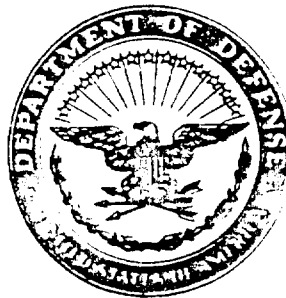


MIL-STD-281A
14 October 1960
SUPERSEDING
(See Foreword)

MILITARY STANDARD

**AUTOMOBILES, TRUCKS, TRUCK-TRACTORS,
TRAILERS AND TRAILER DOLLIES;
PRESERVATION AND PACKAGING OF**



MIL-STD-281A
14 October 1960

ARMED FORCES SUPPLY SUPPORT CENTER
WASHINGTON 25, D. C.

Automobiles, Trucks, Truck-Tractors, Trailers and
Trailer Dollies; Preservation and Packaging of

14 OCTOBER 1960

MIL-STD-281A

1. This standard has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

2. Recommended corrections, additions, or deletions should be addressed to the Commanding General, U. S. Army Ordnance Tank-Automotive Command, ATTN: ORDMC-RES.1, 1501 Beard Street, Detroit 9, Mich.

MIL-STD-281A
14 October 1960

FOREWORD

The purpose of this standard is to establish minimum preservation, packaging, and packing requirements for levels to be used for shipment and storage of wheeled vehicles in a mobile condition, boxed, and skidded.

Fundamentally, the vehicle processing procedures, methods, and materials contained in this standard are intended for use by all Department of Defense services when specifying requirements for preparation and preservation of vehicles for shipment and storage. It is expected that this standard will in most cases be implemented by means of departmental documents (manuals, technical orders, supply bulletins, publications, limited coordination specifications, vehicle preparation for shipment and storage data sheets, etc.,) to specify the requirements of this standard which apply to the specific vehicle or vehicles, as well as to provide coverage for installed equipment and peculiar parts and components not provided for in this standard.

The degree of protection provided in 5.1 is level A (mobile) preservation and packaging.

The degree of protection provided in 5.2 is level B (mobile) preservation and packaging required for the specific shipping, handling, and storage conditions stated therein. It is recognized that occasions will arise, such as favorable climatic conditions at the storage site that may justify modification of the level B requirements. Level B is designed for flexibility in that it permits the application of varying degrees of protection to fit the specific conditions. Only those minimum requirements necessary to protect the vehicle under the specific conditions would be specified by the using service.

The degree of protection provided in 5.3 is level C (mobile) preservation and packaging.

The degree of protection provided in 5.4 is level A (boxed or skidded) preservation, packaging, and packing.

The degree of protection provided in 5.5 is level B (boxed or skidded) preservation, packaging, and packing.

The degree of protection provided in 5.6 is level C (boxed or skidded) preservation, packaging, and packing.

Requirements for quality assurance provisions are provided in section 6.

This revision A supersedes Standard MIL-STD-281, dated 25 April 1956, and the following specifications: MIL-T-3435A, dated 8 April 1959; MIL-T-3345A, dated 8 April 1959; MIL-P-10039B, dated 4 May 1955; MIL-P-10040B, dated 21 February 1955; and MIL-P-13784(Ord), dated 12 November 1954.

CONTENTS

	Page
1. SCOPE.....	1
1.1 Coverage.....	1
1.2 Application.....	1
2. REFERENCED DOCUMENTS.....	2
2.1 Specifications, standards, and drawings.....	2
2.2 Other publications.....	3
3. DEFINITIONS.....	4
3.1 Protection.....	4
3.2 Shipment.....	4
3.3 Mobile.....	4
3.4 On vehicle equipment.....	4
3.5 Inspection terms.....	4
4. GENERAL REQUIREMENTS.....	5
4.1 Cleaning and drying.....	5
4.2 Preservatives.....	5
4.3 Disassembly.....	5
4.4 Matchmarking.....	5
4.5 Chassis relubrication.....	5
4.6 Record forms.....	5
4.7 On vehicle equipment.....	5
4.8 Intervehicular (jumper) cable.....	5
4.9 Lamps.....	5
4.10 Marking.....	6
4.11 Loading.....	6
5. DETAILED REQUIREMENTS.....	6
5.1 Level A (mobile) preservation and packaging.....	6
5.2 Level B (mobile) preservation and packaging.....	16
5.3 Level C (mobile) preservation and packaging.....	18
5.4 Level A (boxed or skidded).....	19
5.5 Level B (boxed or skidded).....	20
5.6 Level C (boxed or skidded).....	20
6. QUALITY ASSURANCE PROVISIONS.....	22
7. NOTES.....	25
INDEX.....	33

LIST OF TABLES

Table I. Inspection characteristics.....	26
--	----

MIL-STD-281A
14 October 1960

I. SCOPE

1.1 COVERAGE. This standard establishes the minimum level A, level B, and level C requirements for preservation, packaging, and packing of Automobiles, Trucks, Truck-Tractors, Trailers, and Trailer Dollies for shipment and storage.

1.2 APPLICATION. The requirements contained herein are intended for application to those vehicles referenced in 1.1 whether new, rebuilt, or economically reparable, and may be used, at the discretion of the using agency, for preservation, packaging, and packing of similar wheeled vehicles. Application to the procure-

ment of vehicles of commercial design is optional with the responsible Government activity.

(Note. See Standard MIL-STD-162 for procedures covering preparation for shipment and storage of materials handling equipment.)

1.3 CLASSIFICATION. Preparation for shipment and storage shall be in one of the following conditions, as specified by the procuring activity (see 7.1)

- (a) Mobile —Preparation of vehicles in a mobile condition (see 3.3).
- (b) Boxed —Preparation of vehicles in a boxed condition.
- (c) Skidded—Preparation of vehicles in a skidded condition.

MIL-STD-281A
 14 October 1960

2. REFERENCED DOCUMENTS

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

SPECIFICATIONS

FEDERAL

- C-N-200 —Neat's Foot Oil
- O-A-548 —Antifreeze, Ethylene Glycol, Inhibited.
- O-I-490 —Inhibitor, Corrosion, Liquid Cooling System.
- QQ-S-781 —Strapping, Flat; Steel.
- TT-P-664 —Primer, Coating, Synthetic, Rust-Inhibiting Lacquer-Resisting.
- UU-P-271 —Paper, Wrapping, Waterproofed Kraft.
- UU-T-81 —Tags, Shipping and Stock.
- VV-F-800 —Fuel Oil, Diesel.
- ZZ-T-416 —Tire and Tubes Reconditioning Materials and Equipment (Rubber and Related Products).
- JJJ-C-86 —Castor Oil, Technical.
- PPP-B-601 —Boxes, Wood, Cleated-Plywood.
- PPP-B-621 —Boxes, Wood, Nailed and Lock-Corner.
- PPP-T-60 —Tape; Pressure-Sensitive Adhesive, Waterproof, for Packaging and Sealing.

MILITARY

- MIL-C-104 —Crates, Wood; Lumber and Plywood Sheathed, Nailed and Bolted.
- MIL-P-116 —Preservation, Methods of.
- MIL-B-117 —Bags, Interior Packaging.
- MIL-B-121 —Barrier-Material, Grease-proofed, Flexible (Waterproofed).
- MIL-B-130 —Barrier-Material, Paper, Noncorrosive.
- MIL-R-196 —Repair Parts for Internal Combustion Engines, Packaging of.
- MIL-P-207 —Packaging and Packing for Domestic and Overseas

Shipment and Storage.
 Electrolyte; Storage Battery.

- MIL-P-208 —Packaging and Packing for Shipment and Storage of Batteries, Storage, Automotive and Navy Portable.
- MIL-L-2104 —Lubricating Oil, Internal-Combustion Engine, Heavy-Duty.
- MIL-L-2105 —Lubricant, Gear, Universal.
- MIL-G-6711 —Graphite, Lubricating.
- MIL-G-10924 —Grease, Automotive and Artillery.
- MIL-C-11755 —Compound, Antifreeze, Arctic-Type.
- MIL-P-11875 —Tools and Equipment (Other than Handtools) for the Maintenance and Repair of Military Vehicles, Packaging and Packing for Shipment and Storage.
- MIL-P-12841 —On Vehicle Equipment (OVE) for Military Vehicles, Packaging of.
- MIL-B-13239 —Barrier-Material, Waterproofed, Flexible, All Temperature.
- MIL-P-14105 —Paint, Heat Resisting, Olive Drab, (for Steel Surfaces).
- MIL-P-15424 —Packaging of Handtools for Domestic and Overseas Shipment and Storage.

STANDARDS

MILITARY

- MIL-STD-105—Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-109—Inspection Terms and Definitions.
- MIL-STD-129—Marking for Shipment and Storage.
- MIL-STD-162—Preparation for Delivery of Materials Handling

MIL-STD-281A
14 October 1960

Equipment and Special
Purpose Vehicles for Do-
mestic and Overseas
Shipment and Storage.

(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.)

2.2 OTHER PUBLICATIONS. The following documents form a part of this standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

INTERSTATE COMMERCE COMMISSION
Motor Carrier Safety Regulations.

(Application for copies should be addressed to the Interstate Commerce Commission, Bureau of Motor Carriers, Washington 25, D. C.)

ASSOCIATION OF AMERICAN RAILROADS
Rules Governing the Loading of Commodities on Open Top Cars.

(Application for copies should be addressed to the Association of American Railroads, 59 East Van Buren, Chicago 5, Ill.)

CONSOLIDATED CLASSIFICATION COMMITTEE
Official Classification Committee
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York 16, N.Y.)

AMERICAN TRUCKING ASSOCIATIONS, INC.
National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations Inc., 1424 Sixteenth Street, N.W., Washington 6, D.C.)

MIL-STD-281A
14 October 1960

3. DEFINITIONS

3.1 PROTECTION. Protection as used herein refers to the degree of preparation intended to protect vehicles effectively and economically during periods of shipment and storage against the following:

- (a) Physical or mechanical damage to vehicle due to severe shock or handling during shipment, loading, unloading, or during storage;
- (b) Pilferage of vehicle parts or components;
- (c) Deterioration, including corrosive action of water or polluted air, and other environmental elements.

3.2 SHIPMENT. Shipment as used herein includes the following operations:

- (a) Loading and transporting of preserved vehicles
- (b) Driveaway (under their own power), haulaway or towaway of preserved vehicles.

3.3 MOBILE. The term mobile as used herein is to identify vehicles that are processed for shipment and storage and that are capable of being moved on their wheels. Vehicles preserved and packaged in accordance with requirements designated "mobile" are never boxed or skidded.

3.4 ON VEHICLE EQUIPMENT. On vehicle equipment (OVE) as use herein includes equipment, armament, communications equipment, and miscellaneous items which are to be packaged and packed with other OVE.

3.5 INSPECTION TERMS.

3.5.1 Inspection, examination, and testing. Inspection and its categories as used herein, including inspection classes, types, amounts, lots, samples, classes of defects, general inspection terms, examination and testing are defined in accordance with Standard MIL-STD-109.

MIL-STD-281A
14 October 1960

4. GENERAL REQUIREMENTS

4.1 CLEANING AND DRYING. Exterior surfaces of vehicle, including interior of cab and body, shall be free of dirt, dust, grease and any other contaminants. Exposed surfaces to which application of a preservative is specified shall be cleaned and dried in accordance with any applicable process and procedure of Specification MIL-P-116. Liquids under pressure shall not be directed at critical components during cleaning operations.

4.2 PRESERVATIVES. Preservatives specified herein, identified by "P numbers," shall conform to the applicable specifications listed in Specification MIL-P-116.

4.3 DISASSEMBLY. Parts vulnerable to damage and pilferage; and projecting parts whose removal will accomplish the desired reduction in cube shall be removed from the vehicle. Removed parts shall be preserved, packaged, and packed in accordance with the requirements for the level to which the vehicle is being processed, and the applicable specifications. The packed parts shall be placed in a protected location on the vehicle and secured in a manner to prevent movement and damage during shipment and storage. Removed bolts and nuts, screws, pins, and washers shall be placed in one of the mating parts and secured to prevent their loss. The wheels shall be removed for boxed preparation of truck chassis; and parts such as wheels, axles, bearings, drawbars, and lamps shall be removed, if necessary, for boxed and skidded preparation of trailers.

4.4 MATCHMARKING. Parts removed from automobiles, trucks, truck-tractors, trailers, and trailer dollies shall be matchmarked when necessary to facilitate reassembly. Matchmarking information shall be on cloth shipping tags conforming to type A of Specification UU-T-81, or metal tags marked with soluble paint and attached to mating parts. The marked cloth shipping tags shall be waterproofed in accordance with Standard MIL-STD-129.

4.5 CHASSIS RELUBRICATION. When vehicle has been operated in excess of 100 miles

since previous lubrication, or after liquid or steam cleaning, vehicle shall be relubricated in accordance with applicable lubrication instructions; and all operational mating surfaces of components such as levers, latches, locking bars, locking pins, hinges, hinge pins, clevis pins, pintle pins, and pedal linkage shall be coated with type P-9 preservative oil.

4.6 RECORD FORMS. One copy each of DA Form 478 (Modification Work Order and Major Unit Assembly Replacement Record), and DA Form 9-3 (Processing Record for Shipment and Storage of Vehicles and Boxed Engines), or other forms designated by the agency concerned including preservation accomplished and de-preservation instructions, shall be completed, placed in an envelope conforming to type II, class b of Specification MIL-B-117, and placed in dash compartment or lubrication order holder; or securely attached in a conspicuous location near identification or data plate.

4.7 ON VEHICLE EQUIPMENT. When specified (see 7.1), OVE shall be packaged and packed in accordance with requirements of Specification MIL-P-12841; or other specification designated by the agency concerned.

4.7.1 Tarpaulins. Except when otherwise specified, tarpaulins and other loose canvas items shall be thoroughly dried, folded, or rolled in a manner to avoid creasing of plastic windows, packaged in accordance with Method IC-5 of Specification MIL-P-116, and packed in a nailed wood box conforming to Specification PPP-B-621. Box shall be identified and stowed in a protected location on the vehicle.

4.8 INTERVEHICULAR (JUMPER) CABLE. Intervehicular (jumper) cable shall be secured to vehicle with tape conforming to type III, class I of Specification PPP-T-60.

4.9 LAMPS. For rail shipment only, exterior lamp and reflector lenses (red or amber) shall be completely covered with kraft paper, and paper shall be covered and secured with tape conforming to type III, class I of Specification PPP-T-60.

MIL-STD-281A
14 October 1960

4.10 MARKING. In addition to specified special marking, vehicles shall be marked in accordance with the applicable requirements of Standard MIL-STD-129.

4.11 LOADING.

4.11.1 Rail shipment. Loading of vehicles on open-top cars for shipment by rail shall be in accordance with the applicable requirements of

Association of American Railroads, "Rules Governing the Loading of Commodities on Open-Top Cars."

4.11.2 Highway shipment. Loading of vehicles for shipment by haulaway, and rules for shipment by driveaway or towaway shall be in accordance with Interstate Commerce Commission Publication, "Motor Carrier Safety Regulations" and applicable Military regulations.

MIL-STD-281A
14 October 1960

5. DETAILED REQUIREMENTS

5.1 LEVEL A (MOBILE) PRESERVATION AND PACKAGING. The preservation and packaging requirements specified for this level are intended to provide adequate protection to vehicles and components from corrosion, deterioration, and physical damage during shipment, handling, and varying periods of storage in excess of 90 days from date of preservation and packaging (Periodic care and preservation during storage required.)

5.1.1 *Transmissions.*

5.1.1.1. Standard drive. Transmission shall contain applicable grade of lubricant conforming to Specification MIL-L-2105, filled to operating level; and shall be operated through all ranges for a minimum of 1 minute at a sufficient engine speed to assure lubricant coverage of all interior parts and surfaces.

5.1.1.2 *Automatic drive.*

5.1.1.2.1 Preservative oil method. When specified (see 7.1), transmission shall contain type P-10 preservative oil, grade 1 or 2 as applicable, filled to operating level, and shall be operated as specified in 5.1.1.1. Transmissions preserved with type P-10 preservative oil that do not operate on lubricating oil conforming to Specification MIL-L-2104 shall have a warning tag, bearing the information "TRANSMISSION FILLED WITH TYPE P-10 PRESERVATIVE OIL—DO NOT DRIVE VEHICLE MORE THAN 10 MILES BEFORE DRAINING AND REFILLING WITH PRESCRIBED OPERATIONAL LUBRICANT," securely attached to the shift selector.

5.1.1.2.2 Operational lubricant method. Unless otherwise specified, transmission shall contain prescribed operational lubricant, filled to operating level; and shall be operated as specified in 5.1.1.1.

5.1.2 Differentials, transfer assemblies, and power takeoff assemblies. Differentials, transfer assemblies, power takeoff assemblies, and other gear driven units, except those lubricated by the unit to which they are attached, shall contain the applicable grade of lubricant conforming to

Specification MIL-L-2105, filled to operating level; and shall be operated as specified in 5.1.1.1.

5.1.3 Propeller shafts. Exposed, machined surfaces of propeller shafts, including splines, slip joints, and universal joints, shall be coated with type P-1 preservative.

5.1.4 Cooling systems. Cooling systems shall be protected by one of the procedures specified in 5.2.3, depending on the condition of shipment and storage, as designated by the responsible technical activity (see 7.1). If no procedure is specified by the responsible technical activity, cooling systems shall be protected in accordance with 5.2.3.1.

5.1.5 Air cleaner (oil-bath type). Air cleaner (oil-bath type) shall contain type P-10, grade 2 preservative oil, filled to operating level. Unpainted surfaces above operating level shall be coated with the same type and grade preservative oil.

5.1.6 Engine crankcase. Engine crankcase shall contain type P-10 preservative oil, grade 1, 2, or 3 as applicable, filled to operating level.

5.1.7 *Engine preservation.*

5.1.7.1 Gasoline engine. Engine fuel intake line shall be disconnected at the most easily accessible point nearest the fuel tank, and a line from a portable container of gasoline shall be connected to the line leading to engine. (For injector-type engine, injector fuel return line shall be disconnected at the quick disconnect coupling. A line shall be provided and connected to the injector fuel return quick disconnect coupling to permit draining into a recovery container. Recovered fuel-oil mixture shall not be used for preserving other engines.) Engine shall be started and operated at fast idle until running smoothly, then accelerated to $\frac{3}{4}$ speed without load, at the same time fuel supply shall be switched to type P-9 preservative oil. The instant engine begins to misfire, ignition switch shall be turned off, line from portable container disconnected from engine, and vehicle fuel line reconnected. Prior to continuation of preservation, engine shall be cooled to a cylinder head temperature of not more than 100°F. Cooling may be accelerated

MIL-STD-281A
14 October 1960

by use of induced air currents. Spark plugs shall then be removed, exercising maximum care in handling to avoid damage to threads and electrodes during preservation. While engine is being cranked with starting motor, two ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through spark plug opening. Without cranking, two additional ounces of the type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder, threaded ends of spark plugs shall be coated with the same type and grade preservative oil and plugs reinstalled. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

5.1.7.2 Diesel engines. Engine fuel intake line shall be disconnected at the most easily accessible point nearest the fuel tank, and a line from a portable container of diesel fuel conforming to Specification VV-F-800 shall be connected to the line leading to engine. Injector fuel return line shall be disconnected at the quick disconnect coupling. A line shall be provided and connected to the injector fuel return quick disconnect coupling to permit draining into a recovery container. Recovered fuel-oil mixture shall not be used for preserving other engines. Engine shall be started and operated at fast idle, without load, until thoroughly warm. Engine shall be accelerated to $\frac{3}{4}$ speed, at the same time fuel supply shall be switched to type P-9 preservative oil. Engine shall be operated until entire fuel system and internal operating surfaces are coated with the preservative oil. Engine shall be stopped and fuel lines reconnected. Prior to continuation of preservation, engine shall be cooled to a maximum cylinder head temperature of 100°F. Cooling may be accelerated by use of induced air currents. Preservation shall then be continued in accordance with one of the following methods, as applicable:

(a) *Four-cycle, gasoline-starting diesel engine.* Spark plugs shall be removed, exercising maximum care in handling to avoid damage to threads and electrodes during preservation. Engine controls shall be positioned for gaso-

line operation and diesel throttle completely closed. While engine is being cranked with starting motor, 1 ounce of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through spark plug openings. Injectors (and precombustion cups, when necessary) shall be removed. Engine controls shall be positioned for diesel operation. While engine is being cranked with starting motor, 2 ounces of the same type and grade preservative oil shall be atomized sprayed into each cylinder through the injector opening. Engine shall be cranked with starting motor for at least five complete revolutions after spraying the last cylinder. Without cranking, two additional ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through spark plug opening. Threaded ends of spark plugs, injectors, and precombustion chambers shall be coated with the same type and grade preservative oil and plugs, injectors, and precombustion chambers reinstalled. Engine controls shall then be positioned for diesel operation. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

(b) *Four-cycle, straight-diesel engines with openings, other than fuel injectors and valves, into combustion chambers and cylinders.* Diesel throttle shall be completely closed. Covers, plugs, or flanges over openings shall be removed and, while engine is being cranked with starting motor, 2 ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through the opening. Without cranking, 2 additional ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through the openings. Inte-

MIL-STD-281A
14 October 1960

rior surfaces of covers shall be coated with the same type and grade preservative oil, and covers reinstalled. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

(c) *Four-cycle, straight-diesel engines without openings, other than fuel injectors and valves, into combustion chambers and cylinders.* Preservation shall be accomplished by one of the following two methods. The practicability of method (1) will depend on the ease with which injectors can be removed, and on the size of openings in the precombustion chambers. If these openings are too small to effectively admit and distribute the preservative oil, the precombustion chambers will require removal; and the practicability of this procedure will then depend on the ease with which the precombustion chambers can be removed, as opposed to method (2), involving removal of manifolds.

(1) Diesel throttle shall be completely closed. Injectors, or injectors and precombustion chambers, as applicable, shall be removed and coated with type P-10, grade 2 preservative oil, exercising maximum care in handling to avoid damage to injectors and precombustion chambers during preservation. While engine is being cranked with starting motor, 2 ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through the openings. Injectors, or injectors and precombustion chambers, as applicable, shall be reinstalled. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

(2) As an alternative, when method (1) is found to be impractical, the following shall be accomplished: Diesel throttle shall be completely closed. Intake or exhaust manifold or both, shall be removed and, when applicable, compression release secured in release position. While engine is being cranked with starting motor, 2 ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through intake valve at the time valve opens. Engine shall be cranked with starting motor until intake or exhaust valve into each cylinder is open. Without cranking, 2 ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into open port of each cylinder. Compression release shall be freed and manifolds reinstalled. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

(d) *Two-cycle diesel engines.* Diesel throttle shall be completely closed. Air-box cover or covers shall be removed from side of engine opposite the blower. Engine shall be cranked with starting motor until piston in cylinder to be sprayed is below intake ports. Without cranking, 2 ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into cylinder through intake port. Procedure shall be repeated for each cylinder. Engine shall be cranked with the starting motor for at least three complete revolutions after spraying the last cylinder. Complete cycle of spraying into cylinders shall be repeated, except that engine shall be cranked with the starting motor for not more than one complete revolution after spraying the last cylinder. Interior surfaces of air-box, cover, or covers shall be

MIL-STD-281A
14 October 1960

coated with the same type and grade preservative oil and reinstalled. A warning tag, bearing the information "ENGINE PRESERVED: DO NOT CRANK," shall be securely attached in a conspicuous location within driver's compartment.

5.1.8 Air compressor. Where the lubricating system is separate from the associated power unit, air compressor crankcase shall contain type P-10 preservative oil only, grade 1 or 2 as applicable, filled to operating level. Compressor air cleaner shall be removed and air intake and outlet disconnected. While engine is being operated during preservation (see 5.1.7.1 or 5.1.7.2 as applicable), type P-10, grade 2 preservative oil shall be sprayed into compressor air intake until oil appears at outlet, then air intake and outlet shall be reconnected. Compressor air cleaner (oil-bath type) shall be preserved as specified in 5.1.5 and reinstalled.

5.1.9 Batteries, cables and electrolyte. Cables shall be secured to battery support with tape conforming to type III, class 1 of Specification PPP-T-60. When specified by the procuring activity (see 7.1), batteries shall be secured in place in vehicle battery carrier. The ventholes in the filler cap of dry charged batteries shall be plugged or sealed. Unless otherwise specified by the procuring activity, dry charged batteries shall be packaged and packed in accordance with the oversea requirements of Specification MIL-P-208. Electrolyte shall be packaged and packed in accordance with requirements of Specification MIL-P-207 (see 7.3). Packaged batteries and electrolyte shall be stowed with other OVE. Electrolyte shall be stowed in a manner permitting easy removal at ports when special stowing is required by maritime regulations. Battery posts shall be covered with plastic caps; or tape conforming to type III, class 1 of Specification PPP-T-60.

5.1.10 Drive belts. Tension of all drive belts shall be released. Unpainted surfaces of pulley groove shall be coated with primer conforming to Specification TT-P-664. A warning tag, bearing the information "BELT TENSION RELEASED; ADJUST BEFORE STARTING

ENGINE," shall be securely attached in a conspicuous location within driver's compartment.

5.1.11 Exhaust system. Unpainted surfaces of exhaust system, except manifold, shall be coated with type P-1 preservative or paint conforming to Specification MIL-P-14105. When required for reduction in cube, upper section of vertical tailpipe shall be removed, coated with type P-1 preservative, and stowed with other OVE. Opening of vertical tailpipes, unless protected by a raincap, or opening left by disassembly, shall be sealed with tape conforming to type III, class 1 of Specification PPP-T-60.

5.1.12 Vehicular fuel tanks.

5.1.12.1 Fill and drain method. Unless otherwise specified, fuel tanks shall be completely drained of fuel, filled with type P-10, grade 2 preservative oil, and again drained. Tank shall be allowed to stand with drain plug removed until oil flow ceases. Plug shall be coated with the type P-10, grade 2 preservative oil and reinstalled. Drained preservative oil may be reused for processing of other gasoline fuel tanks provided not more than 10 percent of the resultant fluid is gasoline when tested as specified in 6.13.1.

5.1.12.2 Drain and spray method. When specified (see 7.1), fuel tanks shall be completely drained of fuel and atomized sprayed with type P-10, grade 2 preservative oil, using atomizing equipment with an extension nozzle which will assure complete coverage of all interior surfaces. Tank shall be allowed to stand with drain plug removed until oil flow ceases. Plug shall be coated with the type P-10, grade 2 preservative oil and reinstalled.

5.1.13 Disc-type clutch. Clutch pedal, with gear shift in "NEUTRAL" position, shall be depressed a distance sufficient to remove free play, and then depressed 1 to 1½ inches more. Pedal shall be secured in depressed position by wiring to floorboard plates; or by wiring a woodblock to pedal shaft beneath floorboard. Flywheel housing drain plug shall be removed and coated with type P-1 preservative. Drain plug, together with a warning tag bearing the information "FLYWHEEL HOUSING DRAIN PLUG REMOVED; RE-INSTALL BEFORE PLACING VEHICLE IN

MIL-STD-281A
14 October 1960

SERVICE," shall be securely attached in a conspicuous location within driver's compartment. When a threaded boss is provided in flywheel housing adjacent to drain hole, removed drain plug shall be installed in threaded boss. A warning tag, bearing the information "FLYWHEEL HOUSING DRAIN PLUG REMOVED AND INSTALLED ADJACENT TO DRAIN HOLE; REINSTALL IN DRAIN HOLE BEFORE PLACING VEHICLE IN SERVICE," shall be securely attached in a conspicuous location within driver's compartment.

5.1.13.1 Clutch disassembly. When specified (see 7.1), in addition to 5.1.13 clutch shall be disassembled and metal surfaces of operating parts, including clutch collars, linkage, pins, and flywheel ring gear and starter drive shall be coated with a thin film of primer conforming to Specification TT-P-664.

5.1.13.2 Clutch plate removal. When specified (see 7.1), in addition to 5.1.13 clutch cover plates shall be removed and, with the clutch engaged, all accessible metal surfaces within the housing shall be sprayed with a thin film of primer conforming to Specification TT-P-664.

5.1.14 Brake systems. Exterior, unpainted or threaded surfaces such as cables, clevises, and linkage of service and parking brakes shall be coated with type P-1 preservative.

5.1.14.1 Interior surfaces of brakedrum. When specified (see 7.1), interior surfaces enclosed within brakedrum, such as brake cams, anchor pins, adjusting screws, and braking surfaces of face of the brakedrum shall be coated with a thin film of primer conforming to Specification TT-P-664. Care shall be exercised to prevent primer from contacting brake lining and rubber impregnated parts. A warning tag, bearing the information "BRAKEDRUMS PRESERVED; DO NOT APPLY BRAKES WHEN VEHICLE IS BEING MOVED," shall be securely attached in a conspicuous location or within driver's compartment. Towing shall be with a rigid tow bar or similar arrangement.

5.1.14.2 Piston dust shield. When specified (see 7.1), piston dust shield shall be lifted, and exposed working surfaces shall be coated with castor oil conforming to Specification JJJ-C-86.

5.1.14.3 Hydraulic brakes. Brake system shall be filled with operational hydraulic brake fluid in accordance with applicable drawings, specifications, lubrication orders or instructions of using services.

5.1.14.4 Airbrakes. Air compressor shall be processed as specified in 5.1.8. Air reservoirs shall be drained of all condensate and interior surfaces atomized sprayed with type P-10, grade 2 preservative oil. Drain plugs and threaded openings shall be coated with type P-10, grade 2 preservative oil, and plugs reinstalled. Drain valves shall be left in open position and a warning tag, bearing the information "AIR RESERVOIR DRAIN VALVES OPEN; CLOSE BEFORE OPERATING VEHICLE," shall be securely attached in a conspicuous location within driver's compartment. For other than self-propelled vehicles, tag shall be securely attached in a conspicuous location near identification or data plate. Exposed ends of service air lines and dummy couplings shall be covered with tape conforming to type III, class I of Specification PPP-T-60. Air line filters shall be drained and closed. Exhaust ports of relay emergency, quick release, and relay valves not equipped with exhaust check valves shall be closed by inserting pipe plugs, or sealed with pressure-sensitive tape. A warning tag, bearing the information, "EXHAUST PORTS CLOSED; REMOVE PLUGS AND TAPE BEFORE OPERATING VEHICLE," shall be securely attached in a conspicuous location within driver's compartment.

5.1.14.5 Air-hydraulic brakes. Air-hydraulic, vacuum, and vacuum-hydraulic brakes shall be processed in accordance with the applicable requirements of 5.1.14.3 and 5.1.14.4.

5.1.14.5.1 Housings and connectors. When specified (see 7.1), plugs and hose shall be removed from housings and connectors, and type P-10, grade 2 preservative oil shall be sprayed on the interior surfaces of the vacuum booster through each opening. Plugs and hose shall be reinstalled and brake pedal actuated through two cycles. Plugs and hose shall again be removed and spraying repeated. Plugs and hose shall be reinstalled.

5.1.14.5.2 Diaphragm-type chambers and

MIL-STD-281A
14 October 1960

pull-type cylinders. Exterior, unpainted or threaded surfaces of diaphragm chambers, cylinders, valves, vacuum tank piping, and compensator rods shall be coated with type P-1 preservative.

5.1.14.6 Electric brakes. When specified (see 7.1) interior surfaces enclosed within brake-drums shall be preserved in accordance with the applicable requirements of 5.1.14 and as specified herein. Openings and vents of electrical items shall be sealed with tape conforming to type III, class 1 of Specification PPP-T-60. A warning tag, bearing the information "OPENINGS AND VENTS SEALED; REMOVE TAPE BEFORE OPERATING VEHICLE," shall be securely attached in a conspicuous location within driver's compartment.

5.1.15 Vehicle cabs

5.1.15.1 Hard-top cab. Door hinges, latches, and operating mechanisms shall be lubricated with type P-9 preservative oil. Locks shall be lubricated with graphite conforming to Specification MIL-G-6711. Inspection access plates shall be removed and all interior surfaces of doors including inner surfaces of access plates, if unpainted, shall be coated with type P-1 preservative, and access plates reinstalled. Care shall be exercised to assure that door drain holes remain open. Windows shall be open $\frac{1}{2}$ inch for ventilation and, when applicable, cab air vents shall be left in open position. Windshield wiper arms and blades shall be removed and, together with keys, placed in a waterproof bag conforming to type optional, class b of Specification MIL-B-117, then stowed in dash compartment, or securely attached to steering column.

5.1.15.2 Soft-top and open-type cabs. Except when removal of top is required for shipment, cab shall be processed in accordance with 5.1.15.1. When removed, top shall be thoroughly dried, folded, or rolled in a manner to avoid creasing of plastic windows, packaged in accordance with Method IC-5 of Specification MIL-P-116, and packed in a nailed wood box conforming to Specification PPP-B-621. Box shall be identified and stowed with other OVE. Windshield

wiper arms and blades shall be removed and, together with keys, stowed in dash compartment, and windshield secured in folded-down position. When dash compartment is not provided, wiper arms and blades, together with keys, shall be placed in a bag conforming to type optional, class b of Specification MIL-B-117 and securely attached to steering column. Seat backs and cushions shall be removed and fabric surfaces covered with barrier-material conforming to type CW-1, class 2; or type B-2, class 2 grade A of specification MIL-B-13239. Barrier material shall be secured with tape conforming to type III, class 1 of Specification PPP-T-60, and seat backs and cushions reinstalled. Dash panel, including defroster vents, shall be covered with waterproof paper conforming to class E-1 or E-2 of Specification UU-P-271, and paper secured, except at bottom, with tape conforming to type III, class 1 of Specification PPP-T-60. Horn button shall be covered with the same class paper, of a size to completely cover opening around horn button, and paper shall be secured in the same manner as specified for dash panel. Floor mat shall be removed, rolled, tied, and stowed on the vehicle. Doors including hinges, latches, seals, locks, operating mechanisms, access plates, and interior surfaces of doors accessible through inspection openings shall be processed in accordance with applicable requirements of 5.1.15.1. Door glass shall be rolled down to the maximum extent and door glass slit sealed with tape conforming to type III, class 1 of Specification PPP-T-60. When top is removed from vehicles equipped with automatic transmissions only, gear shift lever shall be placed in neutral position and exposed machined surfaces shall be coated with grease conforming to Specification MIL-G-10924. Openings in top of shift towers shall be covered with tape conforming to type III, class 1 of Specification PPP-T-60.

5.1.16 Vehicle bodies.

5.1.16.1 Cargo and command bodies. Cover shall be removed, leather straps coated with neat's foot oil conforming to Specification C-N-200, and cover, including end curtains, shall be thoroughly dried, folded, or rolled, packaged in

MIL-STD-281A
14 October 1960

accordance with Method IC-5 of Specification MIL-P-116, and packed in a nailed wood box conforming to Specification PPP-B-621. Box shall be identified to indicate contents. Top bows shall be removed. Unpainted metal surfaces of bows, stake pockets, and removed hardware shall be coated with type P-1 preservative, and hardware, when dry, shall be reinstalled into one of the mating parts. Bows shall be banded together with strapping conforming to class A or B of Specification QQ-S-781 and secured to floor of cargo compartment. Openings afforded by removal of bows, and stake pockets that are not provided with drain holes to permit draining, shall be covered with tape conforming to type III, class 1 of Specification PPP-T-60. When required for reduction in cube, troop seats and side racks shall be removed, banded together with the same class strapping, and secured to floor of cargo compartment. Boxed cover shall be stowed and secured with other OVE. Body drains shall be opened to prevent accumulation of water.

5.1.16.2 Dump body. Unpainted metal surfaces of body, roller arms and ramps, uncovered tailgate chains, locking devices, control levers, and related linkage shall be coated with type P-1 preservative. Hydraulic system shall be filled to operating level with operational hydraulic fluid. When furnished, cab protector rack, except when welded, shall be removed and secured within body. Removed hardware and unpainted surfaces exposed by disassembly shall be coated with type P-1 preservative, and hardware reinstalled into one of the mating parts. All exposed, unpainted machined surfaces of the hydraulic ram, when the dump body is fully retracted, shall be coated with type P-1 preservative.

5.1.16.3 Van, ambulance, panel utility, and maintenance truck bodies. Body drains and ventilators shall be placed in open position to provide all possible ventilation. Door hinges, latches, and operating mechanisms shall be lubricated with type P-9 preservative oil. Special equipment, when furnished with body, such as shop cabinets, tools and benches, electronic equipment, air compressors, generators, and re-

frigeration air conditioning and heater units shall be preserved and packaged in accordance with requirements of existing applicable specifications; or as specified by the procuring activity (see 7.1). Doors shall be closed and secured to prevent pilferage or damage.

5.1.16.4 Jeep body. Top shall be removed, thoroughly dried, folded, or rolled in a manner to avoid creasing of plastic windows, packaged in accordance with Method IC-5 of Specification MIL-P-116, and packed in a nailed wood box conforming to Specification PPP-B-621. Box shall be identified and stowed with other OVE. Windshield wiper arms and blades shall be removed and, together with keys, stowed in dash compartment, and windshield secured in folded-down position. When dash compartment is not provided, wiper arms and blades, together with key, shall be placed in a bag conforming to type optional class b of Specification MIL-B-117, and securely attached to steering column. Seat backs and cushions shall be removed and fabric surfaces covered with barrier-material conforming to type CW-1, class 2; or type B-2, class 2, grade A of Specification MIL-B-13239. Barrier-material shall be secured with tape conforming to type III, class 1 of Specification PPP-T-60, and seat backs and cushions reinstalled. Dash panel, including defroster vents, shall be covered with waterproof paper conforming to class E-1 or E-2 of Specification UU-P-271, and paper secured, except at bottom, with tape conforming to type III, class 1 of Specification PPP-T-60. Horn button shall be covered with the same class paper, of a size to completely cover opening around horn button, and paper shall be secured in the same manner as specified for dash panel.

5.1.16.5 Fuel tank body. Unless otherwise specified, all interior surfaces of fuel compartments, including unpainted metal surfaces of underside of hatches, shall be coated with type P-10, grade 2 preservative oil, and tank drains left in open position. Drain openings shall be screened to prevent entry of insects and rodents. Rubber seals of hatches shall be coated with talc conforming to type IV, class C of Specification ZZ-T-416, and hatches shall be closed and se-

MIL-STD-281A
14 October 1960

cured. Exterior unpainted metal surfaces of hose couplings, valves, and pump shall be coated with type P-1 preservative. Equipment compartment drains shall be secured in open position. Door hinges and latches shall be lubricated with type P-9 preservative oil, and doors closed and secured to prevent pilferage or damage.

5.1.16.5.1 Fuel pumping system. All interior surfaces of fuel transfer pump shall be sprayed with type P-10, grade 2 preservative oil. Manifold valves shall be placed in open position. Pump and sump drain plugs shall be removed, coated with type P-10, grade 2 preservative oil, and placed in a bag conforming to type II, class c of Specification MIL-B-117 and identified. A warning tag, bearing the information "PUMP AND SUMP DRAIN PLUGS REMOVED; REPLACE BEFORE OPERATING ENGINE AND PUMP," shall be securely attached, together with bag, in a conspicuous location on the pump. With the engine cooled to a temperature of not more than 100° F., the following shall be accomplished. Engine crankcase shall contain type P-10 preservative oil, grade 1 or 2 as applicable, filled to operating level. Spark plugs shall be removed, exercising maximum care in handling to avoid damage to threads and electrodes during preservation. While engine is being cranked manually, two ounces of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder through spark plug opening. Without cranking, 1 additional ounce of type P-10, grade 2 preservative oil shall be atomized sprayed into each cylinder; threaded ends of spark plugs shall be coated with the same grade preservative oil and plugs reinstalled. A warning tag, bearing the information "ENGINE PRESERVED; DO NOT CRANK—DO NOT OPERATE ENGINE AND PUMP WITHOUT FLUID IN PUMPING SYSTEM," shall be securely attached in a conspicuous location on pumping system. Sediment bowl and fuel line of engine fuel tank shall be completely drained of fuel. Fuel tank shall be preserved in accordance with the applicable requirements of 5.1.12.

5.1.16.6 Water tank body. Water tank body shall be cleaned in accordance with Method C-

14, using a nontoxic cleaning compound, and dried by Method D-1 of Specification MIL-P-116. After cleaning, drains and lower outlets shall be left in open position and openings covered with filter paper or fine mesh aluminum or plastic screen, secured in place with tape conforming to type III, class 1 of Specification PPP-T-60. Removed drain plugs shall be coated with type P-14 preservative, and placed in a bag conforming to type II, class c of Specification MIL-B-117. Bag shall be identified, sealed, and securely attached to one of the faucets; or in a conspicuous location within equipment compartment. Valves, faucets, and forward outlet shall be coated with type P-14 preservative. Rubber seals of hatches and top openings shall be coated with tape conforming to type IV, class C of Specification ZZ-T-416, and forward outlet, hatches, and top openings shall be closed and secured. Equipment compartment drains shall be secured in open position and compartment doors closed and secured to prevent pilferage or damage. For steel tanks (other than stainless or precoated) all interior tank surfaces shall be coated with type P-14 preservative.

5.1.16.6.1 Water pumping system. Interior surfaces of centrifugal, reciprocating, and rotary pumps, including impellers, rotors, rotor shafts, pistons, piston rods, air chambers, vanes, vane slots, valves, valve rods, thrust pins, cylinder walls, oil-air-steam or water passages, and gears shall be sprayed with type P-14 preservative. When applicable, spraying shall be accomplished while slowly actuating pump. Top or end casing of two stage or larger pumps, with horizontally or vertically split casings, shall be removed and coated with type P-14 preservative. Pump shall be allowed to stand with drain plug removed until preservative flow ceases. Plug shall be coated with the type P-14 preservative and reinstalled. Other openings leading to interior of pump shall be closed with threaded cap, plugs, or tape conforming to type III, class 1 of Specification PPP-T-60.

5.1.17 Inverted trailers. When cargo or other trailers are to be inverted for shipment, filler plug and vent assembly shall be removed from hydraulic brake master cylinder and solid plug

MIL-STD-281A
14 October 1960

installed, using two compression-type copper gaskets, to prevent loss of brake fluid. Filler plug and vent assembly shall be coated with type P-10, grade 2 preservative oil, packaged in accordance with method IC-1 of Specification MIL-P-116, and secured to master cylinder. A warning tag, bearing the information "MASTER CYLINDER FILLER PLUG AND VENT ASSEMBLY SECURED TO MASTER CYLINDER; REINSTALL BEFORE PLACING VEHICLE IN SERVICE," shall be securely attached to trailer-to-vehicle brake line connection. Exposed ends of airplane type shock absorbers shall be covered with tape conforming to type III, class 1 of Specification PPP-T-60. When required for shipment, wheels of inverted trailer shall be removed and secured to trailer bed. When removed, racks shall be stowed and secured in a manner that will not increase cubage.

5.1.18 Miscellaneous preservation. All exterior, unpainted surfaces such as steering assemblies, frames, tie rods, adjusting rods, springs, pintle assemblies, fifth wheels, upper fifth wheel plates and kingpins, trailer landing gear, stabilizing jacks, and surfaces exposed by disassembly shall be coated with type P-1 preservative. Exposed, unpainted, machined-metal surfaces, and threaded surfaces that require occasional turning in normal operation of the unit shall be coated with grease conforming to Specification MIL-G-10924. Padiocks shall be lubricated with graphite conforming to Specification MIL-G-6711.

5.1.19 Winch and derrick assemblies. Winch gear case and other gear driven units shall contain gear lubricant conforming to requirements of applicable lubrication order, filled to operating level. Wire cable shall be unreeled and all surfaces shall be coated with type P-1 preservative. While cable is being rewound, any damage to applied preservative coating shall be repaired by application of additional type P-1 preservative to damaged areas. All exposed, unpainted metal surfaces of cable drums, sheaves, snatch blocks, boom block, A-frame, crane, or derrick boom, controls, and linkage shall be coated with type P-1 preservative. All mov-

ing, mating parts shall be coated with grease conforming to Specification MIL-G-10924. Hydraulic system shall contain operational hydraulic fluid, filled to operating level. When operating surfaces of hydraulic piston are exposed, piston shall be coated with grease conforming to Specification MIL-G-10924, and overwrapped with barrier-material, conforming to type II, grade A, class 2 of Specification MIL-B-121, secured with tape conforming to type III, class 1 of Specification PPP-T-60. When hydraulic piston is retracted, exposed surfaces of piston shall be coated with type P-1 preservative. Hydraulic controls shall be secured in neutral position.

5.1.19.1 Gear chain drives. Exposed gears, nonprecision drive chains, sprockets, and adjusting mechanisms shall be coated with type P-1 preservative. Exposed precision drive chains shall be coated with type P-9 or P-3 preservative oil to assure penetration to inner surfaces of rollers, pins, and bushings. Excess type P-9 or P-3 preservative shall be allowed to drain, then entire area shall be coated with type P-1 preservative.

5.1.20 Repair parts. When specified (see 7.1), repair parts shall be preserved in accordance with Specifications MIL-P-116, MIL-R-196, and MIL-P-11875 as applicable, packed in a minimum number of nailed, wood boxes conforming to class 2, style optional, of Specification PPP-B-621, or in wood cleated-plywood boxes conforming to oversea type, style optional, of Specification PPP-B-601. The number, size and weight of the boxes shall be determined by the available space and convenience for packing on the truck chassis and trailer. Boxes shall be strapped in accordance with the appendix to the applicable box specification. Boxes shall be positioned on the vehicle so as not to increase cubage or to interfere with lifting or towing the vehicle.

5.1.21 Tools. When specified (see 7.1), tools shall be preserved and packaged in accordance with Specification MIL-P-15424. Unless otherwise specified, tools shall be placed in the toolbox on the equipment. The lid of the toolbox shall be closed and secured. Lid joints shall be

MIL-STD-281A

11 October 1960

sealed with tape conforming to type III, class 1 of Specification PPP-T-60.

5.1.22 Rubber tires. For shipment by common carrier, tires mounted on the wheels (road tires) shall be inflated to 10 pounds above pressure recommended for maximum load. Tires mounted on rims and wheels (spare tires and mounted tires removed from the trailers) shall be inflated to $\frac{2}{3}$ of pressure recommended for maximum load.

Note. For storage, vehicle shall be blocked clear of the ground and the pressure in all tires reduced to 10 ± 2 psi.

5.1.23 Technical publications. When specified (see 7.1), technical publications for each vehicle shall be packaged in accordance with Method IC-3 of Specification MIL-P-116. Unless otherwise specified, technical publications shall be placed in the toolbox or in the lubrication order holder on the equipment.

5.2 LEVEL B (MOBILE) PRESERVATION AND PACKAGING. The preservation and packaging requirements specified for this level are intended to provide adequate protection for domestic or oversea shipment (open deck loading excluded) and which may involve storage outside of buildings for a combined total of approximately 90 days. When conditions of shipment or storage other than those described above are encountered, the level B requirements specified herein may be modified by responsible technical activities to the extent necessary.

5.2.1 Transmissions.

5.2.1.1 Standard drive. Transmission shall be preserved in accordance with 5.1.1.1.

5.2.1.2 Automatic drive. Transmission shall contain lubricant conforming to requirements of applicable drawing, specification, or lubrication order, filled to operating level. When transmission contains type P-10 preservative oil, grade 1 or 2 as applicable, operating level shall be attained by addition of the same grade oil, or lubricating oil conforming to Specification MIL-L-2104. Transmission shall be operated through all ranges for a minimum of 1 minute at a sufficient engine speed to assure lubricant coverage of all interior parts and surfaces.

5.2.2 Differentials, transfer assemblies, and

power takeoff assemblies. Differentials, transfer assemblies, power takeoff assemblies, and other gear driven units, except those lubricated by the unit to which they are attached, shall contain the applicable grade of lubricant conforming to Specification MIL-L-2105, filled to operating level. The assemblies shall be actuated to assure lubricant coverage of all interior parts and surfaces.

5.2.3 Cooling systems. Cooling systems shall be protected by one of the following procedures, depending on the condition of shipment and storage, as designated by the responsible technical activity (see 7.1). If no procedure is specified by the responsible technical activity, cooling systems shall be protected in accordance with 5.2.3.1.

5.2.3.1 Water and antifreeze procedure. Cooling systems shall contain a clean solution consisting of equal parts by volume of antifreeze (ethylene glycol) conforming to type I of Specification O-A-548, and water, filled to capacity. Engine shall be operated to assure coverage of all interior parts and surfaces. When cooling system is thermostatically controlled, engine shall be operated until a temperature has been reached that causes thermostat to open, assuring complete mixing and even distribution of the antifreeze solution. A warning tag, bearing the information "COOLING SYSTEM FILLED WITH WATER AND ANTIFREEZE (ETHYLENE GLYCOL) IN EQUAL PARTS BY VOLUME—DO NOT DRAIN," shall be securely attached to radiator filler neck.

5.2.3.2 Antifreeze compound procedure. For shipment and storage in areas where the temperature drops below -40°F ., cooling system shall be filled with antifreeze compound conforming to Specification MIL-C-11755. The compound shall be used without dilution. A warning tag, bearing the information "COOLING SYSTEM FILLED WITH ANTIFREEZE (ARCTIC TYPE)—DO NOT DRAIN," shall be securely attached to radiator filler neck.

5.2.3.3 Water and corrosion-inhibitor procedure. For shipment and storage within the bounds of 30° north latitude and 30° south latitude, ex-

MIL-STD-281A
14 October 1960

cept continental United States, cooling system shall be preserved as follows. Prior to, or concurrently with other preservation requiring engine operation, cooling system shall be filled with clear water up to, but not including, the radiator upper tank. A corrosion inhibitor conforming to Specification O-1-490 shall be added in the proportion of 5 ounces of the inhibitor for each 10 quarts of water. The inhibitor shall be dissolved in 2 quarts of warm water and poured into the radiator while the engine is idling. More water shall be added, if necessary, to fill the radiator to operating level. A warning tag, bearing the information "COOLING SYSTEM DOES NOT CONTAIN ANTIFREEZE— FILLED WITH WATER AND INHIBITOR," shall be securely attached to radiator filler neck.

5.2.3.4 Preservative and drain procedure (see 7.2). Cooling system shall be filled with type P-3 preservative prior to engine preservation. After engine preservation, cooling systems shall be drained and drain cocks left in open position. A warning tag, bearing the information "CLOSE DRAIN COCKS AND FILL COOLING SYSTEM BEFORE OPERATING ENGINE," shall be securely attached in a conspicuous location within driver's compartment.

5.2.4 Air cleaner (oil-bath type). Air cleaner (oil-bath type) shall contain lubricating oil conforming to requirements of applicable drawing, specification, or lubrication order, filled to operating level. When air cleaner contains type P-10 preservative oil, grade 1 or 2 as applicable, operating level shall be attained by addition of the same grade oil, or lubricating oil conforming to Specification MIL-L-2104.

5.2.5 Engine crankcase. Engine crankcase shall contain lubricating oil conforming to requirements of applicable drawing, specification, or lubrication order, filled to operating level. When crankcase contains type P-10 preservative oil, grade 1 or 2 as applicable, operating level shall be attained by addition of the same grade oil, or lubricating oil conforming to Specification MIL-L-2104.

5.2.6 Engine preservation.

5.2.6.1 Gasoline engine. Gasoline engine shall be preserved in accordance with 5.1.7.1.

5.2.6.2 Diesel engines. Diesel engines shall be preserved in accordance with 5.1.7.2, as applicable.

5.2.7 Air compressor. Air compressor crankcase shall contain lubricating oil conforming to requirements of applicable drawing, specification, or lubrication order filled to operating level. When crankcase contains type P-10 preservative oil, grade 1 or 2, as applicable, operating level shall be attained by addition of the same grade oil, or lubricating oil conforming to Specification MIL-L-2104.

5.2.8 Batteries, cables and electrolyte. Batteries, cables and electrolyte shall be processed in accordance with 5.1.9.

5.2.9 Exhaust system. When required for reduction in cube, upper section of vertical tailpipe shall be removed, coated with type P-1 preservative, and stowed with other OVE. Opening of vertical tailpipes, unless protected by a raincap, or opening left by disassembly, shall be sealed with tape conforming to type III, class 1 of Specification PPP-T-60.

5.2.10 Vehicular fuel tanks. When draining of fuel tanks has not been specified, residual fuel may remain in the fuel tank.

5.2.11 Brake systems.

5.2.11.1 Hydraulic brakes. Brake system shall be filled with operational hydraulic brake fluid in accordance with applicable drawing, specification, or lubrication order.

5.2.12 Vehicle cabs.

5.2.12.1 Hard-top cab. Windows shall be opened $\frac{1}{2}$ inch for ventilation and, when applicable, cab air vents shall be left in open position.

5.2.12.2 Soft-top and open-type cabs. For domestic shipment, soft-top and open-top cabs shall be processed in accordance with 5.1.15.2. For oversea shipment, when required for reduction in cube, top shall be removed, thoroughly dried, folded, or rolled in a manner to avoid creasing of plastic windows, packaged in accordance with Method IC-5 of Specification MIL-P-116, and packed in a nailed wood box conforming to Specification PPP-B-621. Box

MIL-STD-281A

14 October 1960

shall be identified and stowed with other OVE. Windshield shall be secured in folded-down position. Door glass shall be rolled down to maximum extent, and door glass slit sealed with tape conforming to type III, class 1 of Specification PPP-T-60.

5.2.13 Vehicle bodies.

5.2.13.1 Cargo and command bodies. When required for reduction in cube, cover, bows, troop seats, and side racks shall be removed and packaged in accordance with 5.1.16.1.

5.2.13.2 Dump body. Hydraulic system shall be filled to operating level with operational hydraulic fluid. When required for reduction in cube, cab protector rack, except when welded, shall be removed and secured within body. Removed hardware and unpainted surfaces exposed by disassembly shall be coated with type P-1 preservative, and hardware reinstalled into one of the mating parts.

5.2.13.3 Van, ambulance, panel utility, and maintenance truck bodies. Bodies shall be preserved in accordance with 5.1.16.3.

5.2.13.4 Jeep body. When required for reduction in cube, top, end curtains, and windshield wiper arms and blades shall be removed and packaged in accordance with 5.1.16.4, except that seat backs and cushions, dash panel, including defroster vents, and horn button shall not be preserved.

5.2.13.5 Fuel tank body. Fuel tank body shall be preserved in accordance with 5.1.16.5.

5.2.13.5.1 Fuel pumping system. Fuel pumping system shall be preserved in accordance with 5.1.16.5.1, except that engine crankcase shall contain lubricating oil conforming to requirements of applicable drawing, specification, or lubrication order, filled to operating level. When crankcase contains type P-10 preservative oil, grade 1 or 2 as applicable, operating level shall be attained by addition of the same grade oil, or lubricating oil conforming to Specification MIL-L-2104.

5.2.13.6 Water tank body. Water tank body shall be cleaned and preserved in accordance with 5.1.16.6.

5.2.13.6.1 Water pumping system. Water pumping system shall be processed in accordance with 5.1.16.6.1.

5.2.14 Inverted trailers. When trailers are to be inverted for shipment, trailers shall be processed in accordance with 5.1.17, except that filler plug and vent assembly shall be placed in a water resistant bag, and bag shall be secured to master cylinder.

5.2.15 Miscellaneous preservation. Miscellaneous preservation shall be in accordance with 5.1.18.

5.2.16 Winch and derrick assemblies. Winch and derrick assemblies shall be processed in accordance with 5.1.19.

5.3 LEVEL C (MOBILE) PRESERVATION AND PACKAGING. The preservation and packaging requirements specified for this level are intended to provide adequate protection for immediate use domestic shipments from supply source to the first receiving activity. This level may conform to suppliers commercial practice when such practice meets the requirements of this level.

5.3.1 Cooling system. When specified (see 7.1), cooling system shall contain a clean solution consisting of equal parts by volume of anti-freeze (ethylene glycol) conforming to type I of Specification O-A-548, and water filled to capacity.

5.3.2 Batteries, cables and electrolyte. When dry charged batteries are furnished, battery shall be secured in place in vehicle battery carrier. Electrolyte for dry charged batteries shall be packaged and packed in containers conforming to Specification MIL-P-207 (see 7.3).

5.3.3 Vehicular fuel tanks. When draining of fuel tanks has not been specified, residual fuel may remain in the fuel tank.

5.3.4 Cargo, command, van, ambulance, panel utility, and maintenance truck bodies. Body drains and ventilators shall be placed in open position to prevent accumulation of water, and to provide all possible ventilation.

5.3.5 Fuel tank body. Fuel tank drains shall

MIL-STD-281A
14 October 1960

be placed in open position. Drain openings shall be screened to prevent entry of insects and rodents. Hatches and doors shall be closed and secured.

5.3.6 Water tank body. Water tank body shall be cleaned and preserved in accordance with 5.1.16.6.

5.3.7 Inverted trailers. When trailers are inverted for shipment trailers shall be preserved in accordance with 5.1.17, except that filler plug and vent assembly shall be placed in a water resistant bag, and bag shall be secured to master cylinder.

5.4 LEVEL A (BOXED OR SKIDDED).

5.4.1 Preservation and packaging. Vehicles shall be preserved and packaged in accordance with 5.1, as applicable, with the following exceptions and additions.

5.4.1.1 Cooling systems. Cooling systems shall be filled with type P-3 preservative prior to engine preservation. After engine preservation, cooling systems shall be drained, and drain cocks left in open position. A warning tag, bearing the information "CLOSE DRAIN COCKS AND FILL COOLING SYSTEM BEFORE OPERATING ENGINE," shall be securely attached in a conspicuous location within driver's compartment.

5.4.1.2 Engine crankcase and lubricating systems. Engine crankcase shall be preserved in accordance with 5.1.6; except that, after engine preservation has been completed, the engine crankcase and all other lubricating systems that are separate from the engine crankcase shall be drained. The drain plugs shall be coated with the preservative oil and reinstalled.

5.4.1.3 Batteries, cables and electrolyte. Dry charged batteries, cables and electrolyte shall be preserved and packaged in accordance with 5.1.9.

5.4.1.4 Wheels, axles, and bearings. When wheels and hubs are removed from axles, the interior bearing surfaces of the hubs and the exterior bearing surfaces of the axles shall be coated with type P-6 preservative. The coated

surfaces of the axles shall be wrapped with barrier-material conforming to type II, grade A, class 2 of Specification MIL-B-121, then over-wrapped with barrier-material conforming to type I of Specification MIL-B-130, secured in place with tape conforming to type III, class 1 of Specification PPP-T-60. Opening of the hubs shall be covered with barrier-material conforming to type II, grade A, class 2 of Specification MIL-B-121, and secured with the same type and class tape. Bearings removed from the wheels shall be preserved and packaged in accordance with Method IA-8 of Specification MIL-P-116, applying type P-6 preservative, and a preliminary wrap of barrier-material conforming to type II, grade A, class 2 of Specification MIL-B-121.

5.4.1.5 Rubber tires. Tires mounted on rims and wheel (spare tires and tires removed from the chassis) shall be inflated to $\frac{2}{3}$ of pressure recommended for maximum load (see 5.1.22).

5.4.1.6 Lamps. Lamps and reflector lenses removed from the vehicle shall be preserved in accordance with Method IC-5 of Specification MIL-P-116.

5.4.1.7 Intermediate packaging.

5.4.1.7.1 Parts removed by disassembly. Unit packages and unpackaged parts removed by disassembly and accessories such as lamps, bearings, and repair parts shall be intermediate packaged in nailed wood boxes conforming to class 2, style optional, of Specification PPP-B-621, or in wood cleated-plywood boxes conforming to overseas type, style optional, of Specification PPP-B-601. The boxes for skidded preparation shall be strapped in accordance with the appendix to the applicable box specification. Strapping shall conform to type I, class B of Specification QQ-S-781. The boxes for boxed preparation shall not require strapping.

5.4.2 Packing.

5.4.2.1 Boxed vehicles.

5.4.2.1.1 Truck chassis. Except where a specific packing instruction has been developed for a particular item by the agency concerned and is so specified in the contract or order, basic units, packaged and unpackaged parts removed

MIL-STD-281A
14 October 1960

by disassembly and the repair parts comprising a complete vehicle shall be packed in wood crates conforming to type I, class I, style a or b of Specification MIL-C-104. An inspection door shall be provided at one end of the crate to afford accessibility for inspection of battery (see 5.4.2.3), and to permit removal of battery when required.

5.4.2.1.2 Trailers and trailer dollies. Except where a specific packing instruction has been developed for a particular item by the agency concerned and is so specified in the contract or order, basic units, packaged and unpackaged parts removed by disassembly, and the repair parts comprising a complete vehicle shall be packed in wood crates conforming to type I, class I, style a or b of Specification MIL-C-104.

5.4.2.2 Skidded vehicles.

5.4.2.2.1 Trailers and trailer dollies. Unless otherwise specified, packing shall be accomplished by placing skids of proper size and length to support the entire trailer adequately under the trailer-bed frame, and by securely bolting the skids to the trailer frame. Packaged and unpackaged parts removed by disassembly shall be nested, blocked, braced, and anchored in position on the platform bed or in the body of the trailer by bolting and strapping. Strapping shall conform to type I or II, class B, size as applicable of Specification QQ-S-781. A superstructure shall be placed over the nested parts and the bed of the trailer, and shall be firmly secured in position. The skids and the superstructure shall be constructed in accordance with Specification MIL-C-104.

5.4.2.3 Arrangements, blocking, bracing, and anchoring. Battery shall be placed and secured to the base of the crate, adjacent to the inspection door of the crate (see 5.4.2.1.1). Tires and wheels removed from the vehicle shall be secured to the base of the crate or to the vehicle by bolting and strapping. Strapping shall conform to Specification QQ-S-781, size as applicable. Cushioning shall be placed between tires and wheels and supporting surfaces and under all strapping to prevent damage to the tires and wheels. Blocking, bracing, and anchoring shall

be in accordance with the appendix to the crate specification. The crate shall be closed and strapped in accordance with the crate specification.

5.4.2.4 Performance. The packaging and packing for boxed preparation shall be capable of withstanding one of the tests described in 6.13.2 without shifting of contents or loosening or breaking of holddowns, ties, stays, blocking, or bracing.

5.4.2.5 Pilot pack. Before the vehicles are packed in quantity, a pilot pack shall be submitted to determine conformance to the packing requirements specified herein, except that, the pilot pack will not be required when the vendor has previously had such a pack tested and accepted for identical equipment on a Military contract, and can furnish evidence that the equipment is being packed identically with the approved pack. Approval of the pack shall not relieve the contractor of his obligation to preserve, package, and pack the equipment in accordance with this standard.

5.5 LEVEL B (BOXED OR SKIDDED).

5.5.1 Preservation and packaging. Unless otherwise specified, vehicles shall be preserved and packaged in accordance with 5.4.1.

5.5.2 Packing. The vehicles, parts removed by disassembly, repair parts, tools and publications shall be packed in accordance with 5.4.2, except that intermediate containers and boxes for maintenance tools and technical publications shall conform to class I of Specification PPP-B-621, and domestic type of Specification PPP-B-601.

5.6 LEVEL C (BOXED OR SKIDDED).

5.6.1 Preservation and packaging. The vehicles, parts removed by disassembly repair parts, tools and publications shall be preserved and packaged in accordance with the supplier's standard practice.

5.6.2 Packing. The vehicles, parts removed by disassembly, repair parts, tools, and publications shall be packed to insure carrier acceptance

MIL-STD-281A
14 October 1960

and safe delivery to destination in compliance with Official Classification Committee Uniform Freight Classification Rules, or with National

Motor Freight Classification (see 2.2), or with other carrier rules applicable to the mode of transportation.

MIL-STD-281A
14 October 1960

6. QUALITY ASSURANCE PROVISIONS

6.1 INSPECTION AT A GOVERNMENT ACTIVITY. When initial processing is conducted at a Government activity, the inspection requirements shall be the responsibility of the Government inspector.

6.2 CONTRACTOR INSPECTION. The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supply and services conform to prescribed requirements.

6.2.1 Contractor and Government manufacturing facilities inspection system. The contractor and Government manufacturing facilities shall provide and maintain an effective inspection system acceptable to the Government covering the supplies under the contract. A current written description of the system shall be submitted to the contracting officer prior to initiation of production. The contractor will not be restricted to the inspection station or to the method of inspection listed provided that an equivalent control is included in the approved inspection procedure. The contractor shall notify the Government of, and obtain approval for, any change to the written procedure that might affect the degree of inspection required by this standard or other applicable documents referenced therein.

6.3 MATERIALS USED IN PROCESSING. Except for materials which have been Government inspected at the source, all materials to be used in processing shall be subjected to the inspection and tests specified for acceptance in the detail specification; or certified inspection and test reports shall be furnished which show that the material, as supplied, conforms to the requirements of the detail specification.

6.4 PROCESSING OPERATION RECORDS. Such records, forms, or other related Government record keeping documents shall be the responsibility of the contractor for the preparation of all phases of vehicle processing i.e., DA Form 9-3, Processing Record for Shipment and Storage of Vehicles and Boxed Engines.

6.5 GOVERNMENT-FURNISHED MATERIAL. When material is furnished by the Government, the contractor's written procedure shall provide for the following minimum requirements: examination upon receipt, inspection for completeness, proper storage and handling, testing (as required), and suitable records. In addition, the contractor shall report without delay to the responsible property administrator, any Government-furnished material found damaged, deteriorated, or otherwise unsuitable for use.

6.6 SPECIAL PROCESSES. When approval of certification of processes, equipment or operating personnel is required under this standard or applicable contractual documents, the contractor shall assure the Government of being fully qualified to perform such special processes.

6.7 GOVERNMENT VERIFICATION. All inspection operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of (a) surveillance of the operations to determine that practices, methods, and procedures of the written inspection plan are being properly applied, and (b) Government product inspection to measure quality of product offered for acceptance. Deviation from the prescribed or agreed upon procedures, or instances of poor practices which might have an effect upon the quality of the product, will be immediately called to the attention of the contractor. Failure of the contractor to promptly correct deficiencies discovered shall be cause for suspension of acceptance until correction has been made or until conformance of product to prescribed criteria has been demonstrated. To avoid interference with operations, the contractor shall designate a responsible official or officials to whom the Government inspector will report such instances.

6.8 AMOUNT OF INSPECTION. Vehicle processing and preservation methods shall be inspected using one of the following systems:

- (a) One hundred percent inspection.
- (b) Statistical sampling in accordance with Standard MIL-STD-105.
- (c) Equivalent system of inspection, subject to the approval of the Government, which will assure a quality level comparable to Standard MIL-STD-105.

6.9 METHOD.

6.9.1 Inspection. Inspection shall be by classification of defects indicated in table I.

6.9.1.1 Inspection level. Inspection level II of Standard MIL-STD-105 shall be used.

6.9.1.2 Reduced inspection. During the course of the contract where sufficient quality history has been generated reduced inspection may be instituted, subject to Government approval, provided all conditions set forth in Standard MIL-STD-105 are satisfied.

6.9.1.3 Acceptable quality levels (AQL). Acceptable quality levels shall be as follows:

Classification	AQL
Major	25 defects per 100 units
Minor	40 defects per 100 units

6.9.2 Lots. A lot shall consist of all vehicles of the same general type (van trucks, semitrailer vans, cargo trucks, fuel tank trucks, water tank trucks, etc.) processed during a working day.

6.9.3 Samples. A sample of end items shall be selected from each lot of end items. The size of the sample shall depend on the appropriate inspection level and lot size. Biased methods for selecting samples shall be avoided. Tables of random numbers or similar devices shall be used for the selection of samples. The choice of items to be selected shall be made by inspection personnel.

6.9.3.1 Lots accepted. Lots that are accepted or approved on basis of sampling inspection results shall be readied for shipment under the requirements of the contract.

6.9.3.2 Lots rejected. Lots that are rejected on the basis of sampling inspection results shall be kept separate from regular production items and so identified. Identity of rejected lots shall be retained if resubmitted for rework or until disposed of.

6.10 PREPRESERVATION INSPECTION. Unless otherwise specified, all vehicles, prior to application of preservatives, shall be visually examined to determine conformance to cleaning and drying (see 4.1), presence of record forms (see 4.6), and presence of markings (see 4.10).

6.11 INSPECTION AND ACCEPTANCE. Only those vehicles meeting the requirements of section 6 of this standard and applicable contractual documents shall be submitted to the Government inspector for acceptance.

6.12 NONCONFORMING MATERIAL.

6.12.1 Contractor processed vehicle. Procedures shall be prepared for control of nonconforming material. Such material shall be diverted from normal material movement channels. All nonconforming material shall be adequately marked as such, and every precaution shall be taken to prevent use of material until disposition is made. A holding area mutually agreeable to the contractor and Government inspector shall be provided.

6.12.2 Vehicles processed at a Government activity. Material found nonconforming at a Government activity shall be subject to adequate controls and necessary corrective action sufficient to assure compliance with the requirements of this standard.

6.13 TESTS.

6.13.1 Fuel and oil mixture test. When type P-10, grade 2 preservative oil is reused for processing of gasoline fuel tanks, the drained preservative oil from 1 out of every 5 vehicles shall be tested to determine conformance to 5.1.12.1. An American Petroleum Institute (API) hydrometer shall be used to measure dilution of preservative oil with gasoline. API indicated degrees shall be converted to percent dilution in accordance with the following:

MAIL-STD-281A
14 October 1960

<i>Percent displacement</i>	<i>API degrees</i>
0	23.0°
5	24.4°
10	26.4°

6.13.2 Pilot pack tests. To determine if the pilot pack is adequately blocked, braced, and anchored; and that provisions have been made to prevent shifting of contents of the pack, the pilot pack shall be subjected to one of the following impact tests. The railroad car method shall be used whenever such facilities are available. The crane and drop method are alternate methods and shall be used in that order of preference only when facilities for the railroad car method are not available.

6.13.2.1 Railroad car method. The pack shall be securely blocked to prevent movement on the car. Antiskid plates shall not be used for this test. The car shall be humped or shunted to cause impact at approximately 10 miles per hour.

6.13.2.2 Crane method. The pack shall be raised with a crane and slings or grabhooks to a height sufficient to allow the pack to swing clear

of the ground. The pack shall be swung, causing one end or corner to strike against a solid barrier at a speed of approximately 8 miles per hour. This can be accomplished by pulling the pack back and up along the arc of free swing until the center of balance reaches a point approximately 27 inches above its original position (also point of impact) measured vertically. The test shall be repeated for the opposite end of the pack.

6.13.2.3 Drop method. One end of the pack shall be mounted on a wood sill 5 or 6 inches high, placed at right angles to the skids. The opposite end shall then be raised to a height of 36 inches and allowed to fall freely to a hard surface. This test shall be applied once to each end of the pack.

6.13.2.4 Examination after test. After the pilot pack test, the pack shall be examined to determine conformance to 5.4.2.4. Any deficiencies shall be corrected by redesign, and the pack retested to determine conformance to this standard.

MIL-STD-281A
14 October 1960

7. NOTES

7.1 ORDERING DATA. Procurement documents should specify the following:

- (a) Title, number, and date of this standard.
- (b) Selection of mobile, boxed, or skidded condition of preparation for shipment and storage (see 1.3).
- (c) If packaging and packing of on vehicle equipment in accordance with Specification MIL-P-12841 is required (see 4.7).
- (d) If transmission should contain type P-10 preservative oil (see 5.1.1.2.1).
- (e) Selection of applicable procedure of protection of cooling systems (see 5.1.4 and 5.2.3).
- (f) If dry charged batteries are to be secured in place in the vehicle battery carrier (see 5.1.9).
- (g) If draining of fuel tank and spraying with type P-10 preservative oil is required (see 5.1.12.2).
- (h) If disassembly of the clutch and preservation of metal surfaces of operating parts is required (see 5.1.13.1).
- (i) If removal of clutch cover plates and preservation of accessible metal surfaces within the housing is required (see 5.1.13.2).
- (j) If preservation of interior surfaces enclosed within brakedrums and face of the brakedrum is required (see 5.1.14.1 and 5.1.14.6).
- (k) If preservation of working surfaces covered by piston dust shield is required (see 5.1.14.2).
- (l) If removal of plugs and hose from hous-

ings and connectors and preservation of interior surfaces of the vacuum booster is required (see 5.1.14.5.1).

- (m) If preservation and packaging of special equipment other than in accordance with applicable specifications is required (see 5.1.16.3).
- (n) If preservation and packaging of repair parts in accordance with Specifications MIL-P-116, MIL-R-196, and MIL-P-11875 is required (see 5.1.20).
- (o) If preservation and packaging of tools in accordance with Specification MIL-P-15424 is required (see 5.1.21).
- (p) If packaging of technical publications in accordance with Method IC-3 of Specification MIL-P-116 is required (see 5.1.23).
- (q) If protection of cooling system with water and antifreeze is required (see 5.3.1).

7.2 PRESERVATIVE AND DRAIN PROCEDURE. Protection of cooling systems using type P-3 preservative (see 5.2.3.4) is not being specified for Ordnance Corps use.

7.3 ELECTROLYTE. Specification MIL-P-207 is in process of revision and will contain the latest requirements pertaining to packaging and packing of electrolyte. When the revision B of Specification MIL-P-207 is available for use, electrolyte should be packaged and packed in accordance with the applicable requirements prescribed for packaged electrolyte units in polyethylene bottle, heat sealed, in a fiber box.

TABLE I. Inspection characteristics

Items	Fluid level	Coating	Drains	Warning tags	Doors and hatches secured	OVE	Other	Inspection type and equipment a—visual b—process c—SIEI	Classification of defects	
									Major	Minor
Chassis relubrication. Record forms		4.5						a a	Improper lubrication. Missing or improperly completed.	
Tarpaulins						4.7.1	Packing box	a, b	Improper packaging and packing.	Improper storage.
Intervehicular jumper cable. Marking							Secure cable 4.8 4.10	a a	Not secured properly. Incomplete data, missing, improper location or size.	
Transmissions	5.1.1 5.2.1 5.4.1			5.1.1.2.1				a, b	Low level. Leaks. Drain plug loose. Check plug loose. No warning tag.	Overlubrication. Warning tag improperly placed.
Differentials, transfer axles, and power takeoff axles.	5.1.2 5.2.2 5.4.1							a, b	Low level. Leaks. Drain plug loose. Check plug loose.	Overlubrication.
Propeller shafts		5.1.3 5.4.1						a	No preservative compound. Dirt in splines. Uneven application.	

MIL-STD-281A
 14 October 1960

MIL-STD-281A
 14 October 1960

Cooling systems...	5.1.4 5.2.3 5.3.1	5.2.3.1 5.2.3.2 5.2.3.3 5.2.3.4 5.4.1.1	5.1.4 5.2.3 5.3.1 5.4.1.1	b, c	Low level. Improper mixture. Leaking drains. Leaking freeze plugs. No warning tag. Low level. Improper coating.	Warning tag improperly placed.
Air cleaner...	5.1.5 5.2.4 5.4.1	5.1.5	a	a	Loose carburetor clamp. Loose assembly nut.	
Engine crankcase.	5.1.6 5.2.5 5.4.1.2	5.1.6 5.2.5 5.4.1.2	a	a	Low level. Leaks. Drain plugs loose. Improper application. Improper method. No warning tag.	Warning tag improperly placed.
Engine preservation: Gasoline Diesel	5.1.7.1 5.2.6.1 5.4.1 5.1.7.2 5.2.6.2 5.4.1	5.1.7.1 5.2.6.1 5.4.1 5.1.7.2 5.2.6.2 5.4.1	a, b, c	a, b, c		
Air compressor...	5.1.8 5.2.7 5.4.1.2	5.1.8 5.2.7 5.4.1.2	a, b, c	a, b, c	Low crankcase level. Improper application. Drain plugs loose.	Improper packaging and packing. Improper stowage. Tension not relieved. Warning tag improperly placed.
Batteries, cables and electrolyte.				a		
Drive belts.		5.1.10 5.4.1	5.1.0 5.2.8 5.4.1.3	a	No warning tag.	

TABLE I. *Inspection characteristics* - Continued

Items	Fluid level	Coating	Drains	Warning tags	Doors and hatches secured	OVE	Other	Inspection type and equipment a - visual b - process c - SIEP	Classification of defects	
									Major	Minor
Exhaust system.		5.1.11 5.2.9 5.4.1				5.1.11 5.2.9 5.4.1		a, b	Improper coating. Improperly taped. Opening without tape.	Improper storage.
Vehicular fuel tanks.		5.1.12 5.4.1	5.1.12 5.4.1				5.2.10 5.3.3	a, b	Improper preservation. Excessive gasoline in preservative compound. Improper coating. Filler cap not replaced.	Drain plug not replaced.
Disc-type clutch.		5.1.13 5.4.1	5.1.13 5.4.1	5.1.13 5.4.1				a, b	Improper preservation. Drain plug not removed. Improper materials. No warning tag.	Warning tag improperly placed.
Brake systems.		5.1.14 5.1.14.1 5.4.1		5.1.14.1 5.4.1				a, b	Improper preservation. Improper application of coating. No warning tags.	Warning tag improperly placed.
Hydraulic brakes.	5.1.14.3 5.2.11.1 5.4.1	5.1.14.3 5.2.11.1 5.4.1						a, b	Air in brake system. Improper fluid level.	Cap improperly coated.
Airbrakes (including reservoir).	5.1.14.4 5.4.1	5.1.14.4 5.4.1	5.1.14.4 5.4.1	5.4.14.4 5.4.1			Tap	a, b, c	Condensate not drained. Drains closed.	Warning tag improperly placed.

28

1/11-STD-281A
14 October 1960

MIL-STD-281A
 14 October 1960

Air-hyd. brakes (including reservoir).	6.1.14.5 5.4.1	5.1.14.6 5.4.1	5.1.14.5 5.4.1	5.1.14.5 5.4.1	Tape	a, b, c	No warning tag. Condensate not drained. Drain plugs not coated. Drains closed. No warning tag. Improperly taped openings and vents. No warning tag. Improper coating. Improper lubrication. Drains closed or clogged.	Warning tag improperly placed.
Electric brakes.	5.1.14.6 5.4.1	5.1.14.6 5.4.1	5.1.14.6 5.4.1	Tape	a, b	Warning tag improperly placed.	Warning tag improperly placed.	
Hard-top cab.	5.1.15.1 5.4.1	5.1.15.1 5.4.1	5.1.15.1 5.4.1	Windows, arma vents 5.2.12.1. Locks lubricated. W/S wiper arma and blades removed.	a, b	Windows and vents not opened.	Windows and vents not opened.	
Soft-top and open-type cabs.	5.1.15.2 5.2.12.2 5.4.1	5.1.15.2 5.2.12.2 5.4.1	5.1.15.2 5.2.12.2 5.4.1	Vents. Packing box. Windshield. Locks lubricated. W/S wiper arma and blades removed.	a, b	Improper coating. Improper lubrication. Drains closed. Improper packing and taping.	Improper stowage.	
Cargo and command bodies.	5.1.16.1 5.2.13.1 5.4.1	5.1.16.1 5.2.13.1 5.4.1	5.1.16.1 5.2.13.1 5.4.1	Packing box. Bows. Hardware. Tape.	a, b	Improper coating. Improper packing. Drains closed or clogged.	Improper stowage.	

TABLE I. Inspection characteristics (Continued)

Items	Fluid level	Coating	Drains	Warning tags	Doors and hatches secured	OVE	Other	Inspection type and equipment a - visual b - process c - SIEU	Classification of defects	
									Major	Minor
Dump body		5.1.16.2 5.2.13.2 5.4.1	5.1.16.2 5.2.13.2 5.4.1				Cal protector ruck	a, b	Improper coating. Improper packing. Hydraulic system not properly filled.	Improper stowage.
Van, ambulance, panel, utility, and maint. truck bodies.		5.1.16.3 5.2.13.3 5.4.1	5.1.16.3 5.2.13.3 5.3.4 5.4.1		5.1.16.3 5.2.13.3 5.4.1		Electrical equipment. Special equipment.	a, b	Drains and vents not open. Improper taping. Special equipment not treated properly.	
Jeep body						5.1.16.4 5.2.13.4 5.4.1	Vents. Packing box. Windshield. Tape. W/W arms and blades removed.		Improper packing. Improper covering. Improper taping.	
Fuel tank body		5.1.16.5 5.2.13.5 5.4.1	5.1.16.5 5.2.13.5 5.3.5 5.4.1		5.1.16.5 5.2.13.5 5.3.5 5.4.1			a, b	Drain closed. Hatches open. Improper material. Improper coating.	Door not secured.
Fuel pump system.		5.1.16.5.1 5.2.13.5.1	5.1.16.5.1 5.2.13.5.1	5.1.16.5.1 5.2.13.5.1				a, b	Improper material. Improper coating. No warning tag.	Warning tag improperly placed.

MIL-STD-281A
 14 October 1960

MIL-STD-281A
 14 October 1960

Water tank body	5.1.10.6 5.2.13.6 5.3.6 5.4.1	5.1.10.6 5.2.13.6 5.3.6 5.4.1	5.1.16.6 5.2.13.6 5.3.6 5.4.1			a, b	Drain openings improperly covered. Improper coating. Tape openings open. Drain openings improperly covered. Improper coating. Solid plugs not used in master cylinder. Improper packing and warning tag. Improper coating. Improper material. Improper coating. Gear case not properly filled. Improper coating. Improper packaging and packing. Not secured properly. Improper pressure. Improper coating. Improper packaging and packing.	Drain closed. Drain plugs improperly packaged. Forward outlet hatches open.
Water pump system	5.1.16.6.1 5.2.13.6.1	5.1.16.6.1 5.2.13.6.1	5.1.16.6.1 5.2.13.6.1			a, b		
Inverted trailers	5.1.17 5.2.14 5.3.7 5.4.1	5.1.17 5.2.14 5.3.7 5.4.1	5.1.17 5.2.14 5.3.7 5.4.1	Vent plug. Package. Wheels. Tape.		a, b		Warning tag improperly placed.
Miscellaneous preservation.	5.1.18 5.2.15 5.4.1	5.1.18 5.2.15 5.4.1		Padlocks.		a, b		
Winch and derrick ways.	5.1.19 5.2.16 5.4.1	5.1.19 5.2.16 5.4.1		Tape		a, b		
Gear chain drives. Repair parts	5.1.19.1 5.4.1 5.1.20	5.1.19.1 5.4.1 5.1.20				a		
Tools				Packing box.		a, b		
Rubber tires				Secure lid		a, b		
Wheels, axles, and bearings.	5.4.1.4	5.4.1.4		Inflate tires		a		
						a, b		

Notes: Level of processing inspection
 (Standard or Special Inspection Equipment (SIE)).
 Paragraph 4 series denotes general requirements.
 Paragraphs 5.1 and 5.4 series denotes level A requirements.
 Paragraphs 5.2 and 5.5 series denotes level B requirements.
 Paragraphs 5.3 and 5.6 series denotes level C requirements.

MIL-STD-281A
14 October 1960

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Notice of availability. Both the title and identifying symbol number should be stipulated when requesting copies of Military standards. Copies of this Military standard may be obtained by directing requests as follows:

For Department of the Army agencies, to Chief of the specific agency or as directed by that agency.

For Department of the Army contractors, to the Contracting Officer.

Custodians:
Army—Ord
Navy—Docks
Air Force—MEM

For Department of the Navy activities, to the Receiving Officer, Naval Supply Depot, 5801 Tabor Ave., Philadelphia 20, Pa.

For Department of the Navy contractors, to the Bureau of Supplies and Accounts, Code A-13, Washington 25, D. C.

For the Marine Corps, to the Commandant of the Marine Corps, Code CSI, Headquarters, USMC, Washington 25, D. C.

For Department of the Air Force activities and Air Force contractors, to the Commanding General, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

Copies of this Military standard may be obtained for other than official use by individuals, firms, and contractors from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Preparing activity:
Army—Ord

MIL-STD-281A
 14 October 1960

INDEX

	Paragraphs	Pages
Absorbers, shock (airplane-type)	5.1.17	15
Air cleaner (oil bath-type)	5.1.5, 5.2.4	7, 17
Air compressor	5.1.8, 5.2.7	10, 17
Air Reservoir	5.1.14.4	11
Axles	5.4.1.4	19
Batteries, cables and electrolyte	5.1.9, 5.2.8, 5.3.2, 5.4.1.3	10, 17, 18, 19
Bearings, wheel	5.4.1.4	19
Belts, drive	5.1.10	10
Bodies, vehicle	5.1.16, 5.2.13	12, 18
Cargo and command	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Dump	5.1.16.2, 5.2.13.2	13, 18
Fuel tank	5.1.16.5, 5.2.13.5, 5.3.5	13, 18
Jeep	5.1.16.4, 5.2.13.4	13, 18
Water tank	5.1.16.6, 5.2.13.6, 5.3.6	14, 18, 19
Van, ambulance, panel utility and truck maintenance	5.1.16.3, 5.2.13.3, 5.4.3	13, 18
Boom, crane or derrick	5.1.19, 5.2.16	15, 18
Bows	5.1.16.1, 5.2.13.1	13, 18
Brake systems	5.1.14, 5.2.11	11, 17
Air	5.1.14.4	11
Air-hydraulic	5.1.14.5	11
Electric	5.1.14.6	12
Hydraulic	5.1.14.3, 5.2.11.1	11, 17
Button, horn	5.1.15.2, 5.1.16.4, 5.2.12.2,	12, 13, 17, 18
	5.2.13.4	
	5.1.16.2, 5.2.13.2	13, 18
Cab protector rack		
Cables:	5.1.9, 5.2.8, 5.3.2, 5.4.1.3	10, 17, 18, 19
Battery	4.8	5
Intervehicular (jumper)	5.1.15, 5.2.12	12, 17
Cabs, vehicle	5.1.15.1, 5.2.12.1	12, 17
Hard top	5.1.15.2, 5.2.12.2	12, 17
Soft top and open-type	5.1.19, 5.2.16	15, 18
Cases, gear	5.1.16.2	13
Chains, tailgate	4.5	5
Chassis relubrication	5.1.5, 5.2.4	7, 17
Cleaner, air (oil-bath type)	4.1	5
Cleaning and drying	5.1.13	10
Clutch, disc-type	5.1.8, 5.2.7	10, 17
Compressor, air	5.1.4, 5.2.3, 5.3.1, 5.4.1.1	7, 16, 18, 19
Cooling systems	5.2.3.2	16
Antifreeze compound procedure	5.2.3.4	17
Preservative and drain procedure	5.2.3.1	16
Water and antifreeze procedure	5.2.3.3	16
Water and corrosion inhibitor procedure	5.1.16.1, 5.2.13.1	12, 18
Cover, cargo and command body		
Crankcase:	5.1.6, 5.2.5, 5.4.1.2	7, 17, 19
Engine	5.1.8, 5.2.7	10, 17
Air compressor	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Curtains, end	5.1.15.2, 5.1.16.4, 5.2.12.2,	12, 13, 17, 18
Cushions, seat backs and	5.2.13.4	
	5.1.15.2, 5.1.16.4	12, 13
Dash panel		
Definitions:	3.5	4
Inspection terms	3.3	4
Mobile	3.4	4
On-vehicle equipment		

MIL-STD-281A
14 October 1960

INDEX—Continued

	Paragraphs	Pages
Protection.....	3.1	4
Shipment.....	3.2	4
Defroster vents.....	5.1.15.2, 5.1.16.4	12, 13
Diaphragm-type chambers and pull-type cylinders.....	5.1.14.5.2	11
Differentials.....	5.1.2, 5.2.2	7, 16
Disassembly.....	4.3	5
Disc-type clutch.....	5.1.13	10
Doors.....	5.1.15.2, 5.1.16.3, 5.1.16.5	12, 13, 14
Door seals.....	5.1.15.1, 5.1.16.3, 5.1.16.5, 5.1.16.6	12, 13, 14
Door glass.....	5.1.15.2, 5.2.12.2	12, 17
Drive belts.....	5.1.10	10
Drives, gear chain.....	5.1.19.1	15
Electrolyte, packaging of.....	5.1.9, 5.2.8, 5.3.2, 5.4.1.3	10, 17, 18, 19
Engine crankcase.....	5.1.6, 5.2.5, 5.4.1.2	7, 17, 19
Engine preservation.....	5.1.7, 5.2.6	7, 17
Diesel.....	5.1.7.2, 5.2.6.2	8, 17
Gasoline.....	5.1.7.1, 5.2.6.1	7, 17
Exhaust system.....	5.1.11, 5.2.9	10, 17
Fifth wheels.....	5.1.18, 5.2.15	15, 18
Flywheel ring gear.....	5.3.13.1	11
Forms, record.....	4.6	5
Frame, chassis.....	5.1.18, 5.2.15	15, 18
Fuel compartments of fuel tank body.....	5.1.16.5, 5.2.13.5	13, 18
Fuel tank, vehicular.....	5.1.12, 5.2.10, 5.3.3	10, 17
Gear chain drives.....	5.1.19.1	15
Hardware.....	5.1.16.1, 5.1.16.2, 5.2.13.1, 5.2.13.2	12, 13, 18
Horn button.....	5.1.15.2, 5.1.16.4, 5.2.12.2, 5.2.13.4	12, 13, 17, 18
Hubs, wheel.....	5.4.1.4	19
Hydraulic system.....	5.1.16.2, 5.2.13.2	13, 18
Dump body.....	5.1.19, 5.2.16	15, 18
Winch and derrick assembly.....	5.1.19, 5.2.16	15, 18
Inspection access plate.....	5.1.15.1, 5.1.15.2, 5.2.12.1, 5.2.12.2	12, 17
Inspection terms (definition).....	3.5	4
Intervehicular (jumper) cable.....	4.8	5
Inverted trailers.....	5.1.17, 5.2.14, 5.3.7	14, 18, 19
Keys.....	5.1.15.1, 5.1.15.2, 5.1.16.4, 5.2.12.1, 5.2.12.2, 5.2.13.4	12, 13, 17, 18
Kingpins (fifth wheel).....	5.1.18, 5.2.15	15, 18
Lamps.....	4.9, 5.4.1.6	5, 19
Landing gear.....	5.1.18, 5.2.15	15, 18
Level A (boxed or skidded).....	5.4	19
Arrangements, blocking, bracing, and anchoring.....	5.4.2.3	20
Intermediate packaging.....	5.4.1.7	19
Packing.....	5.4.2	19
Preservation and packaging.....	5.4.1	19
Level A (mobile) preservation and packaging.....	5.1	7
Level B (boxed or skidded).....	5.5	20
Packing.....	5.5.2	20
Preservation and packaging.....	5.5.1	20

INDEX—Continued

	Paragraphs	Pages
Level B (mobile) preservation and packaging.....	5.2	16
Level C (boxed or skidded).....	5.6	20
Packing.....	5.6.2	20
Preservation and packaging.....	5.6.1	20
Level C (mobile) preservation and packaging.....	5.3	18
Loading.....	4.11	6
Highway shipment.....	4.11.2	6
Rail shipment.....	4.11.1	6
Locks.....	5.1.15.1, 5.1.15.2, 5.2.12.1, 5.2.12.2	12, 17
Marking.....	4.10	6
Matchmaking.....	4.4	5
Miscellaneous preservation.....	5.1.18, 5.2.15	15, 18
Fifth wheels.....	5.1.18, 5.2.15	15, 18
Frames.....	5.1.18, 5.2.15	15, 18
Kingpins.....	5.1.18, 5.2.15	15, 18
Landing gear.....	5.1.18, 5.2.15	15, 18
Padlocks.....	5.1.18, 5.2.15	15, 18
Pintle assemblies.....	5.1.18, 5.2.15	15, 18
Springs.....	5.1.18, 5.2.15	15, 18
Stabilizing jacks.....	5.1.18, 5.2.15	15, 18
Steering assembly.....	5.1.18, 5.2.15	15, 18
On vehicle equipment:		
Definition.....	3.4	4
Packaging and packing.....	4.7	5
Options:		
(paragraphs containing "when specified")		
Batteries, cables and electrolyte.....	5.1.9	10
Brake systems:		
Electric brakes.....	5.1.14.6	12
Housings and connectors.....	5.1.14.5.1	11
Interior surface of brake drum.....	5.1.14.1	11
Piston dust shield.....	5.1.14.2	11
Classification.....	1.3	1
Cooling systems.....	5.1.4, 5.2.3, 5.3.1	7, 13, 18
Disc-type clutch:		
Clutch disassembly.....	5.1.13.1	11
Clutch plate removal.....	5.1.13.2	11
On-vehicle equipment.....	4.7	5
Repair parts.....	5.1.20	15
Technical publications.....	5.1.23	16
Tools.....	5.1.21	15
Transmissions:		
Preservative oil method.....	5.1.1.2.1	7
Vehicle bodies:		
Van, ambulance, panel utility and maintenance truck bodies.....	5.1.16.3	13
Vehicular fuel tanks:		
Drain and spray method.....	5.1.12.2	10
Padlocks.....	5.1.18, 5.2.15	15, 18
Parking brake linkage.....	5.1.14	11
Pedal, clutch.....	5.1.13	10
Pintle assemblies.....	5.1.18, 5.2.15	15, 18
Plates, inspection access.....	5.1.15.1, 5.1.15.2, 5.2.12.1, 5.2.12.2	12, 17
Power take-off assemblies.....	5.1.2, 5.2.2	7-16

MIL-STD-281A
14 October 1960

INDEX—Continued

	Paragraphs	Pages
Preparation for shipment and storage:		
Boxed or skidded condition, level A	5.4	19
Boxed or skidded condition, level B	5.5	20
Boxed or skidded condition, level C	5.6	20
Mobile condition, level A preservation and packaging	5.1	7
Mobile condition, level B preservation and packaging	5.2	16
Mobile condition, level C preservation and packaging	5.3	18
Preservatives	4.2	5
Propeller shafts	5.1.3	7
Protection (definition)	3.1	4
Protector rack, cab (dump body)	5.1.16.2, 5.2.13.2	13, 18
Pumping system:		
Fuel tank	5.1.16.5.1, 5.2.13.5.1	14, 18
Water tank	5.1.16.6.1, 5.2.13.6.1	14, 18
Quality assurance provisions:		
Amount of inspection	6.8	23
Contractor inspection	6.2	22
Contractor and Government manufacturing facilities inspection system	6.2.1	22
Government furnished material	6.5	22
Government verification	6.7	22
Prepreservation inspection	6.10	23
Inspection and acceptance	6.11	23
Inspection at a Government activity	6.1	22
Lots	6.9.2	23
Materials used in processing	6.3	22
Method:		
Inspection level	6.9.1.1	23
Reduced inspection	6.9.1.2	23
Acceptable quality levels (AQL)	6.9.1.3	23
Nonconforming material	6.12	23
Processing operation records	6.4	22
Samples	6.9.3	23
Special processes	6.6	22
Tests	6.13	23
Racks, side	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Record forms	4.0	5
Reflector lenses	4.9	5
Repair parts	5.1.20	15
Reservoirs, air	5.1.14.4	11
Rubber seals	5.1.16.5, 5.1.16.6, 5.2.13.5, 5.2.13.6, 5.3.5, 5.3.6	13, 14, 18, 19
Rubber tires	5.1.22, 5.4.1.5	16, 19
Scope:		
Application	1.2	1
Classification	1.3	1
Coverage	1.1	1
Seat backs and cushions	5.1.15.2, 5.1.16.4, 5.2.12.2, 5.2.13.4	12, 13, 17, 18
Service air lines	5.1.14.4	11
Shipment (definition)	3.2	4
Shock absorbers (airplane-type)	5.1.17, 5.2.14	14, 18
Side racks	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Special equipment (when furnished with body)	5.1.16.3, 5.2.13.3, 5.3.4	13, 18
Splines, drive shaft	5.1.3	7
Springs	5.1.18, 5.2.15	15, 18

INDEX—Continued

	Paragraphs	Pages
Sprockets, chain.....	5.1.19.1	15
Stabilizing jacks.....	5.1.18, 5.2.15	15, 18
Stake pockets.....	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Starter drive.....	5.1.13.1	11
Steering assemblies.....	5.1.18, 5.2.15	15, 18
Straps, leather.....	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Tags, matchmarking.....	4.4	5
Tailgate chains.....	5.1.16.2, 5.2.13.2	13, 18
Tailpipe, vertical.....	5.1.11, 5.2.9	10, 17
Tarpaulins.....	4.7.1	5
Toolbox.....	5.1.21	15
Trailers, inverted.....	5.1.17, 5.2.14, 5.3.7	14, 18, 19
Transfer assemblies.....	5.1.2, 5.2.2	7, 16
Transmissions.....	5.1.1, 5.2.1	7, 16
Automatic drive.....	5.1.1.2, 5.2.1.2	7, 16
Standard drive.....	5.1.1.1, 5.2.1.1	7, 16
Troop seats.....	5.1.16.1, 5.2.13.1, 5.3.4	12, 18
Universal joints.....	5.1.2, 5.2.2	7, 16
Upper fifth wheel plate.....	5.1.18, 5.2.15	15, 18
Vacuum and vacuum hydraulic brakes.....	5.1.14.5	11
Vehicular fuel tanks.....	5.1.12, 5.2.10, 5.3.3	10, 17, 18
Ventilators, body.....	5.1.16.3, 5.2.13.3, 5.3.4	13, 18
Warning notices (paragraphs containing warning tags):		
Airbrakes.....	5.1.14.4	11
Cooling systems.....	5.4.1.1	19
Antifreeze compound procedure.....	5.2.3.2	16
Preservative and drain procedure.....	5.2.3.4	17
Water and antifreeze procedure.....	5.2.3.1	16
Water and corrosion inhibitor procedure.....	5.2.3.3	16
Diesel engines.....	5.1.7.2	8
Disc-type clutch.....	5.1.13	10
Drive belts.....	5.1.10	10
Electric brakes.....	5.1.14.6	12
Fuel pumping system.....	5.1.16.5.1	14
Gasoline engine.....	5.1.7.1	7
Interior surfaces of brakedrum.....	5.1.14.1	11
Inverted trailers.....	5.1.17	14
Transmissions (automatic drive) preservative oil method.....	5.1.1.2.1	7
Wheels, axles, and bearings.....	5.4.1.4	19
Winch and derrick assemblies.....	5.1.19, 5.2.16	15, 18
Windows.....	5.1.15.1, 5.2.12.1	12, 17
Windshield.....	5.1.15.2, 5.1.16.4, 5.2.12.2, 5.2.13.4	12, 13, 17, 18
Windshield wiper arms and blades.....	5.1.15.1, 5.1.15.2, 5.1.16.4, 5.2.12.1, 5.2.12.2, 5.2.13.4	12, 13, 17, 18
Wire cable.....	5.1.19, 5.2.16	15, 18

