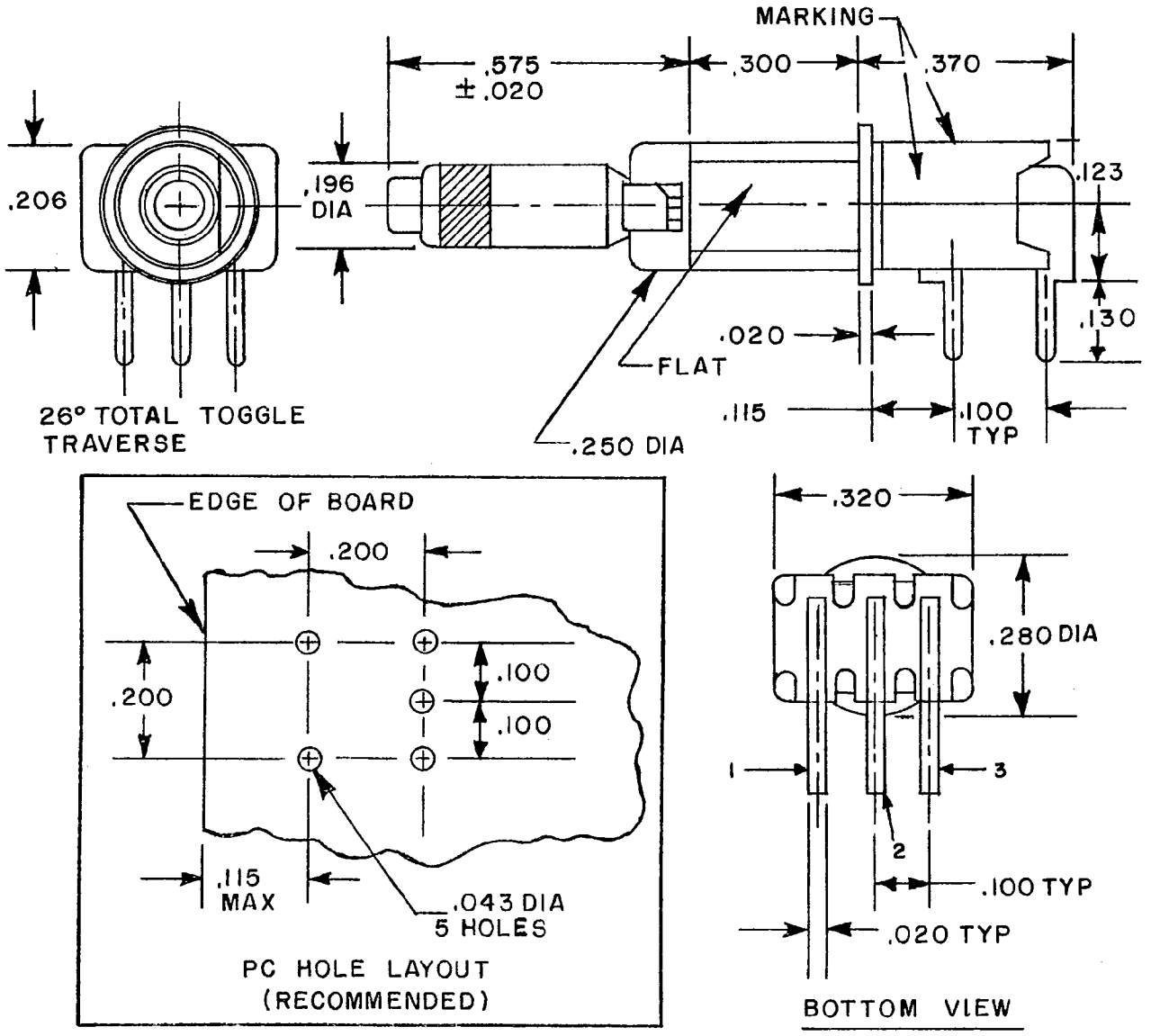
MILITARY SPECIFICATION SHEET

SWITCHES, TOGGLE, SUBMINIATURE, LEVER LOCK, SEALED LEVER, FLUX SEALED RIGHT ANGLE PC BOARD MOUNT - ONE, TWO, AND FOUR POLE, 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 complete requirements for acquiring the switches described herein shall consist of this specification and the latest issue of MIL-S-83731.



Configuration A
Single pole

FIGURE 1. Dimensions and configurations.

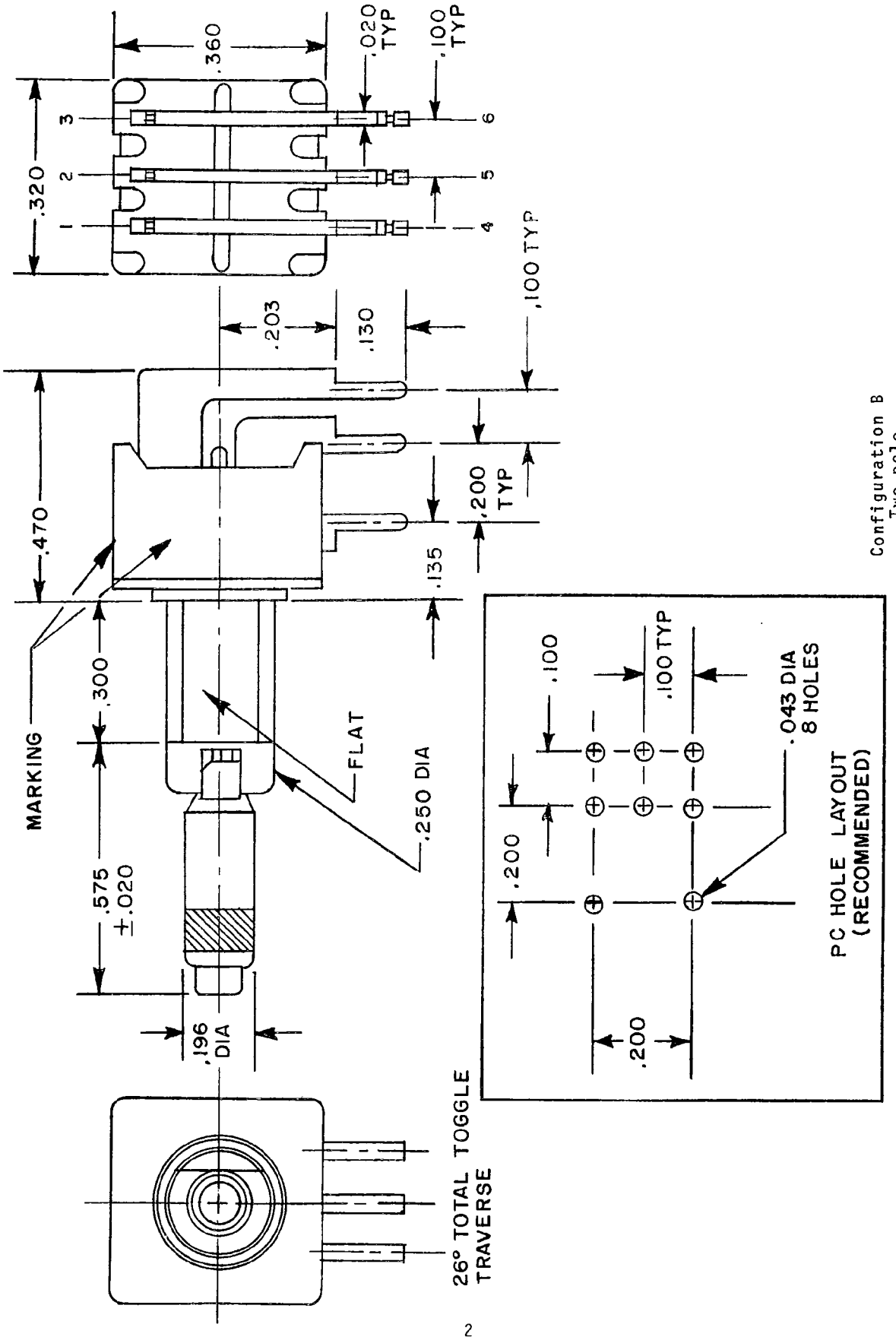


FIGURE 1. Dimensions and configurations - Continued.

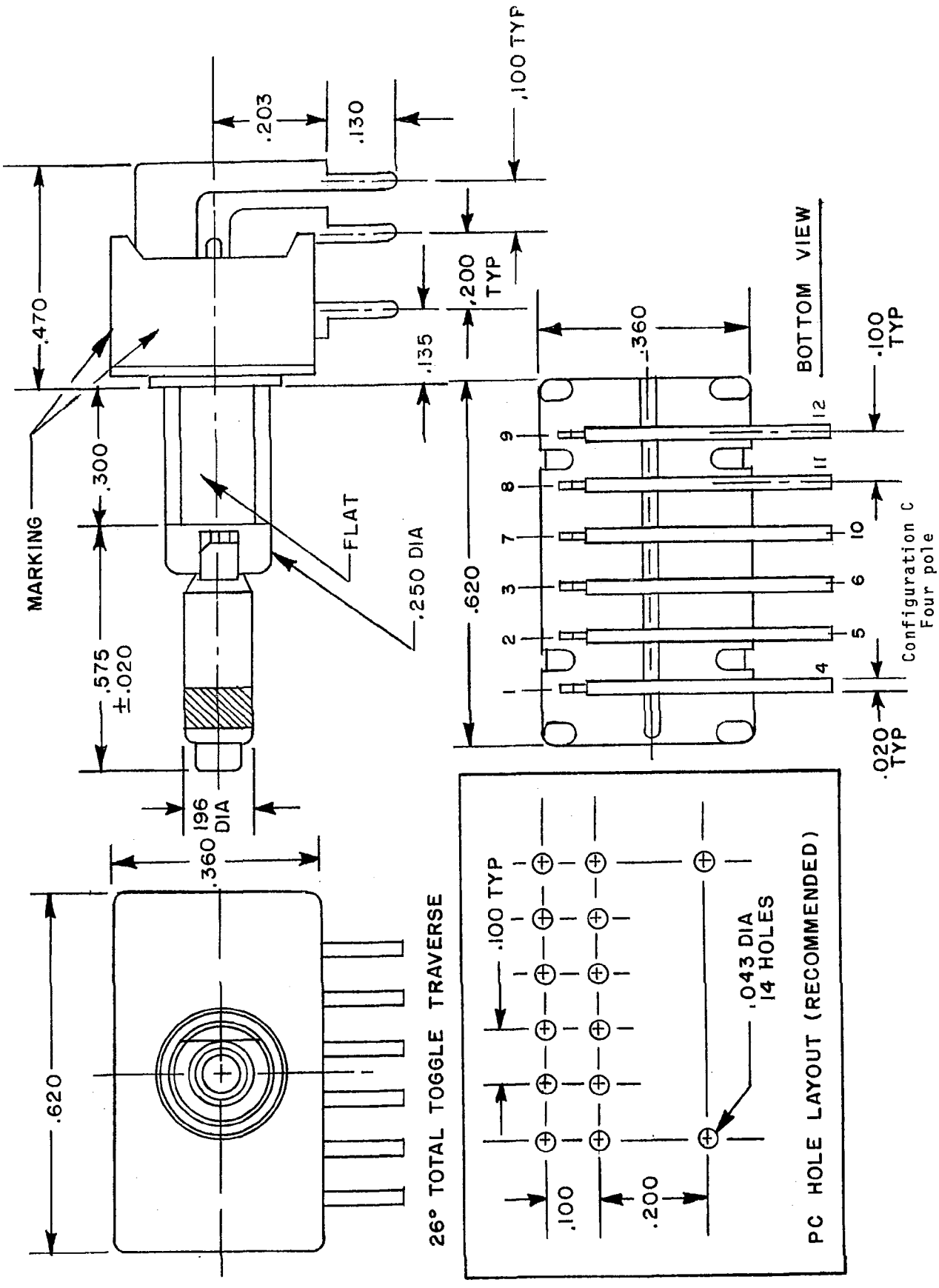


FIGURE 1. Dimensions and configurations - Continued.

INCHES	MM	INCHES	MM
.020	.51	.206	5.23
.030	.76	.280	7.11
.043	1.09	.300	7.62
.100	2.54	.320	8.13
.115	2.92	.360	9.14
.123	3.12	.370	9.40
.130	3.30	.470	11.96
.135	3.43	.575	14.61
.196	4.98	.620	15.75
.200	5.08		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only and are based upon 1 inch = 25.4 mm.
3. Unless otherwise specified, tolerance is ±.005 (.13 mm) and ±4°.
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.

TABLE I. Circuit for switching characteristics.

Circuit 1/	Available 1/ locking combinations	Circuit with toggle in		
		Flat side	Center	Opposite flat side
21	A	On	Off	On
23	D	On	None	On

1/ Circuit numbers and locking combinations are derived from MS27740(USAF).

TABLE II. Dash numbers and characteristics.

M83731/20 Dash no.	No. of poles	Circuit 1/ configuration	Applicable figure
-001	1	21	1A
-002	2	21	1B
-003	4	21	1C
-004	1	23	1A
-005	2	23	1B
-006	4	23	1C

1/ Circuit configurations are described by table I.

REQUIREMENTS:

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

Material and finish:

Contacts:

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

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 maximum at open circuit voltage of 30 mV maximum (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):

Low level: Per 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. Contact sticking not applicable.

Overload: Not applicable.

Shock: Method I.

Terminal flux seal: 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 the 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 two hours. After switches have cooled to room temperature, repeat measurement of contact resistance. Contact resistance shall not increase by more than 10 milliohms over the initial reading. Disassemble switch and visually inspect 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.

a. Test condition B.

b. For right angle switches, the bend shall be applied to the terminal portion that is inserted into a printed circuit board.

Part number: The part number shall consist of the prefix M83731/20 followed by the appropriate three digit dash number from table II (e.g., M83731/20-001).

Custodian:
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