

POSITION STATEMENT

SECURING COMPRESSED GAS CYLINDERS FROM FALLING AT GAS MANUFACTURERS', DISTRIBUTORS', AND CYLINDER REQUALIFICATION FACILITIES AND USERS' SITES

Question

What is the proper way to secure compressed gas cylinders to prevent them from falling?

Answer

Gas manufacturers', distributors', and cylinder requalification facilities: An accepted safe method for securing compressed gas cylinders in storage is the nesting of cylinders by positioning them in a tight mass using a contiguous three-point contact system with other cylinders or using a solid support structure such as a wall or railing (see Figure 1) [1]. In seismically active areas, additional safeguards may be warranted.

Compressed gas cylinders in the process of examination, servicing and refilling are not required to be secured [1].

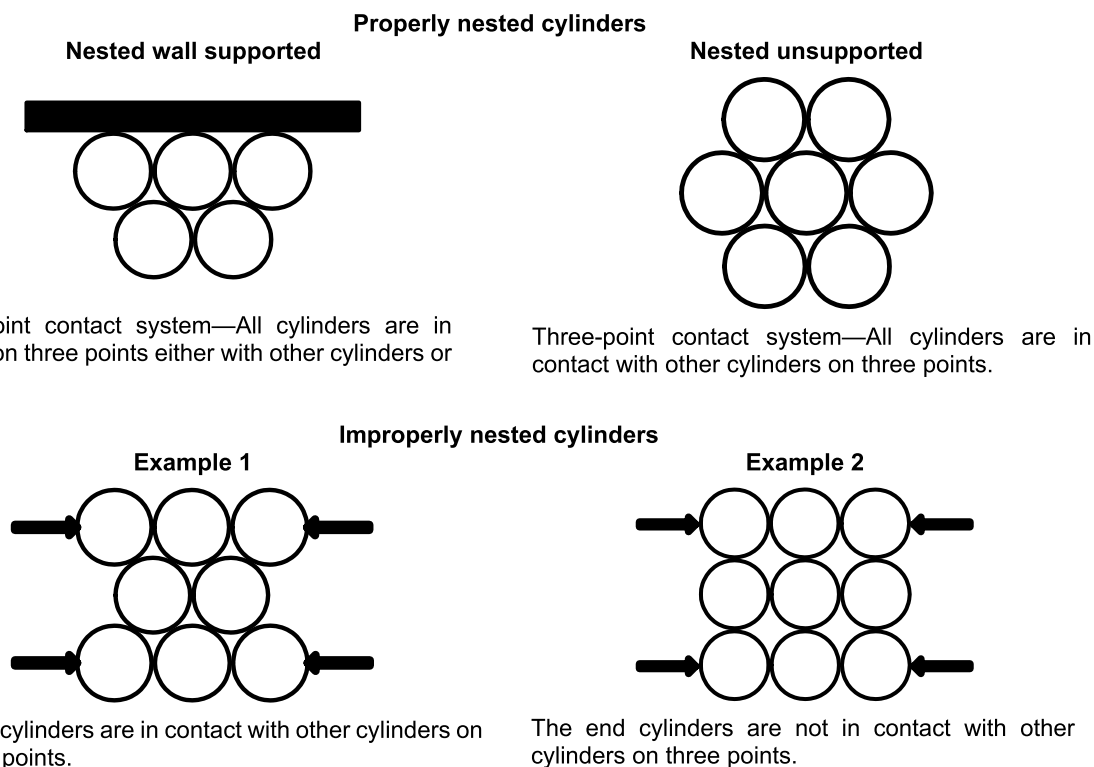


Figure 1—Proper and improper cylinder nesting

Reason for different methods

Appropriate methods for securing compressed gas cylinders differ because of the different types of personnel, facilities, equipment, and procedures associated with gas manufacturers, distributors, and cylinder requalifiers as compared to users. Consider the following:

- Gas manufacturing, distributing, and cylinder requalification facilities are designed and equipped specifically to process, store, and distribute large numbers of compressed gas cylinders with minimal related risks to personnel. Where such a high volume of cylinders is handled, securing the cylinders with chains or other such devices is, in many cases, not only inefficient and disruptive to the work process but can increase the risk of injury to personnel because of the additional cylinder handling steps required;
- Gas manufacturing, distributing, and cylinder requalification personnel are specifically trained and experienced in the handling, storage, and distribution of compressed gas cylinders. They understand how to properly secure cylinders by the nesting method; and
- Gas manufacturers, distributors, and cylinder requalifiers have developed numerous procedures based on their determination of the safest, most effective way to process, store, and distribute compressed gas cylinders at their facilities.

Storage methods approval organizations

The practice of nesting compressed gas cylinders has been reviewed and acknowledged as acceptable for gas manufacturers and distributors by the federal Occupational Safety and Health Administration (OSHA) based on the incorporation of the 1965 CGA P-1, *Safe Handling of Compressed Gases*, in paragraph 1910.101(b) of Title 29 of the U.S. *Code of Federal Regulations* [2, 3]. It has been repeatedly upheld by both state and federal OSHA review commission decisions. Other professional and industry organizations that have endorsed or incorporated CGA's position in their codes include the National Fire Protection Association, Uniform Fire Code, National Fire Code of Canada 1995, and the Gases and Welding Distributors Association. CGA has studied this practice with its member companies over many years. The most recent revision of CGA P-1, *Standard for Safe Handling of Compressed Gas in Containers* maintains nesting of cylinders as an equivalent and safe method of storage for gas manufacturers and distributors (refer to CGA P-1 for additional information) [2].

Summary

In summary, the proper securing of compressed gas cylinders at gas manufacturers', distributors', and cylinder requalification facilities and users' sites is as follows:

- All compressed gas cylinders in service or in storage at gas manufacturers', distributors', and cylinder requalification facilities and users' sites shall be secured to prevent them from falling. An appropriate method for securing cylinders is by providing a substantial chain, rope, or strap that is positioned in front of or around the cylinder(s) and secured to a solid structure; and
- At gas manufacturers', distributors', and cylinder requalification facilities, the nesting of cylinders is considered an equivalent safe manner of storage. Nesting depends on a three-point contact system such that all cylinders must be in contact at three points with either a secure wall or another cylinder. Figure 1 shows examples of proper and improper nesting.

References

[1] NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, National Fire Protection Association. www.nfpa.org

[2] CGA P-1, *Standard for Safe Handling of Compressed Gas in Containers*, Compressed Gas Association, Inc. www.cganet.com

[3] *Code of Federal Regulations*, Title 29 (Labor), U.S. Government Printing Office. www.gpo.gov