

MIL-C-3701B  
 14 March 1975  
SUPERSEDING  
 MIL-C-3701A  
 5 June 1963

## MILITARY SPECIFICATION

### CYLINDERS, COMPRESSED GAS: DOT-8 SERIES

#### 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 valve and cap for acetylene service.

1.2 Classification. Cylinders covered by this specification shall be of the capacities shown in Table I as specified (see 6.2 and 6.4).

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

#### SPECIFICATIONS

##### Federal

O-A-51

- Acetone, Technical.

##### Military

MIL-V-2

- Valves, Cylinder, Gas (for Compressed or Liquified Gases), General Specification for.

MIL-V-2/1

- Valve, Cylinder, Gas: Acetylene, Outlet 5/11, Inlet 3/4 Inch.

MIL-V-2/3

- Valve, Cylinder Gas: Acetylene Outlet 201.

MIL-T-704

- Treatment and Painting of Materiel.

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MIL-C-17376/1

- Caps and Flanges, Compressed-Gas Cylinder: Caps.

MIL-C-17376/2

- Caps and Flanges, Compressed-Gas Cylinder: Flanges, Low Pressure.

MIL-C-52752

- Cylinders, Compressed Gas, Packaging of.

#### STANDARDS

##### Military

MIL-STD-101

- Color Code for Pipelines and for Compressed Gas Cylinders.

#### DRAWINGS

##### Bureau of Ships

810-1385867

- Decalcomania for Navy Gas Cylinders.

(Copies of specifications, standards, and drawings required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

#### DEPARTMENT OF TRANSPORTATION

Title 49, 171-190

- Code of Federal Regulations

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

### 3. REQUIREMENTS

3.1 Description. The acetylene cylinders shall conform to the Code of Federal Regulations, Title 49, 171-190, Specification DOT-8, DOT-8AL or DOT-8W (see 6.3). The cylinders shall be within the dimensions specified in Table I, in accordance with Figure 1, and as specified herein.

TABLE I. CYLINDER DIMENSIONS

Min. Cap. Cu. Ft.	Dimensions		Inlet Threads	Flange	Cap	DOT Spec- ification (see 6.3)	Valve MIL-V-2
	OD	H					
10	4 $\pm$ 1/2	12.5 $\pm$ 1.0	3/8-18 NGT	NA	NA	8 or 8AL	V3-201-1
40	6 $\pm$ 1/2	20 $\pm$ 1.5	3/8-18 NGT	NA	NA	8 or 8AL	V5-201-1
50	7 $\pm$ 1	22 $\pm$ 1.5	1-11-1/2 NGT	MIL-C-17376/2	MIL-C-17376/1	8 or 8AL	V2-501-1
225	12 $\pm$ 1	29 $\pm$ 2.0	1-11-1/2 NGT	MIL-C-17376/2	MIL-C-17376/1	8 or 8AL	V2-501-1
75	7 $\pm$ 1	26 $\pm$ 2.0	1-11-1/2 NGT	MIL-C-17376/2	MIL-C-17376/1	8 or 8AL	V2-501-1
190	9.5 $\pm$ 1	32.5 $\pm$ 2.0	1-11-1/2 NGT	MIL-C-17376/2	MIL-C-17376/1	8 or 8AL	V2-501-1
360	12 $\pm$ 1/2	41 $\pm$ 1.5	1-11-1/2 NGT	MIL-C-17376/2	MIL-C-17376/1	8 or 8AL	V2-501-1

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3.2 Construction. The cylinders shall be true of form and shall be stable in the upright position. Configuration, welding, brazing, and seams shall conform to Code of Federal Regulations, Title 49 Specification DOT-8, DOT-8AL, or DOT-8W (see 6.3). The cylinder closure shall be as specified in 3.4. Foot rings formed and welded to convex bottom design, or rolled from the extended side walls of cylinders of unit construction using concave bottom designs, shall have a minimum of two ventilation and two drainage holes equally spaced in the circumference. The porous filler shall be poured into the cylinder shell prepared in accordance with 3.3 and shall be thoroughly cured prior to infiltration with acetone. The properties of the cured filler, the filler shrinkage or clearance limits and use of wells under the flange or neck shall conform to DOT CFR, Title 49. The porosity of the filler shall exceed 83 percent of the total cylinder volume. Acetone infiltration shall be at least 97 percent of the maximum level permitted by CFR Title 49. The acetone shall be of technical grade conforming to O-A-51.

3.3 Cylinder processing. After shaping, deburring, assembly, and welding and before placement of the porous filler in 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.

3.4 Closure. The cylinder shall be fitted with a steel flange conforming to MIL-C-17376/2. When specified (see 6.2), 10 and 40 cubic foot cylinders shall be supplied with drilled and threaded boss welded to the cylinder. Each acetylene cylinder shall be fitted with a valve in accordance with MIL-V-2 as specified in Table I. Valve V1-511-1 shall conform to MIL-V-2/1 and valve V3-201-1 shall conform to MIL-V-2/3. 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 porous filler, acetone and the acetylene saturation gas, 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 expressed in pound and quarter pounds, expressed in 4 ounce increments to the nearest quarter pound. The figures expressing pounds shall be separated from the figures expressing ounce by a dash (-).

3.6 Test date. The cylinders shall be delivered within 1 year of the test date stamped on the cylinder.

3.7 Cylinder identification. Unless otherwise specified herein, marking shall be in characters not less than 3/16 inch high for 10 cubic foot cylinders. On larger cylinders marking shall be in characters not less than 3/8 inch high.

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

- (a) DOT-8, DOT-8AL, or DOT-8W (see 6.3) as applicable.
- (b) Serial number (see 6.5) as registered with the Bureau of Explosives in characters not less than 3/8 inch high for cylinders more than 6 inches outside diameter.
- (c) "US GOVT", Government symbol as registered with the Bureau of Explosives.
- (d) Date of test diametrically opposite the above marking.
- (e) The inspector's official mark as applicable.
- (f) Manufacturer's mark near date of test preferably right above it.
- (g) The tare weight (see 3.5) shall be stamped in a position other than in sequence with the serial number or test date, and shall be preceded by the letters "TW".
- (h) Capacity of acetylene gas in cubic feet (see 1.2), shall be 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) When specified (see 6.2), decalcomanias conforming to Drawing 810-1385867 shall be affixed diametrically opposite one another on the sides of the cylinder, 90 degrees from the stenciled name of the gas.

3.8 Treatment and painting. Each cylinder and cap shall be treated and painted externally in accordance with MIL-T-704, Type A, color conforming to the cylinder color code requirement of MIL-STD-101.

3.9 Workmanship. Cylinder, 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.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified

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herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. The supplier is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications and standards.

4.2 Classification of inspections. Inspections shall be classified as follows:

- (a) Quality conformance inspection (see 4.3)
- (b) Inspection of preparation for delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Examination. Each cylinder shall be examined in accordance with 4.4.1. The presence of one or more defects shall be cause for rejection.

4.3.2 Tests. Each cylinder shall be tested in accordance with the Code of Federal Regulations, Title 49 to determine compliance with specified requirements. Nonconformance to any requirement of Title 49 shall constitute failure of this test.

4.4 Inspection procedure.

4.4.1 Examination. Cylinders shall be examined as specified herein for the following defects:

- 101. Cylinders not in accordance with DOT-8 or DOT-8AL Code of Federal Regulations.
- 102. Dimensions not as specified.
- 103. Construction not as specified.
- 104. Porous filler and acetone infiltration not as specified.
- 105. Cylinder processing not as specified.
- 106. Closure not as specified.
- 107. Tare weight not as specified.
- 108. Test date more than 1 year prior to date of acceptance by the Government.
- 109. Marking not as specified.
- 110. Treatment not as specified.
- 111. Workmanship not as specified.

4.5 Inspection of preparation for delivery. The packing and marking of the cylinders shall be examined in accordance with the Quality Assurance Provisions of MIL-C-52752.

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## 5. PREPARATION FOR DELIVERY

5.1 Packing and marking. The cylinders shall be packed and marked in accordance with MIL-C-52752. The capacity 10, 40, and 50 cylinders shall be packed as specified for Type I, II, III, or IV cylinders and the capacity 75, 190, 225, and 360 cylinders shall be packed as specified therein for Type V cylinders. The level of packing shall be Level A, B, or C as specified (see 6.2).

## 6. NOTES

6.1 Intended use. These cylinders are intended for the use in transporting and storing acetylene gas.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Cylinder classification required (see 1.2).
- (c) When drilled and threaded boss is required (see 3.4).
- (d) When decalcomanias are required (see 3.7.2 (b)).
- (e) Level of packing required (see 5.1).

6.3 DOT-8W specification. The Compressed Gas Association has completed a specification for welded acetylene cylinders fabricated from two drawn heads and a body with a longitudinal seam. This specification has been forwarded to the Department of Transportation, Office of Hazardous Materials to be included in the Code of Federal Regulations. When the specification DOT-8W becomes approved, the cylinders manufactured by its standards will be acceptable under this specification.

6.4 Cataloging data. The changes in cataloging data for acetylene cylinders listed by capacity between this revision and the previous edition are as follows:

<u>Cubic Feet Cap.</u>	<u>Part Number</u>	<u>MS39227 Dash No.</u>
10	3701-1	MS39227-1
40	3701-2	MS39227-2
50	3701-3	MS39227-3
225	3701-4	MS39227-4
75	3701-5	New
190	3701-6	New
360	3701-7	New

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The 50 cubic foot cylinders have been retained with part numbers listed above, because many of these items are active in the Federal Supply System. These part numbers will support National Stock Numbers for proper cataloging and requisition until item usage life has been expended. The 50 cubic foot cylinders are not available as manufacturer's stock items. Requisition for any of these cylinders without substitution option may require procurement that will be costly and should require specific justification. The 225 cubic foot acetylene cylinder has been the dominant military size with many units in daily use. This cylinder size is no longer manufactured as a competitive commercial item, but is available by special procurement in significant numbers. The commercial industry utilizes a larger cylinder to reduce turn around time for greater efficiency per unit of acetylene. The 360 cubic foot charged cylinder weighs approximately 210 pounds. Manual handling for dead lift operations will be classified a four man task. This is the same as for the present 225 cubic foot cylinder due to shape and contour and lack of lifting handles. When new procurement is considered, an evaluation of the larger 360 cubic foot cylinder and the efficiency it will afford should be made.

6.5 Serial numbers. Cylinder serial numbers will be prefixed by a two or three letter symbol designating the procuring agency and will have a two letter suffix designating the 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.

Custodians:

Army - ME  
Navy - SH  
Air Force - 68

Preparing activity:

Army - ME

Review activity:

Army - WC

User activities:

Navy - MC, YD

Project No. 8120-0336



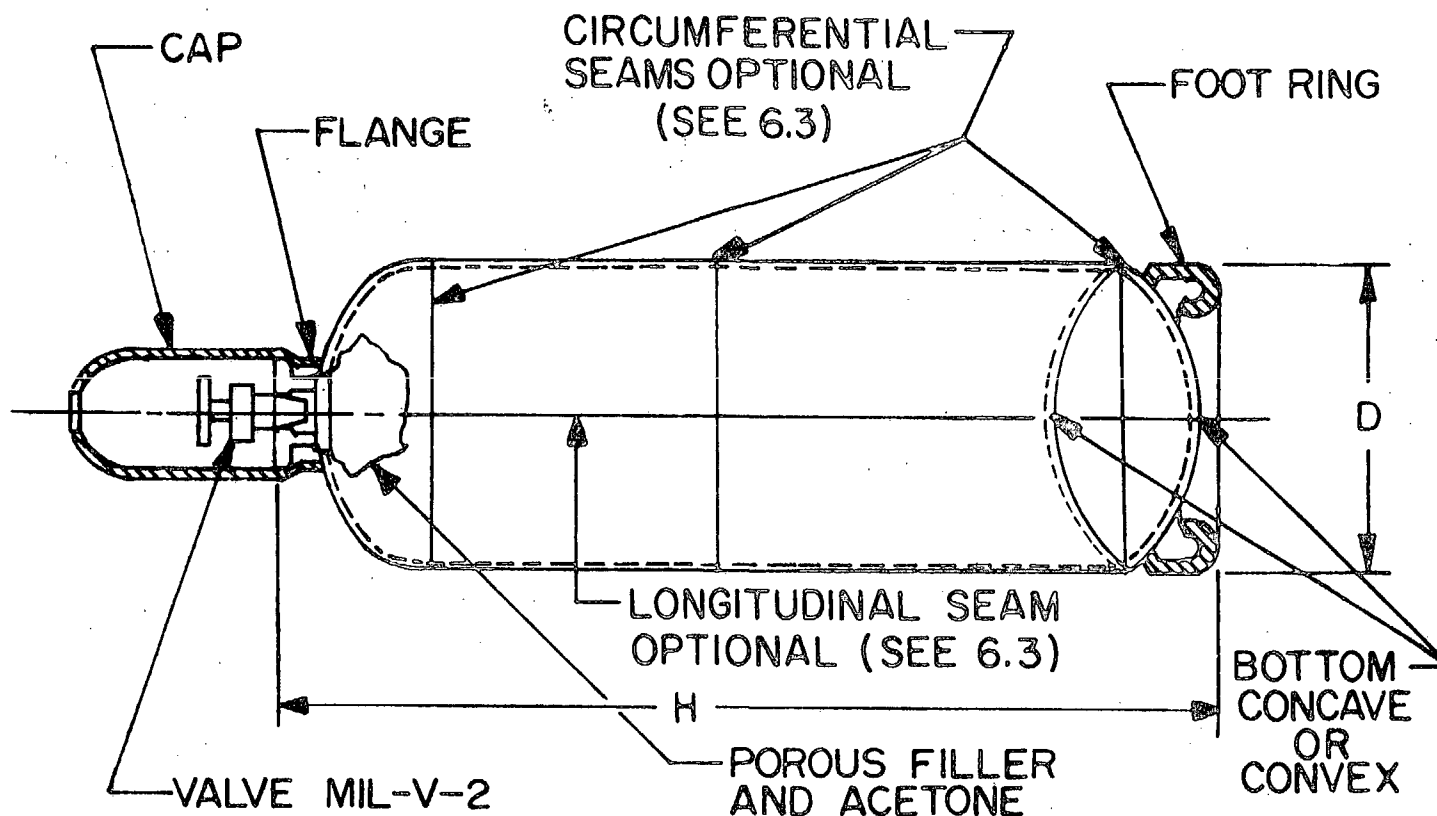


FIGURE 1. ACETYLENE CYLINDERS 8 OR 8AL

X-2480A

