



USER MANUAL

Rev 02

Issue date: 26/01/2015

Original Instructions



Introduction

This manual contains information for operating, maintaining and storing the TORO personnel carrier.

The key to safe operations is the familiarisation and participation in planning of all crew involved. Please refer to the Crane Transfer Guidelines. This is a separate document that contains comprehensive guidance and information on each element of operation. It is for those researching, planning, managing or carrying out the safest possible crane transfers.

Safe and proper use of the TORO is the responsibility of the user after having taken due regard of the information provided in this document.

You should ensure that all safety measures as required by relevant legislation and by good operational practice are in place.

Appropriate training should be provided for all personnel involved in the use of this device.

For the purposes of this manual RML will be deemed to mean Reflex Marine.

Please retain this manual for future reference. Additional copies may be obtained by contacting Reflex Marine or by downloading the latest version from www.reflexmarine.com/support.

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1 Product Specifications

Table 1 Product Specifications

Model No.		RT4
Dimensions (Nominal)	Width 1	1988 mm
	Width 2 (Across Buoyancy)	2109 mm
	Height	2089 mm
Weight	Maximum Gross Mass	815 kg
	Tare Weight	375 kg
	Payload - SWL	440 kg
Materials	Frame	316 Stainless steel, A4 stainless steel fixings
	Central Column / Lift Eye Plug	316 Stainless Steel
	Other Steel Components	All stainless steel except for floor grating
	Floor Grating	S235JR, GALVANISED TO BS 1461
	Buoyancy	PE moulded shell with Polyurethane (PU) closed cell foam fill.
	Seat Base	PE moulded shell with Polyurethane (PU) closed cell foam fill.
	Landing Feet	EVA Foam
Operating Temperatures	Standard Model	-20°C to +50°C
Suspension	Feet	EVA foam feet designed to absorb hard landing impact
	Seat Cushions	Integral skin polyurethane seat cushion designed to absorb hard landing impact
Seating	Seats	4 x Full Height Seats
	Harnesses	2 Point, Quick Release Buckle
	Grab Handles	2 Per Passenger
Lifting Points SWL	Main	815 kg
	Backup	815 kg
	Handling	800 kg
Wire Rope Lifting Assembly	Safe Working Load	2000 kg
	Wire Rope	Anti-rotation wire rope
Number of Passengers	Standard	4
	Stretcher Mode	2 + Stretcher
Impact Protection	Vertical impacts	Passengers are protected during heavy landings at speeds of up to 3 m/s
	Lateral impacts	Passengers are protected from lateral impacts at speeds of up to 2 m/s
Stability	Horizontal	35 degrees, for a load of 1-4 passengers.
	Submerged Self-Righting	Up to 180° with 2 passengers. 110° with 4 passengers
Type Approval	Class	CE - 24319/D963
		ABS - 09-LD408536-1-PDA
Quality	System	Manufactured to ISO 9001:2008
Standards	National Technical Standards	UK, BS EN 1993 series: The Use of Structural Steel in Building.
	Industry European Standards	EC Machinery Directive EN 14121-1, BS EN 12100-10 Load Test – ILO152 / LOLER
	National Regulations	UK, PUWER / LOLER

2 Operating Parameters

2.1 Overview

There are a large number of factors that affect the safe conduct of marine personnel transfers. These include crew skill and experience, met-ocean conditions, landing areas, vessel station keeping capability and response to sea conditions, visibility and line of sight. A combination of many factors will determine the risk involved in a transfer.

2.1.1 Operational Sea State

The TORO has inbuilt cushioning to minimise shock loads and maximise passenger comfort during take-off and landing. The maximum recommended significant wave height is determined by the maximum relative velocity between the TORO (or crane hook) and the landing deck.

The calculated sea states detailed below are based on vertical collision speeds and bio-mechanical considerations. They reflect the ability to withstand such impacts with minimal risk of injury to the human body. However, there are many additional factors that may affect the safety of crane transfer operations. These include vessel station-keeping, crew competence, wind speed and visibility. The operator should always refer to general guidelines on crane transfers operations to assess overall risks.

Technical note:

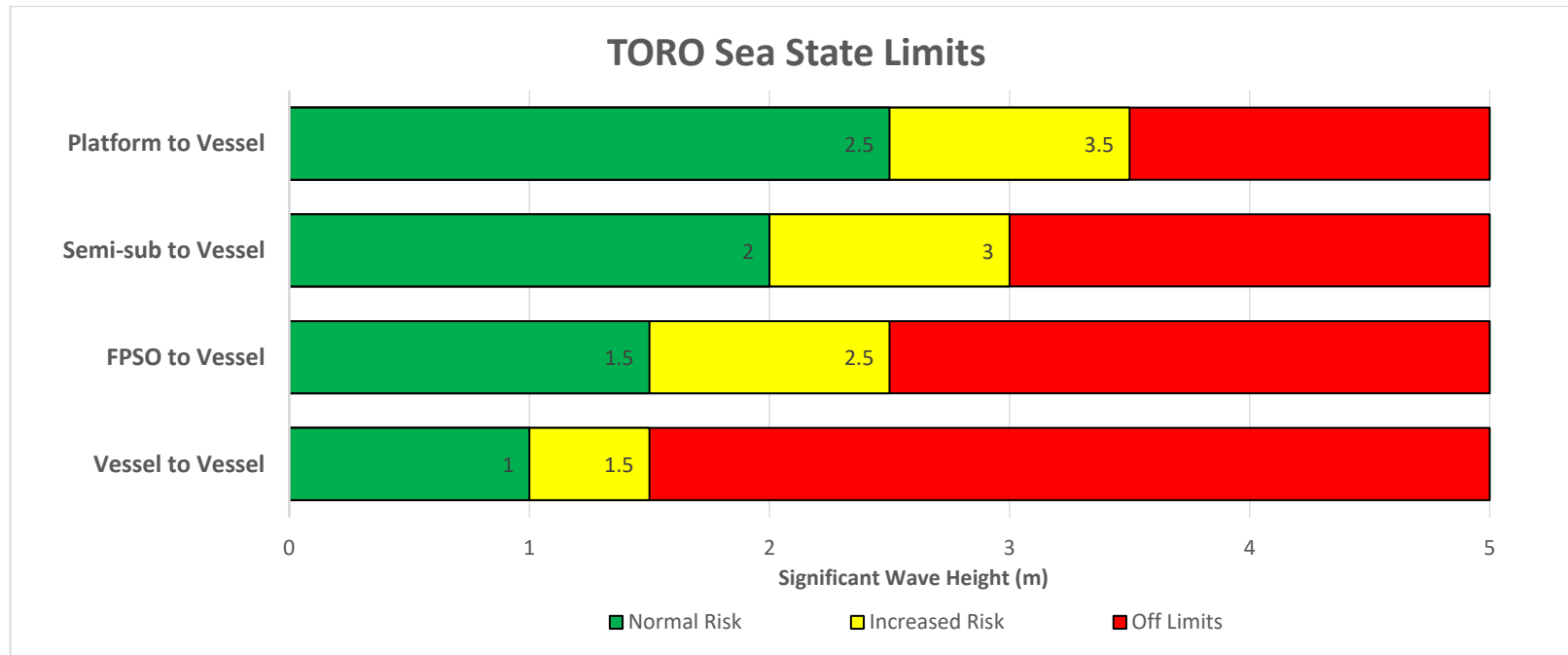
The calculation for relative velocity used here is based on the European offshore crane standard, BS EN 13852-1:2004. Whereby the maximum anticipated relative velocity between a load and a vessel deck, is given by the following;

$$\text{Relative velocity} = (0.5 * \text{Hook velocity})^1 + \sqrt{(\text{Vessel deck velocity}^2 + \text{Boom tip velocity}^2)}$$

¹ Equal to 1.67 m/s (100 m/min) for lifts below 5 tonnes. Higher crane hook speeds may be available, and it follows that the higher the available crane speed the higher the possibility of a heavy landing or take off. However, with a qualified Crane Operator, it is considered unlikely that the TORO will be landed at full hook speed on a deck rising at full speed.

If there are concerns about heavy landings, operators may wish to consider the following methods to reduce risks; dry runs without passengers, landing in centre of deck where there is less vessel movement, transferring fewer passengers to increase damping, using a hook speed indicator.

Table 2 TORO Operating Parameters



Note:

- **Recommended Operating Limit** - This is the envelope in which it would normally be considered safe subject to due consideration of other risk factors.
- **TORO Performance Limit** - This envelope is defined by the performance limits of the capsule and the theoretical translation to significant wave height by EN13852-1:2004. However it is assumed that in such elevated sea states other risk factors may become substantial. Operations should not normally be performed in this range without conducting a thorough risk assessment. Contact Reflex Marine if you need assistance.
- **Outside operating Limit** - It is not recommended - sea states are above the safe design envelope of the capsule.

2.2 Recommended Operating Parameters

Table 3 Recommended Operating Parameters

Parameter	Recommendation
Wind Speed	40 knot (equivalent to 20 m/s)
Visibility	Crane Operator should have a clear view of the pickup and set down areas.
Vessel Motion	Pitch 10° Roll 10°
Vessel Station-Keeping	Able to maintain position within a 5 m (16 ft) radius. If a high risk of the vessel losing position exists, disconnect the carrier for passenger embarkation.
Landing Area	Must be clear of obstructions, protrusions, and trip and fall hazards.
Landing Area – Ice / Spills	Ice and spills must be cleaned from landing area prior to transfer.
Landing Area on Vessel	6 m x 6 m (20 ft x 20 ft) landing area is recommended, equivalent to 2m (6.5 ft) clearance all round. Smaller landing areas may be used provided a risk assessment of factors such as deck hazards, weather, sea state, vessel size, station-keeping is carried out.
Landing Area on Installation	4 m x 4 m (13 ft x 13 ft) clear landing area is recommended based on additional 1m entry and exit path on all sides.
Crane Requirements	Crane must be suitable for lifting personnel and properly maintained.
Communications	Radio communication must be established between the Crane Operator and the vessel Deck Crew and Master.

3 Using the TORO

3.1 Safety Features

Protected Seating Position:

Seats are positioned directly behind the buoyancy panels providing maximum protection and minimised sense of exposure. The arrangement of the seats and individual entry / exit points allow rapid access and egress, allowing faster and more efficient transfers.

Fall Protection:

Lap strap system and grab handles protect from the risk of falling during transfer. A 3 point harness is available as an optional accessory.

Vertical impact protection:

- i. Semi-upright seat position, soft pommel seats and soft headrest
- ii. Soft EVA foam feet

Lateral impact protection:

- i. Stainless steel frame
- ii. Buoyancy panels
- iii. High backed headrest designed to reduce risk of whiplash
- iv. Grab handles and pommel shaped seat cushion for secure seating position

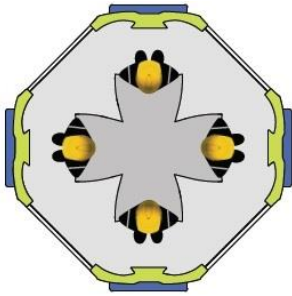
Floatation:

Buoyancy panels ensure the TORO floats with passengers above the water line. When in stretcher mode the stretcher will not be above the water line.

3.2 Passenger Instructions

- i. Enter carrier and take the seat to the left
- ii. Fasten seat harness
- iii. Keep hands and feet inside the carrier
- iv. Hold the grab handles to keep body stabilised
- v. Place feet onto the floor in front of the buoyancy panel
- vi. Bear weight slightly onto feet in order to adopt a comfortable semi squat position especially during landing and take-off

3.3 Entry and Exit

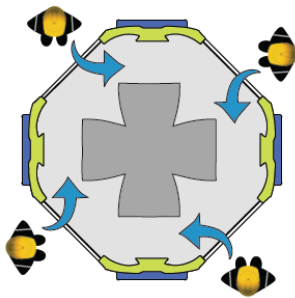


Passenger entry to and exit from the TORO should only be conducted with the carrier in a stable position on deck as advised by the crane operator to the deck crew member in charge of the transfer operation.

Note: All exiting passengers must be clear of the carrier before any new passengers attempt to board.

Each individual seat has a dedicated entry / exit point to prevent confusion and ensure an efficient operation. All passengers must enter and exit from the same direction. Chevrons on the buoyancy panels are present to indicate the direction of entry.

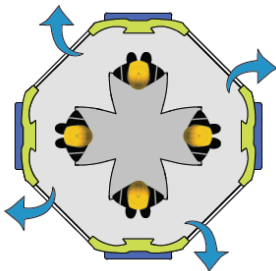
Entry



When advised to do so by the deck crew, passengers should proceed as directed to one of the four entrances (note trip hazard). When instructed, all passengers should enter the carrier and take the seat to their left.

Passengers should ensure they are securely seated and ensure the seat harness is securely fastened. Grab handles are provided on the tubular upright members either side of the buoyancy panel and passengers should grip these firmly or the harness straps whenever seated.

Exit



Following landing and when advised to do so by the deck crew, passengers should unfasten the safety harness, stand and exit (note trip hazard) to their left.

Passengers should move clear of the carrier as directed by the deck crew, ensuring they remain clear of the lifting assembly.

3.4 Deck Crew Instructions

Briefings

Deliver passenger briefings prior to every transfer lift which should contain the following information:

- i. Location specific instructions
- ii. Loading and unloading procedures
- iii. Emergency procedures
- iv. Potential hazards
- v. Seating position

Other Responsibilities

- i. Highlight potential hazards to passengers e.g. trip hazards during entry/exit
- ii. Remain alert from any hazards as they arise and take appropriate action
- iii. Check that passengers' harnesses are secure and correctly fitted
- iv. When the carrier is in the static position on deck for passenger entry and exit, the wire rope lifting assembly will be in a static position and may obstruct one or more of the entry / exit points. Ensure passengers remain clear of the wire rope lifting assembly. Deck crew may need to clear the lifting assembly from carrier entrances.

3.5 Safety Harness Procedure

The TORO comes with lap straps fitted as standard, however 3 point harnesses are available as an optional accessory.

To make passenger entry more efficient, where possible, deck crew or passengers should loosen all harnesses prior to entering the carrier. All passengers should be familiar with seating procedure and practice entry prior to operations.

3.5.1 Lap Belt

Fasten

Step 1

Take the lap fastener clip and feed through eye.



Step 2

Fold over the clip and the safety belt is secure



Step 3

Next pull the **LOWER** straps first



Unfasten

Step 1

Fold back buckle



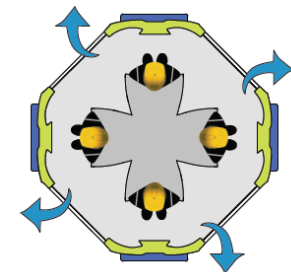
Step 2

Pull apart harness straps



Step 6

Exit the carrier



3.5.2 3 Point Harness

Fasten

Step 1

Enter the carrier from the right hand side of your chosen seating position



Step 2

Pull the harness straps over your shoulders and pull the buckle together



Step 3

Take the lap fastener clip and feed through eye



Step 4

Fold over the clip and the safety belt is secure



Step 5

Next pull the **LOWER** straps first



Step 6

Then the **UPPER** straps to make a tight fit



Unfasten

Step 1

Fold back buckle



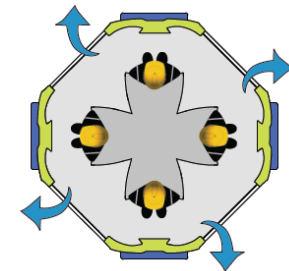
Step 2

Pull apart harness straps



Step 3

Exit the carrier to the left



3.6 Stretcher Mode

The following steps outline the procedure to convert the TORO into stretcher mode.

3.6.1 Converting to Stretcher Mode

Figure 1 TORO Stretcher Mode

It's very easy to use the TORO rapidly for medEvacs using a stretcher.

The stretcher can be fitted in the TORO without any reconfiguration of the seating arrangement. The stretcher is positioned for transit on the floor underneath the seating and between the seat bases.



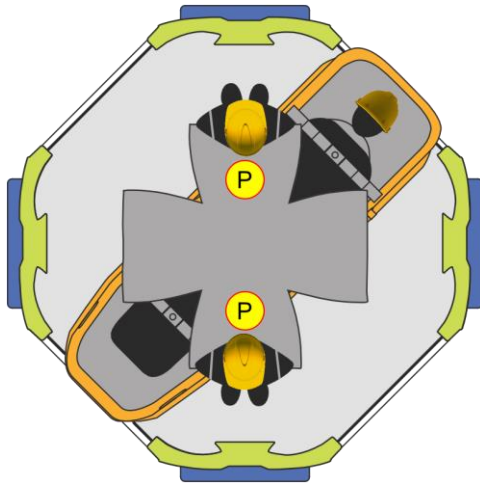
Important: The stretcher passenger would be below the waterline in the very rare event that the TORO were immersed. It is important to review the risk when performing stretcher based transfers and ensure that awareness is high and that emergency procedures are in place.

3.6.2 Stretcher Positioning

- i. The TORO should be positioned on a flat surface in an area which provides sufficient space to correctly align the stretcher and guide it into position.
- ii. Ensure that the floor grating is clear of obstructions before positioning the stretcher.
- iii. Ensure the injured person is securely strapped into the stretcher.
- iv. Using three or four persons to lift the stretcher, align the stretcher with the space between the seat bases. The stretcher is to be placed under the seats aligned with the space between buoyancy modules 'A' and 'B' or between buoyancy modules 'C' and 'D'. Note: Ensure safe manual handling when lifting the stretcher.
- v. Place the feet-end of the stretcher onto the floor grating and slide the stretcher into position as shown in figure 2 below. Secure the stretcher in position with the four straps provided as shown in Figure 2.
- vi. The top cross beam may be used as a support point for an intravenous drip.
- vii. The stretcher is held in position laterally by the seat bases. Secure the head and feet ends of the stretcher to the floor with the four straps provided to prevent longitudinal movement.

- viii. Important: Prior to transfer ensure the stretcher is firmly secure.
- ix. The casualty can be accompanied by a maximum of two passengers during the transit. Passengers should occupy seating positions marked as 'P' (as shown in figure 2 below) when accompanying a stretcher casualty.

Figure 2 TORO Stretcher Positioning



3.7 Carrying Luggage

The TORO is not supplied with luggage storage. All luggage items should be transferred separately in dedicated luggage container or cargo net.

3.8 Control of Lifting Assembly

The TORO is designed to stay firmly on the deck of the vessel whilst passengers are entering or leaving the carrier. The Crane Operator must maintain slack in the line upon landing to allow for the vessel movement.

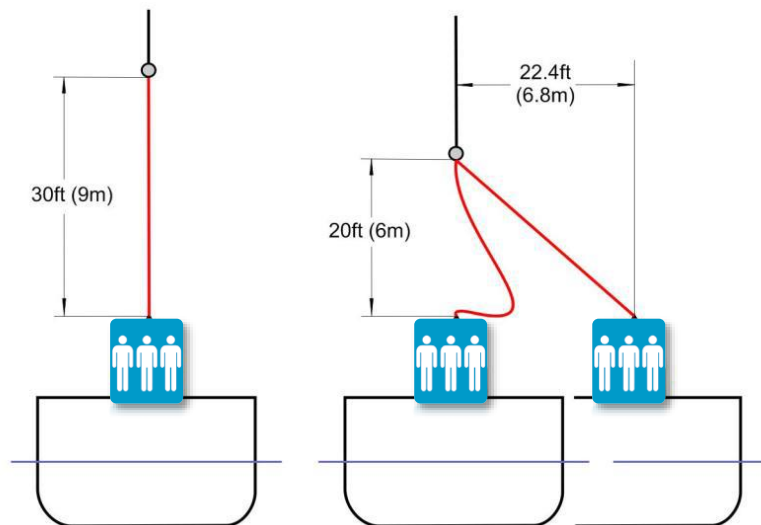
Table 4 Control of lifting assembly

Parameter	Recommendation
Ideal Sling Length	The recommended limits in this section are based on the use of the standard wire rope lifting assembly length of 30 ft (9 m).
Shorter Slings	For the use of shorter lifting assemblies an additional risk assessment combined with dry runs should be performed to establish safe operational routines and weather conditions. Using a shorter sling set also increases risks associated with the hook block being in close proximity to the capsule

Table 5 Sling lengths

Sling Length	Recommended Slack	Allowable Drift	Distance to the Crane Hook
30 ft	10 ft	22.4 ft	20 ft
20 ft	10 ft	17.3 ft	10 ft
10 ft	8 ft	9.8 ft	2 ft

Figure 3 Lifting assembly slack



4 Inspection & Maintenance

4.1 Introduction

Following the recommended procedures set out in this section will help to ensure safe operation of the TORO.

4.2 Definitions

Transfer Lift

A transfer is defined as one pickup and put down when passengers are on board, or when the unit carries more than its tare weight.

Usage Category

This is defined by the number of transfer lifts per year. There are four different usage categories from low to very high.

Critical Parts

These are an identified set of load bearing parts.

Suspension System

These are an identified set of parts that are part of the suspension system.

Competent Person

A competent person is a person who has appropriate practical and theoretical knowledge and experience of the equipment. This will enable them to detect defects and weaknesses and to assess their importance in relation to the safety and continued use of the equipment. It is recommended that the competent person is sufficiently independent and impartial to allow objective decisions to be made.

Non Destructive Testing

Although not considered necessary, some operators choose to adopt a dye penetrant crack inspection prior to any re-installation of a critical part.

4.3 Inspection Types

Table 6 Inspection Types

Inspection Type	Description
Pre-use Check	A check of key areas prior to each use without dismantling the assembly. Carried out by a competent person.
Visual	A careful and critical assessment of the components, carried out by a competent person without dismantling the assembly.
Examination	A careful and critical assessment of the components, carried out by a competent person. This should include dismantling the assembly and performing a visual assessment of the condition of each component, supplemented by other means such as measurement and non-destructive testing as considered necessary. For lifting assemblies this should include a visual inspection of the condition of each leg.
Post Load Test Inspection	A careful and critical assessment of the components following a proof load test. Carried out by a competent person without dismantling the assembly.

All inspections should:

- i. Be performed by a competent person
- ii. Be carried out as per the frequency indicated in the usage table
- iii. Be formally recorded

4.4 Frequency

The recommended frequency and type of inspection, test and maintenance is shown in Table 7. (SEE OVER). Please note:

- i. If any doubt exists regarding the usage then the maintenance strategy should revert to a more conservative higher usage category. This must also be considered if there is any concern over heavy impacts or overloads.
- ii. This recommendation applies to change out of components parts only and does not replace or alter the inspection intervals as prescribed by the relevant legislation.
- iii. The check, inspection, examination and test routine as detailed in this document should always be carried out on schedule.
- iv. Where the carrier has experienced heavy vertical or lateral impacts, or sustained substantial damage, a detailed examination should be carried out to ensure integrity before conducting any further lifts. Details of all damage should be recorded in a damage report. Details of the cause of the damage should also be recorded, if known.

If damage to the frame has occurred, welds should be examined for cracks using dye penetrant.

- v. Details of all repairs or modifications carried out should be recorded and copies of damage and repair / modifications reports should be sent to the party controlling the use of the TORO.
- vi. Lifting assembly covers should be removed if the wire rope lifting assembly is removed from service.
- vii. Contact RML or an approved partner for technical advice on inspection, testing or maintenance. It is always helpful to provide detailed photos and reports along with any query to support@reflexmarine.com.

4.5 Supporting Documentation

Customer drawing pack

Every TORO comes with a drawing pack that contains all of the relevant drawings to aid in its maintenance. This pack contains the following:

- i. Assembly drawings
- ii. Replacement parts, kit drawings
- iii. Torque settings
- iv. Operational stickers
- v. Bill of materials

Certification pack

Every TORO comes with a certification package which includes, but not limited to, manufacturer's declaration of conformity, all of the critical parts certificates, load test certificates and the third party release note and checklist.

If any further certification is required please contact RML.

Component certification

RML retains copies of the certification for all units and components involved in their manufacture. Replacement copies are available on request.

Table 7 TORO Inspection and Maintenance Recommendations

TORO RECOMMENDED INSPECTION AND MAINTENANCE SCHEDULES							
Usage Category No of Transfer Lifts per year	Pre Use Check	Visual Inspection	Examination	Wire Rope Lifting Assembly Replacement	Critical Parts Replacement	Suspension System Replacement ²	Unit Replacement ¹
					Load Test		
					Post Load Test Visual Inspection		
Low <100	Prior To Every Use	6 months	12 months	12 months	36 months	4 Years	12 years
Medium 100 - 500		6 months	12 months	12 months	24 months	3 Years	8 years
High 500 - 2000		3 months	12 months	6 months	12 months	2 Years	6 years
Very High 2000 - 5000		3 months	6 months	3 months	6 months	1 years	4 years
	¹ This may be extended subject to a 'condition & service assessment' carried out by Reflex Marine or an Approved Partner ² Comprises of landing feet and seat cushions						

4.6 Load Test Procedure

Table 8 Load Test Requirements

Question	Response
When must a Proof Load Test be conducted?	<ul style="list-style-type: none"> i. After replacement of any critical parts. Does not apply to replacement of lifting assemblies. ii. After any suspected damage arising from overloading or impact. iii. If the history of the carrier is uncertain. iv. If the inspection data plate is missing, illegible or out of date.
Who can conduct this test?	<ul style="list-style-type: none"> i. Independent 3rd party. ii. A competent and certified test person.
Does this test require a formal record?	Yes.
What equipment is required to perform this test?	<ul style="list-style-type: none"> i. Loading weights or sand bags (1,255 kg). ii. Calibrated weighing scale or load cell. iii. Lifting equipment certified for > 5 Tonnes SWL. iv. A ladder or top access platform. v. An inspection frame or floor matting. vi. Good lighting.

Main Lift Point and Backup Lift Point Load Test Procedure

Table 9 Load Test Instructions for Main Lift Point and Backup Lift Point

Item	Instruction
Components Under Test	<ul style="list-style-type: none"> i. Main Lift Point / Backup Lift Point ii. Central Column Load Bearing Assembly. iii. Seats and Floor Structure.
Test Proof Load	1255 kg (2761 lb)
Test Proof Load Distribution	<p>At the discretion of the competent person the proof load may be applied to the TORO either solely on the floor or split between the floor and seats. For the latter the recommended distribution is;</p> <ul style="list-style-type: none"> i. 440 kg (970 lb) on seats spread equally between them. Seats and harnesses should be protected prior to loading with weight. The test load should be concentrated towards the centre of the unit to prevent damage to the seat. ii. 815 kg (1793 lb) placed on the floor and distributed evenly.
Basis of Test Proof Load	Twice Maximum Gross Weight, less Tare Weight* = 2 x 815 kg – 375 kg = 1255 kg (2761 lb)
Crane Hook Load	1630 kg (3586 lb)
Test Method	Lift the unit and hold static for 3 minutes.
Order	1 st - Main Lift Point 2 nd - Backup Lift Point

* **Note: The tare weight of the TORO is approximately 375 kg (827 lb) but may vary slightly. Each TORO must be weighed prior to load test**

Handling Eye Load Test Procedure

Table 10 Load Test Instructions for the Handling Eye

Item	Instruction
Components Under Test	i. Handling Point ii. Central Column Load Bearing Assembly. iii. Floor Structure.
Test Proof Load	375 kg (827 lb)
Test Proof Load Distribution	At the discretion of the competent person it is recommended that the proof load is applied to the floor of the TORO; i. 375kg (827 lb) placed on the floor and distributed evenly.
Basis of Test Proof Load	$2 \times \text{Tare Weight}^* = 2 \times 375 \text{ kg} = 750 \text{ kg (1653 lb)}$
Crane Hook Load	750 kg (1653 lb)
Test Method	Lift the unit and hold static for 3 minutes.

Inspection Data Plate

An inspection data plate will be issued and attached by the test house, which should show:

- i.
- ii. Tare weight (kg)
- iii. Pay load / SWL (kg)
- iv. Handling Eye SWL (kg)
- v. Maximum gross load (kg)
- vi. The load test date (DD/MMM/YYYY)
- vii. Test load (kg)
- viii. Serial number: RT4-XXX (where XXX is unit I.D. No)
- ix. Model number: RT4
- x. Entry into service date (DD/MMM/YYYY)



Marker Plate

- i. Model number: RT4
- ii. Serial number: RT4-XXX (where XXX is unit I.D. No)
- iii. Date of manufacture (DD/MM/YYYY)
- iv. Tare weight (kg)
- v. Pay load / SWL (kg)
- vi. Maximum gross load (kg)
- vii. Maximum number of passengers (standard & stretcher mode)

<p>TORO PERSONNEL TRANSFER CAPSULE</p> <p>MODEL: RT-4 SERIAL No. _____</p> <p>MANUFACTURED BY: REFLEX MARINE LTD, ABERDEEN, UK</p> <p>DATE OF MANUFACTURE _____</p> <p>TARE: 375KG SWL: 440KG MGM: 815KG</p> <p>MAXIMUM NUMBER OF PASSENGERS:</p> <p>1. 4 SEATED OR 440KG (WHICHEVER IS THE LESSER)</p> <p>2. STRETCHER PLUS 2 SEATED</p>
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Certification Plate

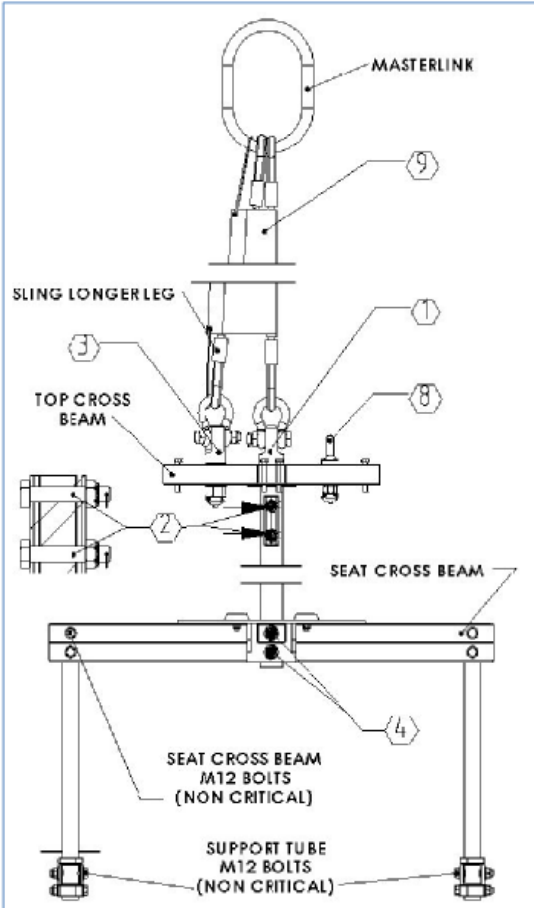
The TORO is indelibly marked with the following information:

- i. CE Mark
- ii. ABS Type Approval Mark



4.7 Pre Use Check

TORO: PRE-OPERATIONAL VISUAL CHECK

CHECK	DESCRIPTION	REFERENCE
1.	Main Lift-Eye Check main lifting eye is fully engaged (the machined shoulder should rest on top of the Top Cross Beam).	 <p>(Seats And Base Frame Not Shown For Clarity)</p> <p>File Name: RT-D1 - REV C - Drawing Insert</p>
2.	Main Lift-Eye Plug M16 Bolts Check both the M16 lifting eye bolts are secure and split pins and tamper proof seals are present and secure.	
3.	Back-Up Lift-Eye Check nut, split pin and tamper proof seal are fitted and in good order.	
4.	Seat Cross Beam M16 Bolts Check both seat cross beam M16 bolts are secure and split pins and tamper proof seals are in position.	
5.	Frame and Buoyancy Check for any damage and ensure that all bolts and fasteners are present, tight and secure.	
6.	Seat Harness Security Check seat harnesses operate properly and attachment points are secure.	
7.	Inspection Data Plate & Certification Check the date of the last examination/inspection to ensure the unit is in compliance.	
8.	Handling Eye Check Handling eye, nut, split pin and tamper-proof seal are fitted correctly and in good order.	
9.	Lifting Sling Set Check slings are correctly attached and in good order. Check the split pins are fitted to shackles. Slings should be in the high visibility cover.	

Drawing No: RT-D1



ECN 014

Revision: D

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Issued: 13/05/2013

4.8 Visual Inspection Checklist Form

TORO Visual Inspection Checklist Page 1 of 3					
Unit Serial Number		This Inspection Date		Inspected by	
Usage Category		Last Visual Inspection		Position/ Company	
Installation / Vessel		Last Examination		Signature	
Avg. No of Transfers / Year		Last Load Test		Original Inspection record filed in	

Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
1.	Wire Rope Lifting Assembly (Critical Part) The wire rope lifting assembly (including attachments) must be visually examined by a Competent Person. Note: High visibility cover must be completely removed to allow inspection of steel wire rope components. It should be replaced according to the usage. This may be as frequently as every 3 months. Irrespective of apparent condition the lifting assembly should be replaced at least every 12 months.			
2.	Main Lift-Eye Plug (Critical Part) Visually inspect in situ for any signs of wear, cracks, deformation or other damage.			
3.	Main Lift-Eye Plug M16 Bolts (Critical Part) Visually inspect the two M16 lifting eye bolts, nuts, split pins and tamper proof seals that connect the main Lift-Eye plug to the central column (through the lifting bolt retaining sleeve) for wear or damage. Check items are present and not loose.			
4.	Back-Up Lift-Eye Visually inspect for any wear or damage and check that the split pin and tamper proof seal are intact.			
5.	Handling Eye Visually inspect for any wear or damage and check that the split pin and tamper proof seal are intact.			

TORO Visual Inspection Checklist continued... Page 2 of 3

Item No	Description	Comment / Serial Number / Colour Code	Pass / Fail	Verified By
6.	Seat Cross Beam M16 bolts (Critical Part) Visually inspect for any wear or damage and check that the nut, bolt and washer are intact.			
7.	Seat Cross Beam Assembly Visually inspect for any wear or damage and check that the nut, bolt and washer are intact.			
8.	Top Cross Beam Visually inspect the top cross beam for any deformation, twisting, misalignment or impact damage.			
9.	Frame and Buoyancy Visually inspect for any damage and ensure that all bolts and fasteners are tight and fully secure.			
10.	Landing Feet Examine the feet to ensure that they are in good condition and that they are properly secured to the capsule. Do not go underneath an active lift Notes: <i>i. Measure height of foot and replace if under 100 mm in height</i> <i>ii. Small (20 mm in length) cuts are acceptable but feet should be replaced when damage larger than 20mm is present.</i>	Foot A: B: C: D:		
11.	Seat Cushions For either Velcro or bolt through fitting, check the cushions are secure and in good condition.	Seat Cushion A: B: C: D:		
12.	Seat Harness Security Visually inspect the seat harness attachment points and the harness webbing for any signs of wear, fraying or damage. Check that attachment points are secure.	Harness A: B: C: D:		

TORO Visual Inspection Checklist continued... Page 3 of 3				
Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
13	Seat Harness (sit-in) Check all seat harness buckles to ensure each is functioning correctly. (Inspector to sit in each seat and check fastening and unfastening of each harness).	Harness A: B: C: D:		
14	Inspection data plate Check the date of the last examination/ inspection to ensure the unit will remain in compliance with requirements for at least 6 months.			
Storage				
15.	Storage Check the storage cover is in good condition and not showing any signs of UV or wind degradation. Storage off the ground , use of spacer chocks whilst not in use			
16.	Replacement Parts Stock Check condition of all associated replacement parts and accessories. Lifting assemblies should be stored in an appropriate dry place without high visibility cover fitted.			
Reports			Complete Y/N	
17.	Documentation / Report including Photographic Report			
NOTES: <div style="height: 150px; border: 1px solid black; margin-top: 5px;"></div>				

4.9 Examination Checklist Form

TORO Examination Checklist Page 1 of 4					
Unit Serial Number		This Inspection Date		Inspected by	
Usage Category		Last Visual Inspection		Position/ Company	
Installation / Vessel		Last Examination		Signature	
Avg. No of Transfers / Year		Last Load Test		Original Inspection record filed in	

Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
1.	Wire Rope Lifting Assembly (Critical Part) Replace the wire rope lifting assembly according to the usage. This may be as frequently as every 3 months. Irrespective of apparent condition the lifting assembly should be replaced at least every 12 months.			
2.	Main Lift-Eye Plug (Critical Part) Remove and visually inspect the main lift-eye plug for any signs of damage or strain. Replace according to the usage of the TORO or on the recommendation of a Competent Person / Inspector.			
3.	Main Lift-Eye Plug M16 Bolts (Critical Part) Remove and visually inspect the two M16 main lift-eye plug securing bolts for any signs of damage or strain. Visually inspect the two M16 holes in the central column tube for signs of damage or strain. Replace appropriate parts according to the usage of the TORO or on the recommendation of a Competent Person / Inspector. Refer to customer drawing pack for torque settings			
4.	Back-Up Lift-Eye Inspect the back-up eye in situ, nut, split pin and tamper proof seal. Replace on the recommendation of a Competent Person / Inspector. Refer to customer drawing pack for torque settings			
5.	Handling Eye Visually inspect for any wear or damage and check that the split pin and tamper proof seal are present.			

TORO Examination Checklist Continued... Page 2 of 4				
Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
6.	Seat Cross Beam M16 bolts (Critical Part) Visually inspect for any wear or damage and check that the nut, bolt and washer are intact. Refer to customer drawing pack for torque settings			
8.	Seat Cross Beam Assembly Visually inspect for any wear or damage or strain and check that the nut, bolt and washer are present and secure. Check stand tubes and upper and lower connections to seat cross beam and floor.			
9.	Top Cross Beam Visually inspect the top cross beam for any deformation, twisting, misalignment or impact damage.			
10.	Frame and Buoyancy Visually inspect for any damage and ensure that all bolts and fasteners are tight and fully secure.			
11.	Landing Feet Examine the feet to ensure that they are in good condition and that they are properly secured to the capsule. Do not go underneath an active lift. Notes: <i>i. Measure height of foot and replace if under 100 mm in height</i> <i>ii. Small (20 mm in length) cuts are acceptable but feet should be replaced when damage greater than 20mm is present</i> <i>iii.</i>	Foot A: B: C: D:		
12.	Seat Cushions For either Velcro or bolt through fitting, check the cushions are secure and in good condition.	Seat Cushion A: B: C: D:		

TORO Examination Checklist Continued... Page 3 of 4				
Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
13.	Seat Harness Security Visually inspect the seat harness attachment points and the harness webbing for any signs of wear, fraying or damage. Check that attachment points are secure.	Harness A: B: C: D:		
14.	Seat Harness (sit-in) Check all seat harness buckles to ensure each is functioning correctly. (Inspector to sit in each seat and check fastening and unfastening of each harness).	Harness A: B: C: D:		
15.	Inspection data plate Renew the load test plate after completion of approved load test.			
13.	Stickers – Check that all of the stickers on the unit are in good condition and that none are missing or damaged. The sticker location drawing can be found in the drawing pack.			
14.	Stretcher Fittings – Test fit a stretcher to ensure that all of the fittings are present and in good condition.			
16	Full Load Test A full load test must be conducted by an independent test house company, nationally recognised and in accordance with ILO 152.			
17	Post Load Test Visual Inspection Conduct and report a post load test visual inspection.			
Storage				
16.	Storage - Check the storage cover is in good condition and not showing any signs of UV or wind degradation. Storage off the ground , use of spacer chocks whilst not in use			

TORO Examination Checklist Continued... Page 4 of 4				
Item No	Description	Comment / Serial Number/ Colour Code	Pass / Fail	Verified By
17.	Replacement Parts Stock - Check condition of all associated replacement parts and accessories. Lifting assemblies should be stored in an appropriate dry place without high visibility cover fitted.			
	Other			
19.	Clean – Has the unit been cleaned			
	Reports		Complete Y/N	
18.	Documentation / Report including Photographic Report			
NOTES:				

4.10 Post Load Test Inspection Checklist Form

Unit No		This Inspection Date		Inspected by	
Usage Category		Load Test Date		Position/ Company	
Installation / Vessel		Load Test Report/Ref		Signature	
Avg No of Transfers / Year		Load Test Authority		Original Inspection record filed in	

Item No	Description	Comment	Pass / Fail	Verified By
1.	Main Lift-Eye Plug (Critical Part) Visually inspect in situ for any signs of wear, cracks, deformation or other damage.			
2.	Main Lift-Eye Plug M16 Bolts (Critical Part) Visually inspect the two M16 lifting eye bolts, nuts, split pins and tamper proof seals that connect the main Lift-Eye plug to the central column (through the lifting bolt retaining sleeve) for wear or damage.			
3.	Back-Up Lift-Eye Visually inspect for any wear or damage and check that the split pin and tamper proof seal are intact.			
4.	Top Cross Beam Visually inspect the top cross beam for any deformation, twisting, misalignment.			
5.	Handling Eye Visually inspect for any wear or damage and check that the split pin and tamper proof seal are intact.			
6.	Seat Cross Beam M16 bolts (Critical Part) Visually inspect for any wear or damage and check that the nut, bolt and washer are intact.			
7.	Seat Cross Beam Assembly Visually inspect for any wear or damage and check that the nuts, bolts and washers are intact.			
8.	Frame and Buoyancy Visually inspect for any damage and ensure that all bolts and fasteners are tight and fully secure.			
9.	Inspection data plate- Check the date of the last load test has been correctly inserted and is indelibly legible.			
	Reports		Complete Y/N	
10.	Documentation / Report including Photographic Report			

NOTES:

5 Handling & Storage

5.1 Stock Inspections

These guidelines are for the stocking of new units and parts before they are put into service. These guidelines are **NOT** applicable to units and parts that have already been put into service.

Table 11 Stock inspections

Type	In Stock Inspection	Release Inspection	Additional Certification	Shelf Life	Actions
Transfer capsules	Annual visual inspection	Less than 2 years old: Visual inspection Older than 2 years: Visual inspection, load test and post load test inspection	i. New inspection date to be stamped on inspection data plate ii. Visual inspection checklist to be completed iii. For units older than two years the new load test date should be stamped onto the inspection data plate and a new load test certificate issued	5 Years	i. Remove lifting assembly ii. Place lifting assembly into dry storage iii. Ensure the unit is chocked up off its feet, stored in a secure area away from the risk of damage and protected from exposure to the elements iv. Update certification pack with new lifting assembly information if original lifting assembly is not being used v. Update the certificate pack with all new certification documents, including load test and examination certificates
Wire Rope Lifting Assembly	Visual inspection every 6 months	Thorough Examination	i. Re-validated Certificate, indicating next inspection date ii. Certificate of thorough examination should be issued	2 Years	i. Keep off the ground in dry and ventilated storage area with the lifting assembly cover removed
Other replacement Parts (not lifting assemblies)	None	Visual Inspection	Not Required	Unit Lifetime	i. Keep in clean dry storage

Note: When a carrier first enters service, this date must be stamped onto the unit data plate.

5.2 Forklift

Care should be taken when handling the TORO with a forklift truck to avoid damage the underside (landing feet, cross braces or base of the central lifting column). Alternatively the capsule may be secured to a pallet specifically designed for use with forks.

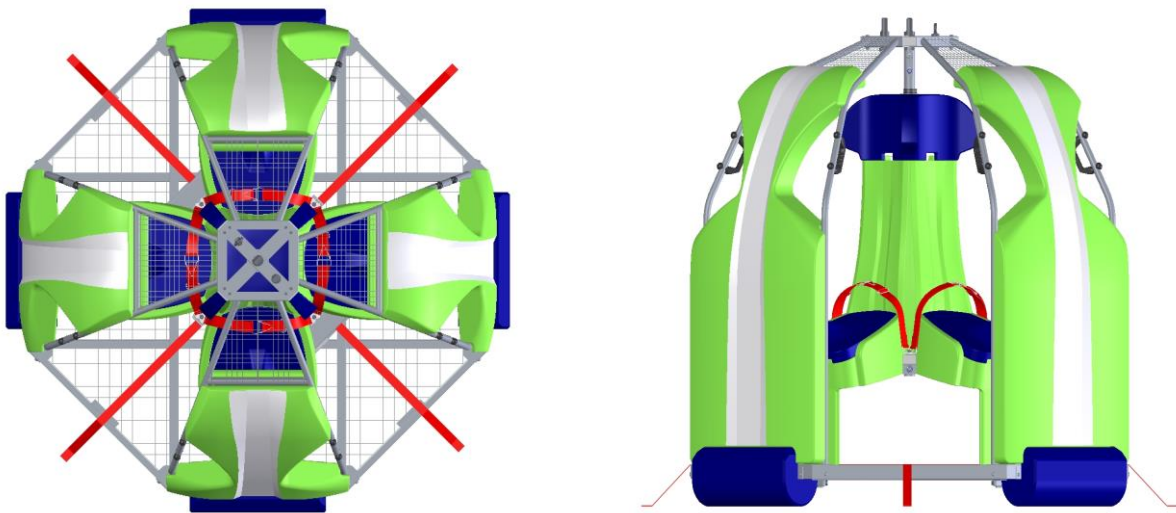
5.3 Crane

When lifting the TORO with short chain or strop, a temporary shackle should be fixed to the handling lifting point. Care must be taken not to damage the lifting assembly.

A shackle should not be fitted through the thimble of the lifting assembly eyes.

5.4 Securing

For deck fastening, use the peripheral braces around the floor grating.



5.5 Inspection

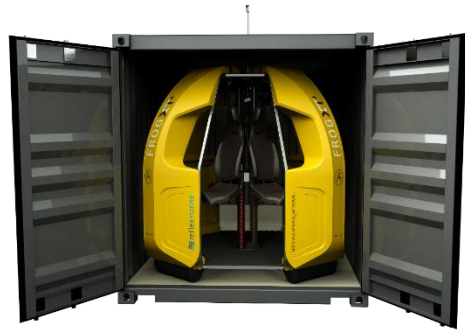
Before and after transportation the TORO must be inspected to check for damage sustained in transit. The unit must not be used if any structural damage is observed. If any damage has been observed please complete a visual inspection to determine the extent of the damage.

5.6 Preparation for Road Transport

Prior to shipping, the seat harnesses must be secured by securing the buckle together and then tightening the harness straps. This will prevent seat harnesses flapping and damaging the seating area. It is recommended that the TORO is covered for shipping either with a TORO weatherproof protective cover or other heavy duty tarpaulin material.

5.7 Shipping

The TORO will fit in a standard or high-cube container. If the TORO is transported on a flat rack it must be secured. Recommended securing points are the radial / peripheral floor braces. To protect it from excess loading, the main Lift-Eye must not be used as a securing point. Feet must be supported to prevent collapse; this can be done by placing suitable chocks or props under the unit.

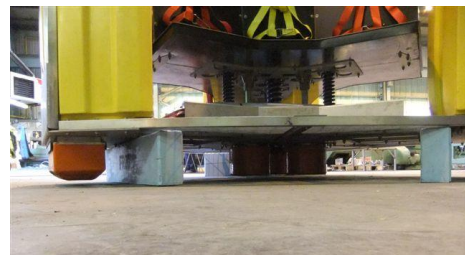


5.8 Storage

The TORO has been designed to cope with the harsh conditions on an offshore installation or vessel; however it is important to protect the unit as much as possible from any hazardous elements and UV degradation. It is recommended that the TORO is stored under a TORO weatherproof cover whilst not in use.

5.9 Feet Deformation during Storage

Prolonged periods of exposure to hot decks and self-weight can cause permanent set deformation of the elastomeric feet. If the carrier is to be stored for prolonged periods a set of chocks should be used to lift the feet away from the deck. Any chocks used should fit properly underneath the main base frame to ensure that any exposed bolt heads are not impinged. The chocks can be pre-laid on the deck ready for landing.



5.10 Replacement Parts

Replacement parts should be stored in dry clean environments and be suitably labelled and tagged.

6 Replacement Parts

6.1 Introduction

Replacement parts can be supplied as individual items or as appropriate kits. Prior to ordering any replacement parts or kits, establish the serial number which is stamped on the data plate. The serial number is RT4- XXX where XXX represents a three digit number. RML holds replacement parts and accessories in stock. We are able to supply most individual components. A full list of parts is contained in the customer drawing pack, which is issued with every unit.

It may be advisable to hold an inventory of frequently replaced parts. This will help to ensure the continued safe operation of the carrier. Minimum stock quantities will be influenced by:

- i. Remoteness of location
- ii. Downtime implications
- iii. Criticality of maintaining crew and emergency response (Medevac) access.
- iv. Usage
- v. Customs processing time
- vi. Delivery cost for small parts

RML can recommend stock items and quantities for your operation.

It is recommended that only genuine OEM parts (including lifting assemblies) are used.

6.2 Kits

The following kits are available for routine and non-routine maintenance. Ordering an appropriate kit is more economical than replacing individual parts.

Kit Name	Part Number	Contents
Lifting Assembly Kit	RT-SK-01	Wire Rope Lifting Assembly Lifting Assembly Cover Associated Fixings
Replacement Parts Kit	RT-RPK-01	Critical Parts Minus The Wire Rope Lifting Assembly
Critical Part Kit	RT-CPK-01-30	Critical Parts including lifting assembly
Harness Kit	RT-RHK-01	4 X Harnesses plus associated Fixings
3 Point Harness Kit	RT-RHK-02	4 X Harnesses plus associated Fixings
Landing Foot Kit	RT-LFK-01	4 X Feet plus associated fixings
Full Service Kit	RT-FSK-01-30	1x Lifting Assembly Kit 1 X Replacement Parts Kit 1 X Landing Foot Kit 1 X back up eye refurbishment kit
Suspension Kit	RT-TSK-01	4 x Seat Cushions 4 x Landing Feet Associated Fixings
Handling eye refurbishment kit	RT-HEK-01	1 x long shank eye bolt plus associated fixings
Back up eye refurbishment kit	RT-BEK-01	1 x back up pad eye plus associated fixings

6.3 Parts identification

Each assembly or part is assigned a part number which provides the unique identification of the part /assembly.

Where material grades and material traceability are deemed to be safety critical these components will be allocated unique component numbers which will be stamped or etched as required.

Components that require unique identification are referenced in the parts list in the customer drawing pack.

For bolts, where etching is impractical, batches will be colour coded and a note added to the mill certificate to identify the colour used.

6.4 Accessories

The following accessories are available from RML to maximise operational effectiveness. They can be supplied with the carrier or ordered separately.



Strobe Light

Provides greater visibility at night and in poor weather conditions. High-intensity: light weight, waterproof to 300 m, Flash Rate 50 per min and also provides 6 mile visibility. Fitted to the top cross beam.
Note: This strobe is not certified for use in hazardous areas. A zoned strobe light is available on request.



Basket Stretcher

Essential for conducting emergency medical transfers, Reflex Marine supply a rigid stretcher that is compatible with the TORO.



Protective Cover

A silver reflective protective cover which is made of flame resistant fabric (BS7837) and protects against degradation from UV light and the weather.

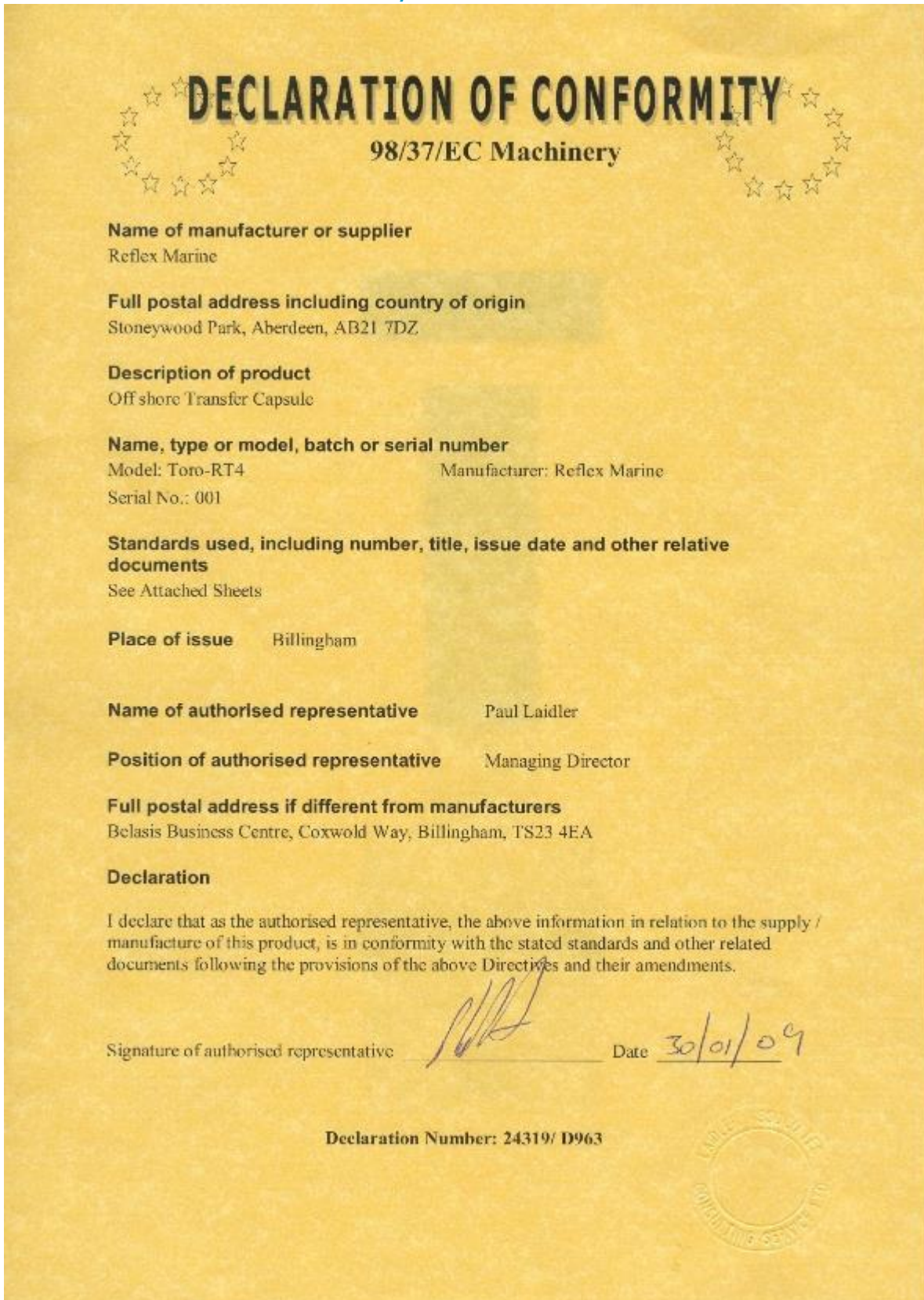
Three Point Harness

Three point harnesses are available for added passenger security (as opposed to the standard lap strap).

For a complete list of accessories please contact RML

7 Certificates

7.1 EC Declaration of Conformity



DECLARATION OF CONFORMITY
98/37/EC Machinery

Name of manufacturer or supplier
Reflex Marine

Full postal address including country of origin
Stoneywood Park, Aberdeen, AB21 7DZ

Description of product
Off shore Transfer Capsule

Name, type or model, batch or serial number
Model: Toro-RT4 Manufacturer: Reflex Marine
Serial No.: 001

Standards used, including number, title, issue date and other relative documents
See Attached Sheets


Place of issue Billingham

Name of authorised representative Paul Laidler


Position of authorised representative Managing Director

Full postal address if different from manufacturers
Belasis Business Centre, Coxwold Way, Billingham, TS23 4EA

Declaration
I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of the above Directives and their amendments.

Signature of authorised representative  Date 30/01/09

Declaration Number: 24319/ D963



7.2 ABS Type Approval

Electronically published by ABS London.
Reference T1103702, dated 20-FEB-2014.



CERTIFICATE NUMBER

09-LD408536-1-PDA

DATE

06 February 2014

ABS TECHNICAL OFFICE

London Engineering Department

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
REFLEX MARINE LTD - CORNWALL

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

PRODUCT: **Offshore Personnel Transfer Device (personnel baskets)**

MODEL: **RT-4 "Toro Personnel Transfer Capsule"**

This Product Design Assessment (PDA) Certificate 09-LD408536-1-PDA, dated 06/Feb/2014 remains valid until 05/Feb/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING

Alexander Curry
Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standard. It is issued solely for the use of ABS, its affiliates, its clients or other authorized entities. Any significant change to the documented product without approval from ABS will result in this certificate becoming null and void. This application/certificate is governed by the "Terms and Conditions of the Request for Product Type Approval and Agreement" as contained in the ABS Rules.

ABS880139

8 Contact Details

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Order enquiries (sales & replacement parts) – support@reflexmarine.com

Accounts Department – accounts@reflexmarine.com