

INCH-POUND

A-A-59006

3 December 1996

COMMERCIAL ITEM DESCRIPTION INDICATORS, PIPELINE, FLOW, SIGHT

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

1. SCOPE

1.1 Scope. This commercial item description covers sight flow pipeline indicators intended for installation in drain lines of strainer, where flow indication is necessary for backflush and draining operations.

2. CLASSIFICATION

2.1 Classification. Sight Flow Pipeline Indicators shall be classified as 150, 250 and 300 class, in-line, flanged units as appropriate to ANSI B16.5 and MIL-F-20042.

3. SALIENT CHARACTERISTICS

3.1 Codes and standards. Sight flow indicators shall comply with the applicable requirements of ASME Boiler and Pressure Vessel Code Section VIII.

3.2 Design. Each sight flow indicator shall be as specified by table I. Sight flow shall be designed as not to obstruct flow of the fluid, is without internal indicator.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, SEA 03R42, Naval Sea Systems Command, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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TABLE I. Reference data.

Equipment/Characteristic	Description
Fluid type	Sea water, Fuel oil, Lube oil
Operating pressure	400 psi (MAX)
Hydrostatic test pressure	600 psi (MAX)
Temperature range	Normal 70 to 220°F
Piping connections	Class 150 and 300, ANSI B16.5 raised face flanges, straight through configuration 150 and 250 rating MIL-F-20042 full face flanges, straight through configuration
Shock resistance	MIL-S-901, grade A
Vibration Resistance	MIL-STD-167, type 1

3.3 Material. The material requirements for all sight flow indicator components shall be in accordance with table II. Sight flow indicators in sea water service shall utilize non-ferrous material.

3.4 Construction. The sight flow indicator is composed of four basic components. The body which provides in-line attachment capability and rigidity to the sight flow indicator. The glass provides the viewing window to the process flow stream. O-rings compressed to tightly seal the gap and prevent leaking between the glass and body. Cover provides a compression surface for the bolts to hold the gasket and glass tightly against the sight flow body.

TABLE II. Materials required for sight flow indicator.

Part	Material	Applicable Documents	Remarks
Body	Stainless Steel	ASTM A 351	Gr CF8M
	70-30 CuNi	ASTM B 369	C96400
	Bronze	ASTM B 61	C95800
		ASTM B 62	
Glass	Borosilicate		Tempered
Threaded fasteners	CRES	MS17829	
		ASTM F 593 SH	
	NiCu	ASTM F 467	N04400, N04405
		ASTM F 468	
"O" rings	Fluorocarbon	MIL-R-83248/1	Type 1 Class 1

3.5 Piping connections. Flanges shall be in accordance with the requirements of ANSI B16.5 for stainless steel units and MIL-F-20042 for bronze units. Flanges shall be integrally cast with the body as applicable to the working pressure.

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3.6 Envelope dimensions. Envelope dimensions shall be in accordance with tables III and IV.

TABLE III. Envelope dimensions for 150 rated sight flow indicators.

Sight flow indicator size (inch)	Width (inches)	Flange to Flange (inches)	View port I.D. (inches)
1	5.750	5.625	1.500
2	9.313	7.875	2.875
3	11.938	9.375	3.750
4	11.625	11.000	4.750
6	18.000	14.250	7.000
8	21.000	16.125	9.000

TABLE IV. Envelope dimensions for 250 and 300 rated sight flow indicators.

Sight flow indicator size (inches)	Width (inches)	Flange to flange (inches)	View port ID. (inches)
1	6.438	6.875	1.375
2	9.625	8.625	2.125
3	13.375	11.375	3.188
4	16.500	13.250	4.250
6	23.750	21.375	6.250
8	23.750	22.375	6.250

3.7 Identification plates. Identification plates shall be provided in accordance with the requirements of MIL-P-15024 and MIL-P-15024/5, and shall include the following:

- (a) Commercial Item Description (CID) number.
- (b) Manufacturer.
- (c) Contract Number.
- (d) The nominal pipe size of the inlet and outlet connections.
- (e) Pressure rating.

3.7.1 Part numbering of interchangeable parts. The manufacturer's part number and drawing number shall be the same. All fasteners shall be identified by an industry part number which identifies both size and material.

3.8 Mechanical shock. The complete sight flow indicator assembly shall be capable of withstanding the medium impact shock test specified in 5.7.2.1.

3.9 Vibration. The complete sight flow indicator assembly shall be designed and tested to function satisfactorily under the requirements of MIL-STD-167-1 Type 1 environmental vibration.

3.10 Workmanship. The body and flanges shall be of uniform quality and condition, free from blow holes, porosity, hard spots, shrinkage defects, cracks, and other defects. All surfaces shall be smooth and well cleaned. The inside surfaces shall be well cleaned and free from sharp edges.

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4. REGULATORY REQUIREMENTS

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

4.2 Prohibited material. Zinc or cadmium plating shall not be used on any part of the sight flow indicators.

4.3 Mercury exclusion. The sight flow indicators shall be free of mercury contamination. During the manufacturing process, tests, and examination, the product to be offered for acceptance shall not come in direct contact with mercury or any of its components, nor with any mercury containing device employing a single boundary of containment.

5. QUALITY ASSURANCE PROVISIONS

5.1 Product conformance. The products provided shall meet the salient characteristics of this commercial item description, 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.

5.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 5.3).
- (b) Quality conformance inspection (see 5.4).

5.3 First article inspection. First article inspection shall consist of one sight flow indicator of each size and identical design undergoing the examinations and tests as specified in table V.

5.4 Quality conformance inspection. All assembled sight flow indicators shall undergo testing as specified in table V. Visual and dimensional examination shall consist of selecting sight flow indicator(s) in accordance with 5.5 and inspecting them in accordance with 5.6.

5.5 Sampling for visual and dimensional examination.

5.5.1 Lot. For sampling, a lot shall consist of sight flow indicators of the same size offered for delivery at one time.

5.5.2 Sampling. As a minimum, the contractor shall select a sample quantity of sight flow indicator in accordance with table VI and inspect them in accordance with 5.6. If one or more defects are found in any sample, the entire lot shall be rejected. The contractor has the option of screening 100 percent of the rejected lot for the defective characteristic(s) or providing a new lot which shall be inspected in accordance with the sampling plan.

TABLE V. First article and quality conformance inspection.

Examinations and tests	First article	Quality conformance
Examination	5.6	5.6
Shock	5.7.2.1	---
Vibration	5.7.2.2	---
Hydrostatic	5.7.1	5.7.1
Burst test	5.7.1.1	---
Additional inspection	5.8	5.8

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TABLE VI. Sampling for visual and dimensional examination.

Lot size number of sight flow indicators	Sample size
5 and under	All
6 to 8	5
9 to 15	7
16 to 25	10
26 to 40	15
41 to 65	25
66 to 110	35
111 to 180	50
181 to 300	75

5.6 Visual and dimensional examination. The sight flow indicators shall be examined to verify conformance to the requirements of table VII. Any indicators having one or more defects shall be rejected.

TABLE VII. Visual and dimensional inspection.

Inspection	Paragraph
Construction	3.4
Piping connections	3.5
Identification plate	3.7
Quality of workmanship	3.10

5.7 Tests.

5.7.1 Hydrostatic pressure test for strength and porosity. The test shall be an internal pressure test with water. Each assembled indicator shall be tested to a pressure equal to 150 percent of the design pressure for a duration of 60 minutes. Any indicator not maintaining zero leakage shall be rejected.

5.7.1.1 Burst test. The sight flow indicator shall be tested for compliance with requirement of table I in accordance with ASME Boiler and Pressure Vessel Code Section VIII. Any indicator that fails to meet the performance requirements of table I shall be rejected.

5.7.2 Mechanical tests.

5.7.2.1 Mechanical shock test. The sight flow indicator shall be tested for compliance with medium impact shock resistance in accordance with the requirements of MIL-S-901 Grade A.

5.7.2.2 Vibration test. The sight flow indicator shall be tested for compliance with MIL-STD-167-1 Type 1. Any unit not meeting MIL-STD-167-1 Type 1 requirements shall be rejected.

5.8 Additional inspection. Where other specifications form a part of this specification, sampling, examination, and tests shall be conducted as required by the pertinent specification, unless otherwise specified in the contract or order (see 7.1).

5.9 Inspection of packaging. Sample packages and the inspection of the packaging-preservation, packing, and marking for shipment and storage shall be in accordance with the requirements of section 6 and the documents specified therein.

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6. PACKAGING

6.1 General requirement. Commercial packaging shall be in accordance with the requirements of ASTM D 3951.

6.1.1 Container modification. Shipping containers exceeding 200 pounds gross weight shall be provided with a minimum of two, 3- by 4-inch nominal wood skids laid flat, or a skid- or sill-type base which will support the material and facilitate handling by mechanical handling equipment during shipment, stowage, and storage.

7. NOTES

7.1 Acquisition requirements. Acquisition documents must specify the following.

- (a) Title, number, and date of this commercial item description.
- (b) Issue of DODISS to be cited in the solicitation, and if required, the specified issue of individual documents referenced (see 7.2.1.1).

7.2 Sources of documents.

7.2.1 Government documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the commercial item description to the extent specified.

7.2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 7.1).

SPECIFICATIONS

MILITARY

- MIL-S-901 - Shock Tests, H.I. (High-Impact); Shipboard Machinery, Equipment, & Systems, Requirements for.
- MIL-P-15024 - Plates, Tags, and Bands for Identification of Equipment.
- MIL-P-15024/5 - Plates, Identification.
- MIL-F-20042 - Flanges, Pipe and Bulkhead, Bronze (Silver Brazing).
- MIL-R-83248 - Rubber, Fluorocarbon Elastomer, High Temperature Fluid and Compression Set Resistant.
- MIL-R-83248/1 - Rubber Fluorocarbon Elastomer, High Temperature Fluid, and Compression set Resistant (O-rings, Class 1, 75 Hardness).
- MS17829 - Nut, Self-Locking, Hexagon, Regular Height, 250 Degree F, (Non Metallic Insert) Non-Corrosion-Resistant Steel.

STANDARDS

MILITARY

- MIL-STD-167-1 - Mechanical Vibrations of Shipboard Equipment (Type I - Environmental and Type II - Internally Induced).

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publication and Forms Center, Standardization Documents Order Desk, BLDG. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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7.2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issue of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 7.1).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
B16.5 - Pipe Flanges and Flanged Fittings.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Boiler and Pressure Vessel Code - Section VIII - Pressure Vessels.

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th St., New York, NY 10017.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
ASTM A 351 - Standard Specification for Castings Austenitic-ferritic (Duplex), for Pressure-Containing Parts.
ASTM B 61 - Standard Specification for Steam or Valve Bronze Castings.
ASTM B 62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
ASTM B 369 - Standard Specification for Copper-Nickel Alloy Castings.
ASTM D 3951 - Commercial Packaging, Practice for.
ASTM F 467 - Standard Specification for Non-ferrous Nuts for General Use.
ASTM F 468 - Standard Specification for Non-ferrous Bolts, Hex Cap Screws, and Studs for General Use.
ASTM F 593 - Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organization that prepares or distributes the documents. These documents also may be available in or through libraries or other informational services.)

7.2.3 Order of precedence. In the event of a conflict between the text of this commercial item description and the references cited herein, the text of this commercial item description takes precedence. Nothing in this commercial item description, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

7.3 First article. When a first article inspection is required, the items shall be a first article sample. The first article shall consist of the units specified. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired and tested by the Government; and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

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7.4 Preinstallation instruction. A set of instructions covering the preinstallation of the equipment should be furnished. Instructions should include all information necessary to return the unit to active status, such as, but not limited to: the addition of lubricants prior to operation, flushing of lines, removal of greaseproof barrier and the location of detached components. Instructions should be packaged in a transparent waterproof plastic bag, minimum 4 mils thick. Closure should be by heat sealing. The shipping container in which the instructions are packed should be so marked.

7.5 Part number. The part number is a definitive part number which corresponds to the size preformation of sight flow indicators covered by this commercial item description. The commercial item description number and code letter are combined to form a definitive part number. Part numbers for the sight flow indicators are assigned as follows:

Commercial item description number	<u>A-A-59006</u>	<u>X</u>	<u>X</u>	<u>XXX</u>
Flange type (N for ANSI or M for Military)				
Size code letter				
Pressure rating (150, 250, or 300)				

7.5.1 Sizes. The size of sight flow indicators (see table III or IV) are identified by a single letter (see table VIII).

TABLE VIII. Size code.

Sight Flow Indicator Size	Code Letter
1 "	A
2 "	B
3 "	C
4 "	D
6 "	E
8 "	F

MILITARY INTERESTS:

Custodians:

Army - ME
Air Force - 99

Preparing activity:

Navy - SH
(Project 4730-0571)

Review activities:

Army - GL
Navy - AS, OS, YD
Air Force - 10, 82
DLA - CS

Civil agency coordinating activity: (where appropriate)

GSA - FSS