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INCH-POUND

A-A-50554A
1 December 2017
SUPERSEDING
A-A-50554
9 October 1997

COMMERCIAL ITEM DESCRIPTION

FILTER, AIR-EXTENDED AREA, INITIAL INSTALLATION

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

1. SCOPE. This specification covers replaceable, extended media area type air filters with externally supported, nonsupported, or self-supporting cartridges. The filters are installed in permanent metal holding frames and housings as required for use in air conditioning, heating, and ventilating systems for removing particulate matter found in the atmosphere.

2. CLASSIFICATION.

2.1 Classification. Filters covered by this specification will be of the following types and grades, as specified (see 7.2).

Type I - Prefilter - Externally supported or nonsupported cartridge
- Grade A - 30 percent commercially rated efficiency in accordance with ASHRAE 52.2 using atmospheric dust
- Grade B - 40 percent commercially rated efficiency in accordance with ASHRAE 52.2 using atmospheric dust
- Grade C - 85 percent commercially rated efficiency (minimum of 58 percent per ASHRAE 52.2 using atmospheric dust)
- Grade D - 95 percent commercially rated efficiency (minimum of 78 percent per ASHRAE 52.2 using atmospheric dust)

Comments, suggestions, or questions on this document should be addressed to DLA Troop Support – Industrial Hardware Division (ATTN: Code FHTE), 700 Robbins Avenue, Philadelphia, PA 19111-5096 or email trpsptspecspa@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil .

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Type II - Afterfilter - Externally supported or nonsupported cartridge

Type III - Afterfilter - Self-supporting cartridge
Grade E - 95 percent rated efficiency (Dioctyl Phthalate (DOP) Test using 0.3 micron particles)
Grade F - 99.97 percent rated efficiency (DOP Test using 0.3 micron particles)

3. SALIENT CHARACTERISTICS.

3.1 Description. Filters shall be of the extended media area type for use in air conditioning, heating, and ventilating systems. Each filter assembly shall include, but not be limited to, the following basic components:

a. A permanent holding frame.
b. A preformed, sealed, and disposable cartridge of the pleated or extended area type.
c. A factory assembled side or bottom loading housing where so specified (see 3.9.1.2 and 3.9.2.2).
d. One direct reading draft gage per filter bank (see 3.10).

3.2 Zinc-coated steel. Galvanized and galvannealed sheet steel shall conform to ASTM A563/A563M. The weight of zinc coating for galvanized steel media shall not be less than that specified in ASTM B633 for type LS electroplate zinc coating.

3.3 Aluminum. Aluminum shall be an alloy conforming to the requirements of ASTM B209. The alloy shall have mechanical properties, formability, and a surface finish suitable for the intended application.

3.4 Corrosion-resistant steel. Unless a particular type of corrosion-resistant steel is specified (see 7.2), corrosion-resistant steel shall conform to any of the 300- or 400-series of ASTM A240/A240M.

3.5 Aluminized steel. Aluminum-coated steel sheets shall be coated with aluminum on both sides by the hot-dip process. The total weight of coating on both sides of the sheet shall be not less than .40 ounces per square foot (122 grams per square meter) of sheet.

3.6 Dissimilar metals. Joints between dissimilar metals, including bolts, nuts, rivets, and other fastenings and fittings shall be protected against galvanic corrosion by the proper selection of materials, plating isolation, insulation, area relationships or other means, providing equivalent protection.

3.7 Fire and casualty hazards. Filters shall meet the fire-resistant requirements of UL 900. Filters shall be either UL class 1 or UL class 2, at the option of the contractor, unless UL class 1 filters only are specified in the invitation for bids (see 7.2). Classifications under UL 900 shall be interpreted as follows:

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a. Class 1 - Filters which, when clean, do not contribute fuel when attacked by flame and emit only negligible amounts of smoke.
b. Class 2 - Filters which, when clean, bum moderately when attacked by flame or emit moderate amounts of smoke or both. Adhesive coatings used on filters shall have a flashpoint of not less than 25 degrees (º) Fahrenheit (1 63º Centigrade) as determined by ASTM D 92.

3.9 Construction. The equipment shall be designed and constructed to facilitate field maintenance. All adjustments and replaceable accessories shall be readily accessible. Conditions which can be hazardous to personnel or deleterious to equipment shall not be permitted.

3.9.1 Type I and II filters.

3.9.1.1 Holding frames. When specified (see 7.2), each filter shall be provided with a permanent holding frame. The permanent holding frame shall be manufactured of not less than 16-gage material as specified in 3.2 through 3.5. The permanent holding frame shall be equipped with suitable cartridge or media retainer clips along with cartridge supporting wire work and gaskets as required by design. There shall be no air leakage between the permanent holding frame and cartridge that may cause air to bypass the filter. The permanent holding frame shall be provided with matching rivet holes to facilitate installation. The dimensions of the holding frame shall be as specified in 3.13.

3.9.1.2 Filter housing. When specified (see 7.2), a factory assembled side or a bottom access filter housing(s) shall be provided. The housing(s) shall be manufactured of minimum l6-gage material as specified in 3.2 through 3.5. The housing(s) shall be completed with mating flanges, quick opening, double skin insulated or rigidly insulated access doors, and gasketed channels to provide a leakproof support for the filters. When specified (see 7.2), a nominal 2-inch prefilter track shall be provided.

3.9.1.3 Filter cartridge. Filter cartridge shall be a preformed, sealed, and disposable cartridge of the pleated or extended area type.

3.9.2 Type III filter.

3.9.2.1 Holding frame. When specified (see 7.2), each filter shall be furnished with a permanent holding frame. The frame shall be manufactured of not less than 16-gage material as specified in 3.2 through 3.5. The holding frame shall be equipped with suitable cartridge retainer clips. The dimensions of the holding frame shall be as specified in 3.13.

3.9.2.2 Filter housing. When specified (see 7.2), a factory assembled side or a bottom access filter housing(s), with a nominal 2-inch prefilter track, shall be provided. The housing(s) shall be manufactured of minimum 16-gage material as specified in 3.2 through 3.5. The housing(s) shall be completed with mating flanges, quick opening, double skins insulated or rigidly insulated access doors, support channels, positive edge seals, and a filter sealing mechanism to provide a leakproof installation for the filter.

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3.9.2.3 Filter cartridge. A preformed, close-pleated replaceable type filter cartridge shall be provided. The filter cartridge shall consist of a frame, media, fire-retardant sealers, and a gasket on downstream face, where required, to prevent any air bypass leakage. If separators are provided, they shall be aluminum.

3.10 Draft gage. One direct reading draft gage shall be furnished with each filter bank complete with tips and necessary accessory items to provide zero adjustment and accurate operation.

3.11 Type I and II filters. Type I and II filter performance requirements shall be as follows for each grade using a 24" X 24" nominal filter.

3.11.1 Pressure drop. Pressure drop shall be measured by the difference in pressure in the duct immediately before and after the filter.

3.11.1.1 Initial pressure drop. With clean filters, the average initial pressure drop measured in inches water gage (wg) (Pascals (Pa)), shall not exceed the values listed at the specified rated airflow capacity, measured in cubic feet per minute (cfm) (cubic meters per hour (CU m/hr).

	RATED AIRFLOW					
GRADE	1500 CFM (2,550 cu M/HR)		2,000 CFM (3,400 cu M/HR)		2,500 CFM (4,250 cu M/HR)	
	INCHES Wg	(Pa)	INCHES Wg	(Pa)	INCHES Wg	(Pa)
A	.25	(62)	.30	(75)	.40	(100)
B	.25	(62)	.35	(87)	.45	(112)
C	.40	(100)	.45	(112)	.55	(137)
D	.55	(137)	.60	(149)	.65	(162)

3.11.1.2 Final pressure drop. The final pressure drop of each filter cartridge, when operated at rated airflow capacity, shall not exceed the following:

	RATED AIRFLOW					
GRADE	1500 CFM (2,550 cu M/HR)		2,000 CFM (3,400 CU M/HR)		2,500 CFM (4,250 cu M/R)	
	INCHES Wg	(Pa)	INCHES Wg	(Pa)	INCHES Wg	(Pa)
A	.70	(174)	.70	(174)	.80	(199)
B	.80	(199)	.80	(199)	1.00	(249)
C	1.00	(249)	1.00	(249)	1.00	(249)
D	1.00	(249)	1.20	(299)	1.20	(299)

3.11.2 Average synthetic dust weight arrestance. The average synthetic dust weight arrestance shall not be less than the following at the final pressure drop in 3.11.1.2:

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	RATED AIRFLOW		
GRADE	1500 CFM (2,550 cu M/HR)	2,000 CFM (3,400 CU M/HR)	2,500 CFM (4,250 cu M/R)
	PERCENT	PERCENT	PERCENT
A	90	90	90
B	94	94	94
C	98	99	99
D	100	100	100

3.11.3 Average dust spot efficiency. The average dust spot efficiency shall not be less than the following as determined in accordance with ASHRAE 52.2 using atmospheric dust:

GRADE	AVERAGE EFFICIENCY (PERCENT)	AVERAGE EFFICIENCY (PERCENT)
A	LESS THAN 10-15	LESS THAN 25-30
B	LESS THAN 20	40-45
C	58	80-85
D	78	90-95

3.11.4 Average dust holding capacity. The average dust holding capacity shall not be less than the following:

	RATED AIRFLOW		
GRADE	1500 CFM (2,550 CU M/HR)	2000 CFM (3,400 CU M/HR)	2,500 CFM (4,250 cu M/HR)
A	1000 GRAMS	1000 GRAMS	600 GRAMS
B	700 GRAMS	600 GRAMS	500 GRAMS
C	470 GRAMS	400 GRAMS	300 GRAMS
D	380 GRAMS	300 GRAMS	220 GRAMS

3.12 Type III filter.

3.12.1 Initial pressure drop. With clean filters, the initial pressure drop shall not exceed the values listed at the given rated air flow capacity. (In no case shall media velocity exceed 11 feet per minute.)

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GRADE	RATED AIRFLOW			
	650 CFM (1,105 CU M/HR)		1000 CFM (1,700 CU M/HR)	
	INCHES Wg	(Pa)	INCHES Wg	(Pa)
E	1.0	(250.0)	1.0	(250.0)
F	1.0	(250.0)	1.0	(250.0)

3.12.2 Final pressure drop. The final pressure drop of each filter, when operated at rated capacity, shall not exceed the following:

	RATED AIRFLOW			
GRADE	6 INCH DEPTH 650 CFM (1,105 CU M/HR)		12 INCH DEPTH 1,000 CFM (1,700 CU M/HR)	
	INCHES Wg	(Pa)	INCHES Wg	(Pa)
E	2.0	(500.0)	2.0	(500.0)
F	2.0	(500.0)	2.5	(625.0)

3.12.3 Efficiency. The efficiency of the type III filters shall be detennined in accordance with MIL-STD-282 using .3 micron particle of thermally generated DOP smoke, or any equivalent grade of DOP, and shall not be less than the following:

GRADE	INITIAL EFFICIENCY (PERCENT)
E	95
F	99.97

3.13 Dimensions. Unless otherwise specified (see 7.2), the actual outside face dimensions of the holding frame shall be 24.000 inch by 24.000 inch (610 millimeters (mm) by 610 mm) and with the depth as manufacturer's standard. The nominal face dimensions of the filter cartridge shall be 23.500 inch by 23.500 inch (598 mm by 598 mm) with the depth as required by design to comply with the requirements as specified in 3.7. The actual face dimension of the cartridge shall be not less than .250 inch (6 mm) in either width or length from the nominal media face dimensions (for grades A through E). Grade F filter cartridge dimension shall be 24.000 inch (610 mm) by 24.000 inch (610 mm), +0 inch (+0 mm), - .062 inch (-2 mm), including the header frame, and depth as required by design.

3.14 Interchangeability. All air filter units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure

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interchangeability of component parts, assemblies, accessories, and spare parts.

3.15 Treatment and painting. Unless otherwise specified (see 7.2), when mediaframes, holding frames, and housings are furnished they shall be treated and painted in accordance with the manufacturer's standard practice. All surfaces of the frames or housings, other than corrosion resisting steel, shall be protected against corrosion and present a neat appearance.

3.16 Marking.

3.16.1 Commercial marking. Each filter shall be marked with the following:

a. The name or trade name of the manufacturer or vendor.
b. A distinctive model number, catalog designation, or equivalent marking.

If a manufacturer produces air-filter units of the same model at more than one manufacturing facility, each filter shall have a distinctive marking. Such markings shall identify the filter as the product of a particular facility and may be in code.

3.16.2 Military marking. When specified (see 7.2), additional Military marking for each filter shall be furnished. Military marking shall be as permanent as the normal life expectancy of the filter, and shall include the applicable National Stock Number and such other essential information as may be specified or approved by the procuring activity. Letters, numerals, and other characters shall be such as to be clearly legible.

4. REGULATORY REQUIREMENTS.

4.1 Recovered Materials. The offeror/contractor is encouraged to use recovered materials to the maximum 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 description are to be new and 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. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this description unless otherwise specified.

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 fail within specified tolerance using conversion tables contained in the latest version of IEE/ASTM SI 10, and all other requirements of this Commercial Item Description including form, fit and function are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified 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.

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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 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.

7. NOTES.

7.1 Part or Identifying Number (PIN). The PIN to be used for filters acquired to this specification are created as follows:

AA50554 – XX

Type and Grade per paragraph 7.1.1 and Table I

Commercial Item Description No.

7.1.1 Types and grades. The type and grade of the filters are identified by a two character code as shown in Table I.

TABLE I – Type and Grade of Filters

GRADE	TYPE I	TYPE II	TYPE III
A	1A	-	-
B	1B	-	-
C	-	SC	-
D	-	2D	-
E	-	-	3E
F	-	-	EF

Example: Type 2, Grade C filter, Pin = AA50554-2C

7.1.2 Part Numbers. The PIN procedure is for Government purposes and does not constitute a requirement for the contractor.

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7.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Filter type and grade (see 2.1).
c. When particular materials are required for media holding frames and filter housings (see 3.2, 3.3, 3.4,3.5, 3.6, 3.9.1.1, 3.9.1.2, 3.9.2.1, and 3.9.2.2).
d. When UL class 1 filters only will be furnished (see 3.7). NOTE: Consult the UL Building Material List for types under 1.2 to which a UL class 1 rating applies.
e. When a permanent holding frame for each filter is required (see 3.9.1.1 and 3.9.2.1).
f. When filter housing is required with a side or bottom access as required by the contracting officer (see 3.9.1.2 and 3.9.2.2).
g. When type II filter housing will be provided with prefilter track (see 3.9.1.2).
h. Dimensions of the holding frame, if other than specified (see 3.13).
i. When treatment and painting is to be other than specified (see 3.15).
j. When Military marking is required and the information to be included (see 3.16.2).
k. Level of preservation, packaging and level of packing required (see 6.).

7.3 Source of documents.

7.3.1 ASTM Standards are available from the ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

7.3.2 UL Standards are available from the Underwriters from Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.

7.3.3 Copies of Military Standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 191 11-5094.

7.3.4 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.

7.4 Improved design and material. It is not the intent of this specification to prohibit the procurement of filters incorporating newly developed designs and materials having greater reliability, less maintenance and longer life than those specified herein, provided that such designs and materials have been evaluated and approved for use in filters.

7.5 Metric units. The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system should be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

7.6 Subject term (key word) listing.

Air Conditioning
Filter
Heating
Ventilating Systems

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MILITARY ACTIVITIES:

Custodians:
Army – CR4
Navy – YD

Preparing activity:
DLA - IS

(Project 4130-2015-001)

Reviewer:
DLA - GS

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