

SWITCH, TOGGLE, POSITIVE BREAK, MINIATURE TOGGLED SEALED,
 SINGLE POLE, SOLDER LUG OR INTEGRATED WIRE
 TERMINALS: .250 MOUNTING BUSHINGS

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

The requirements for acquiring the product described herein shall consist of this specification sheet and the latest issue of MIL-DTL-8834.

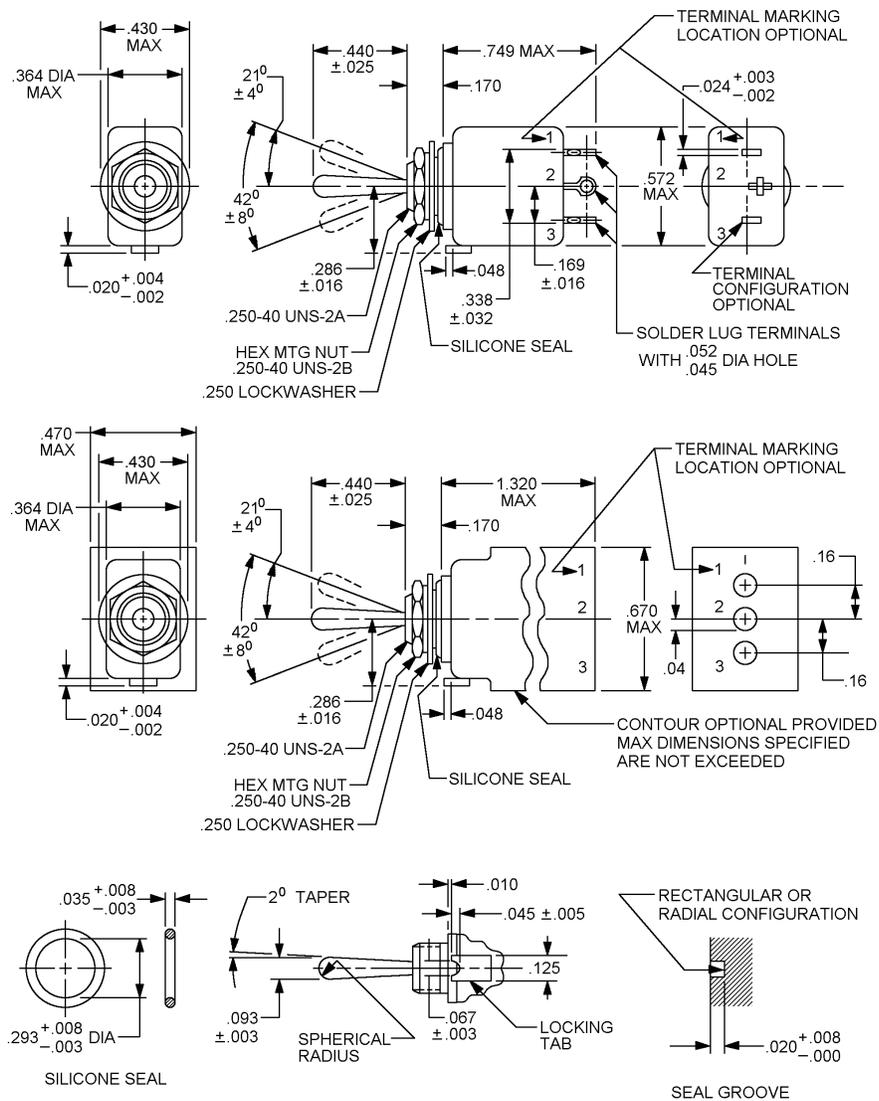


FIGURE 1. Single Pole Switch

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TABLE I. Detail requirements. 5/

MS dash no.	Circuits made between terminals as indicated with the toggle lever in these positions: <u>1/</u>			Current capacity in amperes						Life low current level switching 5 mV
				Resistive load			Inductive load			
				28 V ac	115 Volts		28 V ac	115 Volts		
60 Hz ac	400 Hz ac	60 Hz ac	400 Hz ac							
-211	2-3 ON	OFF	ON 1-2	5	2	3	<u>2/</u> 1	1	2	<u>3/</u> 25 μA
-221		NONE	OFF							
-231		NONE	ON 1-2							
-241		NONE								
-271		MOM-ON 2-3	OFF							
-281	NONE									
-311	ON 2-3									
-321 <u>6/ 7/</u>	NONE	ON								

1/ Direction of movement of internal mechanism is opposite to the direction of the toggle movement.

2/ With time constant of .020 ± .002 seconds.

3/ Contact resistance not to exceed 50 ohms during life, low current level switching.

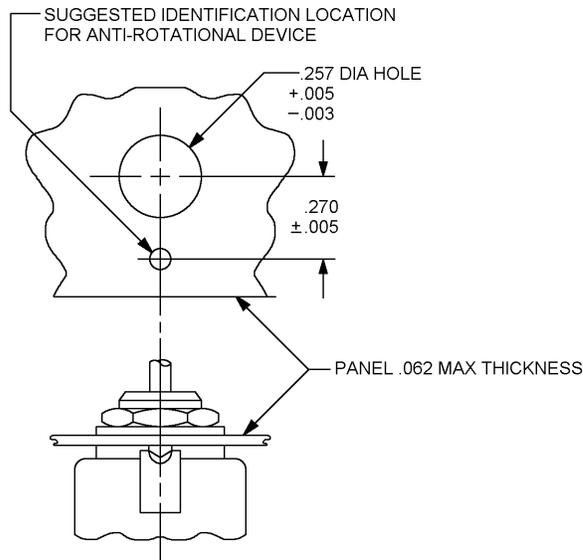
4/ Nonfunctional terminals shall not be supplied.

5/ Part or Identifying Number (PIN) example: For IWTS termination MS number will be concluded by the letter W.
Example: MS24655-211 with IWTS termination will be MS24655-211W.

6/ Dielectric withstanding voltage: 1,200 V rms at sea level (center on circuits).

7/ Delayed action of the switch toggle lever may cause circuit to close or open before snap action mechanism trips.

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Inches	mm	Inches	mm	Inches	mm
.002	0.05	.040	1.02	.270	6.86
.003	0.08	.045	1.14	.286	7.26
.004	0.10	.048	1.22	.293	7.44
.005	0.13	.050	1.27	.338	8.59
.008	0.20	.062	1.57	.364	9.25
.010	0.25	.067	1.70	.408	10.36
.016	0.41	.093	2.36	.440	11.18
.020	0.51	.125	3.18	.470	11.94
.024	0.61	.160	4.06	.572	14.53
.025	0.64	.169	4.29	.670	17.02
.028	0.71	.170	4.32	.749	19.02
.032	0.81	.250	6.35	1.320	33.53
.035	0.89	.257	6.53		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .010$ (0.25 mm) on decimals and $\pm .5^\circ$ on angles.
4. For hardware detail specifications, see appendix of MIL-DTL-8834.
5. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.
6. Referenced Government documents of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.
7. Altitude: 50,000 feet.
8. 115 V ac, 60 hertz electrical endurance tests are to be performed at room temperature and pressure.
9. Weight: .011 pound maximum (5.0 grams). For switches with solder lug terminals. .0211 pound maximum (9.6 grams). For switches with IWTS termination.
10. Shock: Switches with solder terminals, method I and method II (high impact). Switches with IWTS terminals, method I only. The switch shall be electrically and mechanically operative at the conclusion of the test and there shall be no mechanical transfer during the test.
11. Suitable for mounting on panels of .062 (1.57 mm) maximum thickness.
12. Strength of terminal: 5 pound normal to the mounting planes, and 2 pounds in other planes, (solder lug terminals only).
13. Strength of actuator: Lever pivot and lever stop 6 pounds.
14. Switches with ITWS terminals shall accept M39029/1-101 connector contacts.
15. With IWTS termination: Sealing plugs may be used in non-functional terminal grommet holes. Switches shall accept MS27488-20 end seal plugs.
16. The terminal sealing grommet for switches with IWTS terminals shall seal on smooth wire insulations of .040 (1.02 mm) to .083 (2.11 mm) diameter. The sealing grommet shall be color coded red to indicate contact size.
17. Installing/removal tool for IWTS connector contacts is M81969/14-02.

FIGURE 2.

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NOTE: The following test requirements apply only to those switches with integrated wire terminals.

TEST REQUIREMENTS:

Qualification and group B tests are to be performed in accordance with MIL-DTL-8834 except:

During all tests switches are to be fully wired with appropriate wire and terminal contacts.

Contact voltage drop: The contact voltage drop with two terminals and the switch contact in series shall not exceed 8 millivolts. This measurement shall be made from one wire contact through the switch contacts to the other wire contact with .1 ampere at a voltage of 2-4 V dc.

Fluid immersion: Two additional qualification and group B switches, fully wired, shall be subjected to three exposure cycles in accordance with a. and b. below.

- a. The terminal end of the switch shall be immersed to a depth of .375 (9.53 mm) measured from the exposed face of the sealing grommet in each of the following fluids to 2 +.5, -0 minutes between immersions. After each immersion, the excess liquid is to be blown off the switch external surfaces with an air jet.
 - (1) MIL-DTL-83133: Turbine fuels, Aviation, Kerosene Types, NATO F-34 (JP-8), NATO f-35, and JP-8 + 100 or Commercial Jet A-1
 - (2) Skydrol 500A: Federal stock number 9150-857-9069.
 - (3) MIL-PRF-87252 – Coolant Fluid, Hydrolytically Stable, Dielectric.
 - (4) ASTM-E1119: Glycol, Industrial Grade Ethylene, Standard Specification for.
 - (5) MIL-PRF-7808: Lubricating Oil, Aircraft Turbine Engine Synthetic Base.
- b. Exposure to ambient air for 24 ± 2 hours.
- c. At the end of the third cycle, the insulation resistance shall be measured and the switches shall be inspected for cracking and loosening of bonds and seams. When switches are tested as specified, the insulation resistance shall not be less than 1,000 megohms and there shall be no evidence of cracking and loosening of bonds and seams.

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Referenced documents. In addition to MIL-DTL-8834, this document references the following:

MIL-DTL-83133
MIL-I-81969/14
MIL-PRF-7808
MIL-PRF-87252
MS27488
ASTM-E1119

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:

Army - CR
Navy - AS
Air Force - 11
DLA - CC

Preparing activity:

DLA - CC

(Project 5930-1795)

Review activities:

Army - AV, MI
Navy - EC
Air Force - 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.