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MILITARY SPECIFICATION

COMPRESSOR ASSEMBLIES, AIRBRAKE SYSTEM; WHEELED VEHICLE

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

1. SCOPE

1.1 Scope. This specification covers eight types of air compressors for airbrake systems of military wheeled vehicles. This specification also covers compressor accessories requiring qualification (see 6.1).

1.2 Classification.

1.2.1 Reciprocating compressors. Reciprocating compressors shall be of the following types, with normally rated displacement in cubic feet per minute (cfm) at 1250 revolutions per minute (rpm), as specified (see 6.2):

Type I	- 7 1/4 cfm, air-cooled, engine-lubricated, reciprocating compressor.
Type II	- 12 cfm, air-cooled, engine-lubricated, reciprocating compressor.
Type III	- 7 1/4 cfm, water-cooled, engine or self-lubricated, reciprocating compressor.
Type IV	- 12 cfm, water-cooled, engine or self-lubricated, reciprocating compressor.
Type V	- 24 cfm, water-cooled, engine or self-lubricated, reciprocating compressor.

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 Command, ATTN: DRSTA-GSS, Warren, MI 48090, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

1.2.2 Rotating compressors. Rotating compressors shall be of the following types, as specified (see 6.2):

Type VI	- Nominal rating of 9 cfm at 1850 rpm, air-cooled, engine-lubricated, rotary compressor.
Type VII	- Nominal rating of 9 cfm at 1850 rpm, water-cooled, engine-lubricated, rotary compressor.
Type VIII	- Nominal rating of 12 cfm at 1550 rpm, water-cooled, engine-lubricated, rotary compressor.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

PPP-T-42	- Tape, Packaging/Masking, Paper.
PPP-T-76	- Tape, Packaging, Paper (for Carton Sealing).
NN-P-530	- Plywood, Flat Panel.
PPP-B-585	- Box, Wood, Wirebound.
PPP-B-591	- Box, Fiberboard, Wood-cleated.
PPP-B-601	- Box, Wood, Cleated Plywood.
PPP-B-621	- Box, Wood, Nailed and Lock Corners.
PPP-B-636	- Box, Shipping, Fiberboard.

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MIL-P-116	- Preservation, Packaging, Method of.
MIL-B-121	- Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-L-2104	- Lubricating Oil, Internal-combustion Engine, Heavy-duty.
MIL-A-13488	- Air Cleaner, Engine, Heavy-duty, Oil-bath Type.
MIL-F-13927	- Fungus Resistance Test; Automotive Components.
MIL-C-16173	- Corrosion Preventive Compound, Solvent Cutback, Cold-application.
MIL-L-21260	- Lubricating Oil, Internal-combustion Engine, Preservation and Break-in.
MIL-E-52798	- Enamel, Alkyd, Camouflage.
MIL-E-52835	- Enamel, Modified Alkyd, Camouflage, Lusterless.

STANDARDS

FEDERAL

FED-STD-H28/2	- Screw Thread Standards for Federal Services.

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MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-130	- Identification Marking of US Military Property.
MIL-STD-202	- Test Methods for Electronic and Electrical Component Parts.
MIL-STD-810	- Environmental Test Methods.
MIL-STD-1186	- Cushioning, Anchoring, Bracing, Blocking, and Waterproofing, with Appropriate Test Methods.
MIL-STD-1188	- Commercial Packaging of Supplies and Equipment.
MS51322	- Compressor, Reciprocating, Power Driven - Air Cooled, 7 1/4 CFM w/Unloader.
MS53005	- Air Cleaner, Intake-compressor.
MS53006	- Governor Assembly - Air Brake for Tactical Vehicles.
MS53032	- Compressor, Reciprocating, Power Driven - Air Cooled, 12 CFM w/Unloader.
MS53067	- Evaporator, Alcohol - Air Brake System.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity, or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Qualification requirements.

3.1.1 Compressor assembly. Compressors furnished under this specification shall be products which have been tested and have passed the qualification tests specified herein, and have been listed on, or approved for listing on, the applicable qualified products list (see 4.4 and 6.4).

3.1.2 Compressor accessories requiring qualification. Accessories requiring qualification furnished under this specification shall be products which have been tested and have passed the qualification tests specified herein, and have been listed, or approved for listing, on the applicable qualified products list (see 4.4 and 6.4).

3.1.2.1 Submitted individual compressor accessories to be qualified. An individual accessory submitted for qualification, which has not been contained in a compressor assembly already qualified, shall be qualified as follows: Testing of the governor shall be accomplished by subjecting the governor to the specified tests (see 4.4). The governor shall be considered qualified when applicable requirements for governor have been met. Testing of the air cleaner shall be accomplished by subjecting the air cleaner assembly to the specified tests (see 4.4). The air cleaner shall be considered qualified when applicable requirements for air cleaner have been met.

3.2 Materials. Materials shall be as specified herein and in referenced specifications, standards and drawings. Material shall be free of defects which adversely affect performance or serviceability of the finished product (see 6.5).

3.3 Design and construction. The design and construction of compressors and accessories shall conform to the following standards, or drawings as specified (see 6.2):

Type I compressor - MS51322
Type II compressor - MS53032
Air cleaner for types I and II compressors - MS53005
Governor for types I and II compressors - MS53006

3.3.1 Threaded parts. All screw threads shall conform to FED-STD-H28/2. The form, number per inch, and class of threads shall be as specified on applicable standards or drawings.

3.3.2 Standard parts. Military standard parts shall be incorporated whenever applicable. Commercial standard parts may be used provided they meet or exceed the requirements of all applicable Military Standards and specifications with respect to fit and function.

3.3.3 Qualified products. The contractor shall be responsible for using parts and assemblies from Qualified Products Lists (QPL's) whenever available. Contractor's inspection records shall list all QPL items by number and date of the QPL, name of supplier and part or drawing number(s). When parts and assemblies are approved as qualified products, but not yet listed on the QPL, the contractor shall list the products by number and date of the approved document and name of supplier(s).

3.4 Performance. Compressor assemblies, governors, and air cleaners shall conform to the following performance requirements, as applicable:

Compressors	3.4.1 and 3.4.4
Governors	3.4.2 and 3.4.4
Air cleaners	3.4.3 and 3.4.4

3.4.1 Compressor performance.

3.4.1.1 Power input. Power input to the compressor under designated load and speed conditions, shall not exceed that specified in table I, or the applicable drawing or standard (see 3.3).

TABLE I. Maximum horsepower input.

Load	Speed rpm.	Types I and III	Types II and IV	Type V	Types VI and VII	Type VIII
At 100 psig	2400	3.25	4.75	7.0	4.3	6.4
Unloaded	2400	1.5	2.25	2.75	1.3	1.4

3.4.1.2 Oil flow. Oil flow at 1775-1825 rpm, and 37.5 psig, shall not exceed 650 cubic centimeters (cc) per minute for types I and III compressors, 1000 cc per minute for types II, IV and V compressors, and 400 cc per minute for types VI, VII and VIII compressors.

3.4.1.3 Discharge air temperature. Discharge air temperature, measured at the compressor discharge fittings, shall not exceed the inlet air temperature by more than that specified in table II.

TABLE II. Discharge air temperature.

Speed	Maximum discharge air temperature above the intake air temperature, °F,	
rpm	Types I, III, VI and VII	Types II, IV, V and VIII
600	150	195
1200	225	295
1800	305	375
2400	350	435

3.4.1.4 Life. Compressor shall withstand 1000 hours of operation as specified in table VII, with load conditions, in alternate 24 hour periods, at no-load and 100 psig. The rate of oil consumption during any 100-hour period shall not exceed 5 cc per hour for types I, II, III and IV, 10 cc per hour for type V, 16 cc per hour for types VI and VII, and 20 cc per hour for type VIII. Bearing wear or burnout, oil or air leakage, or distorted parts, considered detrimental to the continued operation of the compressor, shall be cause for discontinuance of the life test.

3.4.1.5 Pressure buildup time. The pressure buildup time from 0 to 100 psig shall not exceed that specified in table III.

TABLE III. Pressure buildup time.

Speed	Time, seconds per 1000 cubic inches				
rpm	Type I and III	Type II and IV	Type V	Type VI and VII	Type VIII
600	105	67	36	129	87
1200	55	33	17	50	36
1800	40	24	13	33	24
2400	35	21	11	26	20

3.4.2 Governor performance.

3.4.2.1 Pressure settings. Pressure settings shall be as specified on the applicable standard or drawing. Average pressures shall not vary more than plus or minus 5 percent from specified values.

3.4.2.2 Life. The governor shall withstand 100,000 cycles of cut-in and cut-out operation.

3.4.3 Air cleaner performance.

3.4.3.1 Air flow restrictions. The static pressure drop across the air cleaner shall not exceed 12 inches of water at rated air flow of applicable compressor.

3.4.3.2 Efficiency. The efficiency of the air cleaner shall not be less than 95 percent (see 4.6.3.3).

3.4.3.3 Dust capacity. The air cleaner shall have a minimum dust capacity of 15 grams of course dust, without exceeding a restriction of 20 inches of water (see 4.6.3.4).

3.4.4 Environmental requirements. For fungus resistance, corrosion resistance, vibration, and shock testing, accessories may be installed on the compressor and tested as a single unit.

3.4.4.1 Fungus resistance. Compressor, governor, and air cleaner shall exhibit no deterioration after undergoing procedure specified in MIL-F-13927 for class 2 items, except the performance tests shall be conducted after 90 days only.

3.4.4.2 Corrosion resistance. Compressor, governor, and air cleaner shall exhibit no corrosion after undergoing procedure specified in method 101 of MIL-STD-202, except length of test shall be 200 hours.

3.4.4.3 Vibration resistance. Compressor, governor, and air cleaner shall operate as in intended use after undergoing procedure specified in method 201, MIL-STD-202, except total time of test shall be 72 hours.

3.4.4.4 Shock resistance. Compressor, governor, and air cleaner shall operate as in intended use after undergoing procedure specified in method 516 of MIL-STD-810.

3.5 Finish. Unless otherwise specified, all exterior metal surfaces, other than the shaft and mounting flange, shall be treated and painted in accordance with the standard practice of the manufacturer. When specified (see 6.2), the finish coat shall be forest green enamel as specified in MIL-E-52798, or MIL-E-52835.

3.6 Identification markings. The complete compressor and each major component shall be marked as specified on applicable drawings or, if not so specified, in accordance with MIL-STD-130.

3.7 Workmanship. Workmanship shall assure a product free of burrs, scratches, sharp edges, chips, or defects which will affect performance or serviceability. No condition shall exist that might present a safety hazard to operating or maintenance personnel.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Materials. Contractor's inspection records shall be examined to determine conformance to 3.2 and 3.3.

4.2 Classification of inspections. Inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.4).
b. Quality Conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified herein, tests shall be conducted at (or corrected to) an ambient intake air temperature of 77° ± 5°F, and barometric pressure of 29.42 ± .50 inches of mercury. The compressor shall be lubricated during the test with oil conforming to MIL-L-2104, grade 10. For air-cooled compressors, cooling air supply shall be from a 7 1/2 inches wide, by 9 1/2 inches high, rectangular discharge, placed 10 ± 1/2 inches from the compressor on the discharge side. The compressor cylinder head shall be centered in the upper half of the cooling airflow.

Cooling airflow shall impinge on the compressor at an angle of 45 degrees to the crankshaft at the pulley end. For water-cooled compressors, cooling water shall be supplied at a temperature of 180°F ± 5°F. Coolant shall be supplied at a flow of two gallons per minute (gpm) for types III and VII, 2 1/4 gpm for types IV and VIII, and 4 gpm for type V.

4.4 Qualification inspection (see 6.4). A qualification sample of three compressors of each type to be qualified, or three compressor accessories, shall be furnished for qualification testing. The samples shall be representative of units proposed to be furnished under contract. Qualification testing shall be conducted under Government surveillance by the contractor, or by an authorized testing facility at a site approved by the Government. Inspection shall consist of examination for the defects specified in table V and testing as specified in table IV, in the order listed.

TABLE IV. Order of qualification testing.

Sample	Test description	Test	Requirement
Compressor			
A, B, & C	Power input	4.6.1.1	3.4.1.1
A, B, & C	Oil flow	4.6.1.2	3.4.1.2
A, B, & C	Discharge air temperature	4.6.1.3	3.4.1.3
A	Life test	4.6.1.4	3.4.1.4
A	Pressure buildup time	4.6.1.5	3.4.1.5
B	Fungus	4.6.4.1	3.4.4.1
B	Power input	4.6.1.1	3.4.1.1
B	Oil flow	4.6.1.2	3.4.1.2
B	Discharge air temperature	4.6.1.3	3.4.1.3
B	Pressure buildup time	4.6.1.5	3.4.1.5
B	Vibration	4.6.4.3	3.4.4.3
B	Power input	4.6.1.1	3.4.1.1
B	Oil flow	4.6.1.2	3.4.1.2
B	Discharge air temperature	4.6.1.3	3.4.1.3
B	Pressure buildup time	4.6.1.5	3.4.5
C	Corrosion	4.6.4.2	3.4.4.2
C	Power input	4.6.1.1	3.4.1.1
C	Oil flow	4.6.1.2	3.4.1.2
C	Discharge air temperature	4.6.1.3	3.4.1.3
C	Pressure buildup time	4.6.1.5	3.4.1.5
C	Shock	4.6.4.4	3.4.4.4
C	Power input	4.6.1.1	3.4.1.1
C	Oil flow	4.6.1.2	3.4.1.2
C	Discharge air temperature	4.6.1.3	3.4.1.3
C	Pressure buildup time	4.6.1.5	3.4.1.5

TABLE IV. Order of qualification testing. - Continued

Sample	Test description	Test	Requirement
Governor			
A, B, & C	Pressure setting	4.6.2.1	3.4.2.1
A	Life test	4.6.2.2	3.4.2.2
A	Pressure setting	4.6.2.1	3.4.2.1
B	Fungus	4.6.4.1	3.4.4.1
B	Pressure setting	4.6.2.1	3.4.2.1
B	Vibration	4.6.4.3	3.4.4.3
B	Pressure setting	4.6.2.1	3.4.2.1
C	Corrosion	4.6.4.2	3.4.4.2
C	Pressure setting	4.6.2.1	3.4.2.1
C	Shock	4.6.4.4	3.4.4.4
C	Pressure setting	4.6.2.1	3.4.2.1
Air cleaner			
A, B, & C	Air flow restriction	4.6.3.2	3.4.3.1
A	Efficiency	4.6.3.3	3.4.3.2
A	Dust capacity	4.6.3.4	3.4.3.3
B	Fungus	4.6.4.1	3.4.4.1
B	Air flow restriction	4.6.3.2	3.4.3.1
B	Vibration	4.6.4.3	3.4.4.3
B	Air flow restriction	4.6.3.2	3.4.3.1
C	Corrosion	4.6.4.2	3.4.4.2
C	Air flow restriction	4.6.3.2	3.4.3.1
C	Shock	4.6.4.4	3.4.4.4
C	Air flow restriction	4.6.3.2	3.4.3.1

4.4.1 Retention of qualification. Certification shall be requested from each manufacturer listed on the QPL every two years, to retain listing on the QPL. This certification shall be forwarded to the preparing activity and shall be signed by a responsible official of management, attesting that the listed product is still available from listed plant; can be produced under the same conditions as originally qualified; i.e., same process, materials, construction, design, manufacturer's part number or designation; and meets requirements of current issue of specification. Failure to provide certification will be cause for removal from QPL.

4.5 Quality conformance inspection.

4.5.1 Sampling for compressors and accessories.

4.5.1.1 Lot formation. Unless otherwise specified, a lot shall consist of all compressors of one type, or air cleaners or governors, from an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.5.1.2 Sampling for examination. Samples for quality conformance examination shall be selected in accordance with MIL-STD-105.

4.5.1.3 Sampling for acceptance testing. Samples for acceptance testing shall be selected in accordance with inspection level S-3 of MIL-STD-105.

4.5.2 Quality conformance examination for compressors and accessories.

4.5.2.1 Acceptable quality level. Each sample, selected in accordance with 4.5.1.2, shall be examined for conformance to the following acceptable quality levels (AQL's) on the basis of percent defective:

Classification	AQL
Major	1.0
Minor	2.5

4.5.2.2 Classification of defects. Examination shall be conducted as specified in table V. Any compressor or accessory in the sample containing one or more defects shall be rejected, and if the number of defective compressors or accessories in any one sample exceeds the acceptance number for that sample, the lot represented by the sample shall be rejected. Rejection of an accessory shall not constitute basis for rejection of the compressor, or the other accessories.

TABLE V. Classification of defects.

Categories	Defects	Method of inspection
Major:		
101	Dimensions affecting interchangeability not within tolerance (see 3.3)	SIE 1/
Minor:		
201	Dimensions not affecting interchangeability not within tolerance (see 3.3)	SIE
202	Improper finish (see 3.5)	Visual
203	Improper marking (see 3.6)	Visual
204	Poor workmanship (see 3.7)	Visual

1/ SIE - Standard Inspection Equipment.

4.5.3 Acceptance tests. Samples selected in accordance with 4.5.1.3 shall be subjected to the following tests, using an AQL of 6.5 on the basis of percent defective:

Compressors	4.6.1.5	Pressure buildup time test
Governors	4.6.2.1	Pressure settings test
Air cleaners	4.6.3.2	Air flow restriction test

4.6 Conformance verification.

4.6.1 Compressor performance tests. Unless otherwise specified herein, the compressor shall be tested for performance with a discharge pressure of 100 psig, at speeds of 600, 1200, 1800, and 2400 rpm. Tests shall be made in accordance with table VI.

TABLE VI. Test deviations and fluctuations.

Variable	Value	Deviation from value
Discharge pressure	100 psig	5%
Speed	-	3%
Oil temperature	140°F	10°F
Oil pressure	37.5 psig	2.5 psig
Cooling air	500 cfm	20 cfm
Coolant	-	1/8 gpm

During testing, the rate of oil flow, air temperature and pressure at the compressor discharge, and power input shall be measured and recorded at each speed.

4.6.1.1 Power input test. While operating as specified in 4.6.1, power input to the compressor shall be measured and recorded at 2400 rpm, and 100 psig load. Test shall be repeated at no load. Maximum horsepower input shall not exceed value specified in table I to determine conformance to 3.4.1.1.

4.6.1.2 Oil flow test. While operating as specified in 4.6.1, oil flow at 1775-1825 rpm, and 37.5 psig, shall be measured and recorded. Values shall not exceed those specified to determine conformance to 3.4.1.2.

4.6.1.3 Discharge air temperature test. While operating as specified in 4.6.1, discharge air temperature shall be measured and recorded. Values shall not exceed those specified to determine conformance to 3.4.1.3.

4.6.1.4 Life test. To determine conformance to 3.4.1.4, the compressor shall be cycled for 1000 hours in accordance with table VII. During the complete life test compressors shall be operated at no load and 100 psig in alternate cycles. The rate of oil consumption (including leakage) shall be determined each 100 hours during the last 800 hours. The compressor may be driven by a gear drive, a coupling, or a belt drive. Belt drive shall produce a torque of 240 inch-pounds, plus or minus 30 inch-pounds, on the crankshaft

toward the compressor base measured from the centerline of the compressor. If the belt drive is not used, this torque shall be maintained on the crankshaft toward the base of the compressor.

TABLE VII. Life cycle test.

Speed, rpm	Time, hours
1800	17
2400	6
0 (Idle)	1

4.6.1.5 Pressure buildup time test. The compressor shall be driven, loaded, at a speed of 600 rpm for 1/2 hour when it is a reciprocating type, or for 15 minutes for a rotating type. The compressor shall then be connected to discharge into a tank with a capacity of 2000 cubic inches ± 5 percent. The time required for the compressor to raise the tank pressure to 100 psig, and the temperature of air at 100 psig, shall be recorded. The test shall be repeated at compressor speeds of 1200, 1800, and 2400 rpm, except the initial warmup at each speed is not required. The pressure buildup time, in seconds per 1000 cubic inches of reservoir volume, shall be computed to determine conformance to 3.4.1.5.

4.6.2 Governor tests.

4.6.2.1 Pressure settings test. To determine conformance to 3.4.2.1, average pressure shall be obtained as follows: The governor shall be conditioned at temperatures of 125°F ± 5°F for 24 hours, and minus 65°F ± 5°F for 24 hours. Average cut-in and cut-out pressures shall then be determined from a series of 10 cycles at 72 ± 10°F. Subsequent pressure setting tests will be performed at 72°F ± 10°F only. Average pressures shall not vary more than plus or minus 5 percent from specified values.

4.6.2.2 Life test. The governor shall be subjected to 100,000 cycles of cut-in and cut-out operation. The supply pressure shall range from at least five pounds per square inch (psi) below cut-in pressure to at least 5 psi above cut-out pressure, at 20 cycles per minute, as determined in 4.6.2.1.

4.6.3 Air cleaner tests.

4.6.3.1 Air flow test. The air cleaner shall be tested at the rated air flow of the applicable compressor, at atmospheric conditions of 29.92 inches of mercury barometric pressure, and temperature of 80°F.

4.6.3.2 Air flow restriction test. With a clean unused air filter element installed in the air cleaner housing, the static pressure drop across the air cleaner shall be determined, at the rated air flow of the applicable compressor, to determine conformance to 3.4.3.1.

4.6.3.3 Efficiency test. The efficiency shall be determined when fine test dust, conforming to MIL-A-13488, is used. The fine test dust shall be fed into the air cleaner at a concentration of .025 grams of dust per cubic foot of air in a period of 30 minutes to determine conformance to 3.4.3.2.

4.6.3.4 Dust capacity test. The air cleaner shall have a minimum dust capacity of course test dust conforming to MIL-A-13488. The course test dust shall be fed into the air cleaner at a concentration of .025 grams of dust per cubic foot of air to determine conformance to 3.4.3.3.

4.6.4 Environmental tests.

4.6.4.1 Fungus resistance test. To determine conformance to 3.4.4.1, the compressor, air cleaner, and governor shall be tested for fungus resistance as specified in MIL-F-13927 for class 2 items, except the performance tests shall be conducted after 90 days only.

4.6.4.2 Corrosion resistance test. To determine conformance to 3.4.4.2, the compressor, air cleaner, and governor shall be tested for resistance to corrosion in accordance with method 101 of MIL-STD-202, except the length of the test shall be 200 hours.

4.6.4.3 Vibration test. To determine conformance to 3.4.4.3, the compressor, air cleaner, and governor shall be subjected to the method 201 vibration test of MIL-STD-202, except the duration of vibration shall be 24 hours in each direction of each of the 3 major axes (total of 72 hours). The compressor in addition to vibration shall be operated at a speed of 1750 $\pm$ 50 rpm, with the unloading valve open, and lubricating oil supplied at a pressure of 20 psig.

4.6.4.4 Shock test. To determine conformance to 3.4.4.4, the compressor and accessories shall be subjected to shock test as specified in method 516 of MIL-STD-810.

4.7 Packaging inspection.

4.7.1 Lot formation. A lot shall consist of all packs prepared for shipment in accordance with level A or B (see 5.3), from an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.7.2 Sampling.

4.7.2.1 Sampling for acceptance examination. Sampling for acceptance examination shall be selected in accordance with MIL-STD-105.

4.7.2.2 Sampling for acceptance testing. One package and one complete pack shall be selected from each lot for acceptance testing.

4.7.3 Examination for packaging and packing.

4.7.3.1 Acceptable quality level. Samples selected in accordance with 4.7.2.1 shall be examined for conformance to the following acceptable quality levels (AQL's), on the basis of percent defective:

Classification	AQL
Major	1.0
Minor	2.5

4.7.3.2 Classification of defects. For examination purposes, defects shall be classified as follows:

TABLE VIII. Classification of defects.

Categories	Defects	Method of inspection
Major:		
101	Parts improperly cleaned (see 5.2.1.1.1)	Visual
102	Lubrication system not properly preserved (see 5.2.1.1.2)	Visual
103	Lubrication system not properly sealed at both ports (see 5.2.1.1.2)	Visual
104	Compressor internal parts not properly preserved (see 5.2.1.1.2)	Visual
105	Inlet and outlet ports not properly sealed (see 5.2.1.1.2)	Visual
106	Main shaft and other critical surfaces not properly preserved and wrapped (see 5.2.1.1.2)	Visual
107	Other exposed unpainted surfaces not preserved as specified (see 5.2.1.1.2)	Visual
108	Plywood for attachment to base is not to the proper specification, or size (see 5.2.1.1.3)	Visual
109	Plywood not properly secured to the base (see 5.2.1.1.3)	Visual
110	Box does not fit snugly to the base and top of compressor to prevent movement (see 5.2.1.1.3)	Visual
111	Box improperly sealed (see 5.2.1.1.3)	Visual
112	Incorrect marking (see 5.4)	Visual
113	Illegible marking (see 5.4)	Visual
Minor:		
201	Improper closure and strapping of exterior container (see 5.3.1 and 5.3.2)	Visual

4.7.4 Testing inspection for packaging and packing. When level A or B is specified (see 6.2), the samples selected in accordance with 4.7.2.2 shall be subjected to test specified in 4.7.4.1 and 4.7.4.2.

4.7.4.1 Packaging test. To determine conformance to 5.2.1.1.3, the package shall be subjected to the test specified for method 1C-5 of MIL-P-116.

4.7.4.2 Packing test. To determine conformance to 5.2.2.1, the shipping container shall be subjected to the interior packing test of MIL-STD-1186. To determine conformance to 5.2.2.2, the same test shall be performed, except the drop shall be 75 percent of the height of the drop specified therein.

4.7.4.3 Failure. Failure of the package or pack to pass any specified test may be cause for the Government to refuse to accept the lot until it has been proved to the satisfaction of the Government that the faults revealed by the test have been corrected.

5. PACKAGING

5.1 For Army use.

5.1.1 Packaging, packing and marking. Packaging, packing and marking shall be in accordance with the applicable packaging standard, or packaging data sheet, specified by the procuring activity (see 6.2). Commercial packaging, packing and marking, when specified, shall be in accordance with MIL-STD-1188.

5.2 Other activities.

5.2.1 Preservation and packaging. Preservation and packaging shall be level A or commercial, as specified (see 6.2).

5.2.1.1 Level A.

5.2.1.1.1 Cleaning. All exterior surfaces shall be cleaned in accordance with method C-1 of MIL-P-116, and dried by the most applicable procedure specified therein.

5.2.1.1.2 Preservative application. Air compressor lubrication system shall be completely filled with preservative oil, conforming to grade 1 of MIL-L-21260, then completely drained. Lubrication system shall then be sealed at both ports with plastic shipping plugs or pipe plugs. While the air compressor crankshaft is being revolved, preservative oil, conforming to grade 1 of MIL-L-21260, shall be sprayed into the air inlet, until oil appears at the air outlet, then inlet and outlet ports shall be sealed with plastic shipping plugs or pipe plugs. The main shaft and any other exposed critical surface shall be coated with preservative oil conforming to grade 2 of MIL-C-16173,

wrapped with barrier-material conforming to type II, grade A, class 2 of MIL-B-121 and secured with tape conforming to PPP-T-42. All other exposed unpainted ferrous surfaces shall be coated with preservative conforming to grade 1 of MIL-C-16173.

5.2.1.1.3 Unit packaging. Plywood, 1/2 inch thick, conforming to NN-P-530, shall be cut into pieces measuring 14 by 11 inches, and predrilled to match two diagonal holes in the base. The base shall be secured to the plywood by two 1/4 inch carrier bolts with the bolthead drawn flush with the plywood, and a flat washer, lockwasher, and nut assembled to the bolt. The air compressor shall be individually packaged with the plywood on the bottom of a box, conforming to class weather-resistant, RSC-2, and applicable grade of PPP-B-636. Length and width of the box shall be so designed that the plywood will fit snugly to all four sides, and the depth shall be such that the top flaps shall fit snugly to the top of the air compressor to prevent any move- ment within the box. All seams of the box shall be closed with 2-inch tape, conforming to PPP-T-76, and tape shall be applied to the seams, as required by PPP-B-636.

5.2.1.2 Commercial. Cleaning, preservation, and packaging shall be in accordance with MIL-STD-1188.

5.2.2 Packing. Packing shall be levels A or B, or commercial as specified (see 6.2).

5.2.2.1 Level A. Unit packages shall be packed in a wirebound wood box, fiberboard wood-cleated box, wood-cleated plywood box, or nailed wood box; meeting the requirements of PPP-B-585, class 3; PPP-B-591, overseas type; PPP-B-601, overseas type; or PPP-B-621, class 2, respectively. Box shall be closed and strapped in accordance with the applicable container specifications, or appendix thereto.

5.2.2.2 Level B. Unit packages shall be packed in a wirebound wood box, fiberboard wood-cleated box, wood-cleated plywood box, or nailed wood box; meeting the requirements of PPP-B-585, class 1; PPP-B-591, domestic type; PPP-B-601, domestic type; or PPP-B-621, class 1, respectively. Boxes shall be closed and strapped as specified in 5.2.2.1.

5.2.2.3 Commercial. Packing shall be in accordance with MIL-STD-1188.

5.2.3 Marking. In addition to any special marking specified in the contract or order, the unit package and shipping container shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The compressors and accessories covered by this specification are intended for use in military wheeled vehicles to supply compressed air for airbrake systems and accessories.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.
b. Type of compressor required (see 1.2).
c. Applicable drawings or military standards (see 3.3).
d. Military finish, if required (see 3.5).
e. Level of packaging and packing required (see 5.1.1, 5.2.1 and 5.2.2).

6.3 Airbrake system evaporator. The evaporator assembly, MS53067, should be used in conjunction with types I, II, III, IV and V compressor systems. As this assembly is not an essentially integral part of any compressor system and is to be utilized only in cold (below minus 35°F) atmospheric conditions, no qualification of this assembly is required. However, prior to installation on any vehicles, the following precautions should be followed:

a. Fill the jar two-thirds full with 188 proof commercially pure methyl alcohol.
b. The compressor to alcohol evaporator line shall be less than 5 feet long and protected from excessive heat, where applicable.
c. Activate the compressor and note air bubbles in alcohol evaporator. Presence of bubbles indicates unit is operating properly.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion on the applicable Qualified Products List, whether or not such products have actually been so listed by that date. The attention of contractors is called to this requirement, and manufacturers are urged to have the products that they propose to offer to the Federal Government tested for qualification, in order that they may be eligible to be awarded contracts or orders for the parts covered by this specification. The activity responsible for the QPL is the Commanding General, US Army Tank-Automotive Command, ATTN: DRSTA-GSS, Warren, MI 48090, and information pertaining to qualification of products may be obtained from that activity.

6.5 Recycled materials. The use of recycled materials which meet the requirements of the applicable material specifications without jeopardizing the intended use of the item shall be encouraged (see 3.2).

6.6 Changes from previous issue. Asterisks 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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Army - AT
Air Force - 99

Review activity:
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