HARKEN®

ACCESS RAIL SYSTEM – R27

User Manual – Intended for specialized personnel or expert users

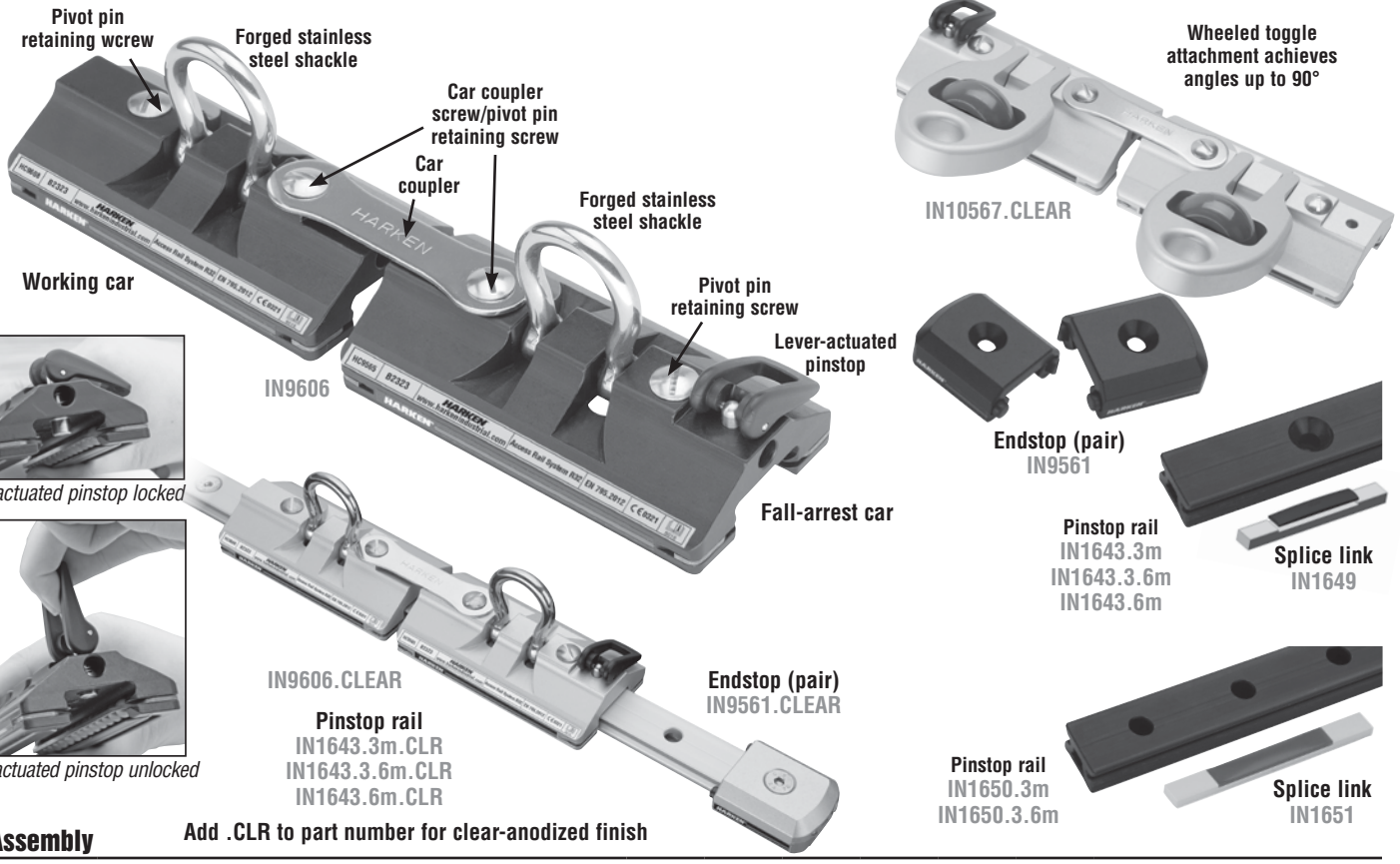
4684.1/7-14

This manual applies to cars shipped from Harken USA as of February 2011. Cars have serial numbers of A0633 and B0768.

WARNING! This product is part of a personal fall-arrest system. The user must follow the manufacturer's instructions for each component of the system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this equipment. Alterations or misuse of this equipment, or failure to follow these instructions, may result in a fall or failure to arrest a fall leading to serious injury or death.

Please read these instructions carefully before installing, servicing, or operating the equipment.
This manual may be modified without notice. See: www.harken.com/manuals for updated versions.
PLEASE SAVE THESE INSTRUCTIONS

Parts Description



Car Assembly

Part No.	Description	Length mm	Length in	Width mm	Width in	Maximum working load kg	Maximum working load lb	Comments
IN9606*	R27 Access Rail car assembly/coupler	273	10 3/4	70	2 3/4	135	297.68	**CE-approved system See drawing H-49971 on page 11**
	Includes: 1 x IN9565; 1 x IN9608; 1 x H-50547							
IN10567*	R27 Access Rail car assembly/coupler/wheel toggle	273	10 3/4	70	2 3/4	135	297.68	
	Includes: 1 x IN10614*; 1 x IN10615*; 1 x H-50547							

*Available with black Hard Lube-anodized or clear-anodized finish. Add .CLEAR to part number for clear-anodizing.
External access cars must only be used with rail mounted using 5/16" (8 mm). Use only endstops listed below.

Rail and Accessories

Part No.	Description	Length m	Length ft/in	Mounting hole spacing mm	Mounting hole spacing in	Fasteners mm	Fasteners in
IN1643.3m*	R27pinstop rail for countersink fasteners	3	9'10 1/16"	100	3 15/16	8 FH	5/16 FH
IN1643.3.6m*	R27pinstop rail for countersink fasteners	3.6	11'9 3/4"	100	3 15/16	8 FH	5/16 FH
IN1643.6m*	R27pinstop rail for countersink fasteners	6	19'8 1/4"	100	3 15/16	8 FH	5/16 FH
IN1649	Splice link (Purchase one IN1649 splice link for each IN1643 rail section)	—	—	—	—	—	—
IN1650.3m*	R27 pinstop rail for caphead fasteners	3	9'10 1/16"	100	3 15/16	8 SHCS**	5/16 SHCS**
IN1650.3.6m*	R27 pinstop rail for caphead fasteners	3.6	11'9 3/4"	100	3 15/16	8 SHCS**	5/16 SHCS**
IN1651	Splice link (Purchase one IN1651 splice link for each IN1650 rail section)	—	—	—	—	—	—
IN9561*	Endstop pair (Use one at each end of system rail)	—	—	—	—	—	—

*Available with black hardcoat or clear-anodized finish. Add .CLR to part number for clear anodizing **Socket Head Cap Screw

Optional Parts

Part No.	Description	Length mm	Length in	Width mm	Width in	Maximum working load kg	Maximum working load lb	Comments
IN9565*	R27 Access Rail car/pinstop	132	5 3/16	70	2 3/4	135	297.68	Use to hang tool bag, etc.
IN9608*	R27 Access Rail car	132	5 3/16	70	2 3/4	135	297.68	
IN10614*	R27 Access Rail car/pinstop/wheel toggle	132	5 3/16	70	2 3/4	135	297.68	
IN10615*	R27 Access Rail car/wheel toggle	132	5 3/16	70	2 3/4	135	297.68	
IN10612*	R27 Wheel toggle	115	4 1/2	25	1	—	—	—
H-50547	Car coupler	Use to couple two cars. Includes two stainless steel fasteners and clear plastic washers.						

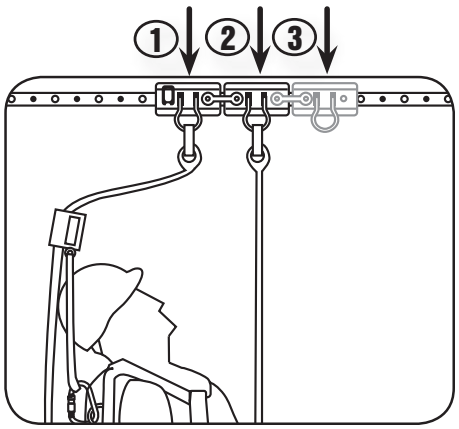
*Available with black Hard Lube or clear-anodized finish. Add .CLEAR to part number for clear anodizing.

1) Applications

A PURPOSE

The rail and car system is designed for use as an adjustable anchorage point for external access to facilitate external maintenance on vessels.

The system has two anchorage points. One anchorage point for a personal suspension system and the second for the fall-arrest system.



1. FULL-BODY SAFETY HARNESS
Use a full-body safety harness attached to access car with pinstop. Full-body safety harness must meet CE/ANSI support standards.

2. WORKING HARNESS CAR
Use a working harness or chair attached to access car. Working harness or chair must meet CE/ANSI support standards.

3. TOOL SERVICE CAR
Add an optional car and coupler to work as your tool service carrier.

B LIMITATIONS

Capacity: This system is designed for use by one person with a combined weight (clothing, tools etc) of no more than 135 kg (297.68 lb). No more than one person may be connected to a two-car assembly at one time.

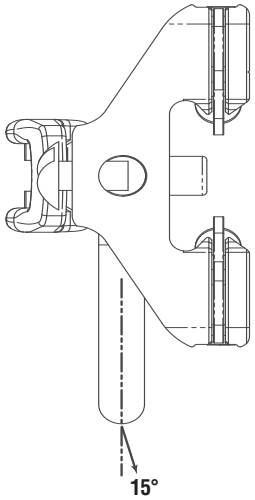
Free Fall: Personal fall-arrest systems used with this equipment must be rigged to limit the free fall to no more than 1.8 m (6 ft). Personal Suspension System must be rigged so that no vertical free fall is possible.

Fall Clearance: There must be sufficient clearance below the user to arrest a fall before the user strikes the ground or other obstruction. Height of user plus extended safety lanyard length must not be more than the height from rail to ground minus 2 m (6.5 ft).

Swing Falls: Minimize swing falls by working as close to the anchorage point as possible.

Check CE label on side of car for serial numbers.

Load Angle Limitations: Harken cars beginning with A0633 and B0768 with 8 mm shackles have the ability to handle loading at an angle up to 15° beyond vertical. **Loads beyond 15° from vertical will overload car.** See drawing at right. Exception: IN10567 wheel toggle cars can handle greater angles. See next page.



Harken IN9606 cars beginning with A0633 and B0768 with 8 mm shackles have the ability to handle loading at an angle up to 15° beyond vertical. Loads beyond 15° from vertical will overload car.

Training: This equipment must be installed and used by persons trained in its correct application and use.

C STANDARDS

This system has been tested to EN 795:2012 standard and is appropriate for single person use with an energy absorber to EN355.

2) System Requirements

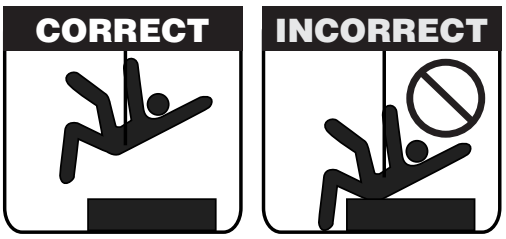
Harken equipment is designed for use with Harken approved components. Substitutions or replacements made with non-approved components may jeopardize compatibility of equipment and may affect the safety and reliability of the system.

Connectors (hooks, carabiners and D-rings) must be capable of supporting at least 22kN (5000 lbs), in accordance with EN362.

Personal Fall-Arrest Systems used with this equipment must meet EN813 requirements and include a shock-absorbing lanyard (to EN355 standard) and a full body harness (to EN361, EN358, EN813 standard).

WARNING! Consult Harken when using this equipment in combination with components or subsystems other than those described in this manual. Altering or intentionally misusing this equipment may cause the system to fail which can cause a fall which could result in severe injury or death.

PLAN SYSTEM



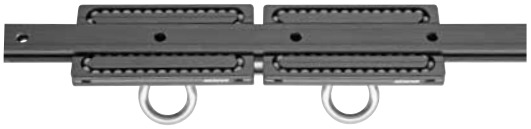
Consider all factors that will affect safety during use of this equipment.

Rail must be laid out and positioned as determined by a naval architect or other suitably qualified person.

User must ensure that distance required to arrest fall is less than obstruction below. Height of user plus extended safety lanyard length must not be more than the height from rail to ground minus 2 m (6.5 ft).

Rail should run horizontal to water plane, but can be mounted at various angles on this horizontal structure.

Ceiling Mount



Wall Mount

Installer shall ensure suitability of base materials into which rail is fixed and that it is capable of sustaining test force as detailed in standard EN 795:2012.

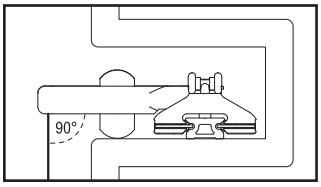
The following publications give detailed information to ensure safe and legally compliant installation. EN 795:2012 – Protection against falls from a height – Anchor devices – Requirements and Testing. BS 7883:2005 – Code of practice for the design, selection, installation, use and maintenance of anchor devices conforming to BS EN 795. MGN422 (M) – Use of Equipment to undertake work over the side on yachts and other vessels. (see Appendix A). Harken External Access System – Installation and Proof Testing Advice. (see Appendix B).

Avoid attaching system components where suspension and/or fall-arrest rope may come in contact with, or abrade against, unprotected sharp edges.

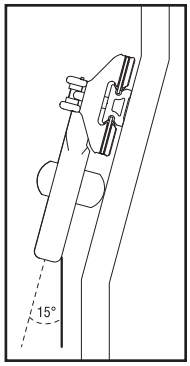
IN1057 CAR ASSEMBLY/WHEEL TOGGLE

This car is designed to run along a surface, mounted so that the toggle overhangs the edge. Ensure that the whole wheel width is in good contact with the surface to which the rail is attached. Ensure that the surface is strong enough to sustain the expected working load and wear.

Wheel Toggle Car



Mounted in recess: cars with wheel toggle for loading over an edge



Mounted on angle: cars with wheel toggle face outward

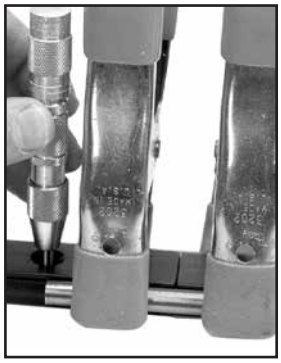
RAIL INSTALLATION

This Access Rail system should be installed only by a competent person or competent organization.

All rail listed in this manual is designed to use stainless steel fasteners. Attachment to vessel must be in accordance with MGN 422(M). Harken does not recommend installing with aluminum fasteners. Use of non stainless steel fasteners is at the liability of the installer and must be designed to meet the requirements of MGN 422(M) in Appendix A and Proof Testing in Appendix B.

Always use threadlocking solution or locknuts.

Precise rail alignment at joints is critical for smooth-running cars. Use Splice Links, Part IN1649 (IN1643 rail) or Part IN1651 (IN1650 rail), and round rods and spring clamps to align rail during installation. Use transfer punch to mark hole centers. Keep rail in alignment, until secured, with spring or "C" clamps when marking, drilling holes and inserting fasteners.



Use transfer punch to mark hole centers. Hold rail in alignment, until secured, with spring or "C" clamps when marking and drilling holes.

To prevent cars from rolling off rail, fasten endstops to rail ends using M8 (5/16") stainless steel fasteners.

All rail and endstop fasteners must be coated with an anti-corrosion compound such as Tef-Gel®.

Installer must ensure that instructions and limitations of use are clearly displayed close to system. This should include a statement that it is designed exclusively for use of personal protective equipment.

4) Use

After a Fall: Any equipment which has been subjected to the forces of arresting a fall must be removed from service immediately and destroyed by user or an authorised person.

Rescue: when using this equipment, the employer must have a rescue plan and the means at hand to implement it and communicate that plan to users, authorized persons, and rescuers.

PERSONAL FALL-ARREST EQUIPMENT

When using a hook with positive locking mechanism to connect to car shackle, ensure roll-out cannot occur. Roll-out occurs when interference between hook and mating connector causes hook gate to unintentionally open and release.

Self-locking snap hooks and carabiners should be used to reduce possibility of roll-out. Do not use hooks or connectors that will not completely close over attachment object.

Follow manufacturer's manual for correct use of energy-absorbing lanyard.

Follow manufacturer's instruction manual for correct use of bosun's chair and certified safety harness.

Do not attach a connector such that it will impact on the side of the car when in use.

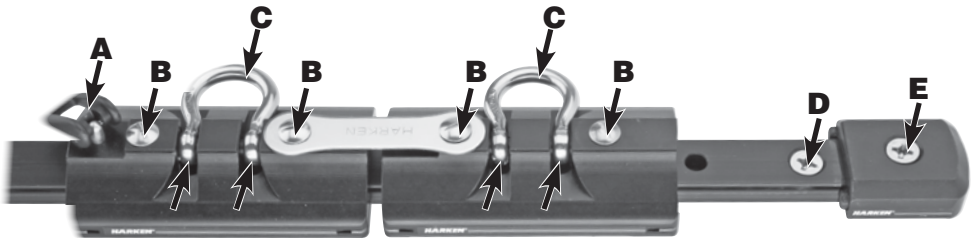
WARNING! This product is part of a personal fall-arrest system. The user must follow the manufacturer's instructions for each component of the system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this equipment. Alterations or misuse of this equipment, or failure to follow these instructions, may result in a fall or failure to arrest a fall leading to serious injury or death.

5) Training

It is the responsibility of the user and the purchaser of this equipment to assure that they are familiar with these instructions, trained in the correct care and use of, and are aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.

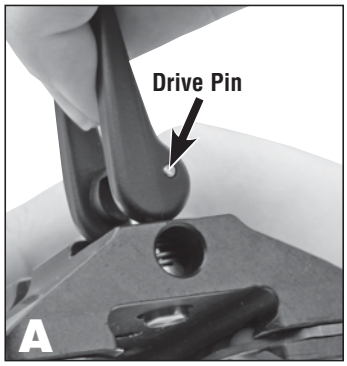
6) Inspection

INSPECT BEFORE EACH USE



A formal inspection of the rail and its connection to the structure must be performed at least annually by a competent person other than the user.

The inspection should be recorded in an inspection and maintenance log.



BEFORE EACH USE

A) Inspect pinstop for spring degradation, cracks or wear that may affect locking strength and operation. Check drive pin holding plastic latch to post to make sure it is secure.

WARNING! If pinstop locking mechanism fails cars may become loose on rail resulting in an uncontrolled slide along rail resulting in severe injury or death.

6) Inspection

B) Inspect pivot pin retaining screws in cars and coupler. Make sure coupler/pivot pin retaining screws have not loosened and are tightened securely in coupler. If loose, remove screw, apply Red Loctite® and tighten.

WARNING! If screws loosen, shackle pivot pin can move, allowing shackle to suddenly release from car resulting in a fall, severe injury or death.

C) Inspect shackles for signs of corrosion, cracks, or elongation. If damaged, do not use. Damaged shackles can indicate that car was overloaded. Return complete car assembly to one of the service centers/recertification centers listed on back of manual for advice.

D) Check all rail screws to make sure they have not loosened and are flush with top of rail. Screws must be flush with top of rail to allow cars to roll smoothly. Loose screws can also compromise system safety.

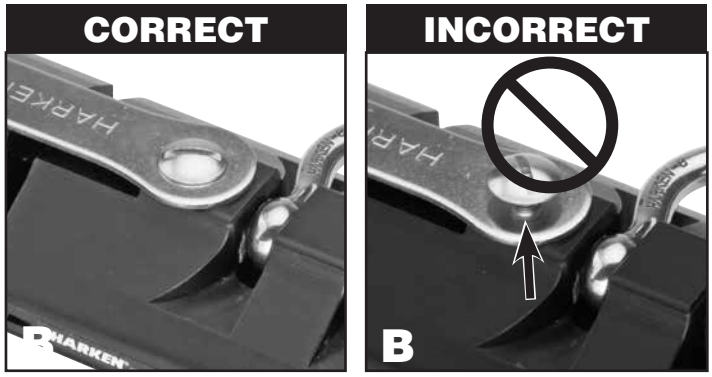
WARNING! If all screws are not fastened securely, rail can separate from mounting surface resulting in a fall, severe injury or death.

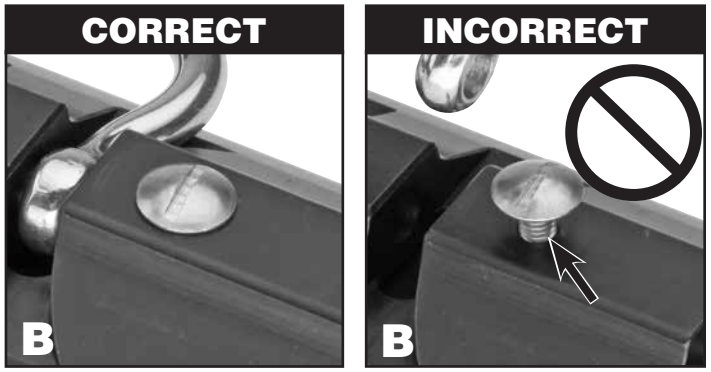
E) Inspect endstop screws to make sure they have not loosened and are flush with top of endstop.

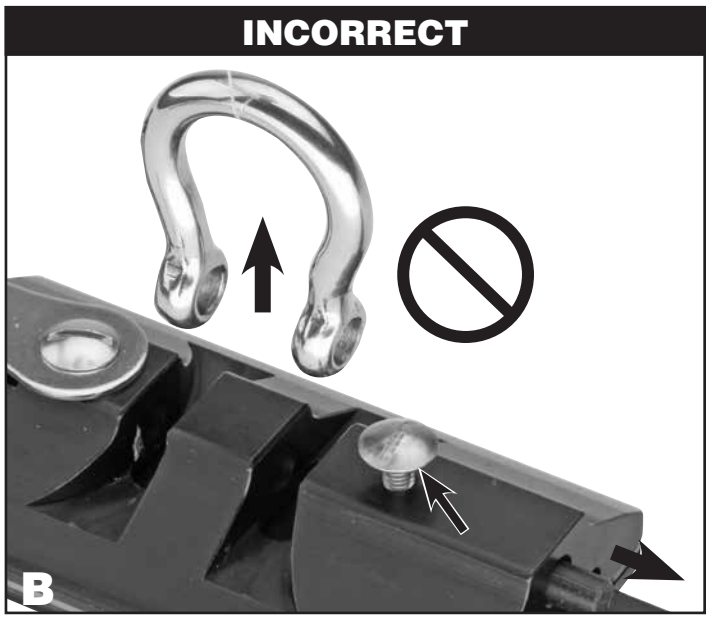
WARNING! If endstop screws loosen cars can roll off end of rail resulting in a fall, severe injury or death.

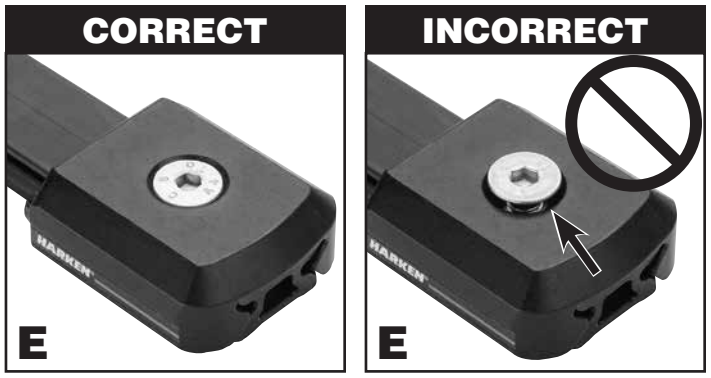
If car has been removed from rail, make sure car contains all 60 balls. Do not load car assembly if balls are missing.

WARNING! If car has been removed from rail some balls may be lost. Do not use cars if balls are missing. Cars with missing balls may come off rail resulting in a fall, severe injury or death.
See page 8.









6) Formal Inspection

A formal inspection of rail for cracks, deformation or wear and its connection to structure must be performed annually by a trained person.
Record inspection results in a log. See page 10.

Remove and inspect cars for damage, corrosion, strength and operation.

Remove shackle from car to inspect hidden portion.

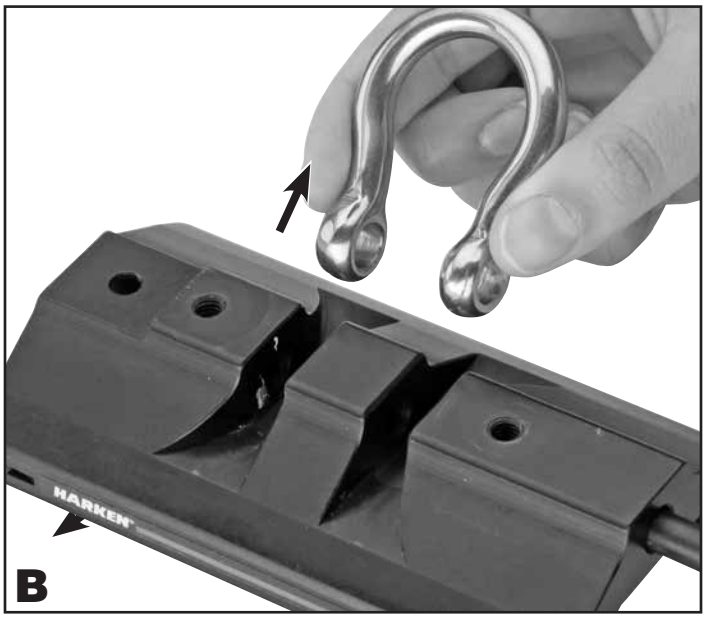
A) Remove car coupler/pivot pin retaining screw. If necessary heat screw with a propane torch to break Red Loctite® bond.

B) Tip car so pivot pin slides out.

C) Remove shackle and inspect. If it shows any sign of corrosion cracking or wear, return complete car assembly to a service/recertification center listed on the back of this manual for advice.

D) Reassemble parts using Red Loctite®.

A



B

C


D

E

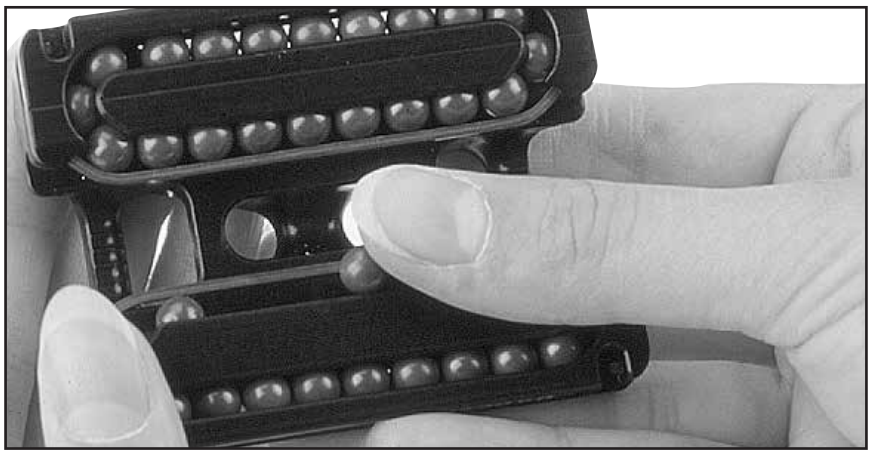
6) Inspection

Inspect cars' Torlon® ball bearings.

Make sure there are no 'flats' as they will impede car movement. Damaged balls may indicate high load or high wear. Return complete car assembly to one of the service/recertification centers listed on the back of this manual for advice.

Make sure that all races have the correct number of balls (see chart below/right).

Do not use system until missing balls have been replaced.



Car length		Balls/car	Balls	Order	Balls/set	Ball Ø
5 3/16"	132 mm	60	Torlon®	1526	25	5/16"(8 mm)

WARNING! Do not use cars if balls are missing. Cars with missing balls may come off rail resulting in a fall, severe injury or death.

To replace lost balls, position car on edge with retaining clip in place. **Do not remove retaining clip**. Gently push one ball at a time into car from center of clip. Allow balls to roll into return race and insert remaining balls. Do not overfill. Each car must have 60 balls!

Inspect pinstop for spring degradation, cracks or wear that may affect locking strength and operation.

Inspect rail for cracks, deformation or wear.

Inspect attaching fasteners for loosening, damage or corrosion that may affect strength.

See Inspection "BEFORE EACH USE", pages 5, 6, 7.

SERVICE

If inspection reveals an unsafe or defective condition, remove item from service and destroy it.

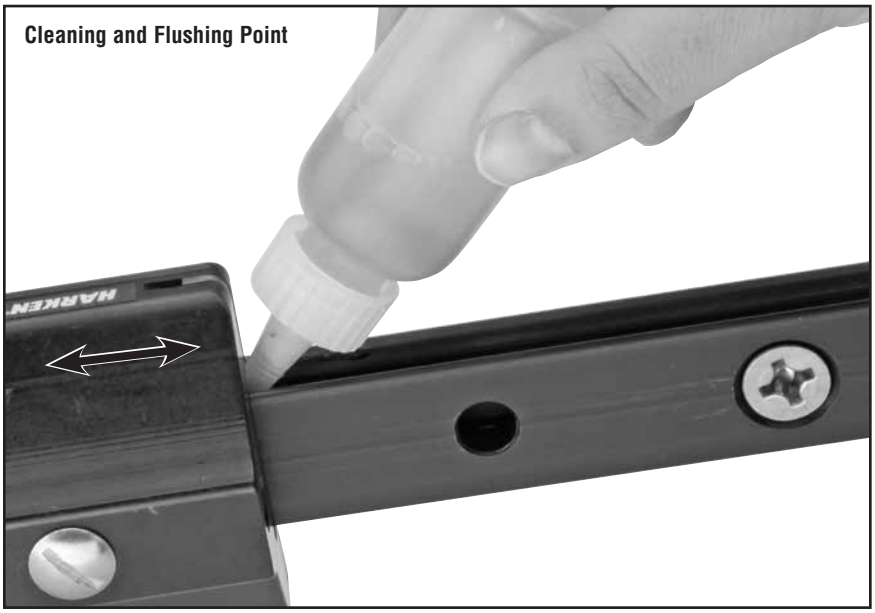
If in doubt please contact manufacturer for further advice.

7) Maintenance

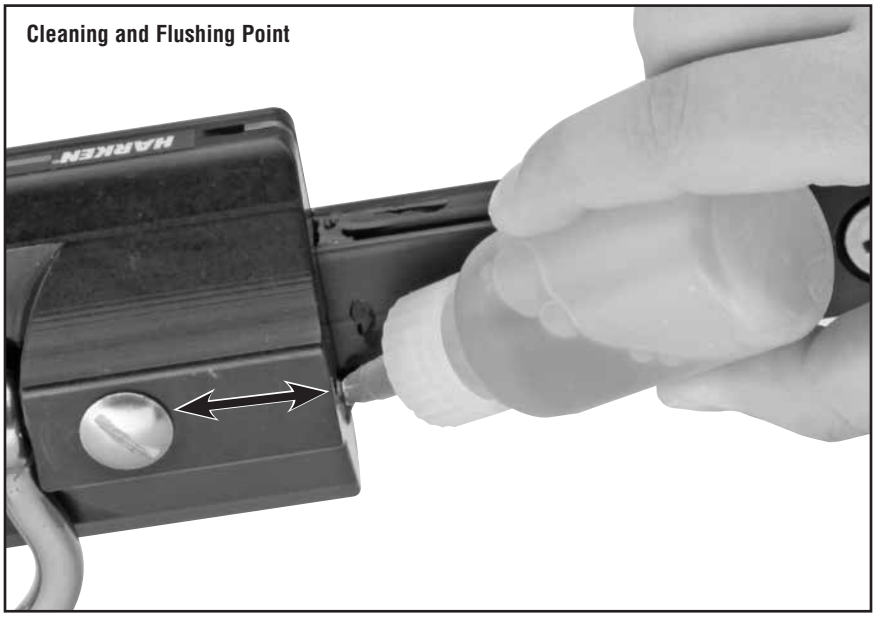
Flush cars frequently by squirting a detergent/water solution into center openings. Roll car back and forth to distribute evenly, then flush bearings with fresh water.

After car dries, apply one or two drops of McLube® OneDrop™. Roll car back and forth to distribute. Do not use spray lubricants because ball bearings may skid, not roll.

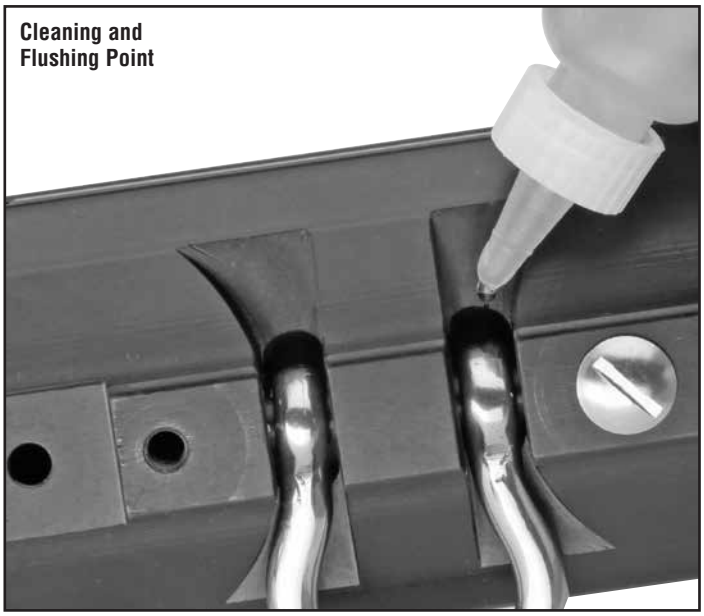
It is important to clean car as excessive build-up of grease, dirt and salt will restrict car movement.



Cleaning and Flushing Point



Cleaning and Flushing Point


Cleaning and Flushing Point

After car dries, apply one or two drops of McLube® OneDrop™. Roll car back and forth to distribute.

8) Labeling

The following is an example and explanation of the product labelling:

IN9608	A0000	HARKEN® www.harkenindustrial.com	Access Rail System R27	EN 795:2012	CE 0321	4686
1	2	3	4	5	6	7

1. Product part number; 2. Serial number; 3. Manufacturer's name; 4. Product name; 5. Number of document to which the equipment conforms; 6. CE symbol; 7. Pictogram indicating the necessity for users to read the instructions for use and label part number.

9) Records

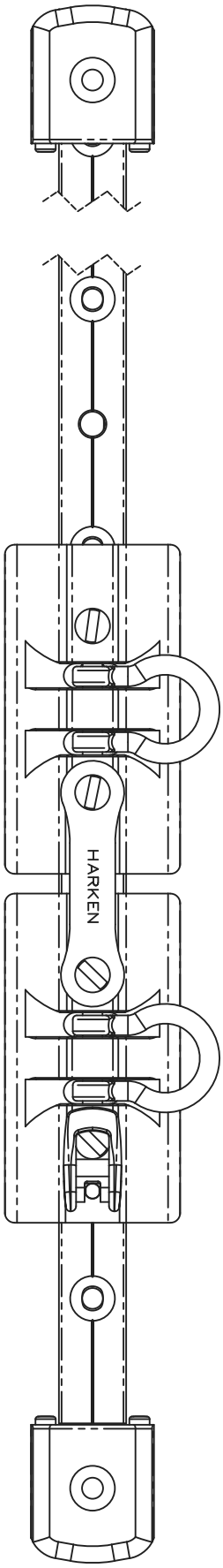
A record must be kept for each component, subsystem and system, with the following details (see example record log below).

It is the responsibility of the user organization to provide the record and to enter onto the record the details required.

EQUIPMENT RECORD		
Product:		
Model/Type	**Description**	**Serial Number**
Manufacturer **HARKEN**	**Address** **N15W24983 Bluemound Rd** **Pewaukee, WI 53072-4974 USA**	**Tel/Fax/Email/Website** **(262) 691-3320 / (262) 701-5780** **harken@harken.com / www.harken.com**
Year of Manufacture	**Purchase Date**	**Date First Put Into Use**
Other important information (i.e. document number):		

EXAMINATION/REPAIR HISTORY				
Date	**Reason for Entry (Periodic exam or repair)**	**Defect notes, repairs carried out and other important information**	**Name and signature of compentent person**	**Date of next periodic examination**

Drawing H-49971



Maritime and Coastguard Agency

MARINE GUIDANCE NOTE

MGN 422 (M)

Use of Equipment to Undertake Work Over the Side on Yachts and Other Vessels

Notice to all Shipowners, Masters and Crew

This notice should be read with the Code of Safe Working Practices for Merchant Seamen Chapters 4 and 15

PLEASE NOTE:-
Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel and you should consider seeking independent legal advice if you are unsure of your own legal position.

Summary

This MGN provides guidance on the use of "rail and trolley" and similar systems for undertaking "overside" work on yachts and other vessels. The main points are:

- to ensure that new systems comply with BS standards;
- to ensure that existing systems have been checked to an equivalent standard;
- to ensure operators have been trained in their use;
- to ensure maintenance is carried out to the manufacturer's advice

Annex 1 give details of the relevant legislation that applies and Annex 2 give details of testing and operation.

1. Introduction

1.1 The use of single point safety "rail and trolley" systems is becoming more prevalent on vessels, especially mega-yachts. These allow crewmembers to work outside conventional guardrails for cleaning and maintenance purposes on yachts or other vessels. In recent years there have been a number of accidents using substandard equipment of this type. Also there has been evidence that the manufacturers' instructions on their use are not being followed. The purpose of this notice is to give guidance on their use.

1.2 Most consist of two travellers linked in tandem that can be separated if necessary into independent units. These are fitted to a metal track rail which allows the travellers to glide along it. There is the option of having more than one traveller on the rail. However, many of these systems have been designed, and installed, for the sole purpose of sail handling and not for supporting workers working over the side of the vessel.

1.3 Equipment which is used for lifting persons must be designed for the purpose and it is not acceptable to use a work station harness or a bosun's chair attached to a rail and trolley system designed for sail handling to enable window cleaning or other overside maintenance to be undertaken.

2. Installation

2.1 Any newly installed rail and trolley system used should be tested, certified and approved to a recognized European Union standard for fall protection equipment (EN 795:2012) and should display the CE mark. More information on these requirements is contained in Annex 2.

2.2 Where it is proposed to use a rail and trolley system, or other system, (i.e., a system already fitted) that has not been specifically designed for supporting crew members over the side, its use for overside work is not permitted without written confirmation having been received from the manufacturer, preferably by means of a certificate, that use for such purposes is permissible including any conditions attached to its use for that purpose.

3. Operation

3.1 Before use the employer should ensure that:

3.1.1 the manufacturer's instructions are read and understood by the persons who will be using the equipment;

3.1.2 a risk assessment is carried out and an appropriate rescue plan developed to recover persons who fall into the water; and

3.1.3 crew members are competent to use the equipment and are aware of any conditions relating to its use and their safety.

3.2 Rail and trolley systems for working overside should not be used whilst the vessel is underway.

3.3 These systems are designed to be used with the appropriate PPE (harnesses, lanyards, fall-arresters and other devices).

3.4 On systems referred to in paragraph 2.1 there is a single attachment on each traveller designed to accommodate a single line such as a harness. One of the travellers is fitted with a locking device. The device which locks the traveller in position along the rail must ONLY be disengaged from the rail while the user is changing position. Once the user is in position, the locking MUST be re-engaged to hold the car in position and limit the user's movement along the rail.

3.5 The user must NEVER rely on only one attachment point for personal protective equipment. The working harness should be attached to one traveller and a fall-arrestor, or other safety device, to the other. A third traveller could be used to attach work tools.

3.6 More guidance can be found in the Code of Safe Working Practices Chapters 4 and 15.

3.7 The use of systems for overside work that do not meet the requirements of either paragraphs 2.1 or 2.2 above, or fail to provide instructions in the use of such equipment in accordance with paragraph 3.1, could potentially place the employer of the crew, and also the master, in breach of their obligations under relevant Merchant Shipping health and safety legislation and render them liable to prosecution and a fine for non-compliance. Further information on relevant legislation is set out in Annex 1.

4. Maintenance

4.1 Where systems meeting the requirements of either paragraphs 2.1 or 2.2 are used for overside work, relevant information regarding the maintenance and testing of such systems should be obtained from the system manufacturer. Such information is to be in written form and a copy of it is to be kept on board the vessel to which it applies.

4.2 More information on the use of these systems is contained in Annex 2.

More Information

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ANNEX 1

MERCHANT SHIPPING LEGISLATION RELEVANT TO OVERSIDE WORK

The following provisions of Merchant Shipping Legislation are relevant to overside work. However only the main points especially relevant to the use or selection of ***rail and trolley systems*** are listed. In order to meet the requirements of the legislation completely it will be necessary to comply fully with all the requirements of this legislation.

1 Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997

1.1 Under regulation 5 of the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (No 2962) (the "General Duties" Regulations), guidance on which is contained in Marine Guidance Note MGN 20, a general duty is placed on an employer to ensure, so far as is reasonably practicable, the health and safety of workers and other persons on board a UK registered vessel. In meeting this requirement the employer is required to undertake a risk assessment to determine whether any risks to the health and safety of workers will, or potentially could, arise in the normal course of their activities or duties. Where any such risks, or potential risks, are identified the employer is required to take appropriate measures to either remove such risks entirely or, where that is not possible, reduce those risks as far as is reasonably practicable. It is for the employer to decide what measures are taken to reduce any risks.

2 Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006

2.1 In addition to the provisions of the General Duties Regulations referred to above, the provisions of the Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006 (No 2183), guidance on which is contained in Marine Guidance Note MGN 331 (M+F), require an employer to ensure that all work equipment made available to workers on the ship:

(a) is suitable for the work to be carried out; or

(b) is properly adapted for that purpose; and

(c) may be used by workers without impairment to their health or safety.

2.2 When selecting work equipment the employer is required to take into account the conditions under which the work is to be undertaken and the characteristics of that work as well as having regard to any risks to the health and safety of workers arising from the use of that work equipment. The employer must also ensure that any work equipment is used only for operations, and under conditions, for which it is suitable. "Suitable" in this context means suitable in any respect which it is reasonably foreseeable will affect the health and safety of any worker. Any work equipment to be used by workers must be maintained in an efficient state, in efficient working order and in good repair.

3 Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006

3.1 Should the use of the access systems referred to in paragraph 1.1 of the main body of this MGN involve raising or lowering of any worker it is likely the provisions of the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 (SI 2006/2184), guidance on which is contained in Marine Guidance Note MGN 332 (M+F), could also apply. Under these Regulations an employer is required to ensure that all lifting equipment is of adequate strength and stability having regard in particular to the stress induced at its mounting or fixing point. In addition the Regulations provide that, except in exceptional circumstances, no lifting equipment shall be used for lifting persons unless it is designed for the purpose.

4 Merchant Shipping and Fishing Vessels (Heath and Safety at Work) (Work at Height) Regulations 2010

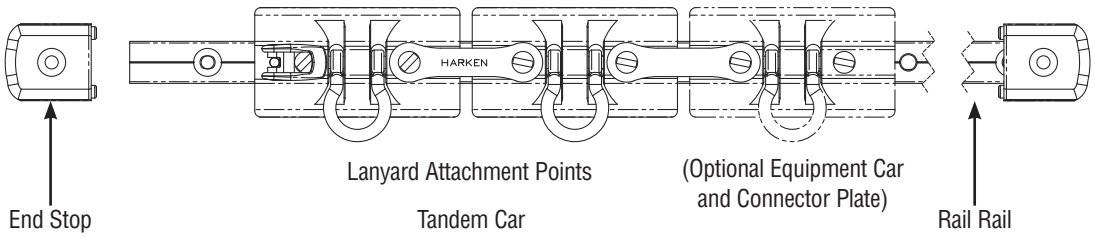
4.1 The Merchant Shipping and Fishing Vessels (Heath and Safety at Work) (Work at Height) Regulations 2010 (No 332), guidance on which is contained in Marine Guidance.

Note MGN 410, require employers to ensure that work equipment used for work at height is the most suitable to ensure and maintain safe working conditions for workers using that equipment. The Regulations also require the employer to select work equipment which is appropriate to the nature of the work to be performed and is appropriate to foreseeable loads and stresses. In addition specific “Requirements for Rope Access and Positioning Techniques” are set out in Schedule 3 to the draft Regulations.

ANNEX 2

PROTECTION AGAINST FALLS FROM A HEIGHT – ANCHOR DEVICES – REQUIREMENTS AND TESTING

1. Fixed rail anchor devices must comply with EN 795:2012.
2. Tests should be carried out on a sample of the medium to which the anchor devices, in this case the traveller and bar, is attached. Each test should be repeated at the extremity and intermediate anchor and at a joint.
3. A static test with a weight of 12kN should be applied for a period of 3 minutes. The device should suffer no permanent deformation of more than 10 mm.
4. A dynamic test consists of a 100 kg mass being dropped so that it generates a fall-arrest load of 9kN. The anchor device shall not release the test mass. Increase the test mass to 300 kg for 3 minutes. The mass is held clear of the ground.
5. Precise descriptions of the required tests can be found in EN 795:2012.
6. Below is an example of a traveller showing its construction.



7. Below is a typical setup for attachments to the traveller.

1.Full-Body Safety Harness

Use a full-body safety harness attached to the access traveller with lock.
Full-body safety harness must meet **CE**/ANSI support standards.

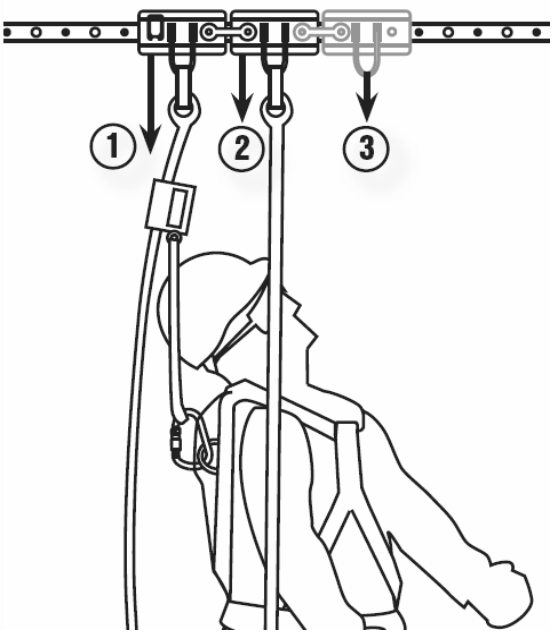
2. Working Harness

Use a working harness or chair attached to the access traveller without lock.
Working harness or chair must meet **CE**/ANSI support standards.

Additional Options

3. Tool Service Car

Add an optional lockable traveller or traveller with coupler to work as your tool service carrier.



Harken Access Rail System (ARS)
Installation & Proof Testing Advice

INTRODUCTION

The following is the good faith interpretation by Harken of the standards that we understand are the current methods that will meet the many test procedures to assure a safely installed Harken ARS System. Harken is not responsible for any future changes, alternate interpretations, or other requirements imposed by inspection officials. Harken does not accept any responsibility for the consequences of failed installations including but not limited to personal injuries, costs or any related damages or from failed alternative installations methods. The installer is directed to carefully consider BACKGROUND.

The Harken ARS is fully tested and certified under EN 795:2012 as a fall-arrest anchor device. However, we have had a number of requests to approve alternative methods of fastening due to different construction and building techniques.

Regrettably, it is simply not possible for us to approve all these alternatives without detailed engineering, testing and surveying of every individual case.

Therefore, the purpose of this guidance is to illustrate how alternative methods of attachment can be considered by the installer and considered as suitable.

To be 100% explicit, this guidance is regarding the installation of the product and nothing to do with the product itself.

BACKGROUND

We have researched the MCA documentation and BS 7883:2005 PPE Anchor Device Testing. From this we can draw two critical principles:

A) Any safety equipment or lifting device must have its installation inspected and surveyed as per standard industry practice. Likewise, periodic inspection is necessary to ensure nothing has deteriorated due to age, wear or corrosion. There are well established systems and protocols in place to ensure this is done. This is nothing special or unique to the Harken ARS.

B) As per the MCA code of practice (Chapter 21.6.1) The Installer has the full responsibility for a proper, safe installation that is tested to meet all relevant standards. Normally this would be verified by an independent safety surveyor.

REGARDING BS 7883:2005

This Code of Practice details the maintenance and testing regime of EN 795:2012 anchor devices for fall protection. It recommends an initial sample (3no.) proof test of 12kN (1200 kgs) for 3 minutes if the installation is into a base material that the installer has no information on or has never installed into before. If the samples tested pass, the rest of the anchor points shall be tested to 6kN for 15 seconds.

If the anchor device is only used for fall protection, the device should be thoroughly examined and tested annually to 6kN for 15 seconds. If the device is used for suspending personnel or rope access the device should be thoroughly examined and tested every 6 months as a minimum.

CONCLUSION

BS 7883:2005 standard gives a good reference point to offer guidance on testing of any rail installation, new or retro-fit. Our interpretation in practical application is:

1. PROOF TESTING

1.1 The test objective is for the installer to prove their individual installation methodology for each type of base material/fastener type or where working with unknown factors.

1.2 The surveyor will have to approve the individual test regime and be satisfied it was done correctly. In practice this normally means overseeing the test.

1.3 For new builds or for identical constructions, the proof test can be done on representative sample pieces. These should be long enough to hold a pair of cars in normal configuration plus the end stops. In practice, 500 mm would be suitable.

1.4 This can be applied to installations if the construction is identical and as long as it is properly documented.

1.5 In the case of retro-fits where the construction is not necessarily known (due to modifications, corrosion or aging), the proof testing will have to be done in situ.

1.6 If done in place, then we recommend testing in highest risk locations such as where personnel gain access to the system or at the ends of the rails.

1.7 Subject to surveyor approval, the proof test procedure would be:

Note: This is a static test. There is no drop load. The car is not expected to move under these conditions

i. Attach a water bag to a single car.

ii. Fill to achieve a load of 1200 kg.

iii. Hold for 3 minutes without deformation – paying particular to rail/fastener stability.

iv. Drain/unload water bag, move and repeat in two further locations (or sample pieces).

v. The system should remain functional.

2. INSTALLATION TESTING:

2.1 This test objective is to ensure that the system has been installed correctly in practice and remains sound as it ages.

2.2 We recommend that each rail is tested in at least 3 locations, typically at both ends and at any rail joint or in the middle.

2.3 Again subject to surveyor approval, each rail should be tested on installation as per:

i. Attach a water bag to a single car.

ii. Fill to achieve a load of 600 kg.

iii. Test for 15 seconds per location.

iv. Repeat as necessary for each separate rail.

2.4 Normal safety equipment operations requires testing post-installation and then 6 monthly routine inspections with 12 monthly testings.

2.5 Further testing and inspection of the ARS should be incorporated into standard operating practices and into the safety records.

3.0 Documentation to be supplied after installation:

i. The installation documentation provides evidence to the end uses and that the installation has been carried out properly.

ii. The documentation should be handed over to the user and kept on hand for subsequent examinations of the device.

iii. The documentation should contain at least:

- Address and location of installation.
- Name and address of installation company.
- Name of the person in charge of the installation.
- Product identification.
- Fixing device.
- Schematic installation plan.
- A declaration by the installer, that it is:

  Installed in accordance with manufacturer's instructions;

  Carried out in accordance to plan;

  Fixed as specified;

  Commissioned in accordance with manufacturer's instructions;

  Supplied with photographic information/documentation.

1/09/10
Andrew Ash-Vie
Managing Director, Harken UK Ltd

Updated in line with EN 795:2012
01/10/2012

Worldwide Limited Warranty

COVERAGE. HARKEN® warrants that each HARKEN product, when properly used and maintained, will be free from defects in material and workmanship from the date of receipt of the product by the final customer.

THE LIMITED WARRANTY. This limited warranty applies to all Harken products purchased.The sole and exclusive remedy under this LIMITED WARRANTY for original defects in materials or workmanship of a HARKEN product shall be the repair or replacement,in HARKEN's sole discretion, of the defective part or component, in accordance with the terms of this warranty.

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- damage or deterioration of cosmetic surface finishes, including cracking, crazing, discoloration or fading;
- accidents, misuse, abuse, abnormal use, improper use, lack of reasonable or proper maintenance or storage;
- installation, service or repairs improperly performed or replacement parts or accessories not conforming to HARKEN's specifications;
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- normal wear or deterioration occasioned by the use of the product or its exposure to the elements;
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- the costs to remove, disassemble or re-install the product;
- removal, storage and replacing of the product on which the product has been installed, even where this is necessary to carry out the warranty service.

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- washers and spacers;
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