



# THE BEST WAY TO...

## Manual handling techniques

There are many guidelines on employee health and safety. It is the employer's responsibility to ensure that employees have been instructed in good manual handling techniques to minimise strain on their muscles and joints when lifting, pulling and pushing.

Employees must receive appropriate instruction and training in manual handling techniques; that is, in how to work without straining themselves. For example, employees should know good techniques for lifting, pulling and pushing, how to use suitable mechanical aids, and how to ensure appropriate space for the task at hand. Furthermore, there are weight limits for what employees can safely lift.

Read about the guidelines for manual handling below and find practical tips and advice.

[This PDF document contains more information about:](#)

- Working heights
- Lifting
- Manual handling techniques when lifting
- When lifting
- When stocking shelves or display cases
- Pushing and pulling
- Important factors in pushing and pulling
- Manual handling techniques when pushing and pulling transport equipment
- When pushing and pulling
- 10 tips for safe lifting

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### WORKING HEIGHTS

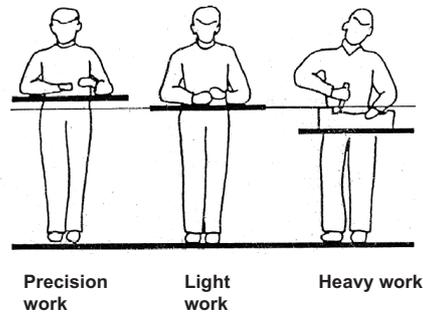
A good working height depends on the task at hand, for example whether it involves reading text and visually inspecting products, tasks of longer duration such as labelling and preparing products, unpacking heavy products, etc.

- Precision work: slightly above elbow height
- Light work: 10-15cm below elbow height
- Heavy work: 20-25cm below elbow height

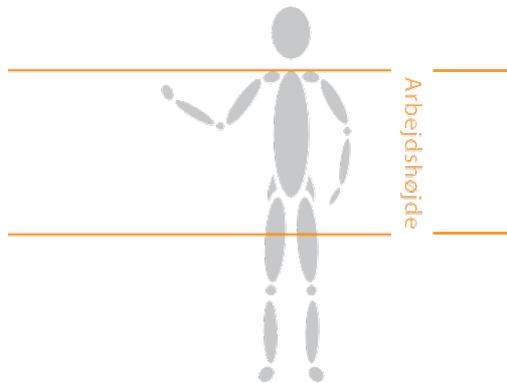


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Working heights during lifting should be between mid-thigh and shoulder height. Heavier products, however, should not be lifted above elbow height.



### LIFTING

Generally speaking, the physical strain of lifting increases the heavier the load and the greater the reaching distance from the spine to the grip point on the load. Heavy lifting with long reaching distances and at heights below mid-thigh or above elbow height should therefore be minimised.

#### Assess work tasks that involve lifting

Assess working procedures and routines with a view to minimising heavy lifting, for example by using proper manual handling techniques and mechanical aids. It's important to not only look at the individual lifting task but also at the number of lifts; what is lifted, where from and where to; and for how long lifting work is performed. It's important to assess whether the lifting activity is a main daily function of the employee or whether the employee only performs occasional lifting followed by periods with other, non-physically demanding tasks.

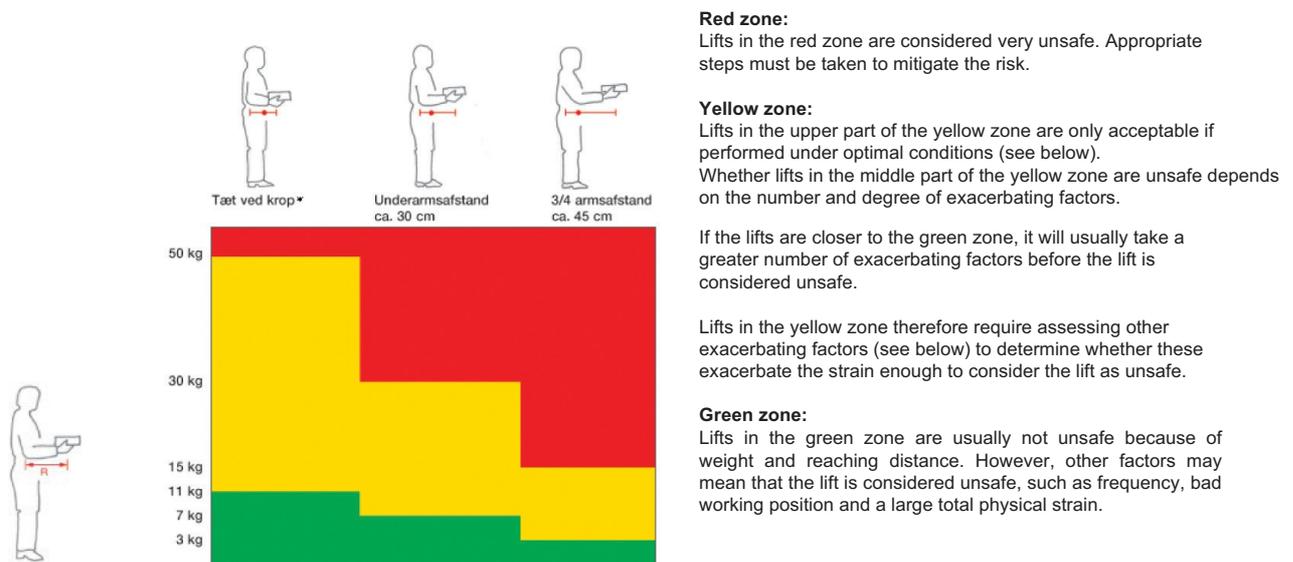


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### Assess lifting risks

The Danish Working Environment Authority (DWEA) has designed general guidelines with limit values for how much it is safe for a person to lift. These consider the reaching distance from the spine to a line passing through the centre of gravity of the load:



(From DWEA guideline D.3.1. on lifting, pulling and pushing).

### Optimal conditions

Optimal conditions are when the lift can be performed in front of the body between mid-thigh and elbow height, when the load is suitable for shorter periods of manual handling, when there is at least two minutes between each lift, when no carrying is involved, when a stable footing can be maintained and when there's an appropriate indoor climate.

### Exacerbating factors

When exacerbating factors are at play, the limits for safe lifting fall to below what is indicated in the figure.

Examples of exacerbating factors:

The product/load

- The load is bulky or awkward, which leads to a poor working posture for arms or back
- It's difficult to get a good grip on the load, for example it is slippery or has no grip points
- The load is unstable
- The content of the load/weight may shift



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### Working position and physical strain

- Lifting is from an awkward angle/involves awkward reaching
- Involves twisting the torso, forward or sideways bending
- Low lifting, i.e. below knee height
- Lifting, etc. above shoulder height
- Lifting from the side or with one hand
- The object has to be placed very precisely
- Lifting at a high pace
- Work takes place while seated, squatting or kneeling

### Workplace

- Restricted space
- The base/surface is unstable, uneven, slippery or sloping so that there is a risk of falling
- There is exposure to cold temperatures and draught
- Poor lighting so that there is a risk of falling

### Other factors

- Repetitive lifting
- Prolonged lifting
- Lifting is the employee's main function
- The employee is also exposed to other physically demanding work that also causes back strain
- There is no possibility to rest or take breaks, for example by doing other, less physically demanding work or work that requires the use of other muscle groups

### Limits for two-person lifting

Two-person lifting (also known as team lifting) should generally be avoided. If the load is too heavy for one person to lift, a mechanical aid should be used instead.

In exceptional circumstances, two-person lifting can be allowed. Two persons lifting together can lift loads of up to 70kg provided the lift can be performed under optimal conditions. That is, the entire lift can be performed in front of the body between mid-thigh and elbow height, the load is suitable for manual handling, there is no carrying involved, a stable footing can be maintained and there's an appropriate indoor climate. Always agree who will be in charge during the lift before lifting in a team.



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### Limits for daily lifting volume

The permitted daily lifting volume for an employee is:

- 10 tonnes if the load is lifted close to the body (i.e. if the lifting height/start position and the destination height are optimal)
- 6 tonnes if the lifts are performed at a forearm's distance from the body
- 3 tonnes if the lifts are performed at three quarters of an arm's distance from the body

Loads of less than 3kg should not be included when assessing the daily lifting volume.

The permitted daily lifting volume is reduced if there are exacerbating factors associated with the lifting, such as: awkward or unstable loads, awkward lifting/reaching positions, lifting above shoulder height or below knee height, carrying a load more than two meters, insufficient space, inappropriate supporting surface (for example sloping or unstable).

### Limits for carrying

Carrying loads from one point to another while walking should generally be avoided. If carrying is required, the following limitations mean loads may not be carried more than 2m:

- Approx. 20kg held close to the body
- Approx. 12kg held at a forearm's distance from the body
- Approx. 6kg held at three quarters of an arm's distance from the body

Loads weighing less and carried as described above should not be carried over distances above 20m. If the load is to be carried up or down stairs, one step should be counted as one meter.

Where loads are carried, it must be ensured that the transport route is level, stable, cleared, well-lit and not slippery.



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### MANUAL HANDLING TECHNIQUES WHEN LIFTING

#### Advice

- Plan the lift - assess the weight and shape of the load and the space available, etc.
- Get a good and secure hold on the load
- Make sure there is enough space to perform the lift - normally, you would need 1 x 1m free space
- Ask for help if the load is too heavy or bulky/awkward
- You can use your strongest muscle groups if you perform the lift between mid-thigh and shoulder height
- Make sure the load rests on/is supported against something as far as possible, so that you can push/pull/slide or tilt it instead of lifting it
- As far as possible, make sure that the product is at a height suitable for safe manual handling
- When lifting from low heights, first tilt the product on end or on one corner so that you can grab hold of it at a higher height
- Lift with your thighs and your buttocks muscles, not your back
- Get a good foothold and use well-fitting, flexible footwear
- Avoid carrying heavy loads as far as possible - use mechanical aids instead
- Ensure variation between lifting and other work

### WHEN LIFTING

1. Position yourself close to the load or slide it toward you. If space is restricted, pull/push and tilt the load into a position where space is less restricted
2. Stand facing the load so that you have it close to the centre line of your body
3. Stand with your feet slightly apart and your weight evenly distributed on both feet
4. Bend at the knees and hips - do not bend your knees more than 90 degrees
5. Keep your back straight and as upright as possible
6. Grab hold of the load with both hands and make sure you have a firm grip on it
7. Lift the load smoothly by straightening your knees and at the hips
8. Keep the load close to your body and let it slide or support it against your body
9. Don't twist your back/torso - if you need to turn, turn your whole body by stepping round, so that your nose and toes are always pointing in the same direction
10. When putting down the load, follow the same procedure as when you lifted it - but in the reverse

See instructions sheets/videos nos. A3, A6, A7, C1, C2, C3, C4, D3.

If, in exceptional circumstances, you need to perform a two-person lift, always agree beforehand who will be in charge during the lift. Make sure that persons lifting together in a team are generally of the same height and of similar physical strength.

See instructions sheets/videos nos. A1, A5

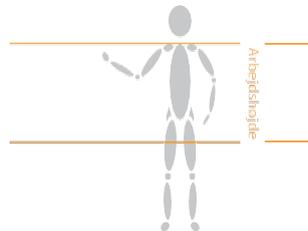


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### WHEN STOCKING SHELVES OR DISPLAY CASES

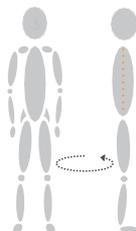
1. Park the transport equipment as close to the stocking destination as possible
2. Make sure you can access the products on the transport equipment from at least three sides
3. Make sure you have space to move - normally, you would need 1 x 1m free space
4. Establish a good working height - optimally between mid-thigh and shoulder height



5. Pull the product towards you before lifting - slide it rather than lifting it



6. Lift with the load in front of and close to your body
7. Keep your body facing the load throughout the lift
8. Don't twist your back/torso - if you need to turn, turn your whole body by stepping round, so that your nose and toes are always pointing in the same direction



9. Work at a calm and steady pace
10. Avoid long reaching distances by placing the product at the front of the display case/shelf and using it to push the other products into place

See instructions sheets/videos nos. A1, C1, C2, C3, C4, C5, C6, C7.



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### PUSHING AND PULLING

Generally speaking, the physical strain of pushing and pulling manually handled transport equipment increases with the weight of the load (incl. the transport equipment), the unevenness of surfaces, the incline, and with more restricted space.

#### Limits for what can be pushed and pulled

Pushing and pulling transport equipment with a total weight (trolley + load) below 200kg is usually not a problem as long as the transport surface is level and suitable for transport and there is space to manoeuvre.

When pushing and pulling loads of more than 200kg, assess potential exacerbating factors, such as the nature of the transport surface, any space restrictions, any turns and change of direction, how often the job needs to be done, etc.

Read more under 'Important factors in pushing and pulling'.

If the total weight is above 500kg, assessing the potential exacerbating factors is even more important, because, in experience, a total weight above 500kg is usually problematic. In such situations, use powered transport equipment instead.

Awkward body postures will often mean that the load is too heavy, and the job therefore too physically demanding.

### IMPORTANT FACTORS IN PUSHING AND PULLING

#### Transport equipment design

- Wheel diameter and width. For example, uneven and unstable surfaces call for larger wheels
- Solid or pneumatic tyres? For example, uneven and unstable surfaces call for pneumatic tyres
- Rigid or swivel wheels?
- The height of handlebars should be approx. 100cm from the floor and should be adjustable by +/- 10cm. Or slightly lower for walking backwards and pulling
- The width of the handlebars should be approx. 45cm and the thickness approx. 3-5cm



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### Transport equipment maintenance

- Dirty, poorly maintained or defective wheels are an exacerbating factor

### Transport surface (transport route)

- Uneven, unstable, bumpy and sloping surfaces are an exacerbating factor

### Space

- Is there space to manoeuvre? For example when turning corners
- Is there space to maintain a good working position (a person requires 700-900mm when pushing and pulling)

### Visibility

- Is the transport route well-lit?
- Is there a clear, unobstructed view? For example, not obstructed by the stacked load

### Unforeseen incidents

- Is there a risk of uneven surfaces, debris in the wheels, obstacles along the transport route, etc. requiring sudden braking or changes in direction?

### Stability of the load

- Has the load been properly packed/stacked, so that it is stable and will not tip over or shift?
- Is the weight of the load evenly distributed?

### Speed and changes in direction

- Does the transport involve frequent starting, stopping/braking and changing direction?

### Space

- Can employees use their body weight?
- Are loads pulled or pushed? Pushing is generally less demanding than pulling.
- Is pulling performed walking forwards (with the transport equipment trailing behind) or backwards? Pulling while walking backwards is more demanding



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### Working positions and movements

- Awkward working positions, such as bending forwards/backwards while twisting the torso, increase the risk of slipping, stumbling or falling

### Frequency and duration of work

- How often are employees pushing and pulling loads, and do these tasks involve frequent starting/restarting?
- How long during a working day do employees work with transport equipment?
- Are employees offered short breaks and the possibility of variation in work tasks?

## MANUAL HANDLING TECHNIQUES WHEN PUSHING AND PULLING TRANSPORT EQUIPMENT

### Advice

- Plan pushing and pulling work. Assess the weight of the load, how stable it has been packed/stacked and what space you have to manoeuvre the transport equipment
- Check that the mechanical aid is working properly. For example, check that the wheels are not jammed, etc.
- Make sure the load does not obstruct your view if you're pushing the transport equipment in front of you
- Get a good and secure grip on the handles
- Pushing is better than pulling (if the transport equipment is designed for pushing)
- If you have to pull, pull walking forwards. That is, walk forwards with the transport equipment trailing behind you.
- If you are using a pallet truck, however, it is easier to pull than push
- Keep your back straight
- Use your body weight when pulling and pushing
- Keep a steady pace and avoid too much braking and changing direction
- Keep an appropriate distance to people and activity along the transport route



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### WHEN PUSHING AND PULLING

#### Pulling - a pallet truck, for example



1. Stand facing the pallet truck and grab hold of the handles with both hands
2. Stand with your feet slightly apart, with one foot in front of the other, and make sure you have a good foothold
3. Lean back and pull in a smooth movement using your body weight and your thigh muscles
4. Keep your back straight
5. Keep your arms close to your body and your elbows slightly bent
6. When the pallet truck starts to move, turn around and pull it along after you
7. Pull at a steady pace

See instructions sheet/video no. B1.

#### Pushing - a pallet truck, for example

1. Place the drawbar in the upright position
2. Stand facing the pallet truck and grab hold of the drawbar handle with both hands
3. Stand with your feet slightly apart, with one foot in front of the other, and make sure you have a good foothold
4. Keep your back straight, with your arms close to your body and slightly bent
5. Lean forward and push in a smooth movement
6. Push the pallet truck at a steady pace

#### Braking



Place the handle in the upright position close to your body, then use your body weight to stop the pallet truck.

See instructions sheet/video no. B1.



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Pushing and pulling - stock trolleys or roll cages, for example



1. Grab the handles or similar at elbow height and in front of your body
2. Keep your elbows slightly bent
3. Make sure to always keep your body facing the transport equipment
4. Make sure to always keep the transport equipment close to your body
5. Do not yank the trolley to change direction or to turn a corner. Rather, take a few steps to the side to turn the trolley rather than yank it around.
6. Alternatively, push the stock trolley or roll cage from the side to change direction

See instructions sheets/videos nos. B4, B5, C2.



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### 10 TIPS FOR SAFE LIFTING

#### LIFT SMARTER NOT HARDER

- The quickest and natural way to lift is not always the best way to lift

#### LIFT WITH YOUR LEGS

- Don't lift with your back and arms

#### AVOID HEAVY LIFTING

- Ask a colleague for help or use mechanical aids

#### AVOID BENDING YOUR BACK UNNECESSARILY

- Avoid taking and placing products from below knee height

#### AVOID LIFTING ABOVE SHOULDER HEIGHT

- Do not lift loads above shoulder height - use a stepladder or kick step instead, for example

#### AVOID TWISTING YOUR BACK

- Turn with your whole body and always keep your nose and toes pointing in the same direction

#### KEEP THE LOAD CLOSE TO YOUR BODY

- Get close to the load before lifting it

#### LIFT SMOOTHLY

- Lift in a smooth motion and at a steady pace

#### AVOID CARRYING OVER LONG DISTANCES

- Use transport equipment to transport products over long distances

#### ENSURE VARIATION IN YOUR WORK

- Always choose the least physically demanding working position next