

Construction Industry council CDM Guidance for Designers

Information on manual handling

General Information Note

I 001

INTRODUCTION

1. The Manual Handling Regulations were intended to reduce the high number of incidents associated with manual handling, ie, the transporting or supporting of loads by hand or bodily force.
2. Many manual handling accidents are cumulative rather than attributable to any single handling operation. Sometimes, a full recovery is not possible resulting in a permanent disability. Construction workers are particularly prone to this type of injury, because they are required to handle significant loads in awkward positions.
3. Designers can help to reduce the incidence of manual handling incidents by giving more consideration to what their designs require a site worker to do.

WHAT THE REGULATIONS REQUIRE

4. The Manual Handling Operations Regulations 1992 establish a hierarchy as follows:
 - a) Avoid, as far as reasonably practicable, hazardous handling operations;
 - b) Make a suitable assessment of any handling operation, which cannot be avoided;
 - c) Reduce the risk of injury from those unavoidable operations.
5. Designers can help in satisfying a) of the Hierarchy by limiting the weight of components. They can also help to satisfy c) by designing in features, which would facilitate movement by mechanised means.

WHAT MAKES MANUAL HANDLING HAZARDOUS

6. The strain on the human body, is affected by the following:
 - a) The magnitude of the load;
 - b) Having to adopt incorrect posture: twisting, stooping, reaching, etc, while handling the load;
 - c) The time for which the load is supported: carrying long distances, prolonged physical effort;
 - d) The time for which incorrect posture has to be adopted;
 - e) The distance from the body that the load is supported, eg, does the load have to be lifted above waist level? and
 - f) Ease of grasping; if the load is large, rounded, greasy or smooth, its handling will call for extra effort, which is fatiguing.

7. Therefore, if the design commits someone to manoeuvring a load, in combination with one or more of (b), (c) and (d), it should be reconsidered to reduce their effects.

GUIDELINES FOR SAFER MANUAL HANDLING

Lifting and lowering

8. Basic guidelines for lifting and lowering loads are given in Figure 1. It is assumed that the worker can grasp the load easily and that he can work in an upright position.

9. If the design restricts the lifting operations to the guideline figures, there is a good chance that it will offer reasonable protection to the majority of the workers on construction sites.

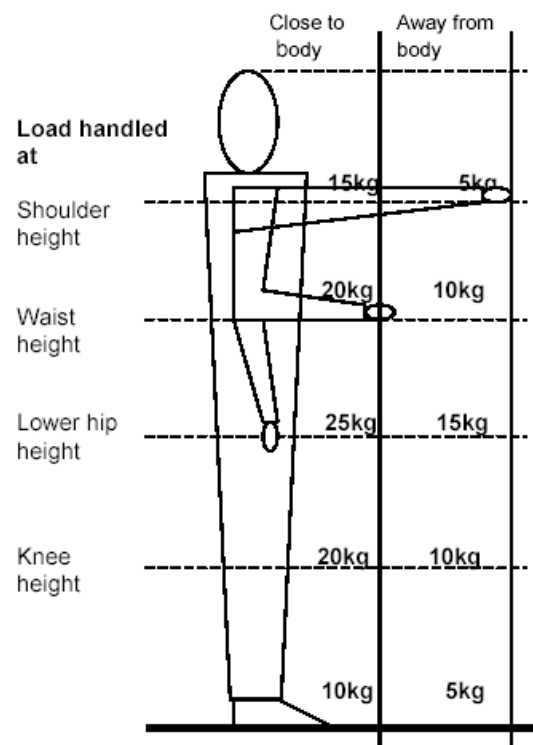


Figure 1: Basic guidelines for handling

10. The basic guideline figures are for 25 handlings per hour, which should be reduced as follows:

- a) 75 handlings per hour 30%
- b) 150 handlings per hour 50%
- c) 300 handlings per hour 80%

11. In addition, if the person lifting has to twist to the side during the lifting operation, the basic

guideline figures should be reduced by the following amounts:

- a) Handler twists through 45° 10%
- b) Handler twists through 90° 25%

12. Further reductions to the basic guideline figures are required when the equipment has to be carried more than 10m without a rest – see table2.

Posture

13. The basic guidelines recognise that construction operations require a degree of working in unergonomic positions, therefore, they concentrate on reducing the amount of time that operatives have to work in these unergonomic positions as shown in table 1:

Work position	Max exposure
Stooping [back is bent more than 20°]	< 10 minutes per hour or < 24 stoop pers hour;
Working above shoulder level	< 10 minutes per hour; or < 24 operations per hour
Twisted head [head is bent at an angle > 20°]	< 10 minutes per hour
Kneeling or working with knees bent	< 10 minutes per hour

Table 1: limiting exposure to unsafe posture

Physical strain

14. Again, the guidelines concentrate on limiting the exposure to the risk. This is linked to figure 1 and guidance is given in Table 2.

Activity	Position	Max exposure
Supporting the figure 1 load for more than 6 secs	Above shoulder level	8 per hr
	At waist level	15 per hr
	Below knee level	4 per hr
Carrying the figure 1 load at waist level	< 15m	Reduce figure 1 load by 15%
	< 25m	Reduce figure 1 load by 30%

Table 2: Limiting physical strain

CONSTRUCTION WORK WITH HANDLING HAZARDS

15. Many of the day-to-day operations in construction expose workers to the possibility of harm from lifting and lowering, working with poor posture and from physical strain. The list of

operations and how they affect the worker are given in table 3.

hazardous handling operation	Site operation[s] which could expose workers to the the hazard
Lifting heavy loads	Placing re-bar, blockwork, installing structural elements, eg, I-beams.
Stooping while working	Fixing re-bar, finishing concrete, digging, scabbling concrete, pipe-laying, spreading concrete,
Working above shoulder height	Brickwork, scaffolding, installing services, glazing,
Working with a twisted neck	Working in confined spaces, eg, installing services.
Working while kneeling or with legs bent	Fixing HD bolts, in confined spaces, finishing concrete, scabbling concrete, pipe-laying,
Carrying heavy loads	re-bar, blockwork, steel sections;

Table 3: Operations introducing handling hazards