Compressed Gas Association
The Standard For Safety Since 1913

CGA E-8—2020
GUIDELINE FOR GAS FLOWMETERS

THIRD EDITION

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NOTE—Technical changes from the previous edition are underlined.

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1 Scope

This publication provides a safety and performance guideline for flowmeters and the flowmeter portion of a flowmeter regulator combination designed for use by the welding, cutting, and allied process industries.

This publication does not apply to medical flowmeters, which are covered in CGA E-7, *Standard for Medical Gas Pressure Regulators, Flowmeters, and Orifice Flow Selectors* [1].[1]

2 Definitions

For the purpose of this publication, the following definitions apply.

2.1 Publication terminology

2.1.1 Shall
Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

2.1.2 Should
Indicates that a procedure is recommended.

2.1.3 May
Indicates that the procedure is optional.

2.1.4 Will
Is used only to indicate the future, not a degree of requirement.

2.1.5 Can
Indicates a possibility or ability.

2.2 Technical definitions

2.2.1 Flowmeter regulator
Combination of a flowmeter with a pressure reducing regulator that provides control of flow rate (volume).

2.2.2 Leak rate
Numerical expression for the amount of gas unintentionally leaked to the atmosphere, from the surrounding atmosphere, or inside a closed system.

NOTE—In this publication, the leak rates will be given in either cubic centimeters per second (cc/s) or cubic centimeters per hour (cc/h).

2.2.3 Oil-free, dry air or oil-free, dry nitrogen
Air or nitrogen with a dew point of –40 °F (–40 °C) or less and an oil content of 5.0 mg/m^3 or less.

2.2.4 Pressure
Force per unit of area exerted by a gas to its surroundings.

NOTE—In the customary U.S. system of measurement, pressure is expressed in pounds per square inch (psi). In ISO standards, pressure is expressed in units based on the Le System International d'Unites (SI system).

3 Descriptions

The flowmeters described in this publication consist of a tube having a tapered inside diameter with a float inside. The flow of gas lifts the float upward inside the tube. As the float's height inside the tube increases, the flow area of the tube also increases. The float will settle at a position inside the tube that is a function of the rate of gas flow.

[1] References are shown by bracketed numbers and are listed in order of appearance in the reference section.