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**Furniture Distribution Guidance:  
Warehouse to Delivery.**

**HSL/2006/87**

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## CONTENTS

1	Introduction.....	1
2	Risk Factors.....	2
3	Solution 1: Pallets and Stillages .....	5
4	Solution 2: Fork Trucks / Pallet Trucks / Stackers / Order Pickers .....	6
5	Solution 3: Loading Bays / Ramps / Dock Levellers / Dock Lifts .....	7
6	Solution 4: Sack Trucks / Trolleys / Dollies / Skates.....	8
7	Solution 5: Conveyors .....	10
8	Solution 6: Lorries and Tail Lifts .....	11
9	Solution 7: Portable Loading Ramps .....	12
10	Solution 8: Elbow and Shoulder Straps / Slings and Quilted Protection Covers ..	13
11	Solution 9: Carpet Handling Aids.....	16
12	Solution 10: Delivery Issues .....	17
13	Summary .....	20
14	References .....	21

# EXECUTIVE SUMMARY

## OBJECTIVE

The objective of this report is to provide information to HSE Inspectors with regard to the risk factors involved in the furniture industry. This includes both warehouse and delivery environments, and the types of handling aids and devices that are currently on the market that may reduce the risk of injury to employees.

## FINDINGS

HSE have identified a wide variety of manual handling issues that exist within the furniture industry. Some of the main problems identified occur within the warehouse and distribution areas and delivery of products. Particular concern was raised with regard to home delivery.

Employees within the furniture industry are required to perform a variety of manual handling activities in order to move items within warehouses, to and from lorries, and during deliveries. Delivery operators are placed at an increased risk of musculoskeletal injury due to the unfamiliar work environments they operate in and may also be affected by fatigue due to the long distances they can travel in a day.

Some of the key risk factors relevant to this industry are the size and weight of the load and often the inability to get a sufficient grip on the load. These factors, particularly the size and weight of the load are difficult or impossible to change in order to make handling easier as furniture cannot be made smaller and lighter unless it is redesigned.

Current trends in furniture design are seeing an increase in product size and weight, with oversized beds and mattresses and fridges being an example of this trend. The size and weight increase is likely to make handling products more awkward and will place all individuals along the supply chain who have to handle them at an increased risk of musculoskeletal injury.

## RECOMMENDATIONS

- **Communication and planning**
  - As much information as possible should be obtained during point of sale with regard to delivery issues.
  - There should be clear communication lines between all parties, for example, retail outlets and the customers, retail outlets and the warehouse / distribution centres or manufacturers, and between delivery operatives and the customer.
  - For home deliveries 2-person delivery is advocated.
- **Information for risk assessments**
  - Items should be labelled appropriately, clearly identifying the product and the product weight. This will help across the supply chain, particularly with assessing the risk to employees who have to handle items.

- Warehouse employees and individuals who work in retail outlets should be aware of how much items weigh, through clear labelling from the manufacturer and store them appropriately. For example heavy items (20kg or more for men, 13kg or more for women) should be placed in middle shelves (e.g. from upper thigh height to chest height) and lighter items should be stored on lower and higher shelves.
- **Education about handling aids and their uses**
  - Information needs to be disseminated to Inspectors and into the industry to make employers aware of what equipment could be useful in certain circumstances.
  - Sufficient training should be provided to employees on the use of handling equipment within the industry. The different areas: warehouse, distribution, retail outlets, and home delivery will all have different equipment that can be used.
- **General recommendations**
  - Trialling or hiring handling aids prior to purchasing them is a good way of checking that they are suitable for the job and avoid a poor idea being implemented widely.
  - Handling aids should frequently be checked and maintained to ensure they are working effectively.
  - Where the use of handling aids is impractical team handling is beneficial, therefore 2-person delivery teams are beneficial to reduce the risk of musculoskeletal injury.
  - There needs to be further investigation into the use of elbow / shoulder straps / slings to determine their effectiveness in reducing the level of risk of injury operators are exposed to. Further investigation into the use of these, and the potential effectiveness of quilted protection covers with handles is also recommended.

# 1 INTRODUCTION

HSE has identified a wide variety of manual handling issues that exist within the furniture industry. Some of the main problems identified occur within the warehouse and distribution areas and during delivery of products. Particular concern was raised with regard to home delivery.

This document is intended to provide information to Inspectors and act as a brief guide on a variety of handling devices that may be useful within the furniture distribution sector including both warehouse and home delivery environments. This document refers to furniture distribution and includes carpet handling but does not cover the issues with regard to white goods delivery.

This document considers the typical working conditions for this part of the industry and summarises the key risk factors in terms of manual handling injury risks. Additionally, it provides information with regard to a range of handling aids and devices that may be useful in a variety of situations when handling of furniture is performed, with the aim to reduce the risk of manual handling injury. None of the handling aids presented here have undergone detailed assessment and do not represent a comprehensive list of all handling aids and devices on the market. The introduction of handling aids / devices may introduce new risks that need to be monitored such as pushing and pulling. Individuals should be sufficiently trained in how to use these products in order to reduce the risk of introducing new hazards.

## **2 RISK FACTORS**

Employees working in the furniture industry have to perform a variety of activities that may place them at increased risk of musculoskeletal injury. These factors are considered below under the risk factor headings as presented in the Manual Handling Operations Regulations Guidelines, L23, (Schedule 1).

### **2.1 TASK**

#### **2.1.1 Vertical Lift Region**

- Often employees have to lift over a large vertical lift region (from floor height to above head height). This is particularly prevalent when loading or unloading delivery trucks in either warehouses or during home deliveries.
- If suitable loading bays do not exist within warehouses or lorries do not have tail lifts, employees have to lift heavy items up into, or lower them down out of lorries.
- The same problem exists when making home deliveries particularly if there is no tail lift and other handling aids are not being used. Additionally, the risk to delivery operatives may increase due to the unfamiliar environment and other environmental conditions that they are exposed to such as weather extremes (e.g. heat, cold, strong air movements, and poor lighting).

#### **2.1.2 Carrying**

- Delivery operators also have to statically hold items when they are carrying them that can increase the strain on the lower back.
- Operators may have to carry large items such as sofas up flights of stairs where their postures will be constrained. If the load is put down to rest such as when negotiating large stairwells, they will then have to lift the load again, placing them at increased risk of injury.

### **2.2 LOAD**

#### **2.2.1 Weight**

- Workers / employees frequently have to handle heavy and awkward loads. Items often do not have weights written on them therefore employees working in both warehouses and delivery situations may not be able to perform a comprehensive risk assessment.

#### **2.2.2 Size**

- Due to the size and awkwardness of the items handled the postures that operators may adopt could become somewhat constricted.

### **2.2.3 Grip**

- The grip operators have on the loads they are carrying is often poor as the furniture items do not have any handholds and may be bulky and difficult to handle.

## **2.3 WORK ENVIRONMENT**

### **2.3.1 Space Constraints**

- If there is insufficient room, posture will be compromised. This may be particularly true when loading or unloading a lorry in both warehouse and delivery situations. To maximise use of the space in the lorry, items are packed in tightly which can place operators at increased risk of musculoskeletal injury from working in awkward or constrained postures.
- Lifting and lowering when working in constrained spaces typically increases the amount of trunk twisting and sideways bending that operators have to perform, increasing their risk of musculoskeletal injury.

### **2.3.2 Floor Surfaces**

- Poor floor surfaces may also contribute to placing operators at increased risk of musculoskeletal injury. This is likely to be particularly important during home delivery when two operators are carrying a large, heavy item. If one operator loses their footing this is likely to result in a sudden movement, which, because of the load being carried will increase the strain placed on the lower back of the other individual. The operator that loses their balance will have to try and recover. Often the priority is to not damage the item being carried therefore they will continue to hold the item when trying to recover from the slip or trip.

### **2.3.3 Temperature**

- Environmental factors that are important to consider especially for home delivery operators who are constantly working in changing and unfamiliar environments.
- Extremes of temperature should be considered. Operators have to work in a range of thermal environments. Of particular concern is working in cold environments that can increase the risk of operators developing a musculoskeletal injury. This is particularly relevant due to the nature of the job; delivery operators have to drive between deliveries where they are also exposed to whole body vibration. They then may have to lift and carry heavy furniture without being suitably warmed-up placing them at increased risk of injury. If it is raining surfaces may become slippery and operators could lose their footing, increasing their risk of injury. Drivers may also be fatigued due to the often long work hours and extensive delivery route.

### **2.3.4 Strong Air Movements**

- Strong air movements may also make the delivery operators jobs more difficult, particularly when carrying large, lighter items that may get caught in the wind.

They may become unbalanced resulting in a sudden response by the body to control the load and increasing the risk of musculoskeletal injury, particularly to the lower back.

### **2.3.5 Lighting**

- Lighting conditions may also affect the risk of developing a musculoskeletal injury. This is likely to be relevant when working in the back of the lorry and then coming out into bright sunlight which may affect the operators vision and could lead to a slip or trip incident and could increase the risk of musculoskeletal injury.

## **2.4 INDIVIDUAL CAPABILITY**

- Consideration should be given to individual capability. Both the warehouse and delivery activities involve repetitive handling of furniture, which is physically demanding.

### **2.4.1 Team Handling**

- Will help to reduce the level of risk workers are exposed to if other manual handling aids cannot be utilised. However, if one operator does lose their footing then the second operator may also be affected by the initial loss of balance suffered by the first operator. If the load is dropped suddenly and they are not expecting it they may try to support / catch the whole weight of the load, placing them at increased risk of injury.

Caution is advised when any new handling aids are introduced into the work environment, as operators need to be trained properly in their use. The introduction of handling aids needs to be assessed and monitored to ensure that new risks are not introduced. Additionally, if handling aids are introduced into the work environment, if it is possible, hiring the equipment for a trial period to establish if they are suitable for individual company requirements is highly recommended prior to investing in some cases, a large amount of money which may not solve the manual handling problems. Caution is particularly advised in Solution 7 referring to elbow and shoulder straps / slings, as these products have not been seen in use, and formal evaluation is limited.

There are steps the industry can take to avoid or reduce the amount of manual handling and control the risk of injury. A variety of handling aids and devices exist that will reduce the amount of manual handling workers have to perform. These can be particularly effective when used correctly in a warehouse / distribution environment. Fewer handling aids and devices have been identified for use during the delivery of furniture and this is likely to be a reflection of the widely varied environments that these workers operate in.



### **3 SOLUTION 1: PALLETS AND STILLAGES**

#### **Warehouse**

A variety of pallets and stillages exist and may be useful in minimising the amount of manual handling within the warehouse and distribution areas of the furniture industry. Pallets can have a number of products stacked on them and then shrink-wrapped to hold them in place. Additionally, stillages provide containment for larger items such as mattresses. Both of these minimise the amount of manual handling workers have to perform as pallet trucks or fork trucks can be used to move the pallets or stillages into and out of the back of lorries and within the warehouse.

#### **Key Internet Search Words**

Pallets

Stillages

Warehouse / Distribution

## 4 SOLUTION 2: FORK TRUCKS / PALLET TRUCKS / STACKERS / ORDER PICKERS

### Warehouse

Used in conjunction with pallets and stillages fork trucks and pallet trucks greatly minimise the amount of lifting and carrying workers within the warehouse have to perform.

Stackers or order pickers are also useful within warehouses to place and retrieve products on pallets from hard to reach places (i.e. stacked high on a shelving unit). These products vary widely from low level to high reaching and a combination of several of these products may be beneficial to use within large warehouses.



### Key Internet Search Words

Fork trucks / forklifts

Pallet trucks / hand trucks

Stackers

Order pickers – high reach, low level

## **5 SOLUTION 3: LOADING BAYS / RAMPS / DOCK LEVELLERS / DOCK LIFTS**

### **Warehouse**

When products are either being unloaded or loaded out of or into lorries it is important to have effective loading bay areas whereby the tasks can be performed efficiently by workers. Planning and organisation also play an important role if these operations are to run smoothly.

#### **5.1 LOADING BAYS**

A wide variety of loading areas exist from one loading bay per lorry where the goods are loaded straight onto, to off the lorry from the warehouse. Other situations where goods are loaded / unloaded off the back of the lorry that has reversed up to a set of roller doors with no use of loading bays, ramps, or tail lifts. In these situations goods are either manually handled by workers or if goods are on pallets or stillages a fork truck may be used.

#### **5.2 DOCK LEVELLERS OR RAMPS**

May be particularly useful to bridge the gap between different levels that may exist (i.e. between the lorry and loading bay), and will allow for the use of pallet trucks and fork trucks to move goods. Care needs to be taken with ramps, so that the gradient does not present problems in terms of the pushing / pulling forces applied by workers. Additionally, the transition between dock and trailer needs to be smooth to avoid the wheels becoming stuck and requiring high forces.

#### **5.3 DOCK LIFTS**

Either surface mounted or pit-mounted will be useful if raised loading bays do not exist and lorries do not have a tail lift. One of the main advantages of using a dock lift is any type of truck is able to load or unload at any kind of dock. The dock lift can be raised to the exact height of the lorry, they are generally larger than tail lifts therefore, potentially, more products can be unloaded at a time. These come in a variety of lifting capacities.

#### **5.4 WHEEL RAMPS**

These are an alternative if an elevated loading bay exists. Some lorries may be too low for the loading bay, therefore by placing the wheel ramps down prior to the lorry reversing this will elevate the lorry to become more level with the loading bay. Using a dock board or plate will help with unloading to bridge the gap between the back of the lorry and the loading bay.

#### **Key Internet Search Words**

Loading bays

Load houses

Loading ramps

Dock levellers

Dock boards / plates

Dock lifts: surface / pit / portable / mobile / static

Wheel ramps

## 6 SOLUTION 4: SACK TRUCKS / TROLLEYS / DOLLIES / SKATES

### Warehouse and Delivery

A wide variety of sack trucks, trolleys and dollies exist that can transport goods within a warehouse and in the delivery of furniture if the ground surface allows. Using these handling aids correctly should help to reduce the amount of manual handling workers have to perform. Where loading or unloading of a lorry occurs without the use of a loading bay or tail lift (either to or from warehouses, outlet stores, and home deliveries), and items need to be manually loaded or unloaded by lifting and lowering them off the back of the lorry the use of a portable ramp and additional handling aids (e.g. sack barrow or trolley), will help to minimise the amount of manual handling employees have to perform.

Many companies produce sack trucks and trolleys that offer great flexibility. Therefore warehouse distribution areas and delivery operators should select handling aids that best suit their needs and requirements. If a gap exists between what is currently on the market and what furniture companies / distributors require, they could become involved with the producers of the handling aids to design more suitable products.

### 6.1 SACK TRUCKS

May be useful to use in the warehouse and distribution areas of a warehouse when loading a lorry, particularly if there are several reasonably small items, they can therefore be loaded onto a sack truck and moved together instead of being carried. Rough terrain sack trucks may be particularly useful for delivery workers who have to negotiate various terrains as these have larger wheels / tyres. White goods sack trucks may also be suitable for some furniture items.



## **6.2 STAIR CLIMBER TRUCK**

May be particularly useful for delivery workers who have to take heavy items up kerbs, steps, or flights of stairs. These devices will help to eliminate a significant amount of lifting and carrying. These trucks can be either manual or electric powered. Recommended weight limits for single operator use are specified by manufacturers. Stair climbers can be especially useful in negotiating single steps and kerbs when moving up levels, and can also be used to descend flights of stairs.

## **6.3 LOAD MOVER / TWIN TROLLEYS**

These products are supplied in pairs and can be put on four casters and moved easily. They have built in jacks allowing loads to be lifted with minimal effort and wheeled away. They can also be used separately as trolleys or sack trucks.

## **6.4 FURNITURE SHIFTERS**

One unit is placed at each end of the load, it is then raised off the floor and secured in place using connecting straps. Can be used to move heavy domestic furniture items so could be particularly useful during home delivery. Information about this product advises that the wheels swivel for increased precision, they are non-marking and can also be used on carpets.

## **6.5 DOLLIES AND SKATES**

Generally good at moving heavy items quickly and easily but will work best on smooth flat floor surfaces. Can be good for moving mattresses and particularly divan bases within warehouse and distribution areas. They could be useful in some circumstances during home delivery, possibly used in combination with portable delivery ramps.

## **6.6 ROLLING CORNERS / CORNER BOGIES**

These products appear to be simple and easy to use when moving large items. They can be placed under the item by lifting or tipping it to one side and sliding the rolling corner or bogie underneath. These are placed under all four corners of the item to be moved.

## **6.7 EXTENDABLE ROLLING ARMS**

This product appears to be very similar to how a dolly or rolling corner or corner bogie operates and could possibly be more difficult to get under the load. This product can extend from 440mm to 700mm and could be used in both warehouse and some delivery situations.

### **Key Internet Search Words**

Sack trucks

Stair climbers / sack trucks

Trolleys

Dollies / container dollies / wooden dollies / plastic dollies / metal dollies

Skates / shifting skates / steerable skates / metal skates / wooden skates

Rolling corners / corner bogies

Extendable rolling arms

## 7 SOLUTION 5: CONVEYORS

### Warehouse

A variety of conveyors could be useful when loading / unloading furniture in lorries. Simple roller conveyors could be used ideally where gravity can assist in rolling the items easily along. Powered / automatic belt conveyors may also be required. Extendable and height adjustable conveyors may be suitable to transport items to the back of the lorry therefore minimising the amount of distance workers have to carry items. Height adjustable conveyors would also reduce the amount of bending and reaching workers will have to perform. Powered, extendable belt conveyors are available which can be easily adjusted up and down and side to side within the lorry / trailer. Some can be combined with systems that raise and lower the worker within the lorry (e.g. Transdek), so that the worker is only required to handle within the optimum zone of between knuckle height and elbow height.



### Key Internet Search Words

Conveyors:

Roller

Automatic / electric / powered

Boom / telescopic / multistage

Height adjustable

Roller loader

## **8 SOLUTION 6: LORRIES AND TAIL LIFTS**

### **Warehouse and Delivery**

A variety of lorries are used in furniture delivery. Within warehouses, distribution centres and retail stores if there are loading bays then loading and unloading can be performed more easily with the use of handling aids (i.e. pallet trucks and fork trucks). However where there are inadequate or poorly matched loading bay facilities, lorries that have tail lifts may be particularly useful.

#### **8.1 TAIL LIFTS**

When workers are making furniture deliveries tail lifts will help to avoid or minimise any unnecessary handling from having to pick up items in the lorry and bend down to place the item at the back of the lorry where it can be offloaded either by the same worker if in a single delivery van or to a second worker. Tail lifts enable handling aids such as trolleys and trucks to be used more easily and effectively. (E.g. the load could be pushed from the lorry on the side of the road up a driveway or path to the front door, minimising the need for workers to perform any unnecessary handling). A retractable tail lift retracts beneath the rear door and does not obstruct the use of a loading bay or other direct access to the main door.

#### **8.2 DOUBLE TIER LORRIES**

May also be useful for maximising the space available and provide an adjustable platform that means items can be loaded from loading bays or conveyors straight into the vehicle, the platform can then be raised to make the top tier and additional items can be loaded underneath, however care is required because this can create reduced headroom.

#### **8.3 INTRA-VEHICLE LIFTS**

Have been designed to improve manual handling safety inside trailers / lorries and would be useful for handling furniture. The machines move along the length of the vehicle and provide a safe working platform and allow access to items up to 3.5 metres off the floor. Therefore, load capacities can be increased in modern high-capacity vehicles.

#### **Key Internet Search Words**

Lorries / trucks / trailers

Tail lifts:

Column lifts - overhead beam / shallow beam / slimline

Cantilever tail lifts - flat platform retractable / retractable / tuck away / tuck under lifts

Barn door lifts

Tail lifts for vans

Slider lifts

Light commercial lift

Double tier lorry / double deck / lifting deck / vertical lift / adjustable platform

Intra-vehicle lifts

## **9 SOLUTION 7: PORTABLE LOADING RAMPS**

### **Warehouse and Delivery**

A variety of portable loading ramps exist and may be beneficial in both warehouse and delivery environments.

#### **9.1 PORTABLE LOADING RAMPS**

Will be beneficial if loading bays are not present or inadequate. The ramps could be used with other handling aids such as sack trucks, trolleys or possibly hand / pallet trucks. Furniture could be loaded or unloaded into or out of the lorry and will reduce the amount of lifting and carrying involved.

#### **9.2 SMALL DELIVERY RAMPS**

May be useful when delivering furniture from a variety of vehicles or lorries, particularly if they do not have tail lifts. Ramps will also be useful when delivering products, particularly if there are several steps to get from the path up to the front door where they can be placed down and a sack truck or other handling aid can be used to push / pull the item into the home. However, these ramps would not work effectively if a large number, or, steep set of stairs had to be negotiated. Care is needed to ensure good compatibility with the vehicle and stability of the ramp for working on while pushing / pulling.

#### **Key Internet Search Words**

Portable loading ramps / delivery ramps



## **10 SOLUTION 8: ELBOW AND SHOULDER STRAPS / SLINGS AND QUILTED PROTECTION COVERS**

### **Delivery**

These products claim to have been designed by professional movers and therefore may be of some use to furniture delivery operators. These products use a strapping system that allows two workers to lift large and bulky items with a reduced need to bend down to lift the items off the ground. However, the same load weight is still lifted and carried by workers.

The strapping system may be useful to furniture delivery workers who have to negotiate uneven terrain from the lorry to the house, where trolleys and dollies may not be practical. Additionally, this could allow workers to more easily negotiate large items through the inside of houses but would be dependent on the space available.

However, these products have not been seen in use and formal evaluation is limited. There may be additional risks from workers being connected to each other and the load from a team handling perspective. Caution should be advised if these products are introduced into any work environment as they may actually introduce new risks to delivery workers.

### **10.1 FOREARM FORKLIFT™**

Designers suggest the device promotes a good lifting technique and is a complimentary handling aid when used with dollies and hand trucks. Research into the effectiveness of this product has been performed, however a comprehensive report could not be obtained and has therefore not been reviewed. Future research into the effectiveness of this product may be beneficial to assess its ability to reduce musculoskeletal disorders.

### **10.2 SHOULDER DOLLY®**

Using these straps reportedly makes moving heavy and bulky objects safer to handle, particularly over adverse terrain and through the interiors of houses. The hands are free to provide additional stability and support to the item or for example, if operators need to hold onto handrails when going up stairs. Two models are available, standard or light duty.

This product was tested by ErgoMed, for a year prior to sale in America. The study compared lifting and carrying heavy electrical equipment up 5 stairs, unaided, and when using the Shoulder Dolly®, and lifting and carrying products on level surfaces unaided compared with the Shoulder Dolly®. A lumbar motion monitor was used that measures the range of motion, velocity of movements and acceleration / deceleration of the spine. Results indicate that there was a reduction in the probability of low back disorders of 14% when using the Shoulder Dolly® compared with manual handling the load. A significant reduction in the amount of forward bending was also observed. When comparing handling on a flat surface a reduction in the probability of low back disorder of 17% was observed, again this is likely to be due to a large reduction in forward bending operators have to perform when using the Shoulder Dolly®.

Disadvantages with using this system are that the weight of the load will now be distributed through the upper back and shoulders, which may increase the risk of injury to these parts. Further research into the loading effects when using the Shoulder Dolly® on the body should be

performed. Researchers also suggest correct squatting technique and training is essential. It is currently unknown how an incorrect squatting technique when using the Shoulder Dolly® will affect the lower back. It is possible that with incorrect technique the reduced probability of lower back disorder will not be as significant when compared to manual lifting and carrying a load. Space constraints can reduce the use of this product, for example in tight stairways or areas with low headroom.

Caution should be advised if this product is to be introduced for use by delivery operators. There appear to be some benefits in reducing the load on the lower back when using a correct squatting technique in an environment with sufficient space. However, the weight of the load will be distributed to the upper back and shoulders and may increase the risk of injury to these and potentially other parts of the body. Hip and knee strength will also need to be considered to be able to perform a squat correctly.

### **10.3 GRIPSYSTEM™**

This product appears to be similar to the Shoulder Dolly®, in that the straps are on the shoulders and back and attach at the front to straps placed under the item to be moved. Again, the hands are free to provide additional stability if required.

Paskiewicz et al (2003) performed a study of 12 participants and investigated the GRIPSystem™. The straps are placed under the object and then the operators have to bend down and attach the straps to the harness that they wear. The two operators then stand up simultaneously to move the item. Their hands are free which may increase their stability and the ability to hold on to railings if negotiating stairs. Overall the probability of low back disorder risk was reduced when compared with lifting and lowering when not using the device. This system appears to be more effective when handling taller items, (e.g. operators have to bend down more when lifting a sofa than when handling a refrigerator). They recommend turning shorter items 'on end' before lifting them. These systems may require sufficient space to use them effectively, which may be difficult in certain home delivery situations.

This study only looked at the back, and further investigations should consider the whole body, particularly the hip, knee and ankle joints to ensure stresses at these joint are not increased. Additionally the loading on the arms and shoulders should be addressed in any further investigations, along with the effect of walking when carrying items. This research was performed in a simulated environment, therefore any future research would benefit from analysis in a 'real world' environment.

Therefore considering the above issues as with the Shoulder Dolly®, caution is advised if these products are introduced and used by delivery operators.

### **10.4 QUILTED PROTECTION COVERS**

Further investigation into the current use of quilted covers during delivery could be beneficial. Some companies place and strap on quilted covers over the items they are delivering (e.g. sofas, arm chairs, etc) and have then been observed to use the straps and quilting to grip the load when handling it. Potential exists for the industry to develop these covers further so they could serve a purpose of not only protecting the item they are delivering, but additional handles could be sewn in various places into the covers providing delivery operators with a better grip on the load.

## **10.5 DOOR JAMB PROTECTORS / FITTED DOOR COVERS**

These products could be useful for delivery workers to have permanently stored on their lorries. They appear to be quick and easy to use and will help to protect the homeowner's property, which may be useful when handling large loads that are difficult to manoeuvre in small spaces. The benefit from these is that less fine control over the load is required, and also perhaps less time will be spent supporting the load.

### **Key Internet Search Words**

Furniture moving / delivery

Elbow straps – Forearm Forklift™

Shoulder straps / slings – Shoulder Dolly®, GripSystem™

Quilted covers / furniture protection covers

Door jamb protector / door protector / fitted door cover

## **11 SOLUTION 9: CARPET HANDLING AIDS**

### **Warehouse and Delivery**

A variety of carpet handling aids exist that can be used both in a warehouse and delivery environments.

#### **11.1 CARPET HANDLING BUGGY**

Carpet handling buggies are most commonly found in warehouses to transport large rolls of carpet around in, or when loading / unloading vehicles and can significantly reduce the amount of lifting and carrying workers need to perform if used correctly. They may also be useful in some delivery situations. Handling techniques for many items onto and off the buggies is important to minimise the risk of injury.

#### **11.2 CARPET GRABBERS**

This product could be useful to both warehouse and delivery workers. The 'carpet grabber' locks into the core of carpet roll and appears to be a useful handling aid providing a good grip when carpet rolls may need to be pulled out of the back of a delivery van. When lifting and carrying the extended handles appear to keep the spine in a more neutral posture. Additionally when two grabbers are used this product can be used as a stand for unrolling the carpet. Caution should be advised if these products are introduced into the work environment as this activity could involve high initial pulling forces.

#### **11.3 CARPET TUG**

This system could be particularly useful in warehouse situations whereby a large number of carpet rolls may need to be loaded or unloaded and when used in combination with a 'carpet buggy' appears to significantly reduce the amount of lifting workers have to perform. This product uses an adjustable winch operated system allowing the operator to control the winch from either inside or outside the vehicle. The wire rope is attached to a webbing harness that is looped around the edge of the roll. The winch can move carpet rolls of up to 400kg in weight onto trolleys.

#### **Key Internet Search Words**

Carpet handling

Carpet handling buggies / carpet buggy / two wheeled carriers / buggies

Carpet grabbers / grippers / handlers

Carpet tug / winch operated system

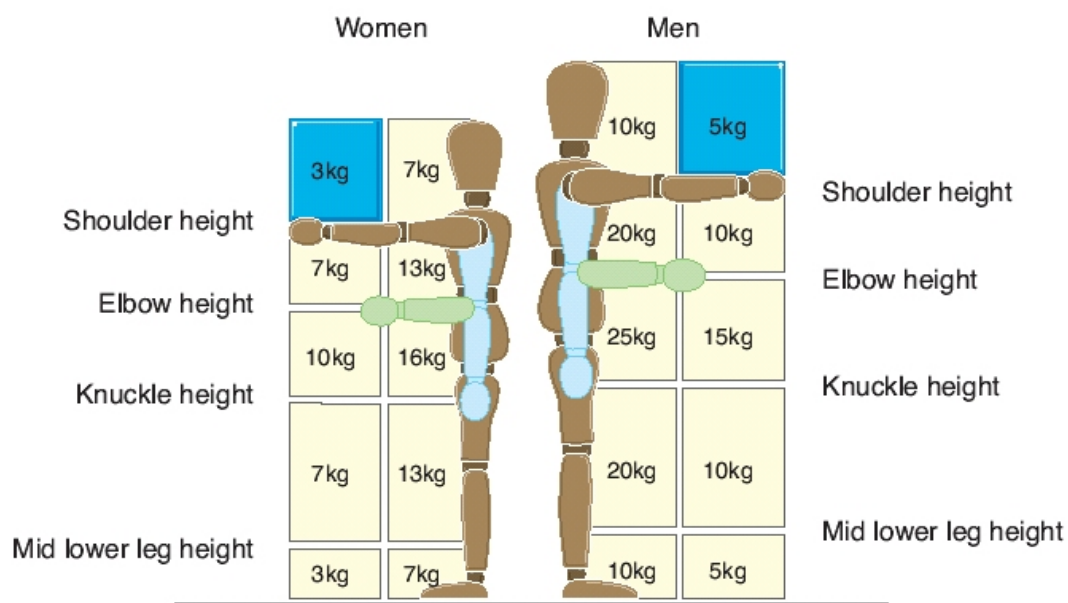
## 12 SOLUTION 10: DELIVERY ISSUES

### 12.1 COMMUNICATION AND PLANNING

- At the point of sale information should be given to the customer with regard to delivery issues. They should be asked a range of questions with regard to the product purchased where it is to be delivered to, if the product will fit in the house, such as up stairs, through doorways and halls, or if windows will need to be removed, or if items have to be lifted up and over balconies because items don't fit up stairwells.
- **Typical questions that could be asked at point of sale:**
  - Where is the product going?
  - What obstacles will be, or are likely to be encountered on route? (e.g. Stairs, steep, or gravel / loose stone driveway, distance from the delivery truck to delivery site, etc).
  - Are doorways and stairs wide / tall enough to accommodate the delivery?
  - Do items need to be taken to protect the home from damage (e.g. floor protection, or padding to protect doorways?).
  - Can an initial visit be performed prior to delivery to check some of the above issues and if the product will actually fit in the house (i.e. large American style fridges?)
- **Typical questions delivery warehouses / operatives need to consider:**
  - Where is the product going?
  - How is it getting there?
  - Will one or two delivery workers be required? (This will depend on individual company policy).
  - What handling equipment or protective padding or flooring will be necessary or useful to make the job easier? Is this stored permanently on the delivery vehicle? If not, is it available?
  - What obstacles will be, or are likely to be encountered on route? (Ask for this information from retail stores which should have asked the customer directly at the point of sale).
  - Is it possible or necessary to do a visit prior to the delivery to assess the risk and any obstacles that may be encountered?
- **Communication with manufacturers will be important to:**
  - Ensure adequate labelling of products occurs, particularly product weight.
  - Work together to develop ideas with regard to packaging and product design. The aim should be to make products that are easier to handle, or packaging that allows for easier handling, or that can be used with handling aids (e.g. modified quilted protection covers).
- **General communication and planning issues:**
  - Adopt the practice of two-person delivery teams to reduce the level of risk of injury by team handling.
  - Ask the customer if possible, to clear a route to the delivery point.

## 12.2 INFORMATION FOR RISK ASSESSMENTS

- Items should be labelled appropriately, clearly identifying the product and the product weight. This will help across the supply chain, particularly with assessing the risk to employees who have to handle items.
- Warehouse staff and staff who work in retail outlets should be aware of how much items weigh and can store them appropriately.
  - For example heavy items (20kg or more for men, 13kg or more for women) should be placed in middle shelves (e.g. from upper thigh height to chest height) and lighter items should be stored on lower and higher shelves.
  - This principle could also be applied to loading the delivery lorries.
  - Consideration of strength differences between males and females is important. Warehouse staff are typically male, therefore handling guidelines are going to be slightly higher than when compared with women who make up a large proportion of employees in retail stores, but may also be involved in handling items of furniture.
  - Consideration should be given to the risk assessment filter in the Manual Handling Operations Regulations 1992 (as amended), L23 (shown below). For example for a man, a load of 5 kg (3 kg for women) lifted from the ground with the arms extended away from the body presents an equivalent level of risk of injury to the back as a load of 25 kg (16 kg for women) when held close to the body at the waist.



**HSE Lifting and Lowering Guideline Figures for Triggering a Detailed Risk Assessment. (HSE, L23).**

## 12.3 EDUCATION ABOUT HANDLING AIDS AND THEIR USES

- Documents such as this one are useful in identifying handling aids that are currently on the market. This information needs to be disseminated into the furniture delivery industry to make employers aware of what equipment could be useful in certain circumstances.

- Distributing this information to inspectors would also be useful so that they are aware of handling aids that may suit particular situations.
- Sufficient training should be provided to employees on the use of handling equipment within the industry. The different areas: warehouse, distribution, retail outlets, and home delivery will all have different equipment that can be used.
- Home delivery is the area that will present employees with the most difficulty in terms of using handling aids.
  - Every delivery situation may be different therefore a range of handling aids may need to be carried on-board when performing deliveries. This in itself may be problematic if they take up large amounts of space.
  - Even with effective communication and planning there are likely to be unforeseen circumstances that the delivery workers face upon arrival. Therefore they need to be skilled in assessing what handling aids are suitable / appropriate.
  - The more highly trained, and well informed delivery workers are about what handling aids are beneficial in certain situations the more skilled they should become in using them. Therefore concerns over causing damage to private property from using handling aids should be minimised.

## 13 SUMMARY

Unlike other industries where recommendations are often made to improve communication between suppliers and customers to address product weight the furniture industry is unable to do this since furniture cannot be made smaller and lighter. Current trends are seeing an increase in product size and weight, oversized beds / mattresses are an example of this trend. Therefore, these, and other such products are likely to place those handling them along the supply chain at increased risk of musculoskeletal injury largely due to the increased weight, size, and awkwardness to handle. Furthermore, the size of houses and access into and out of them can make delivery particularly hazardous for operators, which will only be exacerbated with an increase in product size.

Delivery operators are placed at an increased risk of musculoskeletal injury due to the unfamiliar work environments they operate in. They also may be affected by fatigue, particularly from driving, sometimes over long distances in a day, and will be exposed to whole body vibration from the lorry during this time. They are then required to handle items without necessarily being sufficiently prepared / warmed-up.

Manual handling does not just involve lifting, lowering and carrying but also involves pushing and pulling. If handling aids have been introduced that require workers to push or pull products it is important that workers are trained in their use. The risk of performing these new activities should be assessed. Trialling or hiring handling aids prior to purchasing them is also a good way of checking that they are suitable for the job and avoid a poor idea being implemented widely.

Performing frequent maintenance of any new equipment that is introduced into the work environment is essential. With any handling aids particularly those with wheels / castors it is important to ensure they are maintained and checked frequently to ensure they are functioning effectively otherwise the amount of force required to push or pull them could increase and potentially place operators at increased risk of injury.

Team handling is an approach often adopted within the industry to reduce the risk to workers and will be particularly important for delivery operatives where the use of handling aids in some circumstances can be difficult or impractical. There are differences between companies in terms of whether they provide one or two delivery workers per vehicle. A single delivery operator will find it more difficult to handle heavy and awkward items and are exposed to an increased level of risk of injury compared to two-person delivery teams. A two-person delivery policy has to be a recommendation, although this will obviously impact upon costs. Long-term savings from employees being off work with injury, and the associated costs such as temporarily replacing them or paying compensation and increased insurance premiums may offset some of this increased staff cost. Operators should also be trained in effective team handling techniques.

There needs to be further investigation into the use of elbow / shoulder straps / slings to determine their effectiveness in reducing the level of risk of injury operators are exposed to. Further investigation into the use of these, and the potential effectiveness of quilted protection covers with handles is also recommended.



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