

REVIEW OF DIVERS HARNESSSES

A REPORT TO MANAGEMENT

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2026 Update: This report is now nearly 20 years old. Industry has taken heed, and the vast majority of diving organisations now comply with the report's findings.



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1 Background

Divers harnesses are worn for safety. If a diver becomes unconscious or incapacitated, he will be rescued and recovered to the diving bell via a recovery hoist. This recovery hoist will be attached to the diver's harness, and he will be raised into the diving bell to receive treatment.

Ultimately, he will have to be returned to the saturation chambers. Therefore, he will have to be lowered from the bell to the transfer chamber using his harness. The harness serves as the strong point for attaching the divers' umbilical.

These harnesses are incorrectly referred to as a recovery harness. They are, by definition, rescue harnesses, as defined in EN1497:1996. This Standard is for top-side harnesses, but the definition is generic.

Rescue Harness Definition: *Component of personal protective equipment for rescue purposes, consisting of elements designed and constructed so that during the rescue process, the rescuee is held.*

The standard specifies requirements, test methods, instructions for use and marking for rescue harnesses. *A rescue Harness is not a component of Personal Protective Equipment against falls from a height.*

EN 1497: 1996

Rescue Equipment-Rescue Harnesses

Safety harnesses are PPE. Therefore, they come under the Personal Protective Equipment Regulations 1992, for use, and the Personal Protective Equipment Regulations 2002, for manufacturing.

All PPE should also meet the relevant European standards.

2 Non Compliance

- Divers' harnesses in use today are not legal PPE.
- Divers' harnesses don't meet relevant Standards, i.e. for lifting.
- The lifting point and the harness itself are not tested for their intended use.
- Certificates of conformity, instructions for use, maintenance, repair, or periodic examinations for the harnesses are not supplied to the end user.
- The company has neither maintenance nor a periodic examination routine in place for the harnesses.

It is the company's responsibility to ensure that the harnesses meet all the requirements of the PPE regulations and European standards. This should have been identified by risk assessments on equipment and procedures, required by the MHSW Regulations.

Another tool that would have identified this omission is an audit. The industry standard is IMCA's D.E.S.I.G.N audits. Harnesses are omitted from these audit checklists. They are also overlooked in IMCA's guidance note 18, *Initial and periodic examination, testing and certification of diving plant and equipment*.

It is the buyer's responsibility to ensure that the PPE conforms to UK legislation, bears the appropriate CE marking, and is suitable for its intended use.

CE markings alone will not determine the suitability of the product for specific applications. Additional tests and conformity with other standards may be necessary beyond the minimum CE approval requirements.

Some harnesses in circulation, usually divers' personal ones (i.e. not issued by the company), do not have CE markings. This is either an indication of age (pre-1995) or that the label has worn off through use.

It is still legal to sell, buy, and use non-CE-marked products, provided they were already in the supply chain within the EEA (i.e., in the hands of a distributor or retailer) before 1st July 1995, and that they are suitable for their intended use.

Any non-CE-marked products, i.e. harnesses, should have been subjected to regular examinations/inspections in this period to confirm their continued suitability and integrity. This, as stated earlier, is not the case for pre 1995 or newer harnesses.

3 Manufactures Responsibilities

The manufacturer/Supplier of harnesses is required to provide instructions for use, maintenance, and examination intervals. Each harness should be clearly and permanently marked by the manufacturer in the official language of the country of destination and should include at least:

- Manufactures name
- Model and type/identification
- Serial number
- EN standard(s)
- The last two digits of the year of manufacture

These requirements come under the same EN as for fall arrest harnesses, EN 365:2004



Example of how a harness should be labelled

4 Angle of Suspension

The primary attachment point on a harness for lifting an incapacitated diver is between the shoulder blades (dorsal). Some harnesses also have optional chest (thoral) lifting points.

To utilise the thoral lift points effectively, it is imperative to use a chest spreader to avoid crushing the divers' chest and restricting their breathing.

The length of the rescue strap and where it attaches to the body of the harness are critical. This, in turn, denotes the angle of suspension of the diver's body through the trunking and in the bell.

Although sites covered by the Diving at Work Regulations are exempt from the Confined Spaces Regulations 1997, there are obvious similarities between the two work environments. ISO 10333 recommends that confined-space harnesses have a maximum suspension angle of 10 °. This would seem a sensible angle to adopt for a divers' harness.

When suspended in the Dive Dynamics bell and recovery harnesses, the angle of suspension is approximately 50° and 30° front and back, respectively. The Divex and Hydrospace harnesses have a high, short dorsal rescue strap that provides a more upright suspension angle.

5 Standards

The majority of divers' harnesses in use today are CE-marked as required for PPE. However, they comply with BS EN 250: 2000. This is the Standard for; *Respiratory equipment: open-circuit, self-contained air diving apparatus.*

Ignore the fact that offshore personnel are wearing these harnesses while saturation diving, not air diving. These harnesses (figures 1 and 2) are designed to carry a Scuba bottle (the four brass eyelets on the back are for the clamps that hold the Scuba bottle). They are not purpose-built lifting equipment and therefore do not carry the required EN/British Standard number.



There is no lifting requirement within EN BS 250; 2000.

Harnesses



There are currently three main types of 'Diver recovery harnesses' worn by divers working in the North Sea: the Dive Dynamics bell and recovery harnesses and Divex's simple harness. They have been the industry standard for over twenty years. They are supplied by Divex.

The Hydrospace harness is manufactured and supplied by Hydrospace. They were trialled offshore (by the author) in 2006. They have since been modified in accordance with current standards and end-user feedback.

6 Compliance

The correct EN standards for divers' harnesses, where lifting is required, are the prEN 15333 series.

These new Standards now refer to divers' harnesses as a 'Lifting harness'.

prEN 15333-1:2005, **Respiratory equipment-Open circuit umbilical supplied compressed gas diving apparatus-Demand apparatus.**

Lifting harness

The apparatus may include a lifting harness for lifting an unconscious diver from the water. The lifting harness may be the body harness or a separate system; in any event it must be possible to easily remove the diving apparatus and auxiliary supply without removal of the lifting harness.

prEN 15333-2 2007, **Open-circuit umbilical supplied compressed gas diving apparatus-Part 2: Free flow apparatus**, also states;

The body harness shall provide a method to securely attach the umbilical to the diver. Each securing point on the body harness shall withstand a tensile load of 3500 N for 5 minutes.

.....the lifting harness shall provide lifting points on both the front and the back of the diver. Each lifting harness as a whole, including adjustment systems, buckles, etc., shall withstand a tensile force of 9000 N.

They also require testing in cycles of seawater submersion (8 hours), then in air without being cleaned in freshwater (16 hours in humidity of not more than 75%)

Although still in draft form, they will be fully operational in March/April (2008).



JOK 2 Harness with correct EN-tested harness

7 Recommendations

- As soon as practicable, review the suitability of all divers' harnesses on worksites and withdraw any non-compliant units. (Remove all stainless attachments for recycling)
- Replace with harnesses that are tested and that meet relevant legislation, guidance and company policy.
- Introduce a periodic inspection regime for the new harnesses (as per the manufacturer's instructions).
- Provide information, instruction, and training to divers wearing the harnesses.
- Supply information, instruction and training to the Dive Supervisors.
- Train key personnel to conduct the periodic inspections.
- Recommend that IMCA include harness condition on *DESIGN* documents and IMCA D18 *Initial and periodic examination, testing and certification of diving plant and equipment*.

8 Conclusion

The legislative and safety issues concerning divers' harnesses appear to have been overlooked. Neither the Health and Safety Executive, IMCA, nor the diving companies themselves have addressed this continued use of non-compliant PPE.

All items of equipment worn by the diver should, wherever possible, comply with international, European or national standards.

The Diving at Work Regulations 1997, ACoP article 122

The Hydrospace harness is now the only commercial diver harness that satisfies current legislation, guidance and company policy. Not only is it the only specific lifting harness, but it also conforms to the correct EN, thereby satisfying the PPE Regulations 1992 for use and the PPE Regulations 2002 for manufacturing.

Hydrospace has also developed a chest spreader to accompany their harnesses so the thoral lift points can be used safely and effectively.

The compliant Hydrospace harness costs less than the non-compliant DD4 bell harness.

The harnesses that comply with EN BS 250: 2000 could still be used for air diving as a bailout harness. They would, however, have to be incorporated into an inspection programme and could not be used to lift personnel.

9 References

www.divex.co.uk

www.hydrospace.co.uk

www.osha.com

www.hse.gov.uk

ACoP L103 Commercial diving projects offshore

prEN15333-1:2005

prEN15333-2:2007

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ISO 10333

EN BS 1497; 1996

EN BS 365; 2004

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IMCA 18

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IMCA DESIGN 24 / 23 / 37 / 40

Personnel Protective Equipment Regulations 1992

Management of Health and Safety at Work Regs 1999

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HSE Research report 451/ 2002-Harness suspension

Confined Spaces Regulations 1997

Alan Forsyth-Evaluation of unconscious diver recovery into a hyperbaric environment

Photographs

Divex

Hydrospace

C Hodge

Rev	Date	Comment
8	1 st May 2014	Added this revision box Added foot notes to changes in industry from this original report Added photo of JOK 2 harness with approved EN reference Changed front cover to Safety Consultant Changed email address
9	13 th January 2015	Changed front cover for 4 Seas Safety website
10	June 2026	Tidy up Sanitized and removed vessel and organisations names Check with Grammarly