INCH-POUND

MIL-PRF-22885/92B
1 March 2001
SUPERSEDING
MIL-S-22885/92A(EC)
10 December 1981

PERFORMANCE SPECIFICATION SHEET

SWITCH, PUSHBUTTON, ILLUMINATED, ROCKER, PADDLE, POWER DUTY, UNSEALED

This specification is approved 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 MIL-PRF-22885.

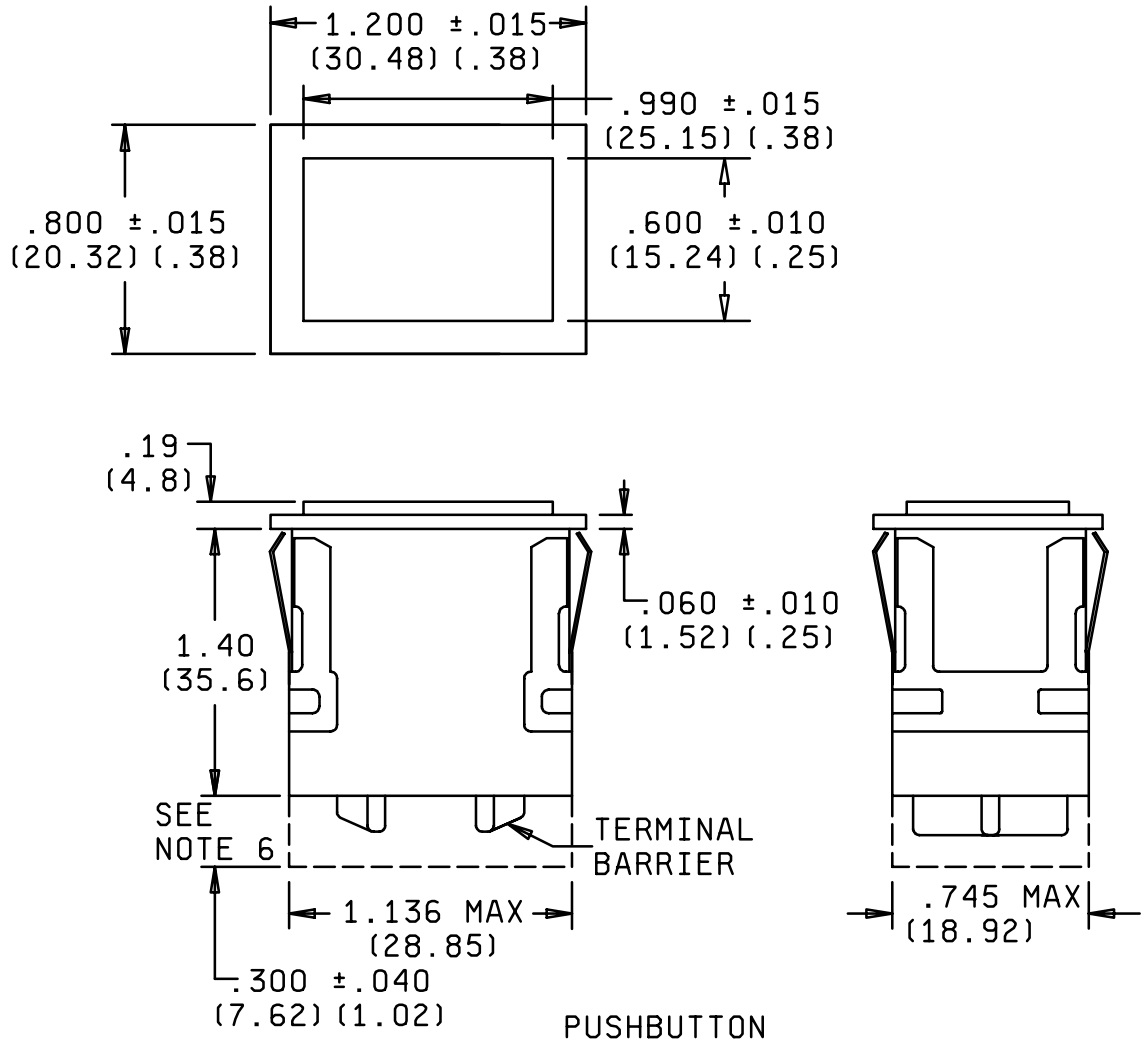


FIGURE 1. Configurations and dimensions.

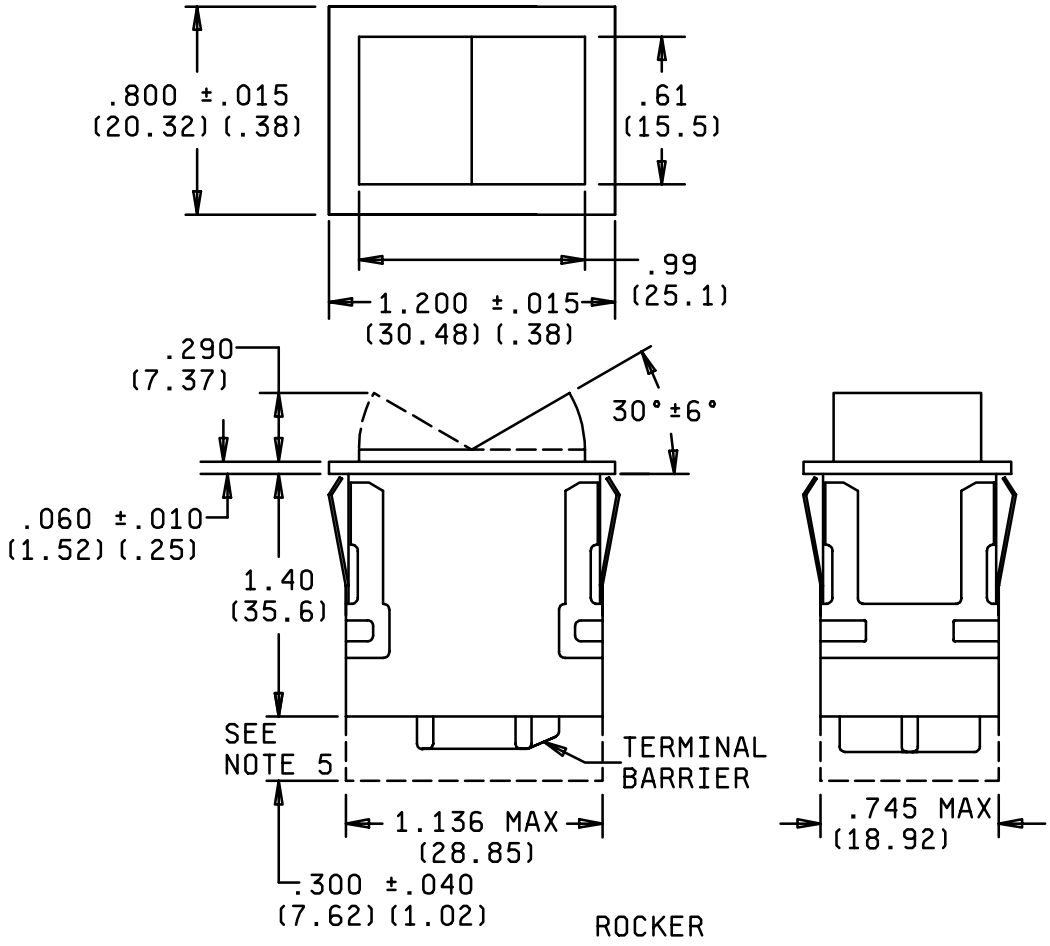
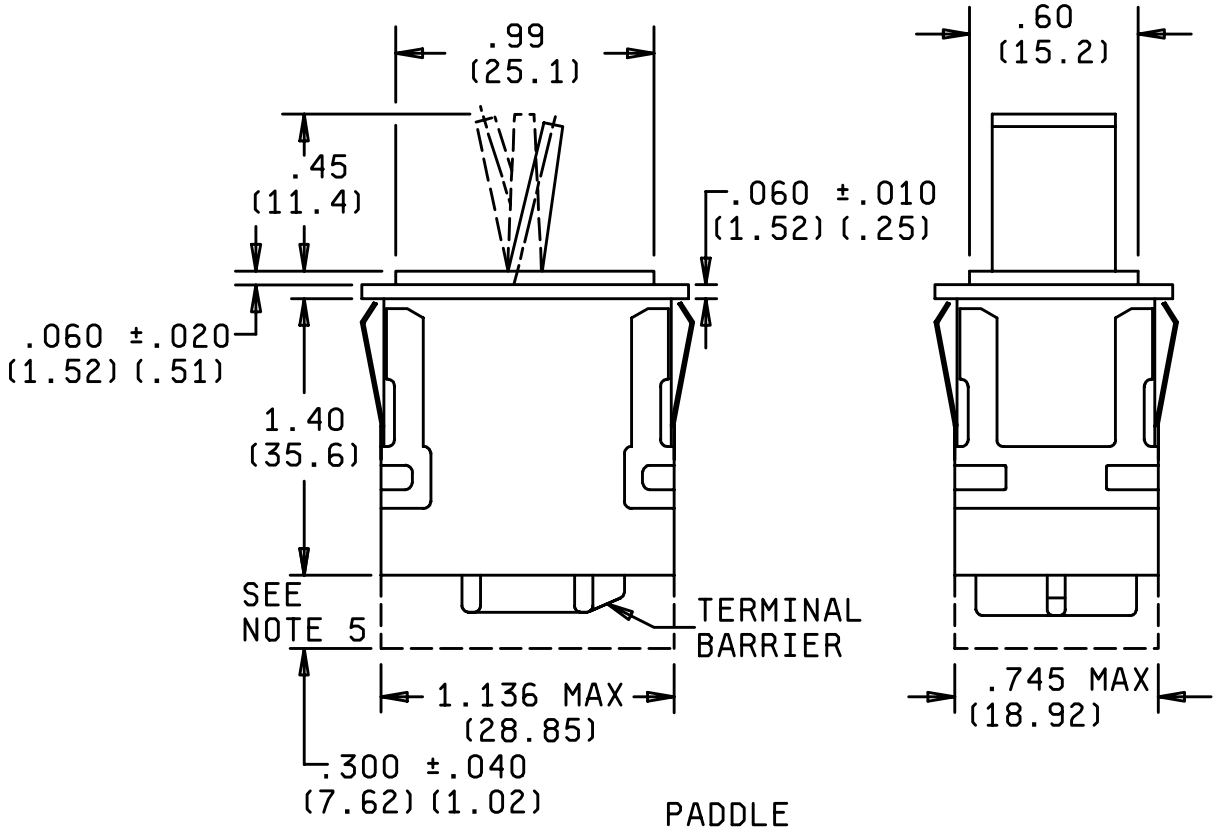


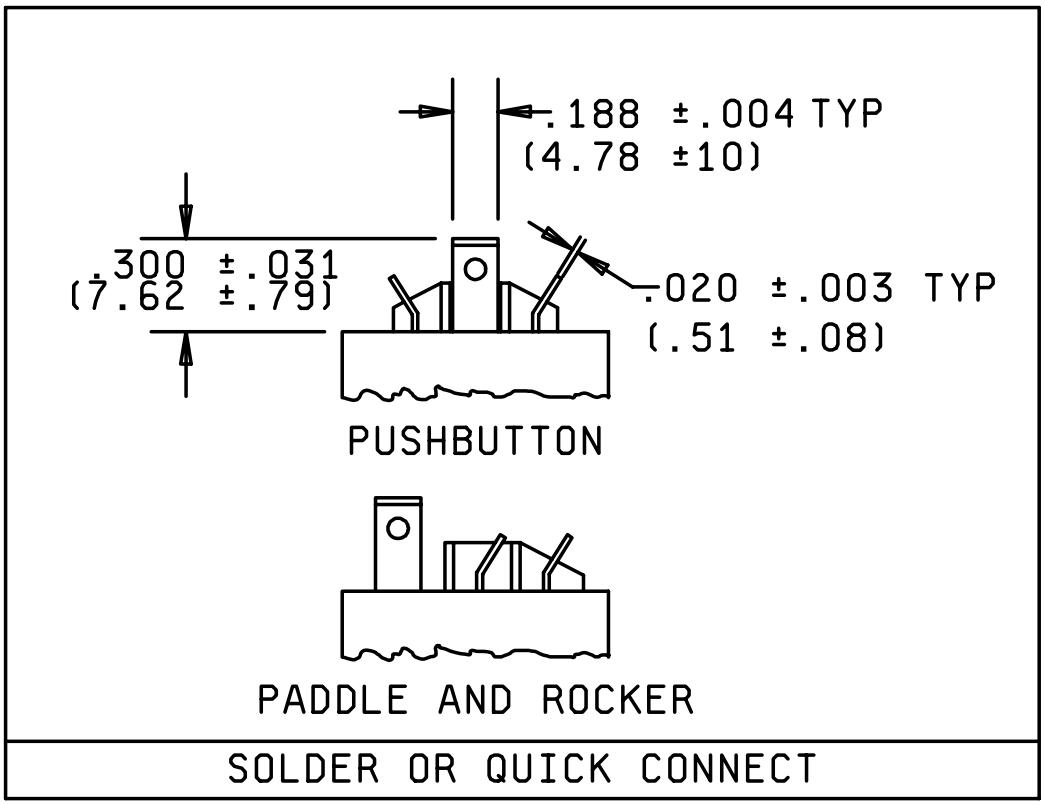
FIGURE 1. Configurations and dimensions - Continued.



NOTES

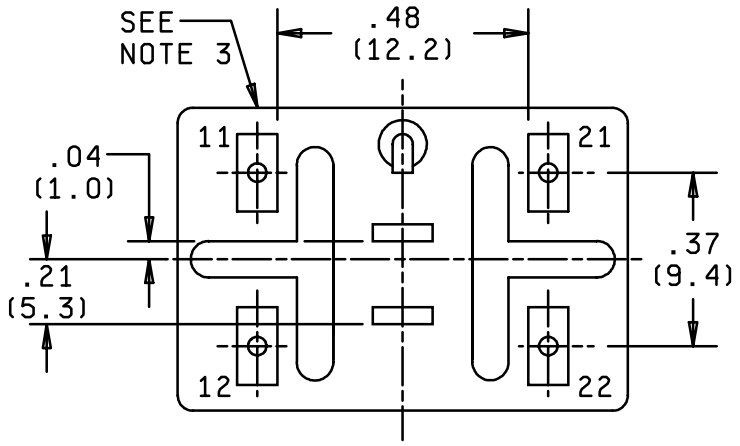
1. Dimensions are in inches.
2. Tolerances are ±.031 (±0.79 mm) unless otherwise specified.
3. Switches shall mount on .060 -.187 (1.52 -4.75 mm) panel thickness.
4. The design configuration is optional within envelope dimensions shown.
5. See figures 3 and 4 for terminal size and location.
6. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
7. Metric equivalents are in parentheses.

FIGURE 1. Configurations and dimensions - Continued.

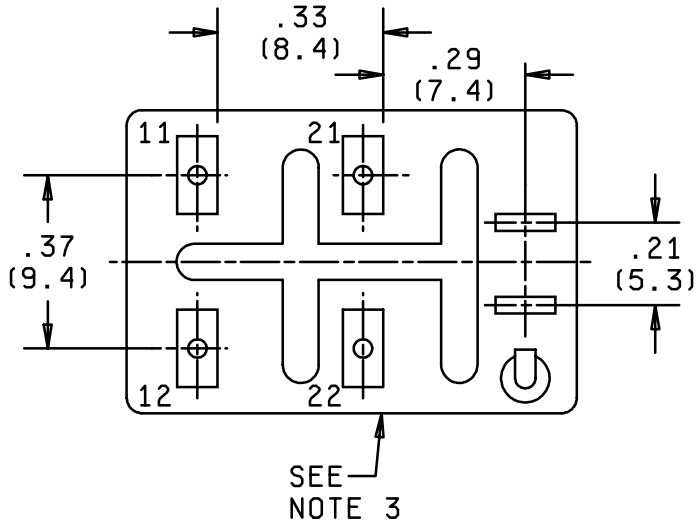


NOTES:
1. Solder hole will accept one #14 AWG stranded conductor
2 Dimensions are in inches.
3. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
4. Metric equivalents are in parentheses.

FIGURE 2. Terminals.



PUSHBUTTON

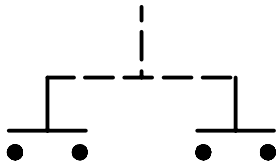


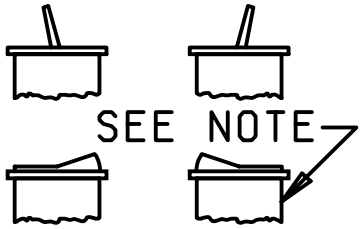
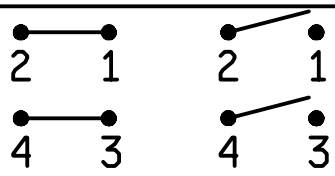
PADDLE AND ROCKER

NOTES:
1. Dimensions are in inches.
2. Tolerances are ±.031 (±0.79 mm), unless otherwise specified.
3. Manufacturer's logo on this side of housing.
4. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
5. Metric equivalents are in parentheses.

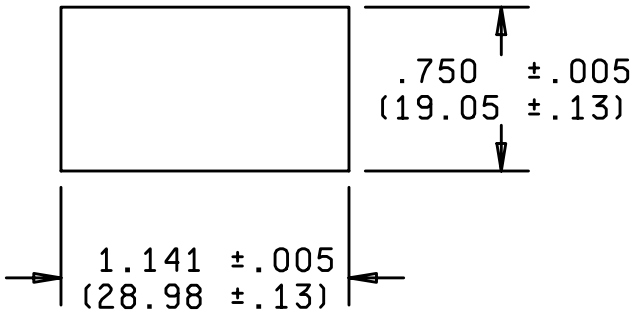
FIGURE 3. Terminal location .

TABLE I. Circuitries.

PUSHBUTTON	
POLES	CIRCUITRIES
2 (FORM X)	

ROCKER AND PADDLE	
POLES	
1 (FORM A)	
2 (FORM A)	

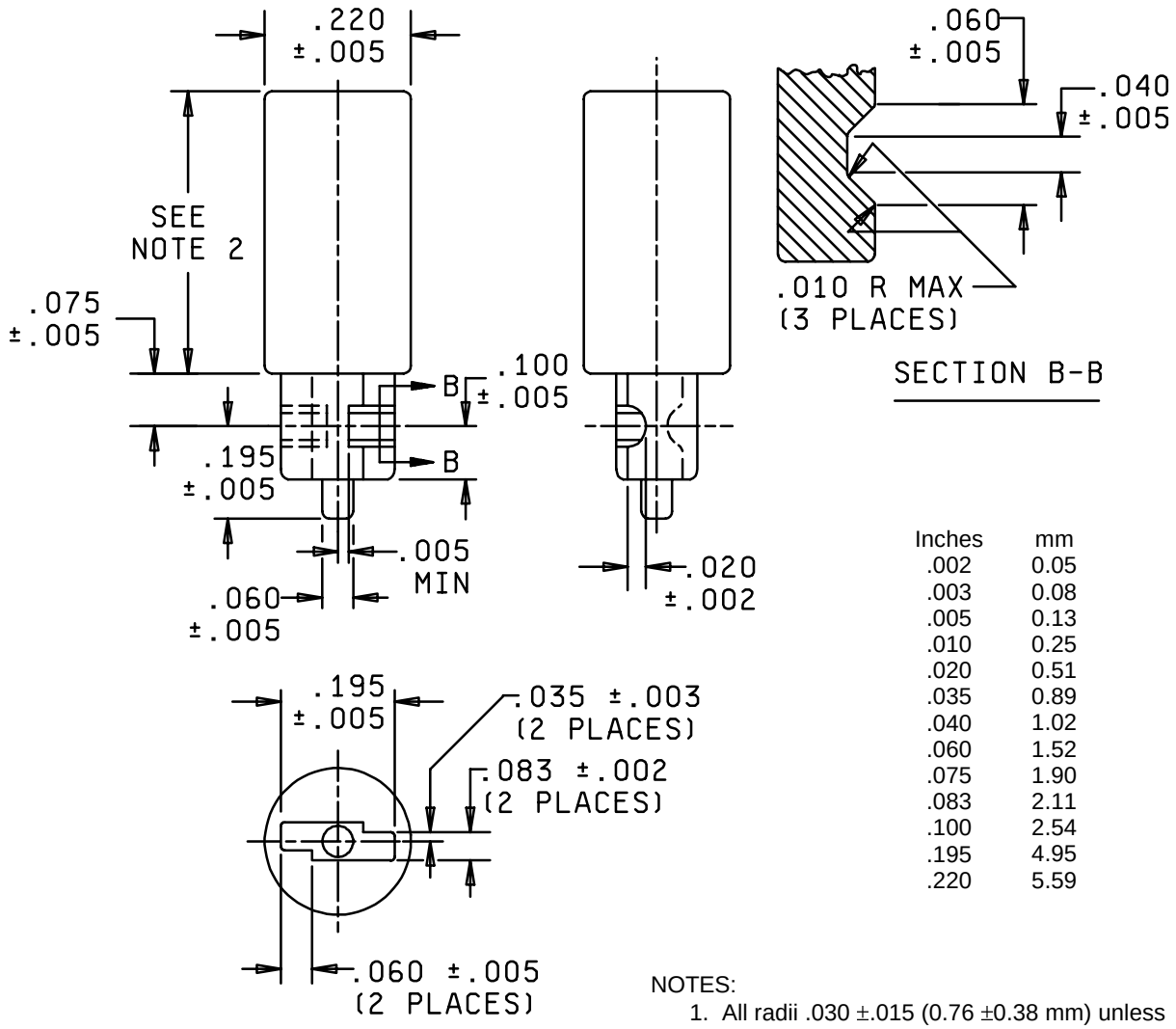
NOTE: Circuitries are shown with the switch positioned such that the manufacturer's logo is located on this side of the switch.



STRIP MOUNTING (SEE NOTE 3)
(1.20)(NO. OF UNITS) -.045 (30,5)(NO. OF UNITS) -1,14

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. See application information for strip mounting information.

FIGURE 4. Panel cutout.



Inches	mm
.002	0.05
.003	0.08
.005	0.13
.010	0.25
.020	0.51
.035	0.89
.040	1.02
.060	1.52
.075	1.90
.083	2.11
.100	2.54
.195	4.95
.220	5.59

NOTES:

1. All radii .030 ±.015 (0.76 ±0.38 mm) unless otherwise specified.
2. This dimension shall be adjusted to provide a total weight of 5 +1, -0 gram.
3. May be of multi-piece construction.
4. May be suitably plated to resist corrosion.
5. Dimensions are in inches.
6. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.

FIGURE 7. T1-3/4 wedge base lamp retention plug.

REQUIREMENTS:

Dimensions and configuration: See figures 1 through 5 and table I.

Complete switch shall consist of:

Switch housing: The switch housing shall include mounting clips.

Actuation and display: Unassembled, when furnished.

Pushbutton actuation:

Transmitted color: (One translucent colored button is furnished when specified).

Projected color: (One white translucent cap and a translucent color insert is furnished when specified).

Hidden color: (One black appearing cap and a translucent color insert is furnished when specified).

Nonilluminated: (One translucent colored button is furnished when specified).

Rocker actuation: Rocker actuation provides transmitted color display only. The rocker operator can be provided as one piece full rocker or two piece rocker for contrasting color selection.

Paddle actuation: Same features as detailed for the pushbutton actuation except paddle cover is provided as a two piece cover.

Lamp: Not furnished. Illuminated devices will accept T-1 3/4 subminiature wedge base incandescent lamp.

Enclosure design: 1 (unsealed).

Temperature characteristic: 0°C to +55°C.

Vibration grade: 2 (10-500 Hz).

Materials:

Polycarbonate: May be used for light display and actuator materials only providing it meets UL 94V-2 or better.

Termination: Quick connect and solder terminals may have up to .0005 inch thick external silver plating.

Weight: See table II.

TABLE II. Weight.

Configuration	Maximum weight
Pushbutton	31 grams
Rocker	35 grams
Paddle	35 grams

Lamp contacts: Contacts for incandescent lamps shall be designed to accept T-1 3/4 wedge base lamps.

Lens: The lens design shall permit application of hot stamp legends.

Explosion: Not applicable.

Overload: Inductive load ac electrical endurance samples shall be subjected to a resistive overload test at 150 percent of the inductive rating.

Electrical ratings and endurance: See table III.

Operating characteristics: See table IV.

TABLE III. Electrical ratings and endurance.

Rating	Cycles
Pushbuttons	
10 amperes, 125 V ac (60% power factor) 8 amperes, 28 V dc resistive	25,000
Rockers and paddles	
15 amperes, 125 V ac (60% power factor) 10 amperes, 28 V dc resistive	25,000

TABLE IV. Operating characteristics.

Configuration	Characteristic	Value
Pushbutton	Total actuator travel	.170 inch min
Rocker		30° ±6°
Paddle		30° ±6°

Contact resistance (switch):

Initial: .100 ohms maximum.

After electrical endurance: Not applicable.

Lamp contact resistance: Lamp circuit resistance test plug in accordance with figure 6.

Strength of actuating means:

Rocker actuation - The static load shall be gradually applied to the rocker surface when that surface is parallel to the mounting surface.

Paddle actuation - With the paddle in the extreme position, a static load of 15 pounds shall be gradually applied perpendicular to the paddle axis and parallel to the direction of paddle travel.

Thermal shock: Temperature extremes shall be -40°C to +65°C.

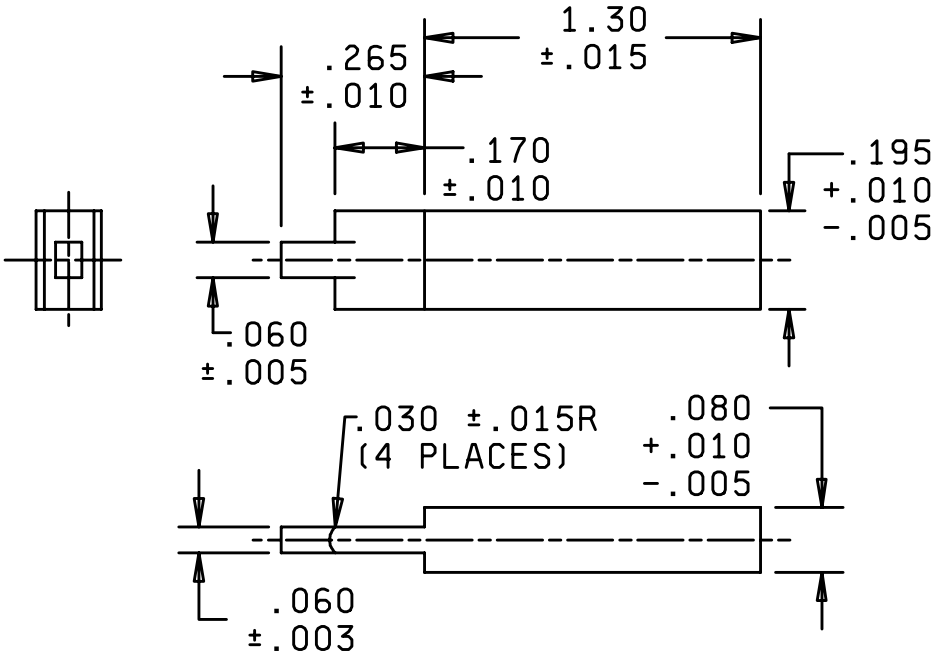
Shock (specified pulse): MIL-STD-202, method 213, test condition A (50 G's).

Field of view: Obstruction of view by the paddle shall not be cause for failure.

Color and luminance: See tables V and VI.

Group A inspection: See table VII.

Qualification inspection: See table VIII.



Inches	mm
.003	0.08
.005	0.13
.010	0.25
.015	0.38
.030	0.76
.060	1.52
.080	2.03
.170	4.32
.195	4.95
.265	6.73
1.30	33.02

NOTES:
1. Dimensions are in inches.
2. Material shall be one-half hard brass.
3. May be suitably plated to resist corrosion.
4. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.

FIGURE 6. T1-3/4 wedge base lamp circuit resistance test plug.

TABLE V. Illuminated chromaticity limits incandescent. 1/2/

Color	Chromaticity coordinates					
	Projected color		Transmitted color		Hidden color	
	"X"	"Y"	"X"	"Y"	"X"	"Y"
Blue	.275	.525	.325	.475	.275	.475
	.275	.450	.250	.475	.225	.475
	.200	.425	.250	.400	.200	.400
	.200	.525	.325	.400	.275	.350
Green	.415	.495	.290	.610	.275	.650
	.375	.450	.255	.525	.195	.595
	.300	.525	.180	.610	.325	.500
	.355	.585	.180	.695	.375	.550
Red	.695	.285	.695	.285	.695	.285
	.710	.290	.710	.290	.710	.290
	.655	.320	.655	.320	.655	.320
	.660	.340	.660	.340	.660	.340
White	.550	.395	.475	.435	.570	.395
	.530	.435	.475	.395	.530	.435
	.460	.435	.530	.435	.460	.435
	.460	.385	.545	.395	.460	.395
Yellow	.580	.400	.580	.400	.580	.400
	.590	.410	.590	.410	.590	.410
	.515	.450	.515	.450	.515	.450
	.525	.475	.525	.475	.525	.475

1/ Measured at 2200° Kelvin using one configuration type II indictor housing plus two lens of each color.
2/ Illuminated chromaticity limits shall be established by the spectroradiometric method for incandescent lamps.

TABLE VI. Brightness - incandescent push-button switch, rockers, and paddles.

Color	Brightness foot-lambert minimum average								
	Pushbutton, configuration type I 1/			Rockers, configuration type II 2/			Paddles, configuration type III 3/		
	Projected	Transmitted	Hidden	Projected	Transmitted	Hidden	Projected	Transmitted	Hidden
Blue	11	7	2	22	12	4	22	12	4
Green	22	11	2	36	17	4	36	17	4
Red	19	15	3	38	34	8	38	34	8
White	58	43	12	98	98	17	98	98	17
Yellow	52	62	13	108	123	20	108	123	20

1/ Tested with one lamp using one housing plus two lens of each color.
2/ Tested using one housing plus two lens of each color.

TABLE VIII. Group A inspection.

Inspection
Visual and mechanical inspection 1/ Operating characteristics Dielectric withstanding voltage Contact resistance (switch)

1/ At the option of the contractor, in-process inspection may be used to meet the materials and design and construction requirements provided they meet the acceptable quality level and all of the contractor's in-process control data on these tests are made available to the Government upon request.

TABLE VIII. Qualification (group submission).

Inspection	Samples 4/	Extent of approval
Group I Visual and mechanical inspection 1/ Solderability 2/ Resistance to solder heat 2/ Contact resistance Operating characteristics	All	All
Group II Terminal strength 2/ Strength of actuating means 3/ Lamp retention Thermal shock Vibration Shock (specified pulse) Moisture resistance Dielectric withstanding voltage	M22885/92-BAA11W (4 samples) M22885/92-FAA21FWW (2 samples) M22885/92-DAA21BWW (2 samples)	
Group III Salt spray (corrosion)	M22885/92-BAA11W (2 samples) M22885/92-FAA21FWW (2 samples)	
Group IV Short circuit Dielectric withstanding voltage Operating characteristics	M22885/92-BAA11W (2 samples) M22885/92-FAA21FWW (2 samples)	

See footnotes at the end of table.

TABLE VIII. Qualification (group submission) - Continued.

Inspection	Samples 4/	Extent of approval
Group VI Overload Electrical endurance Contact resistance (lamp) Dielectric withstanding voltage Operating characteristics	M22885/92-BAA11W (4 samples) M22885/92-FAA21FWW (2 samples) M22885/92-DAA21BWW (2 samples)	All
Group VIII Color Luminance Field of view	Chromaticity and brightness samples to be tested are as determined by the applicable tables. Two samples of each configuration are tested for field of view.	

1/ Two samples of each configuration type for physical dimensions.
2/ Two samples of each terminal type.
3/ Two samples of each actuator type.

Part or Identifying Number (PIN) for pushbutton switches:

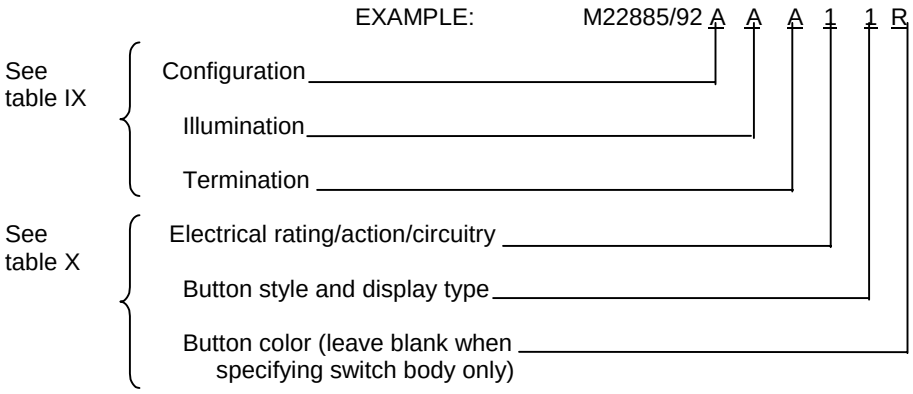


TABLE IX. Configuration, illumination, and terminal codes for pushbutton switches.

Configuration	Illumination	Termination
A - Rectangular pushbutton, nonilluminated B - Rectangular pushbutton, 1 lamp circuit	A - No lamps installed	A - Solder/quick connect

TABLE X. Electrical rating, action, circuitry, display, and button style for pushbutton switches.

Electrical rating/action/circuitry	Button style and display type	Button color
1 - 10 amperes, 125 V ac (60% pF) 8 amperes, 28 V dc resistive Alternate action/2 pole 2 - 10 amperes, 125 V ac (60% pF) 8 amperes, 28 V dc resistive Momentary action/2 pole	1 - Rectangular pushbutton, transmitted color 1/ 2 - Rectangular pushbutton projected color 3 - Rectangular pushbutton, hidden color 4 - Switch body only. No buttons, caps, or color inserts supplied. (Acquire separately from source listed on sampling plan.)	R - Red Y - Yellow G - Green B - Blue W - White K - Black ** L - Gray ** ** For non-illuminated configuration type only

1/ Use transmitted color for nonilluminated switches:

PIN for rocker and paddle switches:

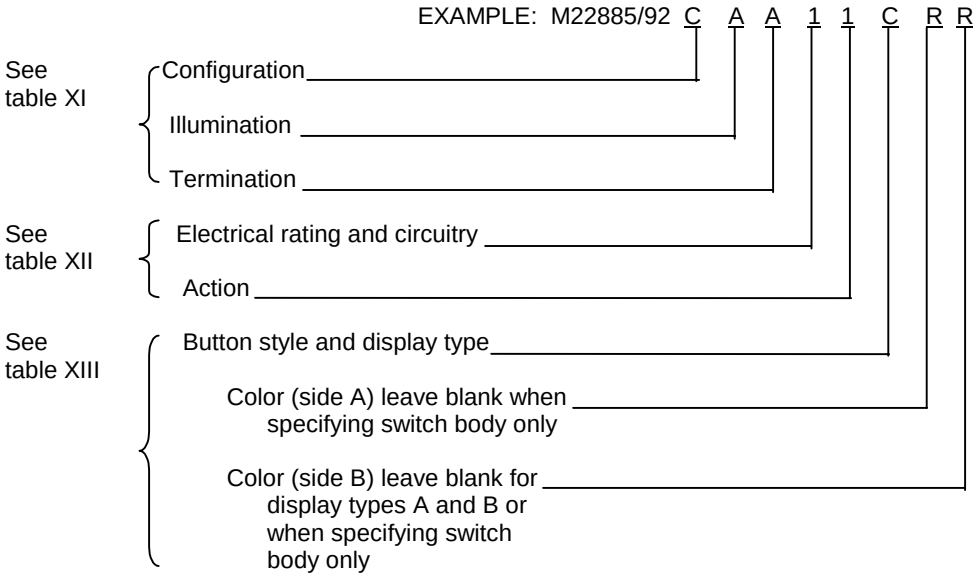


TABLE XI. Configuration, illumination, and terminal codes for rocker and paddle switches.

Configuration	Illumination	Termination
C - Rocker, nonilluminated D - Rocker, 1 lamp circuit E - Paddle, nonilluminated F - Paddle, 1 lamp circuit	A - No lamp installed	A - Solder/quick-connect

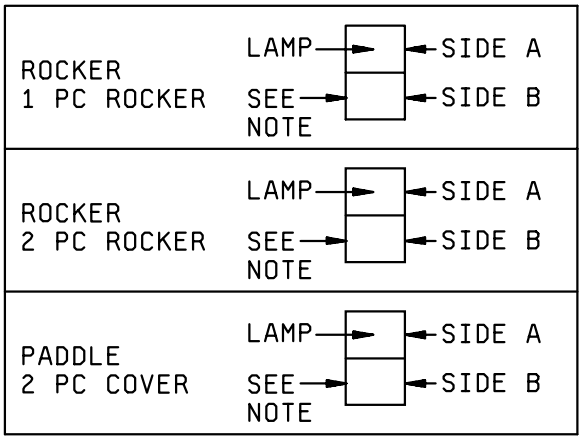
TABLE XII. Electrical characteristic, circuitry and action codes for rocker and paddle switch.

ELECTRICAL RATING/CIRCUITY	ACTION CODE		
1 - 15 AMPERES,125 V ac(60% pF) 10 AMPERES,28 V dc RESISTIVE 1 POLE			
2 - 15 AMPERES,125 V ac(60% pF) 10 AMPERES,28 V dc RESISTIVE 2 POLES	1	MAINTAINED	MAINTAINED

NOTE: Actions are shown with the switch positioned such that the manufacturer's logo is located on this side of the switch.

TABLE XIII. Button style, display type and color for rocker and paddle switches.

Button style/display type	Color	
	Side A	Side B
A - Nonilluminated, 1 piece rocker (one color only) B - Transmitted color, 1 piece rocker (one color only) C - Nonilluminated, 2 piece rocker D - Transmitted color, 2 piece rocker E - Nonilluminated, 2 piece paddle F - Transmitted color, 2 piece paddle G - Projected color, 2 piece paddle H - Hidden color, 2 piece paddle J - Switch body only: No covers or inserts supplied. Acquire from source listed on the sampling plan.	R - Red Y - Yellow G - Green B - Blue W - White K - Black * L - Gray *	R - Red Y - Yellow G - Green B - Blue W - White K - Black * L - Gray *
	* For nonilluminated configuration type.	



NOTE: Button styles are shown as viewed from the front of the panel and positioned so that the manufacturer's logo is on the side of the housing.

APPLICATION INFORMATION

RECOMMENDED STRIP-MOUNTING ORIENTATION

Pushbuttons. "Panel holding" mounting clips are on the long sides. Only horizontal strip mounting with the long sides adjacent the panel edges is recommended. (No more than three units can be strip mounted with the long bezel sides touching.)

Rockers and paddles. "Panel holding" mounting clips are located on the short sides. This permits horizontal strip-mounting with the long sides of the bezel touching. (No more than three rocker or paddle switches can be strip-mounted with the short sides of the bezel touching.)

Custodians:
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5930-1716-19)