

## TYRE HANDLING WORKSHOPS

### High stacks

#### 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 10kg 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 1.6m.

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 1.6m. 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.

Lift truck tyres as a 2 or 3-man team whenever possible.

## Risk assessment

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

<b>Load weight/frequency</b> <b>G0</b> <span style="color: green;">■</span> <b>A4</b> <span style="color: orange;">■</span>	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.
<b>Hand distance from lower back</b> <b>A3</b> <span style="color: orange;">■</span> <b>R6</b> <span style="color: red;">■</span>	There is some reaching away from the body when lifting tyres into racking at both high and low levels.
<b>Vertical lift distance</b> <b>R3</b> <span style="color: red;">■</span>	The tyres are handled between knuckle height and shoulder level (and in some cases above).
<b>Trunk bending/sideways bending</b> <b>A1</b> <span style="color: orange;">■</span>	There is often some trunk sideways bending associated with this operation when reaching high.
<b>Postural constraints</b> <b>G0</b> <span style="color: green;">■</span>	There is often a lack of space between stacks.
<b>Grip on the load</b> <b>G0</b> <span style="color: green;">■</span> <b>A1</b> <span style="color: orange;">■</span>	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.
<b>Floor surface</b> <b>G0</b> <span style="color: green;">■</span> <b>A1</b> <span style="color: orange;">■</span>	Since the task is performed inside, the floor surface is typically good, but can be uneven or lack 'housekeeping'.
<b>Other environmental factors</b> <b>G0</b> <span style="color: green;">■</span>	Since this operation is usually performed inside, the lighting and thermal environment is usually good.
<b>Overall Score</b>	<b>14–16</b>

## 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.

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

This guide has been prepared by the Tyre and Rubber Industries Safety Action Group (TRISAG) in consultation with the Health and Safety Executive (HSE). It has the support of the Retread Manufacturers Association (RMA) and the British Tyre Manufacturers Association (BTMA). TRISAG wishes to record its appreciation and thanks for the help given and information provided by the Health and Safety Executive.