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MILITARY SPECIFICATION

SWITCH, SENSITIVE: 30 VOLTS DIRECT CURRENT MAXIMUM, WATERPROOF

This specification is approved for use within the U.S. 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 a waterproof, single-pole, sensitive switch used for controlling electrical circuits up to 30 volts direct current in tactical military vehicles.

1.2 Classification. The switch shall be classified as follows (see 6.2 and 6.7):

Type I - Single-throw
Type II - Double-throw
Class 1 - Normally open
Class 2 - Normally closed

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. 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 Specification, standards, and handbooks. The following specification, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

MILITARY

MIL-F-13927 - Fungus Resistance Test; Automotive Components.

STANDARDS

MILITARY

MIL-STD-130	- Identification Marking of U.S. 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.
MS39058	- Switch, Sensitive - 24 Volt DC, (Waterproof).

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Navy Publication and Printing Office, Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede 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 set for opening of bids (see 4.4 and 6.3).

3.2 Materials. Materials shall be as specified herein and in applicable specifications and standards. Insulating material shall conform to MIL-STD-454, requirement 11 (see 4.7.1).

3.2.1 Dissimilar metals. Except where necessary to complete an electrical circuit, contact between dissimilar metals which would encourage galvanic action shall be avoided (see 4.7.1).

3.2.2 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 6.4.2).

3.3 Design and construction. Switch dimensions, construction and requirements shall be as specified in MS39058 (see 4.7.1).

3.4 Physical requirements.

3.4.1 Shock. While carrying a rated resistive load current of 15 amperes, the switch shall not open or close during shock testing as specified in MIL-STD-202, method 213, test condition I. After the shock test, the switch shall meet the requirement of 3.5.2 (see 4.7.3.1).

3.4.2 Vibration. While carrying a rated resistive load current of 15 amperes, the switch shall not open or close during vibration testing as specified in 4.7.3.2. After the vibration test, the switch shall meet the requirements of 3.4.4, 3.5.2, and 3.5.4.

3.4.3 Lead connections. Lead connections to the switch body shall withstand a force of 110 Newton (N), applied in specified directions, without damage. Subsequently, the switch shall meet the requirements of 3.5.2 and 3.5.4 (see 4.7.3.3).

3.4.4 Physical characteristics. The switch shall actuate with 4.5 to 9.0 Newton (N) of force applied within 3 mm of center of switch button. Other physical characteristics shall be as follows (see 4.7.3.4):

Release force	- 1.7 newton, minimum.
Release time	- 0.25 second, maximum.
Pretravel	- 0.38 mm, minimum.
Overtravel	- 0.38 mm, minimum.
Movement differential	- 0.13 mm, maximum.

3.5 Electrical requirements.

3.5.1 Current rating. The current rating shall be 7.5 amperes lamp load, 7.5 amperes inductive load (L/R ratio 0.026), and 15 amperes resistive load (see 4.7.4.1).

3.5.2 Contact voltage drop. With switch contacts closed and a rated resistive load current of 15 amperes applied, the measured allowable voltage drop shall not exceed 150 millivolts, except as specified in 3.5.6 (see 4.7.4.2).

3.5.3 Overload capacity. The switch shall withstand 100 make and break cycles while carrying a rated resistive load current of 22.5 amperes. Subsequently, the switch shall meet the requirements of 3.5.2 (see 4.7.4.3).

3.5.4 Insulation resistance. The insulation resistance between open contacts of the switch shall be not less than 500 megohms (see 4.7.4.4).

3.5.5 Open circuit resistance. The resistance between open contacts of the switch shall be not less than 1 megohm (see 4.7.4.5).

3.5.6 Endurance. The switch shall withstand 25,000 make and break cycles while connected to either a rated inductive load current or rated lamp load current of 7.5 amperes. Subsequent to cycling, the contact voltage drop shall not exceed 300 millivolts (see 4.7.4.6).

3.6 Environmental requirements.

3.6.1 Corrosion. Subsequent to testing as specified in 4.7.5.1, the switching mechanism shall evidence no corrosion.

3.6.2 Fungus. The switch shall evidence no deterioration after testing as specified in MIL-F-13927, class 1, method A, for a period of 90 days. The switch shall subsequently meet specified requirements (see 4.7.5.2).

3.6.3 Waterproofness. The switch shall evidence no leakage when tested as specified in MIL-STD-1184, method 100, and shall subsequently meet specified requirements (see 4.7.5.3).

3.6.4 Extreme temperature. The switch shall operate for 1000 cycles (see 4.3.1) throughout a temperature range of -54 degrees Celsius (°C) to 74°C with a not greater than 0.25-second release time. The switch shall meet the requirements specified in table I, for the temperature-tested samples, in the order shown (see 4.7.5.4).

3.7 Identification marking. Identification marking shall be in accordance with MIL-STD-130 (see 4.7.2).

3.8 Workmanship. Workmanship shall be of a quality which will assure a product free of pinholes, flash, protrusions, or breaks in the rubber covering specified in MS39058 or in lead wire insulation (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 as specified herein. Except as otherwise specified in the contract or purchase order, 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 or witness any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must 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 assuring 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, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept of defective material.

4.2 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be conducted under the following conditions:

a. Air temperature 23 ± 10°C.
b. Barometric pressure 724 + 51, -76 mmHg.
c. Relative humidity 50 + 30 percent.

4.2.1 Switch cycling frequency. Switch cycling frequency shall be 15 cycles per minute with 2.0 + 0.2 seconds on and 2.0 + 0.2 seconds off. The ends of the leads shall be sealed as necessary to prevent entry of moisture, salt, or fungus through the ends.

4.3 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.4).
b. Quality conformance inspections (see 4.5).
   (1) Examination (see 4.5.2).
   (2) Acceptance tests (see 4.5.3).
c. Control tests (see 4.6).

4.4 Qualification inspection. A qualification sample of nine switches of each type and class to be qualified shall be furnished for qualification inspection. The samples shall be representative of switches proposed to be furnished under the contract. Qualification inspection shall be conducted

under Government surveillance by the contractor or by an authorized testing facility at a site approved by the Government and shall consist of the inspections specified in 4.7.1, examination for the defects specified in 4.7.2, and tests as specified in table I in the order listed (see 6.3).

Table I. Order of qualification tests.

Sample number	Paragraph	Title
1 and 2	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.4.5	Open circuit resistance
	4.7.3.4	Physical characteristics
	4.7.5.4.1	Low temperature operation
	4.7.5.3.1	Waterproofness
	4.7.4.4	Insulation resistance
	4.7.5.4.2	High temperature operation
	4.7.3.4	Physical characteristics
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.4.5	Open circuit resistance
	4.7.4.3	Overload capacity
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.5.1	Corrosion
3 and 4	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.3.4	Physical characteristics
	4.7.3.3	Lead connections
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.4.4	Insulation resistance
	4.7.3.1	Shock
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.3.2	Vibration
	4.7.3.4	Physical characteristics
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.4.4	Insulation resistance
5 and 6	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.3.4	Physical characteristics
	4.7.4.6	Endurance
	4.7.3.4	Physical characteristics
	4.7.4.1	Current rating
	4.7.4.2	Contact voltage drop
	4.7.4.4	Insulation resistance

Table I. Order of qualification tests - Continued.

Sample number	Paragraph	Title
7 and 8	4.7.4.1 4.7.4.2 4.7.3.4 4.7.4.4 4.7.5.2 4.7.3.4 4.7.4.1 4.7.4.2 4.7.4.4	Current rating Contact voltage drop Physical characteristics Insulation resistance Fungus Physical characteristics Current rating Contact voltage drop Insulation resistance
9	4.7.5.3.1 4.7.5.1	Waterproofness Corrosion

4.4.1 Failure. Failure of any sample to pass any of the qualification tests specified herein may be cause, at the option of the Government, for refusal to conduct additional testing until the faults revealed have been corrected.

4.4.2 Retention of qualification. Certification is required from each manufacturer listed on the QPL every 2 years to retain listing on the QPL. This certification shall be forwarded to the preparing activity and shall be signed by a responsible official of management, attesting that the listed product is still available from the listed plant, can be produced under the same conditions as originally qualified, i.e., same process, materials, construction, design, manufacturer's part number or designation, and meets the requirements of the current issue of the specification. Failure to provide certification will be cause for removal from the QPL.

4.5 QCI. QCI shall include the examination of 4.5.2 and the tests of 4.5.3. Noncompliance with any of the specified requirements in sections 3 and 5 shall be cause for rejection.

4.5.1 Sampling inspection. Unless otherwise specified (see 6.2), the sampling plan specified herein shall be used. See 6.4 for definitions of sampling inspection terms.

4.5.1.1 Lot formation. An inspection lot shall consist of all switches of one part number, from an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.5.1.2 Sample. The sample for QCI examination and tests shall be selected from the inspection lot in accordance with table II.

TABLE II. Sampling plan for QCI.

QCI sampling plan			
Inspection lot size	Sample size		
	Examination		Test
	Major	Minor	
2 to 8	*	5	2
9 to 15	13	5	2
16 to 25	13	5	2
26 to 50	13	5	2
51 to 90	13	7	8
91 to 150	13	11	8
151 to 280	20	13	8
281 to 500	29	16	8
501 to 1200	34	19	13
1201 to 3200	42	23	13
3,201 to 10,000	50	29	20
10,001 to 35,000	60	35	20
35,001 to 150,000	74	40	32
150,001 to 500,000	90	40	32
500,001 and over	102	40	50

* Indicates entire lot must be inspected (100% inspection).

4.5.2 Examination. The sample selected in accordance with 4.5.1.2 shall be examined and defects classified as specified in table III (see 4.7.2). The acceptance number in all cases is zero.

4.5.2.1 Classification of defects. For examination purposes, defects shall be classified as listed in table III.

TABLE III. Classification of defects.

Category	Defect	Method of examination
Critical	None	
Major		
101	Improper rubber material (see 3.2).	4.7.1
102	Improper insulating material (see 3.2).	4.7.1
103	Dimensions affecting interchangeability, out of tolerance (see 3.3).	Gage
104	Faulty workmanship affecting performance (see 3.8).	Visual
Minor		
201	Dimensions not affecting interchangeability, out of tolerance (see 3.3).	Gage
202	Improper identification marking (see 3.7).	Visual
203	Faulty workmanship affecting appearance (see 3.8).	Visual

4.5.2.2 Unclassified defects. All unclassified defects having no bearing on function, safety, interchangeability or life, but which are considered departures from good workmanship, shall be noted in writing. Workmanship deficiencies falling within this category and recurring in 5 consecutive lots, or 10 lots or more within a 30-day period, shall be added to the minor defects.

4.5.3 Acceptance tests. The sample selected in accordance with 4.6.1.2 shall be subjected to the tests specified in table IV. The acceptance number in all cases is zero.

Table IV. Order of acceptance tests.

Paragraph	Title
4.7.3.3	Lead connections
4.7.4.2	Contact voltage drop
4.7.3.4	Physical characteristics
4.7.4.2	Contact voltage drop
4.7.4.4	Insulation resistance
4.7.5.3.2	Waterproofness
4.7.4.2	Contact voltage drop
4.7.4.5	Open circuit resistance

4.5.4 QCI failure. Any item that fails to conform to any specified requirement shall be rejected; any failure (one or more) of the selected sample in either the Major/Minor categories or test for the appropriate inspection lot size shall constitute a failure of the entire lot. The rejected item(s) may be repaired or corrected and resubmitted for inspection. If the contractor utilizes sampling inspection as an element of his inspection system, rejected inspection lots may be resubmitted for acceptance if the contractor performs 100 percent inspection on the lot for those characteristics which were defective and resulted in rejection of the lot and removes all defective units or obtains procuring activity approval to resample the lot due to the insignificance of the defects. Resubmitted lots shall be kept separate form new lots and shall be clearly idetntified as resubmitted lots.

4.6 Control tests. Control tests shall be conducted on 2 from each 300 switches consecutively produced, except that not more than 4 nor less than 2 shall be selected in any 30-day period. The samples shall be identified as to production period and subjected to the tests specified in table V in the order listed.

Table V. Order of control tests.

Paragraph	Title
4.7.4.2	Contact voltage drop
4.7.4.6	Endurance
4.7.3.4	Physical characteristics
4.7.4.2	Contact voltage drop
4.7.4.4	Insulation resistance
4.7.5.3.1	Waterproofness
4.7.4.4	Insulation resistance
4.7.4.2	Contact voltage drop
4.7.4.5	Open circuit resistance

4.6.1 Failure. Failure of any sample to pass any control test specified herein shall be cause for the Government to refuse acceptance of the production quantity represented, until action taken by the contractor to correct defects and prevent recurrence has been approved by the Government.

4.7 Methods of inspection.

4.7.1 Materials, design and construction. Conformance to 3.2, 3.2.1 and 3.3 shall be determined by inspection of contractor records providing proof or certification that materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.7.2 Defects. Conformance to 3.2, 3.3, 3.7, and 3.8 shall be determined by examination for the defects listed in table III. Examination shall be visual, tactile, or by measurement with standard inspection equipment.

4.7.3 Physical tests.

4.7.3.1 Shock. To determine conformance to 3.4.1, the switch shall be connected to a rated resistive load current of 15 amperes. An oscilloscope or other suitable device shall be used to detect momentary circuit closure or opening due to shock. The switch shall be mounted by means of a suitable strap around the switch body and subjected to the shock test specified in MIL-STD-202, method 213, test condition I. An acceleration force of 100 gravity units shall be applied in the direction of each of the three major axes of the switch when in closed position, and shall be repeated with the switch in open position.

4.7.3.2 Vibration. To determine conformance to 3.4.2, the switch shall be connected to a rated resistive load current of 15 amperes. An oscilloscope or other suitable device shall be used to detect momentary circuit closure or opening due to vibration. The switch shall be mounted by means of a suitable strap around the switch body and subjected to a simple harmonic motion having an amplitude of 0.76 mm (1.52 mm maximum total excursion), the frequency being varied uniformly between the approximate limits of 10 and 55 hertz (Hz). The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be transverse in approximately 1 minute. This motion shall be applied for not less than 1 hour in the direction of each of the three major axes of the switch, with the switch in each open and closed position (a total of 6 hours of vibration).

4.7.3.3 Lead connections. To determine conformance to 3.4.3, the switch shall be held in a vise and a force of 110 N shall be applied to each connecting lead so that the tensile force is transmitted to the point where the lead is connected to the switch body. The force shall be applied both in the direction of the center axis of the switch and perpendicular to the center axis.

4.7.3.4 Physical characteristics. To determine conformance to 3.4.4, the switch shall be mounted as in intended operation. The force required to actuate it in the region specified in 3.4.4 shall be measured. Subsequently, the release force, release time, pretravel, overtravel, and movement differential shall be measured.

4.7.4 Electrical tests.

4.7.4.1 Current rating. To determine conformance to 3.5.1, the switch shall be mounted as in intended operation and the current rating measured under lamp load, inductive load, and resistive load.

4.7.4.2 Contact voltage drop (see 6.5). To determine conformance to 3.5.2 and to the contact voltage drop requirement of 3.5.6, the switch shall be subjected to the test specified in 4.7.4.2.1 or 4.7.4.2.2, as applicable. The switch shall be subjected to the nondestructive test specified in 4.7.4.2.1 if the switch is subsequently to be subjected to any of the tests specified in 4.7.5.1 through 4.7.5.3 (see table I and 4.6) or when the switch is being subjected to acceptance tests (see 4.5.3). Otherwise the switch shall be subjected to the destructive test specified in 4.7.4.2.2 (see table I and 4.6).

4.7.4.2.1 Nondestructive test. The switch shall be connected to a rated resistive load current of 15 amperes. The voltage drop shall be measured between the ends of each appropriate pair of leads with the contacts in the corresponding closed position. The contact voltage drop shall be estimated by subtracting the product of 5 millivolts per inch times the total length in cm of the two conductor leads, from the voltmeter reading in millivolts.

4.7.4.2.2 Destructive test. The switch shall be connected to a rated resistive load current of 15 amperes. A point shall be located on each lead 10 mm ± 5 mm from the body of the switch. The leads shall be punctured as necessary and the voltage drop measured between each appropriate pair of points defined above, with the contacts in the corresponding closed position.

4.7.4.3 Overload capacity. To determine conformance to 3.5.3, the switch shall be subjected to 100 make and break cycles while being subjected to a rated resistive load current of 22.5 amperes.

4.7.4.4 Insulation resistance. To determine conformance to 3.5.4, the insulation resistance shall be measured between the ends of each appropriate pair of leads, with the contacts in the corresponding open position, in accordance with MIL-STD-202, method 302, test condition C.

4.7.4.5 Open circuit resistance. To determine conformance to 3.5.5, the open circuit resistance shall be measured between each appropriate pair of leads, with the contacts in the corresponding open position, using a suitable ohmmeter.

4.7.4.6 Endurance. To determine conformance to 3.5.6, one-half of the switches to be tested shall be connected to a rated inductive load current of 7.5 amperes. The remainder of the switches to be tested shall be connected to a rated lamp load current of 7.5 amperes. Each loaded switch shall be operated for 25,000 make and break cycles. During the test, each switch shall be periodically observed for evidence of malfunction. Subsequently, the contact voltage drop shall be measured.

4.7.5 Environmental tests.

4.7.5.1 Corrosion. Subsequent to testing as specified in 4.7.5.3.1, the switch shall be opened and the spring, contact point, and soldered connections shall be visually examined to determine conformance to 3.6.1.

4.7.5.2 Fungus. To determine conformance to 3.6.2, the switch shall be subjected to the test specified in MIL-F-13927, class 1, method A, except that examination shall be made after 90 days only.

4.7.5.3 Waterproofness.

4.7.5.3.1 Qualification and control tests. To determine conformance to 3.6.3, the switch shall be subjected to the test specified in MIL-STD-1184, method 100, procedure 1, except that the switch shall not be operated while submerged.

4.7.5.3.2 Acceptance test. To determine conformance to 3.6.3, the switch shall be subjected to the test specified in MIL-STD-1184, method 100, procedure 5.

4.7.5.4 Extreme temperature. To determine conformance to 3.6.4, the switch shall be subjected to the tests specified in 4.7.5.4.1 and 4.7.5.4.2.

4.7.5.4.1 Low temperature operation. The switch shall be conditioned for 24 hours at 51 ± 3°C. While still in ambient air at that temperature, the switch shall be operated for 1000 cycles (see 4.2.1) while connected to a rated resistive load current of 15 amperes and the release time measured.

4.7.5.4.2 High temperature operation. The switch shall be conditioned for 24 hours at 74°C ± 3°C. While still in ambient air at that temperature, the switch shall be operated for 1000 cycles (see 4.2.1) while connected to a rated resistive load current of 15 amperes and the release time measured.

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).

6. NOTES

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

6.1 Intended use. Switches covered by this specification are intended to be used as gun-firing switches in combat vehicles.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Type and class of switch (see 1.2).
c. Item name and part number (see 3.3).
d. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).
e. If responsibility for inspection shall be other than as specified (see 4.1).
f. If inspection conditions shall be other than as specified (see 4.3).
g. 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 the applicable QPL whether or not such products have actually been so listed by that date. The attention of the contractors is called to this requirement, 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 orders for the products covered by this specification. The activity responsible for the QPL is the U.S. Army Tank-Automotive Command, Warren, Michigan 48397-5000 and information pertaining to qualification of products may be obtained from that activity.

6.4 Definitions.

6.4.1 Definitions of terms used in sampling inspection.

a. Classification of defects. A classification of defects is the enumeration of possible defects of the unit of product classified according to their seriousness. A defect is any nonconformance of the unit of product with specified requirements. Defects will normally be grouped into one or more of the following classes: critical, major and minor defects. Also, defects may be grouped into other classes, or into subclasses within these classes.

b. Critical defects. A critical defect is a defect that judgement and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product, or a defect that judgement and experience indicate is likely to prevent performance of the tactical function of a major end item such as a ship, aircraft, tank, missile, or space vehicle.

c. Critical defective. A critical defective is a unit of product which contains one or more critical defects and may also contain major and/or minor defects.

d. Defective. A defective is a unit of product which contains one or more defects.

e. Formation of lots or batches. The product shall be assembled into identifiable lots, sublots, batches, or in such other manner as may be prescribed (see 1). Each lot or batch shall, as far as is practicable, consist of units of product of a single type, grade, class, size, and composition, manufactured under essentially the same conditions, and at essentially the same time.

f. Lot or batch. The term lot or batch shall mean "inspection lot" or "inspection batch", i.e., a collection of units or product from which a sample is to be drawn and inspected and may differ from a collection of units designated as a lot or batch for other purposes (e.g., production, shipment, etc.).

g. Lot or batch size. The lot or batch size is the number of units of product in a lot or batch.

h. Major defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

i. Major defective. A major defective is a unit of product which contains one or more major defects, and may also contain minor defects but contains no critical defect.

j. Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

k. Minor defective. A minor defective is a unit of product which contains one or more minor defects but contains no critical or major defect.

l. Presentation of lots or batches. The formation of the lots or batches, lot or batch size, and the manner in which each lot or batch is to be presented and identified by the supplier shall be designated or approved by the responsible authority. As necessary, the supplier shall provide adequate and suitable storage space for each lot or batch, equipment needed for proper identification and presentation, and personnel for all handling of product required for drawing of samples.

m. Representative sampling. When appropriate, the number of units in the sample shall be selected in proportion to the size of sublots or subbatches, or parts of the lot or batch, identified by some rational criterion. When representative sampling is used, the units from each part of the lot or batch shall be selected at random.

n. Sample A sample consists of one or more units of product drawn from a lot or batch, the units of the sample being selected at random without regard to their quality. The number of units or product in the sample is the sample size.

o. Sampling plan. A sampling plan indicates the number of units of product from each lot or batch which are to be inspected (sample size or series of sample sizes) and the criteria for determining the acceptability of the lot or batch (acceptance and rejection numbers).

p. Time of sampling. Samples may be drawn after all the units comprising the lot or batch have been assembled, or samples may be drawn during assembly of the lot or batch.

6.4.2 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.4.3).

6.4.3 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 Contact voltage drop tests. Two contact voltage drop tests are specified (see 4.7.4.2) because (1) a test which does not destroy the rubber seal of the switch is necessary in order to assure meaningful results from subsequent waterproofness, corrosion, or fungus tests, while (2) a test in which the rubber seal of the leads is destroyed is necessary in order to determine the actual voltage drop across the switch contacts.

6.6 Open circuit resistance test. The purpose of this ohmmeter test (see 4.7.4.5) is to determine if the switch contacts are open without subjecting the switch to an excessive number of applications of high voltage.

6.7 Grades. Previous revisions of this specification carried classifications of grade A (waterproof) and grade B (nonwaterproof). Since all switches are now waterproof, this classification was dropped.

6.8 Subject term (key word) listing.

Contact voltage drop
Current rating
Endurance
Fungus
High temperature operation
Insulation resistance
Lead connections
Low temperature operation
Open circuit resistance
Overload capacity
Recovered material
Shock
Vibration
Waterproofness

6.9 AMC policy on AQLs/LTPDs. This specification is certified to be in compliance with current Army Materiel Command (AMC) policy for the elimination of AQLs/LTPDs (Acceptable Quality Levels/Lot Tolerance Percent Defectives) from military specifications.

6.10 Cross-reference. The interchangeability of items made to this specification was not affected in the conversion from English units (revision D) to metric units (revision E).

Custodian:
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Preparing activity:
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