

ICS 03.220.40

CCS R54



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 16636-2008

Code of safety for diver's use of electricity underwater

潜水员水下用电安全规程

Issued on: June 19, 2008

Implemented on: January 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
3	Terms and Definitions
4	Environment
4.1	Deck cabin decompression and emergency transport systems
4.2	The Diving Bell and provided guillotine submersible
4.3	Underwater working spaces
4.4	Electric wetsuit
4.5	Manned submersible
4.6	ROV
4.7	Umbilical cord
4.8	Handheld devices
4.9	Subsea equipment
4.10	Wet Welding and Cutting
4.11	Plus current device
4.12	Power equipment
4.13	Water distribution equipment
4.14	Underwater explosive device
4.15	Battery
4.16	Insulation Materials
5	Technical requirements
5.3	The Diving Bell and provided guillotine submersible
5.4	Underwater working spaces
5.5	Manned submersible
5.6	ROV
5.7	Umbilical cord
5.8	Handheld devices
5.9	Subsea equipment
5.10	Electric wetsuit
5.11	Wet Welding and Cutting Power Voltage
5.12	Plus current device
5.13	Power equipment

6 Installation and Operation

6.1 Underwater electricity installation requirements

Foreword

All the technical contents of this standard is mandatory. This standard mainly with reference to the International Marine Contractors Association (IMCA) "underwater electrical safety code of practice" (AODC035), on GB 16636-1996 "diver underwater electrical safety technical specifications" and GB 17869-1999 "diver underwater electrical safety rules" Integration amendment and in accordance with GB/T 1.1-2000 requirements be modified editorial. This standard replaces GB 16636-1996 "diver underwater electrical safety technical specifications" and GB 17869-1999 "diver underwater use Electrical safety procedures. " This standard will be incorporated into the main content of GB 17869-1999 GB 16636-1996, and remove the two standards Overlapping narrative text. Appendix A of this standard and Appendix B is an informative annex. The standard proposed by the People's Republic of China Ministry of Transportation. This standard is under the jurisdiction of the Ministry of Communications and salvage underwater engineering Standardization Technical Committee. This standard was drafted. Shanghai Jiaotong University Institute of Marine Sciences underwater engineering. The main drafters. Zhang Guoguang, Dong Jianshun, Jing Yanlin, Wangbao Jian, He Xiuxia. This standard replaces the standards previously issued as follows:

--- GB 16636-1996;

--- GB 17869-1999. Diver underwater electrical safety regulations

1 Scope

China's mandatory code of safety for a diver's use of electricity underwater. Underwater welding, cutting and power tools put a diver in direct contact with an electrical circuit while immersed in a conductive medium, which removes every protection that keeps electricity survivable on land: the body is not insulated, the current has paths through the water in all directions, and the diver cannot let go. The code addresses that with rules that are specific and non-negotiable - direct current rather than alternating for welding and cutting, because alternating current at mains frequency is far more likely to cause fibrillation and muscular lock; the knife switch that must be open except during the actual arc and operated by the tender on the diver's command; the earthing arrangement; the insulation of the holder and the leads; and the prohibition on the diver being between the electrode and the earth return.

This standard specifies the divers and underwater operations related to a variety of underwater electrical equipment, and underwater operations, although with no direct

relationship, but it may It would pose a hazard in a variety of jobs diver underwater electrical structure, facility in terms of the basic requirements for safe use of electricity, including the use of environmental, technical Requirements, installation procedures, and emergency measures. This standard applies to tools, equipment, systems, tools, structure, facility, as well as electrical safety-related and diver underwater diving installed.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB 6722 Blasting Safety Regulations

GB/T 16560 deck decompression chamber

3 Terms and Definitions

The following terms and definitions apply to this standard.

3.1 Avoid or prevent a variety of electrical devices may be provided by the use of underwater (or pressure tank) caused by divers hazards (such as. electric shock), and because Heating cause degradation of electrical insulating materials and toxic, explosive product, or because of the heated surface, faulty equipment, switchgear and other electrical generation Arc, spark ignited some of the damage caused to the mixed gas divers.

3.2 The entire device and the system can transport divers diving operations at desired pressure (including. deck decompression chamber, diving bell, underwater Working spaces and personnel transport tanks, etc.) and various types of diving, as well as divers in diving operations should dress, or to maintain the harness Peigua (Eg. wetsuit, scuba, umbilical cord and communications equipment, etc.).

3.3 One kind of transport divers in case of emergency means the pressure vessel, one of the main equipment of diving systems. Divers Emergency transport system The system is equipped with a gas, electrical and audio-visual detection device can be in contact with their counterparts in the deck decompression chamber. Also known as. personnel transport compartment.

3.4 Tools diver when used underwater, equipment and instruments.

3.5 Large-scale installations and structures in the long-term underwater work, such as. impressed current cathodic protection systems, subsea oil and gas production systems, subsea pipelines and water Under the cables.

3.6 Nearby underwater electrical equipment in normal use, such as. the environment in which the pressure, gas, temperature, humidity, and divers love the dress And other conditions.

3.7 It can be allowed to flow through the body of the diver maximum current.

3.8 When the voltage gradient occurs in the water will not harm diver, divers minimum distance from a charged body.

3.9 A setting in the vicinity of the work area, used to complete the cabin structure underwater welding and other work. Under the pressure of the outside world of the sea, the work chamber The interior has a dry and moderate gas environment.

3.10 By electrical heating mode, warm heat generation diver underwater diving suit, pants, gloves, hats, etc. are necessary.

3.11 A variety of small devices during diving operations carried by a diver, such as. cameras, underwater lighting, power hand tools and non-destructive testing (NDT) devices.

3.12 The seabed by electric drive for a variety of work tools, equipment powered hydraulic pump or power source.

3.13 Take fully insulated, or perfectly conducting, or insulating and conducting combined and other measures to avoid the potential causes of the water caused by the potential gradient electric shock hazard Water service.

4.1 Deck cabin decompression and emergency transport systems

4.1.1 Pressure. 0MPa ~ 6MPa, but generally 0MPa ~ 3MPa, and can change at different rates.

4.1.2 Environment. 0MPa ~ 0.6MPa compressed air; or an oxygen partial pressure of not more than 0.06MPa and an oxygen concentration of not more than 23% oxygen Mixture.

4.1.3 Temperature. saturated cabin is 25 °C ~ 35 °C, cabin air is 0 °C ~ 50 °C.

4.1.4 Humidity. cabin relative humidity of 50% to 75%, under special circumstances, a brief rise to 100%.

4.1.5 diver dress. wearing thin non-electrical protection clothing.

4.2 The Diving Bell and provided guillotine submersible

4.2.1 Pressure. 0MPa ~ 6MPa, but generally 0MPa ~ 3MPa, and rapidly changing.

4.2.2 Environment. 0MPa ~ 0.6MPa compressed air; or an oxygen partial pressure of not more than 0.06MPa and an oxygen concentration of not more than 23% oxygen Mixture.

4.2.3 Temperature. inner equipment for 25 °C ~ 35 °C, special cases can be reduced to 10