



Coffee Break Training - Fire Protection Series

Hazardous Materials: Compressed Gas Cylinder Control Valve Pressure Relief Devices

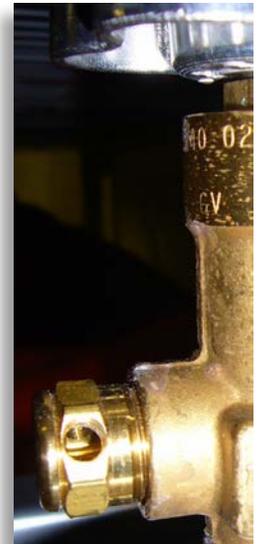
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Learning Objective: The student will be able to explain the operation of compressed gas cylinder control valve pressure relief devices (PRDs).

Last week's Coffee Break Training described gas valves for high- and low-pressure cylinders. Today, we look at the PRDs installed on the valves to minimize the chance of catastrophic cylinder rupture.

Requirements for PRDs are established in Compressed Gas Association S-1.1, *Pressure Relief Device Standards-Part 1-Cylinders for Compressed Gases*. The standard represents the minimum requirements for PRDs considered appropriate and adequate for cylinders with a water capacity of 1,000 pounds (454 kilograms) or less.

Device Designation	Description
CG-1	A nonreclosing frangible metal disk designed to burst when the static pressure at the inlet exceeds the specified set pressure. The burst disk allows the pressurized gas to pass through the outlet vent and relieve the internal pressure of the system. The pressure rating typically is stamped on the disk face. This device empties the entire contents of the system.
CG-2	A nonreclosing fusible plug designed with a metal alloy that has a low melting temperature rated at 165 F (74 C); the plug yields when exposed to excess temperature and opens the outlet to allow the pressurized gas to escape. This device empties the entire contents of the system.
CG-3	A nonreclosing fusible plug that includes a metal alloy that has a low melting temperature rated at 212 F (100 C); the plug yields when exposed to excess temperature and opens the outlet to allow the pressurized gas to escape and relieve the internal pressure of the system. This device empties the entire contents of the system.
CG-4	A combined fusible alloy device rated at 165 F (74 C) and rupture disk that requires both functions to occur (excess temperature and overpressurization) to release the entire contents of the cylinder.
CG-5	A combined fusible alloy device rated at 212 F (100 C) and rupture disk that requires both functions to occur (excess temperature and overpressurization) to release the entire contents of the cylinder.
CG-7	A spring-loaded reclosing device in which a spring holds the valve closed until the static pressure increases above the set pressure of the spring. When the valve is exposed to pressure at or above the set pressure, the disk unseats, which opens the valve and allows the gas to vent, thus relieving the excess pressure. This device does not empty the entire cylinder.



This Type CG-1 pressure relief device (PRD) at the lower left is identified by its distinctive open vent holes.

Note: There is no CG-6 designated PRD.

When a cylinder is being filled, it is the filler's responsibility to verify that the PRD is correct for the product.

For more information, consider enrolling in the National Fire Academy course "Hazardous Materials Code Enforcement" (R0615). Information and applications can be obtained at <http://apps.usfa.fema.gov/nfacourses/catalog/details/10504>.



Eligible for Continuing Education Units (CEUs)

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For archived downloads, go to:

www.usfa.fema.gov/nfa/coffee-break/