

INCH-POUND

MIL-DTL-3701F

7 June 2010

SUPERSEDING

MIL-DTL-3701E

20 April 2009

DETAIL SPECIFICATION

CYLINDERS, COMPRESSED GAS: DOT-8 AND DOT-8AL
ACETYLENE, WITH VALVES

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers new steel cylinders, with applicable valves and caps, intended for acetylene service.

1.2 Classification. The cylinders covered by this specification are of the capacities shown in table I, as specified (see 6.2).

TABLE I. Physical characteristics.

Capacity (in cubic feet (ft ³))	Dimensions (in inches)		Inlet threads	Flange specification	Cap specification	Valve (specification A-A-59860)
	OD	Height				
10	4.0 ±0.5	12.5 ±1.0	3/8-18NGT	N/A	N/A	AA59860-005
40	6.0 ±0.5	20.0 ±1.0	3/8-18NGT	N/A	N/A	AA59860-006
75	7.0 ±0.5	26.0 ±1.0	1-11 1/2-NGT ¹	MIL-C-17376/2	MIL-C-17376/1	AA59860-003 ² AA59860-004 ³
190	9.5 ±0.5	32.5 ±1.0	1-11 1/2-NGT ¹	MIL-C-17376/2	MIL-C-17376/1	AA59860-003 ² AA59860-004 ³

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TABLE I. Physical characteristics - Continued.

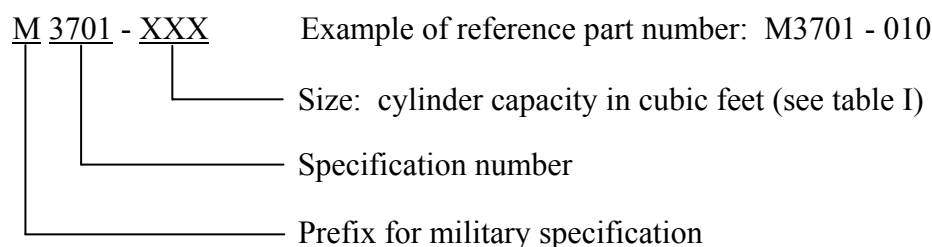
Capacity (in cubic feet (ft ³))	Dimensions (in inches)		Inlet threads	Flange specification	Cap specification	Valve (specification A-A-59860)
	OD	Height				
225	12.0 ±0.5	29.0 ±1.0	1-11 1/2-NGT ¹	MIL-C-17376/2	MIL-C-17376/1	AA59860-003 ² AA59860-004 ³
360	12.0 ±0.5	41.0 ±1.0	1-11 1/2-NGT ¹	MIL-C-17376/2	MIL-C-17376/1	AA59860-003 ² AA59860-004 ³

¹ Optionally, 3/4-14NGT inlet threads may be specified (see 6.2). When specifying this optional inlet, use valves AA59860-001 and AA59860-002, in place of AA59860-003 and AA59860-004 respectively.

² When a compression packed valve is required, specify AA59860-003 or -001 (see 6.2).

³ When an O-ring valve is required, specify AA59860-004 or -002 (see 6.2).

1.3 Part or identifying number (PIN). The PIN to be used for cylinders acquired to this specification is created as follows:



M3701 - 010 indicates a 10 ft³ capacity cylinder, with an outer diameter of 4.0 inches ±0.5 inch, a height of 12.5 inches ±1.0 inch, 3/8-18NGT inlet threads, and a valve specified as AA59860-005.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of the documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

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COMMERCIAL ITEM DESCRIPTION

A-A-59860 - Valves, Cylinder, Gas (for Compressed or Liquefied Gases)

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-C-17376/1 - Caps and Flanges, Compressed-Gas Cylinder: Caps
 MIL-C-17376/2 - Caps and Flanges Compressed-Gas Cylinder: Flanges, Low Pressure

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-101 - Color Code for Pipelines and for Compressed Gas Cylinders

(Copies of these documents are available at <https://assist.daps.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other government documents. The following other government document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

CODE OF FEDERAL REGULATIONS (CFR)

49 CFR 178.59 - Specification 8 Steel Cylinders with Porous Fillings for Acetylene
 49 CFR 178.60 - Specification 8AL Steel Cylinders with Porous Fillings for Acetylene

(Copies of these documents are available at <http://www.gpoaccess.gov/cfr/> or from Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

2.3 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM D329 - Standard Specification for Acetone

(Copies of this document are available at <http://www.astm.org/> or from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.)

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COMPRESSED GAS ASSOCIATION (CGA)

CGA TB-17

- Test Methods for Evaluating Paints and Coatings on
Refillable Steel Compressed Gas Cylinders

(Copies of this document are available at <http://www.cganet.com/> or from Compressed Gas Association, 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Construction. The acetylene cylinders shall conform to the specifications for DOT-8 or DOT-8AL cylinders in accordance with 49 CFR 178.59 and 178.60. The cylinders shall be within the dimensions specified in table I in accordance with figure 1. The cylinders shall be stable in the upright position. Foot rings formed and welded to convex bottom designs or rolled from the extended side walls of cylinders of unit construction using concave bottom designs shall have a minimum of two ventilation holes and two drainage holes equally spaced in the circumference. The porosity of the filler shall exceed 83 percent of the total cylinder volume.

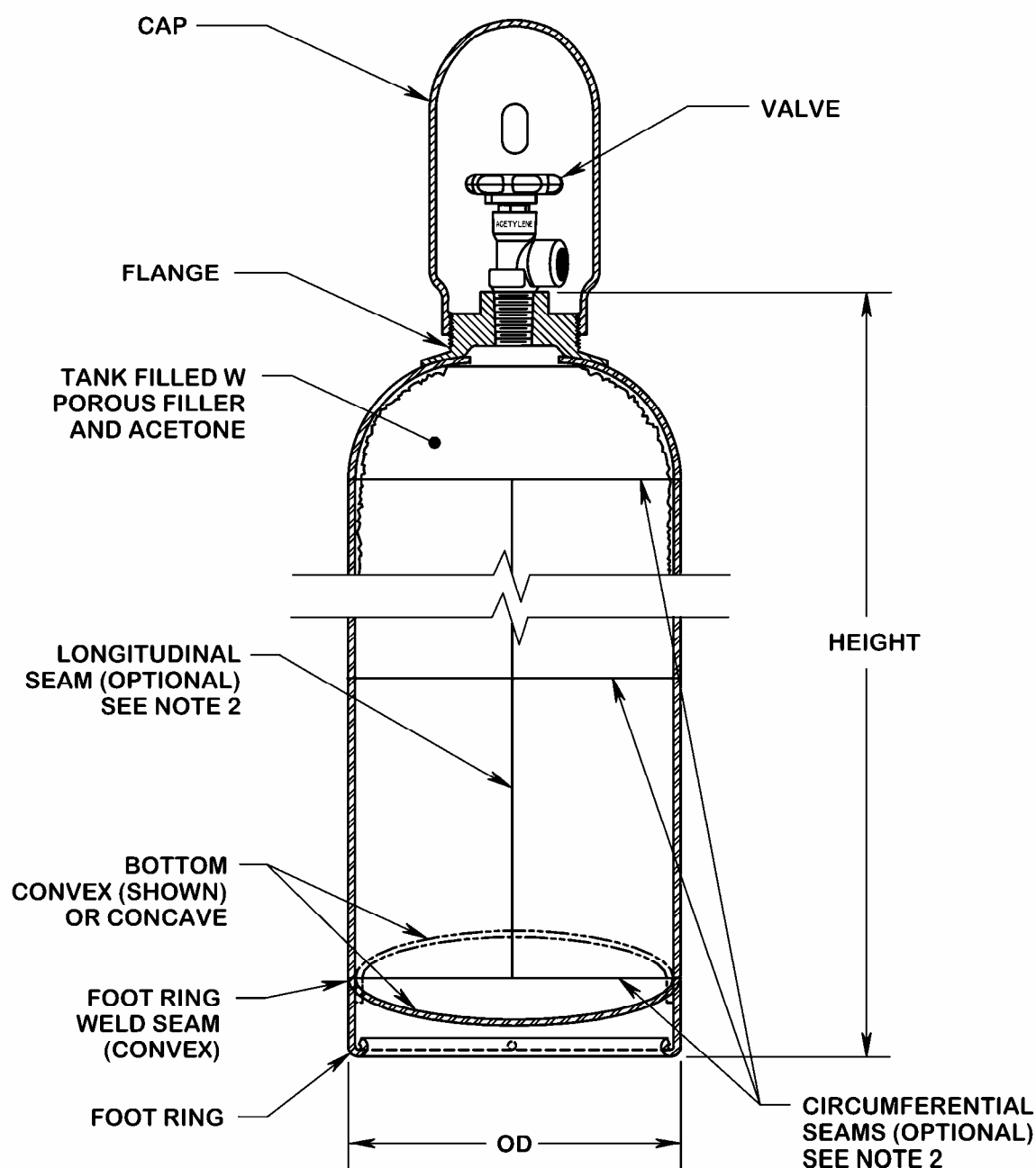
3.2 Acetone. The acetone shall be of technical grade conforming to ASTM D329. Acetone infiltration of the filler shall be at least 97 percent of the maximum level permitted by 49 CFR 178.59 and 178.60.

3.3 Cylinder processing. After shaping, deburring, assembly, and welding, and before placement of the porous filler into the cylinder, the internal surfaces shall be free of residual hydrocarbons. Drawn shells shall be protected against deterioration and corrosion but internal rust bloom is acceptable. The filler shall be poured into the cylinder and shall be thoroughly cured prior to infiltration with acetone.

3.4 Flanges, valves, and caps. The cylinder shall be fitted with a steel flange conforming to MIL-C-17376/2 as specified in table I. When specified (see 6.2), 10 and 40 cubic foot cylinders shall be supplied with a drilled and threaded boss welded to the cylinder. Each acetylene cylinder shall be fitted with a valve in accordance with A-A-59860 as specified in table I. Each cylinder with a flange shall be supplied with a valve protection cap conforming to MIL-C-17376/1.

3.5 Tare weight. The tare weight of the cylinder shall be the weight of the cylinder, flange, and valve, including the porous filler, saturation gas, and acetone, but excluding the valve protection cap. The tare weight for 10-cubic-foot cylinders shall be stamped in 1-ounce increments. Tare weights of larger acetylene cylinders shall be measured in pounds and quarter-pounds, expressed in 4-ounce increments to the nearest quarter-pound. The figures expressing pounds shall be separated from the figures expressing ounces by a dash (–).

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NOTES:

1. See table I for OD, height, and valve requirements.
2. A longitudinal seam, if forge lap welded, is authorized for DOT-8 cylinders, but never together with a body circumferential seam. A longitudinal seam is not authorized for DOT-8AL cylinders.

FIGURE 1. DOT-8 or DOT-8AL acetylene cylinders.

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3.6 Test date. The cylinders shall be delivered within one year of the test date stamped on the cylinder.

3.7 Cylinder identification. Unless otherwise specified herein, markings shall be in characters not less than 0.188 inches high for 10 cubic foot cylinders. On larger cylinders, markings shall be in characters not less than 0.375 inches high.

3.7.1 Standard markings. Standard markings shall be plainly and permanently marked by stamping on the shoulder of each cylinder, starting near the neck as follows:

- a. "DOT-8" or "DOT-8AL" as applicable.
- b. Serial number (see 6.3).
- c. "US GOVT", government symbol as registered with the Department of Transportation.
- d. Date of test, stamped diametrically opposite the above marking.
- e. The inspector's official mark, if inspected by an organization other than the manufacturer.
- f. Manufacturer's mark, stamped near the date of test (preferably right above it).
- g. The tare weight (see 3.5), stamped in a position other than in sequence with the serial number or test date, and preceded by the letters "TW".
- h. Capacity of acetylene gas in cubic feet (see 1.2), preceded by the letters "CAP".

3.7.2 Additional markings. In addition to the above markings, the cylinders shall bear the following markings:

- a. The name of the gas, stenciled on the cylinder in accordance with MIL-STD-101.
- b. Decals when specified (see 6.2), affixed diametrically opposite to one another on the sides of the cylinder, 90 degrees from the stenciled name of the gas.

3.8 Treatment and painting. The treatment and painting of cylinders shall be by any method or system that will provide a finish that will meet the requirements of the CGA TB-17. The cylinders shall be color coded and stenciled in accordance with the requirements of MIL-STD-101.

3.8.1 Bottom coating. Calcium sulfonate coating, such as Watson Armor Shield or an equivalent, shall be applied to each dry, clean steel cylinder bottom and footring, when applicable, as soon as practicable after cleaning processes are completed. Dry film thickness of the bottom coating shall be 3.0 to 7.0 one-thousandth of an inch (mil).

3.9 Workmanship. Cylinders, valves, plugs, flanges, and caps shall be clean and free from grit and loose scale. Edges shall be rounded or chamfered. Cylinders shall be cleaned and free of other surface defects detrimental to the intended use.

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3.10 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements and promotes economically advantageous life cycle costs.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as conformance inspection.

4.2 Conformance inspection.

4.2.1 Examination. Each cylinder shall be examined for the defects as listed in table II. The presence of one or more defect shall be cause for rejection.

TABLE II. Processing defects.

Defect code	Defect	Requirement paragraph
101	Cylinder not in accordance with specification DOT-8 or DOT-8AL	3.1
102	Dimensions not as specified	3.1
103	Construction not as specified	3.1
104	Porous filler and acetone infiltration not as specified	3.1, 3.2
105	Cylinder processing not as specified	3.3
106	Flanges, valves, and caps not as specified	3.4
107	Tare weight not as specified	3.5
108	Test date more than one year prior to the date of acceptance by the government	3.6
109	Marking not as specified	3.7
110	Treatment not as specified	3.8, 3.8.1
111	Workmanship not as specified	3.9

4.2.2 Tests. Cylinder testing shall be in accordance with 49 CFR 178.59 or 178.60 to determine compliance with the specified requirements. Nonconformance to any requirement therein shall constitute failure of this test.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the inventory control point's packaging activities within the military service or defense agency, or

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within the military service's system command. Packaging data retrieval is available from the managing military department's or defense agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. DOT-8 and DOT-8AL compressed gas cylinders are intended for use in the transportation and storage of acetylene gas.

6.1.1 Military unique rationale. These cylinders may be subjected to harsh environments including temperature extremes and salt-water corrosion. For this reason, they require surface preparation and painting beyond that normally provided for commercial cylinders.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Cylinder capacity required (see 1.2).
- c. Optional inlet thread size, if required (see table I).
- d. Valve specification (see table I).
- e. Drilled and threaded boss, if required (see 3.4).
- f. Decals, if required (see 3.7.2).
- g. Packaging (see 5.1).

6.3 Serial numbering. Cylinder serial numbers will be prefixed by a two or three digit symbol designating the procuring agency and will have a two-letter suffix designating the agency's contracted supplier. The number will be assigned and affixed by the supplier to the individual cylinders. These numbers may be consecutive with the supplier's regular production numbers or of a series established specifically for customer's cylinders. However, all cylinders on a given contract will be numbered consecutively and controls will be exercised to preclude duplication with future deliveries to the government.

6.4 Subject term (key word) listing.

Acetone
Cap
Flange
Porous filling
Saturation

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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Custodians:

Navy - SH

DLA - GS

Preparing Activity:

DLA - GS7

(Project 8120-2010-002)

Review Activity:

Navy - MC

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST database at <https://assist.daps.dla.mil/>.