

## **Packing and Handling Instruction for Type TC02, IP-2 ISO Container**

---

*Project title:* **Low Level Waste ISO Freight Containers**

*Project number:* **DR-GEN**

*Bldg name/number:* **Low Level Waste Repository**

*Document ref:* **OM/LLWRGR/MECH/00001/E**

*Purpose of issue:* **For Operational Use**

*Date of issue:* **25 Apr 2013**

*Author:* **R E Millington**

*Department:* **Engineering and Technical**

*Group:* **LLW Repository Ltd**

*Checked by:* **B Mellor**


*Level of checking:* **Level 3**

*Checker's signature:* 

*Date:* 

*Approved by:* **R E Millington**

*Approver's position:* **Package Design Authority**

*Approver's signature:* 

*Date:* **250413.**

"Copyright NDA 2013, this document contains proprietary information, permission to copy, or use such information, should be sought from the Intellectual Property Manager, LLW Repository Ltd."

## History sheet

Rev	Date	Reason for revision	Revised by
A	11 Feb 2010	First Issue	J Langham
B	29 Feb 2012	Updated for re-license 5.2 payload for two stillages added. 5.3 Removed, 5.4 Removed. 8.3 Warning on the use of fork pockets added 10.4 (LLWR) added after operator 10.4.2 Routine maintenance removed from the start of first paragraph replaced with annual inspections and maintenance Appendix A Stillage information removed now part of guidance note PAAGN12	S Williams
C	29 Jun 2012	Document reformatted due to re-licensing	S Williams
D	Feb 2013	Updated to include additional stillage types and stillage specific O&M specifications. Table 3 was table 2. Original table 3 deleted, new table 2 added. Sections 5.1.4, 5.2.1 & 5.2.2 revised Sections 7.7, 7.8 and 8 updated to refer out to stillage specific O&M specifications. Section 9 deleted – now included in stillage specific O&M specification. Sections 10 & 11 renumbered accordingly Figures 9 & 10 deleted, figures 11 to 13 renumbered accordingly. References updated	R E Millington
E	25 Apr 2013	Section 2.1.3 and 6.1.1 updated to include reference to PAA/GN08. Section 7.3.1 updated to include reference to Container Damage Reporting Form Sections 7.5.1, Sections 7.5.1 iv) and 7.6.1 v) updated Section 8.3.1 updated to include reference to table 2 Section 9.1.3 added to include requirement for weight declaration form Section 9.2.2 added to include reference to PAA/GN05 Section 9.3.2 added to include reference to document holder Section 9.4.1 updated to include reference to ACEP decal Section 10.1.1 updated to delete permission requirement Reference 4, 14, 15, 16 & 17 added.	R E Millington

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

<b>Contents</b>		<b>Page</b>
1	Introduction.....	6
1.1	General.....	6
1.2	Temperature Range .....	6
2	Scope .....	6
2.1	General.....	6
3	Compliance.....	7
4	Responsibilities .....	7
5	Package Description .....	7
5.1	General.....	7
5.2	Payload .....	8
6	Container Handling Operations .....	8
6.1	General.....	8
6.2	Handling Methods.....	8
6.3	Lifting and Loading Equipment.....	9
6.4	Lifting using a Fork Lift Truck.....	9
6.5	Lifting using Bottom Fittings.....	9
6.6	Lifting using Top Fittings.....	9
6.7	Maximum Stacking Height.....	9
6.8	Lifting Container Lid .....	9
6.9	Handling by other methods .....	9
7	Inspections.....	10
7.1	General.....	10
7.2	Certificate of Approval.....	10
7.3	Summary of Turn-round Inspection .....	10
7.4	CSC (Safety Approval) Plate .....	10
7.5	Visual Inspection of External Container Body and Lid.....	11
7.6	Internal Visual Inspection of Container .....	11
7.7	Visual Inspection of the Stillage .....	11
7.8	Visual Inspection of the Lifting frame .....	11
7.9	Lid Seals and Seal Support Channel .....	12
7.10	HEPA Filter.....	12
8	Preparing, Loading, and Unloading of the Container.....	12

**Packing and Handling Instruction for Type TC02, IP-2 ISO Container**

---

8.1	Positioning of Container .....	12
8.2	Lid Removals.....	12
8.3	Preparing, loading and unloading of the stillage.....	12
8.4	Loading and Securing of the Stillage into the Container .....	13
8.5	Replacing the Container Lid.....	13
8.6	Closing the Lid .....	13
9	Pre Dispatch Checks.....	13
9.2	Monitoring and Labelling .....	13
9.3	Documentation .....	14
9.4	Planned Maintenance .....	14
10	Storage of Containers.....	14
10.1	Storage of Empty Containers.....	14
10.2	Container Retrieval from Storage.....	14
11	Appendix A Container Specification .....	26
Figure 1 - General View of TC02 Container		16
Figure 2 - General View of Container with Type S1 stillages		17
Figure 3 - Trailer Support		18
Figure 5 - Lifting Using Bottom Fittings		20
Figure 6- Lifting Using Top Fittings		21
Figure 7 - Lid Lifting Operations		22
Figure 8 – Layout of Stillage and Lifting Frame (TC02/S1 & TC02/L1) Within the Container		23
Figure 9 - Lid Guidance		24
Figure 10 - Twistlock System on Trailer		25

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### Definitions/Glossary

ALARP	As Low As Reasonably Practicable
ACEP	HSE Approved Continuous Examination Programme
ADR	European Agreement concerning the carriage of Dangerous Goods by Road
Approving Authority	LLWR Container Approval Authority is responsible for the issue of Certificates of Approval for IAEA self assessment container types on behalf of LLWR
Consignor	Consignor according to the provisions of ADR
Container Operator	Owner of the Container
Contract Authority	LLW Repository Ltd
CSC	(International) Convention for Safe Containers
Design Authority	Head of Engineering LLW Repository Ltd., Holmrook, Cumbria
Inspection Authority	An Inspection organisation approved by the Health & Safety Executive to approve designs as meeting ISO and CSC requirements.
IAEA	International Atomic Energy Agency.
IP-2	Industrial Container Type 2
ISO	International Standards Organisation.
LLW	Low Level Waste
LLWR	Low Level Waste Repository
LSA	Low Specific Activity
Manufacturer	The organisation responsible for producing hardware in accordance with the requirements of the Contract Authority.
OI	Operating Instructions
OQP	Operational Quality Plan
SCO	Surface Contaminated Object
SQEP	Suitably Qualified and Experienced Person
WAC	Waste Acceptance Criteria

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 1 Introduction

#### 1.1 General

- 1.1.1 This document provides the Relevant Parties (Consignors, Consignees) with guidance regarding the operational requirements for the LLW Repository Ltd IP-2 Container Design TC02.
- 1.1.2 The TC02. It has been designed in compliance to ISO 1496-1 [1] and has been tested under the alternative arrangements in IAEA Regulations for the Safe Transport of Radioactive Material 2009 [2] for IP-2 packages
- 1.1.3 The container is designed for the transport and disposal of radioactive material in the form of LLW conforming to LSA or SCO material as defined in Reference [2]. Each container is supplied as an Industrial Container Type 2 (IP-2) container. The explicit use and restrictions of the packaging are defined in the Certificate of Approval issued by the LLWR Container Approval Authority.

**NOTE: Where it is found that any part of these Packing and Handling Instructions cannot be complied with, the container shall be embargoed and advice shall be sought from the Contract Authority to allow the shipment to continue.**

- 1.1.4 In specific circumstances the additional permission/approval/endorsement is required from the contract authority:

Contact: [transportandlogistics@llwrsite.com](mailto:transportandlogistics@llwrsite.com)

Activity	Requirement
Container restraint (other than twist lock)	6.2.2
Lifting the lid by alternative means	6.8.1
Alternative Container Handling Methods Other than that permitted in section 6	6.9
Non standard use of stillages	8.4
Resolution of identified damage/defects	7.1.1

**Table 1 Controls requiring Contract Authority Permission**

#### 1.2 Temperature Range

- 1.2.1 Ambient temperature range for this package design is -40°C to +38°C.

### 2 Scope

#### 2.1 General

- 2.1.1 This document identifies the operational requirements. The purpose of these instructions is to ensure that each container is safely and correctly handled and loaded prior to transportation, and is inspected this will ensure compliance with the requirements of reference [3]. Adherence to these Packing and Handling Instructions and Maintenance requirements as specified in reference [5] will ensure that the equipment remains in a serviceable and safe condition to meet the design parameters and maintain regulatory compliance within the safety justification.

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

2.1.2 These Packing and Handling Instructions address the following issues:

- a) Container handling operations (including turn-round inspection), to be carried out as required at loading and unloading
- b) Minor maintenance tasks that can be carried out prior to loading and unloading, (as part of the container turnaround), by the operational staff.
- c) Acceptance criteria requirements (norms and tests)
- d) When further permission is requested from the Contract Authority.

2.1.3 These instructions are to be used in conjunction with any local instructions governing radiological and other safety issues related to movement of radioactive materials, as well as any national nuclear safety requirements and the agreement for the supply of the containers.  
**NOTE: It is recommended that an OQP is used to carry out these tasks. PAA/GN08 [4] provides guidance on the preparation of an OQP for the TC02 container**

### 3 Compliance

3.1.1 The Consignor is responsible for ensuring that Container use complies with these Packaging and Handling Instructions and with other appropriate Regulatory requirements. (including the consignment of any empty containers).

### 4 Responsibilities

4.1.1 It is the responsibility of the Consignors to ensure that:

- Container operating and inspection activities are carried out in compliance with a quality management system that meets the requirements of Reference [6].
- Radioactive materials and transport containers are in compliance with applicable local and Regulatory requirements.
- Reference is made to the Certificate of Approval for the container identifying information on approved contents and other shipment and operating requirements.
- The material to be consigned satisfies the regulatory requirements for transport within an IP-2 ISO freight container.
- The material to be consigned complies with the acceptance criteria for the receiving facility.
- Personnel associated with packing, loading and unloading [9] carrying out examination of the container [10] are instructed to carry out the required operations as quickly as safely practicable in order to ensure personal radiation dose is ALARP.

### 5 Package Description

#### 5.1 General

5.1.1 The package is uniquely identified by the LLW Repository Ltd IP-2 package design number TC02. The package is essentially a half height ISO freight container, which is primarily designed to transport solid waste items within the UK and to international locations.

5.1.2 The package measures 6.058m x 2.438m x 1.325m high and consists of a carbon steel external frame and a stainless steel inner tub and floor.

5.1.3 The lid is secured to the container body using 24 number clamps on swing bolts. The clamps remain attached to the container. The lid is removed as per section 8.2 and fastened as per section 8.6.

5.1.4 There are eight internal twistlock receivers to enable securing of stillages within the container. Each of the LLWR approved stillage types incorporate twistlock mechanisms to enables the stillage to be secured for transport within the TC02. .

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 5.2 Payload

- 5.2.1 The rated payload for each container is 30,900 kg. Note: The stillage tare weight forms part of the payload.
- 5.2.2 The TC02 container shall only be used to transport items restrained on the LLWR approved stillages. The operation of the stillages is described in the Operating and Maintenance specification for the specific stillage in use as listed in Table 2.

Stillage Type	Payload Capacity (kg)	Stillage Tare Weight (kg)	Stillage Operating and Maintenance Specification
S1	4300	700	OM/3409227/MECH/00005
S2	27500	2500	OM/3409227/MECH/00002
S3	14000	1000	OM/3409227/MECH/00004

**Table 2: Stillage types**

**NOTE: Only stillages approved by LLWR may be used for securing waste within the container.**

## 6 Container Handling Operations

### 6.1 General

- 6.1.1 The consignor shall have a QA system in place covering the container inspection, handling, loading and dispatch as identified in this instruction. Note: PAA/GN08 [4] provides guidance on the preparation of an OQP for the TC02 container
- 6.1.2 The detailed QA system referenced above shall consider all operational hazards and limits including but not limited to the following:
- Container inventory
  - Container and stillage lifting operations
  - Container payload size, weight, SWL, etc.
  - Container radiation and contamination levels.

### 6.2 Handling Methods

- 6.2.1 The container is based on a Series 1 ISO freight container conforming to Reference [1], incorporating standard corner fittings and fork lift pockets. The recommended handling methods are detailed below.
- 6.2.2 The container is to be restrained to the conveyance using twist locks at the nominal spacing of 5855 mm (longitudinal) and 2260 mm (lateral) for effecting tie-down of the package to the vehicle via the four bottom corner fittings in compliance with BS ISO 3874 [7]. For any other method of container restraint, assessment must be carried out by SQEP personnel and submitted to the Contract Authority for endorsement.
- 6.2.3 The vehicle securing devices will be rated to carry the container as designed under routine conditions of transport.
- 6.2.4 Before any lifting the container must be free to be lifted e.g. ensure that the twistlocks mechanisms or any other securing systems are removed or disengaged (See Figure 1 and Figure 10)



## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 6.3 Lifting and Loading Equipment

- 6.3.1 All container lifting and loading equipment must be rated to handle the container safely. See below for relevant weight information applying to the TC02 container design:
- Tare Weight (empty container fitted with lid but excluding any internal stillages) 4100kg.
  - Container lid weight approximately 525 kg.
  - For details of stillage tare weights refer to Table 2

### 6.4 Lifting using a Fork Lift Truck

- 6.4.1 The container base is fitted with forklift pockets at 2050mm centres that are rated for the gross weight of the container. The forks shall be fully inserted in the proprietary fork pocket as shown in Figure 4.

### 6.5 Lifting using Bottom Fittings

- 6.5.1 The method of lifting illustrated in Figure 5 usually employs a four-leg wire or chain sling, which incorporates a top spreader beam at least as wide as the container. This method can be used for lifting both laden and unladen containers. Each leg of the sling is attached to the side of the appropriate corner fitting using either shackles or monoblocks.

**CAUTION: The angle between the container base and the sling leg must be 45 degrees or greater.**

### 6.6 Lifting using Top Fittings

- 6.6.1 Lifting a laden container using the top fittings requires a spreader frame designed to ensure that only a vertical force is applied to the top corner fittings. The attachment to the corner fitting must be as shown in Figure 6.
- 6.6.2 For lifting an unladen container using the top corner fittings, a four-legged sling can be used where each leg of the sling is attached to the top corner fitting using either shackles.

**WARNING: Lifting from the top corner fittings using a four-leg sling must NOT be used for lifting a laden container.**

### 6.7 Maximum Stacking Height

- 6.7.1 The maximum stacking height for a fully laden container is six (6) high including the base container. Where containers are to be stacked, it is recommended that ISO intermodal connecting twist locks are used to aid stack stability.

**CAUTION: The angle between the container base and the sling leg must be 45 degrees or greater. This method of lifting can be used to lift empty or loaded containers.**

### 6.8 Lifting Container Lid

**WARNING: The lid lifting lugs are only designed for lifting the lid ONLY. Lid lifting lugs shall not be used to lift containers.**

- 6.8.1 The lid shall be lifted with a suitable four-leg sling with lifting shackles (SWL 6 cwt (300kg) each) attached to the four lifting lugs on the lid (See Figure 7). If alternative equipment is proposed approval must be gained through the Contract Authority prior to lifting the lid.

### 6.9 Handling by other methods

- 6.9.1 The container may be handled by methods other than those described above. This can only be carried out after a full evaluation of the equipment and method and any impact on the container has been assessed and approved by the Contract Authority.

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

6.9.2 Additional methods and guidance for the handling of both laden and empty containers can be obtained from reference [7] .

### 7 Inspections

#### 7.1 General

7.1.1 The container should be in a fit-for-purpose condition before being used and shall satisfy the inspection/checking criteria described below at a minimum. All inspections must be carried out by a Suitably Qualified and Experienced Person (SQEP). If any defects, incidents or abnormalities are identified then the container shall be placed on hold and it must be must be reported to the Contract Authority for resolution.

#### 7.2 Certificate of Approval

7.2.1 The container Certificate of Approval for transport issued by the Approving Authority must be checked to ensure it is valid and will remain valid throughout the period during which the container is to be transported in the public domain.

#### 7.3 Summary of Turn-round Inspection

7.3.1 On package turn-round (i.e. loading and unloading) the following visual inspections shall take place. Record of these inspections shall be kept and all defects or difficulties shall be reported using the Container Damage Reporting Form [14].

Ref.	Inspection Requirement	Record Requirement	Acceptance Criteria Ref
1.	Package general condition	Corrosion, defect, wear	7.5
2.	Other safety related features.	Vents, control systems and mechanical interlocks etc.	7.10
3.	Package markings	All regulatory markings/labels are present and legible.	7.5
4.	Seals and seal surfaces	No damage or debris.	7.9
5.	Check package internally	No debris, damage, corrosion or water present.	7.6
6,	Swing bolt operation	Wear, interface, clearances, any defects or difficulties	8.2.2
7	Package license validity	Confirm package license validity.	7.2

**Table 3: Turnaround Inspection TC02 Main Body**

In addition, the turn round inspections for the stillage(s) shall be carried out in accordance with the relevant operating and maintenance for the specific stillage type in use.

#### 7.4 CSC (Safety Approval) Plate

7.4.1 The CSC safety approval plate must be checked to verify that the container is in date i.e. within 5 years of manufacture. Where the CSC plate is found to have expired, confirm that a valid ACEP decal is displayed adjacent to the CSC plate and the date of the next examination is due is valid. Re-inspection and re-plating will be required if the period of validity will expire prior to filling or consignment. The Contract Authority shall be contacted regarding container re-inspections. This shall include a confirmatory lid seal leakage testing see guidance document PAA/GN01 (Technical Inspection with Associated Seal Leakage Tests) [10].

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 7.5 Visual Inspection of External Container Body and Lid

**NOTE: If in any doubt contact the Contract Authority for advice.**

**WARNING: Inspection of the container base should be carried out from the side of the container (do not work under the container).**

- 7.5.1 Visually examine all the external surfaces (including the base) of the container for signs of damage.
- i) Cracking of welded joints is unacceptable.
  - ii) Puncturing of the container body or lid is unacceptable
  - iii) Cuts or scratches in the container skin greater than 1.5 mm deep are unacceptable
  - iv) Small dents are acceptable (less than 15 mm)
  - v) The external paint finish must be checked for damage/corrosion (except base). Minor scuffing of the paint finish is acceptable but there shall be no exposed bare metal. Any exposed bare metal should be reported to the Contract Authority. Note: The inside of the container including the underside of the lid is unpainted as the surfaces are stainless steel.
  - vi) All decals are present and correct

### 7.6 Internal Visual Inspection of Container

- 7.6.1 Visually examine the package internals for signs of damage and cleanliness. There shall be no visible mechanical damage.
- i) Cracking of welded joints is unacceptable.
  - ii) Tie –down points - There shall be no visible mechanical damage corrosion, deformation, change in section, or cracks evident in the main body or welds of any tie down points.
  - iii) Puncturing of the container body or lid is unacceptable
  - iv) Cuts or scratches in the container skin greater than 1.5 mm deep are unacceptable
  - v) Small dents are acceptable (less than 15 mm)
  - vi) There shall be no water present in the container

### 7.7 Visual Inspection of the Stillage

- 7.7.1 Inspect the stillage in accordance with the stillage specific Operating and Maintenance Specification (see Table 2).

### 7.8 Visual Inspection of the Lifting frame

- 7.8.1 Inspect the lifting frame in accordance with the stillage specific Operating and Maintenance Specification (see Table 2)

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 7.9 Lid Seals and Seal Support Channel

**CAUTION: The seals should be handled with care and not twisted.**

- 7.9.1 Particular attention should be given to checking the features which secure the lid, and also to the lid seal faces and seal channels. If any damage is found on the lid seal faces or seal support channels then repairs will be required. The container shall be placed on hold and the Contract Authority contacted for resolution.
- 7.9.2 For information on seal leakage testing see guidance document Reference: PAA/GN01 (LLWR IP2 ISO Container CSC Plate Inspection, Technical Inspection with Associated Seal Leakage Tests) [10].

### 7.10 HEPA Filter

- 7.10.1 Check that the HEPA filter assembly mounted in the 'A' end of the container is undamaged. If the assembly is damaged the container shall be placed on hold and the Contract Authority contacted for resolution

## 8 Preparing, Loading, and Unloading of the Container

### 8.1 Positioning of Container

- 8.1.1 During loading/unloading operations the container shall be either:
- Positioned on a flat & level hard standing/floor such that the floor and/or all the four corner fittings can take the load. Care must be taken to ensure that the container is not set-down on any sharp objects that could damage the floor. Note: proprietary castor wheel can be secured to each base corner twistlock to aid manoeuvrability of the container provided that: the castor wheels are rated to support the maximum gross weight of the loaded container, and; movement of the container, supported on the wheels is attempted only on a level hard standing/floor. Or,
  - If the container is to be operated whilst residing on its transport trailer, then the tractor unit must be removed and an independent jacking system must be used to support the front of the trailer as shown in Figure 3.
- 8.1.2 During all loading operations, water must not enter the container body at any time. Ingress of water and dirt into the seal areas should also be prevented. Any such water ingress shall be removed.

### 8.2 Lid Removals

- 8.2.1 To remove the lid, loosen the 24 nuts on the ¾" BSW swing bolts that hold the clamps down and rotate the bolt and clamp away from the lid. This will allow the removal of the lid as shown in Figure 7.
- 8.2.2 Examine the swing bolts for damage, ensure all welds are free from defect and that the retaining nuts can be freely rotated by hand all the way down the thread
- 8.2.3 After removing the lid, it should be set down on a clear area where it will not obstruct loading operations and it should be supported at regular intervals (1.2 m) on timber, one at each end and one in the centre, as shown in Figure 7, the timber being spaced so as to line up with the 6 feet on the lid.

### 8.3 Preparing, loading and unloading of the stillage

- 8.3.1 Preparing, loading and unloading of the stillage shall be carried out in accordance with the stillage specific Operating and Maintenance Specification (see Table 2).

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### 8.4 Loading and Securing of the Stillage into the Container

8.4.1 The loading and securing of the stillage into the container shall be carried out in accordance with the stillage specific Operating and Maintenance Specification (see Table 2).

### 8.5 Replacing the Container Lid

8.5.1 A light surface of silicone based grease must be maintained on the seal surface and there must be no signs of age hardening of the seal. This grease shall be certified for use between -40°C and +38°C

### 8.6 Closing the Lid

**WARNING: Always ensure that lifting frames are detached before fitting the lid.**

8.6.1 Ensure all swing bolts are in the approximately horizontal position. The clamps need not be removed from the swing bolts. Apply 'Copaslip' or a similar anti-seize lubricant to the bolt threads as required. If there is any issue with the swing bolt assembly these can be replaced with parts applied by the Contract Authority.

**NOTE: Never attempt to replace the spherically seated washer with a plain washer. The spherical seated washer is required because it significantly reduces the offset loading during bolt tightening operations.**

8.6.2 Check that the seals are in a serviceable condition, are free from damage, and that the seal interspace is clear; reference section 7.9

8.6.3 The lid should only be located in one position on the container. When positioning the lid onto the top of the container, ensure the decals match on each end of the container, and the A end has the HEPA filter. The lid must be guided using the lid guide bars, which are on each corner of the lid.

**WARNING: On no account shall the operator's hands be placed under the lower edge of the lid as it could shift or fall during lowering (see Figure 9).**

8.6.4 Rotate the lid swing bolts and the clamps onto the lid edge and the clamp blocks (spherically seated washers are included in the assembly so no additional washers are required), ensure that clamps are located properly and not touching the lid, and then tighten all the nuts to a torque of 170 +/-10 Nm.

8.6.5 The seals are leak tested at the container manufacturers on completion of manufacture; therefore, there is no requirement to re-test the seals unless they have been damaged or replaced.

8.6.6 Once the lid is secured, fit the security seals in each of the two positions located at each end of the lid/container.

## 9 Pre Dispatch Checks

9.1.1 The container shall again be subjected to a visual examination of all exterior surfaces (including the underside and fork pockets). Reference section 7.5

9.1.2 All decals must be legible and securely affixed to the container body

9.1.3 The container shall be weighed and the consignor shall complete an assembly and weight declaration form [15]

### 9.2 Monitoring and Labelling

9.2.1 Prior to dispatch the Consignor shall monitor the radiation and contamination levels on the outside of the package and affix all necessary labels and placards in compliance with the applicable requirements listed in the regulations [2].

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

9.2.2 Consignors should refer to the LLWR monitoring requirements guidance note PAA/GN05 [16] and the associated Schedule 1 [17] which details the minimum monitoring requirements for the TC02 container.

### 9.3 Documentation

9.3.1 The Consignor shall complete the necessary consignment documentation as required by Reference [2] by the Consignors/Consignees Site Procedures and the receiving facility acceptance criteria.

9.3.2 As a minimum, the following completed forms shall be placed in the container document holder to be consigned with the package:

- Customer Damage Reporting Form [14],
- Assembly and Weight Declaration Form [15] and
- Monitoring Form [17]

### 9.4 Planned Maintenance

9.4.1 It is a regulatory requirement to ensure compliance with the Package Design Safety Report that planned maintenance shall be performed under a Maintenance Quality Plan (MQP). It is the responsibility of the container operator (LLWR) to carry out maintenance in accordance with Maintenance Instruction [5]. The consignor must check the ACEP decal affixed to the container, which will clearly define the next maintenance due date. The consignor must check that this date has not passed.

9.4.2 Annual inspections and maintenance are the responsibility of the container operator and shall be carried out in accordance with Reference 4 under an ACEP scheme.

## 10 Storage of Containers

### 10.1 Storage of Empty Containers

10.1.1 The container should be stored on a hard flat surface that is well drained. It is important that the Container paint finish is not damaged during this operation. The container shall not be used for storage.

10.1.2 If the Container is to be stored for a period of 3 months or longer, a thin coat of lubricant applied to the threaded swing bolts. The swing bolts shall be tightened to 60Nm +/- 10Nm.

### 10.2 Container Retrieval from Storage

10.2.1 Upon retrieval from storage the container shall be examined in accordance with Section 7.

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

### References

- [1] BS 3951: Part 2: Section 2.1 (ISO 1496/1), Freight Containers. Part 2, Specification and Testing of series 1 freight containers. Section 2.1, General Cargo Containers for General Purposes Amendment 1: 1AAA and 1BBB Containers Fifth Edition; Amendment 1: 03/01/93; Amendment 2: 07/01/98
- [2] IAEA Safety Standard Series No TS-R-1: Regulations for the Safe Transport of Radioactive Material, 2009 Edition.
- [3] International Convention for Safe Containers, 1972 (CSC).1996 Edition
- [4] PAA/GN08: Low Level Waste Repository Guidance on the Preparation of an Operational Quality Plan for the use of TC02 Re-usable IP-2 ISO Container
- [5] OM\_LLWRGR\_MECH\_0002.Maintenance Specification for Container Design Number TC02
- [6] BS EN ISO 9001 Quality Management Systems – Requirements
- [7] BS ISO 3874: Series 1 Freight Containers - Handling and Securing Fifth Edition; 1997. Corrected and Reprinted 15/07/1999; Amendment 1 15/11/2000; Amendment 2 01/07/2002.
- [8] Lifting Operations and Lifting Equipment Regulations 1998 SI2307
- [9] European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) 2011
- [10] PAA/GN01 LLWR IP2 ISO Container CSC Plate Inspection, Technical Inspection with Associated Seal Leakage Tests
- [11] OM\_3409227\_MECH\_00005. Operating and Maintenance Specification for TC02 Type S1 Stillage.
- [12] OM\_3409227\_MECH\_00002. Operating and Maintenance Specification for TC02 Type S2 Stillage.
- [13] OM\_3409227\_MECH\_00004. Operating and Maintenance Specification for TC02 Type S3 Stillage.
- [14] Form 0311. LLWR IP-2 TC02 Reusable Container Customer Damage Reporting Form
- [15] TC02 Assembly and Weight Declaration Form
- [16] PAA/GN05. Guidance Note – Re-usable Transport Container Monitoring Requirements
- [17] Schedule 1: TC02 Release Procedure – Minimum Monitoring Requirements for the TC02 Re-usable Transport Container

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

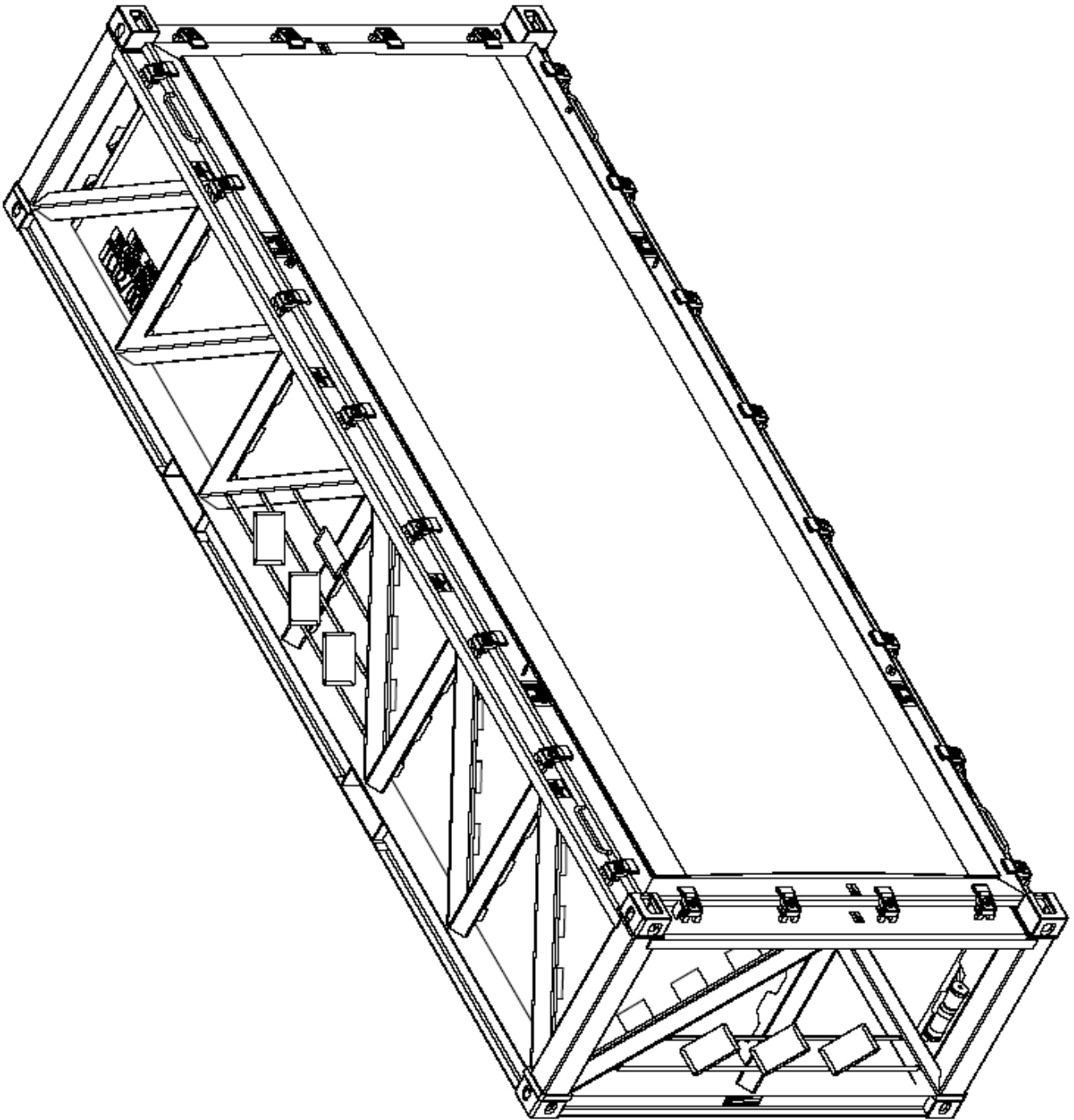


Figure 1 - General View of TC02 Container



Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

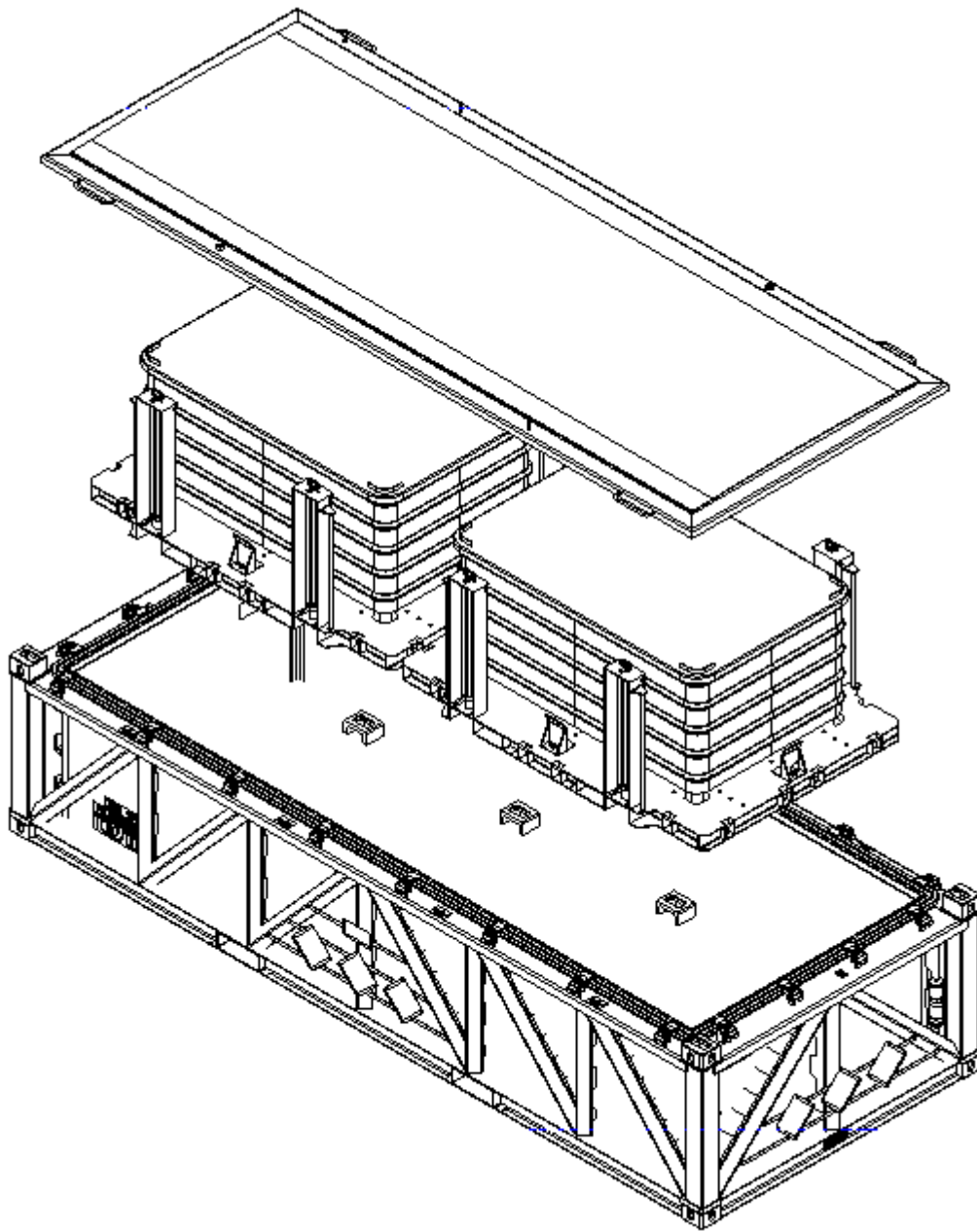
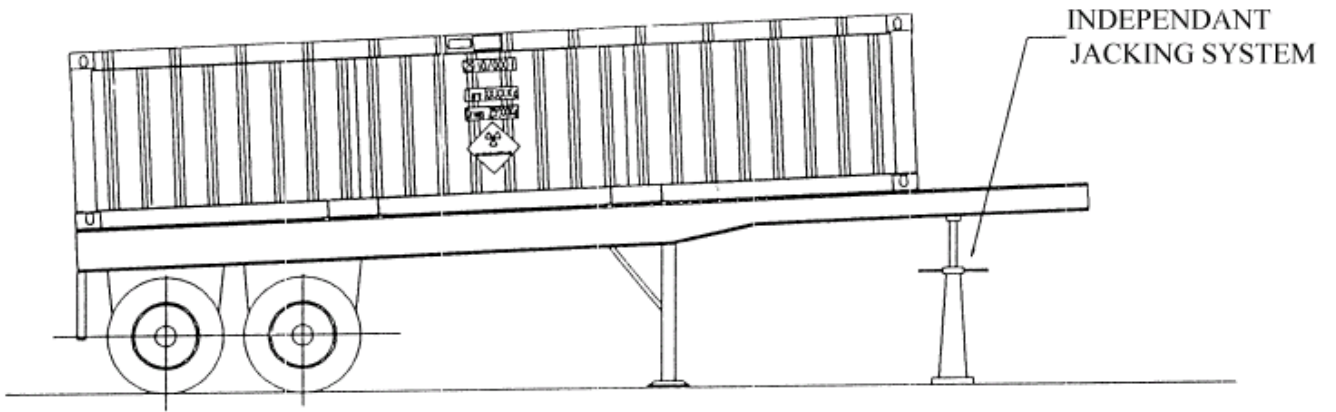


Figure 2 - General View of Container with Type S1 stillages

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---



SUPPORT ARRANGEMENT WHEN THE CONTAINER IS LOADED WHILST ON A TRAILER

**Figure 3 - Trailer Support**

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

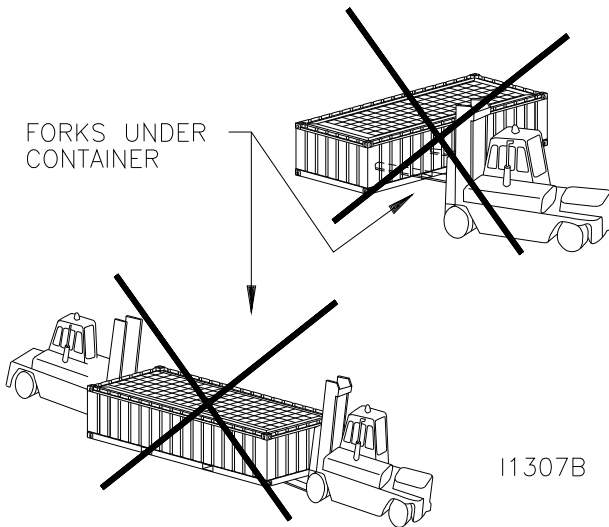
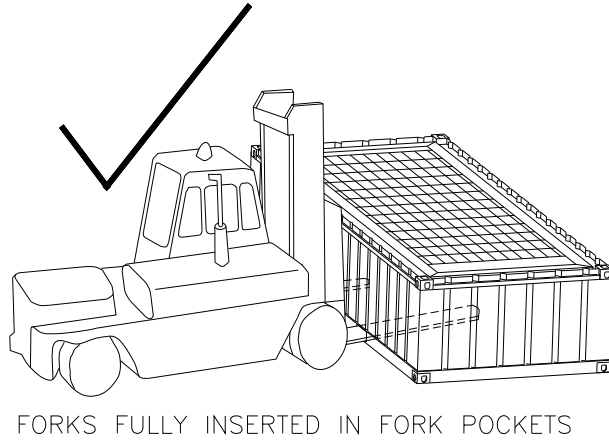


Figure 4 - Lifting Using Fork Lift Truck

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

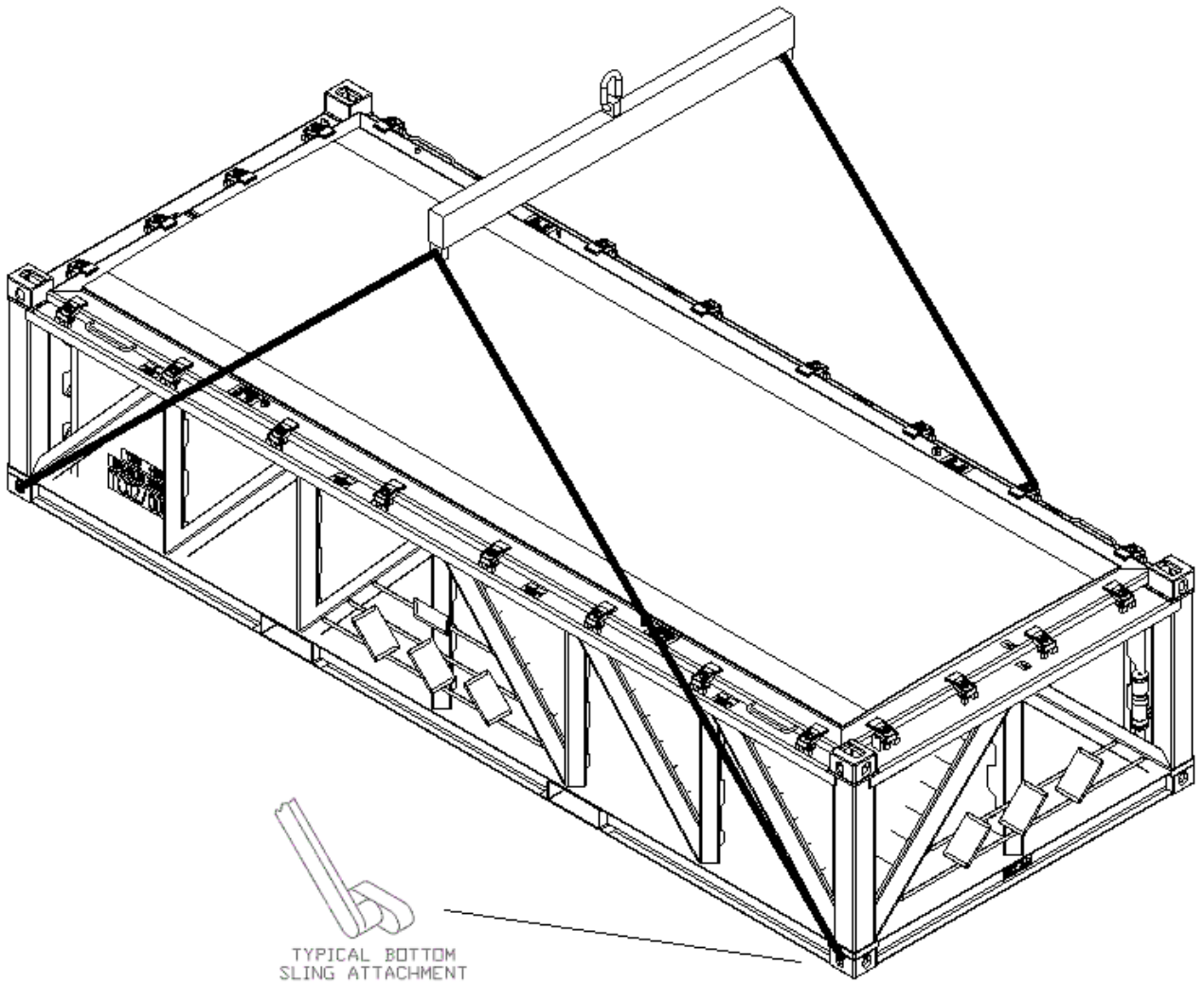


Figure 5 - Lifting Using Bottom Fittings

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

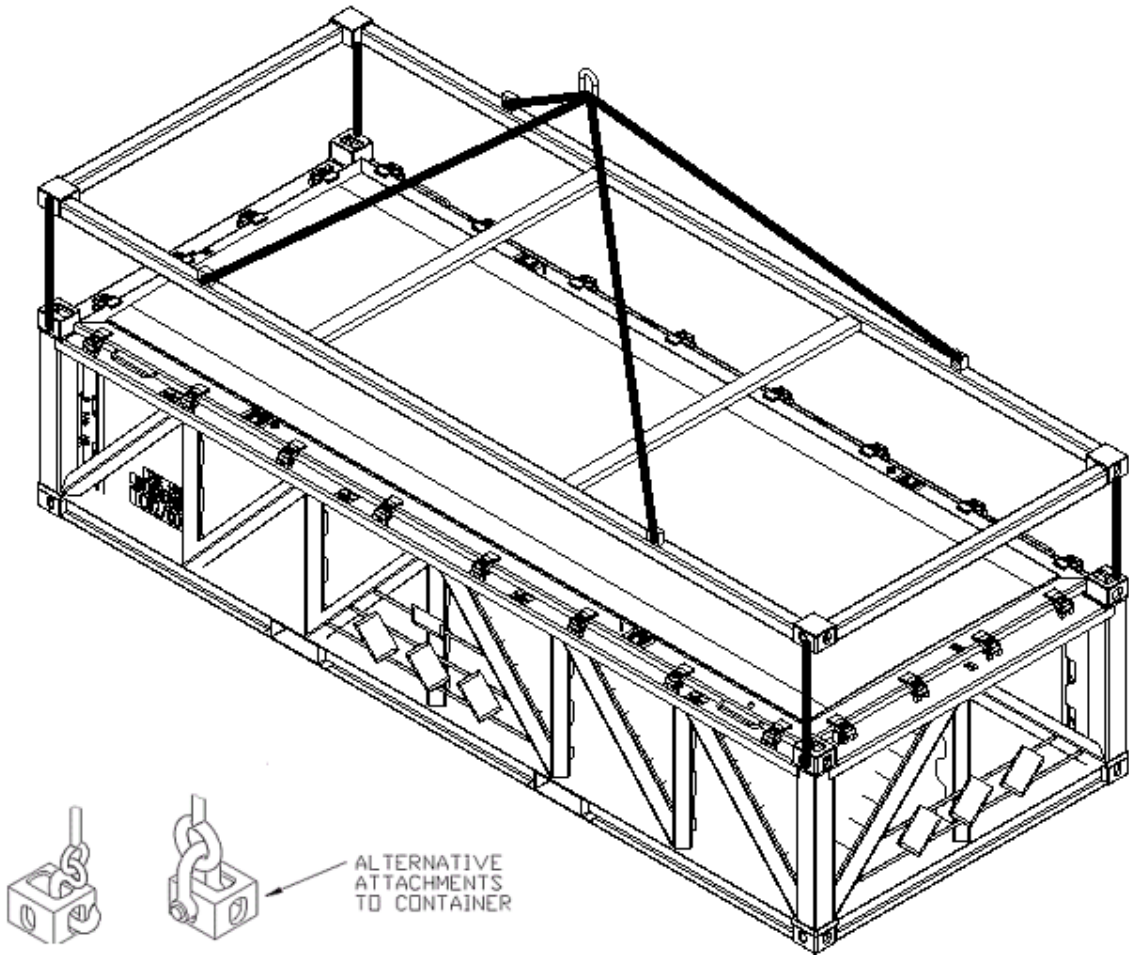


Figure 6- Lifting Using Top Fittings

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

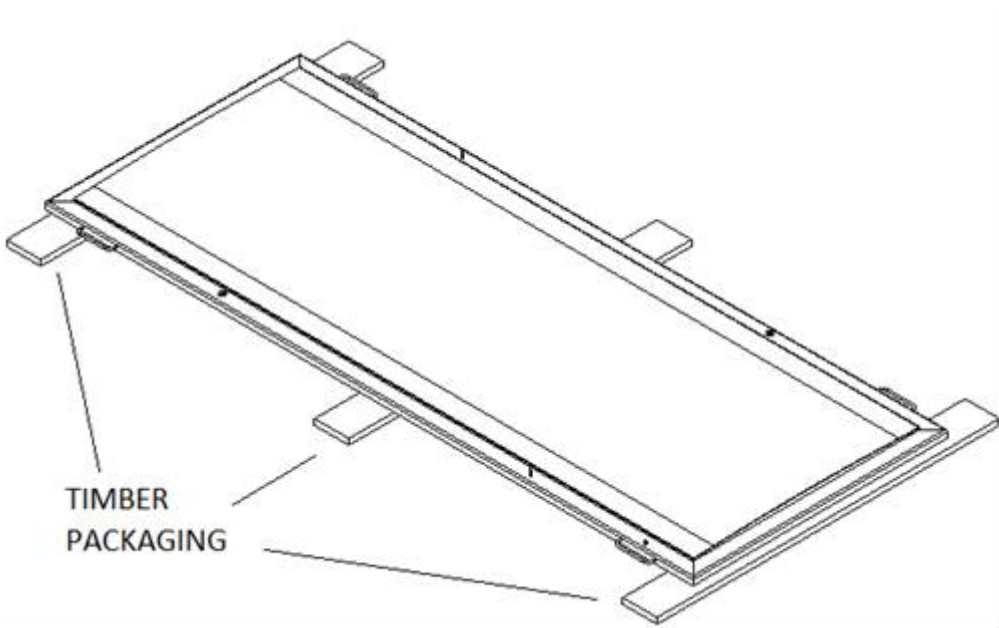
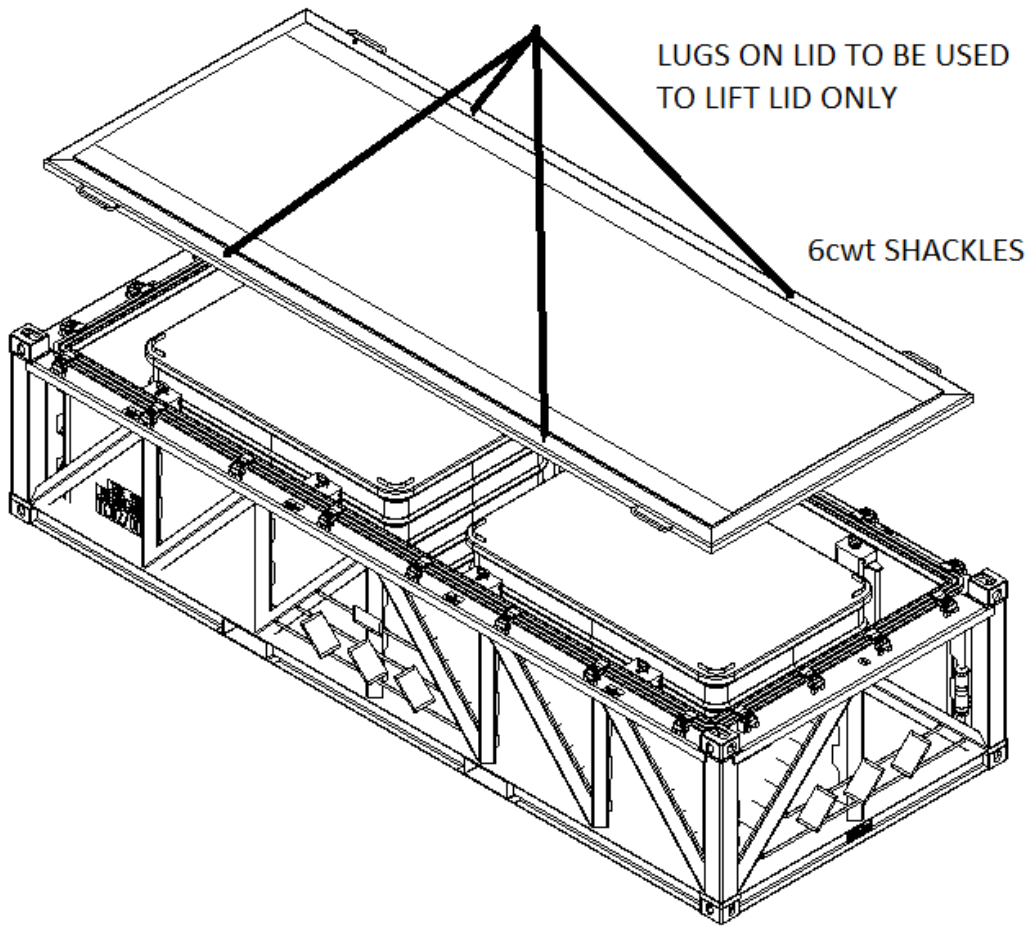
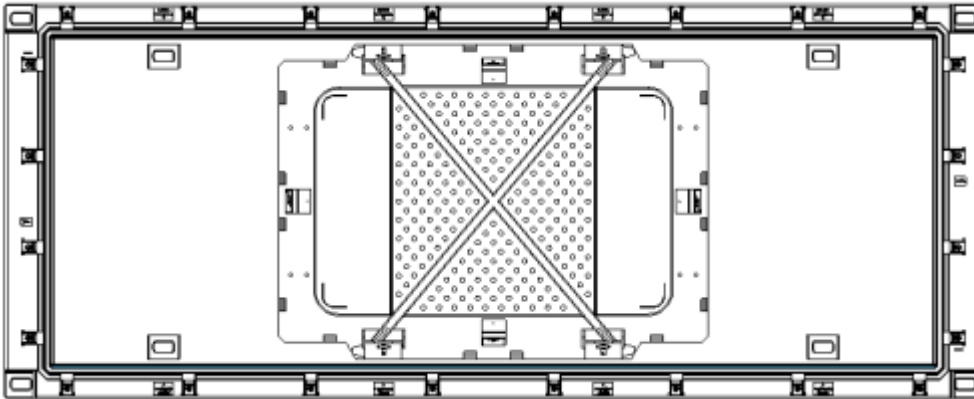


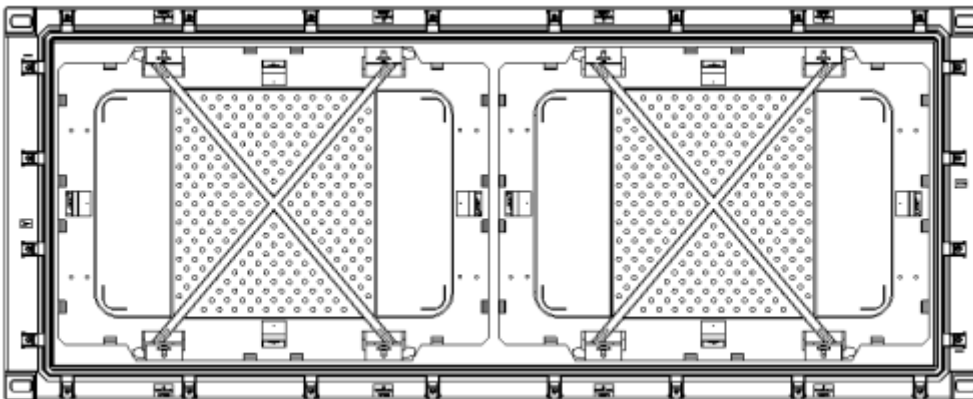
Figure 7 - Lid Lifting Operations

Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---



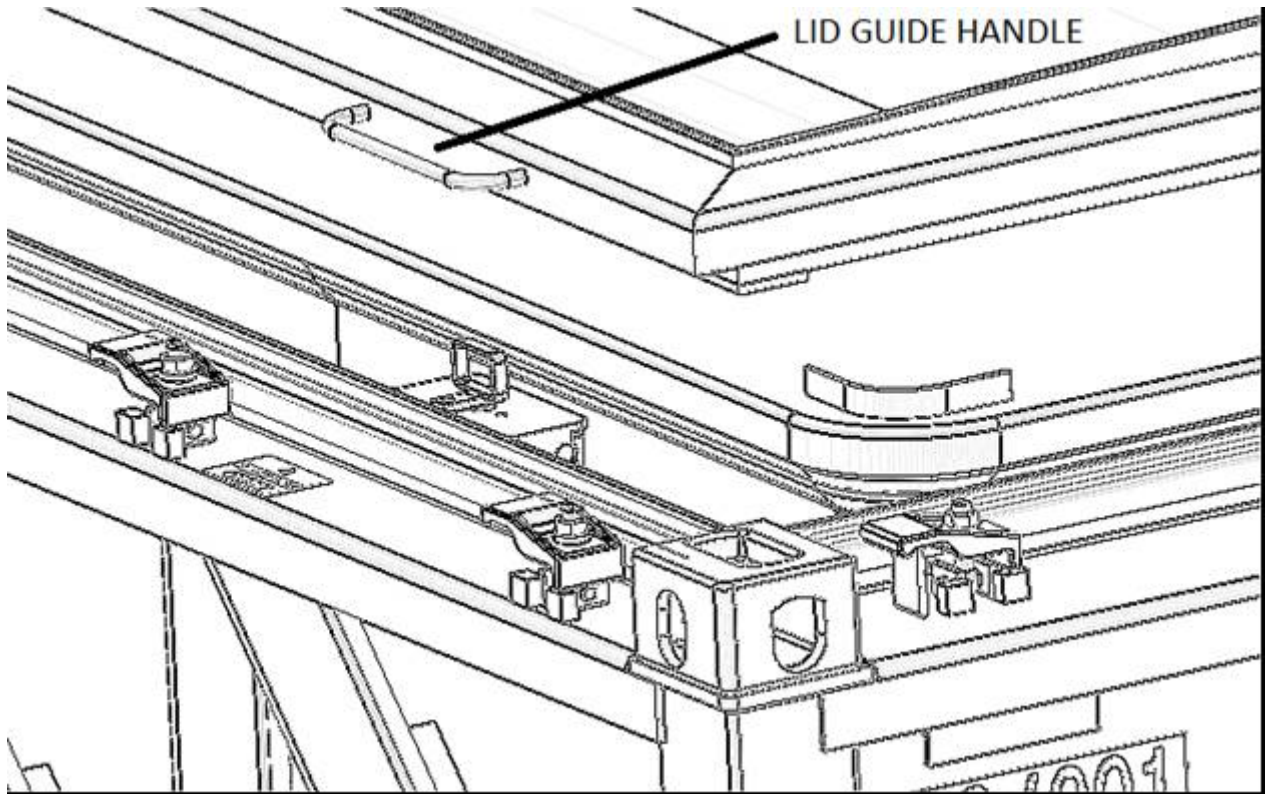
**SINGLE STILLAGE ARRANGEMENT**



**DOUBLE STILLAGE ARRANGEMENT**

**Figure 8 – Layout of Stillage and Lifting Frame (TC02/S1 & TC02/L1) Within the Container**

Packing and Handling Instruction for Type TC02, IP-2 ISO Container



**WARNING: USE THE LID GUIDE HANDLES AS THERE IS NO CLEARANCE UNDER THE LIP IN THE FINAL POSITION**

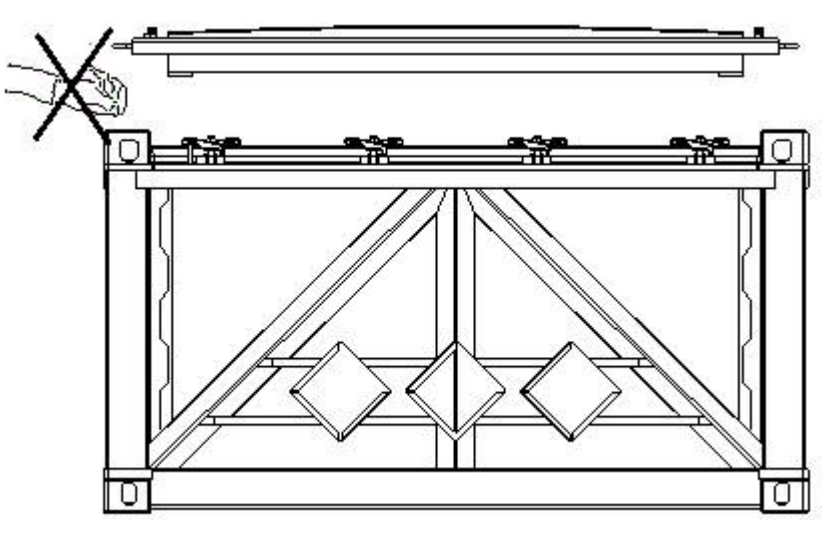


Figure 9 - Lid Guidance



Packing and Handling Instruction for Type TC02, IP-2 ISO Container

---

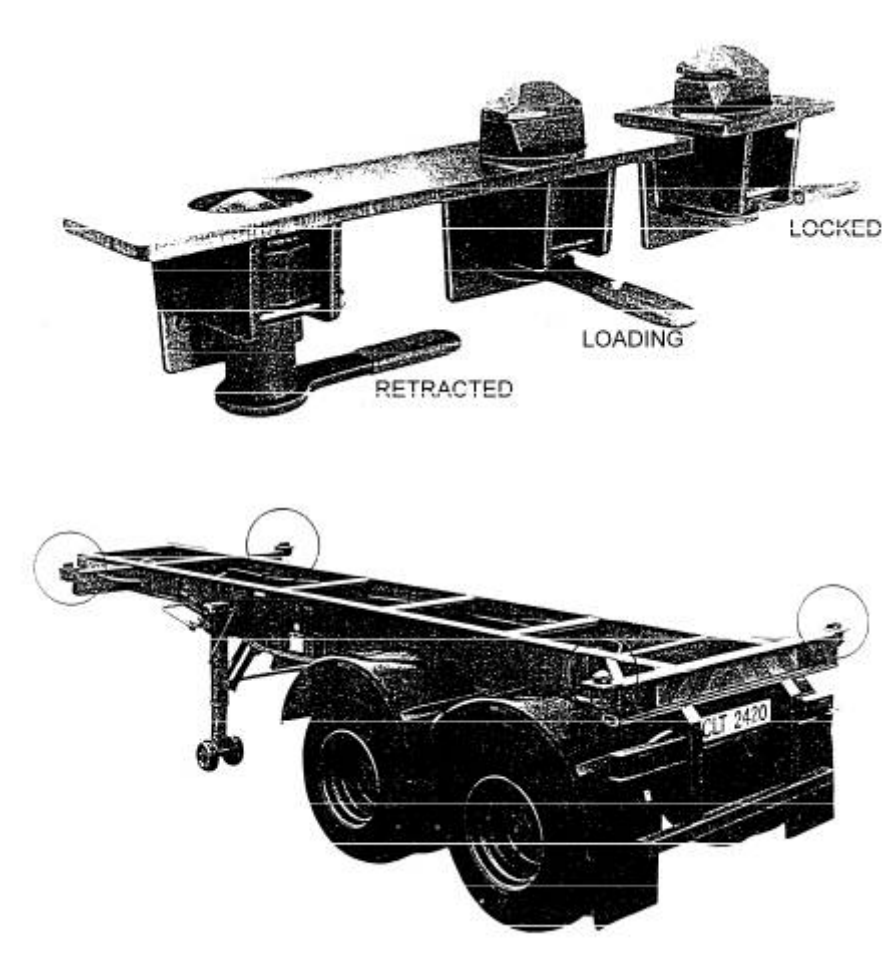


Figure 10 - Twist lock System on Trailer

## Packing and Handling Instruction for Type TC02, IP-2 ISO Container

**11 Appendix A Container Specification**

<b>G.A. Drg. No</b>	<b>.OBE 2668146</b>
<b>Indicative Weights (kgs)</b>	
Body	3575
Lid	525
Permissible Gross Weight	35000
<b>Indicative External Dimensions:</b>	
Height (mm)	1325
Width (mm)	2438
Length (mm)	6058
Volume (m <sup>3</sup> )	12
<b>Aperture Dimensions:</b>	
Length (mm)	5040
Width (mm)	2008
<b>Maximum Stacking Height:-.</b>	6
<b>Lid Seal Configuration</b>	Double
<b>Seal Leak Test Method</b>	Interspace