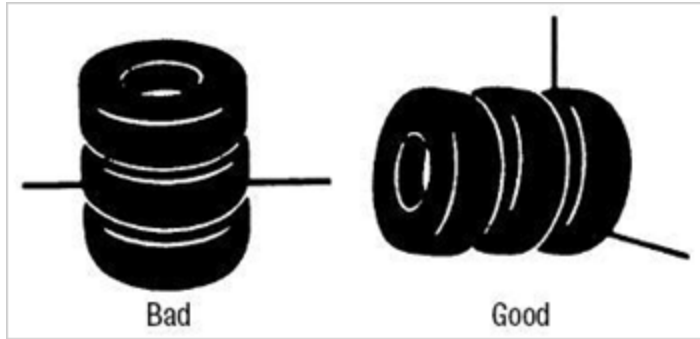
MAJOR CAUSE - MAINLY DUE TO VEHICLE MISALIGNMENT.REASONS:-

- Defective steering geometry.
- Defective / worn out wheel bearing.
- Worn out bushes / pins.

Handling & Storage of Tubeless tires

Storage of tires:-

tires wherever possible, should be stored in a cool and dry place. Storage out of doors is not recommended. Tubeless tires should be stored upright / vertical position to avoid forcing the beads together.



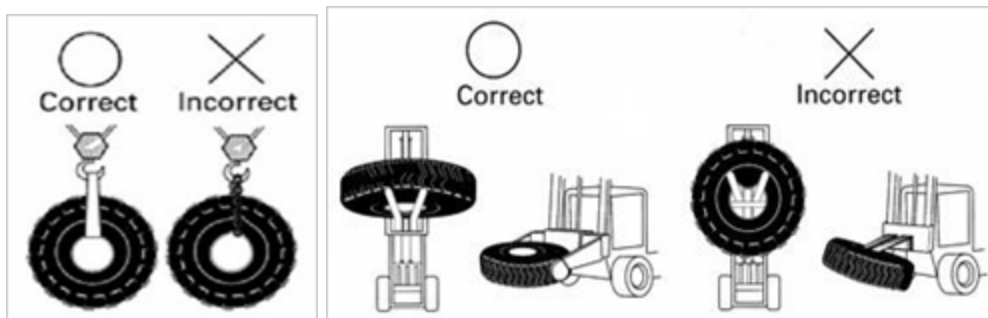
Factors contributing to deterioration of stored tires, tubes, flaps & o-rings are:

- Light (Particularly Sunlight, which is rich in ultra-violet rays.)
- Ozone (From electrical generators & arc welders etc.)
- Heat
- Air currents
- Oils, grease, fuels & other solvents.
- Water
- Dust & dirt.

Handling & Transporting tires:-

When transporting tires particular care must be taken to ensure that the beads and inner liner of the tyre are not damaged. Damage of even a minor nature, could result in premature tyre failure due to air seeping into the body of the tyre, causing a separation.

Illustrated below are the correct and incorrect methods of transporting a tyre.



Courtesy of BKT Tires