

Diving cylinders: Guidance on their manufacture, inspection and carriage

HSE information sheet

Diving Information Sheet No 11

Introduction

This is part of a series of information sheets providing guidance on diving at work. The information is also relevant to the recreational diving sector. The new Carriage of Dangerous Goods (CDG) Regulations 2009¹ have now made it clear that cylinders used for breathing apparatus are not within the scope of these Regulations. This information sheet provides guidance on the manufacture, inspection and carriage of diving cylinders in light of this change.

Manufacturing standards

Diving cylinders contain large amounts of stored energy. It is vital that they are made to appropriate standards and used and maintained to ensure the safety of both the divers who use them and the people who fill them. In the EU a cylinder used with diving apparatus cannot be put on the market unless it conforms to the Pressure Equipment Directive (PED),² which is implemented in UK legislation by the Pressure Equipment Regulations 1999,³ as amended.

All diving cylinders manufactured to the PED will bear the CE mark. Cylinders made before the application of the PED will not bear the CE mark but may continue to be used as long as they have been manufactured in accordance with an appropriate standard and are maintained in serviceable condition.

In-service inspections and tests

It remains a requirement of health and safety law⁴ that equipment used at work or in connection with work is properly maintained. Diving cylinders used at work or filled by a person who is at work must therefore be subject to a suitable inspection and test regime to ensure they are safe. Recreational divers should note that this applies to their cylinders where they are filled by a person at work. It is, however, strongly recommended that all cylinders, whether used at work or not, are subject to such a test regime. Aside from the obvious safety issues, personal insurance cover might well be prejudiced if they are not.

The relevant European Standards describing the inspection requirements for diving cylinders are:

- steel cylinders BS EN 1968;⁵
- aluminium cylinders BS EN 1802;⁶
- composite cylinders BS EN ISO 11623.⁷

These European Standards require that the inspection and test is carried out by a competent person. There is no unique legal definition of competence for cylinder testing. However, HSE considers that the following provide a suitable level of confidence in a cylinder inspectors' competence for this task:

- appointment by the Secretary of State for Transport for the purposes of inspection of gas cylinders;
- working within the terms of an industry accredited scheme such as that operated by the Scuba Industries Trade Association (SITA) and the Inspectorate for Diving Equipment Servicing and Testing (IDEST).

The appointment or accreditation should be for the specific type of cylinder concerned.

Details of those test house/cylinder inspectors meeting these criteria are provided on the following websites:

- Department for Transport Appointment: www.dft.gov.uk/pgr/freight/dgt1/road/packaging/tanks/pressurerecept/
- SITA/IDEST Scheme: www.sita.org.uk/IDEST/idest.html

Stamp marking and labelling

European Standards require a diving cylinder to be stamp marked, to show that it has been subject to the relevant inspection/test, and labelled to show the next test date. A test report should also be given to the owner. It is recommended that cylinder owners retain these test reports as proof, in addition to the stamp mark, that the test has been conducted by a suitably competent person.

The hazards posed by cylinders containing high-pressure gas are considerable. People involved in their handling, particularly the emergency services responding to an incident, need to be able to identify these hazards. Diving cylinders should continue to be labelled in accordance with the European Standard EN 1089-2,⁸ namely with a label displaying the green compressed-gas hazard diamond, an additional yellow hazard diamond if the gas has an oxygen content greater than 21%, plus the UN name and number of the gas contained in the cylinder.

Carriage

The change to the CDG Regulations is unlikely to have a significant impact on many organisations that carry filled diving cylinders on the road as part of a work activity. Previously, up to 1000 litres nominal capacity (water capacity) of diving cylinders could be carried without the full application of the Regulations. In such circumstances the only requirement, under the previous Regulations, was to carry a 2 kg dry-powder fire extinguisher in the vehicle.

References

- 1 *Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009* SI 2009/1348 The Stationery Office
- 2 *Pressure Equipment Directive 97/23/EC* 29 May 1997 The Stationery Office
- 3 *Pressure Equipment Regulations 1999* SI 1999/2001 The Stationery Office
- 4 *Health and Safety at Work etc Act 1974 (c.37)* The Stationery Office 1974 ISBN 978 0 10 543774 1
- 5 BS EN 1968:2002 *Transportable gas cylinders. Periodic inspection and testing of seamless steel gas cylinders* British Standards Institution
- 6 BS EN 1802:2002 *Transportable gas cylinders. Periodic inspection and testing of seamless aluminium alloy gas cylinders* British Standards Institution
- 7 BS EN ISO 11623:2002 *Transportable gas cylinders. Periodic inspection and testing of composite gas cylinders* British Standards Institution
- 8 BS EN 1089-2:2002 *Transportable gas cylinders. Gas cylinder identification (excluding LPG). Part 2: Precautionary labels* British Standards Institution

Further reading

Commercial diving projects offshore. Diving at Work Regulations 1997. Approved Code of Practice L103 HSE Books 1998 ISBN 978 0 7176 1494 3

Commercial diving projects inland/inshore. Diving at Work Regulations 1997. Approved Code of Practice L104 HSE Books 1998 ISBN 978 0 7176 1495 0

Recreational diving projects. Diving at Work Regulations 1997. Approved Code of Practice L105 HSE Books 1998 ISBN 978 0 7176 1496 7

Media diving projects. Diving at Work Regulations 1997. Approved Code of Practice L106 HSE Books 1998 ISBN 978 0 7176 1497 4

Scientific and archaeological diving projects. Diving at Work Regulations 1997. Approved Code of Practice L107 HSE Books 1998 ISBN 978 0 7176 1498 1

Further information

HSE priced and free publications can be viewed online or ordered from www.hse.gov.uk or contact HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995. HSE priced publications are also available from bookshops.

British Standards can be obtained from: www.bsigroup.com/Shop or by contacting BSI Customer Services for hard copies only Tel: 020 8996 9001 e-mail: cservices@bsigroup.com.

The Stationery Office publications are available from: www.tso.co.uk. Statutory Instruments can be viewed free of charge at www.opsi.gov.uk.

For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Fax: 0845 408 9566 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

This information sheet can be found at: www.hse.gov.uk/pubns/dvis11.pdf.

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