

[INCH-POUND]  
A-A-52611  
May 5, 1997  
SUPERSEDING  
ZZ-V-25E  
June 23, 1982

## COMMERCIAL ITEM DESCRIPTION

### VALVES AND VALVE SPUDS, CAPS, AND CORES, PNEUMATIC TIRE

The General Services Administration has authorized the use of this Commercial Item Description (CID) for all federal agencies.

1. **SCOPE.** This CID covers requirements for valve assemblies, valve spuds, caps, cores, and grommets for use with tubeless tires or inner tubes used on ground vehicles. Valve assemblies, (hereinafter called valves) include valve stems, caps, cores, spuds, grommets, bridge washers, and hex nuts. Valve assemblies are intended for repair, replacement, and as original equipment on pneumatic tire inner tubes or rims for tubeless pneumatic tires.

#### 2. CLASSIFICATION.

2.1 Types, classes, and styles. Valves, valve spuds, caps, and cores will be of the following types, classes, styles, and Tire and Rim Association (T&RA) number (see 7.3):

Type I - Valves, pneumatic tire, inner tube.

Class 1 - Air use, rubber-covered, standard bore.

Style A - Straight (TR 1, TR 13, and TR 15).

Style B - Straight, hand-bendable (TR 87, TR 135, and TR 150).

Style C - Straight (TR 300).

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent by letter to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000.

AMSC N/A

FSC 2640

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Class 2 - Air use, rubber base, bare metal stem, straight, standard bore.

Style A - With body threads (TR 70, TR 440, TR 441, TR 442, TR 443, TR 444, and TR 445).

Style B - Without body threads (TR 440, TR 441, TR 442, TR 443, TR 444, and TR 445).

Class 3 - Air use, rubber base, straight, standard bore.

Style A - Partially threaded stem (TR 87S and TR 87).

Style B - Fully threaded stem (TR 4).

Class 4 - Air-use, rubber base, without body threads, bent 90 degree (°), standard bore.

Style A - Bare metal stem (TR 87).

Style B - Rubber up stem (TR 110 and TR 87).

Class 5 - Air-water use, rubber-covered, with identifying rings, straight, standard bore.

Style A - (TR 13CW and TR 15CW).

Style B - Hand-bendable (TR 150CW).

Class 6 - Air-water use, rubber base spud with TR CH3 core housing, standard bore (TR 218A and TR 220A).

Class 7 - Repair, screw-on, standard bore, bent 86° (TR 1075A, TR 1076A, TR 1077A, TR 1078A, TR 1175A, TR 1177A, and TR 1179A).

#### Type II - Valves, pneumatic, tire, tubeless.

Class 1 - Air-use, snap-in, standard bore (TR 412, TR 413, TR 414, TR 415, TR 418 TR 423, TR 425, and TR 600HP).

Class 2 - Air use, clamp-in, for drop-center rims and side-of-well valve-hole location, standard bore, straight (TR 416, TR 416S, TR 500, TR 501, TR 570, TR 571, TR 572, TR 573, TR 574, and TR 575).

Class 3 - Air-use, clamp-in, for sealed rims and center-of-base valve-hole location, standard bore, bent (TR 503A, TR 505A, TR 507A, TR 508A, TR 509, TR 510, TR 511, and TR 534).

Class 4 - Air-use, clamp-in, bare metal stem with body threads (TR 430).

Class 5 - Air-water use, clamp-in, off-the-road, large bore, with removable valve stem, straight (TR J670).

Class 6 - Air-water use, clamp-in, off-the-road, large bore, bent (TR J650 and TR J690).

Class 7 - Air-water use, clamp-in, standard bore, straight (TR 618A).

Class 8 - Air-water use, clamp-in, off-the-road, standard bore, bent (TR 621A, TR 622A, and TR 623A).

#### Type III - Valve spuds, pneumatic tire.

Class 1 - Inner tube, standard bore (TR SP1000).

Class 2 - Inner tube, large bore (TR SP1000).

Class 3 - Tubeless, large bore (TR SP2).

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Class 4 - Inner tube, super large bore (TR SP816).

Class 5 - Tubeless, super large bore (TR SP8B and TR SP9).

Type IV - Valve caps, pneumatic tire.

Class 1 - Standard bore (TR VC2, TR VC3, and TR VC8).

Class 2 - Large bore (TR VC6 and TR VC7).

Type V - Valve cores, pneumatic tire.

Class 2 - Standard bore (TR C1).

Class 3 - Large bore (TR C2).

Type VI - Valve stems, pneumatic tire.

Class 1 - Large bore, bent, vehicular (TR J4000 - horizontal length).

Type VII - Core housings, pneumatic tires.

Class 1 - Standard bore (TR CH3).

Class 2 - Super large bore (TR CH8 and CH16).

### 3. SALIENT CHARACTERISTICS.

3.1 Materials. Unless otherwise specified herein, materials shall be in accordance with the manufacturer's material specifications. All material shall be new and unused. Asbestos, cadmium, and radioactive material shall not be used in this item. Radioactive material is defined by Title 10, Code of Federal Regulations, Part 40, and other radioactive material in which the radioactivity is greater than 0.002 microcuries per gram or 0.01 microcuries total activity for the item.

3.1.1 Material deterioration and control. The valve shall be fabricated from compatible materials, inherently deterioration resistant or treated to provide protection against the various forms of deterioration that may be encountered in any of the applicable storage and operating environments to which the item may be exposed.

3.1.1.1 Ozone resistance. All grommets and rubber valve parts, shall have resistance to weathering as accepted in standard commercial practices. Unless otherwise specified (see 7.3), rubber used externally on valves, type II, class 1, shall show no evidence of cracking when being inspected under 5-power magnification, after the following: Heat age for 72 hours at 212 degrees Fahrenheit (°F) [100 degrees Celsius (°C)] prior to installing in 0.453 inch (in.) [11.5 millimeters (mm)] or 0.625 in. (15.9 mm) diameter rim hole. Install in rim hole, flex 10°, and expose to an ozone concentration of 100 parts per million (ppm), by volume to air, for 40 hours at 100 ±5°F (38 ±3°C).

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### 3.2 Design and construction.

#### 3.2.1 Valve.

3.2.1.1 Valve components. Unless otherwise specified (see 7.3), valves shall conform to the applicable reference (see 2.1). Each valve shall consist of a cap, a core, and when required, a spud, all as specified herein as well as a metal stem, rubber-covered, when required. All caps, cores, and spuds used as valve components shall meet all applicable requirements.

3.2.1.2 Valve interior design. Valve interior design shall be such that when the core is properly installed, the tip of the core plunger pin shall position 0.035 in. (0.89 mm) below, to 0.010 in. (0.25 mm) above, the valve lip.

3.2.1.3 Bridge washer. When specified (see 7.3), each type I, class 2, style A and class 7 valve shall be furnished with a bridge washer suitable for its intended purpose.

3.2.1.4 Repair valves. Screw-on type repair valves (type I, class 7) shall be furnished with a 0.485-26 threaded recess in the base.

#### 3.2.2 Cap.

3.2.2.1 Cap. Unless otherwise specified (see 7.3), caps shall be furnished and shall conform to the applicable reference (see 2.1) and may be screwdriver, swivel sealing type (TR VC2), dome, sealing type (TR VC3) or dome, polyethylene dust cover type (TR VC8).

#### 3.2.3 Core.

3.2.3.1 Core fit. Unless otherwise specified (see 7.3), cores shall conform to the applicable reference (see 2.1). Cores supplied for replacement shall fit as the original cores without modification of cores or valves.

3.2.3.2 Deflation by core. Cores shall be so constructed that when installed for use, tire pressure can be decreased by depressing the core plunger pin. It shall not be necessary to remove the core from the valve to deflate the tire or tube.

3.2.3.3 Core plunger pin height. Core design shall be such that when the core is properly installed, the tip on the core plunger pin shall position 0.035 in. (0.89 mm) below to 0.010 in. (0.25 mm) above the valve lip.

3.2.3.4 Spud. Unless otherwise specified (see 7.3), spuds shall conform to the applicable reference (see 2.1).

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3.2.3.5 Grommet. Unless otherwise specified (see 7.3), the grommet design characteristics shall be capable of meeting its intended purpose and material should be Ethylene Propylene Dyne Monomer (EPDM) or equivalent.

3.2.3.6 Nut, hexagon, plain. Unless otherwise specified (see 7.3), the nut design shall be capable of its intended purpose.

### 3.3 Physical properties.

#### 3.3.1 Valves.

3.3.1.1 Tensile strength. Valves with rubber bases shall conform to the pull values of Table I.

TABLE I. Least allowable tensile strength values.

Type	Class	Pounds
I	1	100
	2	300
	3	100
	4	100
	5	100
	6	100
III	1	300
	2	300
	4	300

3.3.1.2 Tensile strength test. To determine conformance to 3.3.1.1, valve stems specified in table I shall be pulled to destruction at the rate of 5 inches per minute in a tensile machine. In preparation for the test, the cap shall be removed and the valve stem shall be firmly and completely mated in the threaded adapter of the pull mechanism while the valve assembly base is clamped into a fixture with an adapter ring. The adapter ring shall have an inside diameter of 0.75 in. [1.91 centimeters (cm)] for type I, classes 3 and 4 valve assemblies, and 1.25 in. (3.18 cm) for type I, classes 1, 2, 5, and 6 valve assemblies.

3.3.1.3 Valve stem base closure. Valves, type I, class 5 and 6, shall have sufficient metal groove to effect a mechanical lock of the rubber in the groove. There shall be no cracks or flaws in the stem wall.

3.3.1.4 Crack resistance of rubber. Valves, type II, class 1, shall have no cuts or cracks in the rim-hole sealing area.

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3.3.1.5 Distortion resistance. Valves, type I, classes 1 and 5, shall be of a strength and hardness as to prevent distortion or other damage when subjected to proper field mounting and servicing methods.

3.3.1.6 Valve bendability.

3.3.1.6.1 Hand-bendable valves. Valves, type I, class 1, style B, and class 5, style B, shall permit hand-bending once without cracking.

3.3.1.6.2 Tool-bendable valves. Valves, type I, class 2 (except TR 70), and TR 87 from class 3, style A, shall permit tool-bending once without cracking.

3.3.1.6.3 Factory-bent valves. Valves, type I, classes 4 and 7, and type II, class 3, 6, and 8 shall not be cracked.

3.3.1.7 Hardness of valve rubber covers and bases. The shore A durometer hardness of unaged rubber compound shall be not less than 55 nor more than 70 for tube applications. The Shore A durometer hardness of the rubber shall be not less than 60 nor more than 70 for snap-in valve applications. Shore A hardness shall not increase to more than 75 for valves aged in storage up to 2 years.

3.3.2 Spuds.

3.3.2.1 Hardness of rubber bases. The durometer hardness of rubber compound of type III, class 1, 2, and 4 spuds shall be the same as for valves with rubber bases.

3.3.2.2 Tensile strength. Type III, class 1, 2 and 4 spuds shall conform to the pull value of table I.

3.3.2.3 Tensile strength test. To determine conformance to 3.3.2.2, spuds shall be pulled to destruction at the rate of 5 in. per minute in a tensile machine. In preparation for the test, the body thread shall be firmly and completely mated into the threaded adapter of the pull mechanism while the base is clamped into a fixture with an adapter ring. The adapter ring shall have an inside diameter of 1-1/2 in. (3.81 cm).

3.3.2.4 Base closure. Spuds, type III, class 1, 2, and 4, shall have sufficient spinning or closing of the inner wall of the metal groove to effect a mechanical lock of the rubber in the groove. There shall be no cracks or flaws in the spud wall.

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### 3.4 Performance.

3.4.1 Valves. Valves having type V, class 2 cores as part of their assembly, shall allow an air flow input rate of at least 4.3 cubic feet per minute ( $\text{ft}^3/\text{min}$ ) (122 liters per minute (L/min)) at 100 pounds per square inch gage (psig) [689 kilopascals (kPa)] of air pressure. Valves having type V, class 3 cores as part of their assembly, shall allow an airflow input rate of at least  $8 \text{ ft}^3/\text{min}$  (226 L/min).

3.4.2 Caps. Caps TR VC2 and TR VC3 shall pneumatically seal the mouth of the valve stems and demonstrate no visible leakage of air while under 100 psig (689 kPa) of air pressure for 30 seconds. In addition, the TR VC8 shall be capable of withstanding finger tightening with no effects in the performance of its intended service.

### 3.4.3 Cores.

3.4.3.1 Air flow input rate. Valve cores, type V, class 2, shall allow an airflow input rate of at least  $4.3 \text{ ft}^3/\text{min}$  (122 L/min) at 100 psig (689 kPa) of air pressure. Valve cores, type V, class 3, shall allow an airflow input rate of at least  $8 \text{ ft}^3/\text{min}$  (226 L/min) at 100 psig of air pressure.

3.4.3.2 Pressure retention. Unless otherwise specified, valve cores, type V, shall meet the following pressure retention requirements for at least one minute without visible leakage:

Classes 2 and 3 - 25 psig (172 kPa) and 200 psig (1379 kPa).

### 3.5 Environmental requirements.

3.5.1 Low temperature leakage. Unless otherwise specified (see 7.3), valve cores, type V, shall meet the following low temperature and pressure requirements without leaking in excess of one bubble per minute with valve mouth in down position:

Classes 2 and 3 -  $-40^\circ\text{F}$  ( $-40^\circ\text{C}$ ) at  $200 \pm 5$  psig ( $1379 \pm 34$  kPa).

3.5.2 High temperature leakage. Unless otherwise specified (see 7.3), valve cores, type V, shall meet the following high temperature and pressure requirements without leaking in excess of one bubble per minute with valve mouth in down position:

Class 2 -  $200^\circ\text{F}$  ( $93^\circ\text{C}$ ) at  $200 \pm 5$  psig ( $1379 \pm 34$  kPa).

Class 3 -  $165^\circ\text{F}$  ( $74^\circ\text{C}$ ) at  $200 \pm 5$  psig ( $1379 \pm 34$  kPa).

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3.6 Dimensions. Unless otherwise specified (see 7.3), dimensions for valves, caps, cores, and spuds shall conform to the applicable reference (see 2.1).

3.7 Applicability of fittings. Applicability of cores, caps, and spuds shall be as outlined in the applicable reference (see 2.1).

3.8 Identification marking. As a minimum, each valve shall be stamped, molded, or otherwise permanently and legibly marked with the T&RA designation number (see 7.3).

3.9 Color. Unless otherwise specified (see 7.3), the color of valves shall be in accordance with the manufacturer's standard practices.

#### 4. REGULATORY REQUIREMENTS.

4.1 Recovered material. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

#### 5. QUALITY ASSURANCE PROVISIONS.

5.1 Responsibility for inspection. The contractor is responsible for the performance of all inspections (examinations and tests).

5.2 Product conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. The Government reserves the right to require proof of such conformance.

6. **PACKAGING**. Preservation, packing, and marking shall be as specified in the contract or order (see 7.3).

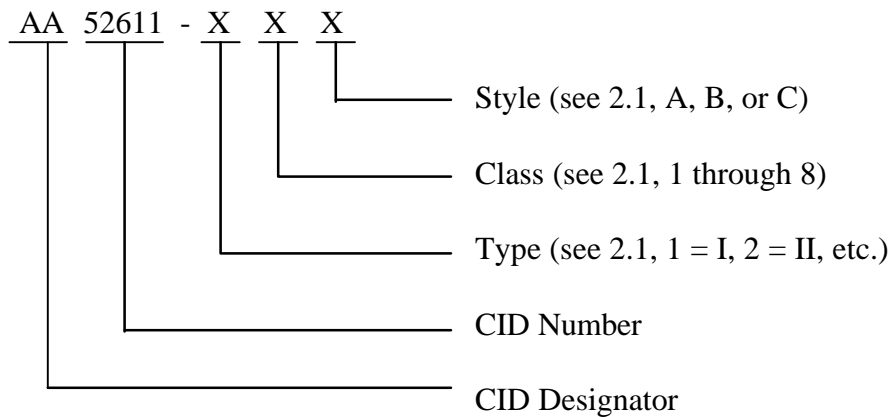
#### 7. NOTES.

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

7.1 Part Identification Number (PIN). The PIN to be used for valves acquired to this CID are created as follows:



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## 7.2 Source of documents.

7.2.1 The Code of Federal Regulations (CFR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

7.2.2 T&RA Standards are available from the Tire and Rim Association, Inc., 175 Montrose West Ave., Suite 150, Copley, OH 44321.

## 7.3 Ordering data. Acquisition documents must specify the following:

- Title, number, and date of this CID.
- Issue of the DoDISS to be cited in the solicitation, and if required, the specified issue of individual documents referenced.
- Type, class, style, PIN, and T&RA number for valve required.
- If rubber used is ozone resistant as specified.
- Valve assemblies, components, bridge washers, caps, cores, spuds, design, construction, grommets, and nuts required.
- If low or high temperature leakage is other than as specified.
- Changes in class 2, styles A and B, class 1, style B, and class 4, style B should refer to table II.
- Special marking, when required.
- When special color required.
- Selection of applicable level and packaging requirements.
- Dimensions other than specified.

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TABLE II. TR Changes.

Old Valve TR No.		New Valve TR No.	
1	TR 75A	1	TR 440
2	TR 77A	2	TR 442
3	TR 78A	3	TR 444
4	TR 87A	4	TR 87
5	TR 175A	5	TR 443
6	TR 177A	6	TR 441
7	TR 179A	7	TR 445
8	TR 460	8	TR 440
9	TR 461	9	TR 441
10	TR 462	10	TR 442
11	TR 463	11	TR 443
12	TR 464	12	TR 444
13	TR 465	13	TR 445

7.4 Cross-reference data. Valve units conforming to this CID are interchangeable/substitutable with valve units conforming to ZZ-V-25E.

**MILITARY INTERESTS:**

## Custodians:

Army - AT  
 Navy - YD1  
 Air Force - 99

## Review Activities:

Navy - AS, CG, MC  
 Air Force - 84  
 DLA - CC

**CIVIL AGENCY COORDINATING ACTIVITY:**

GSA - FSS

## Preparing Activity:

Army - AT

(Project 2640-0215)