

[INCH-POUND]  
 A-A-50558  
June 3, 1996  
 SUPERSEDING  
 MIL-V-16733D  
 3 January 1989

## COMMERCIAL ITEM DESCRIPTION

### VALVES, PRESSURE REGULATING, STEAM

The General Services Administration has authorized the use of this commercial item description, for all federal agencies.

1. **SCOPE.** This commercial item description covers steam pressure regulating valves that transform steam from a specified initial pressure to a specified final reduced discharge pressure or range of pressures. The specified inlet steam pressures range from 15 pounds per square inch gage (psig) to 1,500 psig (103 kiloPascals gage (kPa(gage)) to 10,343 kPa(gage)). The steam pressure regulating valves covered by this commercial item description are intended for transforming steam from a specified initial pressure to a specified final reduced discharge pressure or range of pressures in steam systems.

2. **CLASSIFICATION.** The valves covered by this commercial item description will be of the following types, classes, and sizes, as specified (see 7.2):

- Type I - Direct operated, self-contained.
- Type II - Pilot operated, self-contained.
- Type III - Direct operated, through external feeler pipe.
- Type IV - Pilot operated, through external feeler pipe.
- Type V - Pilot operated, through a hydraulic pneumatic, or electric system.
- Class 125 - 125 psig (862 kPa(gage)) Working Steam Pressure (WSP) at 450 degrees Fahrenheit (°F) (232° Celsius (°C)).
- Class 150 - 150 psig (1034 kPa(gage)) WSP at 450°F (232°C).
- Class 250 - 250 psig (1724 kPa(gage)) WSP at 450°F (232°C).
- Class 300 - 300 psig (2069 kPa(gage)) WSP at 500°F (260°C).
- Class 400 - 400 psig (2758 kPa(gage)) WSP at 750°F (399°C).
- Class 600 - 600 psig (4137 kPa(gage)) WSP at 750°F (399°C).

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043-4301.

AMSC N/A

FSC 4820

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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Class 900 - 900 psig (6205 kPa(gage)) WSP at 750°F (399°C).

Class 1200 - 1200 psig (8274 kPa(gage)) WSP at 750°F (399°C).

Class 1500 - 1500 psig (10,343 kPa(gage)) WSP at 750°F (399°C).

Sizes (inches nominal pipe size): 1/4 (8 mm), 3/8 (10 mm), 1/2 (15 mm), 3/4 (20 mm), 1 (25 mm), 1-1/2 (40 mm), 2 (50 mm), 2-1/2 (65 mm), 3 (80 mm), 4 (100 mm), 5 (125 mm), 6 (150 mm), 8 (200 mm), 10 (250 mm) and 12 (300 mm).

Sizes (inches outside diameter): 14 (355.6 mm) and 16 (406.4 mm).

### 3. SALIENT CHARACTERISTICS.

3.1 Description. The pressure reducing valves shall automatically reduce the specified initial steam pressure to the specified final reduced pressure or pressure range, at all conditions of flow between the minimum and maximum flow specified, without hunting, cycling, fluttering, or chattering. The motion of operating parts shall be smooth, non sticking, and free of perceptible backlash. The valves shall be fully adjustable over the specified operating range, without the replacement of springs or diaphragms. Unless otherwise specified (see 7.2), the valves shall be designed to permit replacement of readily removable parts without removal of the bodies from the line. All parts necessary for satisfactory operation of the valves shall be supplied.

3.1.1 Type I. Type I valves shall consist essentially of valve body and diaphragm, bellows, or piston-operated valve, loaded by means of a spring, weight and lever, air dome, or air tank. The valves shall be completely self-contained, direct-operated valves, controlled by the steam pressure within the reduced-pressure chamber of the valve body without the use of external piping.

3.1.2 Type II. Type II valves shall consist essentially of valve body, main valve with a spring-loaded diaphragm or piston-operator, and a pilot valve with a spring-loaded diaphragm operator. The valves shall be completely self-contained, pilot-operated valves, controlled by means of an intermediate steam pressure supplied by the pilot valve, built integral with, or rigidly attached to the body of the main valve. The pilot valve shall be controlled by the pressure within the reduced-pressure chamber of the main valve.

3.1.3 Type III. Type III valves shall consist essentially of valve body and a diaphragm, or bellows operator, loaded by means of a spring, weight and lever, air dome, or air tank. The diaphragm or bellows chamber shall be provided with a tap for the connection of the feeler pipe, but the feeler pipe will not be required with the valve. The valves shall be direct operated, controlled by the reduced-steam pressure by means of the external feeler pipe connected at some point in the reduced-pressure line on the downstream side of the valve.

3.1.4 Type IV. Type IV valves shall consist essentially of a main valve with a spring-loaded diaphragm operator, a pilot valve with a spring or weight and lever-loaded diaphragm operator, and any necessary restricting or throttling valves. The diaphragm chambers of the main and pilot valves shall be provided with taps for the connection of feeler and control piping, but the feeler

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and control piping will not be required with the valve. The main valve shall be controlled by the intermediate-steam pressure supplied by the pilot valve. The pilot valve shall be controlled by the reduced-steam pressure supplied by means of an external feeler pipe connected at some point in the reduced-pressure line on the downstream side of the main valve.

3.1.5 Type V. Type V valves shall consist essentially of a main valve with a spring-loaded diaphragm operator, a pilot valve operated by hydraulic, pneumatic, or electrical means, and all accessory fittings required for a complete unit. The main valve shall be activated by a diaphragm and spring arrangement that will allow the valve to deliver the desired reduced pressure. The pilot valve shall cause activation of the diaphragm and spring.

3.2 Standard commercial product. The valves shall, as a minimum, be in accordance with the requirements of this commercial item description and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this commercial item description but which are a part of the manufacturer's standard commercial product, shall be included in the valves being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.3 Design. The unit shall be designed to permit easy accessibility for maintenance and service in the field. The design shall be such as to prevent conditions hazardous to personnel or deleterious to equipment.

3.4 End connections. Valve end connections shall be screwed, screwed unions or flanged, welding ends, tube ends, or tri clamp, as specified (see 7.2). Screwed ends shall conform to National Pipe Threads. All ends shall conform to the applicable requirements of ANSI B16.1 and ANSI B16.5.

3.5 Construction. Valves shall be designed and manufactured to meet the requirements as specified in the acquisition documents. The design and manufacture shall be the same as standard commercial practice.

3.5.1 Inner valves. Valves shall have single or double seats as specified (see 7.2), except that type II valves shall have single seats only. When specified (see 7.2), double-seated valves shall be so designed that the action of the inner valve can be easily reversed without the use of additional parts.

3.5.2 Valve trim. Valve trim shall be in accordance with the manufacturer's standard practice, except as otherwise specified herein (see 7.2). Design shall be such that in the event of pressure failure of the operating medium, the valve shall go to the open or to the closed position as specified (see 7.2).

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3.5.3 Type V control pilots. Type V control pilot shall be hydraulically, pneumatically, or electrically controlled, as specified (see 7.2). The instrument and control piping shall be in accordance with ANSI B31.1.

3.5.4 Operators. Unless a particular type is specified (see 7.2), operators shall be any one of the following: diaphragms, bellows, or pistons.

3.5.5 Loading means. Unless a particular means is specified (see 7.2), loading shall be by any one of the following: springs, weights and levers, air domes, and tanks.

3.6 Operational requirements. The initial or inlet pressure (maximum/minimum), the total temperature or degrees superheat, the delivery or outlet pressure (maximum/minimum), the maximum flow required through regulator, and the character of the load (constant or intermittent) shall be as specified (see 7.2).

3.6.1 Accuracy of regulation. The controlled pressure shall not vary by more than the values indicated in table I. These values shall be based on the steam flow varying not more than  $\pm 10$  percent of the rated capacity, and the initial pressure varying not more than  $\pm 20$  percent of the specified initial pressure, except that for single-seated direct-operated valves, the initial pressure shall vary not more than  $\pm 10$  percent. Unless otherwise specified (see 7.2), accuracy of regulation for small flow valves shall conform to table I. Valves listed are for slow load or pressure changes. When abrupt changes occur, momentary deviations may be greater but shall result in immediate return to the limits indicated in table I.

TABLE I. Accuracy of regulation.

Types I and III			
Range of controlled (pressure psig)		Maximum deviation (plus or minus)	
2-20	13.9-137.9 kPa(gage)	20 percent	
21-50	144.8-344.8 kPa(gage)	10 percent	
51-1500	351.6-10,342.5 kPa(gage)	5 percent	
Types II, IV, and V			
2-20	13.9-137.9 kPa(gage)	1/2 psig	3.5 kPa(gage)
21-50	144.8-344.8 kPa(gage)	1 psig	6.9 kPa(gage)
51-1500	351.6-10,342.5 kPa(gage)	2 percent	

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3.6.2 Leakage. Leakage through single-seated valves shall be not greater than 0.01 percent of the maximum valve capacity. Leakage through double-seated valves shall be not greater than 0.5 percent of the specified maximum valve capacity.

3.6.3 Operating range. Unless otherwise specified (see 7.2), valves shall be adjustable over an operating range of not less than 10 percent of the specified reduced pressure.

#### 4. REGULATORY REQUIREMENTS

4.1 Materials. 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). Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this commercial item description are to be new. They are to be fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this commercial item description.

4.2 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within specified tolerances using conversion tables contained in the latest version of Federal Standard No. 376, and all other requirements of this commercial item description including form, fit, and function are met. If a product is manufactured to metric dimensions in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

#### 5. QUALITY ASSURANCE PROVISIONS.

5.1 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of the commercial item description. The product must conform to the producer's own drawings, specifications, standards, and quality assurance practices. The same product must be offered for sale in the commercial marketplace by a nationally recognized brand found in standard vendor catalogs. The government reserves the right to require proof of such conformance prior to first delivery, and thereafter as may be otherwise provided for under the provisions of the contract.

6. PACKAGING. Preservation, packing, and marking shall be as specified in the contract or order (see 7.2).

#### 7. NOTES.

7.1 Source of documents.

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

7.1.2 ASTM Standards are available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

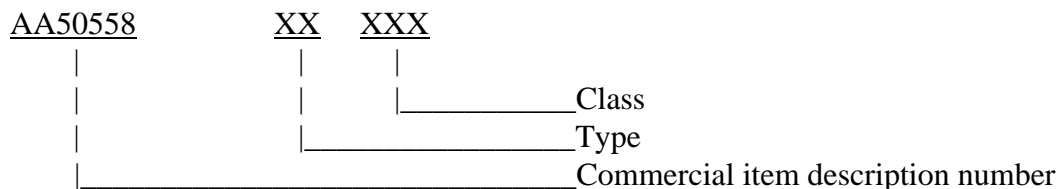
7.1.3 ANSI Standards are available from American Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

7.1.4 The Federal Acquisition Regulation (FAR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

7.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type, class and size required (see 2.).
- c. When valves require removal from the line for replacement of parts are acceptable (see 3.1).
- d. Type of end connection required (see 3.4).
- e. Whether single or double-seated (see 3.5.1).
- f. When double-seated valves designed to reverse inner valve action without use of additional parts is not required (see 3.5.1).
- g. Valve trim, if other than specified (see 3.5.2).
- h. Whether valve should close or open in the event of pressure failure of the operating medium (see 3.5.2).
- i. Type of control pilot for type V valve (see 3.5.3).
- j. Type of operator (see 3.5.4).
- k. Type of loading means (see 3.5.5).
- l. Type of operational requirement (see 3.6).
- m. When accuracy of regulation for small flow valves should be different (see 3.6.1).
- n. Operating range, if other than specified (see 3.6.3).
- o. Level of preservation, packing and marking required (see 6.).

7.3 Part Identification Number (PIN). The following part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PIN used for units acquired to this description will be assigned as follows:



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7.3.1 Type and class. The following is a sample that would define the marking for a type I class 125 valve: AA50558-I-125

7.4 National Stock Numbers (NSNs): The following is a list of NSNs assigned which correspond to this commercial item description. The list may not be indicative of all possible NSNs associated with the commercial item description.

<u>NSN</u>	<u>TYPE</u>	<u>CLASS</u>
4820-00-289-2150		
4820-LLLC21441		

7.5 Working steam pressures. The valves should be designed and constructed for operation at the maximum WSP and temperatures indicated by the following pressure classes:

Type I	- Classes 125 and 250.
Type II, III, and IV	- Classes 125, 150, 250, 300, 400, and 600.
Type V	- All classes.

7.6 Sizes. The valves should have the following nominal pipe sizes:

Type I	- 1/4-inch (8 mm) to 12 inches (300 mm).
Type II	- 1/2-inch (15 mm) to 6 inches (150 mm).
Type III	- 1/4-inch (8 mm) to 12 inches (300 mm).
Type IV	- 1/4-inch (8 mm) to 12 inches (300 mm).
Type V	- 1/2-inch (15 mm) to 12 inches (300 mm) and 14 (355.5 mm) and 16 inches (406.4 mm) outside diameter.

7.7 Key word listing.

Discharge pressure  
High pressure  
Reduced pressure  
Steel valve

7.8 Classification cross reference. Classifications used in this commercial item description (see 2.) are identical to those found in the superseded military specification, MIL-V-16733D.

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CIVIL AGENCY COORDINATING ACTIVITY:

-MILITARY INTEREST:

Custodians  
Navy - YD1

Review Activity  
DLA -CS

GSA-FSS

Preparing Activity  
Navy - YD1

(Project 4820-0687)