Approved Code of Practice for Manual Handling (Maritime Industry)

I, KEVIN JAMES ANDREWS, Minister for Employment and Workplace Relations, approve the following Code of Practice under subsection 109(1) of the *Occupational Health and Safety (Maritime Industry) Act 1993*.

Dated 14th September 2006

KEVIN ANDREWS

Minister for Employment and Workplace Relations

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1 Name of Code of Practice

This instrument is the *Approved Code of Practice for Manual Handling (Maritime Industry)*.

2 Application

Pursuant to paragraph 109(4)(a) of the *Occupational Health and Safety (Maritime Industry) Act 1993*, this Code of Practice is to apply generally.

3 Commencement

This Code of Practice commences the day after it is registered.

Table of Contents

1. INTRODUCTION

PURPOSE

1.1 The purpose of this *Code of Practice for Manual Handling* for the Australian Maritime Industry[1], is to provide practical advice in meeting the requirements of the *Occupational Health and Safety (Maritime Industry) (National Standards) Regulations 2003* relating to the identification, assessment and control of risks arising from manual handling activity in a maritime environment.

INTERPRETATION

1.2 While this code of practice aims to provide detailed advice, it is not possible to deal with every situation which may be found in a maritime environment.

OVERVIEW

1.3 This code of practice provides advice in the following areas:

a) General Principles (Section 2);
b) Risk Identification (Section 3);
c) Risk Assessment (Section 4); and
d) Risk Control (Section 5).

[1] This Code of Practice is based on the National Code of Practice For Manual Handling [NOHSC: 2005(1990)] published by the Australian Safety and Compensation Council

2. GENERAL PRINCIPLES

CONSULTATION

2.1 The *National Standard for Manual Handling* (Sections 5.2 and 6) requires assessment and control of manual handling tasks to be carried out by employers in consultation with employee(s) who are required to carry out the tasks and their representative(s) on health and safety issues. This consultation should occur:

a) as early as possible in planning for the introduction of new or modified manual handling tasks, or in the review of existing tasks, to allow for changes arising from the consultation to be incorporated;
b) when the employer is identifying the problem areas in order to establish priorities for assessment;
c) when determining the approach and methods to be used in assessing the manual handling tasks;
d) when decisions are being taken on various control measures to reduce risk factors; and
e) when the effectiveness of implemented control measures is being reviewed.

2.2 Consultation may occur through formal and/or informal processes, and involve direct and/or representational participation.

DESIGN

2.3 The *National Standard for Manual Handling* provides (Section 3):
An employer shall take all workable steps to make sure:

a) that the plant, equipment and containers used in the workplace are designed, constructed and maintained to be, as far as workable, safe and without risk to health and safety when manually handled;
b) **(b)** that the work practices carried out in the workplace involving manual handling are designed to be, as far as workable, safe and without risk to health and safety; and
c) **(c)** that the working environment is designed to be, as far as workable, consistent with safe manual handling activities.

2.4 Additional costs are incurred in redesigning or modifying plant or processes once they are being used in the workplace. It is more cost effective to reduce risk factors at the design stage.

2.4A The ability to influence ship design can be limited. All practicable and workable steps to improve the safety of work practices at the design stage should be explored.

2.5 Purchasing specifications should specify the uses or functions of the plant and equipment, and, where possible, the general performance characteristics required to reduce the risk to health and safety.

2.6 Where design or purchase of equipment is planned, the appropriate consultation should occur in accordance with procedures in Sections 3.9-3.11 of this code of practice.

2.7 The design of plant, equipment and containers in workplaces needs to provide for a range of physical characteristics of the workforce. Information concerning human dimensions and

capabilities should be taken into account to provide an optimum match between the plant or equipment and users.

Design Principles

2.8 Employers need to be aware of the enormous range of physical dimensions, for example height and reach, to be found in the workforce, and the implications of this for task design and the selection and use of equipment and furniture.

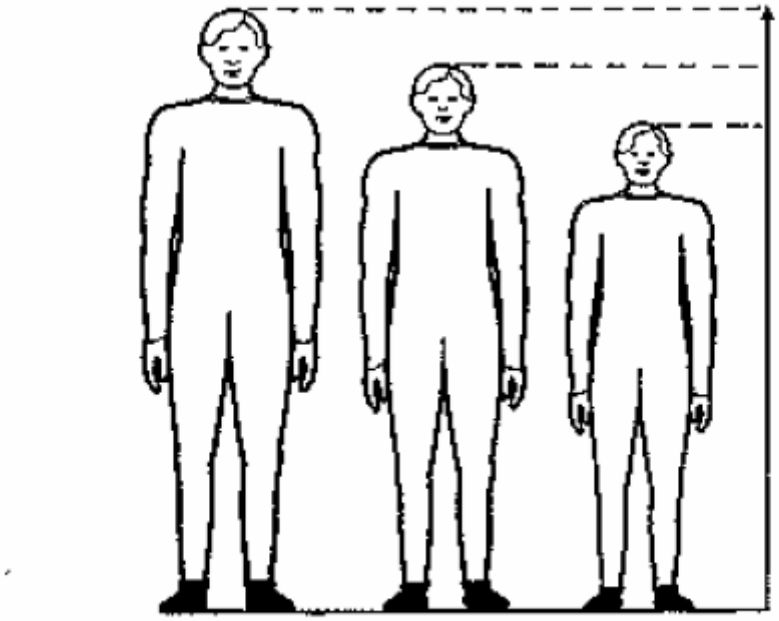


Figure 1- *Workplaces should incorporate adjustable features to accomodate people who are not average size*

2.9 Equipment and furniture should be designed so that they can be used safely. It is also desirable to design activities and tasks to suit the capacity of the widest possible range of the workforce to avoid discrimination against particular groups. That is, the employer is required to take account of the safety of each employee, and not simply design a system which might be safe for an *average* person of the workforce.

2.10 Some general principles for reducing risks associated with manual handling, which should be incorporated into the design of workspaces, plant and equipment are:

a) minimise the lifting and lowering forces exerted;
b) avoid the need for bending, twisting and reaching movements; and
c) reduce pushing, pulling, carrying and holding.

2.11 Aspects to consider at the design stage include:

a) size, surface characteristics, stability and weight of objects;
b) vertical and horizontal movements involved;
c) workplace layout and general environment; and
d) work postures and space requirements.

2.12 These aspects should be considered in relation to the following stages of the handling process:

a) transportation and reception;
b) handling at the workplace; and
c) storage and distribution.

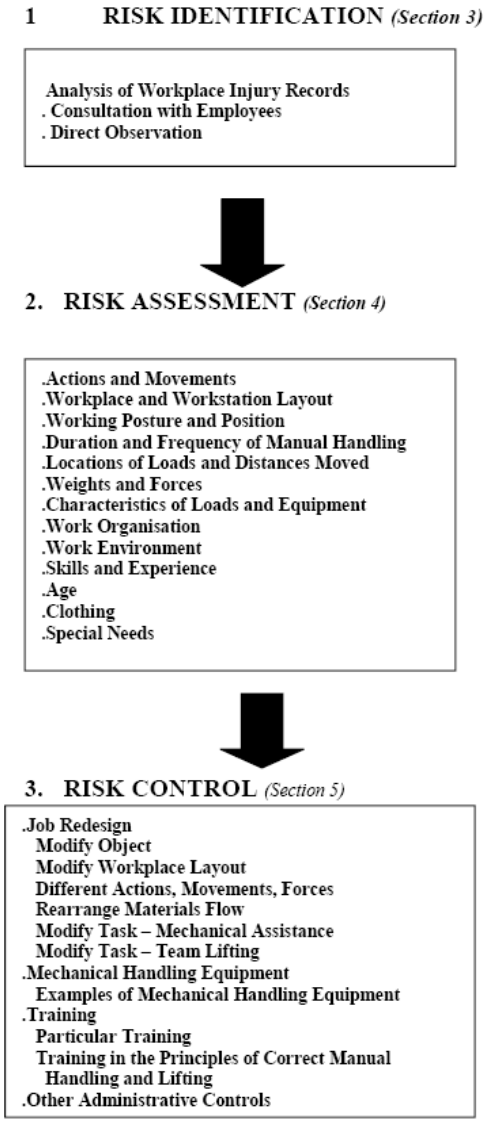
RISK IDENTIFICATION, ASSESSMENT AND CONTROL

2.13 This code of practice provides guidance on the following three key stages in the process of reducing manual handling injuries:

a) identification of risk factors in the workplace likely to cause manual handling injury;
b) detailed assessment of particular risk factors; and
c) principles and examples of control measures to eliminate or reduce risk.

2.14 Figure 2 summarises these stages.

Figure 2 – The three stage approach to safe manual handling:



RISK CONTROL

Risk Control Priorities

2.15 After the risk factors have been assessed, they should be removed or reduced by particular actions. *The National Standard for Manual Handling* proposes a priority order in controlling risk as follows (Sections 5.3 and 5.4):

The employer shall, if manual handling has been assessed as a risk:

a) redesign the manual handling task to eliminate or control the risk factors; and

b) ensure that employees involved in manual handling receive appropriate training, including training in safe manual handling techniques.

Where redesign is not workable, or as a short term/temporary measure, the employer shall:

a) provide mechanical aids and/or personal protective equipment, and/or arrange for team lifting in order to reduce the risk; and/or

b) ensure that employees receive appropriate training in methods of manual handling appropriate for that manual handling task and/or in the correct use of the mechanical aids and/or personal protective equipment and/or team lifting procedures.

2.16 It is likely that for many jobs the application of these types of control will not be mutually exclusive. In some job(s) it may be workable to redesign some parts, and to provide mechanical aids.

2.17 The risk control section of this code of practice gives advice about control options which can be considered depending on the severity of risk.

Weight

2.18 Weight is used in this code of practice as one of the important factors to be considered when assessing and controlling risk.

2.19 Weight is not used to prescribe absolute limits. However, particular attention should be given to Sections 4.21-4.26 and 5.19-5.43 of this code of practice which provide a general guide to weights which it is recommended that adults and juniors should not handle unaided.

New and Returning Employees

2.20 Notwithstanding the remainder of this code of practice, employees newly engaged on a manual handling task or process or returning from an extended absence should, where necessary, be allowed a period of adjustment to build up the skill and ability demanded by the tasks they are required to perform.

Training
2.21 The *National Standard for Manual Handling* provides (Section 5.3):

The employer shall, if manual handling has been assessed as a risk:

a) redesign the manual handling task to eliminate or control the risk factors; and
b) ensure that employees involved in manual handling receive appropriate training, including training in safe manual handling techniques.

2.22 In addition to the employees involved in manual handling, other target groups also requiring training include:

a) supervisors and managers of employees involved in manual handling tasks;
b) employees' representative(s) on health and safety issues; and
c) staff responsible for work organisation, job and task design.

2.23 Objectives in relation to training should be established and should include:

a) the prevention of manual handling injuries by an approach based on risk identification and assessment, and primary control through job and task design;
b) the recognition and promotion of understanding of the multi-faceted nature of manual handling activities; and
c) the promotion and utilisation of safe manual handling techniques.

Training Content
2.24 The content of any training program should be tailored to the specific needs of the group being trained.

2.25 Topics should include:

a) a review of the risks to health from manual handling;
b) the magnitude of the problem;
c) a review of the potential effect of manual handling on the body;
d) job and individual risk factors associated with manual handling injuries;
e) control strategies, with primary emphasis being placed on work organisation, job and
f) task design;
g) safe manual handling techniques;
h) the safe use of mechanical handling aids and personal protective equipment; and
i) responsibilities of the parties.

Particular Training
2.26 In addition to the general training above, refer to Sections 5.54 - 5.57 of this code of practice for guidelines on particular training on safe manual handling.

REVIEW AND EVALUATION

2.27 The implementation of this risk control approach, as with any successful systematic process, does not end with the implementation of some change. The effectiveness of the new control measures needs to be reviewed regularly to ensure that the objectives are being achieved and that there are no unforeseen negative outcomes.

RECORD KEEPING

2.28 Records associated with the implementation of the *National Standard for Manual Handling* should be maintained in a central location and be available to the employees' representative(s) on health and safety issues. Such records will make the task of review and evaluation easier.

2.29 The records may include information on:

a) the manual handling injury prevention program;
b) risk assessment reports;
c) design modifications to, and specifications for, plant and work processes;
d) risk control measures implemented; and
e) training and education activities.

3. RISK IDENTIFICATION

3.1 This section of the code of practice provides means of identifying manual handling tasks likely to be a risk to health and safety in order that they can be examined and assessed as required by the *National Standard for Manual Handling* (Section 4.1).

3.2 The purpose of risk identification is to:

a) identify; and
b) place in priority order,

the jobs or tasks which require risk assessment.

3.3 There are three basic steps to risk identification:

a) analysis of workplace injury records;
b) consultation with employees; and
c) direct observation or inspection of the task or work area.

3.4 If any of the three steps indicate the need for assessment, Section 4 of this code of practice provides advice on that assessment.

ANALYSIS OF WORKPLACE INJURY RECORDS

3.5 Employers should examine workplace records of injuries to identify where, and in what jobs, manual handling injuries have occurred.

3.6 Indicators to consider include:

a) the area of the workplace where the injury occurred;
b) the occupation, or job/task of the injured person;
c) the part of the body injured, for example, back, neck or shoulder;
d) the nature of the injury, for example, strain, sprain, laceration or fracture; and
e) the type of accident, for example, overexertion and physical stress in lifting object, or slips and falls while handling objects.

3.7 It is often useful to examine injury records to find out the frequency and severity of injuries and compare them to the number of employees or hours worked, that is, incidence rate. Comparisons can also be made between locations, occupations or tasks.

3.8 Higher frequency and/or severity rates indicate priority areas.

CONSULTATION WITH EMPLOYEES

3.9 It is important to consult with employee(s) performing the tasks as they are likely to be aware of the risk of manual handling injuries associated with their jobs.

3.10 Consultation during the risk identification process with employee(s) carrying out the tasks and with their representative(s) on health and safety issues may also obtain information about associated risk factors.

3.11 Consultation should also occur when priorities for risk assessment are being established. Employee(s) may be able to indicate tasks or movements which are particularly fatiguing, strenuous or difficult to perform.

DIRECT OBSERVATION

3.12 The direct observation by the employer and all employees of work areas and of the task being performed will assist in identifying risk. This need not be the sole responsibility of one individual. Workplace inspections, audits, and walk through surveys and the use of checklists can assist in the risk identification process. It is best if these direct observation tools are tailored to the specific characteristics of the organisation or industry concerned. A general risk identification checklist and guidance on its use is provided in this section. The checklist is also reproduced at the back of this publication so that it can be copied for use in the workplace.

If any of the questions in the checklist result in a YES answer, further assessment of that risk factor is required. Generally the more YES answers that result for a particular task, the higher the priority for risk assessment.

Information on risk assessment and practical advice for the identification and control of risks arising from manual handling activity in workplaces, reference should be made to the Office of the Australian Safety and Compensation Council's *National Standard for Manual Handling*, and the *Code of Practice for Manual Handling* for the Australian Maritime Industry.

3.13 The spaces provided at the top of the checklist enable the person performing the general risk identification to record relevant information on:

a) the *building, plant and equipment* (description of work location);
b) details of the *task* and/or *workstation*;
c) the *person conducting the assessment* on behalf of the employer; and
d) the name of the *employees' representative(s) on health and safety* issues consulted in the process.

3.14 If any of the questions in the checklist result in a YES answer, further assessment of that risk factor is required. Generally the more YES answers that result for a particular task, then the higher the priority for risk assessment.

SAFE MANUAL HANDLING CHECKLIST
GENERAL RISK IDENTIFICATION

Description of Work Location Date __/__/__

Task Description

Assessed by

Employees' Representative(s)

The existence of any one of the following key risk factors, that is, a *Yes* answer, indicates the need for further assessment as outlined in Section 4 – Risk Assessment.

MOVEMENTS, POSTURE AND LAYOUT DURING MANUAL HANDLING

1.	Is there frequent or prolonged bending down where the hands pass below mid-thigh height?	□Yes □No
2.	Is there frequent or prolonged reaching above the shoulder?	□Yes □No
3.	Is there frequent or prolonged bending due to extended reach forward?	□Yes □No
4.	Is there frequent or prolonged twisting of the back?	□Yes □No
5.	Are awkward postures assumed frequently or over prolonged periods, that is, postures that are not forward facing and upright?	□Yes □No

TASK AND OBJECT

6. Is manual handling performed frequently or for long time periods by the employee(s)? □Yes □No
7. Are loads moved or carried over long distances? □Yes □No
8. Is the weight of the object:
   a) more than 4.5 kg and handled from a seated position? □Yes □No
   b) more than 16 kg and handled in a working posture other than seated? □Yes □No
   c) more than 55 kg? □Yes □No

Note: Weight is not used to prescribe absolute limits, but is one of the important factors to be considered when assessing and controlling risk.

9. For pushing, pulling or other application of forces: are large push/pulling forces involved? □Yes □No
10. Is the load difficult or awkward to handle, for example, due to its size, shape, temperature, instability or unpredictability? □Yes □No
11. Is it difficult or unsafe to get adequate grip of the load? □Yes □No

WORK ENVIRONMENT

12. Is the task performed in a confined space? □Yes □No
13. Is the vessel pitching and rolling too much for the task to be safe? □Yes □No
14. Is the lighting inadequate for safe manual handling? □Yes □No
15. Is the climate particularly cold or hot? □Yes □No
16. Are the floor working surfaces cluttered, uneven, slippery or otherwise unsafe? □Yes □No

INDIVIDUAL FACTORS

17. Is the employee new to the work or returning from an extended period away from work? □Yes □No
18. Are there age-related factors, disabilities or other special factors that may affect task performance? □Yes □No
19. Does the employee's clothing or personal protective equipment interfere with manual handling performance? □Yes □No

4. RISK ASSESSMENT

4.1 The *National Standard for Manual Handling* provides (Section 4.1): An employer shall ensure that manual handling, which is likely to be a risk to health and safety, is examined and assessed.

4.2 The *National Standard for Manual Handling* lists (Section 4.3) the factors to be taken into account when making an assessment of a manual handling task. These factors highlight the complex nature of the causes of injury from manual handling.

4.3 Risk identification should be undertaken on a regular basis and, when indicated, risk assessment carried out. Risk assessment is particularly critical whenever:

a) an injury has occurred arising from a work process and/or practice; and
b) a work process and/or practice is introduced or modified.

4.4 In assessing a job or a task, all risk factors should be considered, and in determining appropriate control measures, the interaction of all the factors shall be taken into account.

4.5 Guidelines on assessment of these risk factors follow.

ACTIONS AND MOVEMENTS

4.6 Actions and movements should not cause undue discomfort or pain. Actions should be performed smoothly and with control, avoiding sudden or jerky movements. Manual handling should be performed in a balanced and comfortable posture. Extreme ranges of joint movement should be avoided, especially when this is prolonged or repetitive. Repetitive bending, twisting and overreaching movements are among those liable to increase the risk of manual handling injuries.

4.7 Variation from the above and/or answering YES to any of the following questions indicates an increased risk:

a) Is the load shared unevenly between both hands, or lifted by one hand only?
b) Is the object pushed or pulled across the front of the body?
c) Is there a need to bend over to one side to lift an object or exert a force?
d) Are two actions performed at the same time when one action is holding an unsupported fixed position?
e) Are several tasks performed in the one position where some are best done in a seated position and the others are best done in a standing position?

WORKPLACE AND WORKSTATION LAYOUT

4.8 The positioning of plant and its controls, equipment, tools and other materials in relation to each other and the employee affects the working posture, working height, manual handling technique, duration, frequency and other work actions and movements.

4.8A In some circumstances the location of some controls and equipment may be influenced by international maritime safety regulation and ship design necessities.

4.9 The layout should permit the employee(s):

a) to adopt an upright and forward facing posture;
b) to have good visibility of the task; and
c) to perform the majority of tasks at about waist height and within easy reach.

4.10 Answering NO to any of the following questions indicates an increased risk:

a) Is the layout appropriate for the manual handling task and the physical dimensions of the employee(s) performing the task?
b) Is there adequate space for all movements involved in the manual handling task?
c) Are appropriate mechanical handling aids readily available for the task?
d) Are the working heights adjustable or matched to the size of the employees and the tasks?
e) Is there adequate clear space for moving legs and feet?
f) Are the different manual handling tasks performed by one person arranged so that excessive movement is avoided?

WORKING POSTURE AND POSITION

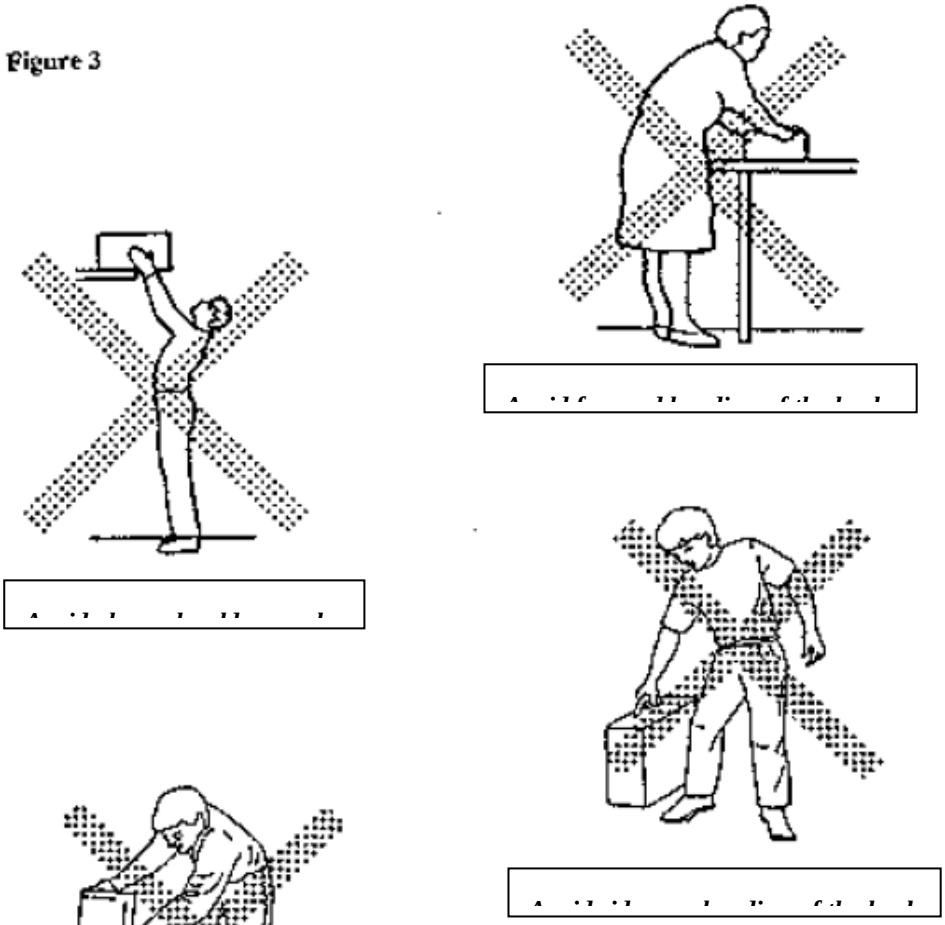
4.11 Work activities should permit the employee to adopt several different, but equally healthy and safe, working postures. Any one posture should not be maintained for long periods without the opportunity to change posture through variation of activity or rest.

4.12 During manual handling, bending and/or twisting of the spine should be avoided, especially when this is prolonged or repetitive.

4.13 Answering YES to any of the following questions indicates an increased risk:

a) Is the object presented to the employee in a position which makes it difficult to reach or grasp?
b) During manual handling, is there frequent or prolonged:
    i. above shoulder reach?
    ii. forward bending of the back?
    iii. twisting of the back?
    iv. sideways bending of the back?

Figure 3



DURATION AND FREQUENCY OF MANUAL HANDLING

4.14 The risk of injury rises with the increasing frequency, repetition and duration of manual handling activity by any one employee in a work period. How often, and for how long, a task is performed are key risk factors to be considered.

4.15 Problems with frequency and duration are not restricted to lifting or lowering of loads. Pushing, pulling, carrying and holding of loads can also be a problem if performed frequently or for prolonged periods.

4.16 The same manual handling task repeated over long periods of time may induce feelings of monotony and boredom. This reduction in alertness may also have important safety consequences.

4.17 There are several factors which influence a person's ability to continue prolonged exertion. These include available energy reserves, the employee's physical fitness and the relative work load, that is, the proportion of the employee's physical capacity engaged by the task.

4.18 Manual handling operations involving the use of smaller muscle groups such as hands (whether in sustained or repetitive static activity) should not be overlooked in assessing risks because these muscles fatigue quickly when overloaded.

LOCATION OF LOADS AND DISTANCES MOVED

4.19 Distances over which loads are manually handled should be as short as possible. The longer the distance the lighter the load that can be carried without increased risk.

4.20 If the load is located above the employee's shoulder height or below mid-thigh height or otherwise requires extended reach, then the risk of injury is increased. An increased risk also occurs where the load requires manoeuvring to be placed accurately into position.

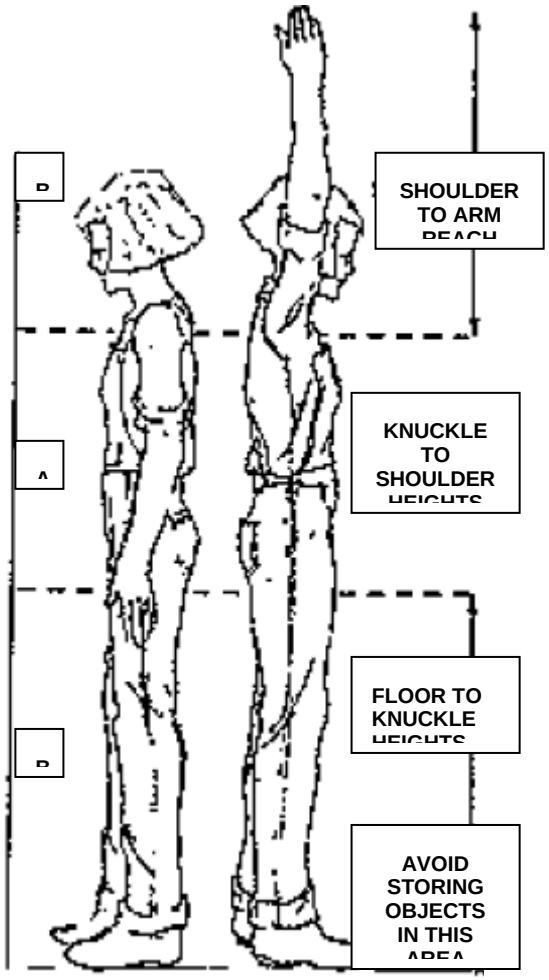


Figure 4 – *Optimise location of loads. The best height range for handling loads is around waist level with lifting between the knuckle and the shoulder being acceptable. Frequently used objects should be stored in the 'A' zone. Seldom used objects should be stored in the 'B' zone.*

WEIGHTS AND FORCES

4.21 The weight of any load which is manually handled shall be considered in relation to other key risk factors including, in particular:

a) frequency and duration;
b) position of load relative to the body;
c) distance moved; and
d) characteristics of the load.

4.22 Where heavier objects are handled, more care is needed in the assessment of risk and in the application of appropriate control measures.

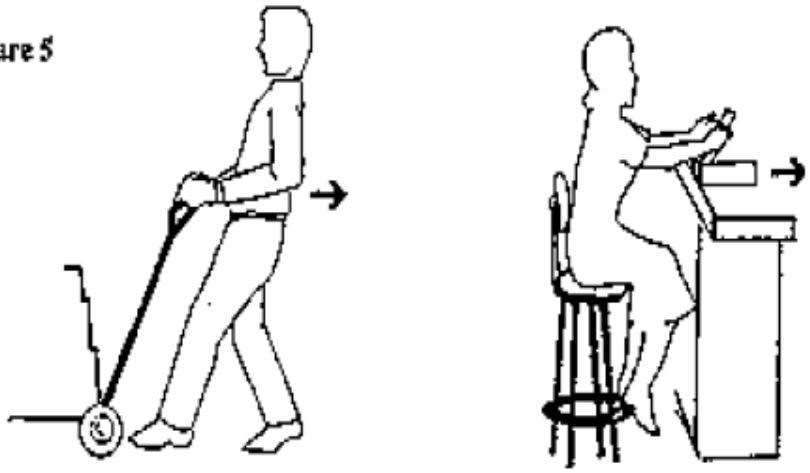
4.23 For lifting, lowering or carrying loads:

a) in seated work, it is advisable not to lift loads in excess of 4.5 kg;
b) some evidence shows that the risk of back injury increases significantly with objects above the range of 16-20 kg, therefore, from the standing position, it is advisable to keep the load below or within this range;
c) as weight increases from 16 kg up to 55 kg, the percentage of healthy adults who can safely lift, lower or carry the weight, decreases. Therefore, more care is required for weights above 16 kg and up to 55 kg in the assessment process. Mechanical assistance and/or team lifting arrangements should be provided to reduce the risk of injury associated with these heavier
d) weights; and
e) generally, no person should be required to lift, lower or carry loads above 55 kg, unless mechanical assistance or team lifting arrangements are provided to lower the risk of injury.

4.24 Apart from lifting, lowering and carrying objects, many tasks in industry involve the use of force to push, pull, hold or restrain objects. Sometimes, as when holding or restraining, the force used does not actually result in movement. In other cases such as pushing levers, pulling/sliding objects the amount of force used is not necessarily related to the movement; for example, a large force may be required to move a lever a short distance. The posture required and the working conditions affect the risk associated with applying a force to push, pull or restrain an object.

4.25 Figure 5 illustrates the application of force in two circumstances.

Figure 5



4.26 Answering YES to any of the following questions indicates an increased risk:

(a) When sliding, pulling or pushing an object, is the object difficult to move?

(b) Is the employee required to exert a large force while seated?

(c) Is the employee required to push/pull while seated without having good seating and solid foot support?

CHARACTERISTICS OF LOADS AND EQUIPMENT

4.27 Characteristics of loads and equipment to consider when assessing risk, in addition to weights and forces, include dimensions, stability, rigidity, predictability, surface texture and temperature, grips and handles.

4.28 The requirement for gloves or similar personal protective equipment also needs to be assessed in relation to manual handling risks. Gloves may protect against hand injuries, such as abrasions and burns, but they will affect grip stability, dexterity and strength. The size, shape, structure and material of the load can affect the risk of injury.

4.29 The handling of live animals or humans increases the difficulty of assessing the risk, and limits the availability of some of the common controls which are used for inanimate objects. This is because the person or animal being handled can hinder (or assist) by moving independently of the persons performing the handling. This may require the handlers to apply additional force to restrain the person or animal, or to exert sudden force in response to unexpected movements.

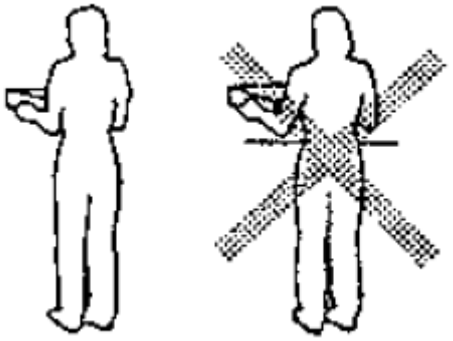
4.30 The nature of the person or animal may place additional demands on the handlers or limit the way the handling may be performed. Some examples are:

a) hospital patients require extreme care in handling, often while attached to fragile medical equipment; and
b) disturbed patients or animals may require restraint in addition to the force needed to move them.

4.31 Answering YES to any of the following indicates an increased risk:

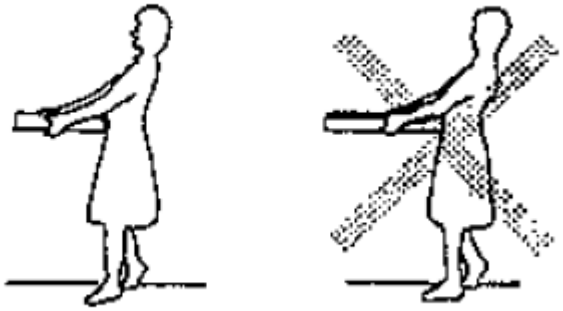
a) Does the person or animal need to be moved in a special way to ensure their health or safety?
b) Is the person or animal disturbed, excited or moving vigorously?
c) Is the object an awkward shape to carry in a balanced posture?
d) Is the object difficult to grasp or hold?
e) Is the object unstable or unbalanced, or does it have contents that may move suddenly?
f) Is the object smooth, slippery, greasy or wet?
g) Does the object have sharp edges or protrusions?
h) Is the object very hot or cold?
i) Does the object block the view of the employee when being handled?
j) Does one person handle sheet material or other large-sized loads without straps, special holders or a second person to assist?
k) Is the object more than 50 cm wide (measured in direction across the body)?

Figure 6



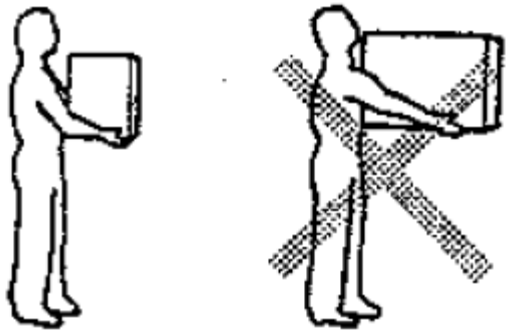
l) Is the object more than 30 cm long (measured in direction away from the body)?

Figure 7



m) Are any two of the object's dimensions more than 75 cm?

Figure 8



WORK ORGANISATION

4.32 Work organisation factors that may influence risk by interacting with other risk factors include staffing levels, availability of equipment, work schedules, shift work, work pace, task variety, rest breaks and recovery time and work procedures.

4.33 Answering YES to any of the following questions indicates an increased risk:

n) Is the work frequency affected by bottlenecks, or sudden changes or delays to the flow of materials?
o) Is the work affected by the unavailability of people to complete tasks within a deadline?
p) Team lifting is not provided and/or safely organised when required?
q) Are there insufficient numbers of employees to carry out the work including where peak workloads occur?
r) Is there lack of an effective maintenance program for tools, plant and equipment used for manual handling?
s) Are procedures for reporting and fixing unsafe equipment or environmental conditions inadequate?
t) Is the workflow not smooth and even?
u) Is there a lack of effective selection/purchasing, instruction and maintenance program for loads, equipment and mechanical handling devices?

WORK ENVIRONMENT

4.34 Factors in the work environment that influence risk include climate, lighting, space and floors, whether the working platform is moving, and other surfaces underfoot.

4.35 Housekeeping and footwear are associated factors that have particular relevance for risk of slips, trips and falls while handling loads.

4.36 Answering YES to any of the following questions indicates an increased risk:

a) Are the floors and surfaces underfoot uneven or slippery?
b) Are there different floor levels in the workplace?
c) Is the workplace untidy with a lack of attention to housekeeping details?
d) Are there extremes of heat, cold, wind or humidity?
e) Are there high levels of fumes, dusts, gases or vapours?
f) Is there excessive vibration?
g) Is the task performed in a confined space?
h) Is the lighting below the levels recommended in Australian Standard AS1680 *Code of Practice for Interior Lighting and the Visual Environment*?

SKILLS AND EXPERIENCE

4.37 Employees shall have the knowledge and ability required to perform the task. A mismatch can cause an increased risk of injury.

4.37A An employer should ensure that any training/education provided to employees in manual handling hazards, recognizing risk and evaluating tasks, is appropriate.

4.38 Answering NO to any of the following questions indicates an increased risk:

a) Has the employee received appropriate training/education in manual handling hazards and/or techniques?
b) Has the employee received appropriate training in recognising risk and evaluating tasks in order to select and apply appropriate handling techniques?
c) Has training, appropriate to the tasks, been provided which relates to manual handling?
d) Has the employee been properly inducted into the job practices and safety requirements in the workplace?
e) For heavy handling tasks, has the employee had previous experience with heavy manual handling?
f) Are the demands of the task within the physical capacity of the employee?

AGE

4.39 Young workers, under the age of 18, are at greater risk than adult workers because they are still developing physically.

4.40 An increased level of care is needed in the assessment of risk and the application of appropriate control measures for young workers. As a guide, the younger the worker, the more care that needs to be taken.

4.41 Young workers under the age of 18 years should not be required to lift, lower or carry objects weighing more than 16 kg without mechanical or other assistance which may include team lifting and/or particular training for the task.

4.42 For older workers, increasing age may be associated with decreasing physical capacity. However, age alone is not sufficient for assessing risk, as older workers may be able to compensate any physical loss by their experience and skill at the task. All relevant risk factors shall be taken into account.

CLOTHING

4.43 The type of clothing an individual wears at work may hinder safe manual handling, for example, tight clothing which restricts movements will adversely affect manual handling technique. Maritime clothing is reasonably standardized in the industry internationally. However, when specialist clothing is required, such as uniform or personal protective equipment, its effect on risk needs to be assessed.

SPECIAL NEEDS

4.44 In some instances, employees may have special needs that require consideration in the risk assessment process. These needs may be permanent or temporary, for example, returning to work from an illness or extended leave of absence, pregnancy, specific disability, etc.

5. RISK CONTROL

5.1 The *National Standard for Manual Handling* (Section 5) requires the following points to be addressed:

> An employer shall ensure, as far as workable, that the risks associated with manual handling are controlled.
>
> Risk control shall be done in consultation with the employees who are required to carry out the manual handling and their representative(s) on health and safety issues.
>
> The employer shall, if manual handling has been assessed as a risk:
> a) redesign the manual handling task to eliminate or control the risk factors; and
> b) ensure that employees involved in manual handling receive appropriate training, including training in safe manual handling techniques.
>
> Where redesign is not workable, or as a short term/temporary measure, the employer shall:
> a) provide mechanical aids and/or personal protective equipment, and/or arrange for team lifting in order to reduce the risk; and/or
> b) ensure that employees receive appropriate training in methods of manual handling appropriate for that manual handling task and/or in the correct use of the mechanical aids and/or personal protective equipment and/or team lifting procedures.

5.2 Risk control is the process of eliminating or reducing identified and assessed risk factors.

5.3 Risk control can best be accomplished by a combination of:
a) job redesign;
b) mechanical handling equipment; and
c) provision of training.

5.4 Care should be taken to ensure that further risks to health and safety are not created by the application of control methods aimed at reduction of manual handling risks, or that conflict with existing job hazard analysis policies and procedures.

RISK CONTROL OPTIONS AND RISK FACTORS

Risk factors	*Risk control options*								
	Job redesign								
	Modify object	*Modify workplace layout*	*Rearrange materials flow*	*Different actions, movements, forces*	*Modify task--mechanical assistance*	*Modify task- team lifting*	*Mechanical handling equipment*	*Training*	*Other admi n istrative - control*
a. Actions and movements	*	*	*	*	*		•	•	
b. Workplace and workstation layout		*	*	*	*		•	•	
c. Working posture and position	*	*		*	*	•	•	•	
d. Duration and frequency			*	*	*			•	
e. Location of loads and distances moved	*	*	*		*	•		•	
f. Weights and forces		*	*	*		•	•	•	
g. Characteristics of loads and equipment	*		*	*	*	•	•	•	

RISK CONTROL OPTIONS AND RISK FACTORS

Risk factors	*Risk control options*								
	Job redesign								
	Modify object	*Modify workplace layout*	*Rearrange materials flow*	*Different actions, movements, forces*	*Modify task-- mechanical assistance*	*Modify task- team lifting*	*Mechanical handling equipment*	*Training*	*Other admi n istrative - control*
h. Work organisation		*	*	*		.		.	
i. Work environment		*	*				.		
j. Skills and experience				*	*		.	.	
k. Age				*	*		.	.	
l. Clothing								.	.
m. Special needs	*	*	*	*	*		*	.	.

* The asterisks indicate the control option of job redesign as preferred to the other options, indicated by a dot.

NOTE: Each risk factor control option should be considered in order of priority.

INTRODUCTION TO RISK CONTROL OPTIONS

5.5 The preceding table indicates which risk control options are relevant for particular risk factors, job redesign being the preferred risk control option. No one single option will necessarily reduce a risk. A combination of different control options is often needed to address risk factors and reduce the overall risk of manual handling injuries.

5.6 The table lists the risk control options described below and indicates which control option(s) may be effective at reducing the risk of each factor.

5.7 *NOTE: The asterisks should not be interpreted absolutely, rigidly or independently. Some risk factors, and some control options, contain a broad range of situations or possible activities. It may be possible in some circumstances to reduce the risk of a particular factor by one of the control options for which there is no asterisk linking it to the risk factor.*

5.8 To illustrate the preference, the five preferred job redesign control options, and their connections with the key risk factors, have been placed in a shaded box.

5.9 An introduction to each control option is given below.

JOB REDESIGN

Modify Object
5.10 The object being handled may be modified or repackaged into a bigger or smaller weight or a different size or shape.

Modify Workplace Layout
5.11 The layout of the plant, equipment and furniture may be modified or rearranged. This may include increased attention to housekeeping and maintenance functions.

Rearrange Materials Flow
5.12 The schedule or timing, and path(s) of materials flow may be modified. The risks may be reduced by rearranging containers and the way materials are moved around the workplace.

Different Actions, Movements, Forces
5.13 With or without workplace modifications, a task may be done in a different way, using different actions, movements and forces.

Modify Task - Mechanical Assistance
5.14 The risk associated with a task can be reduced by mechanical assistance, minor rearrangements of plant and equipment and an improved (or effective) maintenance program.

Modify Task - Team Lifting
5.15 The actions, movements and forces required for manual handling can be modified by team lifting arrangements.

Mechanical Handling Equipment
5.16 The provision of mechanical handling equipment with the provision of appropriate training can reduce the risk by reducing the force required.

Training
5.17 Where the previous options have been unable to reduce a significant risk, then the person requires particular instruction, training and/or education in the manual handling task.

Other Administrative Controls
5.18 Other administrative controls requiring consideration include any special needs relating to the employee, such as their state of health, and clothing.

Job Redesign

Modify Object
5.19 Where the presence of a risk factor has been identified, the modifications suggested in the following questions may assist to reduce the risk:

a) Can the object be made lighter?
b) Can the object be packaged in smaller containers?
c) Can the object be made less bulky, so that it can be handled closer to the employee's centre of gravity?
d) Can the shape or surface texture of the object be changed to make it easier to grip?
e) Could the surface be cleaner or cooler, or the edges less sharp, so the employee can hold the object against the body?
f) Can handles be provided, or some type of sling used to move the object?
g) Is the object designed, or the material packaged, so that it will not shift unexpectedly while it is being moved?

Modify Workplace Layout
5.20 Modification of the workplace layout can reduce the risk associated with manual handling. Where risk factors have been identified, then particular workplace modification may be effective in reducing the risk. In some circumstances the location of some controls and equipment may be influenced by international maritime safety regulation and ship design necessities. Examples of the modification of workplace layout are given in the following figures (Figures 9-16).

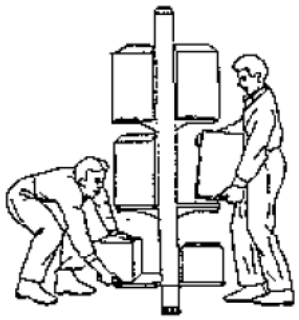


Figure 9 - *Store heavier and frequently used items at waist level*

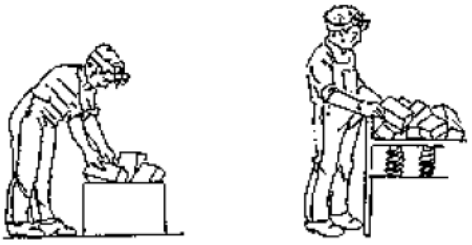


Figure 10 - *Raise work level by use of self-adjusting platform*

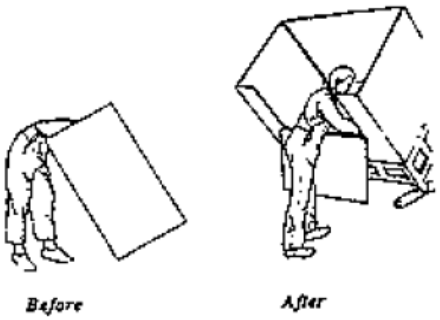


Figure 11 - *Prevent excessive bending of the back by adjusting work level*

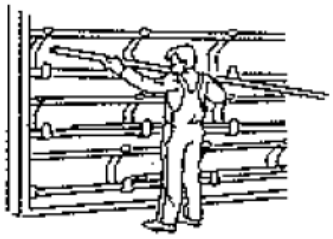


Figure 12 - *Adjustable storage heights*

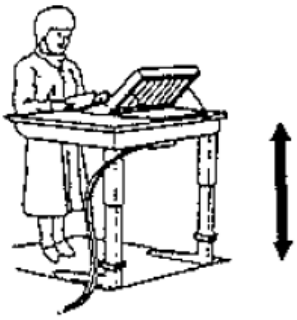


Figure 13 - *Adjustable work heights*

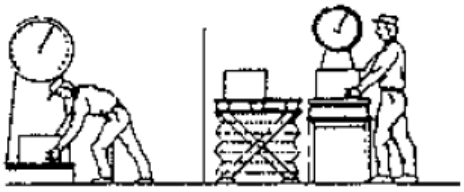


Figure 14 - *Adjustable work heights*

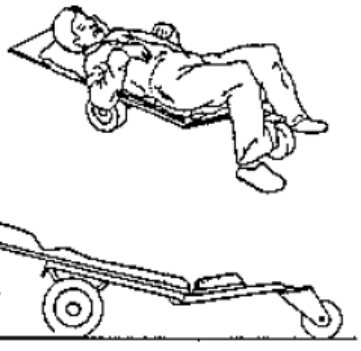


Figure 15 - *Avoid muscle fatigue when working in awkward positions*

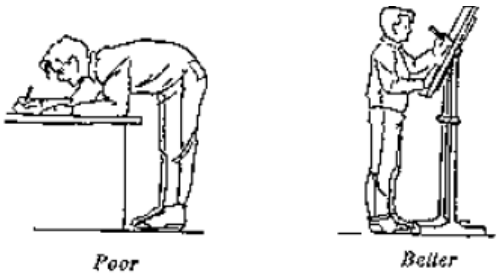


Figure 16 - *Improve posture*

Tools Design and Modification

5.21 The design of tools, implements and controls has an influence on work postures, movements and physical stress. Some principles of good design are:

a) Tools are as light as their function will permit, that is, heavy tools are fitted with devices to save the employee from having to support an unnecessary weight and designed for two handed use.

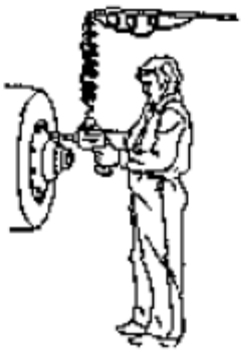


Figure 17 - *Suspended tools avoid unnecessary load*

b) Tools are well balanced. The angle between handle and working parts is designed to avoid unnatural bending of the hands and arms.
c) The handle is designed to suit the grip and force required, and preferably in such a way that the user can change grip.
d) The grip surface does not conduct heat or cold easily. It is sufficiently rough to prevent hands from slipping and it has no sharp or projecting parts to impose an uneven or unnecessarily heavy surface pressure on the hand.
e) The positioning, resistance direction of movement and length of travel of controls are suitable for the employees and job.
f) Tools are provided with adequate vibration insulation if necessary.
g) Tools are suitable for both right-handed and left-handed employees and for hands of different size.

Controls Design

5.22 In relation to controls, hand controls are often preferable for precision or speed of operation, while foot controls are generally best if greater force has to be applied. Pedals are most conveniently and safely operated from a seated position. If the employee has to stand up, the pedal shall be designed and positioned in such a way that the employee can support the foot on the pedal at the heel. This will make it easier to keep balance.

Rearrange Materials Flow

5.23 Where the presence of risk factors has been identified, then the following rearrangement may reduce the risk:

a) Rearranging the containers and the way materials are moved around the workplace, between different parts of the work process.
b) Placing loads to be handled in an optimum location will also reduce the risk. The best height range for handling loads is around waist level with lifting between the knuckle and the shoulder being acceptable.

5.24 The principles outlined above are illustrated in Figures 18-24.

Rearrange materials flow

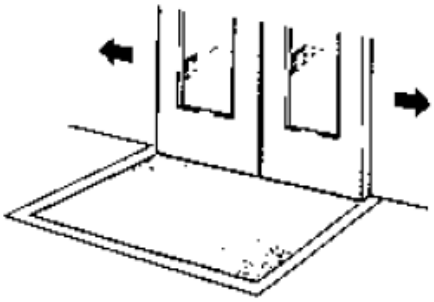


Figure 18 - *Automatic door*

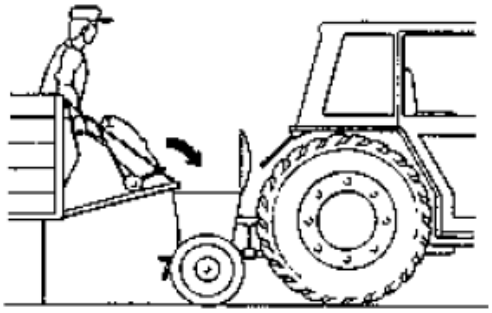


Figure 19 - *Gravity feed principle to avoid lowering*

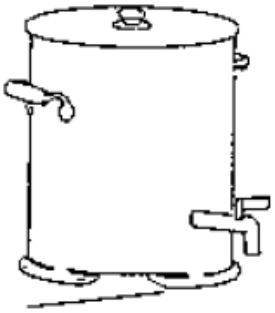


Figure 20 - *Tap avoids lifting to empty*

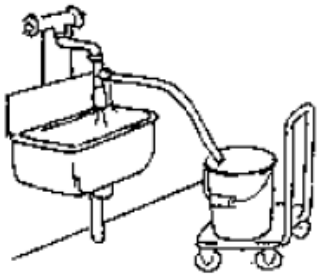


Figure 21 - *Hose avoids lifting*

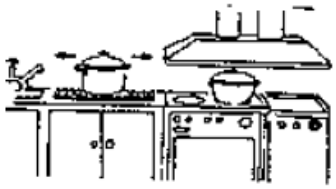


Figure 22 - *Rollers avoid carrying*

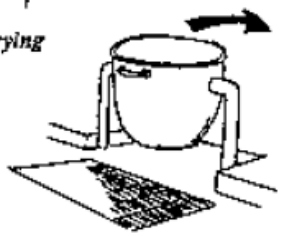


Figure 23 - *Pour without lifting*

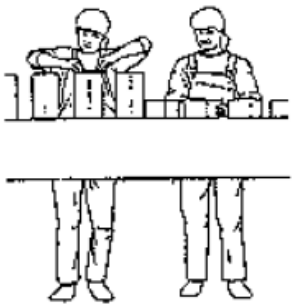


Figure 24 - *Tilt objects to reduce work height*

Different Actions, Movements, Forces

5.25 Where risk factors have been identified, the following suggestions may assist in reducing the risk.

5.26 Bending movements can be reduced by***:***

a) using lift tables, work dispensers and similar mechanical aids;
b) raising the work level;
c) positioning all material at work level;
d) keeping materials at work level, for example, avoid lowering objects that shall later be lifted; and
e) eliminating large horizontal reaches.

5.27 Twisting movements can be reduced by:

a) positioning all tools and materials in front of the employees;
b) using conveyors, chutes, slides or turntables to change the materials flow direction;
c) providing adjustable swivel chairs;
d) providing sufficient work space for the employee's whole body to turn; and
e) improving layout of the work area.

5.28 Reaching motions can be reduced by**:**

a) positioning tools and machine controls close to the employee;
b) positioning materials, workpieces and other heavy objects as near the employee as possible;
c) enabling the object handled to be kept close to the body;
d) reducing load or container size; and
e) enabling the employee to walk around the load or to rotate it.

5.29 Lifting and lowering forces can be reduced by:

a) eliminating the need to manually do this by using lift tables, forklifts, cranes, hoists, balancers, drum and barrel dumpers, work dispensers, elevating conveyors and similar aids, raising the work level, lowering the position of the employee and using gravity dumps and chutes;
b) reducing object weight by reducing load size (specify to suppliers, for example, in regard to photocopying paper packaging), reducing capacity of containers, reducing the weight of the container, reducing load in each container and reducing the number of objects lifted or lowered at one time;
c) increase object weight so that it shall be handled mechanically by using a unit or bulk load concept such as palletised loads;
d) reducing the holding position away from the body by changing object shape, providing suitable grips or handles, providing greater access to the load and improving workplace layout; and
e) converting to pushing or pulling.

5.30 Pushing and pulling forces can be reduced by:

a) eliminating the need to push or pull by using powered conveyors, using powered trucks or movers and using slides, rollers or chutes;
b) reduce required forces by reducing load weight; using non-powered conveyors, air bearings, ball castor tables, monorails and similar aids; using four-wheel hand trucks, hand trolley with good bearings and large

diameter wheels or castors appropriate to the particular surfaces; providing good maintenance of equipment and floor surfaces; using mechanical pushers or pullers; and

c) reduce the distance of push or pull by improving work area layout; relocating production or storage area, or similar system change.

5.31 Carrying forces can be reduced by:

a) converting to pushing or pulling by use of conveyors, air bearings, ball castor tables, monorails, slides, chutes and similar aids, using forklifts, two or four-wheel hand trucks, trolleys and similar;
b) reducing object weight by reducing object size, reducing capacity of containers, reducing container weight, reducing load in each container and reducing the number of objects carried at one time; and
c) reducing carry or transport distance by improving work area layout, relocating storage or production area, or similar system change.

5.32 Holding forces can be reduced by:

a) reducing object weight, as above;
b) reducing object size;
c) reducing holding time;
d) eliminating holding by using, for example, jigs and fixtures; and
e) using mechanical loading and unloading.

5.33 Principles involved in minimising the risk of injury when applying force include:

a) pushing/pulling is more efficient if applied at or around waist level;
b) pushing in/pulling out is stronger than left/right (across the body); and
c) for manual handling, significantly higher push/pull forces are possible when standing than when seated, and the use of body weight in pushing/pulling is preferred.

Modify Task – Mechanical Assistance

5.34 Examples of mechanical aids and some potential hazards which may be encountered in their use are given below.

Hooks

5.35 The employee should be trained in the use of hand or packing hooks so that they will not glance off hard objects. If the hook is carried in the belt, the point shall be covered.

Bars

5.36 The major hazard in the use of a crowbar is that it may slip. The point or edges should have a good `bite'.

Rollers

5.37 Rollers are often used to move heavy and bulky objects. Fingers or toes may be pinched or crushed between a roller and the floor.

Jacks

5.38 All jacks should be clearly marked with their safe working load. The surface onto which a jack is placed shall be level, clean and be sturdy enough to support the load. After the load is raised, additional support should be placed under it. Employees using jacks should wear safety shoes and instep guard protection because handles may slip or parts may fall.

Platforms
5.39 Platforms are useful for loading and unloading, provided that the load is maintained at a convenient height for lifting and handling.

Trestles
5.40 These and other support may be used for manoeuvring long loads on the point of balance, or for readjusting the grip or carrying posture.

5.41 The following figures (Figures 25-46) are examples of the use of mechanical assistance.

Figure 25 - *Adjustable platform reduces stooping and reaching*

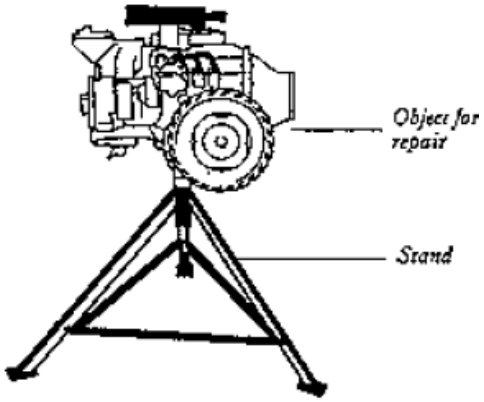


Figure 26 - *Stand avoids awkward posture*

Figure 27 - *Simple trolley avoids awkward handling*

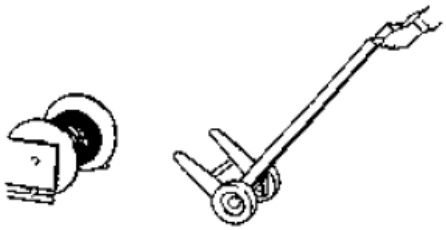


Figure 28 - *Simple lever and wheels avoids stooping and reduces effort*

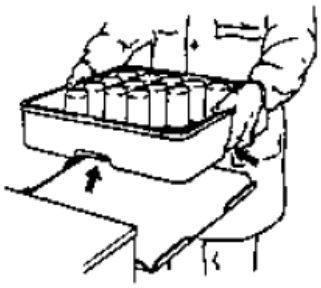


Figure 29 - *Design for finger space*

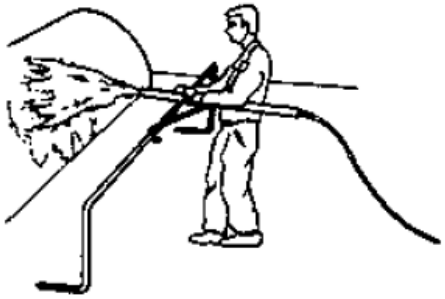


Figure 30 - *Use structures to absorb reaction forces*

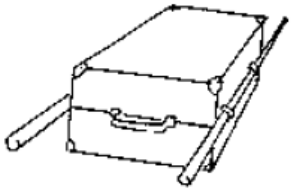


Figure 31 - *Simple frame enables better posture*

Figure 32 - *Hose rests on and clips over bar*

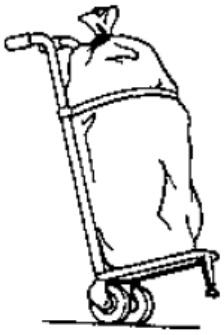


Figure 33 - *Hand trolley*

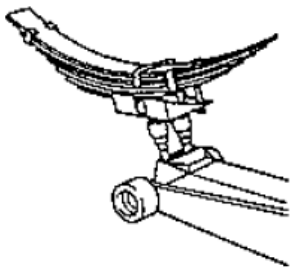


Figure 34 - *Support weight by use of jack*

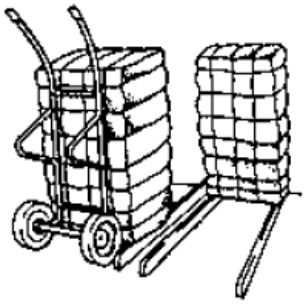


Figure 35 - *Rails enable trolleys to slide under loads*

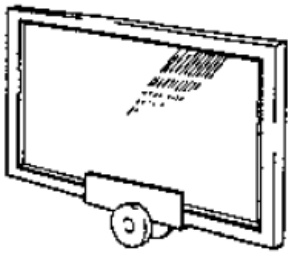


Figure 36 - *Wheel set enables pushing in place of lifting*

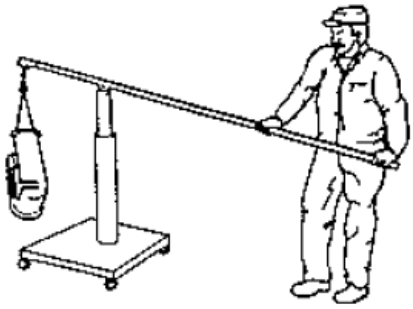


Figure 37 - *Lever and rolling platform reduce effort*

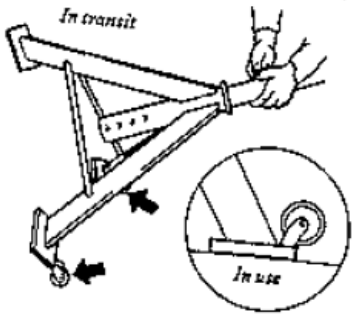


Figure 38 - *Wheels avoid carrying when moving*

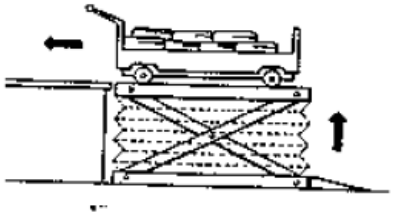


Figure 39 - *Adjustable height platform reduces lifting*

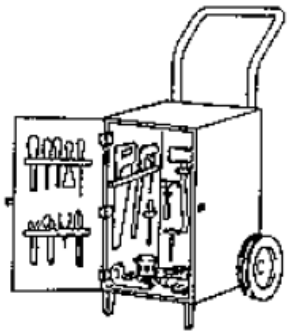


Figure 40 - *Custom-made trolley avoids carrying*

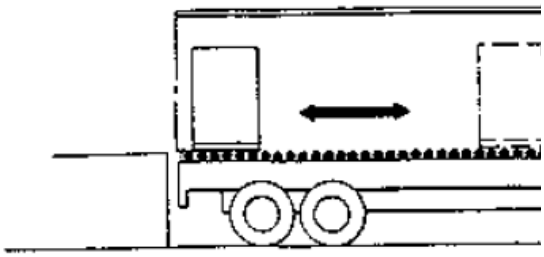


Figure 41 - *Floor rollers assist moving*

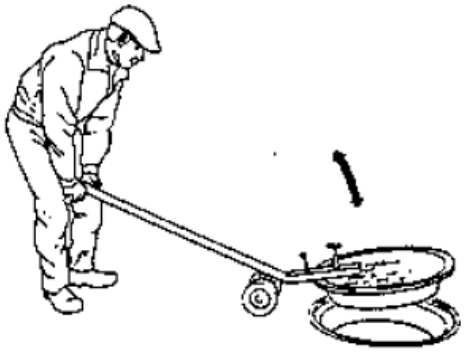


Figure 42 - *Levers reduce force required*

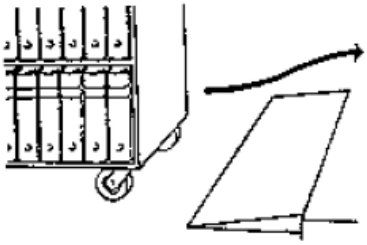


Figure 43 - *Ramps avoid lifting or dragging*

Figure 44 - *Rolling platform to avoid lifting*

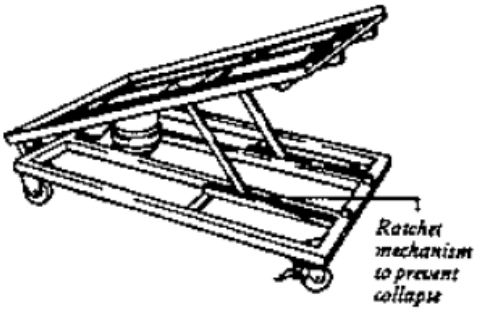


Figure 45 - *Rolling platform with tilt mechanism*

Modify Task - Team Lifting

5.42 The regular need for team lifting usually signals the need for redesign. Introduction of team lifting may be effective in reducing risk in certain manual handling tasks.

5.43 Whenever team lifting is used, it is essential to co-ordinate and carefully plan the lift. In organising a lift it is important to ensure:

a) an adequate number of persons in the team;
b) that one person is appointed to coordinate the lift;
c) that the team members are of similar capacity and know their responsibilities during the lift;
d) that appropriate training in lifting has been provided; and
e) the lift has been rehearsed, including what to do in case of emergency.

MECHANICAL HANDLING EQUIPMENT

5.44 Where risk factors have been identified, then the provision of mechanical handling equipment may reduce the risk.

5.45 Mechanical handling equipment includes:

a) simple aids, for example, levers, sliding rails, conveyers, that is, belt conveyors and roller conveyors;
b) cranes and hoists, for example, jib cranes, overhead travelling cranes and mobile hoists;
c) positioning equipment, for example, lift jacks; and
d) industrial vehicles, for example, fork lift trucks and two-wheeled hand trucks.

5.46 Mechanical handling equipment should:

a) be easy to use and not cause an obstruction;
b) be designed to suit the load; and
c) be readily available even in emergencies.

5.47 Operators should have information, instruction, and opportunities for hands-on experience on their use.

5.48 The design, installation and use of mechanical handling equipment may be subject to State or Territory legislation.

Examples of Mechanical Handling Equipment

Conveyors

5.49 Conveyors are generally useful when loads are uniform, materials move continuously, routes do not vary, loads are constant, movement rate is relatively fixed, conveyors can bypass cross traffic, and the path to be followed is fixed. Types of conveyors include:

a) roller conveyors;
b) belt conveyors;
c) screw conveyors;
d) chutes;
e) monorails; and
f) trolley conveyors.

Cranes and hoists

5.50 Cranes and hoists are most commonly used when movement is within a fixed area, moves are intermittent, loads vary in size and weight, cross traffic will interfere with conveyors, and/or loads handled are not uniform. Types of cranes and hoists include:

a) overhead travelling cranes;
b) gantry cranes;
c) jib cranes;
d) hoists; and
e) stacker cranes.

Industrial trucks

5.51 Industrial trucks are generally used when loads are moved intermittently, movement is over varying routes, loads are uniform, cross traffic would prohibit conveyors, clearances and running surfaces are adequate and suitable, most of the operation consists of, for example, pallet-lifting, manoeuvring and stacking, and material can be put into unit loads. Types of industrial trucks include:

a) forklift trucks;
b) platform trucks;
c) two-wheel hand trucks;
d) tractor-trailer trains; and
e) hand stackers.

5.52 Illustrations of mechanical handling equipment follow (Figures 47-63).

Mechanical Handling Equipment

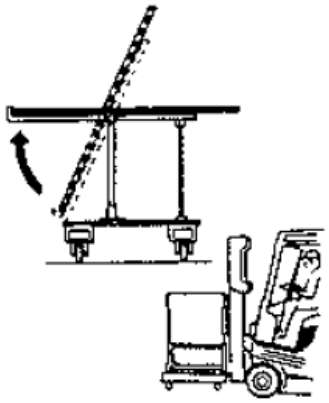


Figure 47 - *A transport wagon designed for handling sheets of material*

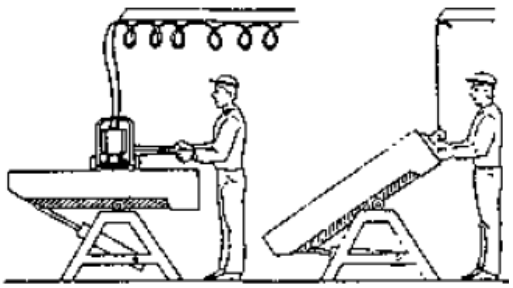


Figure 48 - *Adjustable support stage provides a better work position for finishing surfaces*

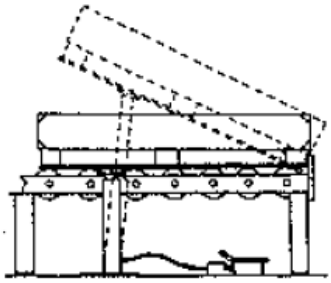


Figure 49 - *Hydraulic tilt bed*

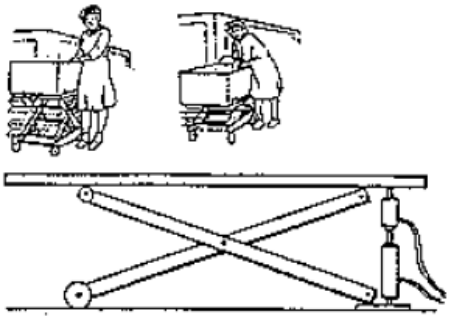


Figure 50 - *Adjustable scissor table for different work heights*

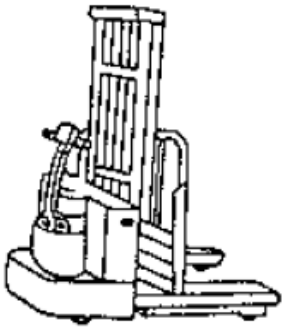


Figure 51 - *Forklift*

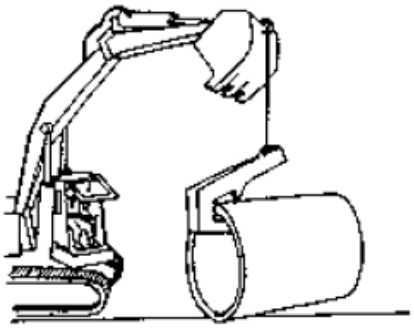


Figure 52 - *Using c-hook to move cylinders and pipes*

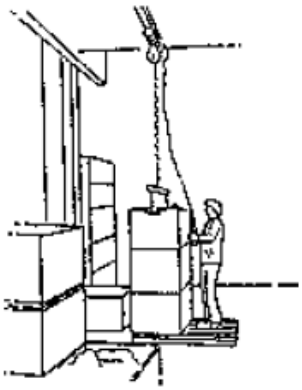


Figure 53 - *Electric hoist*

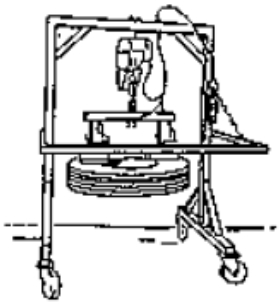


Figure 54 - *Ganty crane for lifting heavy material off pallets*

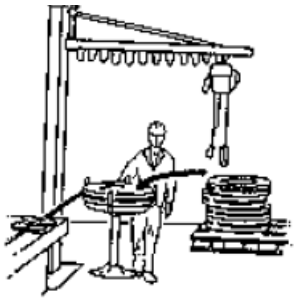


Figure 55 - *Overhead crane for heavy lifting*

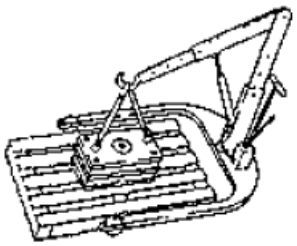


Figure 56 - *Mobile crane*

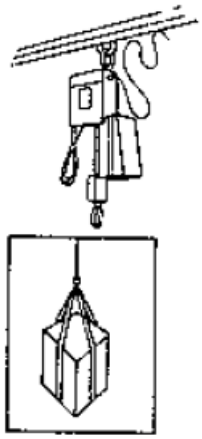


Figure 57 - *Specially designed hooks or slings for lifting*

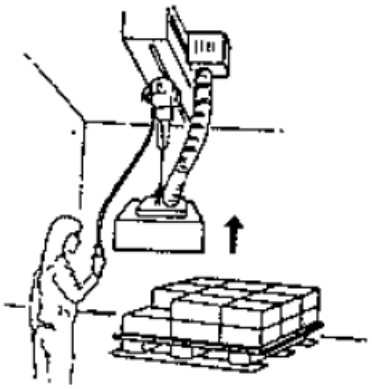


Figure 58 - *Vacuum lifter for material handling*

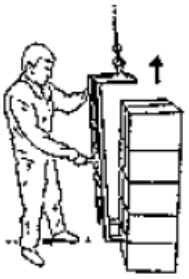


Figure 59 - *Lifting device for moving boxes and crates*

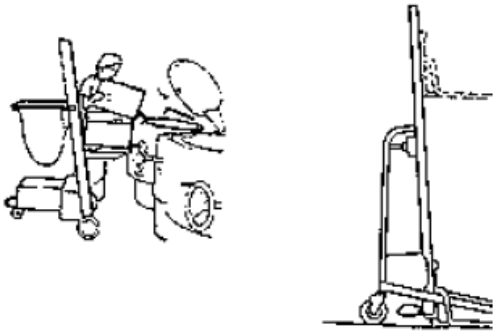


Figure 60 - *A lifting cart makes it easier to dispense material above shoulder height*

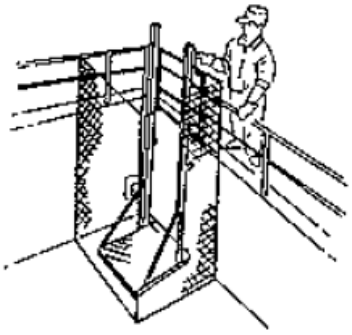


Figure 61 - *Elevator for transporting goods between floors*

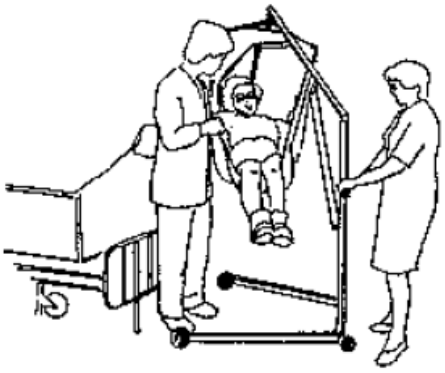


Figure 62 - *Mechanical aids for patient lifting and moving*

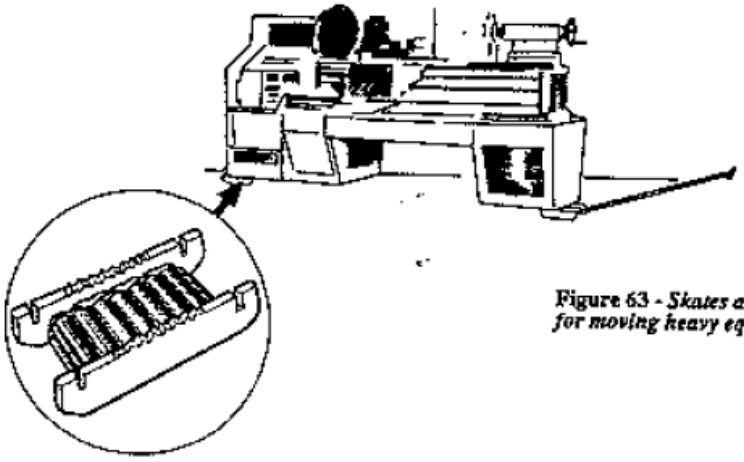


Figure 63 - *Skates are useful for moving heavy equipment*

TRAINING

5.53 The principles dealing with general training are outlined in Sections 2.21-2.26 of this code of practice.

Particular Training

5.54 The *National Standard for Manual Handling* provides (Section 5.3):

> The employer shall, if manual handling has been assessed as a risk:
> a) redesign the manual handling task to eliminate or control the risk factors; and
> b) ensure that employees involved in manual handling receive appropriate training, including training in safe manual handling techniques.

5.55 The provision of particular training should follow an analysis of the task(s) involved which will have identified the risk factors present. Once the analysis has eliminated job design options as unworkable, how to do the job with least risk should be defined and forms the basis of the particular training.

5.56 The training shall be specific to the task and will aim to ensure that the employee:

a) understands the reasons for doing the job with least risk;
b) can recognise the risks and decide the best way to go about it;
c) knows what is the best way to go about it; and
d) can perform the task in this way.

5.57 This training should be supplemented by appropriate supervision when required. Any training which is provided for employees required to carry out the manual handling should also be provided to their supervisors.

Training in the Principles of Correct Manual Handling and Lifting

Manual Handling

5.58 For purposes of training programs, the following principles apply for most manual handling tasks.

Plan

5.59 As one way of avoiding overexertion injuries, the employee undertaking the manual handling should assess the load, determine where it will be placed and decide how it will be handled. By first assessing the situation, the employee can decide if mechanical assistance/aids or another person is needed to move the object, animal or person.

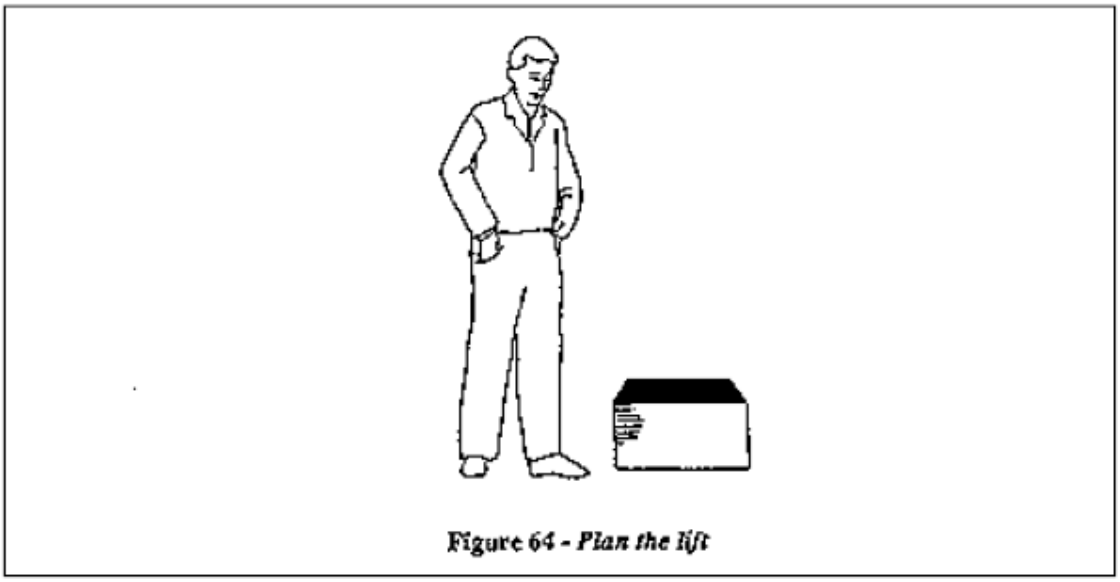


Figure 64 - *Plan the lift*

Determine the best technique

5.60 All factors should to taken into account when determining the best technique. The best handling technique involves suitable balance and avoidance of unnecessary bending, twisting and reaching. A person undertaking a lift should lift efficiently and rhythmically, minimising bending of the lower back. The knees should be bent, but preferably not at a right angle. When applying force, the principles in Section 5.25-5.33 of this code of practice are also relevant.

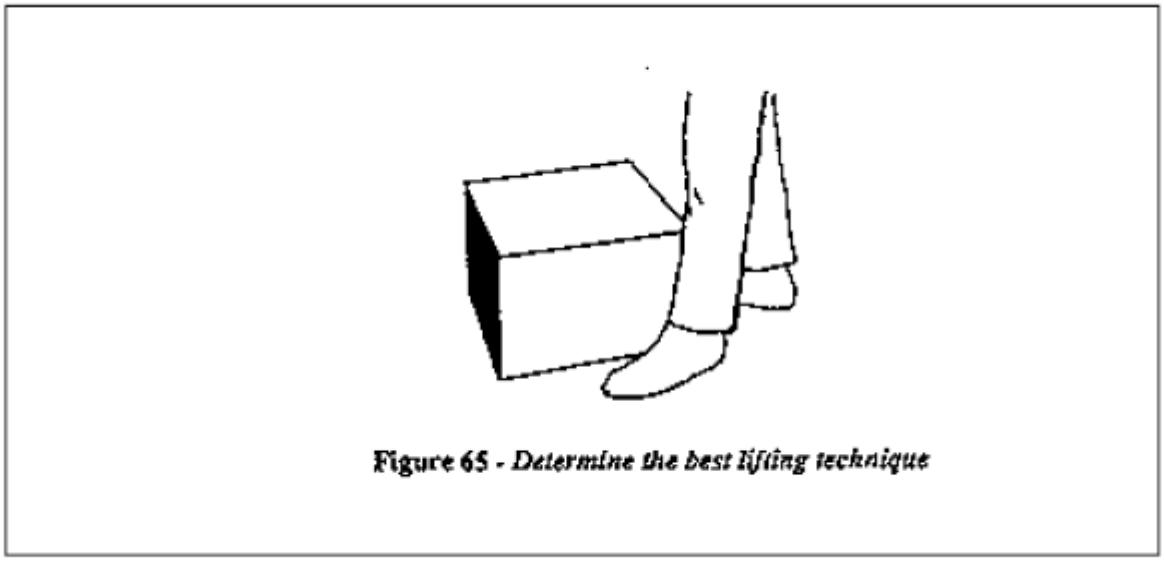


Figure 65 - *Determine the best lifting technique*

Take secure grip on the object being handled

5.61 The grip helps to determine how safe the task will be. Whenever possible, a comfortable power grip (with the whole hand) should be used rather than a hook or precision grip (with fingers only).

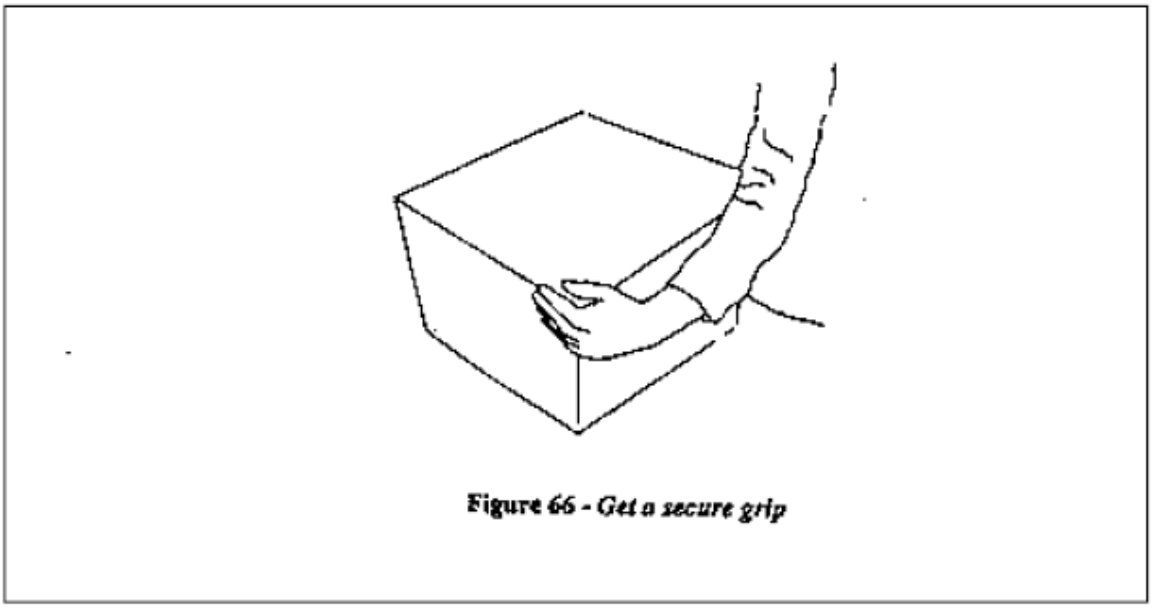


Figure 66 - *Get a secure grip*

Pull the load in close to the body

5.62 For lifting in particular, it is important to have the centre of gravity of the load close to the body to prevent excessive stress on the back and to use the strongest muscles of the arms to hold the load. It is important to minimise the effects of acceleration by lifting slowly, smoothly and without jerking.

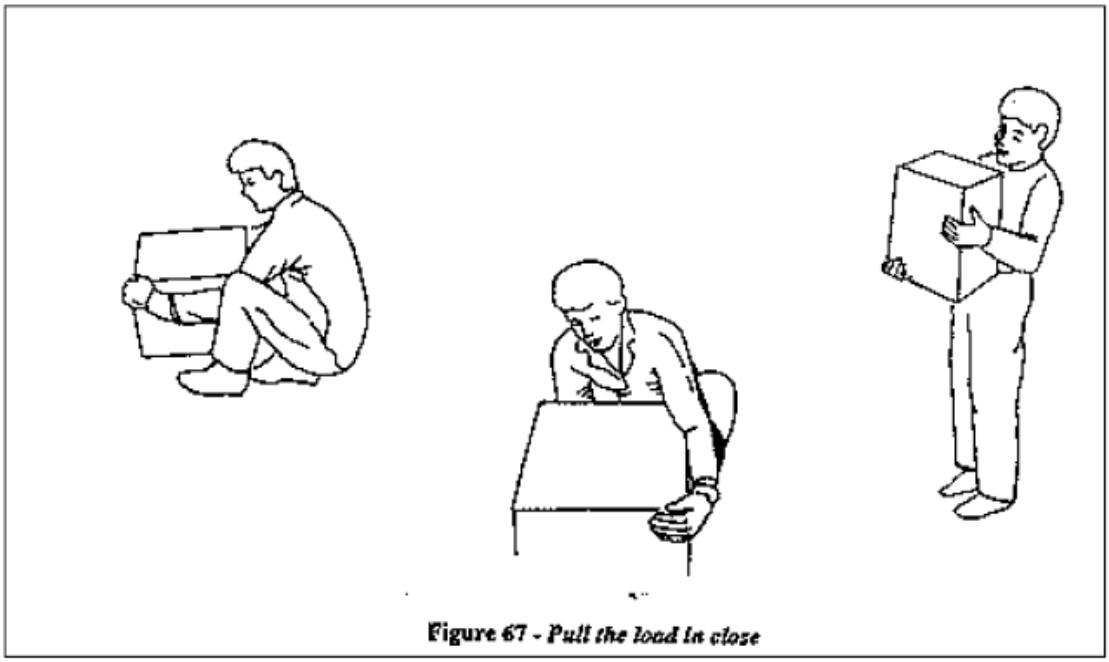


Figure 67 - *Pull the load in close*

Vary heavy handling tasks with lighter work

5.63 The job/task should be designed so as to provide alternative tasks that do not heavily stress the same muscles. Throughout the work shift, heavier handling tasks should be alternated with lighter tasks which allow the active muscles to recover.

Team lifting
5.64 To enable load sharing, lifting partners should be of similar height and build and should be trained in lifting techniques. There should be a person nominated as team leader to coordinate the lift. Team lifting should not be used as a first option in risk control.

Figure 68 - *Team lifting*

Manual Lifting
5.65 It is difficult to generalise about the optimum or maximum weight of a load to be lifted, because there are so many factors involved besides the actual weight to be lifted.

5.66 The following points should be considered:

a) Lifting aids should be used if possible.
b) There should be sufficient space for lifting to be done in the right position and with correct posture and body movements.
c) There should be no obstructions when moving objects.
d) The start and finish height of the load should be a suitable level above the floor, that is, between mid-thigh to shoulder height, preferably at about waist height.
e) The centre of gravity of the load should be as close to the body as possible. A load is more difficult (heavier) to lift or carry if it is not close to the body. For example, 10 kg held at a distance of 80 cm imposes the same load as 50 kg right next to the body.
f) The back should not be twisted or bent sideways.
g) Lifting with one hand should be avoided.
h) If lifting has to be performed frequently or for prolonged time periods, then the acceptable weight of the load rapidly diminishes.

OTHER ADMINISTRATIVE CONTROLS

Special Needs
5.67 The state of an individual's health should be taken into consideration when allocating manual handling duties, drawing upon medical advice as appropriate. When an individual's health changes and those changes affect capacity to perform normal duties, whether permanently or temporarily (such as hernia, pregnancy or post-operative recovery), as far as workable the work system should be adapted to suit the new circumstances or the individual should be allocated other tasks.

5.68 The increased experience and skills of older workers may compensate substantially for decline in the resilience of their tissues, including ligaments and joints.

5.69 In making such decisions, it may be necessary to seek medical assessment of individual cases in relation to the specific duties of a job, rather than generalised conclusions about the capacities of groups to perform manual handling tasks.

Clothing

5.70 In some situations, special clothing is required to reduce risk of injury. The following examples demonstrate how special clothing can reduce the risk of injury:

a) gloves provide protection from cuts and abrasions;
b) proper footwear assists prevention of injuries from slips and falls, and from dropped loads; and
c) proper clothing allows loads to be carried close to the body.

SAFE MANUAL HANDLING CHECKLIST
GENERAL RISK IDENTIFICATION

The direct observation by the employer and all employees of work areas and of the task being performed will assist in identifying risk. This need not be the sole responsibility of one individual. Workplace inspections, audits, and walk through surveys and the use of checklists such as this one can assist in the risk identification process. It is best if these direct observation tools are tailored to the specific characteristics of the organisation or industry concerned. A general risk identification checklist and guidance on its use is provided in this section.
If any of the questions in the checklist result in a YES answer, further assessment of that risk factor is required. Generally the more YES answers that result for a particular task, the higher the priority for risk assessment.
Information on risk assessment and practical advice for the identification and control of risks arising from manual handling activity in workplaces, reference should be made to the Office of the Australian Safety and Compensation Council's *National Standard for Manual Handling*, and the *Code of Practice for Manual Handling* for the Australian Maritime Industry.

Description of Work Location Date __/__/__

Task Description

Assessed by

Employees' Representative(s)

MOVEMENTS, POSTURE AND LAYOUT DURING MANUAL HANDLING

1.	Is there frequent or prolonged bending down where the hands pass below mid-thigh height?	□Yes □No
2.	Is there frequent or prolonged reaching above the shoulder?	□Yes □No
3.	Is there frequent or prolonged bending due to extended reach forward?	□Yes □No
4.	Is there frequent or prolonged twisting of the back?	□Yes □No
5.	Are awkward postures assumed frequently or over prolonged periods, that is, postures that are not forward facing and upright?	□Yes □No

TASK AND OBJECT

6. Is manual handling performed frequently or for long time periods by the employee(s)? □Yes □No
7. Are loads moved or carried over long distances? □Yes □No
8. Is the weight of the object:
   a) more than 4.5 kg and handled from a seated position? □Yes □No
   b) more than 16 kg and handled in a working posture other than seated? □Yes □No
   c) more than 55 kg? □Yes □No

Note: Weight is not used to prescribe absolute limits, but is one of the important factors to be considered when assessing and controlling risk.

9. For pushing, pulling or other application of forces: are large push/pulling forces involved? □Yes □No
10. Is the load difficult or awkward to handle, for example, due to its size, shape, temperature, instability or unpredictability? □Yes □No
11. Is it difficult or unsafe to get adequate grip of the load? □Yes □No

WORK ENVIRONMENT

12. Is the task performed in a confined space? □Yes □No
13. Is the vessel pitching and rolling too much for the task to be safe? □Yes □No
14. Is the lighting inadequate for safe manual handling? □Yes □No
15. Is the climate particularly cold or hot? □Yes □No
16. Are the floor working surfaces cluttered, uneven, slippery or otherwise unsafe? □Yes □No

INDIVIDUAL FACTORS

17. Is the employee new to the work or returning from an extended period away from work? □Yes □No
18. Are there age-related factors, disabilities or other special factors that may affect task performance? □Yes □No
19. Does the employee's clothing or personal protective equipment interfere with manual handling performance? □Yes □No