Tank Inspection Handbook

GE seaco tanks

This is the fourth edition of the Tank Container Inspection Handbook. This handbook will be updated from time to time.

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For further information please contact:

Engineering and Technical Services Department

GE SeaCo Services Ltd.
21 St Thomas Street
London
SE1 9RY, UK

Tel:	+ 44 (0)20 7939 5600
Fax:	+ 44 (0)20 7939 5650
Email	ets@GE SeaCo.com
Website	www.GE SeaCotanks.com

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Section 1

SAFETY

Section 1 - Safety

Contents of Section

DO NOT OPERATE ANY VALVES /FITTINGS OR ENTER ANY TANK WHICH DOES NOT POSSESS A VALID SAFETY DOCUMENT.

SEE SECTION 2 FOR DEFINITION OF A VALID SAFETY DOCUMENT.

INTRODUCTION

Inspections should be carried out in compliance with international and local laws including health and safety, the workplace, inspection and working conditions. The following is for guidance only.

SAFE INSPECTION PROCEDURES AND PRACTICE.

Tank containers are designed to transport cargoes which may be dangerous. Characteristics and safety hazards associated with specific cargoes are available from manufacturers on the Material Safety Data Sheets (MSDS).

Cargoes might be transported under a blanket layer of inert gas such as nitrogen. An inert gas cannot support human life; breathing any gas mixture possessing less than 19.5% of oxygen is likely to cause suffocation (asphyxiation). Prior to a thorough cleaning and ventilation, tanks may not possess adequate oxygen to sustain life or may contain harmful or explosive vapours hazardous to one's health.

Do not operate any valves/fittings or enter any tank which does not possess a valid safety document

Personnel must not enter any tank container until a tank entry permit has been completed. Entry permits are designed to help ensure compliance with confined space entry laws and regulations of all governments having jurisdiction (nation, state/province, locality, etc.).

Before entering a tank the inspector must:

- Check the last cargo and safety data (MSDS) and take appropriate action.
- Check that the tank has been **cleaned.**
- Check that the tank has been adequately **ventilated** with fresh air to ensure a minimum oxygen content of 19%.
- Check the tank atmosphere to determine the absence of explosive or flammable vapour or gas.
- Check that an **attendant** who has full knowledge of the time of entry is stationed outside the tank in the immediate vicinity and that the inspector and attendant are equipped with **all safety and rescue equipment** required by all applicable laws and regulations.

SPECIFIC INSPECTION HAZARDS

Personnel must be mindful of certain specific hazards which could potentially arise when inspections or testing of containers are performed. These include but are not limited to:

Asphyxiation or poisoning upon entry into an unclean tank or a tank possessing insufficient oxygen.

Sudden release of pressure from discharge valves or manlid if opened while tank is under pressure. Avoid standing in front of fittings, openings or over the manlid if the possibility of sudden pressure discharge exists. Personnel should depressurise the tank vessel by carefully operating the airline valve. Do not depressurise the tank vessel by attempting to open the manlid.

Always face away from the manlid opening when finally cracking and lifting the manlid to avoid inhalation of any potentially hazardous escaping fumes or unanticipated pressure release.

Sudden release of steam pressure from steam tubes. Avoid standing in front of steam tube openings or quick release valves if the possibility of sudden pressure discharge exists, or when depressurising the steam heating system.

Jamming of fingers in open valves during inspection. Do not place fingers into open valves as sudden closure could crush fingers.

Falling from damaged ladder or walkway. Ensure repairs to damaged sections of ladder or walkway prior to treading on them if condition is unsafe to proceed. Ensure that there is no contamination on the ladder or walkway which may cause loss of grip.

NOTE: ALL PERSONNEL HAVE A RESPONSIBILITY FOR THEIR OWN HEALTH AND SAFETY AND MUST TAKE CARE TO REDUCE ANY RISKS TO AN ABSOLUTE MINIMUM.

Section 2

DEFINITIONS AND CLEANING TERMINOLOGY

Section 2 -
Definitions And Cleaning Terminology

Contents of Section

DEFINITIONS

The following definitions are used in this manual:

1 DAMAGE

Damage is one or more physical defects in a container caused by a single event or a series of events such as impact, abrasion contamination, cargo attack etc. which exceeds the acceptable limits as defined in Section 8 entitled Inspection Guidelines for Tank Containers of this handbook. This includes corrosion, pitting or gouges to the interior or exterior of the tank, shell, fittings or accessories.

2 AGE RELATED DETERIORATION

Age Related Deterioration (ARD) is one or more physical defects resulting inevitably from exposure of the container to conditions for which it was designed. It precludes the existence of any physical defect which is considered unacceptable in accordance with GE SeaCo's Inspection Guidelines, as defined in Section 8 of this handbook and which may have led to the deteriorated condition.

3 IMPROPER REPAIRS

An improper repair is any repair performed where any one of the following defects is present:

- The repair has not been performed in strict accordance with GE SeaCo guidelines.

- The repair is of a quality or condition which could still be defined as damage according to GE SeaCo guidelines.

- The repair has an adverse affect on the original ISO dimensions of the container.

- The repair affects the structural integrity of the container.

- Use of incorrect materials.

- Sub standard preparation or painting.

- Poor quality welding or workmanship.

- Sub-standard cleaning or polishing of the tank or fittings.

4 FULL REFURBISHMENT

Full refurbishment is the process of removing all the paint coating and any corrosion from the tank frame by abrasive blasting followed by repainting and replacing the cladding and insulation.

The insulation and cladding may be refurbished as part of a full refurbishment process. However, it is not essential for the cladding to be included in a full refurbishment process.

5 PARTIAL REFURBISHMENT

Partial refurbishment is the process of renovating areas of the tank to an extent less than that defined as Full Refurbishment.

6 TANK

Tank Container in its entirety. (Not just the tank shell)

7 UN PORTABLE TANK

Tank designed and approved for the carriage of dangerous goods (as defined by UN dangerous goods list). The GE SeaCo tank fleet includes UN Types T1 to T50 (IMO1, IMO2 and IMO5).

8 STATUTORY TEST DATE

The date when a periodic inspection and pressure test of the tank was carried out to comply with the regulations of the governmental approving agencies.

9 DETACHABLE PARTS

Detachable parts are components which are not permanently attached to the tank and are designed for easy detachment to facilitate the loading, unloading or general operation of the tank container.

Examples of detachable parts are:

- Valves, gaskets and seals.
- Blank flanges and outlet caps.
- Bolts, nuts and washers.
- Syphon tubes.
- Electric plugs.

10 CONSEQUENTIAL DAMAGE

Any damage resulting from the lessee's failure to carry out a necessary repair.

11 CLEANING TERMINOLOGY

a) Evidence of Last Cargo

A written document from a qualified and authorised employee or representative of the lessee stating the proper shipping name of the last cargo, together with the U.N. reference number.
Note: the brand name or proprietary name of the cargo is NOT the proper shipping name.

b) Material Safety Data Sheet (MSDS)

A document issued by the manufacturer of the cargo detailing the cargo characteristics and safety precautions.

c) Certificate of Cleanliness

A document issued by a qualified person stating:

- Tank container serial number
- Date, Time and Place of issue
- Name of Survey Company
- Name of Cleaning Company
- Last cargo and UN number
- Method of Cleaning
- Gas free entry permit
- A thorough visual examination has been carried out and the interior of the tank, valves and fittings are free of pitting, corrosion, contamination, particles of previous cargo and odour.
- The tank is clean and dry.

See Appendix 2.1 for an example of a Certificate of Cleanliness.

Cleaning Certificate Validity Date

The Cleaning Certificate date of issue should be recent. An evaluation of the circumstances and the issue date should be undertaken to ensure that the tank has not been used since the time of issue. For example, allowance should be made for the transit time between the point of cleaning and the off-hire depot. Circumstances may vary and it is not possible to set a specific validity date. For certain cargo an entry permit / safety certificate will be necessary.

d) Cleaning Receipt (wash ticket)

A document issued by the qualified person of a specialist cleaning contractor responsible for the tank cleaning stating that

A thorough visual examination has been carried out and the interior of the tank, valves and fittings are free of contamination, particles of previous cargo and odour.

See Appendix 2.2 for an example of a Cleaning Receipt.

e) Entry Permit (or Safety Certificate)

A document issued by a qualified person of the repair depot, or surveyor, in order that personnel may safely carry out prescribed tasks. The document should state:

- Tank container serial number
- Date, Time and Place of issue
- Name of Survey Company
- Name of person issuing certificate
- Last Cargo and UN number
- MSDS reference
- Period of validity of the permit

- Tests carried out (as applicable)
- oxygen reading (gas free)
- Purpose of tank entry
- All necessary precautions have been taken to make the tank safe for entering and carrying out prescribed work during the specified time.

See Appendix 2.3 for an example of an Entry Permit.

The validity of the Entry Permit is strictly on a limited time basis; it must be current. Any delays in carrying out subsequent repair work may necessitate the issue of a further Entry Permit.

f) Cleaning Document

Is a written declaration that the tank has been cleaned. Depending on the circumstances a cleaning document may be the:

- Cleanliness receipt
- Cleanliness certificate
- Entry permit (safety certificate)

g) Qualified Person (e.g. surveyor, quality controller)

A person that is properly trained, competent and experienced and is authorised by the employer or governmental body as is appropriate, to undertake the task.

h) Specialist Cleaning Contractor

A company of high-standing local reputation skilled in tank cleaning and licensed by appropriate governmental agencies and a member of applicable trade organisations.

i) Transferable Stain

A stain or discoloration which can be removed from the metal surface of the tank shell or fittings by normal cleaning methods or by the use of a nylon abrasive *Scotchbrite* pad.

12 GE SeaCo Surveyor

Any *GE SeaCo* Engineer or any Engineer authorised by *GE SeaCo* to carry out Tank inspections or surveys.

APPENDIX 2.1 (GE SeaCo preferred format**)**

CLEANLINESS CERTIFICATE

ISSUED BY SURVEYOR

SURVEY COMPANY NAME AND ADDRESS:	
TANK NO:	
PLACE OF ISSUE:	DATE OF ISSUE / TIME :
CLEANING COMPANY:	LOCATION:
CLEANING PROCESS:	
LAST CARGO :	UN NO. :
EXTERIOR free from all cargo and contamination Exterior frame, tank & walkways YES Manlid and valve compartments YES Serial nos. and statutory markings YES Cargo labels removed YES	
INTERIOR Entry made into tank by surveyor YES Free from odour YES Free from all cargo and contamination YES Free from corrosion or pitting YES (if no, report detail below) Dry YES	
VALVES/FITTINGS free from all cargo and contamination Valves YES Manlid seal YES Dip-pipe/ Syphon pipe YES	
Gas free Entry Permit issued YES	
REMARKS	
A thorough visual examination has been carried out and the interior of the tank, valves and fittings are free of contamination, previous cargo and odour. The tank is clean and dry.	
NAME (PRINT) (being the qualified surveyor)	SIGNED

APPENDIX 2.2

CLEANING RECEIPT (Wash Ticket)

ISSUED BY CLEANING COMPANY

*	CLEANING COMPANY NAME AND ADDRESS:	
*	TANK NO:	
*	PLACE OF ISSUE:	
*	DATE OF ISSUE / TIME :	
*	CLEANING PROCESS:	
*	LAST CARGO :	
*	UN NO. :	
	Gas free Entry Permit issued YES	
	REMARKS	
*	A thorough visual examination has been carried out and the interior of the tank, valves and fittings are free of contamination, previous cargo and odour. The tank is clean and dry. YES	
*	NAME (PRINT)	SIGNED
	(being the qualified surveyor)	

The cleaning receipt as a minimum must contain the details marked *.

APPENDIX 2.3

ENTRY PERMIT

ISSUED BY DEPOT / SURVEYOR

ISSUED BY DEPOT - NAME AND ADDRESS:	
ISSUED BY SURVEYOR - SURVEY COMPANY NAME AND ADDRESS:	
TANK NO:	
PLACE OF ISSUE:	DATE OF ISSUE / TIME :
CLEANING PROCESS:	
LAST CARGO :	UN NO. :
VALID FROM: DATE TIME TO: DATE TIME	
PURPOSE OF TANK ENTRY	
TESTS OF CONTAMINATES AND ATMOSPHERE IN THE TANK TEST TYPE RESULT SATISFACTORY YES / NO	
Safety equipment to be worn by person making entry into tank	
A full examination of the hazard of the tank has been carried out and the appropriate safety tests completed with acceptable results. The tank is safe to enter.	
NAME (PRINT) (being the qualified surveyor)	SIGNED

Section 3

COMPLETION OF TANK REPAIR ESTIMATE

and

COMPLETION OF INTERNAL SHELL CONDITION CHART

Section 3 - Completion of Tank Repair Estimate and Completion of Internal Shell Condition Chart

Contents of Section

COMPLETION OF TANKCONTAINER REPAIR ESTIMATE

The following instructions are for the benefit of depots that prepare manual Repair Estimates (RE).

INTRODUCTION

A Repair Estimate (RE) (which performs the function of off-hire damage report) must be completed by the depot for every tank entering the depot off lease.

Freemove units moved in status 'A' condition or new units ex manufacturer must be checked to ensure they have not suffered transit damage. If such units have transit damage then a Repair Estimate must be completed for that unit.

For **Tank Containers** the **Repair Estimate** is a single page document.

Listed below are descriptions of the entries that must be made in each section.

*** Depots should if possible report the Repair Estimate via EDI using their depot management system.**

(1) LAST CARGO

Enter the proper shipping name and UN number of the last cargo carried.
Note :- abbreviations of the cargo name, brand name or proprietary name are not acceptable.
The depot must be in receipt of a safety document stating the proper name of the last cargo, together with the UN reference number, prior to carrying out the inspection.

Additionally, information concerning last cargo will have already been advised in writing by the GE SeaCo Ops Centre prior to redelivery.

It is vital, both for the safety of personnel and in order to convey last cargo data to the next user of the tank, that the last cargo data is accurate in every detail.

If the information is missing or incomplete for any reason, the depot must contact the last lessee or GE SeaCo Customer Service Centre. **Do not enter incorrect or incomplete information.**

(2) TEST DATE

This refers to the last 2½/5 year statutory pressure test. Enter date of last test shown on the tank data plate.

NOTE: Refer to Section 8, Sub-Section 12c to determine when the statutory testing must be performed.

(3) CONTAINER GRADING

Unlike other equipment types there are no grading procedures applicable for tanks.

(4) COMPONENT

If estimating with the ISO/Cedex coding system use the 3 digit alpha codes to denote the component.

Enter the 3 digit alpha code shown on the Component List for any item which is damaged.

Appendix 3.2 shows a list of Tank Components.

(5) DAMAGE CODES

If estimating with the ISO/Cedex coding system use the 2 digit alpha codes to denote the damage.

If estimating with the GE SeaCo coding system use the 2 digit numeric codes to denote the damage.

Only note damages that exceed the acceptable limits, as defined in the Inspection Guidelines.

See Appendix 3.3 for the full description of all damages Codes applicable to Tank Containers and a *GE SeaCo* to Cedex/ISO conversion.

The damage code used to describe any particular damage will automatically allocate the costs of the repair. Therefore, the damage code system has important Operational as well as Technical implications.

Notes on the use of Damage Codes:

The Cedex/ISO alpha code is shown in brackets after the *GE* S numeric code.)

(i) Damage Codes **must always be used as a single code.** A combination of two or more codes to describe damage to any individual item is **not permitted.**

(ii) **Improper Repairs (Codes 24 (IO) & 25 (IN))**

There are two possible codes which can be used:

24 (IO) : Improper Repair - Old

25 (IN) : Improper Repair - New

The Inspector must decide by reference to the On-Hire Date (see (4) above), whether the improper repair was carried out **during** the most recent lease (Code 25 (IN)), or **before** it (Code 24 (IO)).

(iii) **Rust, or Damage caused by Rust (Code 17 (CO))**

Code 17 (CO) must be used only in clearly defined circumstances as follows:

(a) It must be used as a single code in any line of the Repair Estimate to describe damage **caused** by rust which is not a result of a Manufacturer's Defect or cargo attack or contamination. The nature of the damage will be sufficiently implied in the appropriate Repair Code(s) which are entered in the adjoining column (see (11) below).

(b) It must be used in any line of the Repair Estimate to describe rust, as defined in (a) above, which requires rectification, by partial refurbishment.

(c) In the case of **full refurbishment** of a tank container Damage code 17 (CO) can only be used for containers which are more than 5 years old or which are subject to a Refurbishment TTB.

For containers **less than** 5 years old use Damage Code 62 (MN) - (New Manufacturing Defect) or 09 (CD) - (Consequential Damage).

(iv) Consequential Damage (Code 09 (CD))

Must be used for any damage resulting from the Lessee's failure to carry out a necessary repair. See Appendix 3.4 below for a full description of the use of Damage Code 09 (CD).

(v) Manufacturers' Defects (Codes 26 (ME) and 62(MN))

There are two possible codes which can be used:

26 (ME) : Manufacturers' Defect - existing
62 (MN) : Manufacturers' Defect - new

(a) Code 26 (ME) must be used to describe damage caused by a manufacturers' defect which is subject to a Tank Technical Bulletin (TTB). The TTB identifies the series of containers affected and gives instructions on repair method and reporting procedure.

(b) Code 62 (MN) must be entered to describe 'new' defects i.e. not yet identified by TTB.

See Section 5 regarding the procedure for reporting both existing and new manufacturers' defects.

(vi) Allocation of Costs

The allocation of repair costs between the two principal account categories, Lessee and GE SeaCo , is determined by the Damage Code.

Appendix 3.5 shows the Damage Codes which must be used in each of the circumstances defined.

The first heading entitled **ANY ITEM** covers **all components** of the tank.

(6) REPAIR CODES

Numeric (*GE* S) or alpha (Cedex/ISO) codes must be used to describe the type or method of repair required to rectify damage previously noted in the Damage Code column.

See Appendix 3.4 for the full list of Repair Codes.

(7) DAMAGE/DIMENSIONS - REMARKS

Specify the quantity and extent of repair requirement against each damaged component.

The type of damage and repair method proposed should have already been noted in the Damage and Repair Codes. Therefore, no description of the damage and repair methods is required except in the case of damages or repair methods that cannot be adequately described by use of the coding system.

INTERNAL SHELL CONDITION CHART

INTRODUCTION

Whenever there is evidence of interior tank stains, shell pitting, rust, scoring, scratches, gouges or any other unsatisfactory internal condition, this must be documented on the Tank Container Interior Shell Chart. See Appendix 3.1 for an example of a form.

When used to document unsatisfactory internal conditions, the Tank Container Interior Shell Chart becomes an addendum to the Tank RE and has the same distribution as the RE. In addition a copy of the chart must be faxed to the Engineering and Technical Services Dept., GE SeaCo London. (Fax 00 44 (0)207 939 5650).

The Inspector enters the following information when completing the form:

(1) STANDING DATA

Tank Serial Number
Enter tank prefix, serial number and check digit.

Depot/Location
Enter depot name, or preferably, GES depot code for depot location at which inspection is performed.

Date
Enter date of inspection.

Report by
Enter Inspector's name.

Inspector Signature
Enter Inspector's signature (at bottom of form)

Tank Unit Type
Enter GE SeaCo tank code

Tank Material
Enter barrel material, i.e. AISI Type 316 steel, or if lined tank, identify lining material.

Last Cargo
Enter the proper name of the last cargo.

UN Number
Enter United Nations reference number.

(2) SHELL CONDITION
Complete the chart using the surface condition key provided. Show measurements for affected areas whenever feasible.

Pitting Shape
Indicate most prevalent shape of pits seen, when pits are present. Tick flat bottom, pin hole, crater or cavity as appropriate.

Approximate Pitting Size
Provide pit measurement size for depth and diameter (in mm), or if pit size varies, identify size as appropriate on the map.

Area of Shell Affected
For any condition indicate the percentage of area of the shell interior affected and remark whether the area affected follows any pattern e.g. ullage line, above/below cargo line etc.

Discoloration
Indicate the colour of any discoloration, for tanks showing any discoloration.

Condition of Fittings
Indicate if any of the condition(s) shown in the surface condition key are present on the syphon tube, manlid or valves; indicate the extent, location, and specific characteristics of the condition(s) found.

Additional Remarks
Use the space for additional comments as needed.

APPENDIX 3.1 - INTERIOR SHELL CHART

GESeaco

INTERIOR SHELL CHART

TANK SERIAL NO	TANK UNIT TYPE
DEPOT LOCATION	LAST CARGO
DATE	UN NUMBER
REPORT BY	TANK MATERIAL

SHELL CONDITION

PITTING SHAPE (INDICATE)

STAINS

SCRATCHES /GOUGES

RUST

PITTING

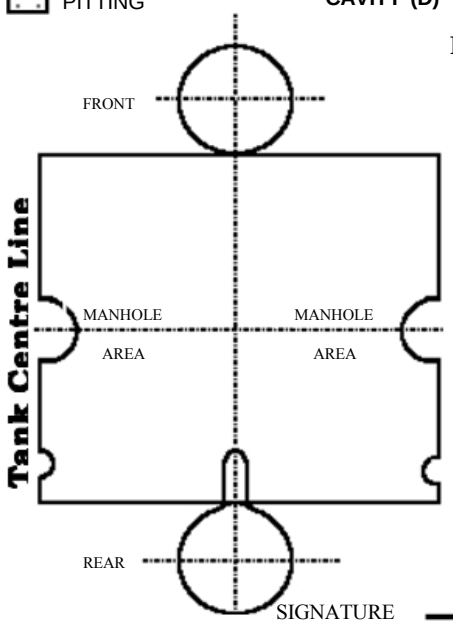
FLAT BOTTOM (A)

PIN HOLE (B)

CRATER (C)

CAVITY (D)

REMARKS



SIGNATURE _____

APPENDIX 3.2

ISO DAMAGE LOCATION CODE SYSTEM

Tank Components have their location identified by alpha codes (up to 4 characters in length).

Appendix 3 below notes the components by section. The location code for each component is noted alongside the component. Only location codes noted alongside the component may be used.

Damages will be located by panel(s). For the purpose of locating damages, the container is divided nominally into 4ft x 4ft (120 cm x 120 cm) segments.

A tank frame location code consists of four characters depending upon the area containing the entire vertical and horizontal length of the damage.

Location Code 1

1. The first character is selected to identify the appropriate face of the container as follows:

- **R** right side
- **L** left side
- **T** roof or top
- **B** bottom (floor)
- **F** front end
- **D** door / ladder & data plate end
- **U** understructure
- **X** whole container
- **I** container interior
- **E** container exterior

Location Code 2

2. The second character is selected to identify the appropriate part of the container face where the damage is contained. To do this the vertical faces of the container are divided into the top and bottom halves and upper and lower main components; the horizontal faces of the container (roof or top and floor or bottom and understructure) are divided into right and left halves when viewed from the door end.

The relevant codes are:

- **H** - upper (higher) component
- **T** - top half
- **B** - bottom (lower) component
- **G** - lower component (ground)
- **L** - left half
- **R** - right half
- **X** - both halves (i.e. top/bottom, left/right, centre)

Location Code 3

3. The third and fourth characters are selected to identify the section of the container in which the damage is contained.

   a) On all containers the front and door ends are divided into the vertical section numbered, when viewed from the door end from left to right.

      1 - for the left hand side corner post

      2 - for the left half

      3 - for the right half

      4 - for the right hand side corner post

   b) On all containers the right and left sides, the roof, the floor and the understructure are divided into equal sections as follows: 5 sections - **1** through **5**

   c) When the damage covers one section only, the third character indicates the appropriate section number and the fourth character shall be filled in with '**N**'.

   d) When the damage covers several adjacent sections the first and last section shall be employed.

   e) When the damage covers several non-adjacent sections or if the damage repair details are not the same, then separate line items must be used.

   f) When the damage covers the entire length of the container face, the third and fourth characters are filled in with '**X**'.

Location Code 4

4. Numbering system for multiple components.

   a) In addition to the above described location code some components are more precisely identified in numerical order.

   b) The particular components of the door and front end such as the door locking bars or front (side) posts are numbered consecutively from left to right when viewed from the door end.

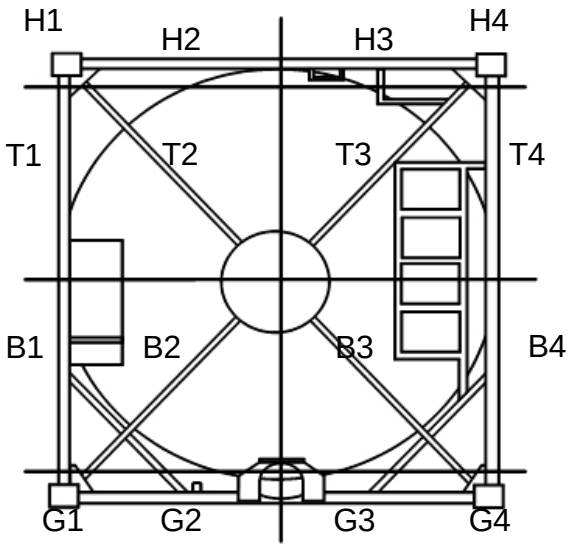
   c) The particular components contained in all other faces such as the roof bows, side posts, crossmembers are numbered consecutively from the door end.

   d) When the damage covers several faces of the inside of the container such as steam cleaning refurbishment or sealing of the panels the code **IXXX** shall be used.

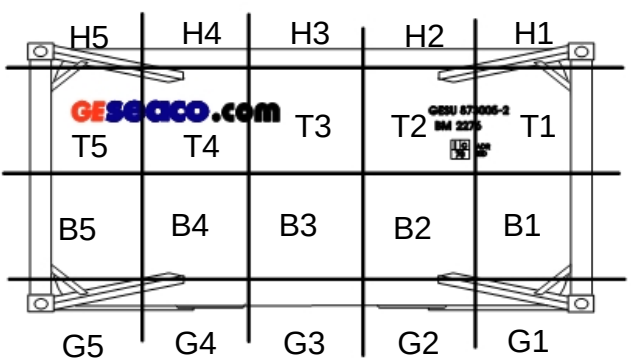
   e) When the damage covers several faces of the outside of the container such as refurbishment, refixing or sealing panels removal of cargo stickers the code **EXXX** shall be used.

   f) When the damage covers several inside and outside faces of the container the code **XXX** shall be used.

The diagrams below illustrate the various faces and components and their appropriate codes:



Ladder / Data Plate Side View



Left Side View

APPENDIX 3.3

ISO /CEDEX COMPONENT CODES

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
Tank Rails (Location = AANN)		
YLA	Ladder	AANN
YLG	Ladder handle	AANN
KWL	Ladder Landing (Tank)	AANN
YHA	Hand rail assembly	AANN
KWW	Deck or Walkway Ass.	AANN
YWA	Walkway	AANN
YWB	Walkway / Large	AANN
YWC	Walkway / Medium	AANN
YWD	Walkway / Small	AANN
YWF	Walkway fittings	AANN
YWM	Walkway mount Bracket	AANN
Tank Spill Box (Location = ABNN)		
YVC	Bott Valve Compartment	ABNN
YVL	Bott V'le Comp'tmt Cover	ABNN
YVH	Bott V'lve Comptmt Hinge	ABNN
YVT	Bot V'l Comprtmt TIR Tab	ABNN
YDC	Tank Drain Tube X-wire	ABNN
YDT	Tank draining tube	ABNN
YSP	Tank spill box	ABNN
YBC	Tank spill box cover	ABNN
YSB	Tank spill box hinge	ABNN
YSQ	Tank Spill Box TIR Tab	ABNN
YLO	Spill Box Lock	ABNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
Tank Markings (Location = ADNN)		
YAA	AAR markings	LNNN, RNNN, ADNN
YBM	BAM marking	
YCT	CTC markings	
MCA	Caution marking	
YPM	Product marking	
YPP	Product plate holder	
YRI	RID/ADR markings	
YRT	RTMD markings	
MST	Size marking	
YUI	UIC markings	LNNN, RNNN, ADNN
YOM	Operator marking	
YFR	FRA markings	
MHT	Height Marking	
YDO	DOT markings	
MMI	Weight marking	DNNN, ADNN
MCC	Country Code	LNNN, RNNN, DNNN, FNNN, ADNN
MOL	Owner's logo	
MIS	ID set	LNNN, RNNN, DNNN, FNNN, TX1N, TX5N, ADNN
MSD	Markings digit	
MFS	Markings set	
MOC	Owner's code	
MPL	Cargo plate	ADNN
MPD	Consolidated data plate	ADNN
MPS	CSC plate	ADNN
MCE	ACEP Marking	ADNN
MPC	Customs plate	ADNN
YEA	Earth connection marking	ADNN
YEW	Electrical wiring marking	ADNN
YFU	FLA plate	ADNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
MPO	Owner's plate	ADNN
YTA	Tank plate	ADNN
YCC	Calibration chart	ADNN
MPM	Manufacturer's plate	ADNN
MRU	Markings other	ADNN
Tank Frame (Location = AFNN)		
YWA	Walkway	AFNN
YWB	Walkway / Replace Large	AFNN
YWC	Walkway / Replace Med	AFNN
YWD	Walkway / Replace Small	AFNN
YWF	Walkway fittings	AFNN
YWM	Walkway mount Bracket	AFNN
YTF	Tank Frame	AFNN
YVP	Vertical post	AFNN
RLA	Side rail	LH1N to LH5N, LG1N to LG5N, RH1N to RH5N, RG1N to RG5N. LH12 to LH45, LG12 to LG45, RH12 to RH45, RG12 to RG45, LH13 to LH35, LG13 to LG35, RH13 to RH35, RG13 to RG35, LH14 to LH25, LG14 to LG25, RH14 to RH25, RG14 to RG25, LH15, LG15, RH15, RG15, DG2N, DG3N, DG23, DH2N, DH3N, DH23, FG2N, FG3N, FG23, FH2N, FH3N, FH23.
RLA	Side rail	
RLC	Side Rail Consani	
YHR	Horizontal rail	
RLG	Rail gusset	DB2N, DB3N, DT2N, DT3N FB2N, FB3N, FT2N, FT3N, LB1N, LB5N, LT1N, LT5N, RB1N, RB5N, RT1N, RT5N, TL1N, TL5N, TR1N, TR5N, UL1N, UL5N, UR1N, UR5N.

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
CFG	Corner fitting	DG1N, DG4N, DH1N, DH4N, FG1N, FG4N, FH1N, FH4N
CPA	Corner post	DB1N, DT1N, DX1N, DB4N, DT4N, DX4N, FB1N, FT1N, FX1N, FB4N, FT4N, FX4N.
CPC	Corn post - Consani	
CPV	Corner Post - CPV	
YDH	Document holder	AFNN
YDG	Doc't Holder Cap & Chain	AFNN
YDF	Doc. Holder Fixing Bolts	AFNN
YDR	Diagonal Brace	D*,L* ,R*, F*, T*, U*, AFNN
KDG	Diagonal Bracing Gussets	
YFF	Frame Fasteners	
YTG	Frame gusset/stiffener	
YMP	Frame strap mount pad	
YFS	Frame Strap	
YEC	Earth connection	AFNN
YLT	Load Transfer Area	AFNN
KGD	Rear Beam Guide (Tank)	AFNN
KEI	RR Sill Elect Instl-Tank	AFNN
YSA	Saddle	AFNN
YSK	Skirt	D*, F*, AFNN
Tank Heating (Location = AHNN)		
TMT	Cargo Thermostat	AHNN
CBB	Circuit breaker 2 Amp	AHNN
CBR	Circuit breaker 20 Amp	AHNN
SMN	Elec.On/Off Switch	AHNN
SVS	Elec.Volt.Switch	AHNN
LIT	Electric Lamp	AHNN
BEA	Electrical Control Box	AHNN
YEH	Electrical heating element	AHNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
YID	Elect Instruction Decal	AHNN
WIR	Electrical Wiring	AHNN
BEG	Control Box Door Gasket	AHNN
YHC	Heating Element Cap	AHNN
YET	Heating Terminal Block	AHNN
ECB	Mains Cable 460 volt	AHNN
EPL	Mains Plug 460 volt	AHNN
YSI	Steam inlet/outlet	AHNN
YDV	Steam trap	AHNN
YSE	Steam tubes	AHNN
YSV	Tank steam safety valve	AHNN
YSL	Tank steam line cap	AHNN
YTM	Tank thermometer	AHNN
YTW	Thermometer Receptacle	AHNN
Tank Insulation (= AINN)		
YIG	Cladding - GRP	DX2N, DX3N, FX2N, FX3N, LX1N to LX5N, RX1N to RX5N, TX1N to TX5N, UX1N to UX5N, AINN
YIZ	Cladding -Stainl. Steel	
YIC	Cladding - Aluminum	
YIN	Insulation-foam	
YIR	Insulation Rockwool	
PRV	Cladding rivets	
YCD	Cladding support	
YCS	Tank cladding strap	
YCR	Clad. Strap Rivets	
YSN	Sun Shield	AINN
YTS	Sun shield support	AINN
YTM	Tank thermometer	AINN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
Tank Loading/Unloading (= ALNN)		
YAV	Air Valve	ALNN
YAP	Airline Pipe	ALNN
YAB	Airline Valve - Ball	ALNN
YAS	Airline Vl - Ball Seating	ALNN
YAE	Airline Valve (1.5") Flange	ALNN
YAT	Airline Valve (1.5") Screw	ALNN
YAF	Airline Valve (2") Flanged	ALNN
YAU	Airline Valve (2") Screwed	ALNN
YAG	Airline Vlv / Tank G'sket	ALNN
YCA	Airline Valve Cap	ALNN
YAC	Airline Valve Cap (1½ in)	ALNN
YCG	Airline Valve Cap Seal	ALNN
YAD	Airline Valve Cap(2")	ALNN
YAW	Weld-in Flange / Airlin Vl	ALNN
YXW	Weld-in Flange / 3 in Vlv	ALNN
YZW	Weld-in Flange / 2 in Vlv	ALNN
YYW	Weld-in Flange / 1½in Vlv	ALNN
YBF	Blind flange	ALNN
YGH	Bolts (Bott/Foot valve)	ALNN
YBD	Bott Outlt Ball Valve - Ball	ALNN
YBR	Btm Out Vlv - Ball Seat Ring	ALNN
YBP	Btm Out Btrfly Vl -Clos Plt	ALNN
YBK	Bott Outlt Buttrfly Valve - Closure Plate Seat Ring	ALNN
YBO	Btm Out Bttrfly Vl - 'O' Rng	ALNN
YBS	Btm Out Bttrfly Vlv - Spindle	ALNN
YFC	Bottom Out Cap and chain	ALNN
YFG	Bottom Outlet Cap Seal	ALNN
YFO	Btm Out Foot Vlv - 'O' Ring	ALNN
YFP	Btm Out Foot Vl- Pres Plat	ALNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
YFK	Btm Out Foot Vl- Seat Rng	ALNN
YFN	Bott Outlet Foot Vlv - Spring	ALNN
YFD	Bott Outlet Vlv / Blank Bolts	ALNN
YFE	Bott Out Vlv / Blank Gasket	ALNN
YBB	Bott Outlt Vlv / Foot Bolts	ALNN
YBG	Bott Outlt Vlv / Foot Gasket	ALNN
YBV	Bottom Outlet Valve Ass	ALNN
YFB	Bott Out Valve Blind Flange	ALNN
YBL	Bottom Outlet Valve Handle	ALNN
YFA	Bott Out Vlv Spigot Flange	ALNN
YBT	Bott Outlet Valve TIR Tab	ALNN
YBW	Weld-in Flang / Bot Outlt Vlv	ALNN
YCO	Coupling	ALNN
YEV	External valve assembly	ALNN
YFJ	Foot Valve / Tank Gasket	ALNN
YFV	Foot valve assembly	ALNN
VVH	Foot Valve Handle	ALNN
YGD	Foot vlv Bolts(Ball- Foot vlv)	ALNN
YGV	Foot vlv Bolt(Foot vlv - Tnk)	ALNN
YGE	Foot vlv Bolts(Plat- Ball Vlv)	ALNN
YGA	Foot valve gasket	ALNN
YFJ	Foot Valve / Tank Gasket	ALNN
YGB	Foot vl Gaskt (Ball-Foot vlv)	ALNN
YGP	Foot vlv Gasket(Plat -Ball Vl)	ALNN
YFH	Foot Valve Operating Lever	ALNN
YLN	Level indicator	ALNN
YMA	Manometer /Pressure guage	ALNN
YMS	Manometer step guard	ALNN
YEG	Remote Trip - Cable Guard	ALNN
YTV	Sample valve assembly	ALNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
YPV	Spacer	ALNN
YEU	Top Ext. Valve Assembly	ALNN
YXB	Top Outlet Ball Valve - Ball	ALNN
YXC	Top Out Bal V -Bal Seat Rng	ALNN
YGJ	Top Outlt B'fly Valve Seal Kit	ALNN
YTD	Top Outlt Blind Flange Bolts	ALNN
YTC	Top Outlt Blind Flang Gasket	ALNN
YXP	Top Out But'fly Vl - Cls. Plat	ALNN
YXR	Top Outlet Butterfly Valve - Closure Plate Seat Ring	ALNN
YXS	Top Outlt Butfly Vl - Spindle	ALNN
YXO	Top Outl Butrfly Vlv 'O' Ring	ALNN
YXD	Top Outl't Prss Vlv - 'O' Ring	ALNN
YXM	Top Outlt Prs. Vl - Pres. Plat	ALNN
YXN	Top Out Pres Vl - Seat Ring	ALNN
YTP	Top Outlet Valv / Blank Gskt	ALNN
YEJ	Top Outlet Valve / Gasket	ALNN
YTE	Top Outlet Valve / Tnk Bolts	ALNN
YTJ	Top Outlet Valv / Tnk Gasket	ALNN
YTO	Top Outlet Valve Assembly	ALNN
YTB	Top Outlt Vlv Blind Flange	ALNN
YTN	Top Outlet 10 inch Valve	ALNN
YWT	Weld-in Flg / Top Outl 10" V	ALNN
YTH	Top Outlt Vlv Oper'tg Handle	ALNN
YTI	Top Outlet Valve TIR Tab	ALNN
YCU	Custom Seal Tank	ALNN
YDI	Diptube	ALNN
	Tank Manhole (Location = AMNN)	
YMH	Manhole assembly	AMNN
YMJ	Manlid Handle	AMNN
YMF	Manhole flange	AMNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
YMC	Manhole cover (manlid)	AMNN
YMI	Manlid cover 6 sw. bolt	AMNN
YMQ	Manlid cover 8 sw. bolts	AMNN
YMK	Manway Swingbolt Handnut	AMNN
YML	Manway Swingbolt Lugs	AMNN
YHD	Manlid fasteners	AMNN
YMO	Manlid hinges	AMNN
YMB	Manlid Hinge Bracket	AMNN
YMG	Manlid gasket	AMNN
YMU	Manlid Gasket Seating	AMNN
YMT	Manlid TIR Tab	AMNN
YMD	Manhole dipstick	AMNN
YMR	Manhole dipstick holder	AMNN
YME	Manway Dipstick Handle	AMNN
Tank Pressure Vessel (= APNN)		
YSH	Shell	DX2N, DX3N, FX2N, FX3N, LX1N to LX5N, RX1N to RX5N, TX1N to TX5N, UX1N to UX5N.
YXT	Shell Ext.r	
YNT	Shell Int.r	
YLI	Tank lining	
YST	Stiffening L ring	X1N to LX5N, RX1N to RX5N, TX1N to TX5N, UX1N to UX5N
YHE	Head	TX1N to TX5N
YSU	Sump	UX1N to UX5N
YBA	Baffle	APNN
YBH	Baffle holder	APNN
YPA	Airline Valve Pad	APNN
YPB	Bottom Outlet Valve Pad	APNN
YPR	Pressure Relief Valve Pad	APNN
YPT	Top outlet valve pad	APNN
YUF	Vapour flange	APNN
YFL	Welded flange	APNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
Tank Safety Devices (= ASNN)		
YEM	Emerg'ncy clos'r remote cntrl	ASNN
YFW	Remote Trip - Cable	ASNN
YER	Rem't Trip - Cabl Guard Fixgs	ASNN
YEB	Remote Trip Bracket	ASNN
YEL	Remote Trip Operatg Handle	ASNN
YED	Remote Trip Warning Decal	ASNN
YOH	Tank overheat fusible link	ASNN
YEC	Earth connection	ASNN
YCF	Flame arrestor - cowl type	ASNN
YFM	Flame arrestor - maxi Hi-flow	ASNN
YEX	Gas tank /excess flow valve	ASNN
YIS	Internal safety valve, gas tank	ASNN
YTR	Tank safety relief valve	ASNN
YFT	Relief valve flame trap	ASNN
YGF	Saf. Vl. Hi-Flow PTFE seals	ASNN
YGV	Saf. Valv.Hiflow Viton seals	ASNN
YSR	Safety relief flange	ASNN
YPI	Safety Rlf Vlv - Inr Pres. Sprg	ASNN
YPO	Saf'ty Rlief Vl - Out Pres Spg	ASNN
YVS	Safety Rel'f Vlv - Vac. Sprg	ASNN
YTQ	Safety Relief Valve Gasket	ASNN
YSW	Weld-in Flg / Safety Relf Vl	ASNN
YRU	Tank rupture disc	ASNN
YRD	Tank rupture disc holders	ASNN
YRG	Bursting disc gasket	ASNN
YRM	Tank saf'ty release manom't'r	ASNN

ISO Code	ISO COMPONENT DESC	ISO Loc. Code
Miscellaneous Tank (= AZNN)		
YTT	2.5 Year Statutory Test	AZNN
YTX	5 Years Statutory Test	AZNN
YCI	Inspt & Issue Clean Cert.	AZNN
YGC	Inspt & Issue Gas free Cert.	AZNN
YSC	Inspect / Issue Safety Cert.	AZNN
YTL	Leak Test (Barrel/Vlvs etc)	AZNN
YTK	Spark Test	AZNN
HWR	Hardware, screws, bolts	AZNN
YWN	Tank washing nozzles	AZNN
BUL	Tank Technical Bulletin	AZNN
ZZZ	No component code	AZNN

PREFERRED ISO CODES

Preferred ISO Damage and Repair Codes are denoted by *. Use these codes wherever possible whilst estimating. This enables an accurate translation between the GE SeaCo system and the Code used on the estimate.

Codes not marked with * are still useable but will be translated to the (2 digit numeric code) GE SeaCo code.

Ensure that this translation will still give the required allocation of costs for Damage codes and that repair codes indicate the correct repair method.

APPENDIX 3.4 Damage Code Description

Damage Code Description

GES Code	ISO Code	ISO Description	Costs Alloc A/c
01	GD*	Gouged	L
	SA	Scratched	L
02	ST*	Saturated/Wet	L
03	OC*	Out of Calibration	L
04	BN	Burned	L
	BO	Burned Out	L
	CB	Tyre Unusable	L
	MF*	Motor Failure	L
05	IE*	Inadequate Electr'l Resistance	GES-PR
06	NO*	Modifications Required	GES-PR
07	WH*	Wet Hides	L
08	CT*	Contaminated	L
09	CD*	Consequential Damage	L
	SD	Stretched	L
	SR	Shrunk	L
10	OO*	Overhead Obstruction	L
11	BT	Bent	L
	BU	Bulged	L
	BW	Bowed	L
	CL	Compression Line	L
	DT*	Dented	L
	PD	Pushed Down	L
	PI	Pushed In	L
	PO	Pushed Out	L
	PU	Pushed Up	L
	WA	Warped	L
12	BR*	Broken/Split	L
13	CU	Cut	L
	HO*	Holed	L
	PH	Pin Holes	L

Damage Code Description

GES Code	ISO Code	ISO Description	Costs Alloc A/c
14	DH*	Dented and Holed	L
15	MS*	Missing/Lost	L
	NP	Not in Place	L
16	LO*	Loose	L
17	CH	Corroded/Holed	GES-PR
	CO*	Corroded/Rusty	GES-PR
18	ML*	Markings/Labels	L
19	CK*	Cracked	L
	CW	Cracked Weld	L
	GO	GRP Surface Crack	L
	GP	GRP Surface Crack	L
20	MA	Misaligned	L
	NI*	Not Within ISO Dimensions	L
21	NT*	Foreign Fitting	L
	NT	Not within TIR regs	L
	SW	Switched	L
22	OD	Out of Date	GES-PR
	TR*	Test Required	GES-PR
23	DB*	Debris/Dunnage	L
	DY	Dirty	L
	Ol	Oil Saturated	L
	OR	Odour	L
	OS	Oil Stains	L
24	IO*	Old Improper Repair	GES- D
	IR	Improper Repair	GES- D
	NV	Not as reqd by user	GES- D
25	IN*	New Improper Repair	L
	MM	Mismatched	L
	OU	Other Unacceptable	L
	WM	Wrong Material	L
26	ME*	Existing Manu Defect	GES- MD

Damage Code Description

GES Code	ISO Code	ISO Description	Costs Alloc A/c
27	BK	Blocked	L
	FZ*	Frozen	L
28	RO	Rotted	GES-PR
	RT	Rotten	GES-PR
	WN	Worn	GES-PR
	WT*	Wear and Tear	GES-PR
	WV	Weathered	GES-PR
29	PS*	Pitted Surface	L
50	OI*	Over-Inflated	L
	UI	Tyre Over-inflated	L
51	IP*	Imploded	L
52	IC*	Improper Cleaniing	L
53	OH*	Overheating	L
54	FD*	Forklift Damage	L
55	FQ*	Food Quality	GES-PR
60	SH*	Short/Open Circuit	L
61	LF*	Low Fluid Level	L
62	MN*	New Manu Defect	GES-New MD
	PF	Paint Failure	
63	LK*	Leak	L
64	FS*	Flat Spots	L
	TU	Uneven Tread	L
	WB	Bald Tyre	L
66	RD*	Rollover Damage	L
67	BL	Blowout	L
	FP*	Flat/puncture	L
	RF	Run Flat	L
68	DL*	Delaminated	L
	SP	Separated	L
	TS	Tyre Damage	L
69	NL*	Nails	L
70	RA*	Remove For Access	L

Damage Code Description

GES Code	ISO Code	ISO Description	Costs Alloc A/c
	ZZ	Special Damage	L
94	RP *	Refurbishment Program	GES-Cap
95	FL*	Floor Refurbishment Program	GES-Cap
	RR	Floor Reburb Program	GES-Cap
97	PM*	Preventative Maintenance	GES-PR
99	RC*	Conversion Required	GES-Cap

APPENDIX 3.5

Repair Code Description

GES Repair Code	ISO Repair Code	ISO Description
30	GS*	Straighten
	RA	Re-align
	RS	Straighten and Resecure
3X	/////	Accumulated. straightening *(code not for use by depots)*
31	IT*	Insert
	OP	Overlapping
32	SF	Section and Foam
	SN*	Section
33	BX	Fit by M&R Stock
	CH	Recharge
	EX	Fit Part EX Owners Stock
	IN	Install
	MK	Re mark
	RP*	Replace
	TP	Top Up
34	WD*	Weld
35	GW*	Straighten and weld
36	DR	Drain
	GT	Remove Glue and Tape
	MV	Remove Markings
	RD	Remove and Dispose
	RM*	Remove
37	WP*	Sweep
38	WW*	Water Wash
39	SC*	Steam Clean
40	AB*	Abrasive Clean & Paint

Repair Code Description

GES Repair Code	ISO Repair Code	ISO Description
41	PA	Paint
	PR*	Partial Refurbishment
	PS	Wire brush and paint
42	HN	Handling Required
	PI	Pre-trip Inspection
	PV	Repairs prior to refurb
	RU	Rebrush
	SI	Splice
	SP*	Special Repair Necessary
	TR	Temporary Repair
	ZZ	Special Repair
43	SE*	Seal
	SR	Reseal
44	FT	Refit
	RE*	Resecure
45	FR*	Free and ease
	LC	Lubricate
46	BU	Blank Out
	OX	Overlay
	PT*	Patch
47	RG*	Re-Glass / GRP Infill
48	DO*	Deodorise
49	PC*	Polish Clean
4X	NA*	No Action Necessary
50	SD*	Sanding / Grind smooth
51	DU*	Dry Out
52	AJ	Adjust
	TC*	Test Calibrate

Repair Code Description

GES Repair Code	ISO Repair Code	ISO Description
53	AC	Air Clean
	DC*	Dismantle and Clean
54	PP*	Pickle/Passivate
55	CC*	Chemical Clean
57	PX*	Patch and Foam
58	IF*	Full length insert
59	DF*	Drain and Fill
5X	TB*	Tech Bulletin completed
61	XW*	Grind and Weld
66	BD	Brand
	MD*	Modify
	RT	Re Rate
67	IP*	Photograph
77	RR*	Remove and Refit
80	RW*	Rewire
81	AR*	Air
88	RX*	Renew with Recon Part
89	RB*	Rebuild
95	RC*	Recondition/Refurbish
97	VM*	Preventative Maintenance
99	CO*	Conversion

APPENDIX 3.6 COST ALLOCATION

Description / Remarks	Damg Code	Cost Alloc.
ANY ITEM		
Repair of impact damage.	Various	L
Replacement of missing components.	15 (MS)	L
Replacement of life expired components, damage resulting from inevitable exposure to normal operating conditions. e.g. hardening / deterioration of seals, discoloration of decals, electrical component not functioning and no signs of damage etc.	28 (WT)	GESPR
Unacceptable improper repairs done during the most recent lease or unacceptable non standard components fitted during the most recent lease.	25 (IN)	L
Unacceptable improper repairs done prior to the most recent lease or unacceptable non-standard components fitted prior to the most recent lease.	24 (IO)	GESD
Consequential damage resulting from the Lessee's failure to carry out a necessary repair. i.e. saturation of the insulation resulting from a failure to repair the cladding.	09 (CD)	L

Description / Remarks	Damg Code	Cost Alloc.

CLEANLINESS

Cleanliness Certificate missing	15 (MS)	L
Normal cleaning of the tank - interior and cargo spillage on exterior	23 (DB)	L
Normal cleaning of the tank - exterior (road dirt, not cargo spillage)	28 (WT)	GESPR
Additional cleaning of the tank due to improper cleaning before redelivery when the tank is returned with a valid cleaning document. This is when the tank is **not sufficiently clean**. i.e. re-cleaning of seals , valves or blemishes / traces of previous cargo	52 (IP)	L
Removal of non standard decals or marks.	18 (ML)	L
Residue of previous cargo that can only be removed by special procedures. These procedures can include structural repair, partial or full refurbishment, component replacement, or a special cleaning method. This code should not be used for seals and gaskets	08 (CT)	L

Description / Remarks	Damg Code	Cost Alloc.

POLISHING

Polishing of the tank - interior. e.g. .removal of cargo residues	23 (DB)	L

TESTING

Periodic testing of the tank, e.g. $2^1/_2$ and 5 year tests	22 (TR)	GESPR
Leak test due to repairs on the shell etc.(code leak test same as the damage)	Various	L

REFURB AND POST REFURB REPAIRS

Full refurbishment and additional work as a result of abrasive blasting on units subject to refurbishment other than specified below.	17 (CO)	Cap Prog. (Full Refurb)
Partial refurbishment and additional work as a result of abrasive blasting on units subject to refurbishment other than specified below.	17 (CO)	GESPR (Part Refurb)
Where necessary due to cargo spillage/ contamination.	08 (CT)	L

Description / Remarks	Damg Code	Cost Alloc.
WET/SATURATED INSULATION FOAM		
As a result of damage or failure of Lessee to carry out a repair or seal a damaged area.	02 (SW)	L
As a result of old improper repairs.	24 (IO)	GES D
As a result of deteriorating sealant on old repairs.	28 (WT)	GES PR
As a result of an ARD.	28 (WT)	GES PR
MANUFACTURING DEFECTS		
New manufacturing defects (i.e. a manufacturing defect not detailed by a current technical bulletin). this also includes post refurbishment repair work.	62 (MN)	New Man. Defect
Existing manuf'turing defect (detailed by a current TTB).	26 (ME)	Existing Man. Defect
SEALANT		
Replacement of sealant which has failed as a result of ARD.	28 (WT)	GESPR
Sealant required as a result of an impact damage or improper operation.	16 (LO)	L

Section 4

INSPECTION PROCEDURES

Section 4 - Inspection Procedures

Contents of Section

INSPECTION PROCEDURES

INTRODUCTION

There are seven standard inspections that might be carried out while tank containers are in depot off-hire. GE SeaCo will confirm the inspections required.

All inspections must be carried out by a *GE SeaCo* Surveyor except for pre-delivery Onhire Surveys which should be carried out by the depot's own quality control personnel.

Inspection Types and their Objectives

a) **Post-Estimate** (Estimate Verification) : Ensures the Repair Estimate conforms to GE SeaCo requirements.

b) **Joint-survey**: Confirms with the customer's surveyor the allocation of repair costs.

c) **Post-Repair**: Ensures the tank has been repaired correctly and is now a status 'A' tank.

d) **Combined - Post-Repair and On-Hire**: Ensures the tank has been repaired correctly and is now a status 'A' tank. Additionally, provide for inspection as in f).

e) **Supplementary Estimate Verification**: Ensure the additional work is necessary.

f) **Lessee On-Hire Survey** Performed prior to lease, ensuring the tank complies with requirements. Include a written report and photos together with an updated cleaning certificate.

g) **Pre-delivery Inspection** Depot check prior to lease ensuring the tank complies with requirements.

A. POST-ESTIMATE INSPECTION

Authenticating the Repair Estimate

Must be performed promptly after depot has completed the Repair Estimate.

Must be performed on ALL tanks:

- returned from lease
- freemoved in a damaged condition
- freemoved units that sustain transit damage

Is not required on tanks:

- freemoved in a Status A condition.
- freemoved from manufacturer

Note: These tanks will require a visual exterior inspection for transit damage

Action to be taken by the *GE*S Surveyor:

The *GE SeaCo* Surveyor must inspect the tank and ensure that the repair estimate is correct. the Repair Estimate must be completed in accordance with the instructions in Section 3. When the *GE SeaCo* Surveyor is satisfied that the Repair Estimate for the Tank is correct he must sign and date the estimate.

Repair estimate checks must include:

- A current, valid Certificate of Cleanliness.
- The last cargo data is correctly entered.
- Damage Codes noted correctly, ensuring the Cost Allocation is correct.
- Only damage requiring repair is noted.
- Correct method of repair is to be adopted.
- Tank Technical Bulletin requirements met.
- Repair costs (labour / materials) are correct. Using combination damages and low cost re-conditioned components as opposed to new.
- Function Testing of the electrical heating or other components has been carried out.
- Statutory Test requirements complied with.
- An internal mapping chart completed if a problem exists on the shell interior.

B. JOINT-SURVEYS (with customer's surveyor)
The joint survey is carried out after the post-estimate inspection and must be performed using the GE SeaCo - ***Printed Estimate***.

The customer's surveyor must provide his own copy of the Repair Estimate. All customers' surveyors must attend at same time.

The two surveyors must agree the material costs and labour hours as allocated or an amended allocation. The estimate must clearly show all amendments.

The estimate must be signed and dated by both the *GE SeaCo* and customer's surveyors.

The *GE SeaCo* Surveyor may alter an item on the estimate by amending the damage and repair codes, description and the costs.

After amendment the repair must still conform to Tank Inspection criteria or requirements. Cost amendments must be agreed with depot.

If the customer's surveyor agrees costs, but refuses to sign the estimate, he should be warned that the survey is invalidated. The *GE SeaCo* Surveyor must write on the estimate ***Costs agreed but customer's surveyor unwilling to sign***, and sign / date it himself.

The depot must report the joint survey result and amended costs immediately to the local *GE SeaCo* Ops Centre.

If agreement is not reached between the surveyors then the *GE SeaCo* Surveyor must immediately report to the *GE SeaCo* Ops Centre.

Lessee Refused Costs Report

- Details of refused costs
- Colour photographs of the refused items
- Reasons why costs refused..
- Send report to GE SeaCo Ops Centre.
- A copy of this form is shown at Appendix 4.2.

C. POST-REPAIR INSPECTION

The post-repair process is used as a means for GE SeaCo to verify that the unit has been repaired in accordance with the estimate and meets all applicable criteria for a unit to be on-hired.

The Post-Repair Inspection procedures must be performed in all depots.

Post-Repair Inspection

The following procedures must be followed when performing a Post-Repair Inspection.

At any time new or amended requirements or criteria may be introduced for specific tanks or tank containers in general, these must be applied in addition to the procedures below during the Post-Repair Inspection.

C.1 Tank Container

The tank container being inspected must meet the specifications of a status 'A' tank with regard to the inspection criteria as noted in the Tank Inspection Handbook, Technical Bulletin's and other Technical requirements that may be in force. All repairs noted on the estimate and any damages that were not noted on the estimate must be fully repaired.

Additionally an internal mapping chart will be done and photos taken of the various components noted below in C.3.

C.2 Statutory Test Validity

The inspector must ensure that the tank Statutory Test validity is current; otherwise it must be updated as necessary. The requirements of the Statutory Test are noted in the Tank Inspection Handbook.

C.3 Photographs and On-Hire Report

Every tank container will require a number of photographs to be taken during the On-Hire Inspection. The photographs must clearly show - interior, sides, ends, top, underside and the top and bottom valve/ manlid compartment.

An On-Hire report must be completed in an approved format together with an internal mapping chart. The Cleaning Certificate shall be renewed. The report and photographs must be made available on the Inspection Company's web site.

C.4 Cleaning Certificate

Every tank container must enter the depot with a valid Cleaning document. At the conclusion of the On-Hire Inspection the inspector should re-validate the existing Cleaning Certificate or issue a new Certificate.

C.5 GQ decal

When the On-Hire inspector is satisfied that the tank container meets all the necessary criteria he must issue a GQ sticker for that tank container. This should be placed into the document holder. Any previous GQ Sticker must be removed.

Only when all the above steps have been satisfactorily completed, can the tank be noted a status 'A' tank, the depot may then transmit the unit status to the Ops Centre.

NOTES Post-Repair

Note 1

If the GE SeaCo Surveyor considers that the depot has omitted to repair items included on the estimate or has not repaired items correctly, then he must clearly mark these items for rework on the estimate.

The cost of rework is for the depot's account.

Rework repairs must commence immediately and be completed in a timescale agreed with the GE SeaCo Surveyor.

Following completion of rework, the unit must be re-inspected by the *GE SeaCo* Surveyor. Inspections will continue until the *GE SeaCo* Surveyor is satisfied that it meets the *GE SeaCo* requirements and quality standards.

Note 2

If the *GE SeaCo* Surveyor considers that additional repairs are required, the depot must produce an Additional Estimate which must be approved by the *GE SeaCo* Surveyor.

If the additional repairs are required as a result of damage caused to the unit whilst in the depot or repairs that should have been identified by the depot estimator at the time of offhire, the costs of rectification must be for the depot account. In this case no Additional Estimate is required.

D COMBINED POST-REPAIR & ON-HIRE

This inspection combines the inspection requirements of

C Post-Repair and

F Lessee On-Hire Survey

E. SUPPLEMENTARY ESTIMATE VERIFICATION

The original estimate should indicate all damages requiring repair in addition to all TTB's and maintenance work required at the time of redelivery.

Normally the only times a supplementary estimate for extra work will be required is when a tank container has been in depot for a period of time and the unit requires maintenance work or when there is a specific request from the Ops Centre to modify the tank or fittings.

Any additional work required above what was noted on the original estimate will be to the depot account unless the damages were not required or were hidden damage. Any supplementary estimate should be submitted as per all normal procedures for authorisation. The Operations Centre may request a survey prior to work being authorised.

The survey must ensure that the actual work is actually necessary and that it conforms to GE SeaCo requirements and to allocate the costs to either the depot or GE SeaCo account.

F. LESSEE ON-HIRE SURVEY

If the customer requests an **On-hire Survey** then he should be encouraged to attend the **Pre-delivery Inspection**. In this case the procedures below must be followed in addition to the Pre-delivery Inspection procedures.

If the customer does not require an **On-hire Survey** then the **Pre-delivery Inspection** carried out by the GE SeaCo Surveyor will serve to ensure that the tank container is in good working order prior to delivery to lease.

Procedure

This survey must be carried out with reference to the criteria detailed in Section 8*, Inspection Guidelines for Tank Containers*.

If an item is beyond the acceptable limits as specified in Section 8 the survey must cease until the required repairs have been carried out.

If the customer's surveyor accepts the unit as being in satisfactory operating condition but nevertheless refuses to sign the On-Hire Survey form, the *GE SeaCo* Representative must note in the REMARKS box the words '***acceptable to customer but customer's surveyor unwilling to sign'***. The *GE SeaCo* Representative must also add brief comments as to the reason for the refusal. The *GE SeaCo* Representative must immediately advise the local *GE SeaCo* OPs Centre. In this situation the unit **can** be delivered to the customer.

The *GE SeaCo* Surveyor must immediately inform the local *GE SeaCo* Ops Centre:

- Customer's surveyor rejects a unit as non-satisfactory and in the opinion of the *GE SeaCo* Surveyor the unit **is in satisfactory condition.**

- If the customer's surveyor requests further checks of the unit in addition to those detailed in this handbook.

If the customer's surveyor has his own On-Hire Survey report and requests the GE SeaCo Surveyor to sign it; the GE SeaCo Surveyor must not sign it unless all the following conditions are fulfilled:

- All codes used are clearly defined on form.
- All comments relating to the condition and operating serviceability of the unit are in accordance with those entered on the *GE SeaCo* form.
- The customer's surveyor also signs the *GE SeaCo* form.
- The customer's surveyor provides the *GE SeaCo* Representative with a copy of his own On-Hire Survey Report.

The *GE SeaCo* form is always the official report confirming the agreement between *GE SeaCo* and the customer regarding the operating condition and serviceability of the unit. The customer's own On-Hire Survey Report does NOT take precedence over *GE SeaCo*'s.

G. PRE-DELIVERY INSPECTION

This inspection must be carried out immediately prior to release of the container.

The depot prior to delivery to the customer must survey every tank being delivered for which GE SeaCo has given release authorisation. In the case of special tanks their individual requirements must be checked.

The depot must ensure the tank:

- Conforms to GE SeaCo booking requirements
- Any special requirements detailed in the booking advice have been completed
- The tank container is of the correct type as detailed in the booking advice.
- If it is more than 6 months since the On-Hire Inspection then the pre-delivery inspection must include a leak check.
- Is fit for service according to *GE SeaCo* repair requirements and quality standards, including specific requirements for Special Tanks.
- Must be fully operational according to the inspection criteria.

If the tank is not repaired correctly, then it must reworked.

- The cost of rework is for the depot's a/c.
- Rework repairs must commence immediately and be completed in a timescale agreed with the GE SeaCo Operations Centre.
- The unit must be re-inspected

Electrical Or Reefer Tanks - depot must produce and retain the run test results.

Once the Pre-Delivery Inspection has been satisfactorily completed then the lower section of the GQ sticker must be completed.

APPENDIX 4.1 GQ Stickers

All status ‘A’’ tank containers must have a completed GQ sticker as shown below, it should be placed in the document holder.

APPENDIX 4.2 Lessee Refused Costs Report

The form shown below must be used to report the items refused at joint survey by the lessee surveyor.

GE SeaCo LESSEE REFUSED COSTS REPORT

Unit serial No.: Date:

Estimate No. Depot Code:

City:

On- Hire Date: Photos Taken **Y/N**

LESSEE REPRESENTATIVE

Co. Name: Surveyors Name:

GE SeaCo REPRESENTATIVE

Co. Name: Surveyors Name:

LESSEE REFUSED LINES

Line No.	Hours Refused	Material Refused	(Local Currency) Refused Amount	Grand Total
1				
2				
3				

(If more, please continue on another form labelled page 2)

LESSEE REASON FOR REFUSAL

1.
2.
3.

GE SeaCo REP. REASON FOR LESSEE ALLOCATION

1.
2.
3.

Attach a copy of the signed and surveyed estimate

Signed (GE SeaCo) Signed (Lessee)

Section 5

IDENTIFICATION OF MANUFACTURERS' DEFECTS

and

PROCEDURE FOR REPORTING MANUFACTURERS' DEFECTS

Section 5 -

Identification of Manufacturers' Defects and Procedure for Reporting Manufacturers' Defects

Contents of Section

IDENTIFICATION OF MANUFACTURERS' DEFECTS

The inspector should be aware of the need to monitor tank design and report potential manufacturing defects and unsatisfactory design in addition to actual manufacturing defects.

Manufacturing defects must be identified and correctly reported on the Repair Estimate.

Typical defects might be those involving:

(1) FATIGUE CRACKS

The most common fatigue cracks occur in the frame, tank support bearers and. All tanks should be checked for any signs of stress related failure of either welds or parent material.

(2) WELD DEFECTS

Possible defects are porosity, lack of fusion or misalignments to welds. Defects to the frame and bearer supports are often revealed by cracks in the welds.

(3) DEFECTS AFFECTING ISO DIMENSIONS

This type of defect is often identified after difficulties have been experienced in lifting a container by spreader.

Over tolerance variances in ISO dimensions are more often as a result of damage or previous improper repair rather than defects in the original manufacture. However, it may be that a design defect to the end frame has caused misalignment.

Expansion of the insulation causing the insulation and cladding to exceed ISO tolerances is often the result of moisture ingress. It may be that defects to the security or water tightness of the cladding joints at manufacture are the root cause of the defect.

(4) PAINT AND SURFACE PREPARATION

Inspectors should be alert for any signs of corrosion that do not appear to be the result of normal deterioration or damage. Corrosion on a container of recent manufacture is a probable indication that the paint system is defective.

The following are the most common types of paint related problems:

(i) Paint Film Detachment

The detachment of areas of the paint film in the absence of signs of sufficient impact or chemical contamination is a sign of coating adhesion failure.

Such detachment may involve the top coat separating from the primer coat leaving the primer intact or alternatively the entire paint coating may detach leaving the bare steel substrate.

This type of failure is the result of lack of intercoat adhesion, poor metal preparation, contamination of the substrate or brittle paint.

(ii) Light Surface Corrosion

Light surface corrosion appearing through the paint film may indicate insufficient paint film thickness.

Where the corrosion appears on the exterior of the painted stainless steel shell this is often due to contamination by carbon steel particles at manufacture prior to painting.

(iii) Corrosion Blisters

This is the most serious type of corrosion and can cause much damage to the steel unless promptly treated. Corrosion blisters form below the paint film and result in deep seated areas of rust and rapid decomposition of the steel.

In the early stages the blisters appear as small bumps beneath the paint film which at this stage is still undamaged. As the steel starts to break down the size of the blisters increase until they break through the paint film. By this stage the corrosion process is well advanced and will have already significantly reduced the steel thickness.

(iv) Electrolytic Corrosion

Corrosion blisters described in (4)(iii) above can occur around data plates and other metal components attached to the container. This may be a result of using incompatible materials, usually the fasteners.

Corrosion of aluminium fasteners and aluminium cladding might also be a result of electrolytic corrosion.

(5) ELECTRICAL FAILURE

Failure of items such as printed circuit boards, thermostat contacts and heating elements may be due to a manufacturer's design defect.

The common cause of defects to the above items is moisture ingress through joints in cladding and control boxes as a result of defects at manufacture. However, previous improper repairs or failure to carry out repairs to damage on a timely basis must be investigated.

PROCEDURE FOR REPORTING MANUFACTURERS' DEFECTS

Potential Manufacturing Defects and Unsatisfactory Design

Depots and inspectors should report to the Engineering and Technical Services Dept. any defect or design defects that may be present on a tank:

a) Design difficult to repair
b) Design frequently damaged, or
c) vulnerable to damage
d) early deterioration, which although not a defect may become one.

The procedure covers units of all equipment types. It applies both to 'new' Manufacturers' Defects and also 'existing' Manufacturers' Defects.

For ease of reference the definition of New and Existing Manufacturers' Defects is:

New Manufacturers' Defect

Any failure discovered on a unit which is less than 5 years old and which cannot be attributed to age related deterioration (ARD), and which has not been identified in the Tank Fleet Survey by a Tank Technical Bulletin.

The age of the unit must be determined by reference to the Tank Fleet Survey, not by reference to the data plate on the unit.

Existing Manufacturers' Defect

Any failure which has been confirmed by GE SeaCo London to be a Manufacturers' Defect, and which has been either identified in the Tank Fleet Survey or covered by a Tank Technical Bulletin or other formal circular instruction issued by Engineering and Technical Services Dept. GE SeaCo London.

PROCEDURE

The procedure shown below is concerned with units returned to depot, either off-hire from lease or from a freemove. It does **not** cover the reporting or repair of in-service units on which manufacturers' defects have been discovered.

These procedures do not amend in any way the Fleet Condition Survey Report (FCSR) System, described in TTB No 30.

(1) NEW MANUFACTURERS' DEFECTS (NEW MD)

When a New MD is identified, the depot must without delay send to the local GE SeaCo Ops Centre:

- A copy of the full printed Repair Estimate.

- Clear photographs illustrating the MD. Each photo must be marked with the unit serial number, date of photo, location, name of inspector, returning lessee.

- A completed inspection report, using the standard GESC Warranty Report form. No other reporting format should be used.

An example of the Warranty Report is shown as Appendix 1.

NOTE: Up to five units may be entered on one form providing all the units are of the same manufacturer and display similar defects.

(2) EXISTING MANUFACTURERS' DEFECTS (EXISTING MD)

For each unit on which an Existing MD is recorded, the following must be sent by the depot to the local GE SeaCo Ops Centre:

- A copy of the full printed Repair Estimate.
- Clear photos illustrating the MD (subject to exceptions listed below). Each photo must be marked with the same data as listed above for New MD's. In addition the TTB reference number must be shown.

NOTE: Photos are **not** required for all Existing MD's. TTB's will state whether or not photos are required. (In most cases photos will be required for an initial period and then the requirement will be withdrawn).

Photographs should clearly indicate the potential or actual problem. On the rear of the photograph the following must be clearly noted:

- unit number
- date
- depot or location where photo taken
- TTB number if applicable

No Warranty Report or other inspection report is required for Existing MD's unless otherwise stated on the Technical Bulletin

APPENDIX 5.1

Warranty Report for New Defects	
Date :	**Reported By :**
Manufacturer :	**Inspected By :**
Unit Type :	**Depot Location :**

	Prefix	Serial	CD	Date Of Delivery
1				
2				
3				
4				
5				

Description of defect :

Cause of defect :

Associated damage / Operating conditions :

Remedial action proposed :

Remedial cost	EIR / RE Number
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Inspection / Investigation cost :

Action :	Action By :

Comments : **Copy to :**

Photographs & Estimates must be attached.

Send to	email	ets@GE SeaCo.com
	Fax	+ 44 20 7805 5920

Section 6

IDENTIFICATION OF FREQUENT MISUSE OF TANK CONTAINERS

Section 6 - Identification of Frequent Misuse Of Tank Containers

Contents of Section

IDENTIFICATION OF FREQUENT MISUSE OF TANK CONTAINERS

A container may be deemed to have been misused if it has been subjected to any of the following conditions which have resulted in damage:

- Used in excess of the designed working pressure, or without ventilation (implosion).
- Handled by any means other than those specified in ISO document DIS 3874. Top side lift equipment (unladen tanks only) must be of the full frame type. Handling by forklift equipment is not permitted for tank containers.
- Transported a cargo that has caused damage by reaction between the cargo and the container.
- Transported by any vehicle or vessel which is not suitable for the carriage of containers.
- Used when the operating or assembly instructions have not been followed or when necessary components are not present or correctly fitted.

Complete the Repair Estimate as normal be immediately report misuse to Ops Centre.

Containers subjected to misuse may be identified if they display characteristics such as:

Used in excess of designed working pressure.

- splits or distortion to steam tubes or shell. Implosion will result in the tank shell or other components bowing inwards. It is caused by failure to vent the tank after cleaning or whilst discharging.

Handled by any means other than specified in ISO document DIS 3874. Top side lift equipment (unladen tanks only) must be of the full frame type.

- Distortion of the top third of tank shell (chains too short)
- Distortion of the manway area due to lifting by use of a yoke in the manway opening
- End frames leaning in towards the interior of the unit (chains too short)
- Permanent twist in the container about a diagonal horizontal axis. (Lifted by chains from two diagonally opposite corner castings)
- Distortion to the underside shell, steam tubes or cladding (lifting by forks)
- Distortion to the side shell or cladding due to top side lifting without adequate support to the bottom side
- Distortion of the tank support bearers or movement of the tank within the frame due to the unit having been dropped.

Transported a cargo that has caused damage to the tank by reaction between the cargo and the container.

- General corrosion and staining
- Corrosion pitting
- Stress corrosion cracking
- Damage to paint coating or cladding caused by spillage or storage in a chemical environment

Transported by any vehicle or vessel which is not suitable for the carriage of containers

- Abrasion or damage caused by the use of makeshift lashing

Used when the operating or assembly instructions have not been followed or when necessary components are not present or correctly fitted

- Implosion of the tank shell due to inadequate venting on discharge
- Implosion of the tank shell due to inadequate venting after hot washing
- Splits in the insulation and cladding due to operation of the tank in excess of the maximum cargo temperatures
- Damage resulting from disregarding assembly or security instructions
- Damaged valves and fittings due to improper tools (incorrect size wrench)
- Damage to manway lid and compartment due to failure to secure when transporting or stacking the tank
- Burnt electrical components due to incorrect voltage supply
- Damage to electrical components due to failure to secure control box doors.

Section 7

IMPROPER REPAIRS

Section 7 - Improper Repairs

Contents of Section

IMPROPER REPAIRS

An improper repair is any repair performed where any one of the following defects is present:

- The repair has not been performed in strict accordance with GE SeaCo guidelines.

- The repair is of a quality or condition which could still be defined as damage according to GE SeaCo guidelines.

- The repair has an adverse affect on the original ISO dimensions of the tank container.

- The repair affects the structural integrity of the tank container.

- Use of incorrect materials.

- Sub-standard preparation or painting.

- Sub-standard cleaning of the tank or fittings.

- Poor quality welding or workmanship.

Not all improper repairs, as defined, need to be reworked.

A distinction has to be drawn between repairs in progress and therefore controllable and repairs, already in existence on a container, which are being considered for rectification.

All repairs carried out under the control of GE SeaCo must be performed in accordance with GE SeaCo repair procedures. Any repair

performed in an GE SeaCo depot which does not meet the GE SeaCo repair criteria should be rejected and the tank container considered still damaged and unavailable for lease until the repair has been made good in accordance with GE SeaCo repair procedures.

Existing repairs which do not strictly meet GE SeaCo requirements can be considered acceptable if they meet the following requirements:

- The repair has been carried out in a competent manner using suitable materials and a good standard of workmanship.

- The repair has been in existence for a long time without any signs of failure.

- The materials used, although strictly not meeting GE SeaCo requirements, do not affect the structural integrity of the container.

- Repairs to non-critical areas e.g. cladding panels, which are not unsightly and are watertight and secure.

- Repairs which may not have been properly cleaned and painted and are showing signs of superficial corrosion.

- Abrasive polishing marks to the shell interior which do not significantly affect the cleanliness standard or structural integrity.

Section 8

INSPECTION GUIDELINES FOR TANK CONTAINERS

ACCEPTABLE CONTAINER CONDITION

(ACC)

Section 8 - Inspection Guidelines for Tank Containers Safety

Contents of Section

INTRODUCTION

ACCEPTABLE AND NOT ACCEPTABLE DAMAGE

The inspection guide which follows lists the component parts of a tank container and defines the Tank Acceptable Container Condition (ACC) criteria for:

- NOT ACCEPTABLE DAMAGE
- ACCEPTABLE DAMAGE

NOT ACCEPTABLE DAMAGE is damage that affects the safety, structural integrity, cargocarrying capacity or the ISO dimensional integrity of the tank container.

THIS TYPE OF DAMAGE MUST BE REPAIRED

ACCEPTABLE DAMAGE is minor damage which does not significantly affect any of the above conditions and therefore:

NO REPAIR IS REQUIRED.

DO NOT OPERATE VALVES /FITTINGS OR ENTER ANY TANK WHICH DOES NOT POSSESS A VALID CERTIFICATE OF CLEANLINESS AND VALID ENTRY CERTIFICATE.

OBSERVE THE SAFE INSPECTION PROCEDURES AND PRACTICE AS DETAILED IN SECTION 1 OF THIS HANDBOOK AND ALL REGIONAL HEALTH AND SAFETY REQUIREMENTS.

1 CLEANLINESS

1.a) INTERIOR

Not Acceptable Damage/Condition

- Cargo, contamination or odour.
- Transferable stains.
- Corrosion, pitting, grinding or gouges.
- Missing or improper Cleanliness Certificate.

Acceptable Damage/Condition

- Discoloration or dull appearance.
- Abrasions or scratches more than 120 grit polish equivalent.

An Internal Shell Condition Chart must be completed for all interior shell defects. See Section 3 for details.

NOTE: Tanks without a cleaning document must be considered unsafe and should not be inspected.

A cleanliness document is required for all tanks prior to redelivery to depot for lease termination (off-hire).

If the cleanliness document is not a Cleanliness Certificate the tank may be off-hired but a Cleanliness Certificate is required and should be added to the off-hire estimate and issued by a qualified person.

Note: where stains are present, clean a test area at the time of estimate preparation to both determine the cost and ensure stains do not conceal corrosion pitting.

If heavily stained tanks are redelivered, contact the Ops Centre immediately, to arrange re-cleaning **prior** to off-hire.

1.b) EXTERIOR

Not Acceptable Damage/Condition

- Cargo contamination (cargo overspill).
- Oil, grease
- Contamination of the valve or manlid compartments.
- General dust and dirt (visible from 10 mtrs).

Acceptable Damage/Condition

- Minor dust and dirt (NOT visible from 10 metres).

NOTE: The valve and spill boxes must be clean. Check areas of overspill for damage to paint and cladding. Inspect drain tubes to ensure they are clear.

1.c) FOREIGN MARKINGS

Not Acceptable Damage/Condition

- Hazard warning labels or cargo labels.
- Non-standard labels or misleading marks.
- Remnants of labels.
- Insecure or unserviceable label holders.
- Customer logo

Acceptable Damage/Condition

- Serviceable label holders.
- Minor label glue residue.

NOTE:

- Non-standard damaged label holders should not be replaced. Remove and make good the area.
- If a customer logo has been fitted over or in place of the GE SeaCo logo, the customer logo should be removed. It is not necessary to renew the GE SeaCo logo, (See Section 12 of this chapter).

2 FRAME

2.a) CORNER POSTS

Not Acceptable Damage

- Cuts, holes, gouges or splits.
- Cracks in welds or parent metal.
- Improper repairs.
- Dents or distortions of a formed edge or face greater than 15 mm irrespective of length of deformation.
- Dents greater than 10 mm and less than 15 mm in depth in excess of two per post.
- Dents greater than 10 mm exceeding 300 mm in length.
- Twisted or bent beyond the ISO.
- Severe Corrosion.

Acceptable Damage

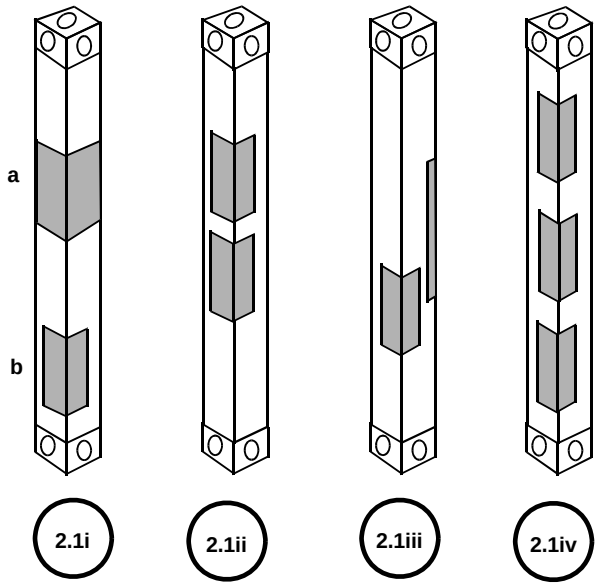
- Dents or distortions not exceeding 15 mm in depth except as qualified above.

NOTE: The GE SeaCo preferred corner post insert shape has angled ends. However existing inserts with square ends are acceptable if all other criteria are satisfied.

A maximum of two structurally sound inserts are allowed to each post.

An insert may include a maximum of two formed edges.

Not Acceptable



2.1i a. insert through 3 formed edges.

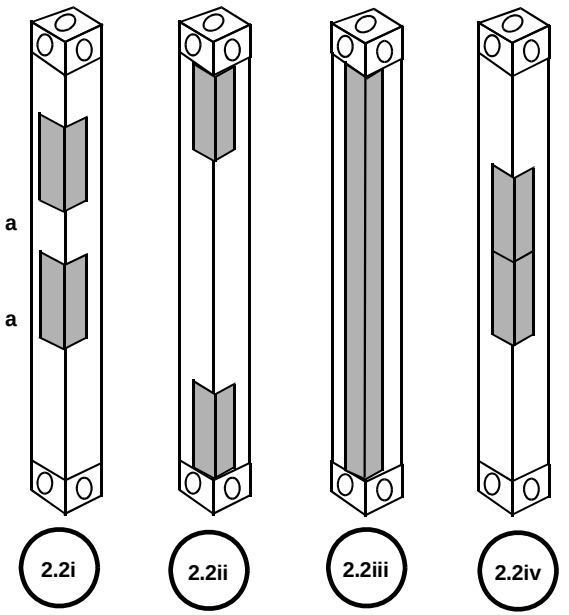
2.1i b. less than 300 mm from casting.

2.1ii less than 150 mm between inserts.

2.1iii overlapping inserts.

2.1iv more than two inserts per post.

Acceptable Damage



2.2i a min. distance between inserts is 150mm.

2.2i b minimum size insert is 150mm.

2.2.ii min. insert at post ends is 300 mm.

2.2iii a full-leng
.0th insert is allowed.

2.2iv two inserts may have a common weld.

2.b TOP /BOTTOM /SIDE /END /CRASH END RAILS
(Incl. stacking supports and centre mounted crash rails)

Not Acceptable Damage

- Cuts, holes gouges or splits.
- Cracks in welds or parent metal.
- Improper repairs.
- Dents or distortions greater than 25 mm.
- Out of straight greater than 25 mm per 2m.
- Distortion reducing clearance between end bottom rail and valve to less than 5mm.
- Severe corrosion.
- Loose or missing fasteners.
- Out of ISO.

- **Acceptable Damage**

- Dents or distortions not exceeding 25mm.
- Dents in bottom face of bottom rails which do not affect any formed edge.

NOTE: If the damage cannot be straightened and it is necessary to repair either by an overplate, insert or a section then the following criteria will apply when assessing the type and extent of repair required.

The minimum permissible length of an overplate, insert or section repair is 50mm; no maximum limit.

No insert or section may finish within 50mm of the corner fitting weld or within 50mm of an existing vertical weld.

If the planned insert or section will end within these areas then the repairs should be extended to the corner fitting or the existing weld.

Over-plating is restricted to the top, bottom and inside faces of the rail where the formed edge is free of damage.

2.c) ANCILLARY BRACING AND LOAD TRANSFER AREAS (LTA)

Not Acceptable Damage

- Cuts, holes gouges or splits.
- Cracks in welds or parent metal.
- Improper repairs.
- Dents and distortions greater than 25mm.
- Out of ISO.
- Severe corrosion.
- Loose or missing fasteners.

Acceptable Damage

- Dents and distortions less than 25mm.

2.d) TANK BEARER SUPPORTS

Not Acceptable Damage

- Cuts, holes gouges or splits..
- Cracks in welds or parent metal.
- Improper repairs.
- Dents or distortion greater than 20mm
- Dents of a formed edge greater than 13mm.
- Severe corrosion.
- Loose or missing fasteners.
- Out of ISO.

Acceptable Damage

- Dents not exceeding 13/20mm in depth as qualified above.

NOTE: In all cases of damage to tank bearer supports the tank shell must also be inspected for damage.

In all cases of severe corrosion to the tank bearer supports the section of the bearer attached to the shell below the insulation must be checked for structural integrity. This may require local removal of insulation.

The criteria for repair is detailed in 2(b) above except that over-plating is not permitted.

e) ISO DIMENSIONS (FRAME)

Not Acceptable Damage

i) Diagonals

- Any damage which affects the ISO required diagonal measurements between corner fitting apertures.

NOTE: The maximum permitted difference in distance between centres of apertures of diagonally opposite corner fittings are:

20' container: 13mm
All end frames: 10mm

ii) End Frame:

- Any dent, bend or bow beyond the limits of the ISO corner fittings.

iii) Side Frame

- Any dent, bend or bow beyond the limits of the ISO corner fittings.

iv) Top or Underside

- Any dent, bend or bow beyond the limits of the ISO corner fittings.

v) Cladding

- Any dent, bend or bow beyond the limits of the ISO corner fittings.

3 WALKWAY AND LADDER ASSEMBLY

Not Acceptable Damage

- Insecure.
- Cuts, holes, dents affecting safety.
- Distortions greater than 50mm.
- Dents greater than 25mm.
- Out of ISO.
- Missing or loose fasteners.

Acceptable Damage

- Distortions not exceeding 50mm and less than 1 m long and not affecting safety.
- Dents and distortions not exceeding 25mm and not affecting safety.
- Cuts, holes, dents not affecting safety.

4 PAINTWORK

Not Acceptable Damage/Condition

- Severe Corrosion.
- Severely damaged by cargo contamination.
- Excessive scrapes and abrasions or delamination

Acceptable Damage

- Superficial Corrosion.
- Discoloration or faded paint colour.
- Minor scrapes and abrasions.

Note: where corrosion is equivalent to Euro standard Re4 or above, then remedial work is required.

5 INSULATION AND CLADDING

5.a) INSULATION

Not Acceptable Damage/Condition

- Missing insulation material.
- Saturated by water or cargo.
- Improper Repairs.
- Deterioration by heat (burnt or baked).

5.b) CLADDING

Not Acceptable Damage/Condition

- Cuts, holes, crack or splits penetrating the cladding thickness and allowing moisture ingress.
- Gaps at cladding joints allowing moisture ingress.
- Deterioration by heat (burnt or baked).
- Insecure cladding or retaining straps.
- Surface damage or staining of cladding due to cargo contamination.
- Severe corrosion.
- Improper Repairs.
- Distorted outwards beyond the limits of ISO.
- Dents greater than 25 mm.
- Hammered surface (golf ball surface)

Acceptable Damage/Condition

- Distortion not affecting security nor allowing moisture ingress except as stated above.
- Abrasion.
- Full belly GRP patch on existing aluminium cladding.

NOTE: In all cases of damage to the cladding, the tank shell, heating tubes and electrical components must also be checked.

NOTE: The following criteria will apply when assessing the type and extent of repair required.

Use overlay riveted patches as the standard repair.

Minimum patch size	150 x 150 mm.
Min. thickness - GRP	2 mm
Min. thick. - Aluminium alloy	0.9 mm

The GRP or alloy colour must match original. Use overlay fibre glass tissue as the standard repair to formed GRP surfaces where riveted patches are impractical.

Infill repairs should be used for holes less than 25mm to FRP /GRP.

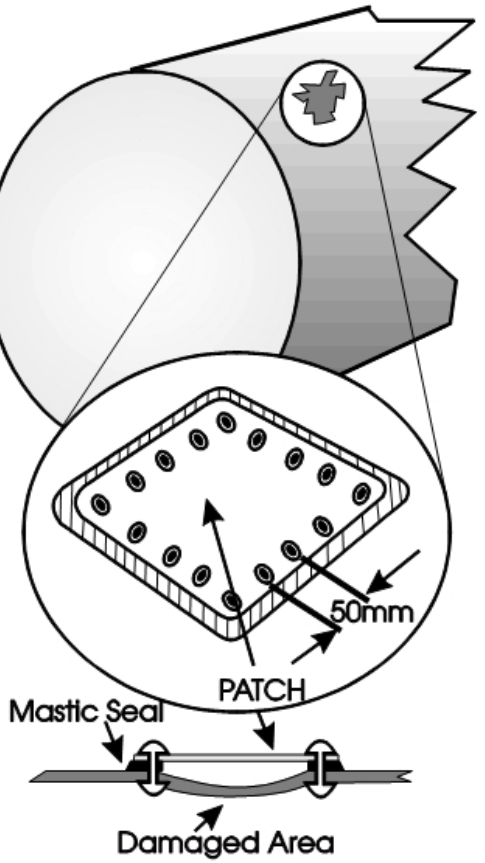
Extend patches to the retainer strap where the patch is within 30 cm of the strap.
Care must be taken to ensure that drills or rivets do not damage the shell, steam tubes or electrical components beneath the cladding.

Multiple patches on panel

If when redelivered to depot the number of repairs or patches either present or required as part of the repairs, distracts significantly from the aesthetic appearance of the tank, then that section or panel must be replaced to achieve a more aesthetic appearance to the tank.

A number of small patches (multiple patches in the same area) can be replaced with a larger single patch or renewed panel in order to achieve a more aesthetic result.

Cladding Patch Repair



Section through Patch

6 MANWAY ASSEMBLY

6.a) MANLID AND SWINGBOLT ASSEMBLIES

Not Acceptable Damage/Condition

- Leaks.
- Missing customs sealing ring.
- Dents or distortion greater than 6mm or affecting proper sealing of the manlid.
- Missing, insecure, seized or non-operational parts.
- Cracks.
- Pitting, corrosion or contamination.
- Improper repairs.

Acceptable Damage/Condition

- Non-standard hand nuts and pivot pins that are of similar design and material e.g. bronze or stainless steel.

6.b) MANLID SEAL

Not Acceptable Damage/Condition

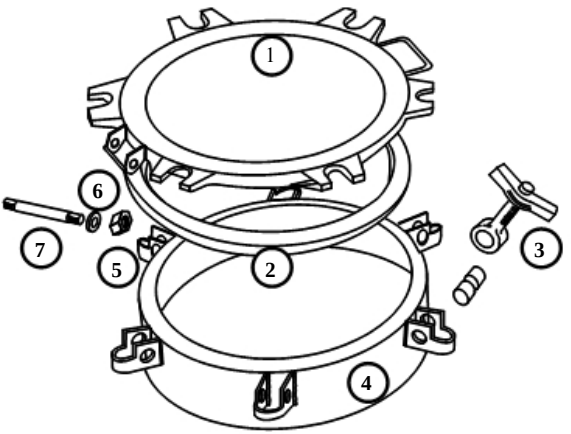
- Cuts, cracks or distortion affecting sealing.
- Contamination
- Square butt joints and /or joints not properly sealed.
- Missing or insecure.

Acceptable Damage/Condition

- Minor surface degradation (perish), which does not contain contamination and does not affect sealing.

NOTE: Seals may be cleaned and re-used or be "turned" to use both sides.
See paragraph 8 below for details of standard seals and gaskets.

MANLID



ITEM	DESCRIPTION
1	Cover
2	Seal ring
3	Swingbolt assembly
4	Neckring
5	Hinge pin
6	Self locking nut
7	Washer
8	Main hinge pin

6.c) DIPSTICK AND CALIBRATION CHART

Dipsticks are not fitted as standard.

Not Acceptable Damage/Condition

- Distortion or damage to the dipstick assembly preventing operation.
- Non stainless steel (AISI 316).
- Contamination or corrosion.
- Illegible or insecure.

NOTE:

- All tanks are fitted with a calibration chart.

- If a dipstick is fitted at the time of off-hire remove and place into GE SeaCo stock.

7 SAFETY VALVES

7.a) PRESSURE ONLY OR PRESSURE AND VACUUM RELIEF VALVES

Not Acceptable Damage/Condition

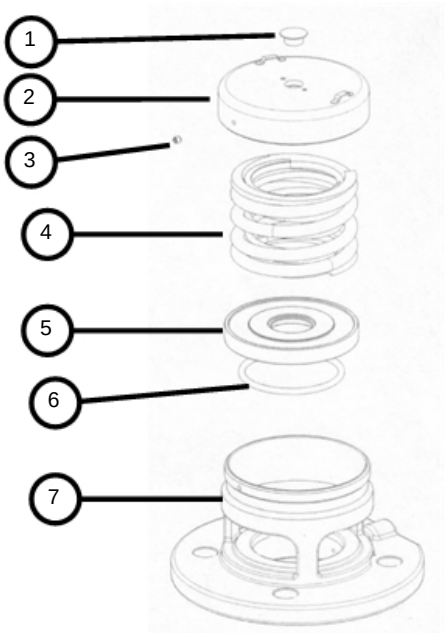
- Contamination or corrosion
- Missing parts.
- Distortions affecting correct operation.
- Leaks or incorrect pressure setting.
- Missing or non-operational Customs sealing ring.
- Improper repairs, seals or gaskets.
- Missing or illegible statutory markings.

Acceptable Damage/Condition
Missing TIR wires where customs ring is fitted. Missing dust plug.

NOTE: Standard Seals

Component	< 2.65 bar	> 2.65 bar
Pressure	Viton A	PTFE Envelope Viton
Vacuum	Viton A	PTFE
Gasket to Tank	PTFE envelope Compressed fibre	PTFE envelope Compressed fibre

RELIEF VALVE



Item	Description
1	Plastic plug
2	Cap
3	Setting locking grub screw
4	Pressure spring pair
5	Pressure Plate
6	Vacuum spring pad
7	Body

7.**b) FLAME ARRESTOR GAUZE (**where fitted)

Not Acceptable Damage/Condition

- Missing parts (only if originally fitted).
- Damage or distortion affecting proper operation.
- Contamination.

NOTE: Flame arrestors are not fitted to pressure only valves or to non-hazardous tanks.

c) RUPTURE DISC ASSEMBLIES
Bursting Disc (where fitted)

Not Acceptable Damage

- Leaks or incorrect pressure rating.
- Contamination or corrosion.
- Damage (broken) or distortion affecting correct operation or sealing.
- Improper parts, repairs, seals or gaskets.
- Damaged pressure gauge (tell-tale gauge) affecting correct operation.

NOTE: Rupture discs are not normally fitted as standard. Many tanks have rupture disc flange assemblies fitted. Where rupture discs and flange assemblies are in good condition they should remain on the tank. A damaged disc must be removed.

Rupture discs and tell-tale gauge are fitted as standard to top outlet only tanks and special tanks e.g.

- TY0, TY1, TY2
- TD0, TD1, TD2
- TA0, TA1, TA2, TA4
- TH1, TH2, TH4
- TZ1T, TZ2T, TZ3T, TZ4T, TZ5T, TZ6T, TZ7T, TZ9T.
- TU2T, (and applicable TS2).

NOTE: check with ETS Dept. regarding rupture disc requirements.

8 TOP VALVES

8.a) AIRLINE VALVE (VENT / VAPOUR RETURN VALVE)

Not Acceptable Damage

- Leaks.
- Contamination or corrosion.
- Damage or distortion affecting correct operation or sealing.
- Non-stainless steel (300 series) parts.
- Defective or non-stainless steel pressure gauge.
- Missing /broken cap, seal or chain.
- Improper repairs, seals or gaskets.
- Non-stainless steel cap,
- Missing or non-operational Customs sealing ring.
- Missing or non-operational parts.

NOTE:

- Gauges (manometer) are not fitted as standard but should not be removed (and aperture plugged) unless defective.
- Outlet screw fitting BSP standard for 6 bar tanks, 10 bar tanks are fitted with a bolted flange.
- Standard seals and gaskets, see below

8.b) TOP OUTLET VALVE (where fitted)

Not Acceptable Damage

- Leaks.
- Contamination.
- Damage or distortion affecting correct operation or sealing.
- Missing or non-operational parts.
- Damaged seals affecting proper sealing.
- Improper repairs, seals or gaskets.
- Non-stainless steel (300 series) parts.
- Non standard parts Missing Customs Sealing ring.

NOTE: Provision is made for top outlet valves but the top valve is not fitted, as standard, to tanks with bottom outlets.

Where valve is fitted do not remove.

The aperture (when a valve no fitted) must be fitted with a bolted blank plate.

NOTE: top outlet only tanks must be fitted with syphon pipe.

8.c) Syphon Pipe (Dip Pipe)

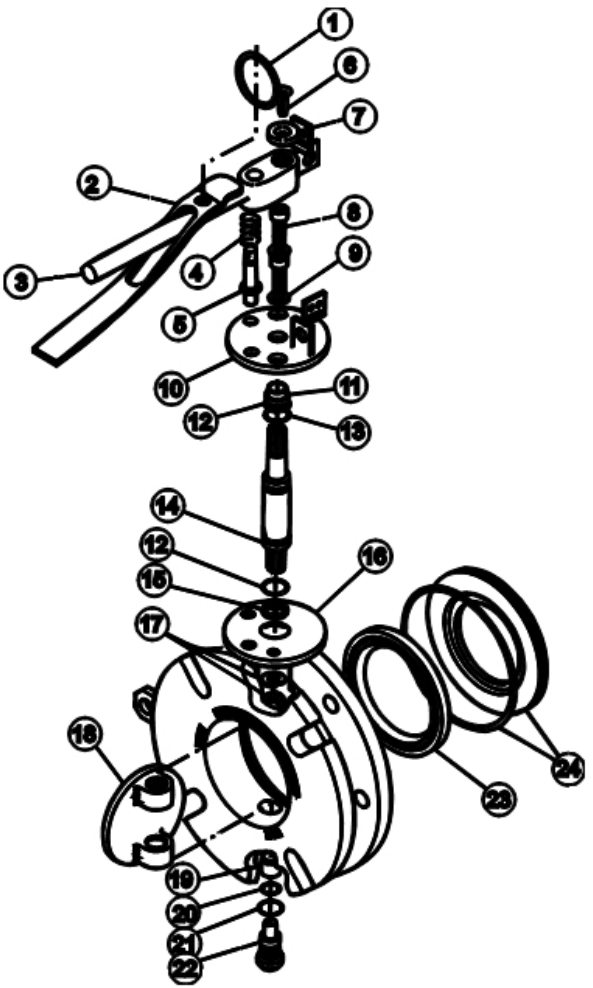
Not Acceptable Damage

- Leaks.
- Contamination.
- Damage or distortion affecting correct operation or sealing.
- Missing or non-operational parts.
- Non-stainless steel
- Gap (at bottom less than 8mm, greater than 14mm)

TOP DISCHARGE

ITEM	DESCRIPTION
1	Pull ring
2	Handle lever
3	Handle (LH)
4	Spring
5	Handle location pin
6	M6 x 16 screw
7	Retaining washer
8	M8 x 20 capscrew (2)
9	M8 spring washer (2)
10	Stuffing clamp flange c\w TIR
11	PTFE bush
12	PTFE 'O' ring (2)
13	Viton 'O' ring
14	Spindle
15	Spindle seat
16	Body
17	M8 nut (2) M8 spring washer (2)
18	Closure plate
19	PTFE lower spindle bush
20	PTFE 'O' ring
21	PTFE 'O' ring
22	Lower spindle
23	PTFE seal
24	Seal clamp & Nitrile 'O' ring

TOP DISCHARGE



STANDARD SEALS AND GASKETS

Component	< 2.65 bar	> 2.65 bar
Safety Valve Pressure'O' Ring	VITON A	PTFE env VITON
Safety Valve Vacuum	PTFE env	PTFE
Safety Valve Gasket to Tank	PTFE env CF	PTFE env CF
Airline Seals	PTFE	PTFE
Manlid Seal		
a) Food Grade	SWR	SWR
b) Chemical Grade	PTFE Braid	PTFE Braid
c) bolted manlid	PTFE	-
Top Outlet Valve 'O' Ring	VITON A	PTFE env VITON
Top Outlet Valve Seals	PTFE	PTFE
Outlet Blank Plate	-	PTFE env CF
Foot Valve 'O' Ring	VITON	PTFE env VITON
Bottom Outlet Valve Seals	PTFE	PTFE
Valve to Tank Gaskets	PTFE env CF	PTFE env CF
Outlet cap Seals	SWR	PTFE
Provisional aperature flange	PTFE env CF	PTFE env CF

Note Env = envelope
CF = compressed fibre

8.c) TOP OUTLET BLANK

Not Acceptable Damage

- Leaks.
- Contamination or corrosion.
- Damage or distortion affecting correct operation or sealing.
- Missing or defective parts.
- Non stainless steel.
- Contamination.

Acceptable Damage/Condition

Zinc plated galvanised steel bolts.

9 SHELL

Not Acceptable Damage

- Leaks.
- Cuts, cracks.
- Defects to welds or parent materials.
- Gouges, scratches or badly executed grinding (erratic pattern) deeper than 0.1mm.
- Excessive grinding or other metal depletion which reduces the shell thickness to less than the minimum.
- Grinding coarser than120 grit, and excessive grinding scars /uneven pattern.
- Corrosion or pitting.
- Stress corrosion.
- Improper repairs or non-standard fittings.
- Sharp indentations, creases or dents.
- Dents greater than 6mm to the top third of the tank shell.
- Dents greater than 10mm to the bottom two thirds of the tank shell.
- Hammer marks (golf ball surface)

Acceptable Damage/Condition

- Gradual distortions /slow dents measured over the length between exterior stiffeners less than 10mm in the bottom two thirds or less than 6mm in the top third of tank shell.
- Light abrasions or scratches to 120 grit polish equivalent or finer.
- Superficial etching with no resulting contamination traps. (Type A and where the thickness is not below the minimum.)
- Original manufacture rolling marks.

NOTE: Statutory re-testing is required after all welded repairs to the tank shell.

Where pitting is recorded a thorough investigation must be carried out.

An Internal Shell Condition Chart must be completed whenever defects requiring repair are detected.

NOTE: All pitting must be reported by type, surface area affected and location on the chart detailed in Section 3. An inspection must be carried out to determine the depth of pitting and that visible pitting does not mask cavity pitting or stress corrosion.

The investigation will involve localised polishing of the surface followed by visual examination with the aid of a magnifying glass and dye penetrant.

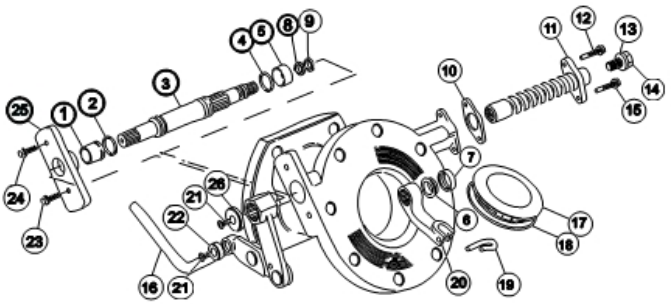
10 BOTTOM VALVES

a) FOOT VALVE

Not Acceptable Damage

- Leaks.
- Contamination or corrosion
- Damage or distortion affecting correct operation or sealing.
- Improper repairs, seals or gaskets. - Non-stainless steel parts.
- Missing or broken Customs sealing ring.

NOTE: Standard seals and gaskets: See paragraph 8 above.



FOOT VALVE

ITEM	DESCRIPTION
1	Stuffing seal
2	Viton seal
3	Spindle
4	PTFE seal
5	Spindle bearing
6	Seal energiser
7	Bush seal
8	PTFE seal
9	Viton 'O' ring
10	Spring boss gasket
11	Spring assembly
12	Clamp bolt (2)
13	PTFE 'O' ring
14	M10 x 15 bolt
15	Spring washer (2)
16	Handle assembly
17	Poppet
18	Fortyt 'O' ring
19	Retaining pin
20	Lift fork
21	Countersunk screw (2)
22	Retaining washer
23	Clamp bolt (2)
24	Spring washer (2)
25	Stuffing clamp
26	Retaining washer

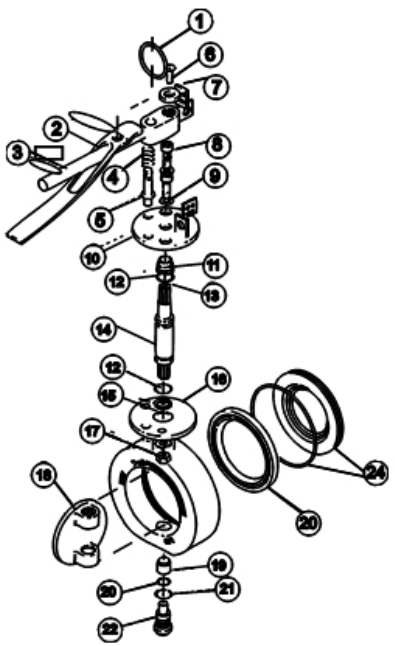
b) BOTTOM OUTLET VALVE

Not Acceptable Damage

- Leaks.
- Contamination or corrosion.
- Damage or distortion affecting correct operation or sealing.
- Improper repairs, seals or gaskets. - Non-stainless steel parts.
- Missing or broken Customs sealing ring.

NOTE: Standard seals and gaskets. See Section 8.2

The Bottom Outlet valve terminates in a 3" BSP screwed outlet. If any other fitting is present, contact GE SeaCo Operations Centre to determine if the standard part is to be re-instated.



BOTTOM OUTLET

ITEM	DESCRIPTION
1	Split ring
2	Operating lever
3	Handle (LH)
4	Handle location spring
5	Handle location pin
6	M6 countersunk screw
7	Retaining washer
8	M8 x 25 socket capscrew (2)
9	M8 washer (2)
10	Stuffing clamp
11	PTFE bush
12	PTFE 'O' ring
13	Viton 'O' ring
14	Spindle
15	PTFE seal
16	Body
17	M8 spring washer (2) M8 nut (2)
18	Closure plate
19	PTFE lower spindle bush
20	PTFE 'O' ring
21	PTFE 'O' ring
22	Lower spindle
23	PTFE main seal
24	Nitrile 'O' ring Clamp plate

c) OUTLET BLANK (BLIND) FLANGE

Non Acceptable Damage

− Leaks.
− Contamination or corrosion. −
Non - stainless steel.
− Damage or corrosion affecting operation −
Missing Customs sealing ring.

d) OUTLET CAP (screw cap)

Not Acceptable Damage −

Leaks
− Contamination or corrosion. −
Missing parts.
− Non - stainless steel.
− Damaged or improper screw threads. −
Missing or broken chain.
− Damage or corrosion affecting operation

Note: standard screw thread is BSP.

e) REMOTE TRIP

Not Acceptable Damage

− Damage rendering remote trip inoperable. −
Seized.
− Insecure.

NOTE: Remote trips are fitted as standard to bottom outlet I>2.65 bar tanks.

e) FUSIBLE LINK

Not Acceptable Damage

- Damage rendering fusible link inoperable.
- Insecure.
- **NOTE**: Fusible links are not fitted as standard to pre-2003 manufactured tanks. Where fitted, the link must remain in place.

11 HEATING

a) STEAM TUBE AND CAP

Not Acceptable Damage

- Leaks.
- Damaged screwed fittings.
- Missing dust caps.
- Missing or broken chain.
- Distortion to the tank shell, (due to overpressure or ice expansion).

Acceptable Damage/Condition

- Tight dust caps which require to be removed by use of a **normal** wrench.

NOTE: In all cases of damage the steam tubes must be pressure tested.

Defective steam traps should be removed; replacement is not required.

Steam tube dust caps may be made from aluminium casting, stainless steel, gun metal or bronze. Replacement caps must be of the most economical material.

b) THERMOMETER

Not Acceptable Damage

- Not operationing correctly.
- Broken face or dial.
- Missing or insecure.
- Improperly fitted.

Acceptable Damage/Condition

Condensation which does not prevent legibility. Non standard type.

NOTE: Thermometers are fitted as standard to **ALL** insulated tanks.

c) ELECTRIC HEATING

Not Acceptable Damage

- Non operational.
- Damage or deterioration that may allow moisture ingress to control boxes or elements.
- Insecure components, cables or terminals. - Corroded terminals or components.
- Improper repairs.
- Earth leakage less than 1 megohm. - Missing parts.

NOTE: All parts must be well maintained and fully operational.

An electric heating function test is required at off-hire (to prepare the EIR/RE) and at on-hire (pre-trip inspection) for **EVERY** tank.

A supply cable of approximately 6m length and a CE17 plug are fitted as standard.

12 MISCELLANEOUS

a) DECALS AND DATA PLATES

Not Acceptable Damage −
Insecure.
− Missing or illegible plates. −
Missing or illegible.
− Obscured or partly missing decals.
− Twisted or bent beyond limits of ISO.

Acceptable Damage/Condition −

Scuffs and scratches.
− Dents or distortion except as qualified above.

NOTE All Statutory markings (decals and plates) must be present,.

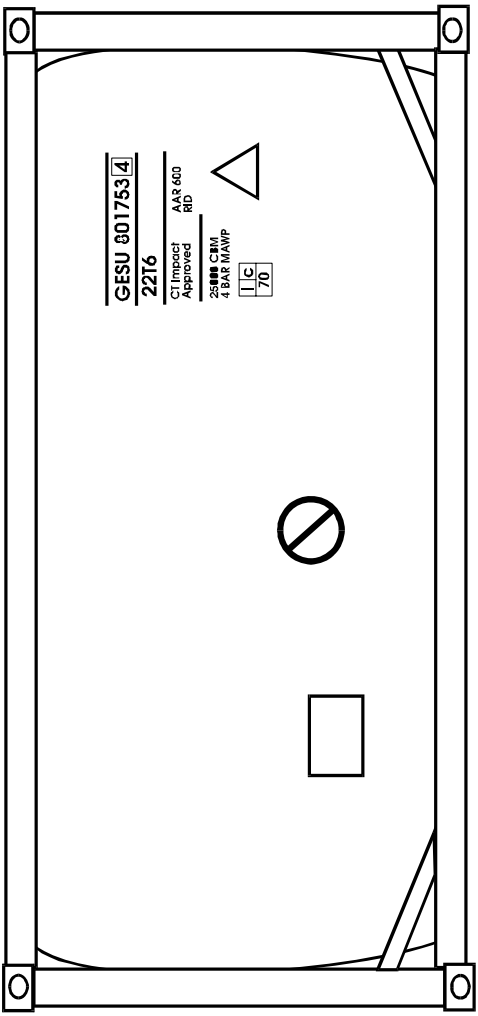
The company logo (SeaCo, GE SeaCo) is not a statutory marking and as such is not required.

If the logo is damaged or a repair is carried out over the logo then the logo should be either

- repaired in part as necessary,
- replaced completely or
- removed completely

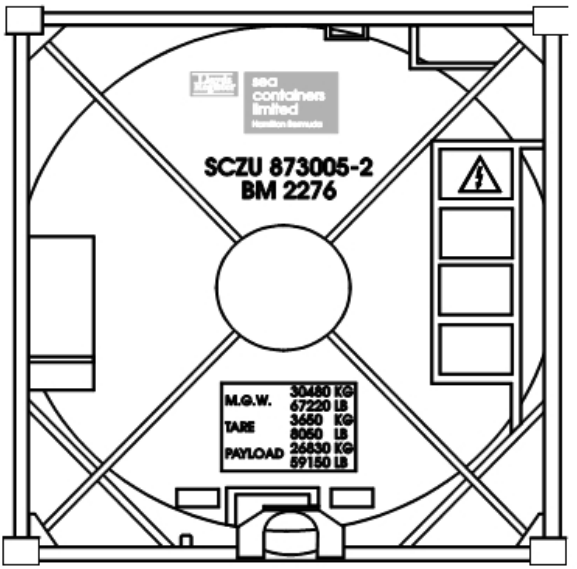
using the cheapest option.

TANK MARKINGS



Note: Some markings are only statutory it the tank is operated in a specific country or region, e.g. ADR,RID or BAM.

TANK MARKINGS CONTINUED



b) DOCUMENT HOLDER

Not Acceptable Damage

− Missing, defective or non-operational. − Insecure.
− Water filled, or blocked drain-hole.

Acceptable Damage/Condition −

Non standard type.

c) SPILL BOX AND COMPARTMENTS

Not Acceptable Damage

- Non operational.
- Cargo residue or waste material.
- Twisted or bent beyond the ISO limits. - Blocked drain tubes.
- Damaged.
- Insecure doors /lids where fasteners do not tightly secure the lid for transport.
- Missing Customs sealing ring and door fasteners.

Acceptable Damage/Condition

- Dents, distortions or splits except as qualified above.

d) EARTH (Ground) LUG

Not Acceptable Damage

- Damaged, missing or painted.

13 TEST

a) Leak Test

Leak tests are required under the following circumstances:

- as part of the off-hire survey to check the tank shell, valves, safety valves and fittings.
- Following repair completion where the tank failed the off-hire leak test.
- Following repair completion where repairs could have affected the tank leak tightness.

This test does not replace the periodic leakage or hydrostatic test which is performed as part of the 2.5 or 5 year test procedures.

b) Leak Test Procedure

The tank container should be pressurised with air as the pressurising medium. The Test Pressure should be a minimum pressure of 1bar and a maximum of 25% of the barrel's Max. Allowable Working Pressure (MAWP).

This test will be used to test the integrity of the tank barrel, valves and fittings.
The pressurising medium should be introduced to the tank and raised (slowly and with due care) to the required pressure. When the required pressure is reached it must be held for 10 minutes without loss in pressure.

The exterior flanges, valves and fittings must be checked to ensure that they are not leaking. Leaks can be identified by the continual formation of bubbles in the solution when it is introduced around the area being tested.

The bottom outlet valve should be tested using an apparatus similar to that shown below.

Checking the foot valve and the outlet valve separately.

Due to the nature of the air test medium it might seep pass the sealing faces where a liquid will not leak. Because of this it is permissible for the internal valve seals to seep a tiny amount in accordance with the criteria.

Re-setting the foot valve (by opening and slamming) might be necessary to stop leaks.

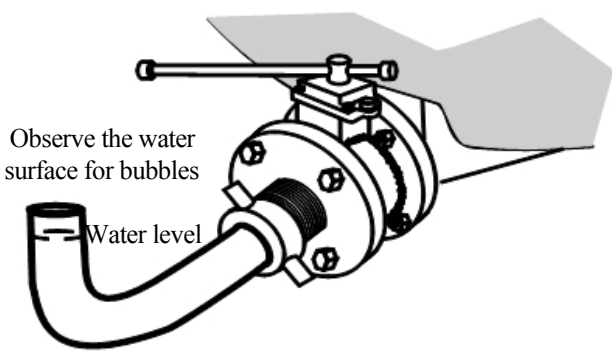
Not Acceptable Damage

Leaks.

Acceptable Damage/Condition

Manufacturers tolerance as noted below.

Set-up to Leak Test Bottom Outlet Valve



Location /Component	Air Tolerance	Liquid Tolerance
Shell	Zero	Zero
Manlid, manlid seal	Zero	Zero
Flanges, gaskets	Zero	Zero
Exterior of all valves	Zero	Zero
Relief valve O ring	Zero	Zero
Airline butterfly valve ball seal	Manufacturers tolerance	Zero
Airline valve closure plate seal	Manufacturers tolerance	Zero
Butterfly valve closure plate seal	Manufacturers tolerance	Zero
Foot valve closure plate O ring	Manufacturers tolerance	Zero
Bottom valve assembly (both valves closed)	Zero	Zero
Outlet cap or plate	Zero	Zero

c) Statutory Test

Statutory re-testing is required after all welded repairs to the shell and as noted below.

NOTE: Dangerous goods cargo may only be transported in a tank container that has a valid test certificate.

Determination of which statutory test to carryout must be based on the criterion below:

- A 2.5 year leak test should be carried out when a 2.5 year test is due (i.e. 2.5 years after the last 5 year test) providing the test is up to 3 months or less before or after test expiry.
- Any tank that requires a 2.5 year test but the test is more than 3 months before or after expiry date should be given a 5 year test.
- Any tank that requires a 5 year test should be given a 5 year test
- Any tank arriving into depot with 6 months or less remaining test date should be tested as part of the estimate.
- Any unit in depot under repair where the test date has 6 months or less remaining should be tested at the time of repair.
- Any unit in depot where the unit is status A and the test becomes due within 6 months should be tested (except where instructions not to test the tank are issued in writing because the unit is not a demand unit)
- Any unit in depot to be delivered to a customer should have 6 months (or more) test remaining at the day of delivery (except when notified in writing to the contrary).

Test Intervals

The table below gives the maximum interval between tests or examinations that is acceptable to the Competent Authorities.

Test or Examination	Maximum interval between tests required by the regulations (years)			
	IMO	US DOT CFR 49	ADR RID	CSC
5 year, hydraulic tank test at test pressure	5	5	5	-
2.5yr Leak test, pneumatic tank test at <MAWP	2.5	-	2.5	-
Relief valve operation test	2.5	2.5	2.5	-
Visual inspection interior	2.5	2.5	2.5	-
Visual inspection waiver at 2.5 year subject to approval	yes	no	yes	-
Visual inspection exterior Valves and fittings	2.5	2.5	2.5	-
Visual inspection structure	2.5	2.5	2.5	2.5
2.5 year test date tolerance (days)	<90 >90	<180 >0	<180 >0	<180 >0
2.5 year test waiver (dedicated cargo, subject to approval)	yes	yes	yes	yes
Tolerance overdue test (dedicated cargo, subject to approval)	180	0	0	0

Note • Tests are required for tanks used to transport hazardous cargo, class 2, 3, 4, 5, 6, 7, 8, 9

• The regulations do not require tests for non hazardous, non regulated cargo except CSC

• Tanks used for static storage within a plant should comply with local regulations - transportation regulations do not necessarily apply

Section 9

CONVENTION FOR SAFE CONTAINERS (CSC)

Section 9 - Convention for Safe Containers

Contents of Section

CONVENTION FOR SAFE CONTAINERS (CSC)

1 INTRODUCTION

Every container must be checked on return to depot to ensure that it carries a valid data plate. This consolidated data plate should incorporate a CSC plate. If the data plate does not include a CSC plate then this must be fitted separately.

In addition every container must be checked to ensure that it is marked to indicate that it is operated under GE SeaCo's **Approved Continuous Examination Programme (ACEP)**. See paragraph 3 below for detailed instructions.

2 FITTING A CSC PLATE

A new data plate must be fitted when:

- The original data plate has been lost.
- The container has never been fitted with a data plate.

Contact the GE SeaCo Operations Centre for the technical data, which must be stamped on the plate.

All letters and numbers stamped on the plate must be a minimum of 5mm in height. An example of a typical data plate and the data required is illustrated below.

The new CSC plate must be fixed in a readily visible place as close as possible to other existing approval plates e.g. Customs Type Approval plate etc.

The majority of GE SeaCo tanks are fitted with a consolidated data plate, (as shown below).

Use 4mm diameter zinc plated steel drive or self-sealing pull rivets to fix the plate to the tank frame.

3. MARKING THE CONTAINER TO INDICATE THAT IT IS OPERATED UNDER ACEP

Every tank must be marked with the standard GE SeaCo ACEP approval number or a decal bearing the approval number **ACEP-BDA-01** on or next to the CSC plate. This approval number is unique to GE SeaCo and if a decal bearing any other approval number is found on the container it must be removed.

If the ACEP decal is missing, a decal bearing the above approval number must be fixed to the CSC plate in the section entitled *Next Examination Due.* Alternatively, if there is insufficient space, fit the decal immediately next to the CSC plate.

The standard ACEP decal is illustrated below:

GE SeaCo Ops Centres/Depots must obtain supplies of the GE SeaCo ACEP decal from Engineering and Technical Services Dept., GE SeaCo London.

Appendix 9.1 - DATA PLATE

GE SEACO srl

BRIDGETOWN BARBADOS

TANK SERIAL No. SCZU 870030-8

MANUFACTURE BY YORKSHIRE MARINE CONTAINERS
ADDRESS BEVERLEY ENGLAND
Date OF MANUFACTURE:
MANUFACTURER'S SERIAL NO:

TANK DESIGN CODE: ASME. SECT. VIII DIV.1
TANK TYPE UN
PORTABLE TANK T11:

CAPACITIES/WEIGHTS/DIMENSIONS
NOMINAL LIQUID CAPACITY 24,000 LITRES
TOTAL MEASURE WATER CAPACITY AT 200C

24010	6343	US
TitARE WEIGHT:	3650 kg	8046 lb
MAXIMUM PAYLOAD:	26830 kg	59150 lb
MAXIMUM GROSS WEIGHT:	30480 kg	67200 lb

PRESSURES

TANK WORKING PRESSURE:	4-0 bar	58 lb/in
TANK TEST PRESSURE:	6-0 bar	87 lb/in
STEAM TUBE WORKING PRESSURE:	4 bar	58 lb/in
STEAM TUBE TEST PRESSURE	6 bar	87 lb/in

TEMPERATURES
AMBIENT TEMPERATURE RANGE:
METALLURIGAL DESIGN TEMPERATURE:
MAXIMUM PRODUCT TEMPERATURE
TOTAL HEAT LEAKAGE FACTOR:
FOR TEMPERATURE DIFFERENCE RANGE:

MATERIALS
TANK SHELL & ENDS BS1501:PART3: 316S33.
TANK WELDS BS316S92. STEAM DUCTS 316S33
SHELL THICKNESS 4.8mm, ENDS 5.7mm
EQUIVALENT MIN.THICKNESS MILD STEEL 6.35mm
INSULATION POLYURETHANE
FRAME BS 50C HIGH TENSILE STEEL

CONNECTIONS

BOTTOM OULET 3 inch	AIRLINE 2 inch BSP
TOP OUTLET 3 inch BSTD	STEAM TUBES .75 inch BSP

INSPECTING AUTHORITY
LLOYD'S REGISTER INDUSTRIAL SERVICES

REGULATING AUTHORITIES AND APPROVAL/PERMIT Nos.

Approval No.	DOT (UK) IMO Type 1
	DOT (US) IMOO1
ADR/RID CERT No 032567	CTC

UIC APPROVAL RAILWAYS CODE
COUNTRY OF APPROVAL UNITED KINGDOM

TESTS
FIRST AND SUBSEQUENT TEST DATES 4/92
5 YEAR TEST DATE
WITNESS MARK

CSC SAFETY APPROVAL

APPROVAL REFERENCE	GB-LR 7708-3/92	
DATE MANUFACTURED	APRIL 92	
IDENTIFICATION NO.	SCZU 870030-8	
MAXIMUM GROSS WEIGHT	30,480 kg	67,200 lb
ALLOWABLE STACKING WEIGHT FOR 1.8G	162,560 kg 15240 kg	358,380 lb
RACKING TEST LOAD VALUE		33,600 lb

2R LONGITUDINAL INERTIA &IR LATERAL INERTIA TESTED

ACEP BDA-01