INCH-POUND
A-A-59000A
1 April 1997
SUPERSEDING
A-A-59000
9 February 1995

COMMERCIAL ITEM DESCRIPTION

STRAINERS, SEDIMENT, PIPELINE, SELF-CLEANING (MANUAL OR AUTOMATED)

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 both manual and automated self-cleaning pipeline sediment strainers.

1.2 Intended use. The strainers specified are intended for installation in sea water piping systems on the discharge side of the pump.

2. CLASSIFICATION

2.1 Classification. Self-cleaning strainers shall be of the following types, classes, styles, and sizes as specified (see 7.1):

Type I - Manual hand wheel actuation.
Type II - Electric motor actuation.

Class 150 - 150 pounds per square inch gage (psig) pressure rating.
Class 250 - 250 psig pressure rating.

Style 1 - One screen, angled flow, sizes 2, 2½, and 3 inch.
Style 2 - Two screens, inline flow, sizes 2½, 3, 4, 6, 8, 10, and 12 inch.
Style 3 - Four screens, inline flow, sizes 14 and 16 inch.
Style 4 - Six screens, inline flow, size 20 inch.

Beneficial comments recommendations, additions, deletions, clarifications etc. and any other data which may improve this document should be sent to: Commander, SEA 03R42, Naval Sea Systems Command, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160.

AMSC N/A FSC 4730

3. SALIENT CHARACTERISTICS

3.1 Codes and standards. Strainer shall comply with the applicable requirements of table I.

TABLE I. Reference data.

Equipment/Characteristic	Description
Fluid type	Sea water
Operation pressure	150 or 250 psi
Temperature range	70 to 120°F
Piping connections Inlet, outlet, and sump port	 150 and 250 rating MIL-F-20042 full face flanges
Pressure resistance	FCI 78-1
Flow capacity	Table III per ISA-S75.02
Shock resistance	MIL-S-901 grade A
Type II strainer only Motor Control Panel	 MIL-M-17059 MIL-M-38510 and MIL-STD-1686

3.2 Design and construction. Each strainer shall be of the type, class, style, and size as specified (see 2.1). Each strainer shall contain one or more rotatable screens and fixed scraper bars for the purpose of cleaning the screen without shutting down operation of the system. Compartment covers shall be flanged and attached to the body by bolts. Each cover shall effect a positive seal on an O-ring recessed in the cover plate. Blade inspection/ adjustment covers on strainer sizes 4 inches and above shall be bolted to flanges on the strainer body. An O-ring recessed in the cover shall be provided to form a watertight seal. The sump below the screen(s) shall be fitted with a drain outlet.

3.3 Material. The material requirements for all strainer components shall be in accordance with table II.

3.4 Screen. The screen shall be made of one unit. Screen shall be of the perforated plate construction. All seam welds shall be continuous. The total clear/open area of the perforations shall be sufficient to allow a maximum clean pressure drop of 6 psi at the design flow rates as shown in table III. Unless otherwise specified (see 7.1), perforated holes are sized as specified by 7.6.3).

3.4.1 Screen strength test. The strainer screen shall be tested by applying a differential pressure across the screen equal to 100 percent of the specified strainer design pressure for the applicable type and class, using water for a duration of 10 minutes. Differential pressure shall be applied in a rapid manner, one minute or less. Screen which distort, stretch, or exhibit other weaknesses shall be rejected.

3.5 Actuation. Each strainer screen shall be fitted with a shaft along its rotational axis, which penetrates the compartment cover through a watertight seal. Outside the housing, the shaft shall be capable of being fitted with either a manual hand wheel (Type I) or an electric motor actuator (Type II). Each manually actuated handwheel shall be sized and configured so that maximum required operating force is less than 50 pounds (lbs). For certain hazard areas, such as installation in a JP-5 pump room, the motor actuator (Type II) shall be explosion proof.

3.6 Scraper bars. The scraper blades in all strainers size 4 inches and above shall be capable of inspection and adjustment via a removable watertight inspection cover on the strainer body, without having to further disassemble the strainer. Each scraper bar shall be aligned so that the screen can be turned in either direction without being damaged.

TABLE II. Materials required for strainers.

Part	Material	Applicable Documents	Remarks
Bodies, covers (parts in contact with sea water)	Copper-nickel alloy	ASTM B 369	C96400
	Aluminum bronze	ASTM B 148	C95800
Collar, handwheel operators, (parts not in contact with sea water)	Cast tin bronze	ASTM B 61	C92200
	Aluminum bronze	ASTM B 505	C95800
	CRES	ASTM A 276	C31600
Scraper	NiCu	ASTM B 127	N04400, N04405
Threaded fasteners	NiCu alloy	ASTM F 467	N04400, N04405
		ASTM F 468	
"O" rings	Fluorocarbon	MIL-R-83248/1	For all except threaded bosses
		MIL-R-83248/2	Threaded bosses
Screen	CuNi plate	ASTM B 122	C71500
	NiCu plate	ASTM B 127	N04400, N04405

3.7 Functional performance. Unless otherwise specified (see 7.1), design flow capacity and design temperature shall be as specified in table III.

3.7.1 Operational cycling tests. The strainer shall be tested for a total of 600 cycles at design pressure. At the completion of the 600 cycles, compliance with the required operating force of 50 pound (lbs) or less and zero leakage shall be demonstrated. Upon satisfactory completion of this test the unit shall be refurbished to new condition before being offered for delivery.

TABLE III. Functional performance.

Size	Screens number	Flow rate (gpm)	Temperature degrees F
2	1	100	150
2-1/2	1	100	150
3	1	160	150
2-1/2	2	165	150
3	2	250	150
4	2	390	150
6	2	900	150
8	2	1500	150
10	2	2150	150
12	2	2750	150
14	4	4250	150
16	4	5500	150
20	6	8250	150

NOTE: 1. Screen perforation 1/32-inch.

3.8 Envelope dimensions. Maximum envelope dimensions (inches) shall be in accordance with table IV.

3.9 Workmanship. The strainer body and covers 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 of strainers shall be well cleaned and free from sharp edges.

TABLE IV. Envelope dimensions.

Size	Screens number	Manual actuation			Motor actuation			Screen removal clearance
		Length	Width	Flange to flange	Length	Width	Flange to flange	
2	1	13.00	7.00	11.00	---	---	---	13.50
2-1/2	1	14.00	7.00	12.25	---	---	---	15.50
3	1	15.00	10.00	14.25	20.00	21.50	22.50	17.25
2-1/2	2	21.75	6.25	12.50	---	---	---	15.50
3	2	24.00	8.50	13.75	---	---	---	17.50
4	2	28.50	9.50	16.75	34.00	38.00	16.75	21.00
6	2	35.50	14.00	21.00	41.00	44.50	21.00	27.00
8	2	44.00	19.50	25.00	46.00	47.50	25.00	33.00
10	2	51.50	23.75	31.00	54.00	49.00	31.00	39.00
12	2	56.50	25.50	35.25	61.50	50.00	35.25	44.00
14	4	64.00	64.00	31.75	56.00	63.00	42.00	40.00
16	4	71.50	71.50	34.75	70.00	77.00	45.00	44.00
20	6	76.00	76.00	41.50	68.00	75.00	51.00	45.00

Notes:

1. Flange-to-flange dimension for single screen strainers are measured from the inlet flange to the flush outlet opening.
2. Width dimension is defined as the widest point of the unit (ie 90 degree to handwheel or motor).
3. Length dimension is defined as the longest point of the unit (ie handwheel to handwheel).

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 strainer.

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

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) Type, class, and style required (see 2.1).
(c) Strainer screen design and characteristics (see 3.4).
(d) Motor design is required (see 3.5).
(e) The required design flow capacity, pressure, temperature, and clean pressure drop (see 3.1).
(f) Technical manuals and drawings required (see 7.3).
(g) Whether repair parts are required (see 7.4.1).
(h) 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-M-17059 - Motors, 60-Cycle, Alternating Current, Fractional H.P., Shipboard Use.
MIL-F-20042 - Flanges, Pipe, Bronze (Silver Brazing).
MIL-M-38510 - Microcircuits, General Specification for.
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).
MIL-R-83248/2 - Rubber Fluorocarbon Elastomer, High Temperature Fluid, and Compression Set Resistant (O-rings, Class 2, 60 Hardness).

STANDARDS

MILITARY

MIL-STD-1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment (Excluding Electrically Initiated Explosive Devices) Metric.

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

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 SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 276 - Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
ASTM B 61 - Standard Specification for Steam or Valve Bronze Castings.
ASTM B 122 - Standard Specification for Copper-Nickel-Tin Alloy, Copper Nickel-Zinc Alloy (Nickel Silver), and Copper-Nickel Alloy Plate, Sheet, Strip and Rolled Bar.
ASTM B 127 - Standard Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip.
ASTM B 148 - Standard Specification for Aluminum-Bronze Sand Castings.
ASTM B 369 - Copper Nickel Alloy Castings.

ASTM (Continued)

ASTM B 505 - Standard Specification for Copper-Base Alloy Continuous Castings.
ASTM B 584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
ASTM D 3951 - Commercial Packaging, Practice for.
ASTM F 467 - Standard Specification for Nonferrous Nuts for General Use.
ASTM F 468 - Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs.

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2859.)

FLUID CONTROL INSTITUTE (FCI)

78-1 - Pressure Rating Standard for Pipeline Strainers Other Than "Y" Type.

(Application for copies should be addressed to the Fluid Control Institute, Inc., P.O. Box 3854, Tequesta, FL 33458.)

INSTRUMENT SOCIETY OF AMERICA (ISA)

S75.02 - Control Valve Capacity Test Procedure.

(Application for copies should be addressed to the Instrument Society of America, 67 Alexander Dr., P.O. Box 12277, Research Triangle Park, NC 27709.)

(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 Technical manuals. The requirement for technical manuals should be considered when this commercial item description is applied to a contract. If technical manuals are required, military specifications and standards which have been cleared and listed in DoD 5010.12-L (AMSDL) must be listed on a separate CDRL (DD Form 1423), included as an exhibit to the contract. The technical manuals must be acquired under a separate contract line item in the contract.

7.4 Ordering spare or repair parts. When ordering spare parts or repair parts for the equipment covered by this commercial item description, the contract should state that such spare parts and repair parts should meet the same requirements and provisions as the parts used in the manufacture of the equipment. Packaging for such parts should also be specified.

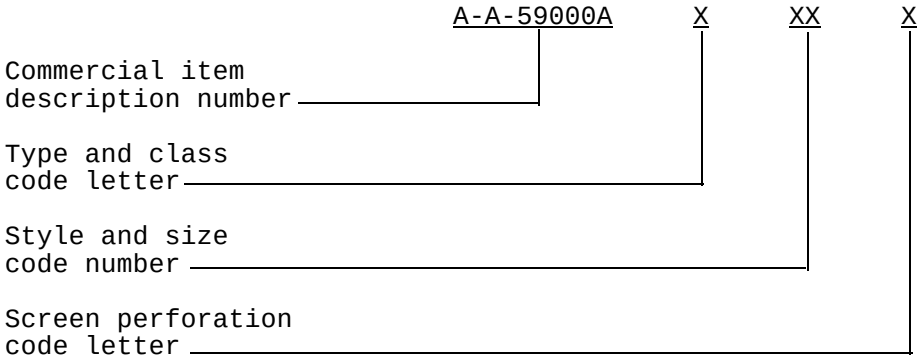
7.4.1 Repair parts and repair parts boxes. Complete sets of repair screens for each type and class shall be furnished as follows:

(a) One set for each of the ten initial strainers required.
(b) One set for each two additional strainers required.
(c) Cover O-rings - four for every strainer supplied.
(d) Other O-rings, and seals - one set for every ten strainers supplied.

When specified (see 7.1) items (c) and (d) shall be furnished in repair boxes.

7.5 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. Closure shall be by heat sealing. The shipping container in which the instructions are packed shall be so marked.

7.6 Part number. The part number is a definitive number which corresponds to the type, class, style, size, and screen perforation of strainers covered by this commercial item description. The commercial item description number, the type and class code letter, the style and size code numbers and screen perforation code letter are combined to form a definitive part number. Part numbers for the strainers are assigned as follows:



7.6.1 Type and class. The type and class of strainer (see 1.2) are identified by a single letter (see table V).

TABLE V. Code letter to type and class.

	Type I	Type II
Class 150	A	B
Class 250	C	D

7.6.2 Style and size. The style and size of strainer (see 1.2) are identified by a double digit number (see table VI).

TABLE VI. Code number to style and size.

Size	Style 1	2	3	4
2	01	-	-	-
2-1/2	02	04	-	-
3	03	05	-	-
4	-	06	-	-
5	-	-	-	-
6	-	07	-	-
8	-	08	-	-
10	-	09	-	-
12	-	10	-	-
14	-	-	11	-
16	-	-	12	-
20	-	-	-	13

7.6.3 Screen perforation. The screen perforation of strainer (see 1.2) are identified by a single letter (see table VII).

TABLE VII. Code letter for screen perforation.

PERFORATED SCREENS		
Size	System particle size tolerance range	Code
1/4"	.47 to .62	A
3/16"	.31 to .47	B
1/8"	.24 to .31	C
3/32"	.15 to .24	D
1/16"	.09 to .15	E
1/32"	.06 to .09	F

7.7 Subject term (key word) listing.

Automated
Cleaning
Filtration
Manual
Motor
Screen
Sea water

MILITARY INTERESTS:

Custodians:
Army - AR
Navy - SH
Air Force - 16

Preparing activity:
Navy - SH
(Project 4730-0588)

Review activities:
Army - AT, CR, ME, MR
Navy - EC, OS, YD-1, CG, MC
Air Force - 11, 85, 90
DLA - CS

Civil agency coordinating activity: (where appropriate)
AGR - APS
HHS - FEC
GSA - FSS