

CGA C-1—2006
METHODS FOR
HYDROSTATIC TESTING
OF COMPRESSED
GAS CYLINDERS
NINTH EDITION



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Work Item 06-053
Cylinder Specifications Committee

NOTE—Technical changes from the previous edition are underlined.

NOTE—Appendices B and E (Normative) are requirements.

NOTE—Appendices A, C, and D (Informative) are for information only.

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Contents	Page
1 Introduction.....	1
2 Scope	1
3 Definitions.....	1
3.20 Visual inspection.....	2
3.22 Water capacity.....	2
4 Overview	2
4.1 Water jacket method.....	2
4.2 Direct expansion method.....	3
4.3 Proof pressure method.....	3
4.4 Registration	3
4.5 Inspection of cylinders.....	3
5 Water jacket method	3
5.1 Scope	3
5.2 Test system components.....	7
5.3 Calibrated cylinder.....	8
5.4 Test system accuracy verification.....	9
5.5 Test system troubleshooting.....	10
6 Direct expansion method.....	13
6.1 Scope	13
6.2 Test system components.....	14
6.3 Calibrated cylinder.....	14
6.4 Expansion determination of test system and components	15
6.5 Test system accuracy verification.....	15
6.6 Test system troubleshooting.....	16
7 Proof pressure method.....	22
7.1 Scope	22
7.2 Test system components.....	22
7.3 Test system accuracy verification.....	23
7.4 Test system troubleshooting.....	24
8 References	24
Tables	
Table 1—Accuracy verification of test system (Direct expansion method)	19
Table 2—Direct expansion hydrostatic testing of cylinders.....	20
Table 3—Determining the expansion of test system and components (Direct expansion method)	21
Figures	
Figure 1—Typical schematic diagram of water jacket test apparatus.....	5
Figure 2—Zero point	5
Figure 3—Total expansion	5
Figure 4—Permanent expansion	5
Figure 5—Adjustment of water level in burette for expansion readings.....	6
Figure 6—Typical schematic diagram of direct expansion test apparatus.....	13
Figure 7—Factors for compressibility of water.....	17
Figure 8—Typical schematic diagram of proof pressure test apparatus.....	22
Appendices	
Appendix A—Sources of regulatory information	25
Appendix B—Calibration devices	26
Appendix C—Marking of cylinders requalified by the water jacket or direct expansion methods	27
Appendix D—Sample forms for cylinder requalification	28
Appendix E—Test system component calibration.....	31

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1 Introduction

Hydrostatic testing of compressed gas cylinders is required for certain newly manufactured cylinders and is an accepted test method for the requalification of cylinders. A current copy of the applicable documents, as specified by the U.S. Department of Transportation (DOT) in Title 49 of the U.S. *Code of Federal Regulations* (49 CFR), and in Canada by Transport Canada (TC) in CSA B339, *Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*, as referenced by the *Transportation of Dangerous Goods Regulations*, shall be available at each facility conducting hydrostatic testing/requalification [1, 2, 3].

For the testing/requalification of cylinders manufactured under an exemption/special permit or permit, a current copy of that exemption or permit shall also be available. (See Appendix A for addresses of agencies that produce these documents).

2 Scope

This publication contains operating and equipment requirements necessary to properly perform hydrostatic testing of compressed gas cylinders.

3 Definitions

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

3.1 Accuracy

Difference between the true value and the gauge indication expressed as a percentage of the gauge span.

3.2 Bar

Metric measurement used for marking service pressure (1 bar = 14.5 psi).

3.3 Calibration

Process of graduating the pressure scale, or adjusting the mechanism, to cause the gauge to indicate within specified accuracy limits.

NOTE—See Appendix B for information on calibration devices.

3.4 Calibration verification

Checking of a gauge by comparison with a given standard to determine the indication error at specified points of the scale.

3.5 Condemn

Determination that a cylinder is unserviceable for continued transportation of dangerous goods and that the cylinder may not be restored by repair, rebuild, requalification, or other procedures.

3.6 Cylinder

Any type of pressure vessel designed for a minimum internal pressure of 276 kPa, abs (2.8 bar, abs, 40 psia) and used for transportation of compressed gases that is required by the regulatory authority to be hydrostatically tested.¹

3.7 Defect

Imperfection of sufficient magnitude to require removal from service.

3.8 Elastic expansion

Increase in cylinder volume due to application of pressure that is recovered when pressure is released.

3.9 Error

Difference between the indicated value and the true value of the variable being measured.

¹ kPa shall indicate gauge pressure unless otherwise noted as (kPa, abs) for absolute pressure or (kPa, differential) for differential pressure. All kPa values are rounded off per CGA P-11, *Metric Practice Guide for the Compressed Gas Industry* [4].