



TECHNICAL INFORMATION SHEET 17

Revision 1 : 2016

MODEL RISK ASSESSMENT FOR THE MANUAL HANDLING OF GAS CYLINDERS

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MODEL RISK ASSESSMENT FOR THE MANUAL HANDLING OF GAS CYLINDERS

INTRODUCTION

Manual handling is one of the most common causes of injury at work and causes over a third of all workplace injuries, which include work related Musculoskeletal Disorders (MSDs) such as upper and lower limb pain / disorders, joint and repetitive strain injuries. Gas cylinders are generally heavy and are relatively unstable due to the base diameter to height ratio. Always apply the safe manual handling principles when handling gas cylinders.

Employees performing tasks that include any of the following risk factors are at most risk of developing some type of MSD:

- ~ Repetitive and heavy lifting
- ~ Bending and twisting
- ~ Repeating an action too frequently
- ~ Uncomfortable working position
- ~ Exerting too much force
- ~ Working too long without breaks
- ~ Adverse working environment e.g. hot, cold

If more than one of these risk factors are present, the risk is usually higher.

The Manual Handling Operations Regulations state that employers must avoid hazardous manual handling operations so far as is reasonably practicable. If they cannot be avoided they must carry out a Manual Handling Risk Assessment.

Gas cylinders can be difficult objects to move safely. Large cylinders may weigh upwards of 100 kg, they are tall and thin and can therefore topple easily. This model document provides assistance with the production of a risk assessment for cylinder handling operations. In some instances a full risk assessment may not be required, to assist with this decision please refer to the "Filter" page.

The following operations are considered:

- 1) Moving cylinders by hand (lifting and carrying)
- 2) Moving cylinders by hand (churning*)
- 3) Moving cylinders by trolley

For instructions on how to use the model risk assessment refer to " What to Do" page.

NOTES:

1. *Churning is when the cylinder base remains in contact with the ground and the cylinder is rotated by hand whilst tilted at a slight angle in order to move it.
2. This model risk assessment only considers risks associated with manual handling of cylinders; it does not take into account other hazards associated with cylinders such as contents, i.e. pressure and chemical hazards (asphyxiant, toxic, corrosive, flammable). These must be considered separately.
3. BCGA Guidance Note 3 contains worked examples with photographs to assist with the completion of the risk assessment. Reference to Figures in this document refers to the Figures displayed in BCGA GN3.

This document has been prepared by BCGA Technical Sub-Committee 6. It was approved for publication at BCGA Technical Committee 154. This document replaces BCGA TIS 17: 2009. This document was first published on 11/05/2016. For comments on this document contact the Association via the website.

HOW DO YOU RATE RISK?

Risk is a combination of the likelihood of an incident occurring and the severity of the injury or loss due to the incident. The Likelihood versus Severity Matrix below is a means for rating risk.

Likelihood / Severity Matrix

		Risk Rating		
		Medium	High	High
LIKELIHOOD	High	Medium	High	High
	Medium	Low	Medium	High
	Low	Low	Low	Medium
		Low	Medium	High
		SEVERITY		

Likelihood: Based on the precautions / controls in place to prevent an incident occurring.

High:	Where no precautions are put in place and the employee can only avoid an incident by following verbally communicated procedures - which typically are only short term. No physical barriers or controls in place.
Medium:	Limited physical barriers or controls in place. The employee can only avoid an incident by working carefully, following training, work instructions and safety procedures.
Low:	Physical barriers or engineering controls such as use of handling aids to minimise the likelihood.

Severity: The degree of injury to the employee or third party, or the cost of loss due to property damage.

Personal Injury

High:	Death or disabling injury.
Medium:	Serious injuries requiring medical treatment and time off from work.
Low:	Minor injuries.

Loss

	Business Size	
	Large	Small
High: Where the cost of the incident would exceed:	£100,000	£20,000
Medium: Where the cost of the incident is between:	£10,000 & £100,000	£2000 & £20,000
Low: Where the cost of the incident could reasonably be expected to be less	£10,000	£2,000

HOW TO CARRY OUT THE ASSESSMENT

The risk assessment should be carried out by persons who have been trained in manual handling, are familiar with the tasks being assessed and understand the concept of risk assessment.

1	Establish whether a full risk assessment is required by completing the "Filter" form.
2	If a full assessment is not required, record the details on the "Filter" form
3	If a full assessment is required, select the Risk Assessment form for the activity to be risk assessed.
4	Enter details in required fields at the top of the Risk Assessment form.
5	Record the existing control measures beside the recommended control measures.
6	Work through the questions to consider, and if the answer is yes decide, if the associated risk is low, medium or high.
7	Add further details in the ' problems occurring from the task ' and ' possible remedial action ' columns.
8	Once you have answered all the questions, use the answers to make an overall assessment of the risk of injury as low, medium or high and record this on the form. Risk = Low - activity is adequately controlled Risk = Medium - activity carries a minor residual risk or is not adequately controlled Risk = High - activity is not adequately controlled
9	If the result is medium or high, decide what action is required to reduce the risk to 'as low as reasonably practicable' (ALARP) and record this in the Action Plan.
10	Do not continue with the activity until risk is reduced to as low as reasonably practicable (ALARP).

RISK ASSESSMENT FILTER

Use this filter if you think that the activity to be assessed is low risk - it will quickly and easily confirm this. Go straight to a full risk assessment if you think the activity being assessed involves a significant risk from manual handling.

Activity name:

Activity description:

Observe the activity being assessed and answer the questions below.

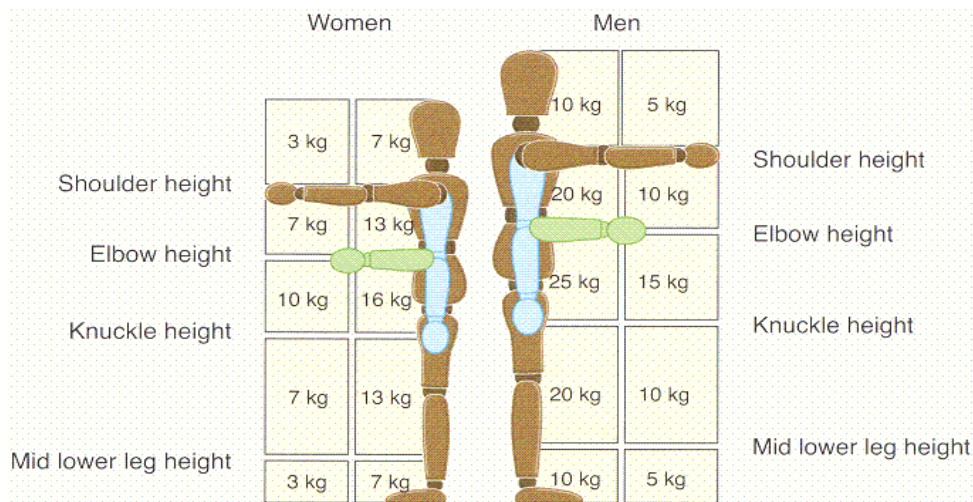
If you answer yes to any of the questions, a full risk assessment is required.

If you answer no to all the questions and you believe the activity to be low risk use this form to record this.

General

- | | |
|---|----------|
| 1) Is the activity carried out once per minute or more frequently? | Yes / No |
| 2) Does the activity involve handling whilst seated? | Yes / No |
| 3) Does the activity involve twisting whilst handling (the upper body is moved whilst keeping the feet static)? | Yes / No |
| 4) Does the load have to be carried more than 10 m without the opportunity to rest? | Yes / No |
| 5) Are any personnel involved in the activity at high risk e.g. pregnant, young, suffering from an MSD? | Yes / No |

Lifting, Lowering and Carrying Cylinders



- | | |
|---|----------|
| 1) Considering the specific manual handling activity and referring to the diagram above, is the maximum weight being handled more than the weight in any of the boxes through which the hands of the individual handler pass? | Yes / No |
| 2) Do the hands of the individual handler pass outside the box zones in the diagram at any time e.g. above head height ? | Yes / No |
| 3) Does the task involve raising cylinders from the horizontal? | Yes / No |

Pushing and Pulling a Cylinder Trolley

- | | |
|--|----------|
| 1) Is the surface which the load is being moved over uneven or soft? | Yes / No |
| 2) Are there slopes, ramps or steps present? | Yes / No |
| 3) Are there trapping hazards or confined spaces present? | Yes / No |

Churning Cylinders

- | | |
|--|----------|
| 1) Does the activity involve churning cylinders? | Yes / No |
|--|----------|

REFERENCES

- 1) SI 1992 No. 2793 The Manual Handling Operations Regulations 1992 (as amended).
- 2) HSE L23 Manual Handling. Manual Handling Operations Regulations 1992 (as amended). Guidance on Regulations.
- 3) HSE INDG 163 Risk assessment. A brief guide to controlling risks in the workplace.
- 4) HSE INDG 383 Manual Handling Assessment Charts (the MAC tool).
- 5) BCGA Guidance Note 3 Safe cylinder handling and the application of the manual handling operations regulations to gas cylinders.
- 6) BCGA Technical Information Sheet 12 Handle gas cylinders safely. Information for customers handling gas cylinders.

Model Risk Assessment for moving cylinders by hand (lifting and carrying)

<p>Activity name <input type="text" value="Moving gas cylinders by hand (lifting & carrying)"/></p> <p>Activity description <input type="text"/></p> <p>Load weight <input type="text"/></p> <p>Frequency of activity <input type="text"/></p> <p>Carrying distance <input type="text"/></p> <p>Location <input type="text"/></p>	<p>Personnel involved <input type="text"/></p> <p>Do they undertake other handling tasks? <input type="text"/></p> <p>Assessment date <input type="text"/></p> <p>Review date <input type="text"/></p> <p>Assessed by <input type="text"/></p> <p>Reviewed by <input type="text"/></p> <p>Discussed with employee safety representatives? <input type="text"/></p>
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Overall assessment of the risk of injury <small>(Complete tables below prior to making overall assessment)</small>	High / Medium / Low
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Recommended control measures	Existing control measures

Questions to consider:	If yes, tick the appropriate level of risk			Problems occurring from the task <small>(make notes in this column in preparation for the remedial action to be taken)</small>	Possible remedial action <small>(e.g. changes that need to be made to the task, load, working environment etc. and who needs to be involved in implementation)</small>
	Low	Medium	High		
1. Does the task involve:					
~ Holding cylinders away from the body?					
~ Twisting?					
~ Stooping?					
~ Reaching upwards?					
~ Large vertical movements?					
~ Long carrying distances?					
~ Unpredictable movement of cylinders?					
~ Repetitive cylinder handling?					
~ Insufficient rest or recovery?					
~ A work rate imposed by a process?					
2. Are the cylinders:					
~ Heavy?					
~ Bulky / unwieldy?					
~ Difficult to grasp?					
~ Unstable / unpredictable e.g. wet cylinders?					
~ Intrinsicly harmful e.g. toxic at high pressure?					

3. In the working environment are there:						
~ Constraints on posture?						
~ Poor, slippery or uneven floors?						
~ Variations in levels e.g. steps, slopes?						
~ Hot / cold / humid conditions?						
~ Strong air movements?						
~ Inadequate lighting conditions?						
~ Obstacles on the travel route e.g. doors?						
4. Consider individual capability - does the job:						
~ Require particular strength, height or other capability?						
~ Pose an increased risk to those with a health problem or a physical or learning difficulty?						
~ Pose an increased risk to those who are pregnant?						
~ Call for special information / training?						
5. Other factors to consider:						
~ Is movement or posture hindered e.g. by clothing, personal protective equipment (PPE) or the cylinder?						
~ Is PPE required? If so, is the correct / suitable PPE being worn?						
~ Are there sudden changes in workload or seasonal changes?						
~ Are cylinder accessories e.g. Valve guard, cap etc. suitable to be used for lifting?						
~ Is the end point prepared to receive the cylinder?						
ACTION PLAN						
Remedial steps that should be taken (in priority order)				Person responsible for implementing controls	Target implementation date	Completed?
Additional references:	BCGA GN3, Safe cylinder handling and the application of the manual handling operations regulations to gas cylinders; BCGA TIS12, Handle Gas cylinders safely; HSE L23, Manual handling operations regulations. Guidance on regulations; HSE INDG383, Manual Handling Assessment Charts (MAC); HSE INDG163, Risk assessment.					

Model Risk Assessment for moving cylinders by hand (churning)

Activity name	<input type="text" value="Moving gas cylinders by churning"/>	Personnel involved	<input type="text"/>
Activity description	<input type="text"/>	Do they undertake other handling tasks?	<input type="text"/>
Load weight	<input type="text"/>	Assessment date	<input type="text"/>
Frequency of activity	<input type="text"/>	Review date	<input type="text"/>
Carrying distance	<input type="text"/>	Assessed by	<input type="text"/>
Location	<input type="text"/>	Reviewed by	<input type="text"/>
		Discussed with employee safety representatives?	<input type="text"/>

Overall assessment of the risk of injury <small>(Complete tables below prior to making overall assessment)</small>	<h3 style="margin: 0;">High / Medium / Low</h3>
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Recommended control measures	Existing control measures

Questions to consider:	If yes, tick the appropriate level of risk			Problems occurring from the task <small>(make notes in this column in preparation for the remedial action to be taken)</small>	Possible remedial action <small>(e.g. changes that need to be made to the task, load, working environment etc. and who needs to be involved in implementation)</small>
	Low	Medium	High		
1. Does the task involve:					
~ Holding cylinders away from the body?					
~ Twisting?					
~ Stooping?					
~ Reaching upwards?					
~ Large vertical movements?					
~ Long churning distances e.g. > 5m?					
~ Unpredictable movement of cylinders?					
~ Repetitive cylinder handling?					
~ Insufficient rest or recovery?					
~ A work rate imposed by a process?					
~ A change in direction of travel?					
2. Are the cylinders:					
~ Heavy?					
~ Bulky / unwieldy?					

~ Difficult to grasp?				
~ Unstable / unpredictable e.g. wet cylinders?				
~ Intrinsically harmful e.g. toxic at high pressure?				
3. In the working environment are there:				
~ Constraints on posture?				
~ Poor, slippery or uneven floors?				
~ Variations in levels e.g. steps, slopes?				
~ Hot / cold / humid conditions?				
~ Strong air movements?				
~ Inadequate lighting conditions?				
~ Obstacles on the travel route e.g. doors,				
4. Consider individual capability - does the job:				
~ Require particular strength, height or other capability?				
~ Pose an increased risk to those with a health problem or a physical or learning difficulty?				
~ Pose an increased risk to those who are pregnant?				
~ Call for special information / training?				
5. Other factors to consider:				
~ Is movement or posture hindered e.g. by clothing, personal protective equipment (PPE) or the cylinder?				
~ ~ Is PPE required? If so, is the correct / suitable PPE being worn?				
~ Are there sudden changes in workload or seasonal changes?				
~ Are cylinder accessories e.g. valve guard, cap etc. suitable to be used for churning?				
~ Is the end point prepared to receive the cylinder?				
ACTION PLAN				
Remedial steps that should be taken (in priority order)		Person responsible for implementing controls	Target implementation date	Completed?
Additional references:	BCGA GN3, Safe cylinder handling and the application of the manual handling operations regulations to gas cylinders; BCGA TIS12, Handle Gas cylinders safely; HSE L23, Manual handling operations regulations. Guidance on regulations; HSE INDG383, Manual Handling Assessment Charts (MAC); HSE INDG163, Risk assessment.			

Model Risk Assessment for moving cylinders by trolley

Activity name	<input type="text" value="Moving gas cylinders by trolley"/>	Personnel involved	<input type="text"/>
Activity description	<input type="text"/>	Do they undertake other handling tasks?	<input type="text"/>
Load weight	<input type="text"/>	Assessment date	<input type="text"/>
Frequency of activity	<input type="text"/>	Review date	<input type="text"/>
Carrying distance	<input type="text"/>	Assessed by	<input type="text"/>
Location	<input type="text"/>	Reviewed by	<input type="text"/>
		Discussed with employee safety representatives?	<input type="text"/>

Overall assessment of the risk of injury <small>(Complete tables below prior to making overall assessment)</small>	<h3 style="margin: 0;">High / Medium / Low</h3>
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Recommended control measures	Existing control measures

Questions to consider:	If yes, tick the appropriate level of risk			Problems occurring from the task <small>(make notes in this column in preparation for the remedial action to be taken)</small>	Possible remedial action <small>(e.g. changes that need to be made to the task, load, working environment etc. and who needs to be involved in implementation)</small>
	Low	Medium	High		
1. Does the task involve:					
~ Transporting cylinder on trolley away from the body?					
~ Twisting?					
~ Stooping?					
~ Reaching upwards?					
~ Large vertical movements?					
~ Travel over long distances?					
~ Unpredictable movement of cylinders?					
~ Repetitive cylinder handling?					
~ Insufficient rest or recovery?					
~ A work rate imposed by a process?					
2. Are the cylinders:					
~ Heavy?					
~ Bulky / unwieldy?					

~ Difficult to grasp?				
~ Unstable / unpredictable e.g. wet cylinders?				
~ Intrinsically harmful e.g. toxic at high pressure?				
3. In the working environment are there:				
~ Constraints on posture?				
~ Poor, slippery or uneven floors?				
~ Variations in levels e.g. steps, slopes?				
~ Hot / cold / humid conditions?				
~ Strong air movements?				
~ Inadequate lighting conditions?				
~ Obstacles on the travel route e.g. doors?				
4. Consider individual capability - does the job:				
~ Require particular strength, height or other capability?				
~ Pose an increased risk to those with a health problem or a physical or learning difficulty?				
~ Pose an increased risk to those who are pregnant?				
~ Call for special information / training?				
5. Other factors to consider:				
~ Is movement or posture hindered e.g. by clothing, personal protective equipment (PPE) or the cylinder?				
~ Is PPE required? If so, is the correct / suitable PPE being worn?				
~ Are there sudden changes in workload or seasonal changes?				
~ Pre-use inspection and routine maintenance carried out on the trolley?				
~ Is the trolley being used to move more than one cylinder at a time?				
~ Is the end point prepared to receive the cylinder?				
ACTION PLAN				
Remedial steps that should be taken (in priority order)		Person responsible for implementing controls	Target implementation date	Completed?
Additional references:	BCGA GN3, Safe cylinder handling and the application of the manual handling operations regulations to gas cylinders; BCGA TIS12, Handle Gas cylinders safely; HSE L23, Manual handling operations regulations. Guidance on regulations; HSE INDG383, Manual Handling Assessment Charts (MAC); HSE INDG163, Risk assessment.			