INCH-POUND

MIL-S-13735D(AT)
7 March 1989
SUPERSEDING
MIL-S-13735C(AT)
13 November 1981

MILITARY SPECIFICATION

SWITCHES, TOGGLE: 28 VOLT DC

This specification is approved for use by the US Army Tank-Automotive Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers toggle switches for use in direct current (dc) electrical circuits. The toggle switch shall be referred to as "switch" herein (see 6.1).

1.2 Classification Switches shall be of the following types, classes, and grades as specified (see 6.2 and 6.6):

Type I	- Single-pole, single-throw.
Type II	- Single-pole, double-throw.
Type III	- Multipole, single-throw.
Type IV	- Multipole, multithrow.
Class A	- Momentary contact.
Class B	- Maintained contact.
Class AB	- Momentary and maintained contact
Grade 1	- Waterproof
Grade 2	- Nonwaterproof.

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

AMSC N/A FSC 5930

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2 APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-C-13486	- Cable, Special Purpose, Electrical: Low-Tension, Heavy Duty Single-Conductor and Multiconductor.
MIL-F-13927	- Fungus Resistance Test: Automotive Components.

STANDARDS

FEDERAL

FED-STD-H28	- Screw-Thread Standards for Federal Services Section 2 United Inch Screw Threads-UN and UNR Thread Forms.

MILITARY

MIL-STD-130	- Identification Marking of US Military Property.
MIL-STD-202	- Test Methods for Electronic and Electrical Component Parts.
MIL-STD-454	- Standard General Requirements for Electronic Equipment.
MIL-STD-1184	- Electrical Components for Automotive Vehicles: Waterproofness Tests.
MS33800	- Connector, Receptacle, Electrical-Pin Contact, No. 12, 14, & 16 A.W.G. Waterproof.
MS39061	- Switch, Toggle-SPST, SPDT 24 Volt DC, 25 Amp (Waterproof).

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

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2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B117 - Standard Method of Salt Spray (Fog) Testing.

(Application for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA, 19103.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification Switches furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list (QPL) at the time of award of contract (see 4.4 and 6.3)

3.2 Materials. Materials shall be as specified herein and in referenced specifications and standards (see 4.7.1).

3.2.1 Recycled, virgin and reclaimed materials. There are no requirements for the exclusive use of virgin materials. The use of recycled or reclaimed (recovered) materials is acceptable provided that all other requirements of this specification are met (see 6.4.1).

3.2.2 Solder. Solder and soldering flux shall conform to requirement 5 of MIL-STD-454 (see 4.7.1).

3.2.3 Metal parts. Metal parts shall be of a corrosion resistant material or shall be protected from corrosion in accordance with the manufacturer's standard practice or in accordance with the applicable MS standard or drawing (see 4.7.1).

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3.3 Design and construction. Switch dimensions and construction shall be in accordance with MS39061, or as specified by the procuring activity (see 4.7.1, 4.7.2 and 6.2).

3.3.1 Cable. Cable used in leads shall conform to type I of MIL-C-13486 (see 4.7.1 and 4.7.2).

3.3.2 Threaded parts. Screw threads of the form, number per inch, and class specified on the applicable drawing or military standard shall be in accordance with FED-STD-H28/2 (see 4.7.1 and 4.7.2).

3.3.3 Lever positions. Lever positions and locations of momentary and maintained contact positions shall be in accordance with the applicable MS standard or drawing (see 4.7.1 and 4.7.2).

3.3.4 Electrical connections. Electrical connections or terminals shall be in accordance with MS33800 or applicable drawing for each lever position (see 4.7.1 and 4.7.2).

3.4 Performance.

3.4.1 Electrical.

3.4.1.1 Contact voltage drop. The voltage drop across all pairs of closed electrical contacts shall be not more than 50 millivolts (mV) when the switch is carrying the rated resistive load current specified on the applicable MS or drawing (see 4.7.3).

3.4.1.2 Overload. The switch shall carry a current equal to 150 percent (%) of the rated resistive load current specified on the applicable MS or drawing without damage (see 4.7.4).

3.4.1.3 High voltage. The switch shall evidence no sparking, arcing, burning, smoking, charring, cracking, loosening, rupturing or damage after, or while, 440 V root mean square (rms) at 60 hertz (Hz) is applied for 1 minute to all pairs of open electrical contacts (see 4.7.5).

3.4.2 Mechanical.

3.4.2.1 Withstanding force. Unless otherwise specified on the applicable MS or drawing, the switch shall withstand a force of 25 pounds in all actuating directions without damage (see 4.7.6).

3.4.2.1.1 Connector or terminal strength. Connectors or terminals shall withstand a force of 25 pounds without deformation (see 4.7.6.1).

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3.4.2.2 Average operating force. The average force required to actuate the switch shall be in accordance with applicable MS standard or drawing except as specified in 3.5.5 (for low temperature). If no operating force is specified, the average operating force shall be 3/4 to 3 pounds for maintained positions and 2 to 3 1/2 pounds for momentary positions. Momentary position, on release, shall be self-cancelling. The average time required for the switch to return from a momentary contact shall be no more than 1 second (see 4.7.7).

3.5 Environmental.

3.5.1 Corrosion. Switch performance shall not be adversely affected by corrosion when exposed to 5% salt water spray for 200 hours (see 4.7.8).

3.5.2 Fungus. Switch performance shall not be adversely affected by fungus when subjected to the fungus resistance test of MIL-F-13927 for 90 days (see 4.7.9).

3.5.3 Sand and dust. Grade 2 switches shall not be adversely affected by sand and dust when subjected to test method 110 of MIL-STD-202 for 12 hours (see 4.7.10)

3.5.4 Waterproofness Grade 1 switch performance shall not be affected after submersion, nor shall the switch show signs of leakage during submersion (see 4.7.11).

3.5.5 Extreme temperature. Switches shall operate in a temperature range of -65 ± 2 degrees Fahrenheit (°F) [-54 ± 1 degrees Celsius (°C)] through 190 ± 2°F (88 ± 1°C). The material used in the switch body shall not shrink, crack, become brittle or soften. While at -65 ± 2°F (-54 ± 1°C), the force required to move the switch from any position to any adjacent position shall be no more than 140% of the average operating force previously determined at room temperature (see 4.7.12)

3.5.6 Ozone. Switches shall evidence no cracking of rubber boot nor shall switch loose waterproofness when exposed to an ozone concentration of 50 ± 5 parts per 100,000,000 parts of air at 100 ± 2°F (38 ± 1°C) for 168 hours (see 4.7.13).

3.5.7 Shock. Switch performance shall not be adversely affected after being subjected to mechanical shocks of 100 gravity units (g) (peak) of sawtooth waveform in both directions along each of the three major axes. There shall be no spurious opening or closing of circuits during the shock application (see 4.7.14)

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3.5.8 Vibration. Switches shall be subjected to vibration testing under electric-load conditions for not less than 1 hour in each of three perpendicular axes. Vibration shall not cause spurious opening or closing of contacts, loosening of parts, noise, wear or physical distortion to mechanical parts (see 4.7.15).

3.5.9 Endurance. The switch shall evidence no mechanical or electrical failure during or after 10,000 operations while connected to rated resistive and inductive loads (see 4.7.16).

3.6 Marking. In addition to any special marking specified on the applicable MS standard or drawing, switches shall be marked in accordance with MIL-STD-130 (see 4.7.1 and 4.7.2).

3.7 Workmanship. Workmanship shall be of the quality to assure a product free of burrs, rust, scratches, chips, sharp edges, loose or defective connectors, cracked insulation, faulty soldering, or other defects which affect serviceability or appearance (see 4.7.2).

4 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order (see 6.2), the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, it does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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4 2 Classification of inspections. The inspection requirements specified herein are classified as follows·

a. Qualification inspection (see 4.4).
b. Quality conformance inspections (QCI) (see 4.5).
   1. Examination (see 4.5.1).
   2. Acceptance tests (see 4.5.2).
c. Control tests (see 4.6)

4.3 Inspection conditions. Unless otherwise specified in the individual test procedures, tests shall be conducted under the following conditions:

a. Air temperature 77 ± 18°F (25 ± 6°C)
b. Barometric pressure 725 + 50 millimeters (mm) mercury
   - 75
c. Relative humidity 50 ± 30%
d. A cycle shall consist of one of the following sequences, as applicable: 3 ± 0.1 seconds in one position, 3 ± 0.1 seconds in the other position (switches without a center position) 3 ± 0.1 seconds in one extreme position and 3 ± 0.1 (again) in center position. If the switch has leads without waterproof connectors, the ends shall be sealed to prevent entry of moisture, fungus, or other contaminant.

4.4 Qualification inspection. For qualification inspection, the manufacturer shall furnish eight specimens of each type, class and grade of switch The sample specimens shall be representative of the units proposed to be furnished to the Government. Qualification inspection shall be conducted by the manufacturer under Government surveillance. Qualification inspection shall consist of testing as specified in table I in the order listed and examination for the defects specified in table II.

TABLE I. Qualification and sequence of testing.

Specimen	Description	Requirement	Test
1 and 2	Contact voltage drop	3.4.1.1	4.7.3
	Terminal strength	3.4.2.1.1	4.7.6.1
	Contact voltage drop	3.4.1.1	4.7.3
	High voltage	3.4.1.3	4.7.5
	Shock	3.5.7	4.7.14
	Vibration	3.5.8	4.7.15
	Average operating force	3.4.2.2	4.7.7
	Contact voltage drop	3.4.1.1	4.7.3
	High voltage	3.4.1.3	4.7.5
	Fungus	3.5.2	4.7.9

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TABLE I Qualification and sequence of testing - Continued.

Specimen	Description	Requirement	Test
	Average operating force	3.4.2.2	4.7.7
	High voltage	3.4.1.3	4.7.5
	Contact voltage drop	3.4.1.1	4.7.3
3 and 4	Contact voltage drop	3.4.1.1	4.7.3
	Withstanding force	3.4.2.1	4.7.6
	Average operating force	3.4.2.2	4.7.7
	Contact voltage drop	3.4.1.1	4.7.3
	Low temperature	3.5.5	4.7.12.1
	High temperature	3.5.5	4.7.12.2
	Average operating force	3.4.2.2	4.7.7
	Contact voltage drop	3.4.1.1	4.7.3
	High voltage	3.4.1.3	4 7.5
	Overload	3.4.1.2	4.7.4
	Contact voltage drop	3.4.1.1	4.7.3
	Corrosion	3.5.1	4.7.8
	Average operating force	3.4.2.2	4.7.7
	High voltage	3.4.1.3	4.7.5
	Contact voltage drop	3.4.1.1	4.7.3
5 and 6	Contact voltage drop	3.4.1.1	4.7.3
	High voltage	3.4.1.3	4.7.5
	Sand and dust (grade 2 only)	3.5.3	4.7.10
	Average operating force (grade 2 only)	3.4.2.2	4.7.7
	Contact voltage drop (grade 2 only)	3.4.1.1	4.7.3
	High voltage (grade 2 only)	3.4.1.3	4.7.5
	Endurance	3.5.9	4.7.16
	Average operating force	3.4.2.2	4.7.7
	High voltage	3.4.1.3	4.7.5
	Contact voltage drop	3.4.1.1	4.7.3
7 and 8	Contact voltage drop	3.4.1.1	4.7.3
	Ozone resistance	3.5.6	4.7.13
	Waterproofness	3.5.4	4.7.11
	High voltage	3.4.1.3	4.7.5
	Contact voltage drop	3.4.1.1	4.7.3

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TABLE II. Classification of defects.

Category	Defect	Method of examination
Critical	None	
Major		
101	Dimensions affecting mounting (see 3.3).	SIE 1/
102	Cable not in conformance (see 3.3.1).	Visual
103	Threads not in conformance (see 3.3.2).	SIE
104	Lever position not as specified (see 3.3.3).	Visual
105	Electrical connections not in conformance (see 3.3.4).	Visual
106	Faulty workmanship affecting performance (see 3.7).	Visual
Minor		
201	Dimensions not affecting mounting (see 3.3).	SIE
202	Marking, improper (see 3.6).	Visual
203	Faulty workmanship affecting appearance (see 3.7).	Visual

1/ SIE = Standard Inspection Equipment

4.5 QCI.

4.5.1 Examination. For examination purposes QCI samples (see 6.2) shall be inspected for defects specified in table II.

4.5.2 Acceptance tests. Samples selected for acceptance tests (see 6.2) shall initially be examined in accordance with 4.5.1 and shall then be subjected to the tests specified in table III.

TABLE III. Quality conformance and sequence of testing.

Description	Requirement	Test
Contact voltage drop	3.4.1.1	4.7.3
Withstanding force	3.4.2.1	4.7.6
Average operating force	3.4 2 2	4 7 7
Overload	3.4 1.2 .	4 7.4

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TABLE III. Quality conformance and sequence of testing - Continued.

Description	Requirement	Test
Contact voltage drop	3.4.1.1	4.7.3
Waterproofness (grade 1 only)	3.5.4	4.7.11
Terminal strength	3.4.2.1.1	4.7.6.1
High voltage	3.4.1.3	4.7.5
Contact voltage drop	3.4.1.1	4.7.3

4.6 Control tests Samples selected for control tests and frequency of tests shall be subjected to the tests specified in table IV (see 6.2).

TABLE IV. Control testing.

Description	Requirement	Test
Contact voltage drop	3.4.1.1	4.7.3
Waterproofness (grade 1 only)	3.5.4	4.7.11
High voltage	3.4.1.3	4.7.5
Contact voltage drop	3.4.1.1	4.7.3

4.7 Methods of inspection.

4.7.1 Materials and construction. Conformance to 3.2 through 3.3.4 shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.7.2 Defects. Conformance to 3.3 through 3.3.4, 3.6 and 3.7 shall be determined by examination for the defects listed in table II. Examination shall be visual or by measurement with standard inspection equipment.

4.7.3 Contact voltage drop. To determine conformance to 3.4.1.1, one terminal of type I or type II switch (if type II, the terminal shall be the common terminal) and two or more terminals of type III and type IV switch (if type IV, the terminal shall be the common terminal) shall be connected to an energy source All terminals which are normally connected to a load in intended operation shall be connected to the rated resistive load specified on the applicable MS standard or drawing. With the lever in each closed

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position, the voltage drop(s) between the appropriate terminals shall be measured. If the switch has no leads, the contact voltage drop(s) shall be considered to be the measured voltage drop(s). If the switch has leads, the contact voltage drop(s) shall be determined by subtracting the voltage drop(s) due to the leads from the measured voltage drop(s).

4.7.4 Overload. To determine conformance to 3.4.1.2, switch shall be subjected to 100 cycles, as defined in 4.3, while being connected to an energy source and to a resistive load current 150% of the rated resistive load current specified on the applicable MS standard or drawing. The circuit shall be that specified in 4.7.3.

4.7.5 High voltage. To determine conformance to 3.4.1.3, with the switch open, 440 V rms at 60 Hz shall be applied for 1 minute to the switch between appropriate terminals, with the lever in each open position.

4.7.6 Withstanding force. To determine conformance to 3.4.2.1, the switch shall be mounted as in intended operation, to a suitable plate. With the lever in one extreme position, the specified withstanding force shall be applied to the lever in the direction opposite to the direction of travel of the lever for 30 ± 1 seconds. This shall be repeated four times. With the lever in the other extreme position, the same force shall be applied in the same manner, the same number of times

4 7.6.1 Connector or terminal strength. To determine conformance to 3.4.2 1.1, the switch shall be mounted as in intended operation, by means of a suitable mounting plate or fixture. If the switch has connectors conforming to MS33800, or other male-female connectors directly attached to the switch body, the force specified in 3.4.2.1.1 shall be applied to each mating connector cable in a direction perpendicular to the connector pin. If the switch has leads, the force shall be applied to each lead in the direction of each major axis of the switch so that it will be transmitted to the body of the switch.

4.7.7 Average operating force. To determine conformance to 3.4.2.2, an average operating force shall be defined as the sum of all the forces required to move the switch lever between any two given adjacent lever positions during the test specified in 4.7.7.1 and 4.7.7.2 divided by the number of times the lever is moved between these same adjacent positions by a force during the same test.

4.7.7.1 Switches without a center position. The switch shall be mounted, in operational condition, to a suitable mounting plate or fixture. With the switch lever initially in a maintained contact position, a gradually increasing force shall be applied to the switch lever in the direction of lever travel, until the lever is in the opposite position. If the switch is class B, a gradually increasing force shall then be applied in the opposite

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direction until the lever is in the original position If the switch is class A. the lever shall then be released and the release time measured The same process shall be repeated four times. The average operating force and the average of the release times shall be computed.

4.7.7.2 Switches with a center position. With the switch lever initially in center position. the procedure specified in 4.7.7.1 shall be followed treating the center position and one extreme position as an individual switch. The same procedure shall also be followed. treating the center position and the other extreme position as an individual switch. The average operating forces (see 4 7 7) and the average of the release times shall be computed.

4.7.8 Corrosion To determine conformance to 3.5.1. the switch shall be tested in accordance with ASTM B117 as specified and examined for leakage.

4.7.9 Fungus. To determine conformance to 3.5.2. the switch shall be subjected to the applicable fungus test and examined to verify that fungal growth is not sustained and performance is not adversely affected.

4 7 10 Sand and dust To determine conformance to 3 5.3. grade 2 switches shall be tested as specified in method 110 of MIL-STD-202 except:

a Switches shall not be tested under electrical load conditions.
b. Sand and dust velocity shall be 2,500 ± 500 feet per minute.
c. Step 2 shall be omitted.

4 7 11 Waterproofness. To determine conformance to 3.5.4. grade 1 switches shall be tested as specified in procedure 1. step 1 and step 2 of MIL-STD-1184; except the switch shall not be tested under electrical load and shall not be operated under water.

4.7 12 Extreme temperature. To determine conformance to 3.5.5. switches shall be subjected to the tests specified in 4.7.12.1 and 4.7.12.2.

4.7.12.1 Low temperature. Switches shall be conditioned for 4 hours at -65 ± 2°F (-54 ± 1°C). After conditioning. and while in ambient air at that temperature. the force specified shall be applied to the lever of each switch. The switches shall then be operated for 1000 cycles (see 4.3d) while connected to rated resistive load as specified on the applicable MS standard or drawing.

4.7.12.2 High temperature. Switches shall be conditioned for 4 hours at 190 ± 2°F (88 ± 1°C). After conditioning and while in ambient air at that temperature. the switches shall be operated for 1000 cycles (see 4.3d) while connected to rated resistive load current as specified on the applicable MS standard or drawing. Switches shall then be cooled to room temperature and shall be examined for the defects listed in 3.5.5.

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4.7.13 Ozone. To determine conformance to 3.5.6, the lever of each switch specimen shall be placed in an extreme position, different from the position in which the specimen was received from the manufacturer. If this position is momentary contact, the lever shall be fastened in this position. After the lever has been in the latter position for 40 ± 5 minutes, each switch sample shall be (immediately) placed in an ozone exposure chamber without altering the switch position. The chamber shall contain 50 ± 5 parts of ozone per 100,000,000 parts of atmospheric air. The chamber temperature shall be maintained at 100 ± 2°F (38 ± 1°C) throughout the exposure period. The switch shall remain undisturbed in the chamber for 168 hours. Immediately after exposure, the rubber boot (casing) surrounding the lever of each switch sample shall be examined for evidence of cracking using 1.5 power magnification.

4.7.14 Shock. To determine conformance to 3.5.7, the switch shall be mounted by means of a suitable plate and subjected to the shock test specified in method 213 of MIL-STD-202, condition I. A suitable device shall be used to detect spurious opening and closing of contacts during the test.

4.7.15 Vibration To determine conformance to 3.5.8, the switch shall be mounted as in intended operation by means of suitable mounting plate or bracket to assure that mounting is free from resonances over the test frequency range The switch shall be subjected to a simple harmonic motion having an amplitude of 0.03 inch (no more than 0.06 inch total excursion), the frequency being varied uniformly between the approximate limits of 10 to 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for not less than 1 hour in line with each of the three major axes of the switch (a total of three hours of vibration). A suitable device shall be used to detect spurious opening and closing of contacts during the test.

4.7.16 Endurance. To determine conformance to 3.5.9, switches shall be connected to an energy source and to loads in the manner specified in 4.7.3, except that one switch shall be connected to the rated resistive load(s) specified on the applicable MS standard or drawing, and the other switch shall be connected to the rated inductive load(s) specified therein. Each switch shall be operated for 10,000 cycles, as defined in 4.3. During the test, each switch shall be periodically observed for evidence of malfunction.

5. PACKAGING

5.1 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking for the desired level shall be in accordance with the applicable packaging requirements specified by the contracting authority (see 6.2).

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6. NOTES

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

6.1 Intended use. The switches covered by this specification are used in direct current electrical circuits in military vehicles.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Type, class, and grade of switch (see 1.2).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
d Applicable MS standard or drawing (see 3.3)
e. If responsibility for inspection should be other than as specified (see 4.1).
f. Place of inspection, if other than as specified (see 4.1).
g. Sample size for QCI examination and acceptance tests (see 4.5.1 and 4.5.2), acceptance criteria and disposition of defective items.
h. Control tests sample size and frequency for conducting control tests (see 4.6), disposition of lot(s) covered by the control test samples and of defective items.
i. Selection of applicable level and packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in QPL 13735 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the QPL is the US Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000, and information pertaining to qualification of products may be obtained from that activity.

6.3.1 Extension of qualification. At the discretion of the qualifying activity, qualification of a switch of one type, class, and grade may establish qualification of any other switch of the same type but of a different class, except that qualification of a grade 2 switch shall not establish qualification of a grade 1 switch.

6.4 Definitions.

6.4.1 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.4.2)

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6.4.2 Solid waste. "Solid waste means (a) any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and (b) other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It does not include solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, (33 U.S.C. 1342 et seq.), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) (Source: Federal Acquisition Regulations, section 23.402)

6.5 Part or Identifying Number (PIN). Except when part numbers are specified on the drawing, MS standard or military specification sheet (MS sheet), the PIN to be used for switches acquired to this specification is created as follows:

M	13735	X	X	X
Prefix to indicate military specification	Specification number	Type number (1 = Type I, 2 = Type II, 3 = Type III and 4 = Type IV) (see 1.2)	Class letter (x = Class A, y = Class B and z = Class AB) (see 1.2)	Grade number (see 1.2)

6.6 Subject term (key word) listing.

Electrical circuit
Endurance
Extreme low temperature
Extreme high temperature
Fungus resistance
Ozone resistant
Qualification
Recycled material
Shock
Vehicle
Vibration

6.7 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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Custodian:
Army - AT

Review activity:
Army - AR

Preparing activity:
Army - AT

(Project 5930-A641)

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DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-S-13735D(AT); Switches, Toggle: 28 Volt DC

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

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