

Guidelines to Address Potential Hazards of Quick Release Cylinder Valves Used in Firefighting Systems

1 Introduction

Several incidents with quick release cylinder valves that are used on some firefighting system gas cylinders have been reported. In one incident, a worker died and in other cases workers suffered bone fractures (shinbone, hand).

In all cases, the cause of the incidents was either the unexpected or intentional opening of the valve fitted to the gas cylinder during handling, filling, or venting of the cylinder. The consequences were that the cylinders went out of control after the valve opened.

These valves are designed to quickly release a large volume of gas. The cylinder valves referenced in this publication have many and various designs and are different from standard high pressure valves. For typical design information on such valves, refer to ISO 17871, *Gas cylinders—Quick-release cylinder valves—Specification type and testing* [1].¹

In addition, this type of valve is often fitted to larger than standard cylinders (for example, 80 litre water capacity) so the hazard created by such a valve opening is increased because of the package size. These packages can be difficult to manually manoeuvre and secure, resulting in additional risk of cylinders falling over and valves opening or shearing.

2 Scope

This publication provides guidelines for the handling of gas cylinders during filling, storage, discharge, maintenance, periodic inspection, and transport equipped with quick release cylinder valves used in firefighting systems.

Quick release cylinder valves are used on cylinders typically containing carbon dioxide, nitrogen, or gas mixtures in firefighting systems.

3 Definitions

For the purpose of this publication, the following definitions apply.

3.1 Publication terminology

3.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2 Should

Indicates that a procedure is recommended.

¹ References are shown by bracketed numbers and are listed in order of appearance in the reference section.

3.1.3 May

Indicates that the procedure is optional.

3.1.4 Will

Is used only to indicate the future, not a degree of requirement.

3.1.5 Can

Indicates a possibility or ability.

4 Handling of gas cylinders equipped with quick release cylinder valves

Cylinders returned for cylinder maintenance or periodic inspection shall be considered as full and shall be handled and vented in accordance with the requirements of this publication.

The handling of gas cylinders during filling, storage, maintenance, periodic inspection, and transport equipped with this type of valve is only safe if the quick release valves have a locking device for the opening lever or a gas-tight outlet seal cap (also referred to as a blanking nut) to prevent accidental release. If not, there is no protection against the unintended opening of the valve. See Figures 1 and 2 for an example of this type of valve and a typical locking device. Cylinders equipped with a quick release valve without a locking device on the opening lever or a gas-tight outlet seal cap (blanking nut) shall not be handled or accepted for filling. To prevent ejection when it is removed, a gas-tight outlet seal cap shall have a vent hole to relieve pressure that might be trapped upstream of the seal cap.

Some valves are protected by a closed removable cap. In such cases, it is not possible to see whether a locking device is in position/activated or not until the cap is removed. For such cylinders, the valve cap shall be removed only after the cylinder is secured.

During discharge or filling, the gas cylinders shall always be secured by a holding or clamping device, and the gas cylinders shall only be released from this device if a blanking nut is installed at the valve outlet and/or the opening lever is locked and secured. Note that these cylinders are commonly larger and heavier than the usual industrial gas cylinders and additional precautions can be required during filling and handling.

WARNING: Because of the energy due to the very high flow, the cylinders are subject to high forces and consequently conventional securing devices such as chains or straps may not be sufficient.

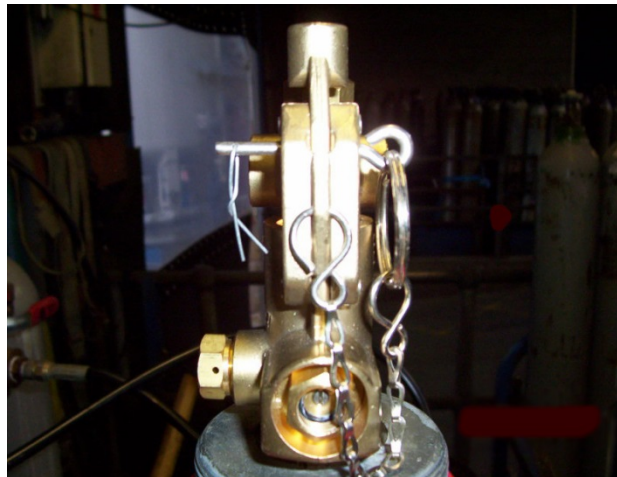


Figure 1—Cylinder valve with valve closed and locking device engaged



Figure 2— Cylinder valve with locking device disengaged and valve open

5 References

Unless otherwise specified, the latest edition shall apply.

[1] ISO 17871, *Gas cylinders—Quick-release cylinder valves—Specification type and testing*. International Organization for Standardization, www.iso.org

As part of a programme of harmonisation of industry standards, the European Industrial Gases Association has issued Safety Info 22, *Potential Hazards of Quick Release Cylinder Valves Used with Firefighting Gases*, jointly produced by members of the International Harmonisation Council.

This publication is intended as an international harmonised standard for the worldwide use and application of all members of the Asia Industrial Gases Association (AIGA), Compressed Gas Association (CGA), European Industrial Gases Association (EIGA), and Japan Industrial and Medical Gases Association (JIMGA). Each association's technical content is identical, except for regional regulatory requirements and minor changes in formatting and spelling.

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