

Diving cylinders: Guidance on their manufacture, inspection and carriage

HSE information sheet

Introduction

This is part of a series of information sheets providing guidance on diving at work. It specifically provides guidance on the application of health and safety legislation in relation to the manufacture, inspection and carriage of diving cylinders. The information contained within this guidance is also relevant to recreational diving.

Manufacturing standards

Diving cylinders contain large amounts of stored energy. It is vital that they are made to appropriate standards and maintained to ensure the safety of both the divers who use them and the people who fill them. In the United Kingdom a cylinder used with diving apparatus cannot be put on the market unless it conforms to the Pressure Equipment Directive (PED)¹, which is implemented in UK legislation by the Pressure Equipment Regulations 1999² (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 if they have been manufactured in accordance with an appropriate standard and are maintained in serviceable condition.

In-service inspections and tests

Health and safety law³ requires 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.

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The relevant standards describing the inspection requirements for diving cylinders are:

- BS EN ISO 18119. Gas cylinders. Seamless steel and seamless aluminium-alloy gas cylinders and tubes. Periodic inspection and testing⁴
- BS EN ISO 11623. Gas cylinders. Composite construction periodic inspection and testing⁵

These standards require that inspections and tests are carried out by a competent person. There is no unique legal definition of competence for cylinder testing. However, many cylinder filling companies and dive centres will only accept cylinders that have been examined and tested by organisations that are

- Appointment by the Secretary of State for Transport for the purposes of inspection of gas cylinders and/or
- Working within the terms of a UKAS accredited scheme.

The Diving Industry Committee has produced further guidance on the periodicity of inspections in the form of diving sector specific risk assessments⁶. However, it remains the responsibility of individuals to assess the condition and usage of their cylinders. In particular, where it is suspected that water may have entered the cylinder inadvertently, that cylinder should be removed from service until it has been inspected by a competent person.

Cylinder owners are advised to contact their cylinder filling company to determine who should carry out the inspection and test. HSE recommends that any inspection and testing regime is subject to independent assurance.

Stamp marking and labelling

National standards⁷ require a diving cylinder to be 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 that the test has been conducted by a suitably competent person.

Transporting cylinders

If you are going to transport cylinders by road then they should be labelled in order to assist the emergency services in the event of an accident. This should be with a label displaying the green compressed-gas hazard diamond, and an additional yellow hazard diamond if the gas has an oxygen content greater than 23.5%. Further guidance on the transport of gas cylinders in vehicles is available from the British Compressed Gases Association⁸.

Specific testing for cylinders which are over 10 years old that are transported by road for the purpose of work

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009⁹ require that cylinders carried in the course of a work activity are in scope of ADR (the agreement concerning the international carriage of dangerous goods by road). In order to meet these specific requirements, cylinder inspection must be conducted by an organisation which has been appointed by the Vehicle Certification Agency (VCA) every 10 years post manufacture¹⁰.

References

- 1 *Pressure Equipment Directive* 97/23/EC 29 May 1997
- 2 *Pressure Equipment Regulations* 1999 SI 1999/2001
- 3 *Health and Safety at Work etc Act 1974*
- 4 BS EN ISO 18119: *Gas cylinders. Seamless steel and seamless aluminium-alloy gas cylinders and tubes. Periodic inspection and testing* British Standards Institution
- 5 BS EN ISO 11623: *Gas cylinders. Composite construction periodic inspection and testing* British Standards Institution
- 6 *Risk assessment of cylinder internal examination periodicity* <https://www.imca-int.com/publications/452/risk-assessment-of-cylinder-internal-examination-periodicity/>
- 7 BS EN 1089-3 *Transportable gas cylinders. Gas cylinder identification (excluding LPG)*
- 8 *British Compressed Gases Association* Guidance note 27
- 9 *Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (as amended)*
- 10 *UK Appointed Inspection Bodies* <http://www.dft.gov.uk/vca/dangerousgoods/gb-appointed-inspection-bodies.asp>

Further reading

Commercial diving projects inland/inshore. Diving at Work Regulations 1997. Approved Code of Practice and guidance L104 (Second edition) HSE Books 2014 ISBN 978 0 7176 6593 8 www.hse.gov.uk/pubns/books/l104.htm

Commercial diving projects offshore. Diving at Work Regulations 1997. Approved Code of Practice and guidance L103 (Second edition) HSE Books 2014 ISBN 978 0 7176 6592 1 www.hse.gov.uk/pubns/books/l103.htm

Recreational diving projects. Diving at Work Regulations 1997. Approved Code of Practice and guidance L105 (Second edition) HSE Books 2014 ISBN 978 0 7176 6594 5 www.hse.gov.uk/pubns/books/l105.htm

Media diving projects. Diving at Work Regulations 1997. Approved Code of Practice and guidance L106 (Second edition) HSE Books 2014 ISBN 978 0 7176 6595 2 www.hse.gov.uk/pubns/books/l106.htm

Scientific and archaeological diving projects. Diving at Work Regulations 1997. Approved Code of Practice and guidance L107 (Second edition) HSE Books 2014 ISBN 978 0 7176 6596 9 www.hse.gov.uk/pubns/books/l107.htm

The Diving at Work Regulations 1997 SI 1997/2776 The Stationery Office 1997 ISBN 0 11 065170 7

Are you involved in a diving project at work? A brief guide to complying with health and safety law. Leaflet INDG266(rev 2) www.hse.gov.uk/pubns/indg266.htm

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This leaflet is available at <http://www.hse.gov.uk/pubns/dvis11.pdf>.

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