Service

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PURPOSE

Rheem Service Technicians, Service Agents and Subcontractors are required, in the course of installing and servicing water heaters, to move water heaters and large, heavy components from place to place. On the face of it this can be a relatively simple task however in practice all sorts of situations and conditions can make the task difficult. Storage water heaters range in mass from 18kg for a small 25-litre model to 190kg for the larger heavy-duty gas models. Commercial Raypak boilers can be almost 1 tonne in weight. The mass in itself can create a lifting or moving problem but this is often compounded by the route that the product needs to traverse. Safe manual handling techniques must be used to move the product from the store to the vehicle, then from the unloading point to the installation site and in some cases from floor level to wall mounting brackets or onto a roof for solar products and some boilers. Precautions need to be taken to prevent manual handling injuries throughout this process.

SCOPE

WHAT IS MAUNAL HANDLING?

Manual Handling means more than just lifting or carrying something. The term "manual handling" is used to describe a range of activities including lifting, lowering, pushing, pulling, carrying, moving, holding or restraining an object, animal or person. It also covers activities, which require the use of force or effort such as pulling a lever, or operating power tools.

Some examples of actions that may cause manual handling injuries are:

- Work involving sudden, jerky or hard to control movements or which causes discomfort and pain;
- Work involving too much bending, reaching or twisting;
- Work where a long time is spent holding the same posture or position;
- Work that is fast and repetitious;
- Heavy weights which have to be lifted and carried manually;
- Work where force is needed to carry out a task.

PROCEDURE

PROPER LIFTING TECHNIQUES

Proper lifting technique is critical to back safety, but perhaps more important is proper planning. Before you lift that box, tool, or piece of equipment, take a moment to consider your action:

Do you need to lift the item manually?
How heavy is it?
Where are you moving the item from?
Where does it have to go?
What route do you have to follow?
Can the load be reduced?

Many times the item you are moving could be moved with a piece of equipment – (dolly, hand truck, forklift, straps, pinch bars, hoist etc). Consider using mechanical help wherever possible. If the item needs to be moved manually, and it is heavy or ungainly, ask for help. When using mechanical help, remember to push, not pull – you'll have more control, and greater leverage. Fasten the load to the equipment, so sudden stops or vibrations don't jar it off. When moving an item from a hard to reach place, be sure to position yourself as close to the load as possible. Slide it out to get it closer, and be sure that you have adequate room for your hands and arms. Be aware of adjacent obstructions, on either side or above the load. Think about where the item will be placed once you've lifted it – will it be overhead? Under an overhang? In a narrow spot? Try to allow yourself as much room as possible to set the load down. You can always shift it slightly later. Check your path from place to place – remove tripping hazards and protect openings. Make sure that the lighting is sufficient to see where you are going. Stabilize uneven or loose ground, or choose an alternate route. The shortest way isn't always the fastest, or the safest.

As in life in general, moderation and balance are important considerations in care and maintenance of your back. You need the correct proportions of strength, flexibility, and overall quality of life to eliminate or minimize back injuries. You need to exercise, eat right, and stretch as often as possible to help prevent injuries, and to recover more quickly if injured. In addition, a reduction in stress levels can help to relieve the muscle tension that can contribute to injuries.

Remember that most back injuries can be attributed to one of these five causes:

Posture
Body Mechanics/Work Habits
Stressful Living (such as insufficient sleep)
Loss of Flexibility

Poor conditioning (tackling vigorous exercise or extreme exertion without preparing one's body)

Also consider that not all back injuries are a result of sudden trauma - most are of a cumulative type, where a repeated minor injury has flared up or continued use of a heavy tool in the same position has caused pain, or a great deal of time is spent in the same position. Familiarize yourself and practice these techniques when lifting items on the job and at home:

PROPER LIFTING TECHNIQUES

Squat to lift and lower. Do not bend at the waist.
Keep your low back bowed in while bending over.
Keep the weight as close to you as possible.
Bow your back in and rise up with your headfirst.
If you must turn, turn with your feet, not your body.
Never jerk or twist.
Put the weight down by keeping your low back bowed in.
Keep your feet apart, staggered if possible.
Wear shoes with non-slip soles.

RISK FACTORS FOR BACK INJURIES

Lifting with your back bowed out.
Bending and reaching with your back bowed out.
Slouched sitting.
Twisting or jerking movements.
Lack of proper rest.
Obesity and poor nutrition.
Stressful work and living habits.

TECHNIQUES FOR SAFE LIFTING

Safe lifting means keeping your back aligned while you lift, maintaining your centre of balance and letting the strong muscles in your legs do the actual lifting. By using the following techniques you can learn how to lift safely and save your back from accidental strain and injury.

1. **Bend Your Knees**
Bend your knees, not your waist. This helps you keep your center of balance and lets the strong muscles in your legs do the lifting.

2. **"Hug" The Load**
Try to hold the object as close to your body as possible, as you gradually straighten your legs to standing position.

3. **Avoid Twisting**
Twisting can overload your spine and lead to serious injury. Make sure your feet knees and torso are pointed in the same direction when you are lifting.

THE SAFE WAY TO LIFT

Before your lift anything think about it. Ask yourself: "Can I lift it alone? "Do I need mechanical help?" "Is it too awkward for one person to handle?" Should I ask a co-worker for help?" Do I need to discuss with my supervisor? If the load is manageable, follow the steps to lift it safely.

TIPS TO REMEMBER

In addition to these techniques, remember to make sure that your footing is firm before you start and that your path is clear. And be sure to use the same safe techniques when you set down your load. It takes no more time to do a safe lift than to do an unsafe lift, so why not play it safe and lift right?

PROPER STRETCHNING AND STRENGTHENING EXERCISES

Besides using proper lifting and carrying techniques, stretching and strengthening exercises can also decrease the risk of injury by providing strength and stability to the muscles in your back.

Flexibility exercises and stretches should be performed frequently during the day, especially if you sit or stay in one position for long periods of time. This puts a lot of pressure on your back, and changing positions or stretching often will relieve the pressure. Always stretch before lifting and carrying objects if you have been sitting for a while.

Although nothing can totally prevent on accident from happening, using the proper lifting and carrying techniques, as well as maintaining an exercise and stretching program, will reduce your chances of getting hurt. Also, before you begin any exercise program, have your doctor perform a physical examination to rule out any possible problems.

PRACTICAL SOLUTIONS

The nature of the work is such that the technician is usually the first, and often the only, Rheem person to visit the site where the work is to be carried out. It is therefore the responsibility of that person to assess the particular manual handling challenges that accompany that job. Should the technician believe that there is a manual handling problem that cannot be addresses with the tools, training, assistance or experience available then a supervisor must be involved. The supervisor should be able to provide the necessary guidance, equipment or additional labour for team lifting.

Below are some suggested solutions which will deal with the problems you may identify.

1. Park the vehicle being loaded or unloaded as close to the pick up point or installation site as possible. Remember if this means driving onto private property permission must be obtained and any site restrictions, regulations must be complied with.
2. Use a suitable trolley (barrow, sack truck) for the purpose. Rheem technicians have access to simple trolleys, stair climber trolleys and sliding axle trolleys. The technician can select the most appropriate. The water heater should be secured to the trolley using the safety strap.
3. It is difficult to confirm at what point two or more people are required to handle a water heater. This will depend on the physique and condition of the technician(s) and the route the heater needs to traverse. Generally speaking all domestic gas water heaters and domestic electric water heaters up to and including 315 litres may be handled by one person. Products heavier than this, over 100kg, may need two people or mechanical assistance.

There are plenty of examples where the guidelines in clause 3 are not appropriate and the technician must assess whether assistance is required. If a second person is needed a call to the office will provide the services of an assistant.

4. If team lifting is used the technicians must discuss the techniques and actions required of each person so that there is a prior understanding of the role of each player. Lifting straps are available which clamp around a water heater and provide lifting handles making it easier to lift without bending the back. Rigid rods (40mm copper tube) can be passed through the handles to facilitate walking.
5. Any straight lifting (total weight of item is elevated or carried), without the use of mechanical handling equipment, should be restricted to no more than 40 kg per person. If it becomes impractical to handle a water heater with multiple assistants the Supervisor will arrange the most appropriate mechanical handling method.
6. Solar collectors (34kg) may be safely lifted onto roofs using ropes from above. All roof work must be done in compliance with the Rheem safety procedures:

OHS-03-009 Working Safely with Ladders
OHS-03-043Working Safely on Roofs

Small solar storage tanks, 160 litres (70kg), may be lifted onto a roof by two people using appropriate ropes however 300 litre storage tanks (100kg) will require some means of mechanical handling, discuss with Supervisor.

MANUAL HANDLING

Procedure
Loading and unloading of packaged water heaters or heavy components (the load) into and out of transport vehicles (vans.

Key Areas
Trolley (barrow, sack truck), variable weights and sizes of packaged water heaters, variable weights and size of heavy components (heat exchangers), manual handling, workplace layout, safety, technicians.

Problem

- Safe loading of packaged water heaters and heavy components into and out of the van
- Minimise excessive handling of loads especially those 100 kg and above.

The Process - Loading

- Technicians to wear safety footwear and suitable clothing
- Technicians to ensure workplace layout is reviewed for easy, unobstructed passage of loaded trolleys. Prepare uncluttered, shortest route pathway to the transport vehicle from the collection point.
- Technicians to ensure the area around the load is uncluttered allowing enough room to safely load the water heaters on the trolleys.
- Technicians to ensure the trolleys are always in good working order with freely mobile, well-oiled wheels to allow ease of movement.
- Take the trolley to the load (a packaged water heater or heavy component). Initially push the upright load away from your body effectively raising the closest side of the load from the ground. A Lunge posture should be adopted
- Technicians to slide the base of the trolley in total under the load.
- Ease the box/component backwards to allow the box to rest on the base of the trolley.
- Secure the load to the trolley with a loop of webbing strap around the box and the trolley handle and tighten to secure the load. All loads should be secured to the trolley prior to any movement of the trolley both for safety and prevention of breakage.
- Technicians should **push** and not **pull** the load to the back of the van. The transport should be parked as close to the collection area as possible to minimise the pushing distance. Remove the safety webbing.

- Technicians to stand the load at the back of the van – a comfortable distance from the base of the van – to allow tilting of the load onto its side.

NB Water heaters should normally be transported in a vertical position. Rheem Service allows water heaters, except heat pump water heaters, to be transported horizontally for short journeys.

- Technicians to stand behind the trolley and push the upper edge of load away from the body with feet in the lunge position. This raises the bottom of the load from the trolley to facilitate removal of the trolley. Remove the trolley away from the load.
- A second technician may be required to assist to tilt the box/component forward to rest its upper edge onto the tray of the van. In this case the two technicians in unison lift the lower edge of the box/component, then push the load into the back of the van.
- The load is then accurately placed in the van to allow a second box/component to be loaded on top.

Unloading:

- Van to be parked as close to the delivery point on a flat and even surface as possible and in a safe zone.
- Technician to wear safety footwear and suitable clothing.
- Technician to assess to best route from the van to the installation site. Care should be taken to recognise impediments such as overhanging obstructions, broken or uneven paths, steps, slippery surfaces or objects such as plant pots, toys, garden seats etc.
- Technician(s) to push load towards the rear door from a crouched position by keeping abdominal muscles tight.
- Technician to alight from the van, go to back of the van to ease load to the ground and stand load upright.
- The load is the placed onto a trolley for ease of movement.
- Load is again secured to the trolley for transportation.
- Load is moved to the point of installation using a pushing action along the predetermined path.
- Loads over 100kg will mostly need two or more technicians to negotiate impediments.
- Where two or more technicians are required team lifting techniques are to be used. (refer clause 4 on page 6)
- Disconnected water heaters must be fully drained before attempting to move them.
- Loads to be manoeuvred into the final position using proper lifting moving techniques described earlier in this document.

SUMMARY

Rheem Service aims to keep its service technicians free from work related injuries. The responsibility is however shared between the managers, supervisors and technicians. The technician must keep him/herself fit to do the work by exercising and eating such that the necessary strength and flexibility are maintained. Warming up exercises prior to attempting to move or lift a product should be done especially after long periods of sitting or driving. Technicians must wear or use the personal protective equipment (PPE) and manual handling equipment provided. Safety procedures must be followed and supervisors involved if an unsafe situation is perceived. Management must provide the equipment, supervision and training required to eliminate personal injury through manual handling. Together we can ensure that technicians finish each day, tired but able to continue their normal home and work life into the future.

REVIEW

This procedure can be used as a guide but must be ratified by the Rheem Service Safety Committee in each branch.