



SAFE HANDLING, LIFTING AND MOVING OF LOADS

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INTRODUCTION

Injury to muscles or the skeleton (principally the back) is common in all workplaces. It accounts, nationally, for a very significant proportion of total sickness absence from work. Staff at all NERC sites have suffered from such injuries, which tend to be slow to heal, affect both work and leisure activities and tend to recur.

Almost all of these injuries are preventable.

NERC is required under the **Manual Handling Operations Regulations (1992)** to:

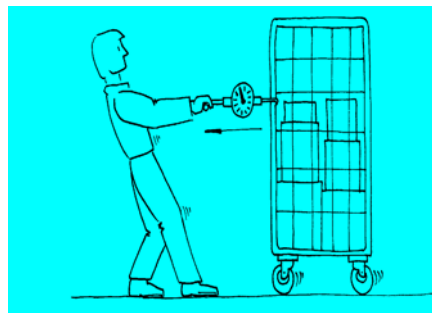
- Avoid the need for manual handling of loads where possible
- Assess the risk when alternatives are not possible
- Devise safe systems of work to minimise the likelihood of injury
- Provide and maintain appropriate equipment
- Train employees in safe handling of loads
- Assess the weights of loads and inform employees
- Manage and keep records of the assessments and safe working systems under the **Management of Health & Safety at Work Regulations (1999)**

Staff are required to follow instructions on safe handling of loads, avoid endangering themselves or others and to report problems to line management.

You must record all injuries and near misses in the local Accident Book.

Manual handling covers:

- Lifting, pulling, pushing of loads by hand
- The manual component where lifting or moving equipment is used
- Movement of materials on delivery into storage and later movement out of storage
- Moving equipment and supplies within the site
- Carrying equipment and materials into the field
- Packing and unpacking vehicles for the transport of equipment and materials
- **Less obvious tasks such as:** digging, hammering in posts or soil corers, levering etc.
- **Repetitive tasks** which may seem trivial individually (eg driving large numbers of screws).



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NOTE: Handling loads mechanically – e.g. by using cranes, fork lift trucks etc – is covered by separate regulations and must be assessed independently. The few NERC sites which carry out large scale loading and unloading operations must write specific policies and procedures for this highly specialised work.

If you hire lifting and moving equipment you must comply with the requirements of the hirer. NERC staff will normally need training to operate hired equipment. You must assess the risks of hired equipment in the normal way. If you use large equipment or move heavy loads, the safety of bystanders becomes an issue. You may need to close the areas where this equipment is to be used to staff who are not involved in operating it. The head of site, or a senior line manager, must consider safety issues before hiring such equipment.

Contractors who need to use heavy lifting equipment should discuss responsibilities and limitation of access to work sites with local NERC management before work starts. Dealing with contractors on NERC sites is covered in [NERC Health & Safety Procedure Number 13: Managing contractors](#).

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Manual handling operations fall into two clear categories: regular tasks and occasional lifting. Managers should assess and control regular tasks. Occasional lifting can only practically be assessed by individual staff at the time. In both cases, expert advice and assistance may be sought via the site and Centre/Survey Safety Advisers.

The need to handle materials should be assessed at the site level. Management have an obligation under the **Manual Handling Operations Regulations (1992)** to minimise manual handling of materials wherever possible. Where are deliveries received, used or stored? Is a better route or organisation possible? Is heavy equipment stored as near as possible to where it is used? Is movement of materials a risk to bystanders? Document questions asked and possible solutions. Cost and plan for longer-term improvements; remember, compensation payments may be substantially higher than immediate cash cost.

Identify regular tasks. Clear description of the tasks is essential to making accurate assessment of the hazards and risks. An honest description of how the task is done now may prevent a future injury. For each task, identify **and document**:

- Staff involved and training record in manual handling
- Loads to be moved (maximum loads to be assessed – for example, if several items are crated for transport to the field, the crate should be assessed even if the items are carried individually on arrival at the field site)
- Weights of loads
- Height and distance of load movement
- Complexity of lift (straight or twisting movement, size of item)
- Availability of lifting or moving aids (trucks, trolleys, ramps etc.)
- Regularity of the task
- Risk to bystanders
- Difficulty of the terrain (carrying loads in, for example, mud flats, mountainous areas or thick woodland may be very strenuous; you may need to assess the fitness of individual staff through appropriate medical examinations. The **Management of Health & Safety at Work Regulations (1999)** call for assessment of the need for health surveillance.)

Carry out a risk assessment for each task. The rationale and principles of risk assessment are detailed in [NERC Health & Safety Procedure Number 12](#). In terms of manual handling, risk is the likelihood of personal injury arising from movement of specific loads by specific staff members; it is classified as high, medium or low.

For each load, in each task, assess **and document**:

- The safe load which can be moved by each staff member under the conditions of the task (use the guidance values in [Appendix III](#) and the questionnaire on the risk assessment form in [Appendix IV](#) to determine this value)
- Training, experience, gender, body weight and size and general fitness of individuals
- Moving aids available
- Risk – by comparing safe load against load to be moved (with and without aids) (use the risk assessment form in [Appendix IV](#))

OPERATIONAL PROCEDURE continued

Write a Safe System of Work to cover the task. A Safe System of Work is an agreement between employer and staff on how tasks should be carried out to avoid personal injury. It **must** address all medium and high risk values identified in the risk assessment. If risk is kept low by the use of equipment or moving aids, the Safe System of Work must specify that these are always used. For manual handling, a safe working system might, for example:

- Nominate particular staff to move specified loads
- Specify the use of equipment or aids (trolleys, trucks etc.)
- Limit the size or weight of transport crates
- Split current loads into smaller units
- Specify that two people are needed to lift particular items
- Specify a particular vehicle type for the task
- Limit weather conditions under which the task can be performed
- Require regular medical checks on staff

You should only agree a Safe System of Work when all high risk areas have been eliminated. You can operate an agreed system which poses medium risks only to gain experience in the short term; all staff working to such systems must be aware of the situation.

Authorisation. The Safe System of Work should be authorised by a Senior line manager and all staff involved should sign it. More senior line managers should resolve any disagreements on its provisions.

Record actions. Line management should hold all documentation: the risk assessment, Safe System of Work, correspondence, calculations and any outstanding disagreements between parties. All staff involved in the task should receive copies of the Safe System of Work. A record should be kept, signed by all parties to the agreement, with an agreed revision date. See the [NERC Health & Safety Procedure on risk assessment \(Number 12\)](#).

Encourage and monitor feedback. Line managers should encourage staff to report any problems or suggestions for change in the safe working systems. Staff should record all strains, fatigue or injuries in the local Accident Book; managers should record actions taken to deal with the problems. Line managers should check that the agreed Safe System of Work is achieving their objectives, and record their findings.

NOTE: There are usually regular tasks on any site where many staff will be involved on occasions, routine small maintenance tasks etc. All staff should be guided to the Appendices of this Procedure, where general lifting and moving guidelines and guidance weights for lifting are given. This will be adequate for many routine tasks. Where a risk assessment is needed and a Safe System of Work generated, it may be appropriate for generic documentation to be produced which can be used by any staff assigned to such tasks.



Director Centre/Survey/Laboratory: responsible for.....

- supporting positive action by all management levels.
- campaigns to encourage managers to act on priority areas.
- delegating responsibility to sites/divisions.
- auditing.
- annual reports on safety performance to NERC.

Site Director/ Head of Administration: responsible for.....

- assessing handling tasks and equipment on site.
- delegating specific responsibilities to line managers.
- deciding level of line management responsibility for record holding
- monitoring the effectiveness of the system.
- cooperation with auditing.
- annual reports to C/S/L Director on health & safety performance.
- monitoring reports of symptoms and taking action to deal with them.

Division/ Section/ Group/ Unit heads: responsible for.....

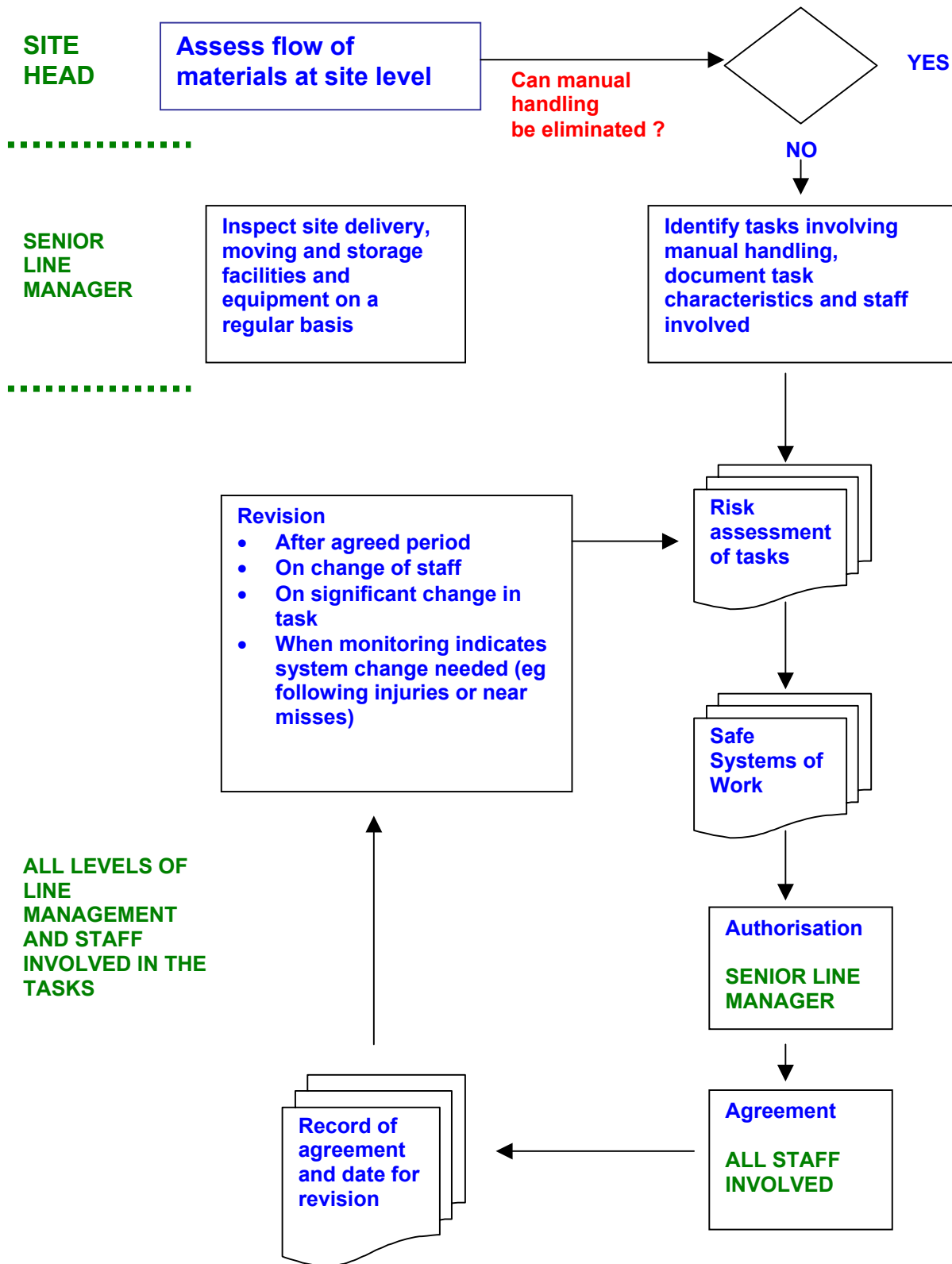
- making assessments of workstations
- Safe Systems of Work (where appropriate) and their authorisation.
- record keeping and monitoring the effectiveness of safety systems.
- inspecting workstations within their area of management responsibility.
- enforcing safety instructions and encouraging a positive safety culture.
- Annual reports to Site Director.

NB. All levels of line management are involved in health and safety management.

Staff: responsible for.....

- following management instructions
- minimising risk to themselves and others
- cooperating in the production of risk assessments
- reporting symptoms in the Accident Book.

Safe handling, lifting and moving of loads – SYSTEM DIAGRAM





Management:

The “Piper-Alpha syndrome”: The system is perfect in theory but everyone is operating it simply to conform with the law. There is no safety culture because there is no ownership or commitment to the safety systems.

Remedy – continuing management commitment, leadership by example, involvement of staff in the assessment and operation of safety systems.

Mixed messages: they come from management at all levels. Managers are often unaware of the conflict. If staff are told: “Safety is paramount”, “Deadlines have to be met” **and** “Costs must be kept down”, which do they respond to in practice? If the senior manager is saying “Safety first” but the immediate supervisor is saying “We haven’t time to do that”, who will staff listen to? “Safety must not be allowed to get in the way of science” expressed at any management level, and not countered, can undo months of effort to instill a safety culture.

Remedy – making managers aware of their inconsistencies, rapid and clear countering of negative messages, leadership by example.

Passing the buck: “Safety is the job of the Safety Adviser – nothing to do with me.” The message to staff is that safety is of peripheral interest and to be delegated if at all possible.

Remedy – remind managers that they carry both legal responsibility and liability. By ducking responsibility they increase liability - for both the individual manager and the organisation. Compensation payments come out of the science budget of the Centre/Survey/Laboratory. HSE will prosecute the most senior manager against whom they can prove negligence.

Pressure from supervisors: Most likely to affect more junior staff and, particularly, students and casual workers.

Remedy – senior management support for susceptible staff. Make it clear to supervisors that such pressure is unacceptable. A culture of acting on information given by “whistle-blowers”.

MAKE SURE THE MESSAGE IS CONVINCING, CONSISTENT AND ENFORCED

Staff:

Over-commitment to the job: Common in self-motivated scientists.

Remedy – The message is “short-term savings in time can lead to long-term adverse consequences for the individual and the organisation”. Training in manual handling for all staff likely to shift loads regularly.

The macho image: Demonstration of physical prowess – mostly male – or ‘need to show I can keep up with the men’ – female.

Remedy – The message is “just because you can lift it doesn’t mean you should” and “is image more important than injury?”

Just this once : The temptation to lift and carry it rather than go to get the trolley.

Remedy – Posters and promotional material. Guidance weights for lifting at key positions on site (storage areas, freezers, where vehicles are parked etc.). Sensible storage or positioning of lifting and moving equipment; do we need more trolleys or sack trucks? Instant reinforcement of the safety message from managers who see it happening. The message is “If in doubt - Don’t lift it!”

THINK BEFORE LIFTING



Management:

The management of safe handling, lifting and moving of loads requires:

- Clear lines of responsibility
- The setting of priorities and goals
- Commitment to provide facilities and equipment required for safety
- Provision of accredited training where a need is identified
- Documentary evidence that tasks involving manual handling have been identified and assessed for risk of personal injury
- Written Safe Systems of Work for all tasks involving significant risk
- Signed agreements between management and staff to work to Safe Systems of Work
- Records of the agreements and agreed dates of revision
- Agreed monitoring and auditing systems
- Provision for staff feedback and whistleblowing

Monitoring:

The monitoring of safe handling, lifting and moving of loads requires:

- Documentation of the management system
- Written records of the process of production of Safe Systems of Work
- Documentation of management follow-up after introduction of such systems
- The recording of incidents, injuries, illness, fatigue and near misses associated with the handling of loads
- Documentation of actions taken as a result of follow-up and accident reporting
- Assessment of safety attitudes amongst staff
- Documentation of training undertaken
- Maintenance of equipment and moving aids

Auditing:

The auditing of safe handling, lifting and moving of loads requires:

- Checking that the above documentation is in place
- Certifying that training is adequate and accredited
- Assessing management and staff attitudes by interview

APPENDIX I: THE MANUAL HANDLING OPERATIONS REGULATIONS (1992) – Summary



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- Manual handling is defined as transporting/supporting of a load including lifting, putting down, pushing, pulling, carrying or moving by hand/bodily force.
 - Each employer must, so far as is reasonably practicable, avoid the need for employees to do manual handling with risk of injury by finding alternative handling methods.
 - If it is not practicable to avoid manual handling the employer must assess operations, take steps to reduce the risk of injury and provide employees with details of the weight of the load, centre of gravity, whether the weight is asymmetrically distributed.
 - Assessments must be reviewed and revised when there are significant changes in the operations or when they are no longer valid.



General guidance on lifting, lowering, pulling and pushing loads

Take great care when lifting, carrying or moving heavy objects. Whenever possible, avoid manual handling of loads. Use trolleys, sack trucks etc. whenever you can; this is essential if loads are to be carried any distance.

NEVER attempt to lift a load that you don't think you can manage – get help.

ALWAYS be in charge of the load NEVER allow the load to take charge of you.

Always think about the job. Planning can often avoid the necessity for manual handling and may prevent serious injury. Remember the stage hands motto: **'Never lift what you can drag, never drag what you can roll, never roll what you can leave'**.

You must produce a risk assessment and Safe System of Work for regular handling jobs. For one-off or occasional jobs, it is still worth while checking the guidance on load size ([Appendix III](#)) and considering the consequences before moving the load. Back injury is very common, can cause long-term pain and incapacity and is easy to avoid.

Common sense rules:

- Always wear suitable loose fitting clothing and safety footwear. Make use of personal protective equipment where appropriate e.g. gloves, safety hats etc
- Always make use of appropriate handling aids e.g. barrows, trolleys, sack barrows, pallet trolley etc to minimise carrying distances.
- Where possible avoid carrying loads up stairs
- If you have to move loads around the corridors then get somebody else to open fire doors for you.
- Avoid storing heavy loads on the floor – the safest height to lift and put down loads from is at waist level.
- Do not use kick stools and step ladders for with manual handling operations – both are inherently unstable. Use suitable staging, platforms and walkways to handle loads above head height.
- NEVER intentionally create large loads when a number of small loads is a safer alternative. Making sure everything is kept together may be a convenient method of housekeeping but is unacceptable if it creates an unsafe manual handling operation.
- When packing boxes, crates etc to form a load for transport, always provide an indication of the weight and centre of gravity on the outside. However, when handling loads use common sense if you suspect that such information may be misleading i.e. the information applied to the original load but the box has been repacked – always test the load.

There are basic principles in lifting:

Foot placement - start with the load between the feet. The leading foot should be in line with the side of the load, pointing in the direction of movement, with the toes level with the front edge of the load. If the load is too big for you to do this, you should not be lifting it.

Knees bent / Back straight - get down to the level of the load by bending the knees and hips. Tuck the chin in, and keep the back straight. Lean forward a bit to get over the load, but do not incline the trunk more than is absolutely necessary. Avoid putting one knee on the floor and deep knee bends.

CONTINUED

Grip - get a full, firm, secure grip on the load.

Lift - pull the load firmly into contact with the body. Stand up in one co-ordinated movement keeping the load in contact with the body throughout.

Lowering - to lower the load, reverse the procedure bending the hips and knees, whilst tilting the load to avoid trapping the fingers.

Lifting very heavy items as part of a team:

- Choose one person to time and co-ordinate the lift.
- Check that the weight of the load is evenly distributed.
- Ensure that each member of the lifting team is in an optimum position and has enough room to negotiate the required manoeuvre.



Guidelines for assessing manual handling

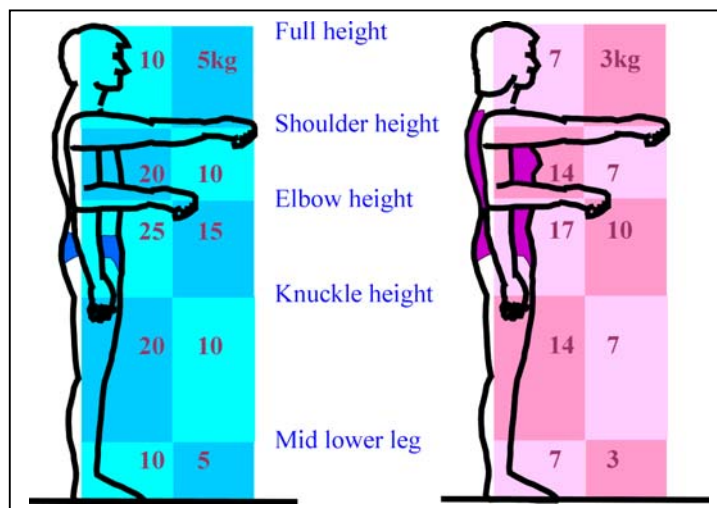
The **Manual Handling Operations Regulations (1992)** set no specific requirements such as weight limits.

Base your assessment on the factors covered in the risk assessment form ([Appendix IV](#)). Check the numerical guidelines produced by HSE to answer the question "Do the operations involve a significant risk of injury?" If, after looking at the following guidance, you are reasonably sure that the answer is NO, record this and do nothing else. If you are unsure, consider all questions on the remainder of the form and determine what steps you need to take to make the operation safe.

IMPORTANT: The following are guidelines and not limits

Lifting and lowering

Weights safe to lift or lower for the average man and woman are suggested in the diagram below.

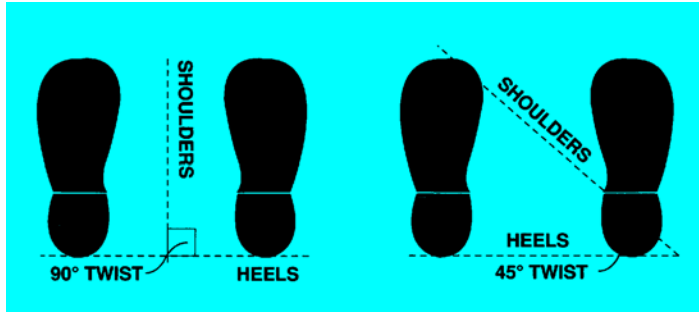


Note that the figures assume lifting with a straight back; bending over, for example to lift from a freezer, substantially reduces the safe weight for lifting. Take the lowest figure from any of the coloured boxes through which the hands pass in the course of the lift. The figures also assume adequate space for the lifter to achieve a stable body position and that the load is readily grasped with both hands. You may need to reduce this figure for factors covered later in this guidance.

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Twisting

Reduce the weight by about 10% when the lifting or lowering involves twisting the body by 45 degrees. Reduce by 20% with twisting of 90 degrees.



Frequent lifting and lowering

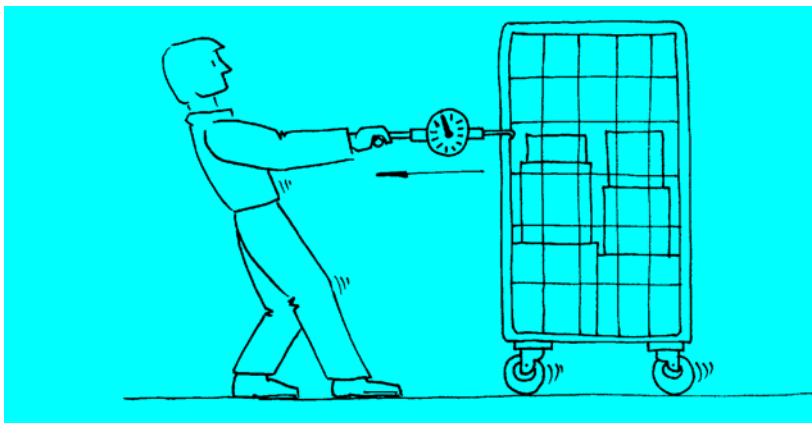
The basic figures are for relatively infrequent operations - up to 30 per hour - with the pace not forced, adequate pauses for rest or recovery and where the load is not supported for any length of time. As a rough guide, reduce by 30% where the operation is repeated once or twice per minute, 50% with repeats five to eight times per minute and 80% with repeats more than 12 times per minute.

Carrying

Similar to lifting; guidelines assume carrying close to the body for no further than 10 metres. Reduce the figure if the load is carried further. Where the load can be carried on the shoulders without having first to be lifted (eg. sacks from a lorry) a more detailed assessment may show that the guideline figure can be exceeded.

Pushing and pulling

Guidelines assume sliding, rolling or support by wheels. Use a spring balance to assess load. Guideline for starting or stopping the load is about 25kg (equivalent to 250 Newtons) and for keeping the load in motion is about 10 kg (100 Newtons). Assume that the force is applied with the hands between knuckle and shoulder height; if this is not possible, reduce the guideline figure.

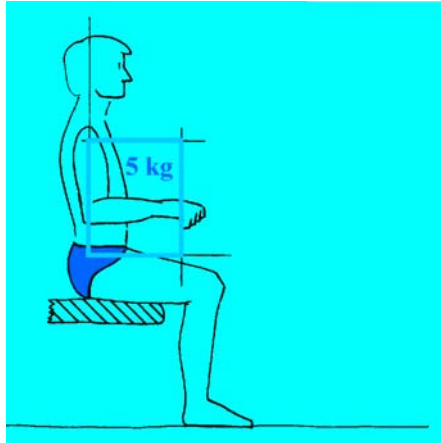


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Lifting and moving loads whilst seated

The basic guideline figure is shown in the diagram and applies only when the hands remain in the box shown. If twisting or further extension of the hands is needed, a more detailed assessment should be carried out.



IF IN DOUBT, DO A MORE DETAILED ASSESSMENT

APPENDIX IV: RISK ASSESSMENT FOR MANUAL HANDLING



Manual Handling Risk Assessment Form

Location:
Section:
Project leader:
Task assessed:

Staff involved:

Experience of personnel in task: (delete as applicable)

Extensive
Moderate
Minimal

Assessment carried out by:

Date:
Signed:

**Delete as
applicable**

PART A: THE WORKPLACE AND WORK ENVIRONMENT

Is the space sufficient to allow safe lifting techniques? YES/NO
Are there slipping or tripping hazards present in the workplace? YES/NO
Is the lighting adequate to allow good visibility for work carried out? YES/NO

PART B: THE TASK

Description of task:

Is lifting:

In a flat plane? YES/NO
From trunk to head? YES/NO
Above the head? YES/NO
In seated position? YES/NO
Combination of movements? YES/NO
Repetitive? YES/NO

Does it involve:

Change of grip? YES/NO
Twisting of the trunk? YES/NO
Stooping? YES/NO
Jerking or sudden movement? YES/NO
Frequent or sudden movement? YES/NO
Prolonged effort? YES/NO
Reaching away from the trunk? YES/NO

PART C: MOVEMENT

Frequency of movement (number of times per minute)? Please specify:

Does handling involve carrying? YES/NO
If yes what is the carrying distance in metres?
Does the handling involve:
Pushing? YES/NO
Welding? YES/NO
Is the workplace dictated by process or other controlling factor? YES/NO
Are rest allowances a feature of the work pattern? YES/NO

PART H: ACTION PROGRAMME

Major risk factors identified:

Additional precautions required and other recommendations:

Actions required:

Who informed:

Date of next assessment:

Appendix IV Table 1. Deciding the level of risk will inevitably call for judgement. This table can be used as guidance in making these decisions when completing the risk assessment form.

Questions to consider.	Level of risk.		
	LOW	MED	HIGH
The tasks - do they involve.			
• holding loads away from trunk?	load moved in box zone closest to body.	load moved in box zone furthest from body.	load moved outside box zones.
• twisting?	up to 45°	45-90°	Over 90°
• stooping?	Slightly.	To knee level.	To floor level.
• reaching upwards?	Shoulder height	Head height	Above head height
• large vertical movement?	Less than 1m	1 - 2m	More than 2m
• long carrying distance?	Up to 10m	10-20m	More than 20m
• strenuous pushing or pulling?	< 25kg starting force - 10kg maintenance force.	25-50kg starting force - 10-20kg maintenance force.	> 50kg starting force -20kg maintenance force.
• unpredictable movement of loads?	Rarely shifts when moved.	Will often shift.	Always shifts.
• repetitive handling?	1-4 operations per day.	5-10 operations per min.	More 10 operations per min.
• insufficient rest or recovery?	Rarely.	Occasionally	Always.
• a workrate imposed by process?	Rarely.	Occasionally	Always.
The loads - are they:			
• heavy? • (indicate weight in kg)	Up to figure in guidelines.	Sometimes in excess of guidelines.	Always significantly in excess of guidelines (i.e. more than double)
• bulky/unwieldy?	Not easily handled.	Awkward to handle.	Difficult to handle.
• difficult to grasp?	Grip is not easily maintained.	Grip is difficult to maintain.	Great difficulty in maintaining grip.
• unstable/unpredictable?	Rarely.	Occasionally	Always.
• intrinsically harmful(e.g. sharp/hot?)	Exposure to harmful characteristic generally avoidable.	Exposure not easily avoidable.	Exposure unavoidable.
The working environment - are there:			
• constraints on posture?	Minimal interference with normal movement.	Moderate interference.	Significant interference.
• poor condition floors?	Some unevenness or obstruction.	Moderate unevenness, low grip or noteworthy obstructions.	Dangerously uneven floor, very low grip & highly obstructed.
• variations in levels?	Load moved <1m vertically.	Load moved 1-2m vertically.	Load moved more than 2m.
• hot/cold/humid conditions?	Rarely.	Occasionally	Always.
• strong air movements?	Rarely.	Occasionally	Always.
• poor lighting conditions?			
Individual capability - does the job:			
• require unusual capabilities?	Most people can carry out the operation.	Only certain people can carry out the operation.	A minority of people can carry out the operation.
• present higher risks to those with a health problem?	Possibly.	Likely.	Certainly.
• as above for those who are pregnant?	Possibly.	Likely.	Certainly.
• call for special information and training?	Would be beneficial, but not essential.	Considered necessary.	Essential to carry out operation.
Other factors -			
• Is movement or posture hindered by clothing or personal protective equipment?	Rarely.	Occasionally	Certainly.

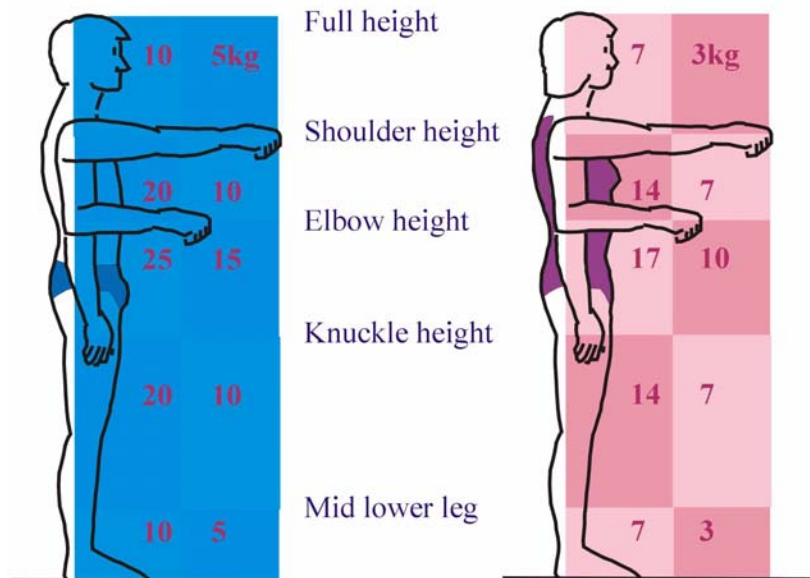


The levels of training required by the **Management of Health & Safety at Work Regulations (1999)** and the **Manual Handling Operations Regulations (1992)**, should be **in proportion to the risks** involved in a particular task. You should consider whether the trainee will be developing a Safe System of Work or working to a previously developed system. The person who gives the training must have a relevant, recognised and current qualification.

The course content should comply with NERC Health and Safety Procedure No. aaaa which defines the core content of Health & Safety training requirements.

Poster available at www.xyz

Lifting - guidance on maximum weights



Take the lowest value for any box through which the load will be lifted as guidance. **Guidance assumes the lift is made with a straight back - DO NOT LIFT WHILST BENDING OVER.** Twisting during lifting increases the stress; reduce guidance values. For more detailed coverage of guidance, including pulling and pushing loads, see the Health & Safety Intranet.

If in doubt - don't lift it!

APPENDIX VII: SOURCES OF FURTHER INFORMATION



The full text of the **Manual Handling Operations Regulations (1992)** can be obtained at <http://tionestop.techindex.co.uk>. Your local Safety Adviser has a password to access this site; material can be downloaded to wordprocessors.

A pdf-file version of the HSE leaflet “Getting to grips with Manual Handling” is available at <http://www.hse.gov.uk/pubns/manlnde.htm>. The leaflet can be printed out free from this source. The leaflet also references a wide range of extra sources of information from HSE; all of these can also be downloaded from the Technical Indexes webpage above.