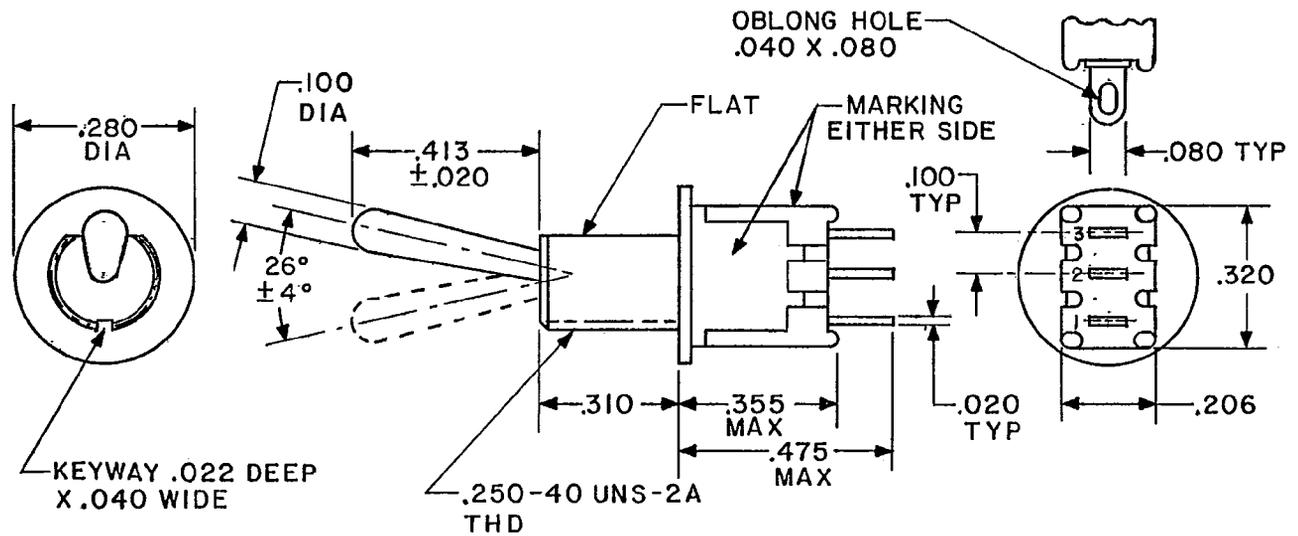


MILITARY SPECIFICATION SHEET

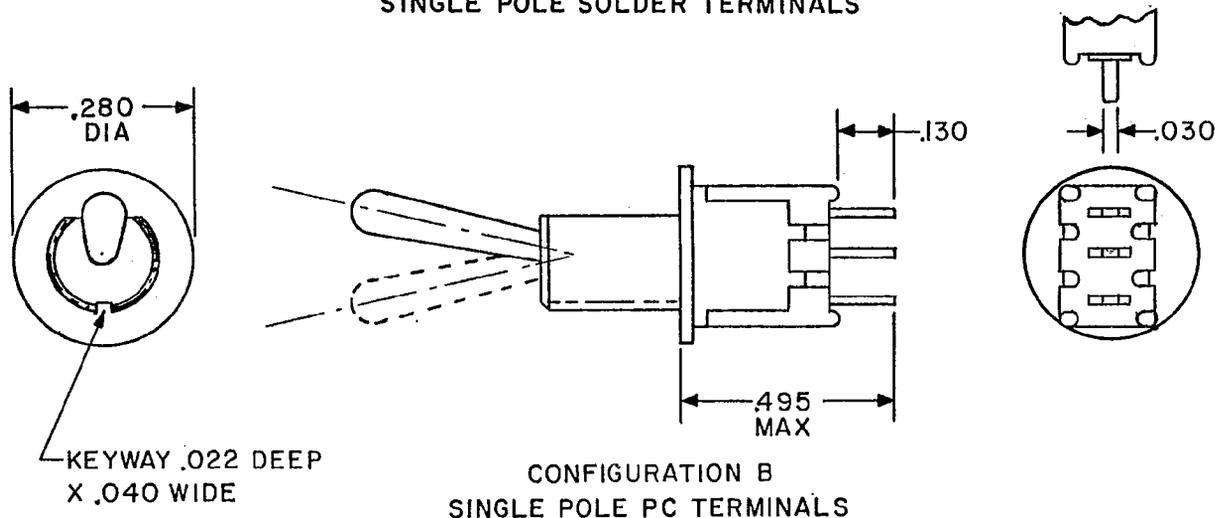
SWITCHES, TOGGLE, SUBMINIATURE, SEALED LEVER, FLUX SEALED,
 ONE, TWO, AND FOUR POLE, HIGH AND LOW-LEVEL CONTACTS

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.



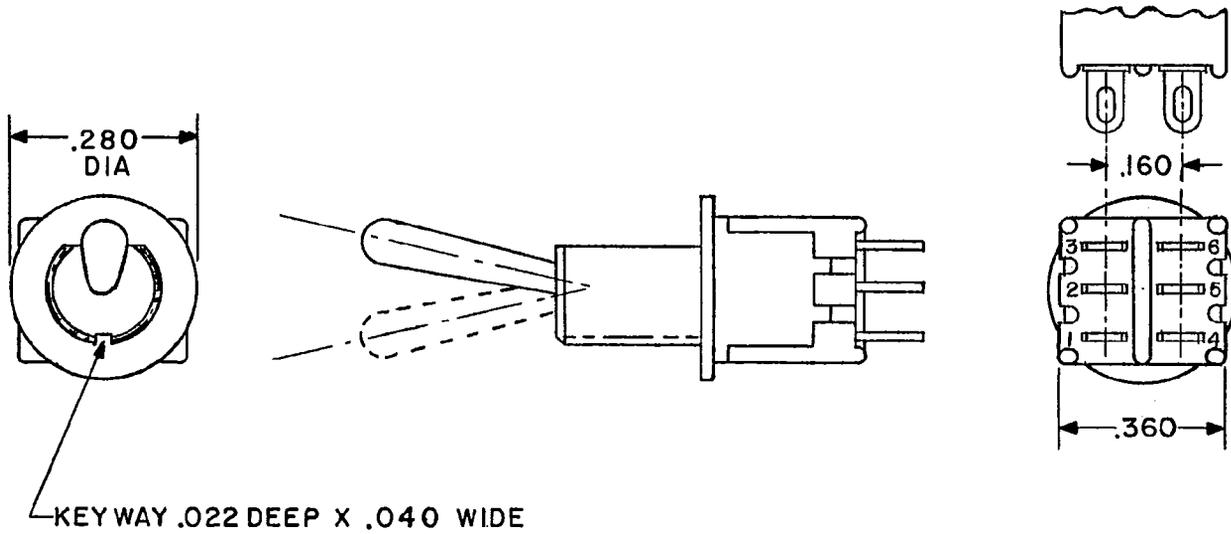
CONFIGURATION A
 SINGLE POLE SOLDER TERMINALS



CONFIGURATION B
 SINGLE POLE PC TERMINALS

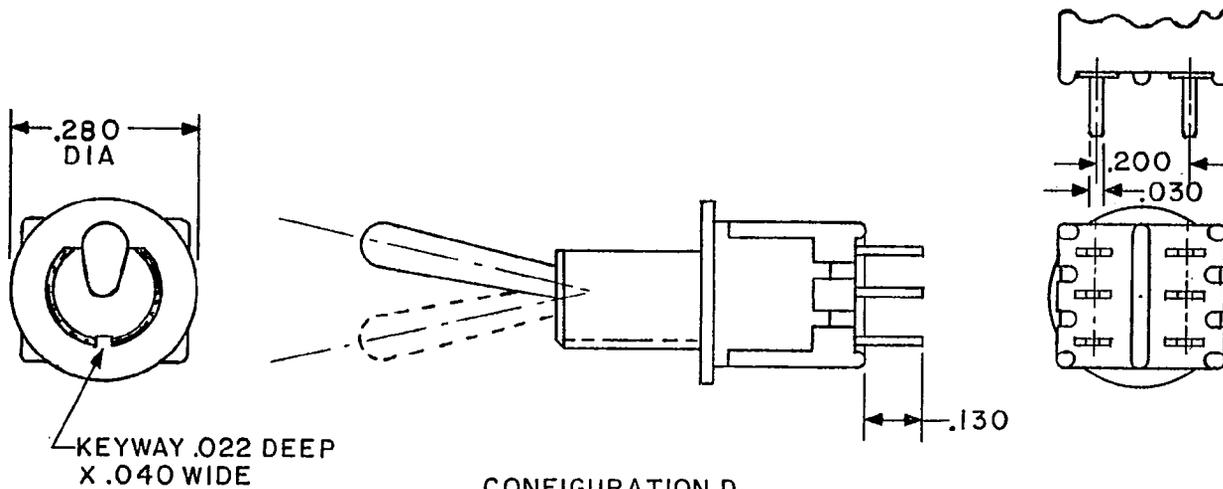
All dimensions same as configuration A except as shown.

(A) denotes changes



CONFIGURATION C
DOUBLE POLE SOLDER TERMINALS

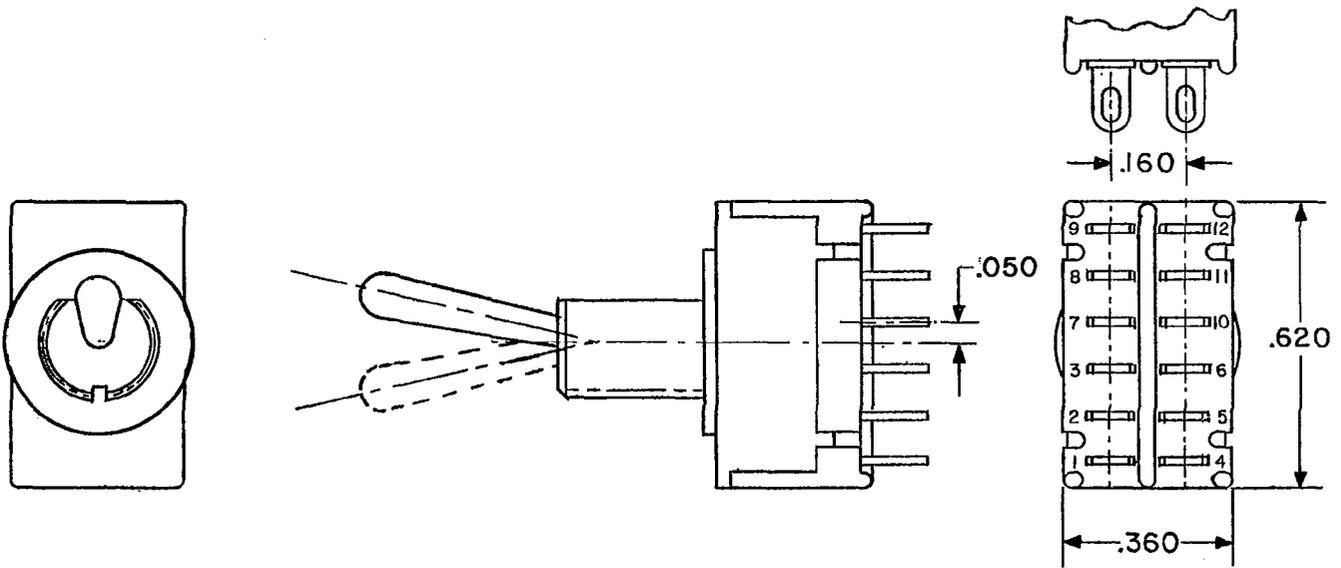
All dimensions same as configuration A except as shown.



CONFIGURATION D
DOUBLE POLE PC TERMINALS

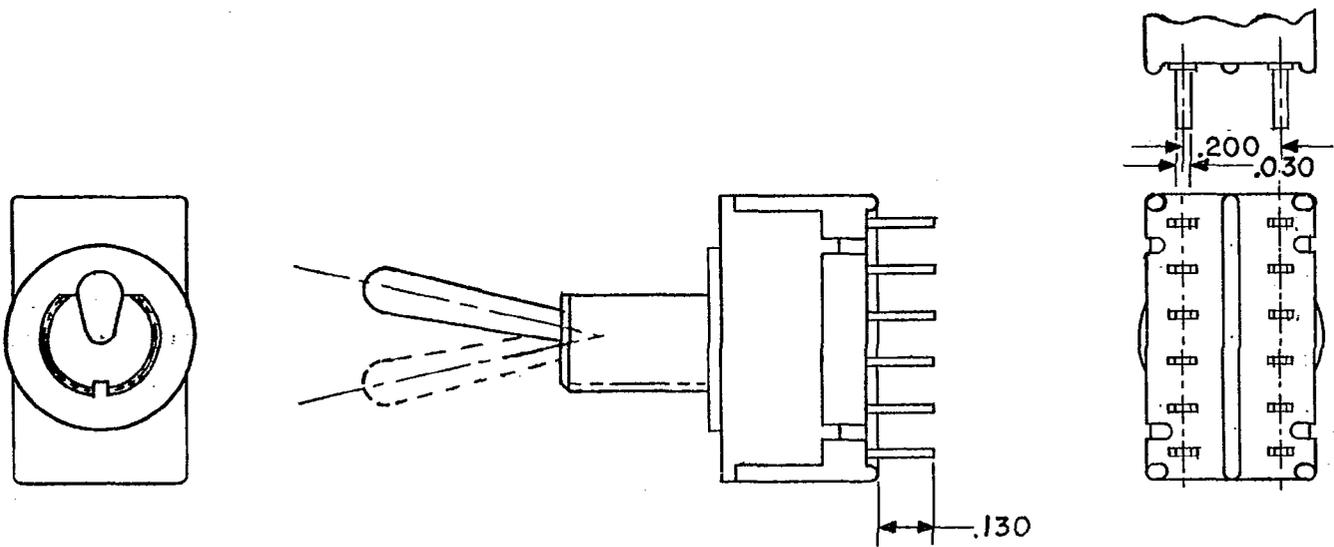
All dimensions same as configuration C except as shown.

FIGURE 1. Dimensions and configurations - Continued.



**CONFIGURATION E
FOUR POLE SOLDER TERMINALS**

All dimensions same as configuration A except as shown.



**CONFIGURATION F
FOUR POLE PC TERMINALS**

All dimensions same as configuration E except as shown.

FIGURE 1. Dimensions and configurations - Continued.

Inches	mm	Inches	mm	Inches	mm
.020	0.51	.130	3.30	.320	8.13
.022	0.56	.160	4.06	.355	9.02
.030	0.76	.200	5.08	.360	9.14
.040	1.02	.206	5.23	.413	10.49
.080	2.03	.280	7.11	.475	12.07
.100	2.54	.310	7.87	.495	12.57
				.620	15.75

NOTES:

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

FIGURE 1. Dimensions and configurations - Continued.

MIL-S-83731/17A(USAF)

REQUIREMENTS:

Design and construction:

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

Material and finish:

Contacts:

- Ⓐ Moving: Gold-plate (40 microinches minimum thickness) over nickel-plate (80 microinches minimum) over silver-inlay (.008 inch minimum thickness) over copper-alloy.

Stationary: Gold-plate (40 microinches minimum thickness) over nickel-plate (80 microinches minimum thickness) with a .010 inch minimum silver edge lay over copper-alloy.

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

- Ⓐ Mounting hardware: Each switch shall be furnished with two hex nuts and an internal tooth lockwasher. In addition, a key "D" washer (see appendix of MIL-S-83731) shall be furnished.

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:

High/intermediate load level (at 28 V dc, 125 V ac 60 Hz, or 115 V ac 400 Hz):

Resistive load: 3 amperes.

Inductive load: 1 ampere.

Lamp load: .25 ampere.

Intermediate load (at 28 V ac or 28 V dc): 0.5 VA maximum.

Low level: 10 mA maximum 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):

CAUTION: During qualification testing, except for endurance, short circuit and overload testing, the contact loading shall be 100 mA maximum at 6 ±1 V dc.

Resistive load: 10,000 operating cycles for each required temperature extreme.

Inductive load: 10,000 operating cycles for room atmosphere and 10,000 feet altitude.

Lamp load: 10,000 operating cycles.

Intermediate load: 10,000 operating cycles using 50 mA at 10 ±2 V dc.

- Ⓐ 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: Applicable to high/intermediate load level switches only.

- Ⓐ Short circuit: Use 50 A at 28 V dc as respective voltage and current levels.

MIL-S-83731/17A(USAF)

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 80°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:

Solderable terminals: Applicable.

Printed circuit (PC) terminals: Shall be tested in accordance with method 211 of MIL-STD-202, condition B.

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 M83731/17 followed by the appropriate 3 digit dash number from table I (e.g., M83731/17-001).

TABLE I. Dash numbers and their characteristics.

83731/17 Dash no.	No. of poles	Rating 1/	Circuit 2/ configuration	Type of terminal	Applicable figure
-001	1	H/I/LL	21	Wire	1A
-002	2	H/I/LL	21	Wire	1C
-003	4	H/I/LL	21	Wire	1E
-004	1	H/I/LL	21	PC	1B
-005	2	H/I/LL	21	PC	1D
-006	4	H/I/LL	21	PC	1F
-007	1	H/I/LL	23	Wire	1A
-008	2	H/I/LL	23	Wire	1C
-009	4	H/I/LL	23	Wire	1E
-010	1	H/I/LL	23	PC	1B
-011	2	H/I/LL	23	PC	1D
-012	4	H/I/LL	23	PC	1F
-013	1	H/I/LL	26	Wire	1A
-014	2	H/I/LL	26	Wire	1C
-015	4	H/I/LL	26	Wire	1E
-016	1	H/I/LL	26	PC	1B
-017	2	H/I/LL	26	PC	1D
-018	4	H/I/LL	26	PC	1F

1/ H/I/LL indicates switch has capability at high level, intermediate level, and low level. To prevent compromising the contact interface, a switch used at the intermediate level (100 mA max) or low level, should not be used or tested at high level.

2/ Circuit configurations are described in table II.

①

TABLE II. Circuit for switching characteristics.

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

Custodians:
Air Force - 85

Review activities:
Air Force - 11, 99

Preparing activity:
Air Force - 85

Agent:
DLA - ES

(Project 5930-F626-01)