



Safety Bulletin - Use of Air Receivers and Propane Cylinders

Introduction

This information bulletin addresses air receivers and propane cylinders that are sometimes used by the public for purposes other than those originally intended, resulting in severe injury and sometimes death.

Pressure vessels are containers for the storage of compressible fluids. Such vessels can be extremely dangerous if not used correctly because of the large amount of stored energy created when fluids are compressed. A sudden release of this energy may have catastrophic explosive consequences. With the hazards involved, pressure vessels are designed and constructed for very specific service conditions and usages and must be operated and maintained in accordance with the manufacturer's specifications and the applicable legislative requirements.

Air Receivers

An air receiver is a pressure vessel specifically designed and constructed to store compressed air. An example of an air receiver is the "air tank" usually available at hardware stores for home use. CSA B51, *Boiler, Pressure Vessel and Pressure Piping Code* provides requirements for the proper design and construction of air receivers. The Code is adopted by regulatory authorities across Canada as part of the pressure-equipment regulations governing the design, construction, and use of pressure vessels.

When an air receiver is used, the manufacturer's operating and maintenance instructions must be followed carefully. There have been many instances of injuries and fatalities resulting from air receivers that were not properly designed, constructed, operated or maintained.

When operating an air receiver, the pressure relief valve, which protects the air receiver from being over-pressurized, must be periodically inspected and tested. Draining the air receiver periodically to rid it of condensation will minimize internal corrosion and promote efficient operation of the air receiver. If lubrication oil is required, only oil meeting the air receiver manufacturer's specifications should be used. There have been reported instances of explosions when incorrect lubrication oil was used. Normally, properly designed, constructed, and maintained air receivers will have a very long service life.

In some jurisdictions, small portable air receivers are exempted from any legal requirements, which results in some small air receivers not manufactured in full compliance with the requirements of CSA B51. In these cases, some of these small air receivers are marked with an expiry date. This would indicate that the air receivers do not meet CSA B51 requirements and should be discarded immediately after the specified expiry date.

Propane Cylinders

Small propane storage pressure vessels used in household barbecues or on small construction sites are typically known as propane cylinders. They are not the same as propane storage tanks, which are constructed in accordance with CSA B51. Propane cylinders are specifically designed and constructed to standards other than CSA B51 for the purpose of storing propane as fuel where ease of transportation (portability) is a major design consideration. Not only are these cylinders subject to specific design and construction requirements under the Transportation of Dangerous Goods Act, but the regulations also stipulate that propane cylinders must not be refilled unless they are manufactured, tested, inspected and marked in accordance with those regulations. Refilling of these cylinders should only be carried out by trained operators. All propane cylinders are marked with an expiry date beyond which they cannot be refilled and should not be used.

Use of propane cylinders is strictly regulated, and they must be filled, used and refilled for the designated application only in accordance with the manufacturer's specifications. Accordingly, the use of these cylinders for permanent ground storage of propane or for storing or transporting substances other than propane is strictly prohibited. Alteration of these cylinders in any way will create a safety hazard and is also prohibited.

Modification of air receivers or propane cylinders

It is illegal to modify pressure vessels or to use pressure vessels for a purpose other than what was originally intended and doing so can have serious consequences. Even if allowed for under the law, modification of pressure vessels or change of use of pressure vessels must be conducted in accordance with the regulations and the provisions of the applicable codes and standards.

A fatal accident occurred recently when a propane cylinder was modified for use in a steam generation application. In another incident, an injury was reported when a modified propane cylinder was used as an air receiver. It has also been discovered that propane cylinders might have been illegally converted for use in agricultural field marking.

Conclusion

When purchasing a pressure vessel, whether an air receiver or a propane cylinder, users must ensure that the pressure vessel is in full compliance with the applicable codes and legislation. For personal and public safety, as well as legal liability, users are reminded that pressure vessels must always be operated, maintained, and periodically inspected and tested in accordance with the manufacturer's specifications and the applicable legislative requirements.

This bulletin was published courtesy of the CSA B51 Technical Committee on Boiler, Pressure Vessel and Pressure Piping Code. For more information, please contact your local regulatory authority or:

Jeet Tulshi

Project Manager

Canadian Standards Association

Tel (416) 747 2603

Email: totaram.tulshi@csa.ca