



MARINE SAFETY ALERT

Inspections and Compliance Directorate

April 8, 2014
Washington, DC

Alert 03-14

FAILURE OF HAND PORTABLE FIRE EXTINGUISHER

This Safety Alert serves as a reminder to vessel owners/operators and fire safety equipment servicing companies to use caution when replacing components on hand portable fire extinguishers. While examining the activities surrounding a fire onboard a vessel, Coast Guard investigators from Sector Hampton Roads learned of the failure of a hand portable 15 pound (lb) Carbon Dioxide (CO₂) extinguisher. During a fire-fighting event, a crewmember attempted to use a 15 lb CO₂ extinguisher, but the extinguisher failed to properly discharge and only seeped from the neck of the extinguisher. The fire was extinguished by another crewmember using a dry-chemical fire extinguisher.

The investigators had the extinguisher examined at a fire-fighting equipment service center. They determined that the hose and discharge horn had been replaced at an earlier time. The end of the hose screws on to a diffuser on the side of the discharge valve/handle assembly of the extinguisher. The diffuser is a ported protrusion on the male end of a ninety degree fitting. On the side of the protrusion are orifices through which the CO₂ flows. The examination revealed that the spherical end of the protrusion, which contains no orifices, bottomed out against the orifice in the connection fitting that leads to the hose and horn assembly. The flow of CO₂ was thus completely blocked.

It was further noted that the male threads of the diffuser were tapered US national pipe threads, while the female threads of the hose connection were straight. This difference likely allowed the hose connection to be tightened further than intended on the diffuser threads, permitting the spherical end of the diffuser to bottom out against the orifice in the tube. This may have also resulted in the reported leakage from the neck of the extinguisher due to back pressure.



Newer types of diffusers exist in which the orifice follows the length of the protrusion and the end is not spherical. However, the issues regarding the tightening of the two components and the importance of ensuring proper lengths and compatibility of the threaded and machined surfaces remain. Binding or bottoming out should not occur except at the threaded surfaces. Replacement parts should be as specified by the original manufacturer of the extinguisher.

The Coast Guard does not know the extent of this problem or if this particular instance of failure is an outlier. It involved an older CO₂ extinguisher with a hose and horn assembly that had been replaced. We do not advise owners/operators or vessel personnel to take apart or disassemble their extinguishers. Only technicians from fire equipment service companies should work on this equipment.

The Coast Guard only advises that if owners/operators, based on visual examination of their equipment, believe there is a possibility of potential blockage of flow due to conditions as described above, they should contact a qualified fire equipment service company for more thorough examination, testing, and repair, if needed.

The Coast Guard recommends that fire equipment service companies be aware of the potential problems described above, and ensure that all replacement components for servicing hand portable fire extinguishers are as specified by the original extinguisher manufacturer. Service companies that market replacement parts should also note the importance of these concerns and advise their customers accordingly. If the appropriate replacement parts are not available, the extinguisher should be replaced.

Owners/operators and fire equipment service companies are requested to contact the Coast Guard at typeapproval@uscg.mil if this issue is discovered to be a widespread problem. Special appreciation to Sector Hampton Roads investigation shop for identifying this important issue.

This safety alert is provided for informational purpose only and does not relieve any domestic or international safety, operational or material requirement. Developed by Sector Hampton Roads Investigations and the Office of Investigations and Analysis, Washington, DC. For questions or concerns please email hqs-pf-flidr-cg-inv@uscg.mil.