

Tyre handling workshops

High stacks



Photo courtesy of Hawleys (Tyre Services) Ltd

The problem

Lifting of tyres to and from a high location is awkward and potentially hazardous. Stretching to reach the top of the stack creates a posture with an increased risk of injury. Also, high stacks may collapse onto people. The weight of a high stack can damage the walls of tyres at the bottom. Manually handling tyres of over 10 kg in weight onto high stacks creates the following risks:

- a high vertical lift;
- bending sideways while reaching high up;
- reaching away from the body at high and low levels.

The solution

As a general rule, do not store tyres 'polo' style above shoulder level. Keep the heaviest commercial tyres (50-70+ kg) on the roll, or in low 'polo' stacks.

The practice of 'lacing' tyres creates the difficulty of extracting tyres from the top without unbalancing the stack. Generally, stacks of tyres stored this way should be limited to a height of 1.6 m.

Limiting the height of stacks to shoulder height minimises the risk of injury. It also reduces the danger from collapsing stacks and damage to tyres at the bottom. Shoulder height is different for different workers and an average needs to be achieved. Some companies have introduced a height limit of 1.6 m. This is a reasonable height.

Rolling tyres up steps of other tyres (while standing at ground level) is a useful means of reducing the forces reached, but takes some skill. Avoid rolling heavy tyres up large steps (greater than 300 mm), as this needs considerable force.

Risk assessment

A typical risk assessment for these issues, using HSE's Manual Handling Assessment Chart.

Load weight/frequency G0/A4	The load is between about 10 kg for a 225/70 R15 van tyre, but up to 18 kg for a 295/40 R20 4x4 tyre.
Hand distance from lower back A3/R6	There is some reaching away from the body when lifting tyres into racking at both high and low levels.
Vertical lift distance R3	The tyres are handled between knuckle height and shoulder level (and in some cases above).
Trunk twisting/sideways bending A1	There is often some trunk sideways bending associated with this operation when reaching high.
Postural constraints G0	There is often a lack of space between stacks.
Grip on the load G0/A1	The grip on the tyres at the bead is generally good. When unstacking the grip can be more difficult, especially if at the limits of reach.
Floor surface G0/A1	Since the task is performed inside, the floor surface is typically good, but can be uneven or lack 'housekeeping'.
Other environmental factors G0	Since this operation is usually performed inside, the lighting and thermal environment is usually good
Overall score	14–16

Stacking commercial tyres

Stacking commercial tyres 'polo' style more than 8 or so high results in greater risks. Practiced workers do the job with the impression of relatively little effort; but the biomechanical loads on the body are considerable. The table below shows a MAC score table for the operation performed for short periods, when a few tyres may be handled at a time.

Load weight/frequency R6/P10	Typically the load is up to a maximum of about 50-70 kg. The combination of load weight and frequency of handling will put the task within the high risk zone.
Hand distance from lower back A3/R6	There is some reaching away from the body when lifting tyres into the stack at both the high and low levels.
Vertical lift distance R3	The tyres are handled between knuckle height and shoulder level (and in some cases above).
Trunk twisting/sideways bending A1	There is often some trunk sideways bending associated with this operation.
Postural constraints G0	There is often a lack of space between stacks.
Grip on the load G0	The grip on the tyres at the bead is generally good.
Floor surface G0/A1	Since the task is performed inside, the floor surface is typically good, but can be uneven or lack 'housekeeping'.
Other environmental factors G0	Since this operation is usually performed inside, the lighting and thermal environment is usually good.
Overall score	14-21