

INCH-POUND

A-A-52482A

July 5, 1995

SUPERSEDING

A-A-52482

December 16, 1993

## COMMERCIAL ITEM DESCRIPTION

### SWITCH, ROTARY: STOPLIGHT, VEHICULAR, MECHANICALLY ACTUATED, 28 VOLT DC

The General Services Administration has authorized the use of this commercial item description (CID) as a replacement for MS75064C(AT) which is canceled.

#### ABSTRACT

This CID covers a 28 volt (V) direct current (dc) single- pole, single-throw waterproof rotary switch intended for use with a stoplight in tactical vehicles operating on a nominal 24 Vdc electrical system.

#### SALIENT CHARACTERISTICS

a. Materials. Unless otherwise specified herein, materials used shall be in accordance with the manufacturer's drawings/specifications. The use of recovered material made in compliance with the regulatory requirements is acceptable providing that all requirements of this CID are met (see note d).

1. Dissimilar metals. Except where necessary to couple an electrical circuit, contact between dissimilar metals which would encourage galvanic action shall be avoided.

2. Plastic. The switch shall show no deteriorating effect during shipping, storage and usage, such as, cracking, chipping, or blistering.

3. Locking devices. Lockwashers, self-locking nuts, or other approved locking devices shall be incorporated where required to prevent loosening of components.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent by letter to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-T, Warren, MI 48397-5000.

FSC 5930

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



PIN No.	Former MS Part No.	Former Drawing No.
A52482-1	MS75064-1	7968845

### Requirements

1. Single-pole, single-throw, waterproof switch.
2. Arm is spring loaded to return to the "ON" position.
3. Switch contact rating: resistive load 10 amps and lamp load 10 amps.
4. A permanent, legible single crimp style band marker with index mark 75, shall be affixed securely to the cables.
5. Cable shall be in accordance with MIL-C-13486.

### Notes:

1. Dimensions are in inches. Unless otherwise specified, tolerances are  $\pm 0.03$  on decimals,  $\pm 2^\circ$  on angles.
2. This CID is not intended to limit construction to features other than as shown hereon by dimensions, notations, and referenced documents.

FIGURE 1. Switch, Rotary, 28 Vdc - Continued.

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b. Design and configuration. Unless otherwise specified in figure 1, the design and configuration of the switch shall be in accordance with the manufacturer's drawings.

c. Performance. The switch shall perform as specified here-in when energized at a rated load of 28 Vdc.

1. Voltage drop. The voltage drop between terminals shall be no greater than 150 millivolts when energized by a 28 Vdc source.

2. Overload. To determine the overload, the switch shall be energized by a 28 Vdc source and connected to loads 40 percent greater than rated (lamp, resistive) loads. The switch shall be operated for 100 cycles at each specified load. For lamp loads, the load cycle shall be  $1 \pm 0.1$  second "on" and  $5 \pm 0.1$  seconds "off" (10 cycles per minute). After cycle is completed, the switch shall meet the requirements of salient characteristic (sc) c.1.

3. Endurance. The voltage drop shall be no greater than 500 millivolts after 50,000 cycles of operations during which the switch is energized by a 28 Vdc source and connected to the rated loads specified in sc c.2. The torque required to operate the switch shall be no less than 30 (max 70 ounces, see c.5) ounce-inches. The switch shall show no evidence of malfunction during the test.

4. Dielectric strength. No burning, charring, loosening, arcing or other damage should be evidenced when applying a 1000 V root mean square (rms) voltage at a frequency of 60 cycles per second with the switch lever in each of its "on" and "off" positions. The applied voltage shall be increased from zero to the specified value at a rate of 400 V per second and shall be maintained between insulated terminals and ground for one minute on each application.

5. Operating torque. The average of five measurements of the torque applied to move the switch for each direction of movement from each position should not be less than 30 nor more than 70 ounce-inches.

6. Maximum torque. With the lever turned to each extreme position a torque load of 3 foot-pounds is applied to the switch. This load shall be applied gradually 5 times for each lever position and held for at least 10 seconds. No breakage, distortion or loosening of parts of the switch shall be evidenced. Subsequent to test, the switch shall meet the requirements of sc c.1.

7. Terminal strength. The switch shall not evidence any damage, distortion or loosening of parts after applying for 10 seconds each a force of 25 pounds at the base of all terminals in four directions perpendicular to the longitude centerline of the terminals at 90° intervals, and a 25 pounds pull along the terminal axes centerline. More so, sc c.1 and c.4 requirements shall be maintained.

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8. Shock resistance. The switch shall evidence no mechanical or electrical malfunction (opening or closing of circuit) during and after exposure to 3 sawtooth shock pulses, each of 50 gravities (g) peak amplitude for 7 milliseconds (ms) duration, in both directions of each of the three orthogonal axes for a total of 18 shock pulses. One axis shall be through or parallel to the plane of contact movement and the lever when in "off" position. The switch shall subsequently meet the requirements of sc c.1.

9. Vibration resistance. The switch shall evidence no electrical or mechanical malfunction when subjected to vibration for one hour along each of three mutually perpendicular axes, one of which shall be through or parallel to the switch shaft; the vibration shall be an harmonic motion having an amplitude of 0.03 inch (0.06 inch total excursion) in a frequency sweep from 10 to 55 and return to 10 Hertz (Hz) in one minute. The switch shall subsequently meet the requirements of sc c.1, c.5 and c.6.

d. Environmental conditions.

1. Salt spray resistance. The switch shall meet the requirements of sc c.1 during and after exposure to a fog of atomized salt water of 5 percent salt solution for 200 hours at  $95 \pm 2$  degrees ( $^{\circ}$ )/ $-3^{\circ}$  Fahrenheit (F).

2. Sand and dust resistance. The switch shall meet the requirements of sc c.1 after exposure to sand and dust in an air velocity of  $2500 \pm 500$  feet per minute with humidity not exceeding 30% for 6 hours at  $77^{\circ}$ F, and 6 hours at  $160^{\circ}$ F.

3. Fungus resistance. The switch shall meet the requirements of sc c.1, c.2, c.4, and c.5 after exposure to fungus growth in air incubation cabinet for 90 days at a temperature between  $75^{\circ}$  and  $85^{\circ}$ F and a relative humidity between 93 and 100 percent.

4. Waterproofness. The switch shall be mechanically and electrically operable during and after submersion in saline solution for 30 minutes at full rated current and voltage. No poor seals, leakage or other failure shall be evidenced. The switch shall subsequently meet the requirements of sc c.1, c.2, c.4, and c.5.

5. Temperature resistance. The switch energized by a 28 V dc source shall be tested at extremes of low and high temperature; it shall be operated through its entire range 1000 times. For lamp loads, the load cycle shall be  $1 \pm 0.1$  second "on" and  $5 \pm 0.1$  seconds "off" (10 cycles per minute). The switch shall subsequently meet the requirements of sc c.1, c.3 and c.5.

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6. Low temperature resistance. The switch shall be placed in a cold chamber at  $-65^{\circ} \pm 5^{\circ}\text{F}$  and conditioned for 24 hours prior to testing, then, with the chamber temperature constant at  $-65^{\circ} \pm 5^{\circ}\text{F}$  the switch shall be operated and tested in accordance with sc d.5. There shall be no evidence of degradation of electrical and mechanical performance. The operational torque shall not exceed by more than 40% of the operational torque of sc c.5.

7. High temperature resistance. The switch shall be connected, conditioned and tested in accordance with sc d.6 except that the temperature shall be  $165^{\circ} \pm 5^{\circ}\text{F}$ .

e. Finish. Unless otherwise specified (see note b), the finish shall be as specified herein.

1. Painting. Cleaning, pretreatment, priming, and painting shall conform to an appropriate CARC paint system selected from drawing no. 12369000. Color of paint top coat shall be green 383, 34094.

2. Plating. Plating shall be applied after all basic metal heat treatments and mechanical operations have been completed. Silver plating shall conform to QQ-S-365. Chromium plating shall conform to QQ-C-320.

f. Identification marking. Identification marking shall be permanent and legible and shall include, as a minimum, the part identification number (PIN) A52482-1 and the manufacturer's CAGE code and part number (see note b). Identification and marking shall be accomplished without adversely affecting the acceptability and function of the finished product.

### QUALITY ASSURANCE PROVISIONS

a. Responsibility for inspection. The contractor is responsible for the performance of all inspections (examinations and tests).

b. Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this commercial item description and that the product conforms to the producer's own drawings, specifications, workmanship standards, and quality assurance practices. Items with known defects shall not be submitted for Government acceptance. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

### PRESERVATION, PACKAGING, PACKING, LABELING, AND MARKING

Preservation, packaging, packing, labeling, and marking for the desired level shall be as specified in the contract (see note b).

NOTES

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

a. Addresses for obtaining copies of referenced documents.

1. Government specifications and standards. Copies of QQ-C-320 "Chromium Plating", QQ-S-635 "Silver Plating", MIL-C-13486 "Cable, Special Purpose, Electrical" and MS27148 "Contact: PIN, Electrical Connector" are available from the Defense Printing Service Detachment Office, Bldg. 4D (Customer Service), 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2. Government drawings. Copies of Army Drawing 12369000 "Chemical Agent Resistant Coatings (CARC)" are available from U.S. Army Tank-automotive and Armaments Command, ATTN: Contracting Officer, Warren, MI 48397-5000.

b. Ordering data. Acquisition documents must specify the following:

1. Title, number, and date of this CID.
2. Issue of the DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced.
3. PIN number and quantity required.
4. If finish is other than as specified.
5. Selection of applicable level and packaging requirements.

c. Cross-reference data. Switches conforming to this CID are interchangeable/ substitutable with switches conforming to MS75064C(AT), dated 27 August 1980.

d. Regulatory requirements. The offeror/contractor is encouraged to use recovered materials in accordance with Public Law 94-580 to the maximum extent practicable.

MILITARY INTERESTS:

Custodian

Army - AT

Review activities

Air Force - 85  
DLA - ES

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:

ARMY - AT

(Project 5930-1617)