

METRIC

MIL-PRF-62048C

12 April 1996

SUPERSEDING

MIL-A-62048B(AT)

6 April 1989

PERFORMANCE SPECIFICATION

AIR CLEANERS, AUTOMOTIVE: HEAVY DUTY,
DRY-TYPE (FOR INTERNAL COMBUSTION ENGINES) (METRIC)

This specification is approved for use by the by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 scope. This specification covers heavy duty, dry-type, air cleaners with a replacement filter element for use with internal combustion engines fox mobile applications.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards forma 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 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A

FSC 2940

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

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SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-PRF-46736 - Filter Element, Intake Air Cleaners: Dry Type.

(Unless otherwise indicated, copies of the above specifications and standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and Publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

DEPARTMENT OF DEFENSE

12369000 - Chemical Agent Resistant Coating (CARC) Paint Systems Index.

(Copies of this drawing are available from the U.S. Army Tank-automotive and Armaments Command, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues 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 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) coatings on Iron and Steel Products.

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken. PA 19428-2959.)

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SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J726

- Air Cleaners Test Code, Recommended Practice.

(Application for copies should be addressed to Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

GENERAL MOTORS CORPORATION (GM)

GM 9540

- Accelerated Corrosion Test

(Application for copies should be addressed to General Motors Corporation, c/o Global Engineering, 15 Inverness Way, Englewood, CO 80112.)

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

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Materials. Unless otherwise specified herein, materials used shall be in accordance with the manufacturer's materials specifications for air cleaners. The materials shall be capable of meeting all of the operational and environmental requirements specified herein (see 4.5.1).

3.2.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Design and construction. Unless otherwise specified by the procuring activity/acquisition document (see 6.2), the air cleaner shall conform to the manufacturer's design and construction for dry type air cleaners except to assure performance in accordance with the requirements specified herein, to facilitate the installation of an air filter element specified in MIL-PRF-46736 for which it was designed. Design features shall provide for use of the air cleaner in either gasoline or diesel fueled engines. Construction dimensions and rated airflow shall be in accordance with the applicable drawings or MS standard (see 4.5.1 and 4.5.2).

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3.4 Performance characteristics. Unless otherwise specified herein, the air cleaner shall meet the performance requirements specified below when a filter element conforming to MIL-PRF-46736 has been installed in the air cleaner. The filter element and air cleaner housing is referred to herein as “air cleaner assembly.” The air cleaner housing and assembled components are referred to herein as “air cleaner housing.” Unless otherwise specified herein, performance requirements shall be met with a clean new element (see 6.2) under the following conditions:

- a. Temperature 21.2 to 32.2 degrees Celsius (°C) [70 to 89 degrees Fahrenheit (°F)].
- b. Relative humidity - 30 to 65 percent (%).
- c. Air flow - The rated airflow shall be as specified in the applicable drawing or MS standard, and variable airflow shall be as specified in figure 1. Specified values of airflow are for standard atmospheric conditions of 249 pascals (Pa) barometric pressure and 12.4°C (80°F) ambient temperature providing an air density of 1.17 kilograms per cubic meter (kg/m^3). Actual airflow values during testing shall be corrected to standard conditions and shall be within plus or minus two percent of specified values.
- d. Airflow restriction - Unless otherwise specified by the procuring activity/acquisition document (see 6.2), actual airflow restriction values shall be corrected to airflow with a density of 1.17 kg/m^3 and shall be accurate to plus or minus 24.9 Pa (0.1 inch of water).
- e. Test dust - The test dust shall be of two grades labeled fine and coarse. The chemical analysis of test dust shall be as specified in SAE J276. The particle size distribution by volume and/or weight for the two grades shall as specified in SAE J726.
- f. Dust feeding rate - When the feeding of dust is required as part of any test, the dust shall be fed at an average rate of 0.883 gram per cubic meters (g/m^3) (0.025 gram per cubic foot) for the actual airflow. See figure 1 for percentage of rated airflow variations. The dust rate shall not vary more than $\pm 0.177 \text{ g/m}^3$ (0.005 gram per cubic foot) during any part of applicable test
- g. Scavenge airflow rate - The scavenge airflow rate shall be as specified in Appendix paragraph A.3.5. Air cleaners equipped with scavenge air aspirators or similar types (non-electric

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blowers) shall provide a 10% scavenge flow of the actual airflow being flowed through the air cleaner.

3.4.1 Filter element. The filter element shall comply with MIL-PRF-46736. The filter element shall be firmly positioned in the housing but easily removable for servicing (see 4.5.2).

3.4.2 Air filter blowers. Air filter blowers shall be capable of scavenging in a manner sufficient to meet service life requirements of the air cleaner (see 4.5.2).

3.4.3 Tubular joints. Air cleaner tubular joints shall have externally beaded ends of sufficient strength to withstand external pressure caused by hose clamps or other fastening devices (see 4.5.2).

3.4.4 Flanged joints. Flange joints shall have smooth faces suitable for use with gaskets, and when assembled shall provide airtight joints under all conditions of service. There shall be no holes in flanges opening into the clean-air passage (see 4.5.2).

3.4.5 Servicing. Servicing, cleaning, and reassembly shall be accomplished without the use of special tools and without disturbing the clean air connections to the engine. The number of parts required to be removed for servicing shall be held to a minimum and shall be so designed as to prevent improper reassembly (see 4.5.2).

3.4.6 Air leakage resistance. The air cleaner shall not leak more than 0.5 m³/hr [0.3 cubic feet per minute (cfm)] at a vacuum of 12.5 kilopascals (kPa) [50 inches of water] and show no evidence of internal or external physical damage (see 4.5.3.1).

3.4.7 Air flow restriction. The initial airflow restriction of the air cleaners shall not exceed 2.2 kPa (9 inch of water) at rated airflow (see 4.5.3.2).

3.4.8 Post service airflow restriction. Unless otherwise specified by the procuring activity/acquisition document (see 6.2), the air cleaner shall not exceed its original restriction by more than 249 pascals (Pa) [1 inch of water] at rated airflow after servicing (cleaning) (see 4.5.3.5).

3.4.9 Efficiency. The efficiency of the air cleaner at rated airflow shall be not less than 99.5% after being fed fine grade dust for 30 minutes or until 110 grams of dust has been fed, whichever results in a greater quantity of dust, or 60 minutes if the rated airflow face velocity of the filter element media is 183 cm per minute (6 feet per minute) or less (see 4.5.3.3).

3.4.10 Service life. After being subjected to the requirement of 3.4.7 the air cleaner shall be capable of operation to 20 hours to reach an airflow restriction of 5.0 kPa (20 inch of

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water) while being fed coarse grade dust at the variable air flows specified in figure 1 (see 4.5.3.4).

3.4.11 Surface treatment. Cleaning, pretreatment, priming and painting shall conform to an appropriate CARC paint system selected from drawing number 1236900. Color of paint top coat shall be as specified in the acquisition document. Corrosion protection of materials shall be equal to or exceed that provided by hot dip galvanized 1020 steel, with coating thickness in accordance with ASTM A123 with zinc phosphate pre-treatment. The proposed material shall be compared to a galvanized sample (as described above) using Accelerated Corrosion Test GM 9540P Method B until one of the items fail with defects such as extensive corrosion at scribe or significant penetration of base metal (see 4.5.2).

3.4.12 Environmental.

3.4.12.1 Vibration. The air cleaner shall be capable of meeting the performance requirements of 3.4.6 and 3.4.9 after withstanding simple harmonic motion having a double amplitude of 0.08 cm (0.13 inch) for 12 hours in the vertical direction and 6 hours in each horizontal direction with a 60 second sweep of 10 and 55 hertz. Without cleaning the element, vibration resistance testing shall be conducted using elements loaded to dust capacity per 3.4.9 (see 4.5.4.1).

3.5 Identification and marking. Identification and marking shall be permanent and legible and shall include, as a minimum, the manufacturer's CAGE code, the Engineering drawing part number, and the maximum rated airflow capacity in m³/min. (cfm) (see 4.5.2).

3.6 Workmanship. Workmanship shall be such that the air cleaner shall be free of burro, sharp edges, surfaces out of alignment or out of contour (visually apparent), loose metal particles or other foreign materials. Sheet metal parts shall be free of pipes, laminations, stringers, tears, and excessive metal thinning at drawn sections (see 4.5.2).

4. VERIFICATION

4.1 Classification of inspection. The inspection conditions specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article inspection. Unless otherwise specified (see 6.2), first article inspection shall be performed on preproduction or initial production samples on each of the four samples

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listed in table II. The sequence of tests to be performed on individual elements must be per table II. The order of elements to be tested may not necessarily follow the sequence listed.

4.3 Conformance inspection. Conformance inspection shall include the examinations of 4.4 and the tests of 4.5.

4.4 Examination. Each air cleaner assembly shall be examined for compliance with the requirements specified in 3.2 through 3.6. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet the specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

TABLE I. Classification of inspections.

Title	Requirement	Inspection	First article	Quality conformance	
				Examination	Tests
Materials and construction	3.2, 3.3	4.5.1	X	X	X
Defects (see table III)	3.3, 3.4.1 thru 3.4.5, 3.4.11, 3.5, 3.6	4.5.2	X		
Performance	3.4	4.5.3	X ^{1/}		
Air leakage resistance	3.4.6	4.5.3.1	X		
Airflow resistance	3.4.7	4.5.3.2	X		
Efficiency	3.4.9	4.5.3.3	X		
Service life	3.4.10	4.5.3.4	X		
Post-service airflow restriction	3.4.8	4.5.3.5	X		
Vibration resistance	3.4.12.1	4.5.4.1	X		

^{1/} See table II for sequence of tests.

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TABLE II. Sequence of tests.

Title	Inspection	First Article
Air leakage resistance	4.5.3.1	X
Airflow restriction	4.5.3.2	X
Efficiency	4.5.3.3	X
Vibration resistance	4.5.4.1	X
Service life	4.5.3.4	X ₁ /
Post-service airflow restriction	4.5.3.5	X

1/ Insert a new filter element prior to performing the service life test.

4.5 Methods of inspection.

4.5.1 Materials. Conformance to 3.2 and 3.3 shall be determined by inspection of contractor records providing proof or certification that materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.5.2 Defects. Conformance to 3.3, 3.4.1 through 3.4.5, 3.4.11, 3.5, and 3.6 shall be determined by examination for the defects listed in table III. Examination shall be visual or by measurement with standard inspection equipment (SIE).

4.5.3 Performance. Unless otherwise specified herein, performance tests shall be conducted on the assembly. Unless otherwise specified herein, test conditions shall be in accordance with 3.4.

4.5.3.1 Air leakage resistance. To determine conformance to 3.4.6 the following air leakage test shall be conducted. Connect the air cleaner outlet to a flowmeter and suction pump, and the inlet to a vacuum indicator. Seal all air cleaner openings except for the suction line. The flowmeter shall be sized and accurate to measure flowrates of 0.5 m³/hr (0.3 cfm) to $\pm 2\%$ accuracy. The vacuum indicator (manometer or gauge) shall read to 12.5 kPa (50 inch of water) with an accuracy of ± 0.05 kPa (0.2 inch of water). Pump down the system to a vacuum of 12.5 kPa (50 inch of water) at the air cleaner inlet and hold for five minutes. The flowmeter shall indicate an airflow rate of not more than 0.5 m³/hr (0.3 cfm) while the vacuum is held at 12.5 kPa (50 inch of water).

4.5.3.2 Airflow restrictions. To determine conformance to 3.4.7, the air cleaner shall be set up in accordance with figure 2, and subjected to a dust free airflow through a new filter element. Determine and record airflow restriction at rated flow.

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TABLE III. Classification of defects.

Category	Defect	Method of examination
<u>Major:</u>		
101	Incorrect dimensions affecting interchangeability, out of tolerance (see 3.3).	SIE <u>1/</u>
102	Nonconformance in design and construction (see 3.3 and 3.4.3 thru 3.4.5).	Visual
103	Filter element not secure (see 3.4.1).	Visual
104	Disassembly and assembly difficult or not possible (see 3.4.1 and 3.4.5).	Visual
105	Bent or defective tubular or flanged joints (see 3.4.3 and 3.4.4).	Visual
106	Faulty workmanship affecting performance (see 3.6).	Visual
<u>Minor:</u>		
201	Incorrect dimensions not affecting interchangeability, out of tolerance (see 3.3).	SIE
202	Incorrect paint application or color (see 3.4.11).	Visual
203	Illegible, improper, or missing marking (see 3.5).	Visual
204	Faulty workmanship affecting appearance (see 3.6).	Visual

1/ SIE = Standard Inspection Equipment.

4.5.3.3 Efficiency. To determine conformance to 3.4.9, the air cleaner shall be set up in accordance with figures 2 or 3, and the air adjusted to rated flow. Feed fine dust at 0.883 ± 0.176 grams per cubic meter (g/m^3) (0.025 grams per cubic foot) air for 30 minutes. In air cleaners where the rated airflow face velocity through the filter element media is 183 cm (6 feet) per minute or less, the dust shall be fed for 60 minutes. The restriction at the start of the test, and at 10-minute intervals throughout the test shall be recorded. The master filter and conductors shall be removed from the test setup taking care to retain all the entrapped dust, and reweighed. Weighings shall be accurate to 0.01 gram wherever possible but never less accurate than 0.1 gram. The efficiency shall be computed using the following formula:

$$\text{Dust Efficiency (\%)} = \frac{W_2 - W_3}{W_1} \times 100$$

Where: W_1 = Weight of dust fed.

W_2 = Weight of master filter and entrapped dust.

W_3 = Weight of master filter before test

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4.5.3.4 Service Life. To determine conformance to 3.4.10 the air cleaner, with a new element installed, shall be set up as shown in figures 2 or 3, and the air set to the rated airflow. The restriction at the start of testing, and at 10-minute intervals throughout the test, shall be recorded; after obtaining the initial restriction at rated airflow, vary the airflow (see figure 1). The average actual airflow for this cycle is 60% of rated flow. Coarse dust shall be fed at 0.883 g/m² of actual airflow. The dust capacity test shall be terminated after 20 hours. Verify that the air flow restriction did not exceed 5.0 kPa (20 inches water). At completion of the filter element shall be viewed through the assembly outlet for visual signs of dust tracking on the clean side of the seal or the filter element media. Any visual signs of dust tracking shall be cause for rejection.

4.5.3.5 Post-service airflow restriction. To determine conformance to 3.4.8 the element or filter pack assembly shall be removed from the air cleaner after the service life test. In filter pack type cleaners, the element shall be disassembled from the basket and spacers. The filter element shall be compressed-air cleaned. The air hose nozzle shall be inserted into each element pocket and the deposited dust shall be blown from the filter element using a back and forth motion. The element shall be first blown in a direction opposite to normal to airflow and then in a direction normal to airflow using care to remove dust from edges and seams. After thorough cleaning, the filter element shall be reassembled in the air cleaner. Airflow shall be adjusted to rated flow and the restriction determined.

4.5.4 Environmental.

4.5.4.1 Vibration resistance. Unless otherwise specified by the procuring activity/acquisition document (see 6.2), to determine conformance to 3.4.12.1 vibration resistance testing shall be performed on elements loaded per 4.5.3.3 and not cleaned. Mount and support air cleaner on a vibration machine. The air cleaner shall be subjected to a simple harmonic motion having a double amplitude of 0.08 cm (0.03 inch), with the frequency being varied uniformly between the approximate limits of 10 and 55 hertz (Hz). The entire frequency range, from 10 to 55 Hz and returning to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for a duration of 12 hours in a vertical direction and 6 hours in the longitudinal horizontal direction and 6 hours in the transverse direction. Subsequently, the air cleaner shall pass the tests of 4.5.3.1 and 4.5.3.3.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department of Defense Agency,

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or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. The air cleaners covered by this specification are intended for use with internal combustion engines for mobile applications.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
- c. If first article inspection is required (see 3.1).
- d. Applicable drawing or standard title, number, and date (see 3.3).
- e. If design changes are required (see 3.3).
- f. If post service airflow restrictions should be other than as specified (see 3.4.8).
- g. If vibration resistance test should be other than specified (see 4.5.4.1).
- h. Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

Air filtration, Engine

6.4 Changes from Previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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APPENDIX A

SPECIAL TEST EQUIPMENT

A. 1 SCOPE

A. 1.1 Scope. This appendix details the special test equipment necessary for the validation of the air cleaners. This appendix is a mandatory part of this specification.

A.2 APPLICABLE DOCUMENTS

(This section is not applicable to this appendix.)

A.3 PROCEDURE

A.3.1 Setup for tests requiring airflow. The test setup for all tests requiring airflow shall be as specified in figure 2 for air cleaners without scavenging blowers, and as specified in figure 3 for air cleaners with scavenging blowers.

A.3.2 Piezometer tubes transition ducts adapter, manometer and flowmeter. Piezometer tubes conforming to figure 4 and equal to or the next size larger [maximum of 1.27 cm (0.5 inch) larger] than the air cleaner inlet shall be installed at the inlet and outlet of the air cleaner. If required, transition ducts shall be installed from the flanges of the air cleaner inlet and outlet to the piezometer tubes. The transition ducts and any adapter installed after the outlet piezometer tube shall have sides at angles not greater than 7 degrees as measured from the centerline of the transition duct. A smooth approach (see figure 5) shall be installed at the front of the inlet piezometer tube. A water type manometer shall be installed between the two piezometer tubes (see figures 2 and 3) and a flowmeter shall be connected to the outlet of the adapter.

A.3.3 Master filter. The master filter, consisting of one layer of 1.27 cm (0.5 in) fiberglass batting conforming to SAE J726, shall be installed in a suitable housing with the nap side of the batting facing upstream. The master filter batting shall be of sufficient size to prevent excessive restriction. The face velocity of air against the master filter batting shall not exceed 6096 cm (200 feet) per minute. A new master filter batting shall be installed if, during the service life test, the air pressure drop across the master filter increases 2.5 kPa (10 inch of water) above its original restriction. A manometer shall be located in the test setup to measure the pressure drop across the master filter. The filter housing shall be electrically grounded during testing.

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APPENDIX A

A.3.4 Preparation of master filter. The fiberglass batting shall be hung in an air oven and dried for a minimum of six hours at a temperature of 93 to 115°C (200 to 240°F) and then weighed to the nearest 0.01 gram. This drying time may be reduced, and the batting considered as completely dry, if there is no change in oven weighings of the batting over two consecutive 10-minute intervals. This drying and weighing procedure shall be observed before and after each test involving dust feeding.

A.3.5 Scavenge air. In all tests of air cleaners equipped with scavenging blowers in which airflow through the air cleaner is required, scavenging flow shall be provided by the electric blower. In all tests, the electrical leads to the blower shall be connected to a suitable direct current power supply with a minimum of 300 watts output for each blower connected to it at any one time. The voltage input to the blower shall be set at 26 ± 0.2 volts direct current (V dc) when the air cleaner is operating at rated flow. During any test, the voltage setting shall be adjusted only when the air cleaner is operating at rated airflow. In tests where dust is fed to the air cleaner, suitable means (see figure 3) shall be provided to carry away the air and dust discharged from the Mower. Atmospheric pressure around the blower discharge shall not be changed by the method used to carry off discharged air and dust. In all tests of air cleaners equipped with scavenge air aspirators or to other methods of ejecting dust, the air cleaner test setup shall duplicate the vehicle installation.

A.3.6 Dust feeder. The dust feeder (see figure 6 or use an equivalent setup) shall be of a type that will deliver dust to the air cleaner neither breaking down the particles nor creating agglomerates. The dust feeder shall deliver dust uniformly throughout the test, with the dust having the same particle distribution at the end of testing as at the beginning of testing.

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APPENDIX A

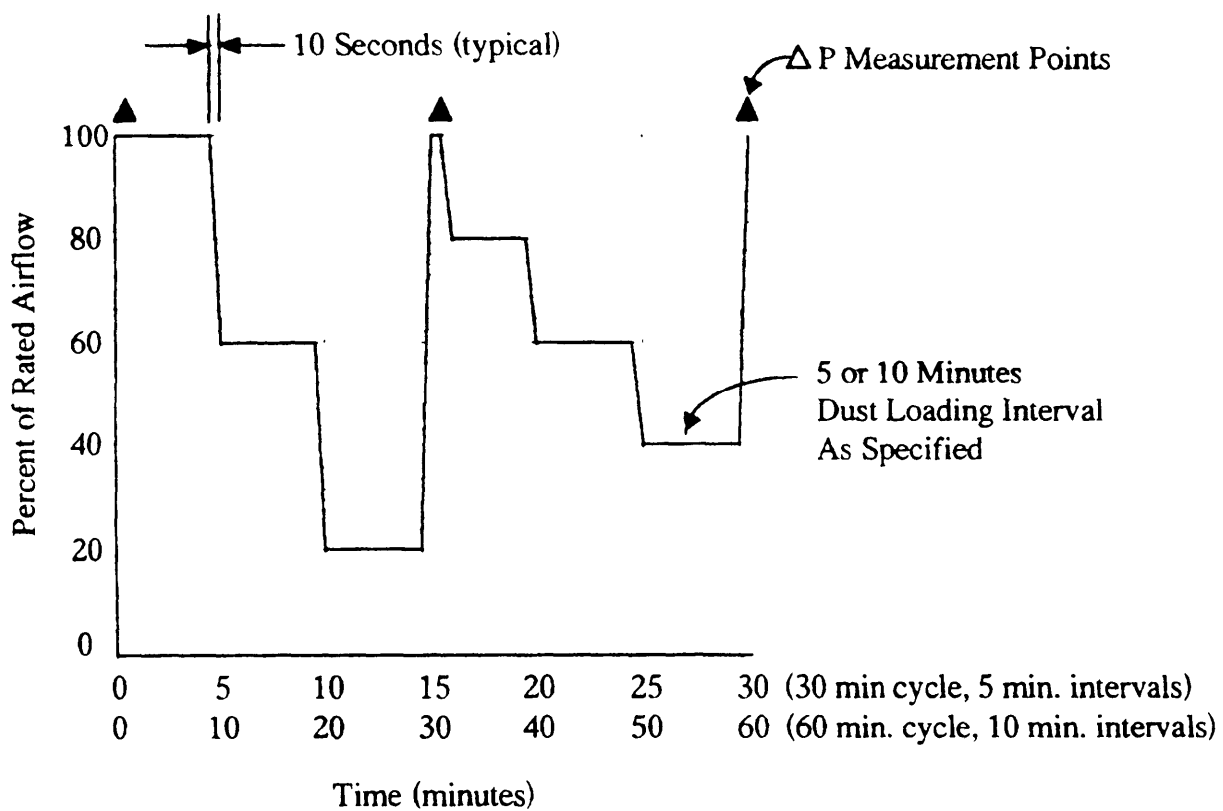
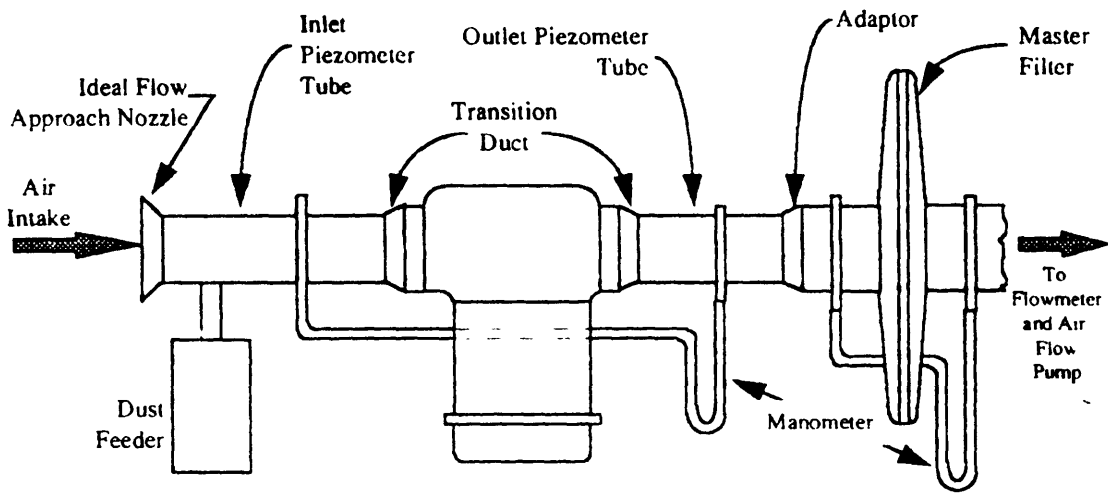
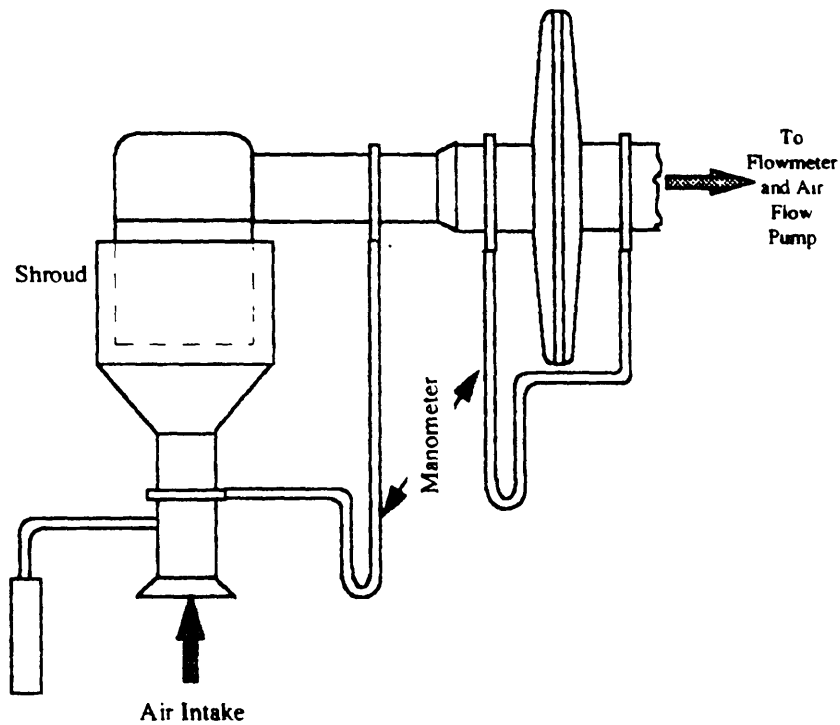


FIGURE 1. Variable airflow cycle.

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APPENDIX A

Tubular Inlet Air CleanerFIGURE 2. Test setup for air cleaners without scavenging blowers.

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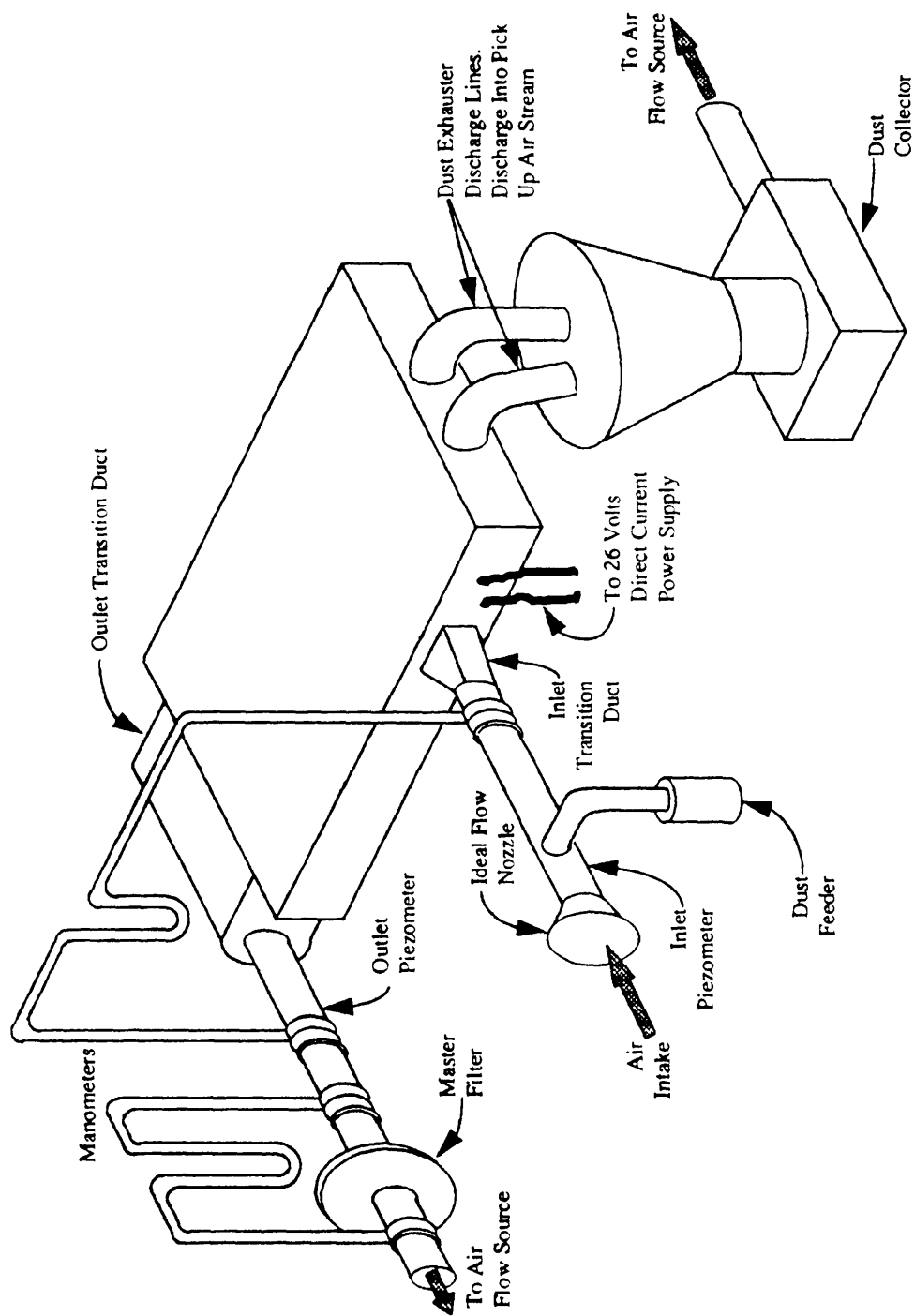
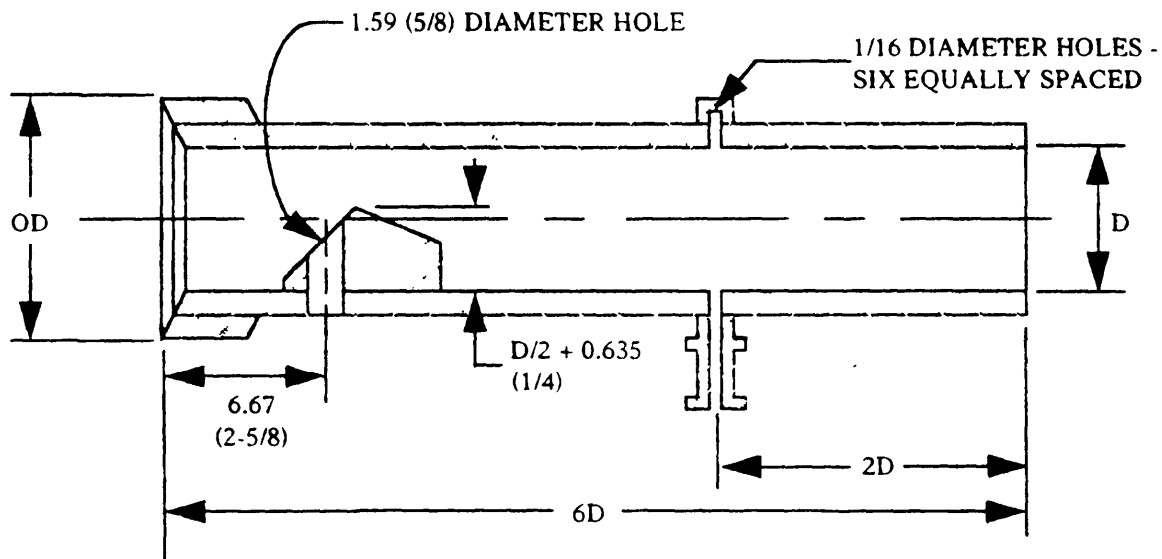


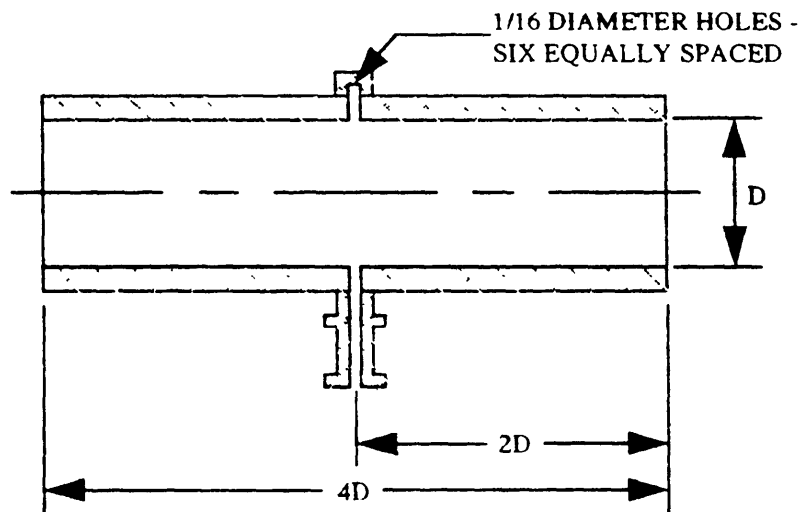
FIGURE 3. Test setup for air cleaners with scavenging blowers.

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APPENDIX A



INLET PIEZOMETER TUBE



OUTLET PIEZOMETER TUBE

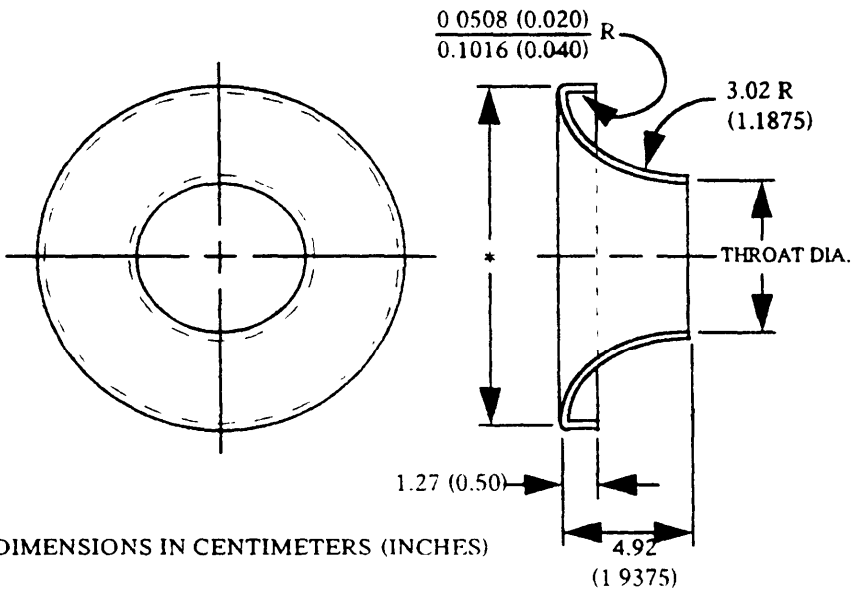
NOTES:

1. All dimensions are in centimeters (inches).
2. Diameter (D), inside diameter (ID) and outside diameter (OD).
3. The OD shall be 19.1 (7-1/2) for piezometer tubes 8.3 (3-1/4) and larger ID: 10.2 (4) for piezometer tubes smaller than 8.3 (3-1/4) ID.

FIGURE 4. Piezometer tubes.

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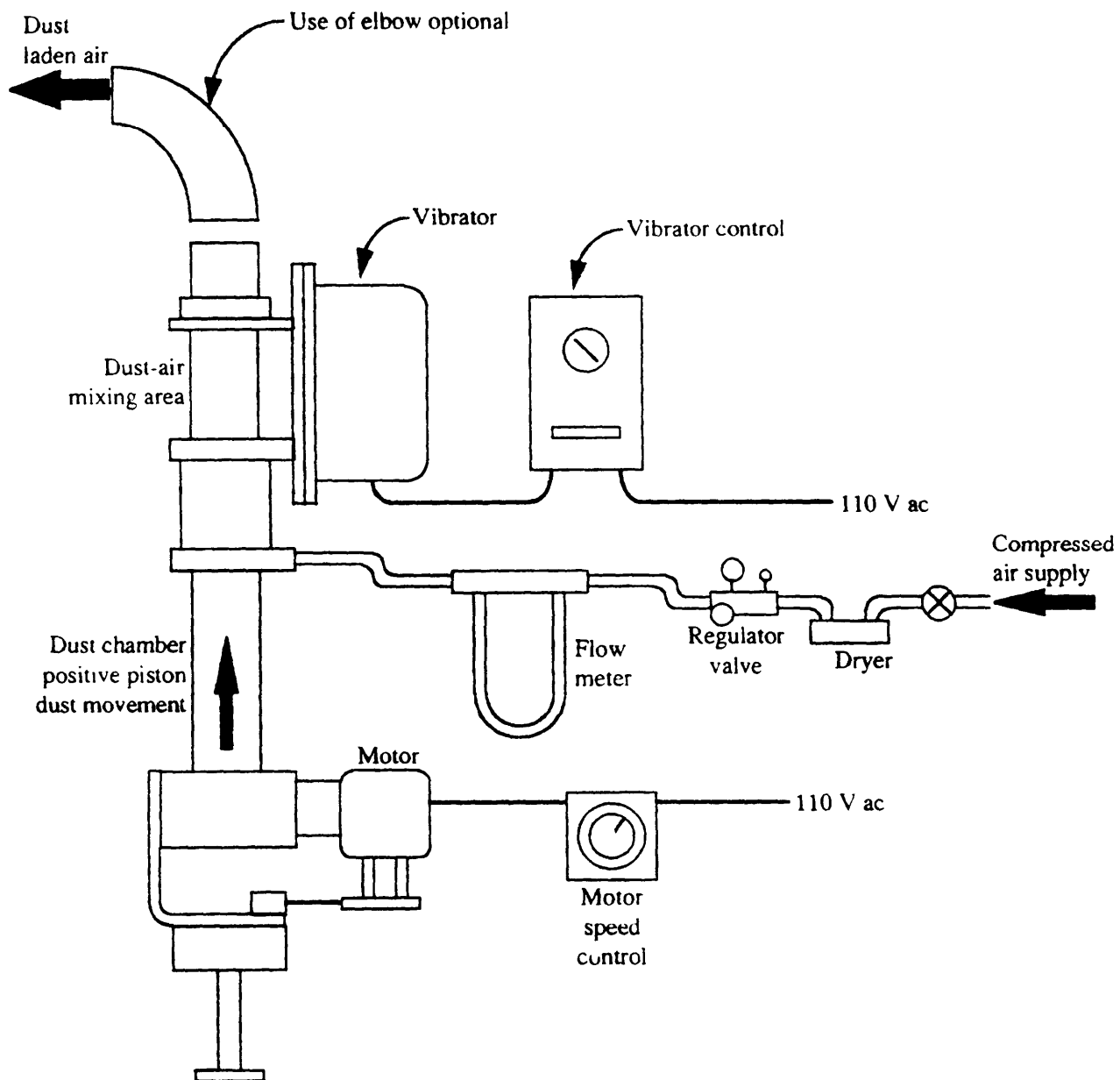
* $19.05 (7.500) + 0.0254 (0.010)$ OR $10.16 (4.000) + 0.0254 (0.010)$
DEPENDING ON PIEZOMETER TUBE DIAMETER

Throat Diameter		Rated Airflow		Throat Diameter		Rated Airflow	
cm	inches	m ³ /hr	cfm	cm	inches	m ³ /hr	cfm
16.03	6-5/16	3398.0	2000	8.89	3-1/2	1189.3	700
15.56	6-1/8	3228.1	1900	8.57	3-3/8	1019.4	600
15.24	6	3058.2	1800	7.94	3-1/8	849.5	500
14.76	5-13/16	2888.3	1700	6.99	2-3/4	679.6	400
14.29	5-5/8	2718.4	1600	6.03	2-3/8	509.7	300
13.81	5-7/16	2548.5	1500	4.92	1-15/16	339.8	200
13.34	5-1/4	2378.6	1400	4.45	1-3/4	280.3	165
12.70	5	2208.7	1300	1.27	1-1/2	203.9	120
12.22	4-13/16	2038.8	1200	3.49	1-3/8	169.9	100
11.75	4-5/8	1868.9	1100	3.18	1-1/4	144.4	85
11.11	4-3/8	1699.0	1000	2.54	1	93.4	55
10.48	4-1/8	1529.1	900	2.06	13/16	59.5	35
9.53	3-3/4	1359.2	800	1.59	5/8	34.0	20
				1.11	7/16	17.0	10

FIGURE 5. Ideal flow nozzle.

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APPENDIX A



NOTE: Volt (V). alternating current (ac)

FIGURE 6. Dust Feeder.

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APPENDIX A

Custodian
Army - AT

Preparing Activity
Army - AT

Review Activity
DLA - CS

(Project 2940-0154)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
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1. RECOMMEND A CHANGE:		1. DOCUMENT NUMBER MIL-PRF-62048C	2. DOCUMENT DATE (YYMMDD) 960412
3. DOCUMENT TITLE Air Cleaners, Automotive: Heavy Duty, Dry-Type (For Internal Combustion Engines) (Metric)			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
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a. NAME (Include Zip Code)		b. ORGANIZATION	
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a. NAME		b. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON	
c. ADDRESS (Include Zip Code) Commander U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BUE Warren, MI 48397-5000		(810) 574-8745 786-8745	
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