WISH

Waste Industry Safety and Health Forum

INFORMATION DOCUMENT

LARGER WASTE CONTAINERS PRACTICAL ASPECTS OF INSPECTIONS

This WISH information document is aimed at health and safety improvements in the waste management industry. The Health and Safety Executive provided support to WISH in producing this guidance. This guidance may go further than the minimum you need to do to comply with the law with regard to health and safety

Contents

This WISH information sheet is a support document to WISH's formal guidance note WISH WASTE 06 'Larger waste containers – design, purchase, checks, inspections, and repair' (available, along with other WISH guidance documents, at https://www.wishforum.org.uk/wish-guidance/). Specifically, it provides advice, tips, illustrations etc relating to the thorough inspection of larger waste containers. You should read this document alongside WASTE 06. Note – this information sheet uses various 'technical' terms to describe the parts, systems, components etc of larger waste containers. It is presumed that readers will be familiar with such terms. If you are unsure what a specific term means you should seek competent advice rather than assume.

Introduction and scope

The use of poorly maintained large waste containers has the potential to cause serious failures which could lead to severe injury or worse to drivers, customer employees, and/or members of the public. Failure to maintain containers in a fit and proper state also presents the risk of prosecution under environmental law for the escape of waste on site or during transport. A key aspect of ensuring that larger waste containers are kept in a safe and well-maintained condition is the thorough inspection of these containers.

This information sheet covers the following types of larger waste container:

- Hook-lift/roll-on-roll-off containers
- Compactor containers including portable compactors
- Front end loader containers (FEL)
- Open and enclosed skips, including rear end loader skips (REL)
- Bottle, clothes etc banks and other similar crane-lifted containers

It does not cover trade and domestic or any other type of wheeled container. This sheet also does not cover ISO-type containers, such as shipping containers used to export baled recyclates, ISO-type containers used to transport waste by boat or rail etc. This is a specialised area and guidance on the inspection of ISO-type containers is available on line, such as at https://www.hse.gov.uk/ports/container-examination.htm.

WISH WASTE 06 'Larger waste containers – design, purchase, checks, inspections, and repair' is formal guidance and provides the detail of *what* areas, components etc should be checked during inspections. This information document provides advice on *how* you might carry-out these inspections.

Throughout this information sheet mention is made of CHEM (Container Handling Equipment Manufacturers Association) technical standards. For details of what these are, and a list of current CHEM standards please see WISH WASTE 06 'Larger waste containers – design, purchase, checks, inspections, and repair'.

Thorough inspections of larger waste containers

The sub-sections below consider the frequency of inspections and provide tips and advice on how to conduct inspections of larger waste containers. Care should be taken as there is some overlap between the types of container covered. For example, if your FEL containers have lifting lugs then you also need to read the section on skips. You should read all of this sheet rather than only the sub-section applying specifically to one type of larger waste container.

Frequency of inspection

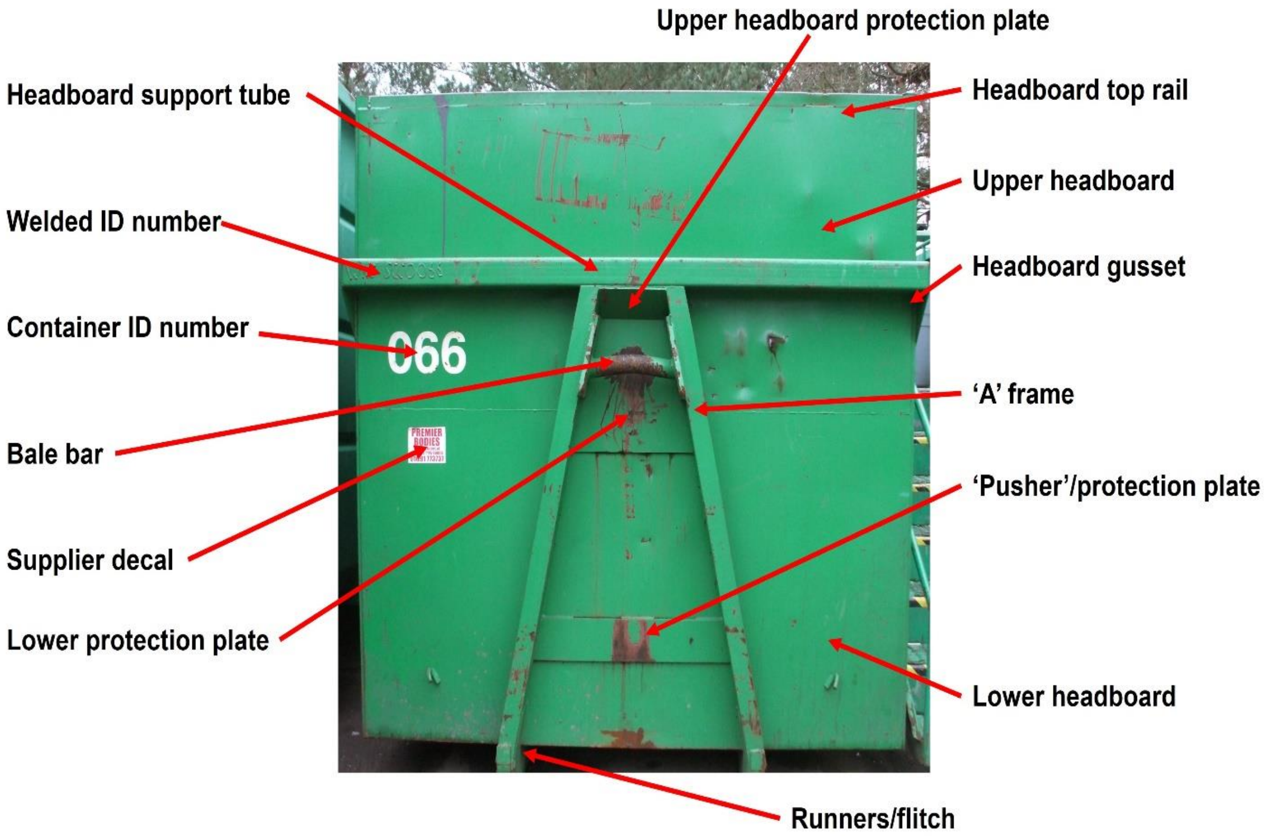
In general, the minimum frequency of thorough inspections for larger waste containers should be annually, and many organisations use this as their ‘default’ for inspection frequency. However, industry experience is that some larger containers suffer more wear-and-tear, damage etc than others. Factors affecting such wear etc can include, for example:

- Waste type – containers used for heavier and ‘harder’ waste types such as rubble and waste metals may wear and/or be damaged quicker than containers used for ‘softer’ waste types such as paper and card, or the corrosive effect of fizzy drinks on the cables and other mechanisms on bottle banks
- ‘Overenthusiastic’ use of compaction methods such as an elephant’s foot attachment on the back-hoe of an excavator or porta-packer equipment at household waste recycling centre sites can result in bowing or other damage to containers, or the use of container lifts (these rotate enclosed hook-lift containers so that they can be loaded ‘on-end’, for example, by a grab crane via the container’s end door) –wastes such as metals dropped into containers in this way can result in damage to the reverse side of headboards or other parts of the container. Rotation back to the horizontal can also result in load-shifting, which also may accelerate wear and/or cause damage
- Inappropriate methods such as the use of heavy mobile plant to force closed container doors at transfer stations, recycling plants etc, or containers being aggressively dragged-around by mobile plant at waste and recycling or customer sites
- Inattentive or inconsiderate collection driver actions, such as ramming containers with hook-lift lifting hooks (also likely to damage the hook) etc

The above are only examples. There are other factors which may be relevant to your containers. At the least, you should monitor damage, wear etc discovered during thorough inspections. If a container, group of containers, container type etc exhibits greater wear, more damage etc than others then you should consider increasing inspection frequency for these.

Hook-lift/roll-on-roll-off containers

The photograph below shows a typical hook-lift container from the lifting end. The notations are the terms used in this guidance – as with many aspects of the waste and recycling industry other terms may be used (for example, bale bars may also be called lift bars, hook bars etc) but for internal consistency the terms below are used in this document.



The 'A' frame, bale bar, and headboard support are key areas to check. This front area of the container is typically subject to the most repeated shock and abuse. Careless operation usually shows itself where the lower headboard sustains punch marks both internally, such as from a compactor mechanism, and externally from the hook-lift, or impacts from items of heavy mobile plant. Damage sustained to the upper part of the headboard are usually crushing/distortion, pulling the top front corners inwards.

Headboard Support and protection plate

Scuff/connection damage should be absorbed by the upper headboard protection plate (also called a deflection plate) behind the bale bar. This plate is to protect the headboard support and to prevent a ‘foul hook’ or mis-hook. This has been the cause of serious, and fatal, accidents: the driver thinks they have engaged the lift-hook correctly onto the bale bar but has actually only loosely ‘hooked-onto’ the headboard support tube resulting in the container coming-off partway through the lift. The protection plate aims to avoid this by not providing a ‘lip’ on the headboard tube onto which a lift-hook can accidentally be partially engaged.

Later designs of hooks can punch the headboard support and upper protection plate on coupling and ‘scrub’ against the rear protection plate as the hook rotates on lifting. Repeated punching will gouge and distort the headboard support which could allow the hook to engage improperly during the start of the lift cycle. Observe the coupling and lifting of the hook and the contact of the bale bar and when the container is in the travel position. There should be no friction between the hook and bale bar in the travel position, incorrect height or attitude of the bale bar will cause premature wear of both components. Also check the slider neck as it relaxes for wear of the slider pads.

The headboard support is usually built from rolled hollow section (RHS) either rectangular or square or from a rolled steel channel (PFC) of matching size to the A frame. The headboard support function is to connect and brace the container sides. It also stiffens the A frame and stops the headboard from pulling forward, keeping the correct position of the bale bar, and the A frame vertical. Therefore, the headboard support must be repaired or replaced immediately if any damage is sustained to it and or its connecting parts.

Collision marks on headboard cross tube, the upper protection plate has provided the tube with the required support

Container mis-hook damage with no upper protection plate fitted, resulting in damaged and compromised headboard support tube, requires repair or replacement and an upper protection plate should be fitted. Painting the upper and lower protection plates bright yellow, white etc can assist the driver when engaging the hook

No upper protection or lower protection plate fitted. Sub-standard design and materials using a pressed plate 3 mm for the headboard support tube. Very little support is given to the A frame or headboard, especially when deformed after impact/mis-hook. Requires extensive modification to make safe

Example of severe deformation of the headboard support. Note deflection of A frame. This is an unsafe container and should not be used. Probable causes include the container being repeatedly overloaded, frequently pulled by mobile plant instead of being loaded onto a vehicle etc

Severe distortion/deflection of runner channel web. No support after flitch plate causing channel web to distort in an overloaded container. Also can cause damage to lifting equipment. Rectification of this type of defect is likely to be very expensive. Note – this container does not conform with CHEM standard TS 8 – the wear strip under the main runner is missing. This omission likely contributed to the distortion shown

A Frame

The ‘A’ frame is generally built from the same material as the longitudinal runners and these components are connected by welding; fully welded to the headboard, as a minimum, and further supported by fully welded flitch plates. Check for cracked welds, wear, and any distortion of the runner also. Check the runner wear strip, if fitted, for wear and if fixed (welded) correctly. With the container on level ground check the verticality of the A frame, use a spirit level, and or stand to one side of the container and look across the front. Document the container’s unique identification number, if not found, give the container some form of marking, welding onto the front, vinyl decals etc, cross reference with the manufacturer's serial/build number (welded numbers are often the most durable).

Bale Bar

The bale bar is the main lifting part of the container and is a safety critical component. This is the only part of the container in contact with the hook-lift at the start of the lift and at the end of the unloading cycle. It is imperative that this part is regularly checked for wear and the integrity of its fixing/welds. The bale bar centre height and attitude should be checked. In addition, the bale bar must be accurately measured for wear using a vernier calliper or similar. Using a gloved hand feel the bale bar to determine the wear width and the areas of wear. Measure several points in the wear area with a vernier calliper or similar and record the lowest worn diameter. Divide this by the diameter of the bar when new. This will determine the amount of original material lost expressed as a percentage. Using the example of a 65 mm when new round bale bar:

> 60 mm measured worn diameter ÷ 65 = 0.9231 (an 8% loss in diameter from new)
> 55mm measured worn diameter ÷ 65 = 0.8461 (a 15% loss in diameter from new)

The amount of wear should not exceed 10% as an absolute maximum and may, dependent on a series of factors (see note below), be no more than 5% to maintain an adequate safety margin. Overall, the less wear the better.

***Note –** the above is simply an example intended to illustrate the process of measuring bale bar wear. The 65 mm bale bar diameter is from CHEM technical standard TS8, the wear limits are from supplier information. Acceptable wear limits will depend on a series of factors, such as original bar diameter, material the bar is constructed from etc (contact your container supplier for detail). What the example above does illustrate is that bale bar wear limits are not high. You should also consider wear rate: will the bar likely exceed its maximum wear limit before the next inspection? You should consider replacement rather than waiting for another, potentially accelerated, year of wear to occur. If unsure you should seek competent advice.*

On some older containers the bale bar does not pass through the A frame uprights and is retained in flat cheek plates only. Such containers should be modified with the fitment of a new bale bar which passes through the A frame. This type of repair modification should only be entrusted to a skilled qualified and competent welder (to BS 4872 standard and parts or equivalent.).

While not a direct container issue, you should also check your fleet's lift hooks for wear using the lifting equipment manufacturer's profile gauge. A worn hook loses material, and therefore connection capability, but also spreads and will prematurely wear a bale bar if not corrected.

Wishbone type bale bars are not common in GB, however ongoing regular inspection before use is needed to monitor wear and for welds cracking.

Wishbone bale bars are butt welded to the steel plates of the container. If the weld fails, there can be sudden and catastrophic failure of the lifting operation. While wishbone bale bars are not inherently unsafe, they are a safety-critical component they should be adequately inspected and maintained. Designs that conform to CHEM technical standard TS8 are preferred as they cannot fail in a similar manner, as the bar passes through openings in the surrounding side plates and is welded to both inner and outer faces of the supporting plates. Failure of a weld still allows support of the bale bar through the side plate

If a portable compactor has a removable lifting frame this should be inspected at six monthly intervals and any faults rectified promptly. This may include significant wear of the bale bar, cracked welds, worn pins/bores etc

Container sides

Open top hook-lift container sides can bow/flare outward because of continual aggressive compaction and loading/pushing with mobile plant etc. When this happens the container's integrity can be severely compromised.


Two examples: container with bowed sides and tearing at the headboard

Constant ramming from above can force the container sides to bow more in the middle than the ends as these parts are restrained by the upper front headboard and rear door. Container sides which are bowed can restrict the flow of material out of the container when it reaches the back door; the material is trying to pass through a 'venturi' and becomes jammed. Acceptable limits of bow/flare can be measured as within three levels of deflection:

- Bowed but safe to use
- Bowed continue to use but repair at the next maintenance interval
- Bowed/damaged unsafe for use until repaired/rectified, quarantine the container and remove from use. Driver reports of loads jamming can assist in the decision to whether to repair immediately

A simple test is to load the container onto the hook-loader vehicle and have the driver deploy the auto sheet, checking how the arms pass the bow and check the sheet is covering all the container. More modern sheeting systems can widen the sheeter frame allowing the arms to pass. However, it does not widen the sheet. Any gaps may lead to wastes/materials being allowed to escape during transit.

Open top containers can collide with the stairs/gantries/walkways, as used on HWRC (household waste recycling/CA) sites, if excessively bowed on placement. This could result in damage to these walkways/stairs.

Rectifying the bow/flare of the container sides is a difficult repair to complete and not necessarily cost effective. It does require some understanding of how the metal reacts to heating and cooling. Check also and rectify as required the top of the headboard connection to the sides/top rails.

Door locking equipment

Main door locks are designed to keep the door of a loaded container securely closed. They need to withstand the forces exerted by the material inside the container during loading and transportation and/or loads shifting during transport. The secondary lock (see sub-section below) serves as a back-up mechanism, ensuring that the door remains closed in the event of a main lock failure. The operating mechanisms for both the primary and secondary locks are typically positioned on the side of the container, allowing the operator to stand in a safe position when releasing the door. When opening the door, the secondary lock/s should be released first, followed by the primary locking device/s.

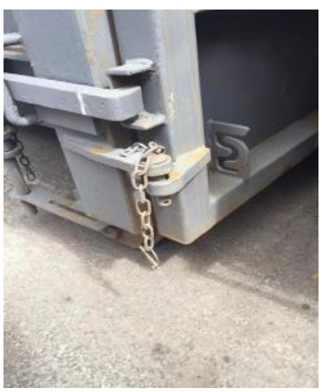
Door locking equipment is a safety critical area of a container. It is also the area that drivers/operators tend to have the most problems with and can present the greatest risk to them such as when opening, securing, and closing doors. Damage to the door retaining gear can show when the door is struck, or if material is repeatedly rammed against it, this bends the vertical shaft, and the retaining lugs (snails), can deflect causing retention/closing of the door to become a problem. It can make it more difficult for the operator to open and close shut, reducing contact with door gear lugs and loops or placing undue pressure on one lug and excessive wear/strain on the ratchet/rigging screw.

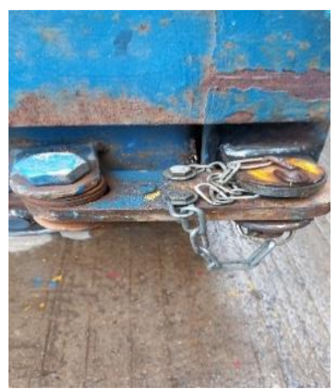
Damaged door retaining gear, causation - bent/damaged span bar. The top retaining lug is no longer in contact with the loop. The rear upright has deflected inward by some 100 mm

Door equipment in good serviceable condition, all lugs in contact with retaining loops equally, ratchet and secondary lock fitted, door pulled up correctly no gaps, door checked for ease of opening/closing and lubricated ratchet and hinges

Secondary locking systems

Check the secondary locking system for operation/fitment and integrity. Record if any parts are missing or damaged or not fitted. No container should be used without a serviceable secondary lock. The secondary lock's function is to keep the door retained and closed in the event of the door's primary locking systems fails. Secondary locks are fixed independently of the door system and do not provide any other control.





Examples of various types of secondary locks

Older containers received for repair may have neither a ratchet/rigging screw nor secondary lock system fitted. The door is secured by a handle located in a clevis and pin only. Understandably, some drivers referred to this as a 'suicide handle' (also called by some a 'grenade' – pull the pin and stand back). Such containers should be removed from service until a damper or similar can be fitted to prevent sudden and uncontrolled opening of the door (note - secondary locks do not usually prevent sudden and uncontrolled opening as the driver has likely already 'pulled the pin' before operating the lever).

Two examples of older containers with no secondary lock system etc fitted

Some containers are fitted with a rigging screw/ratchet assembly on the opening side of the door. Others are fitted with a damper. Both aim to stop the securing handle/lever, if still fitted, from swinging around in an uncontrolled manner (usually because of pressure on the door from overfilling, over-compacted, inappropriate waste type etc). Experience is that dampers are usually more effective than rigging screws/ratchets (see section below on compactor containers). Violent and sudden swinging of securing handles/levers striking the driver on the head or upper torso can cause severe injury. Using containers without a ratchet/rigging screw, damper, or similar, and fitted with a handle only may also be the cause of musculoskeletal injuries. Ratchet/rigging screws must be well maintained to avoid 'other tools' (often inappropriate tools) being used by drivers if they become stiff or difficult to operate. Tell-tale signs include hammer/strike marks on the handle.

The secondary locking pin or latch of a container must be released before releasing the door latches. This means that, if the door is under pressure, it can spring open rapidly and in an uncontrolled manner. This should be included in driver training, information and instruction. The rigging screw/ratchet etc does not control the speed the door opens at. As part of their normal routine the driver will have probably uncoupled the secondary lock before using the ratchet/rigging screw etc. In these cases the door can be released in an uncontrolled manner.

The container span bar, even if only slightly bent, can also make the rear door stiff/ difficult to open/close as this slight deformation can pull the rear end of the container sides in, which affects the hinges and locking gear. If the span bar is straight, and the door is still difficult to move it may be because of a lack of lubrication.

For any deformation found in a span bar, check the connecting welds of both the uprights and span bar for cracking or flaws. A bent span bar can also restrict the load from tipping out cleanly as it catches the material fouls and jams. Replacing the span bar requires the sides to be squared, using an 'acro-prop' or similar to avoid misalignment of the door, and the loops fouling or being too wide when the door is closed

Doors

The rear door must rotate 270° to be fully secured by its retaining loop and the labyrinth. When the door is in the correct position, the hinges provide support for the door. A tell-tale sign of a door problem is an extension to the door retaining loop, such as a piece of rope or shackle. Always exercise high caution when opening or closing the door, and when securing it open or closed. Excessive wear in the hinges can be compensated to square the door. The door when closed shut must not have any gaps either at the sides or bottom, as material may escape, littering the highway.

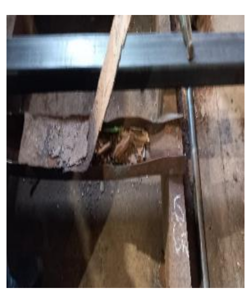

Door retaining loop and labyrinth/retaining plate (chain systems are not recommended)

Floors

Secure the door in the open position and inspect the internals of the container. Checking both sides and headboard internally for damage, bowing, holing and general wear. Measure the bow of the sides at several points internally and record. Check the floor/valley (slope) for gouges, holes, the welding and fixing of the floor sheets to the valley. Is the floor undulating between the bearers and can you make out the bearer, the outline visible? If the floor is excessively worn the bearers may likely be crushed. Holes in the floor need to be rectified promptly to avoid structural issues and the loss of wastes.

Damaged and holed floor with outline of bearers visible, and replaced floor





Replacing cross bearers/floor (opportunity to replace with better materials?). Pressed steel channel full of debris which has entered where the floor was holed above the bearer and rammed in by compaction

Check the sides swages, if fitted, for wear/torn/holed. Check the headboard behind and below the bale bar for damage. If the headboard panel is punched in these places, it can suggest poor or inconsiderate driving. The fixing (welds) of the A frame to the headboard can be compromised as distortion can weaken this area and may also affect the geometry of the bale bar. Record all damage. Secure the door closed to allow inspection of the offside panel side, uprights including fixed ladder, if fitted. Record all damage.

Undersides of containers

Inspection of the underside of a container should be with the container safely propped or otherwise securely and independently supported (for example, on an appropriate frame). It is not acceptable practice to work/inspect under a container with it raised partially using a hook-lift vehicle – hydraulics and their components can and have failed. Issues to inspect while the container is securely raised include the cross bearers and underbody lock pockets.

Load the container onto a hook-lift vehicle checking the security of the wear strip, if fitted, and how the container lands and sits on the bed supports and rollers. Lower the container onto the chassis and slide to the travel position. Check for damage to the bearers, for being crushed, detached, cracked, or split. Check for rusting of the underside, main runners, and flitch plate integrity. Check the underbody lock pockets, engagement of the forks of the underbody lock, the rearmost bearers, and the wheels.

Deformation of runner. Deformation starts at the end of flitch plate as no support is provided. Note, as in the photograph above this container is missing its wear strip – see CHEM standard TS 8

Wheels and wheel assemblies

The rear wheel assemblies carry the container and are part of the loading/unloading cycle. The height of the wheel in relation to the runner diminishes with wear, use and abuse. The wheels must carry/support the container allowing it to roll freely. In the original design of hook lifts loading of a hook-lift container required the container to roll when raised at the front end, but as the container was lifted it would sit on the heels of the bearers and pull the truck using no tractive power/freewheel under the container and load it onto the vehicle.

More modern wheel designs have raised the height of the runners allowing the container to roll all the way through the lift cycle. In both designs if the roller is not free moving it will place great strain on the lifting equipment, bale bar etc. Check the condition of the roller, shaft and housing its security and alignment to the rear bearer. Repeated bumping of the roller into 'stops' or placing on surfaces which the wheels sink into and have to be dragged through will cause damage to the wheel assembly and rear bearer).

Example of a damaged wheel and carrier

If fitted, the heels of the runners should be well maintained especially if used on drawbar trailers. The heel should have a smooth radius to allow easy transfer of containers onto trailers. If the edge of the heel is sharp this may grab or dig into the trailer channel giving a jerky transfer and placing undue pressure and wear on other components. Rectification is by welding a heavy strip around the heels. If the drawbar trailer is the type with a deck rather than channels wheels should be in good working order.

Smooth container heel radius smooth allowing a better sliding action. Note – CHEM standards TS 8 and 13 do not include a 'heel', rather they include a radiused cut-out to promote a smooth transfer. The container shown right is non-standard and has been included for information as they are in use

Some containers have a ladder fitted to allow drivers to inspect loads. This was the topic of a withdrawn CHEM standard (TS 12 – withdrawn in 2006). Different organisations have differing views on the fitting of ladders to large containers: some have removed ladders others have kept them in place. This is a matter for your risk assessments, such as those relating to work at a height. If you do decide to retain ladders, then you should ensure they are safe to use, checked, inspected and well maintained. Ladders should not be used when the container is loaded onto a hook-lift vehicle because of the increased height involved.

Compaction containers including portable compactors

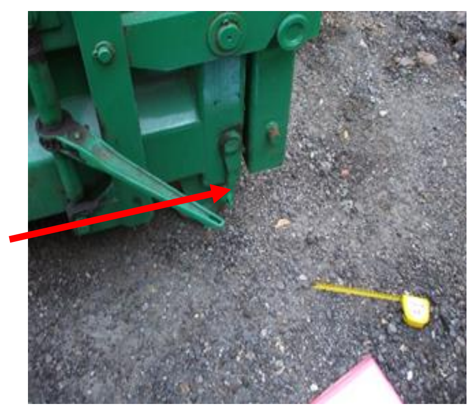
Many of the issues relating to compactor containers are also included in the sub-sections above and below: this sub-section should not be read in isolation. You should also refer to the relevant CHEM technical standards, such as TS 2, TS 5, TS 6, and TS 9.

Door locking

The door locking system of compactor containers and portable compaction units are often inherently better designed to take account of the pressures applied to this type of container and their rear doors. Over-centre lever systems can seize or become damaged. On inspection check the latches all move in the same plane and extend equally, and the retaining loops for the latches are not cracked or missing. Check the all the latches are pulling equally and are securing the door.

***Note –** some container manufactures today are fitting/supplying door equipment commonly fitted to standard duty open top containers moving away from the more complex over-centre latching types while some manufacturers are now fitting dampers to compactor door opening leavers. These restrict how quickly a level can move making it less likely that a lever will suddenly and rapidly 'spring-out' striking a driver with force. These systems are desirable, experience shows them to be more effective than other alternatives, and you may want to specify them.*

Example of a compaction container latching mechanism. Release lever is secured by a pin on a chain (to prevent its loss)



Lower latch is used to grab door when closing to overcome door seal and assist closure

Portable compactor door released

Compactor containers and portable containers tend to wear from the inside out. These containers keep their shape because the roof makes a lidded box, unlike open top containers. Wear on the floor can be detected by the outline of the bearers, and the floor can also undulate. Typically, the most wear of the floor is found between the rear bearer and the adjacent second and third bearers. This is where the waste is driven into the container from the compactor platten/ram. The compactor container roof and sides can also wear as the compactor creates a bow wave with the waste as it fills the container, and this scrapes these parts. The ‘daylight test’ (can daylight, or a torch etc, be seen – that is, are there any holes) will show areas which are pin holed and need refurbishment.

The rear door and securing points are usually the most stressed parts of the compactor container. Wear and distortion can be found in the pinning off pockets and the pin retaining clevises are prone to damage. Replace bent pins and split pinning off tubes with the correct material. Loss of pinning off tubes is generally caused by the compactor flap becoming distorted, opening, and allowing the tube to fall into the waste during filling. The remaining critical areas are similar to an open top container.

Pinning-off pockets on a compactor container

Container inspection

Before any inspection of portable compactors commences the area at the rear of the ram should be cleared of all detritus and debris. There is potential for biological contamination and decomposition of organic material which may create exposure to health hazards. It is not acceptable to inspect containers of any type until all waste etc has been cleared from all parts of the container. For portable compactors the compaction mechanism should also be securely isolated and locked-off.

Two examples of debris trapped at the cylinder area (behind the compactor ram).

A cleaning programme of the cylinder area (rear of the ram) should be in place. This should be monitored, the platten/platten floor refurbished as the veneers become thicker. This reduces the risk of the concertina plates disengaging. The frequency of inspection/ cleaning will depend on the amount wear of the platten/ram and platten/charge box floor. The types of wastes compacted will also affect the amount of wear. Check for any oil found in the waste as this may indicate that hydraulic hoses etc may be damaged or weeping. Handle such contaminated waste using appropriate precautions.

Portable compactors tend to have two wearing areas: the platten floor/floor area where platten/ram moves across and the container sides immediately after the platten. To check wear of the platten box and platten floor look for small ‘veneers’ of rigid plastic, wood, soil etc., which can pass through under the concertina plates and become trapped in the hydraulic cylinder area.

Wear of the internal sides of the container part can result in loss of material thickness and bulging outwards. This is rectified by cutting out the worn panel plates and replacing them. The refurbishment of the platten/ram is more involved as the ram must be removed and a compensating ‘hardox type’ material welded to or replacing the original.

Wear on sides will cause panels to bulge

Floor showing signs of wear, starting to undulate and define bearers

***Note** – this information sheet only covers the container itself and not the compaction machinery. See comments in the design and procurement section of WISH WASTE 06 on compactor containers for sources of information on compactor machinery.*

Skips including REL (rear end loader) skips

Skips tend to be subject to more abuse as their use and handling is often less controlled by the owner/operator. Damage to safety critical areas of the skip is usually more easily identified because of their relatively contained height and length and less complex door arrangements and lifting designs. It is important that an inspection and repair/refurbishment programme be in place. See also relevant CHEM standards such as TS 10 (RELs) and TS 14 (general skips).



Examples of repairs to skips, new floor and new tipping bars fitted

Drop down doors

The drop-down door, if fitted to open skips, has a spring bolt or locking pin and own retaining system. The door must be manageable to be lifted by one person free from distortion and slot easily into the retaining lugs; then secured with the spring bolt or captured pin.

Skip door and details of drop down and safety latching

Lifting lugs

One safety critical area to check is the skip lifting lugs and associated bracing channels. There should be no sharp edges where steel sheet is welded to the channel or box section. Some skip manufactures form a fold/return to avoid creating exposed sharp edges. However, these folded parts are still subject to being gouged or bent, so producing a sharp edge.

Skip lugs should be inspected for wear, fixing security and any deformation. This applies to all skip lugs and types of skip/containers, such as open/enclosed skips, rear end loader type (REL), front end loader (FEL), where skip lugs are also fitted.

Examples of damaged and worn skip lifting lugs. In general, it is preferable to replace a skip lug with a forged type in lieu of a fabricated lug

Skip lugs, if bent, must be replaced not straightened. For the skip lug to bend excessive force is likely to have been applied such that the lug can no longer be trusted as a key lifting component. Consider what other damage to the skip may have been sustained.

To replace a skip-lug the shank must be fully welded on both the inside and outside of the channel, and on the end where it passes through the skip side plate. A large washer is typically used to make a strong welded connection around the end of the lug and side plate. This washer also covers and replaces the metal lost when cutting out the original lug.

To complete this repair a section of the channel can be replaced allowing the lug to be welded both inside and outside. The original channel is likely to have sustained some elastic deformation. The new section of channel should be carefully positioned and fully welded. All open ends should be capped and dressed, and the repaired section painted. Prior to welding skip lugs should be preheated as preparation in situ. This work should be carried out by an experienced, competent welder/fabricator.

Example of repair to an external skip lug. Note - to provide assurance over the quality of the replacement welding, NDT techniques are recommended to be carried out by a suitable practitioner (you can speak with your statutory examiner for lifting equipment for advice)

Skip floors

The general refurbishment of open top skips typically is to replace the floor and part of the sides and ends. Skips are given a second life when the owner wishes to increase their stock, and it is economically viable to refurbish rather than replace.

Inspections should detail the lifting parts and tipping bar, checking the welding integrity and condition of the metal floor and sides. A ‘hammer test’ (use of a hammer to test for excessive rust, holes, excessive wear etc – that is tapping with a hammer as often seen during car MOT tests) will usually be sufficient to check the rusting and corrosion state of the skip. Severely corroded skips will generally be holed, which makes the decision to replace the floor/lower sides easier. Check the external weld seams are all in good condition and the skip corners are secure all support gussets are intact, replace if necessary.

When replacing a skip floor ensure no lip is formed below the tipping bar. It is possible for the lip to engage accidentally and not the vehicle’s tipping latches creating a ‘foul hook’ situation. As the skip moves through its tipping angles it will likely disengage from the lip and swing in an uncontrolled manner. See also CHEM standard TS 3 on lugs.

small skip refurbished - new tipping bar detail

REL front lifting box, check also for cracked welds in other areas, repair where required and ensure lifting tubes are fully welded into front box

REL front tipping pin welded in detail. Not all REL containers have the pins welded in. For some the driver inserts separate pins and removes these after the service of the container. Welded in pins can be prone for persons suffering injury by walking into the protruding shaft, however fixed pins are always available and avoid the risk of lost separate pins being replaced by inappropriate other substitutions

Skip lids

Enclosed skip lids operated by customers on sites with in-situ emptying, for example RELs, require maintenance and checking by the visiting driver. During the servicing of the skip the lids their ease of operation should be checked. Metal lids and doors have generally been replaced with plastic types, which are usually easier to use but can deteriorate more quickly and may require replacement more frequently. Most damage to these doors /lids is done during the tipping cycle. The securing equipment for retaining the doors should be checked to avoid damage. While outside of the scope of this sheet, some skip lids on portable compactor units are interlocked – these interlocks need inspecting for their integrity and function.

Example, typical enclosed skip

Example enclosed skip lid securing mechanism

Example, enclosed skip with stabilising 'wedges' fitted to reduce the risk of the skip 'nose-diving' when loaded on a slope (provided the skip is facing the correct way)

FEL (front end loader) containers

Front end loader containers are emptied in-situ at customer locations. These containers can also be lifted by skip loaders if lifting lugs are fitted. Some also have channels to allow the container to be moved by a forklift truck. All of these lifting areas/points, where fitted, require checking and inspection. The immediate reporting of problems/faults by the visiting driver and actions to rectify is important. The general issues associated with structural integrity, issues with lifting lugs (if fitted) etc are covered in the sub-sections above, See also CHEM technical standard TS 11 for more detail.

FEL vehicles are large and require an adequate area to safely manoeuvre, and to couple to containers without having to push or drag the container to engage the forks. These containers often store loose light materials and therefore their lids and equipment must be in good working order to avoid material escaping during lifting and tipping sequences.

Damage is often found at the mouth of the lifting pockets as a result of inconsiderate operation, such as ‘slamming’ the tipped container because the material is sticking inside the container. This can be because of waste getting wet because the lids may be damaged and not sealing or being left open. Wet waste which is left in the container may cause internal corrosion and more emptying problems.

All lifting points/areas require checking and inspection

Typical example FEL container

Bottle, clothes and similar banks

The inspection of bottle, paper, clothing and other similar banks/containers, including those which are bottom emptying, are subject to the requirements of PUWER inspections. The frequency of inspections should be determined by factors such as the amount of use, that is how many times these units are emptied. However, bottle etc banks are commonly placed at locations such as bring-sites, where the exclusion of members of the public during lifting is problematic – the consequences of a failure during lifting may be more severe than in more secure locations. This would be a valid input to your risk assessment regarding how often inspections are conducted. See also WISH WASTE 11 ‘Safety at ‘bring-sites’ in the waste management and recycling industry’ available at WISH WASTE 11.

As a minimum, subject to risk assessment, inspections of bottle banks should be once per year. The internal mechanisms including the ropes, chains, links etc of bottle banks can be subject to rapid deterioration caused by the residues left in the glass containers (many ‘fizzy drinks’ are corrosive). As with all container inspections the unit must be completely empty before inspection. Taking this into account you may, subject to risk assessment, want to inspect bottle banks more frequently than annually.

Bottle banks are frequently located in an area where space is restricted, for example to maximise the number of banks which can be placed at a bring site. This often results in the banks being pulled-out rather than ‘clean lifted’ or colliding with other containers when being lifted and/or lowered back into position. In addition, there is often slight deformation of banks from over-filling. Such issues can have a cumulative effect on the integrity of the bank and as a result it is important the driver checks every time and removes a bank from service if found with a safety defect and/or excessive wear.

Check bottle banks for deformation, splits, and other damage. Excessively deformed banks should be removed from service (repair of deformation, splits etc in plastic bottle banks is often not economic). Look at the bank on the floor – is it deformed, are the sides still vertical and/or obviously bulging from their original shape.

In addition to structural issues, inspections of banks should include checking that all cables, chains, hatch mechanisms operate and run smoothly and freely, and that cables, chains, mechanisms etc are undamaged and in good condition. These checks should include lifting the bank and observing the operation of its mechanisms and hatch operation.

Check bank lifting eyes and similar for damage, wear, deformation etc. Any excessively damaged or worn lifting eyes should be replaced. There are standards for lifting eyes of various types. If you are unsure regarding the type of lifting eye on your banks you should seek competent advice.

For clothing, book, shoe etc banks check the operation and condition of any tipping/hinged loading trays, letterboxes etc. Trays etc should operate smoothly and easily. Check for any rough or sharp edges caused by corrosion, wear, or damage – members of the public use these banks and are unlikely to be wearing protective gloves.

For banks with opening hatches/doors for unloading check door operation, hinges etc. Plus check door hold-back mechanisms and overall hatch/door integrity. Look for signs of damage caused by attempted forced entry – clothing etc banks are frequent targets for those seeking to remove items for sale or their own use.

Ideally, banks should be located on a firm hard surface such as concrete or tarmac. However, some are not, being located on gravel or other unmade land. This can accelerate corrosion in the floor of banks – check for this and include such factors in your risk assessment relating to the frequency of inspections.

Recording inspections

Thorough inspections need to be recorded. This can be via a paperwork system, or more frequently an electronic system (either a simple spreadsheet or more sophisticated data-base approach). The decision as to what type and how sophisticated your system is likely to be based on factors such as how many containers you have. Whatever system is used it should include items such as (the list below is not comprehensive):

- Container identification/reference number – unique to each container
- The type of container
- Date of inspection
- List of any defects found their location/s and seriousness
- Action required to rectify defects, or if the container is to be taken out of service
- Confirmation of repairs etc being completed and inspected for their adequacy
- Date next inspection is due

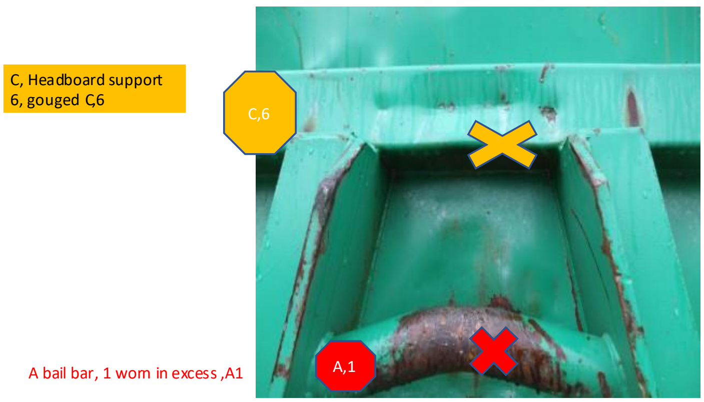
Many organisations use a summary sheet to keep track of container inspections, defects identified, repair dates, status of repairs etc. The graphic below shows an example of a summary sheet. This is only an example and not intended to represent good practice etc.

SUMMARY STATUS REPAIR MANAGEMENT REPORT (MAINS +STARTERS)

Container id or number	Type of container	Date inspected	Status on date of inspection	Bail bar wear %	Fault area(s) of container	Repair date scheduled	Repair date actual	Status 27/12/22	Repair complete date
1	40	10/12/2022		93					
22	40	10/12/2022		82	A,1	12/12/2022	15/12/2022		
15	12	10/12/2022		93	D,3 E,2	20/12/2022	26/12/2022	E,2	10/01/2023
25	40	10/12/2022		81	A,1	12/12/2022	15/12/2022		
63	40	10/12/2022		95					
101	40	10/12/2022		90	C,3	20/12/2022	20/12/2022		
55	40	10/12/2022		92	L,1	12/12/2022	10/012023	L,1	10/01/2023

In the example above fault, location etc codes are used for the sake of brevity in the sheet. If you use such codes those involved in inspections should be aware of what they mean. The example also uses a ‘traffic light’ system to indicate issues such as the severity of the defect, whether inspections are occurring on time etc – this is common practice, and with spreadsheet and more sophisticated systems such traffic light notations can be automated based on date etc.

Some organisations use photographs to support their system. The use of photographs can be useful to inform repairers of the location of a defect and its nature. As noted above, if you use a code system make sure your repairer also knows what it means.



Example of photograph use to ensure the repairer knows where the defect is and its nature

Whatever recording system you use, it should be aimed at ensuring that:

- All containers are inspected
- That inspections take place on time and to schedule
- All defects are identified and recorded
- Safety critical defects result in containers being taken out of service until they can be repaired to a safe standard or disposed of
- All significant defects are addressed and as required repaired, that replacements etc are made and similar
- No unsafe containers are put back into service

Disclaimer and WISH

This information document has been prepared by health and safety practitioners to assist health and safety improvements in the waste management industry. It is endorsed by the WISH (Waste Industry Safety and Health) Forum. This information document is not formal guidance and represents good practice, which typically goes beyond the strict requirements of health and safety law.

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The Waste Industry Safety and Health (WISH) Forum exists to communicate and consult with key stakeholders, including local and national government bodies, equipment manufacturers, trade associations, professional associations and trade unions. The aim of WISH is to identify, devise and promote activities to improve industry health and safety performance.