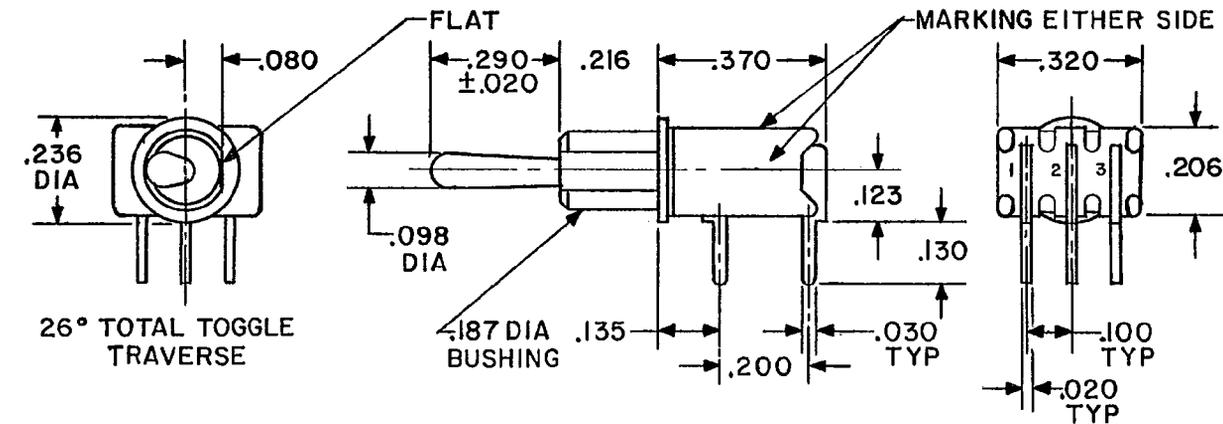


MILITARY SPECIFICATION SHEET

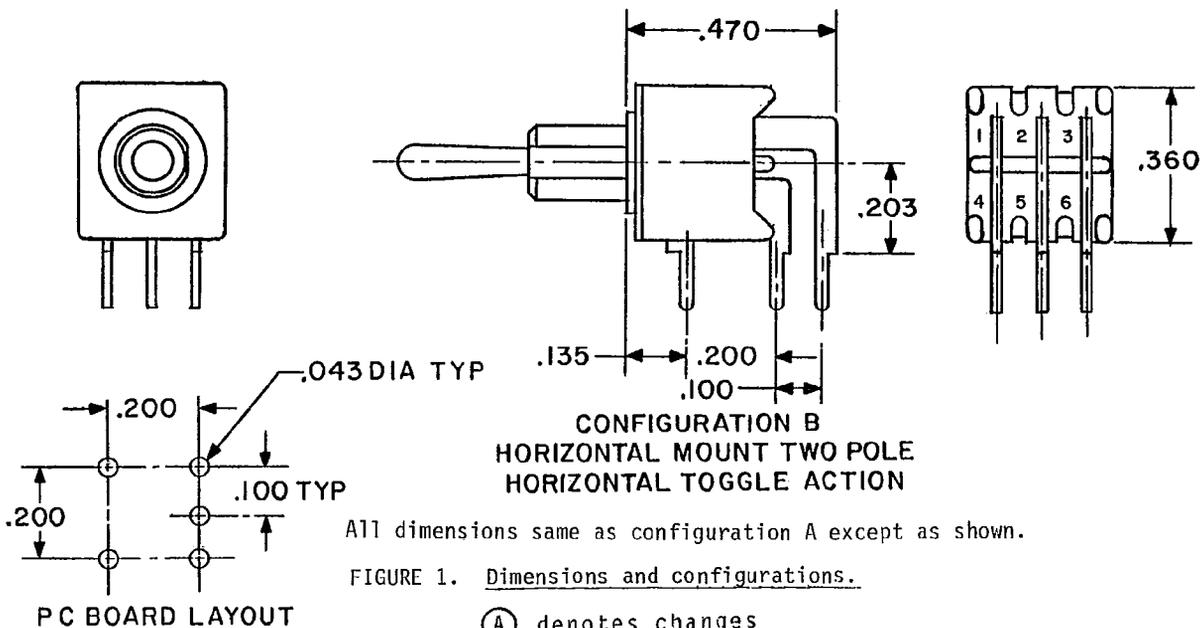
SWITCHES, TOGGLE, SUBMINIATURE, SEALED LEVER, FLUX SEALED,  
 ONE, TWO, AND FOUR POLE,  
 RIGHT ANGLE (HORIZONTAL AND VERTICAL) PCB MOUNT,  
 LOW-LEVEL CONTACTS

This specification is approved for use by the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the switches described herein shall consist of this specification and the latest issue of MIL-S-83731.



CONFIGURATION A  
 HORIZONTAL MOUNT ONE POLE  
 HORIZONTAL TOGGLE ACTION

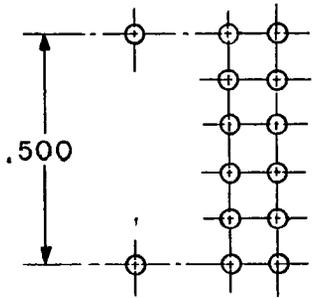
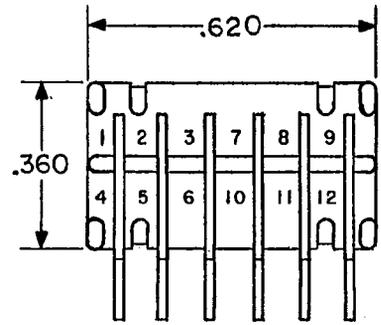
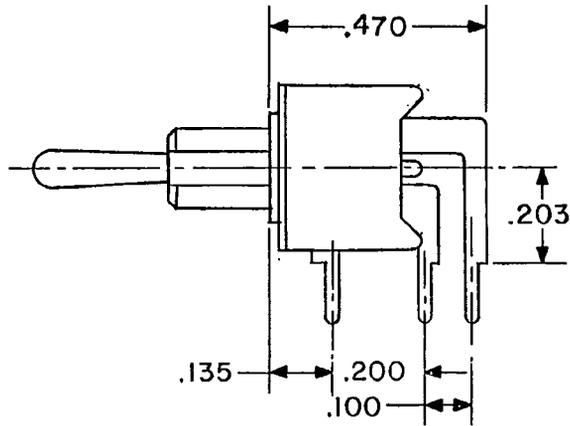
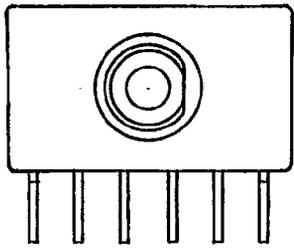


CONFIGURATION B  
 HORIZONTAL MOUNT TWO POLE  
 HORIZONTAL TOGGLE ACTION

All dimensions same as configuration A except as shown.

FIGURE 1. Dimensions and configurations.

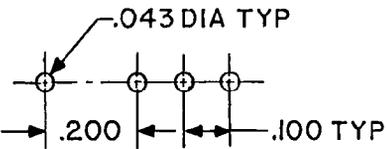
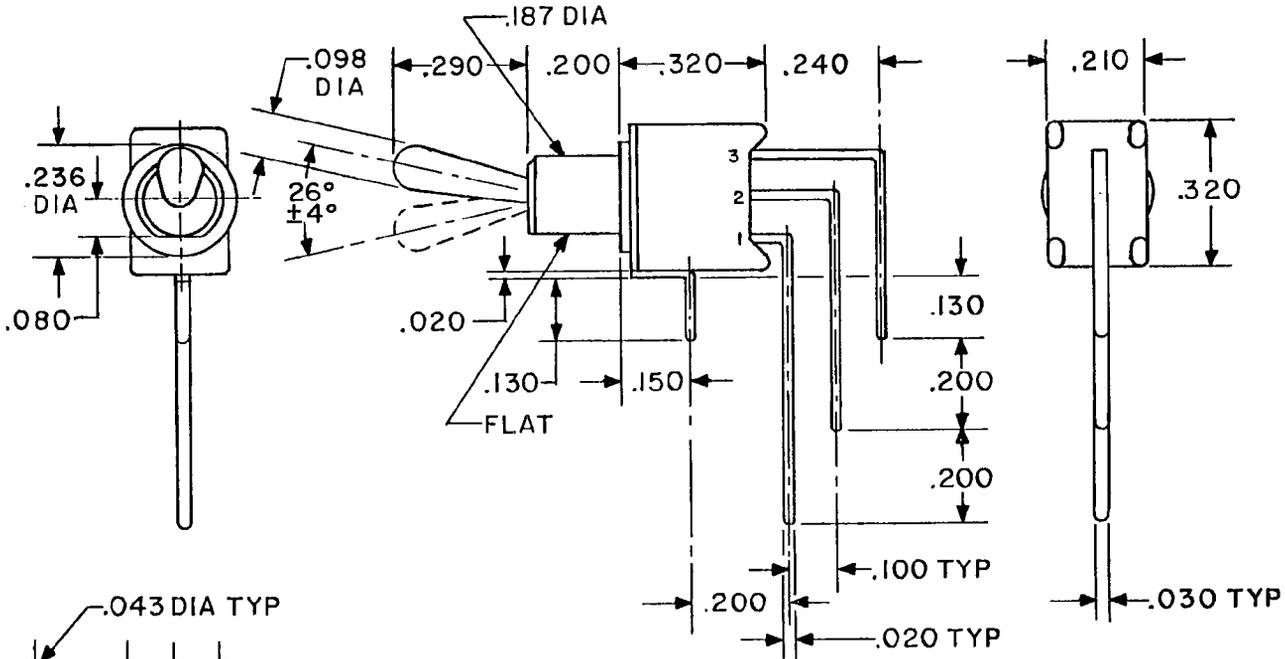
(A) denotes changes



PC BOARD LAYOUT

CONFIGURATION C  
HORIZONTAL MOUNT FOUR POLE  
HORIZONTAL TOGGLE ACTION

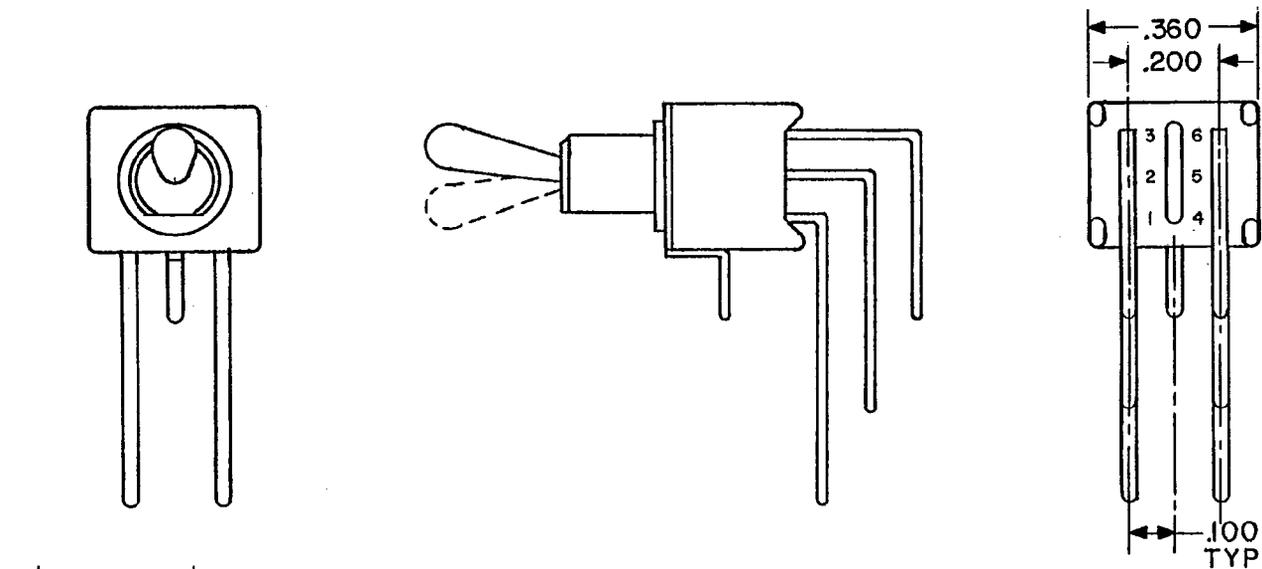
All dimensions same as configuration A except as shown.



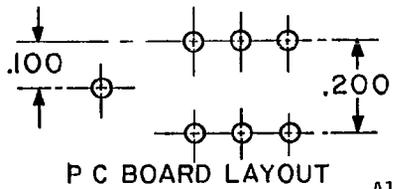
PC BOARD LAYOUT

CONFIGURATION D  
VERTICAL MOUNT ONE POLE  
VERTICAL TOGGLE ACTION

FIGURE 1. Dimensions and configurations - Continued.



**CONFIGURATION E**  
**VERTICAL MOUNT TWO POLE**  
**VERTICAL TOGGLE ACTION**



All dimensions same as configuration D except as shown.

Inches	mm	Inches	mm	Inches	mm
.020	0.51	.110	2.79	.280	7.11
.030	0.76	.130	3.30	.300	7.62
.040	1.02	.140	3.56	.320	8.13
.043	1.09	.160	4.06	.340	8.64
.080	2.03	.196	4.98	.360	9.14
.087	2.21	.200	5.08	.575	14.61
.100	2.54	.206	5.23	.620	15.75
		.250	6.35		

**NOTES:**

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is  $\pm 0.005$  (0.13 mm).
4. Action of internal mechanism movement is opposite to direction of toggle movement.
5. Terminal numbers are for reference only and may not appear on switch.

FIGURE 1. Dimensions and configurations - Continued.

REQUIREMENTS:

Design and construction:

Dimensions and configurations: See figure 1, configurations A through E, as applicable.

Material and finish:

Contacts:

Moving: 40 microinches minimum gold thickness over 80 microinches minimum nickel thickness over copper-alloy.

(A) Stationary: Gold-plate (40 microinches minimum thickness) over nickel-plate (80 microinches minimum thickness) over copper-alloy.

Terminals: Gold-flash (8 microinches minimum) over nickel-plate (80 microinches minimum) over copper-alloy.

Weight (maximum): 1 pole, 4.25 grams; 2 pole, 5.75 grams; 4 pole, 6.75 grams.

Temperature rating: -25°C to +71°C (operating); -55°C to 85°C (storage).

Electrical ratings:

Low level to .4 VA (with voltage limited to 20 V dc). Low level test limits defined as 10 mA max at open circuit voltage of 30 mV max (ac or dc).

Mechanical endurance: Except temperatures of cycling shall be -25°C, +0°C -4°C and +71°C, +4°C -0°C.

Electrical endurance (except as follows):

(A) Low level: In accordance with MIL-STD-202, method 311, using an open circuit test voltage of 30 mV (ac or dc) and a closed circuit current of 10 mA; 20,000 operating cycles at 20 cycles per minute minimum; no miss resistance in excess of 3 ohms. Monitoring of contacts for sticking is not applicable.

Overload: Not applicable.

(A) Short circuit: Not applicable.

Shock: Method I.

Flux sealed: These switches shall have their bases sealed to prevent flux from entering the switches during soldering processes. They shall be tested for this capability as follows: Measure and record initial contact resistances. Support switches, terminals down, in a shallow pan. Pour flux at 30°F ±5°F per type RMA of MIL-F-14256, specific gravity 0.896 into pan without splashing until level of flux is approximately 1/16 inch above bottom of plastic switch case and let switches soak for 10 minutes. Remove switches from flux, clean with flux cleaning solvent, and immediately place in oven for drying at 175°F ±10°F for 2 hours. After switches have cooled to room temperature, repeat measurement of contact resistance. Contact resistance shall not have increased in excess of 10 milliohms over the initial reading. Disassemble switch and visually examine the contact area for evidence of flux. Any evidence of flux shall be cause for rejection.

Dielectric withstanding voltage:

Atmospheric pressure: 1000 V rms.

Reduced barometric pressure (10,000 feet): 250 V rms.

Strength of terminals:

Printed circuit (PC) terminals: Shall be tested in accordance with method 211 of MIL-STD-202, condition B. For right angle switches, the bend shall be applied to the terminal portion that is inserted into a printed circuit board.

Strength of toggle lever:

For test (a) use 8 pound loads.

For test (b) use 5 pound loads.

Part number: The part number shall consist of the prefix M83731/18 followed by the appropriate 3 digit dash number from table I (e.g., M83731/18-001).

TABLE I. Dash numbers and their characteristics.

M83731/18 dash no.	No. of poles	Mounting	Circuit 1/ configuration	Applicable figure
-001	1	Horizontal	21	1A
-002	2	Horizontal	21	1B
-003	4	Horizontal	21	1C
-004	1	Vertical	21	1D
-005	2	Vertical	21	1E
-006	1	Horizontal	23	1A
-007	2	Horizontal	23	1B
-008	4	Horizontal	23	1C
-009	1	Vertical	23	1D
-010	2	Vertical	23	1E
-011	1	Horizontal	26	1A
-012	2	Horizontal	26	1B
-013	4	Horizontal	26	1C
-014	1	Vertical	26	1D
-015	2	Vertical	26	1E

1/ Circuit configurations are described in table II.

(A)

TABLE II. Circuit for switching characteristics.

Circuit	Circuit with toggle in		
	Opposite flat 1-2 7-8 4-5 10-11	Center	Flat side 2-3 8-9 5-6 11-12
21	ON	OFF	ON
23	ON	NONE	ON
26	MOM-ON	NONE	ON

Custodians:  
Air Force - 85

Preparing activity:  
Air Force - 85

Review activities:  
Air Force - 11, 99

Agent:  
DLA - ES

(Project 5930-F626-02)