



**CGA E-16—2022**  
**STANDARD FOR COMPRESSED**  
**GAS CHECK VALVES FOR**  
**PRESSURES UP TO 3500 PSI**

**THIRD EDITION**

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NOTE—Technical changes from the previous edition are underlined

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## 1 Introduction

Many years of field use and experience have shown that various types of equipment using the Compressed Gas Association (CGA) standard cylinder valve, pipeline, and manifold connections are reliably safe when operated in accordance with manufacturer's instructions. Under certain circumstances, the user's failure to follow these instructions can cause the backflow of unwanted gas into a pipeline, cylinder, or other equipment.

The purpose of a check valve is to reduce the possibility of a reverse flow of gas or simply to keep the atmosphere, moisture, dirt, etc. from backing up into a system when changing connections. Check valves are not intended to act as fire stops (flame arrestors) or as replacements for shutoff valves.

Check valves that meet the requirements of this standard shall not be misconstrued as a substitution or replacement for the backflow check provisions in NFPA 51, *Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes*; CGA E-12, *Standard for Safety Devices Used in Gas Welding, Cutting, and Allied Processes*; or NFPA 99, *Health Care Facilities Codes*, unless properly specified for that particular use [1, 2, 3].<sup>1</sup>

Safe use of gas piping equipment, including check valves, can only be assured by the observance of proper operating procedures and safe practices recommended by the equipment manufacturers, industry associations, and regulatory bodies.

## 2 Scope

This standard applies to check valves used in general industrial and medical compressed gas service designed for service pressures up to 3500 psi at 120 °F (24 130 kPa at 49 °C), and used in conjunction with cylinder valve or manifold connections specified by various standards of CGA.<sup>2</sup> These connections may be incorporated as part of equipment; such as regulator inlet connections, manifold connections, or other high pressure hose line (pigtail) inlet and outlet connections. See:

- CGA E-3, *Standard for Low Pressure Pipeline Station Outlet/Regulator Inlet Connections*;
- CGA E-9, *Standard for Flexible Stainless Steel Braided Hoses Used in Compressed Gas Service*;
- CGA E-11, *Standard for Stationary Compressed Gas Cylinder Discharging Manifolds for Working Pressure up to 3000 psi*;
- CGA V-1, *Standard for Compressed Gas Cylinder Outlet and Inlet Connections*; and
- CGA V-10, *High Pressure Gas Trailer Connections* [5, 6, 7, 8, 9].

This standard does not apply to check valves used as an integral part of a regulator, residual pressure cylinder valve, gas pump, or otherwise integral component of other equipment. This standard does not apply to cryogenic or liquefied gas check valves.

Flammable, toxic, high purity, or specialty gas applications can require additional specialized design requirements.

This standard does not prejudice the continued use of check valves in service or in inventory at a manufacturer's or user's site that were manufactured before the effective date of this standard. The effective date of this standard is one year from the date of publication of this edition, which is October 31, 2022. Check valves manufactured on and after the effective date of this standard shall be in compliance with this standard.

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

<sup>2</sup> Psi, bar, and kPa shall indicate gauge pressure unless otherwise noted as (psia; bar, abs; and kPa, abs) for absolute pressure or (psid; bar, dif; and kPa, differential) for differential pressure. All kPa values are rounded off per CGA P-11, *Guideline for Metric Practice in the Compressed Gas Industry* [4].