

MINIATURE POSITIVE ACTION SWITCHES

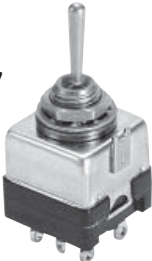
Series - 8866-8869

MIL-S-8834 Miniature Positive Action Switches

Solder Lug Terminals

FEATURES			SPECIFICATIONS			CURRENT RATINGS							
- Sealed bushing - Current rating versatility 1 and 2 pole circuitry - Non-teasible mechanism for all but center "ON" circuits - Dry circuit (logic level loads) to power switching levels - Wiping action contacts - Positive make and break action - Small and large size bushings and Actuator - Solder lug terminals - Also available with locking Actuator, integrated wire termination and printed circuit board terminals.		- Bushing seal or bonded seal per MIL-S-8834 - MS approved and QPL'd to MIL-S-8834 - Temperature range: -67°F to +160°F (-55°C to +71°C) - Life: 20,000 operations at rated load 40,000 operations mechanical life "O" ring panel seal on ¼" - 40 type bushing size - Solder lug terminals .050 [1,27] dia. hole	No. of Poles	Catalog Number	Type of Operation	28 and 50VDC (Amperes per pole)				115VAC 60Hz and 400Hz (Amperes per pole)			
						Resistive Load		Inductive Load		Resistive Load		Inductive Load	
						28VDC	50VDC	28VDC	50VDC	60Hz	400Hz	60Hz	400Hz
			1	8866 8868	Maintained and Momentary	5	1	1	-	2	3	1	2
			2	8867 8869	Maintained and Momentary	5	1	1	-	2	3	1	2
Minimum Rating: 25 microamperes at 5 millivolts.													

SELECTION TABLE

CIRCUIT WITH LEVER IN . . .					
	Up Position	Center Position	Down Position (Keyway)	Military Part Number	Catalog Number ②
8866 	ONE POLE				
	ON	OFF	ON	MS24655-211	8866K1
	ON	NONE	OFF	-221	K7
	ON	NONE	ON	-231	K4
	ON	OFF	NONE	-241	K5
	* ON	OFF	ON*	MS24655-271	8866K2
	NONE	OFF	ON*	-281	K6
	ON	OFF	ON*	-311	K3
	NONE	ON	ON*	321	K8①
8867 	TWO POLE				
	ON	OFF	ON	MS24656-211	8867K1
	ON	NONE	OFF	-221	K7
	ON	NONE	ON	-231	K4
	ON	OFF	NONE	-241	K5
	* ON	OFF	ON*	MS24656-271	8867K2
	NONE	OFF	ON*	-281	K6
	ON	OFF	ON*	-311	K3
	NONE	ON	ON*	MS24656-321	8867K8 ①
	ON	ON	ON	-331	K9 ①
	ON	ON	ON*	-351	K10①
	* ON	ON	ON*	-341	K11①

* **Momentary contact.**
See page A75 for special circuit diagrams.
① Dielectric per MIL-S-8834 except limited to 1250 volts. Delayed action of the switch toggle lever may cause circuit to close or open before snap action mechanism trips.
② Caution should be exercised during soldering and flux removal. See page A56 for details.

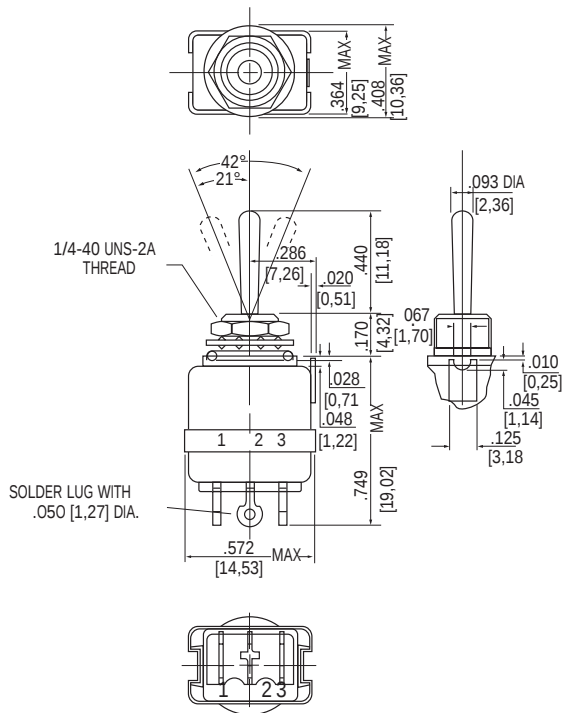
Series - 8866-8869

MINIATURE POSITIVE ACTION SWITCHES

MIL-S-8834 Miniature Positive Action Switches

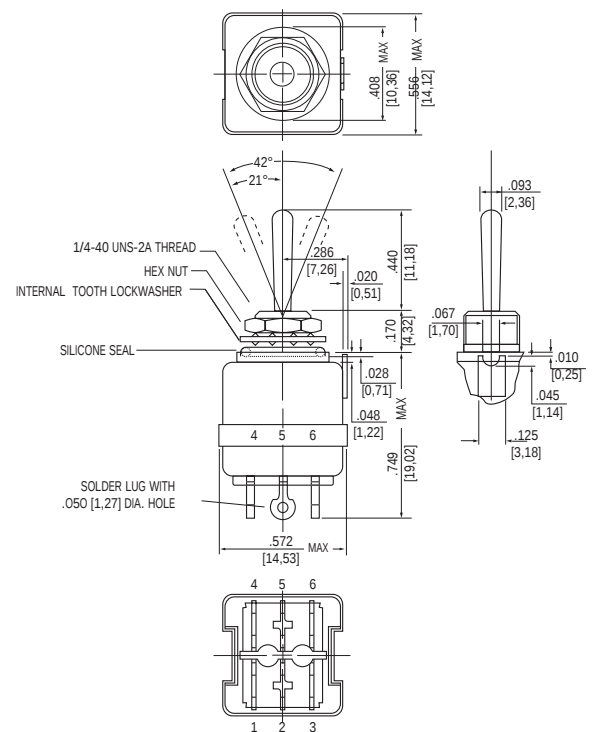
Solder Lug Terminals

MOUNTING DIMENSIONS - ONE POLE / 8866



Terminal Identification

MOUNTING DIMENSIONS - TWO POLE / 8867

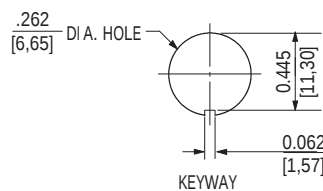
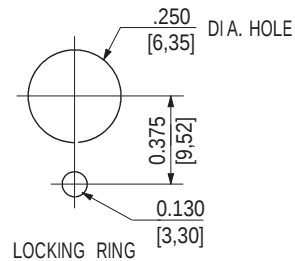


Terminal Identification

Non-functional terminals not supplied.

PANEL CUTOUT DIMENSIONS

1/4 - 40 DIA. BUSHING



STANDARD

0.00 = inches

[0,0] = mm

Mounting dimensions for reference only.

MINIATURE POSITIVE ACTION SWITCHES

Series - 8866-8869

MIL-S-8834 Miniature Positive Action Switches

Solder Lug Terminals

SELECTION TABLE

CIRCUIT WITH LEVER IN . . .							
	Up Position 	Center Position 	Down Position (Keyway) 	MS Part Number	Catalog Number ②	MS Part Number ③	Catalog Number ②
8868 	ONE POLE						
	ON	OFF	ON	MS90310-211	8868K1	Feature Not Available in Single Pole Switches	
	ON	NONE	OFF	-221	K7		
	ON	NONE	ON	-231	K4		
	ON	OFF	NONE	-241	K5	—	—
	* ON	OFF	ON*	MS90310-271	8868K2	—	—
	NONE	OFF	ON*	-281	K6	—	—
	ON	OFF	ON*	-311	K3	—	—
	NONE	ON	ON*	MS21351-321	K8①	—	—
8869 	TWO POLE						
	ON	OFF	ON	MS90311-211	8869K1	MS90311-711	8869K1X
	ON	NONE	OFF	-221	K7	-721	K7X
	ON	NONE	ON	-231	K4	-731	K4X
	ON	OFF	NONE	-241	K5	-741	K5X
	* ON	OFF	ON*	MS90311-271	8869K2	MS90311-771	8869K2X
	NONE	OFF	ON*	-281	K6	-781	K6X
	ON	OFF	ON*	-311	K3	-811	K3X
	NONE	ON	ON*	MS21353-321	8869K8 ①	MS21353-821	8869K8X①
	ON	ON	ON	-331	K9 ①	-831	K9X①
	ON	ON	ON*	-351	K10 ①	-851	K10X①
	* ON	ON	ON*	-341	K11 ①	-841	K11X①

* **Momentary contact.**

① Dielectric per MIL-S-8834 except limited to 1250 volts. Delayed action of the switch toggle lever may cause circuit to close or open before snap action mechanism trips.

② Caution should be exercised during soldering and flux removal. See page A56 for details.

③ Furnished with Bonded Seal Feature. (Meets 15' water sealing level requirements.)

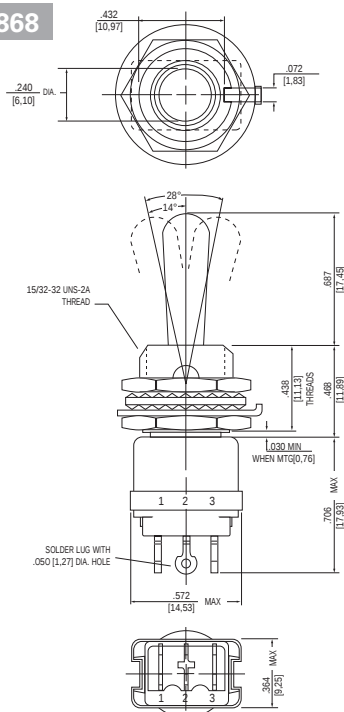
Series - 8866-8869

MINIATURE POSITIVE ACTION SWITCHES

MIL-S-8834 Miniature Positive Action Switches

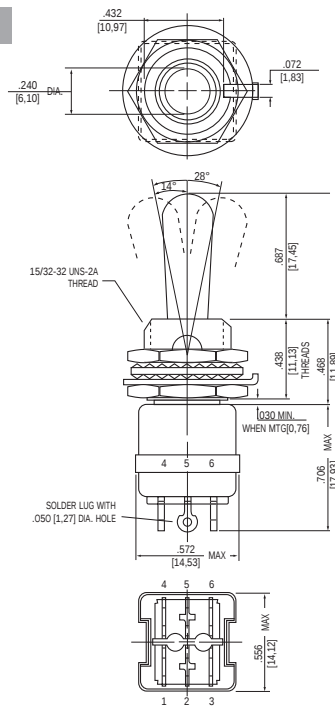
Solder Lug Terminals

MOUNTING DIMENSIONS - ONE POLE / 8868



Terminal Identification

MOUNTING DIMENSIONS - TWO POLE / 8869



Terminal Identification

STANDARD
0.00 = inches
[0,0] = mm

Mounting dimensions for reference only.

Non-functional terminals not supplied.

MINIATURE POSITIVE ACTION SWITCHES

Series - 8866-8869

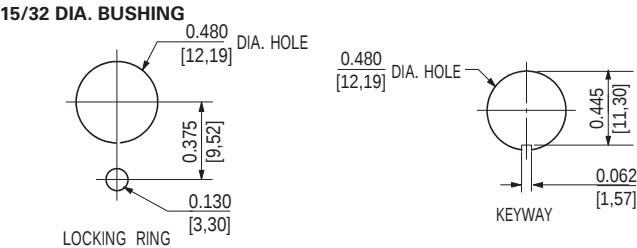
MIL-S-8834 Miniature Positive Action Switches

Solder Lug Terminals

OPTIONS/ACCESSORIES

PANEL CUTOUT DIMENSIONS

- Special mounting hardware
- Special marking
- Mounting hardware furnished assembled
- Panel seal, Part Number 32-341
- Lever extensions and attachable tips
- Special circuits
- Special bushing and lever plating
- Mounting adapter nuts
- Custom wire harnesses
- EMI/RFI capability on two pole (large bushing)
- Gold plated contacts



STANDARD

0.00 = inches

[0,0] = mm

Mounting dimensions for reference only.

See page A56 for soldering and cleaning recommendations.

Series - 8866, 8867, 8868, 8869

MINIATURE POSITIVE ACTION SWITCHES

MIL-S-8834 Miniature Positive Action Switches

Printed Circuit Terminals

FEATURES			SPECIFICATIONS			CURRENT RATINGS										
- Sealed bushing - Dry circuit (logic level loads) to power switching levels - Two bushing and toggle lever sizes 1 and 2 pole circuitry - Non-teasible mechanism for all but center "ON" circuits - Wiping action contacts - Positive make and break action - Small and large size bushings and Actuator - Printed circuit board termination - Two types of printed circuit board terminals: - Straight - Formed (Right Angle)			- Bushing seal or bonded seal per MILS 8834 - MS approved and QPL'd to MILS-8834 - Temperature range: -67°F to +160°F (-55°C to +71°C) - Life: 20,000 operations at rated load 40,000 operations mechanical life "O" ring panel seal on ¼" - 40 type bushing size			No. of Poles	Catalog Number	Type of Operation	28 and 50VDC (Amperes per pole)				115VAC 60Hz and 400Hz (Amperes per pole)			
									Resistive Load		Inductive Load		Resistive Load		Inductive Load	
									28VDC	50VDC	28VDC	50VDC	60Hz	400Hz	60Hz	400Hz
						1	8866 8868	Maintained and Momentary	5	1	1	-	2	3	1	2
						2	8867 8869	Maintained and Momentary	5	1	1	-	2	3	1	2

Minimum Rating: 25 microamperes at 5 millivolts.

SELECTION TABLE

CIRCUIT WITH LEVER IN . . .														
			Up Position		Center Position		Down Position (Keyway)		Large Lever With Straight Mount PC Terminals		Small Lever With Formed Mount PC Terminals		Large Lever With Straight Mount PC Terminals	
						MS Part Number	Catalog ^② Number	MS Part Number	Catalog ^② Number	MS Part Number	Catalog ^② Number	MS Part Number	Catalog ^② Number	
One Pole														
			ON	OFF	ON	MS21354-211	8866K61	MS21433-211	8866KA61	MS21356-211	8868K61	Feature Not Available in Single Pole Switches		
			ON	NONE	OFF	-221	K67	-221	KA67	-221	K67			
			ON	NONE	ON	-231	K64	-231	KA64	-231	K64			
			ON	OFF	NONE	-241	K65	-241	KA65	-241	K65			
			* ON	OFF	ON*	MS21354-271	8866K62	MS21433-271	8866KA62	MS21356-271	8868K62			
			NONE	OFF	ON*	-281	K66	-281	KA66	-281	K66			
			ON	OFF	ON*	-311	K63	-311	KA63	-311	K63			
			NONE	ON	ON*	-321	K68①	-321	KA68①	-321	K68①			
Two Pole														
			ON	OFF	ON	MS21355-211	8867K61	MS21434-211	8867KA61	MS21357-211	8869K61	MS21357-711	8869K61X	
			ON	NONE	OFF	-221	K67	-221	KA67	-221	K67	-721	K67X	
			ON	NONE	ON	-231	K64	-231	KA64	-231	K64	-731	K64X	
			ON	OFF	NONE	-241	K65	-241	KA65	-241	K65	-741	K65X	
			* ON	OFF	ON*	MS21355-271	8867K62	MS21434-271	8867KA62	MS21357-271	8869K62	MS21357-771	8869K62X	
			NONE	OFF	ON*	-281	K66	-281	KA66	-281	K66	-781	K66X	
			ON	OFF	ON*	-311	K63	-311	KA63	-311	K63	-811	K63X	
			NONE	ON	ON*	MS21355-321	8867K68 ①	MS21434-321	8867KA68①	MS21357-321	8869K68 ①	MS21357-821	8869K68X ①	
			ON	ON	ON	-331	K69 ①	-331	KA69①	-331	K69 ①	-831	K69X ①	
			ON	ON	ON*	-351	K610①	-351	KA610①	-351	K610①	-851	K610X①	
			* ON	ON	ON*	-341	K611①	-341	KA611①	-341	K611①	-841	K611X①	

* Momentary contact.

See page A75 for special circuit diagrams.

① Dielectric per MIL-S-8834 except limited to 1250 volts. Delayed action of the switch toggle lever may cause circuit to close or open before snap action mechanism trips.

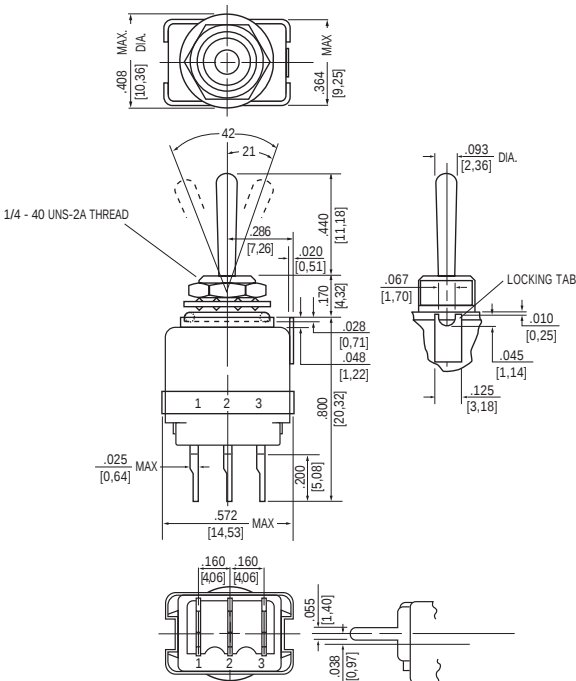
② Caution should be exercised during soldering and flux removal. See page A56 for details.

③ Furnished with Bonded Seal Feature. (Meets 15' water sealing level requirement.)

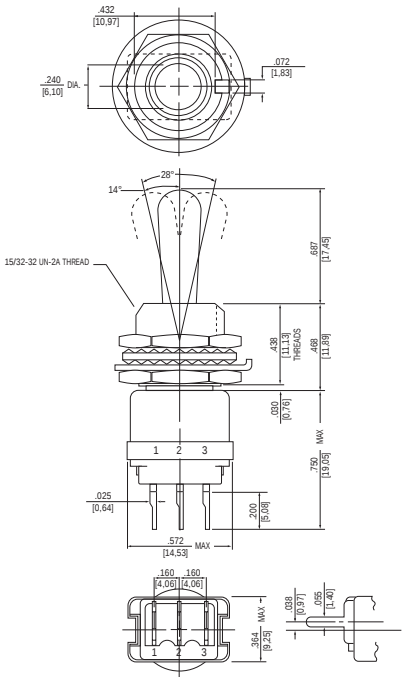
MINIATURE POSITIVE ACTION SWITCHES
Series - 8866, 8867, 8868, 8869

MIL-S-8834 Miniature Positive Action Switches
Printed Circuit Terminals

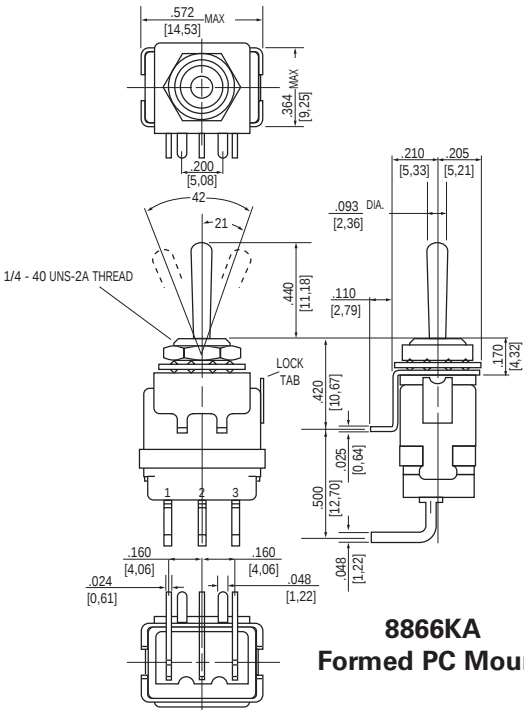
MOUNTING DIMENSIONS - ONE POLE



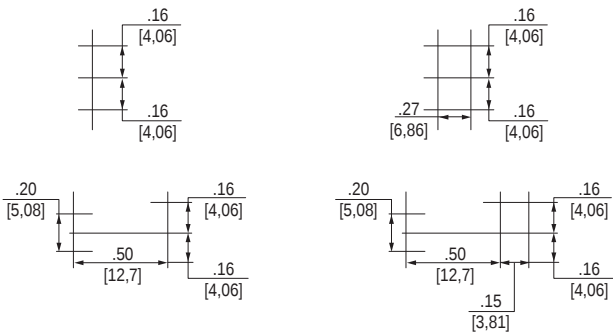
8866
Straight PC Mount



8868
Straight PC Mount



8866KA
Formed PC Mount



STANDARD
0.00 = inches
[0,0] = mm

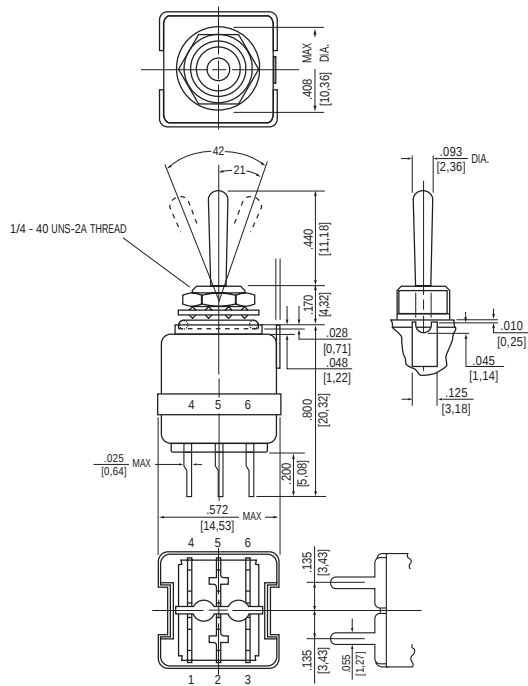
Terminal Identification

Mounting dimensions for reference only.

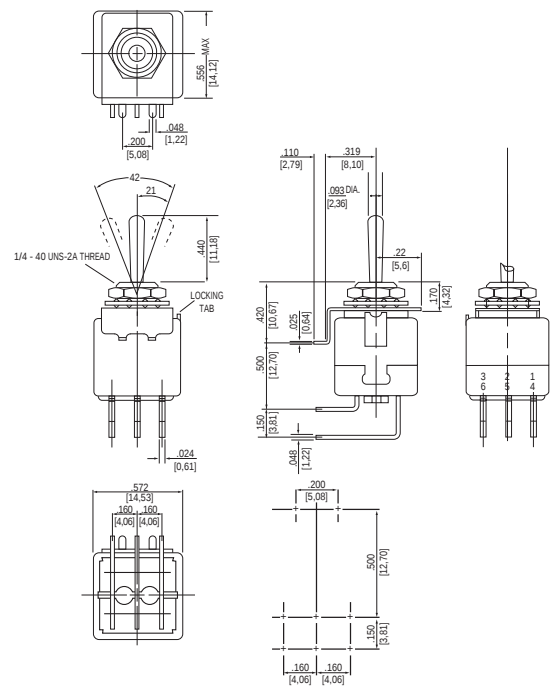
Non-functional terminals not supplied.

MINIATURE POSITIVE ACTION SWITCHES
MIL-S-8834 Miniature Positive Action Switches
Printed Circuit Terminals

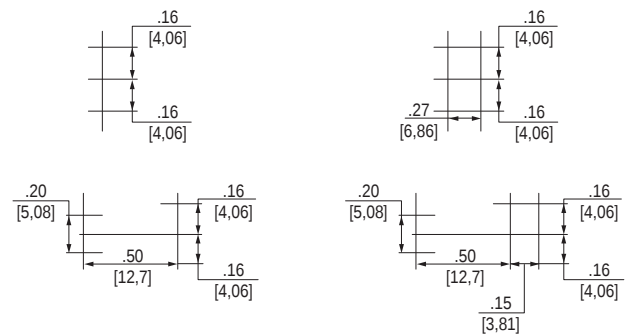
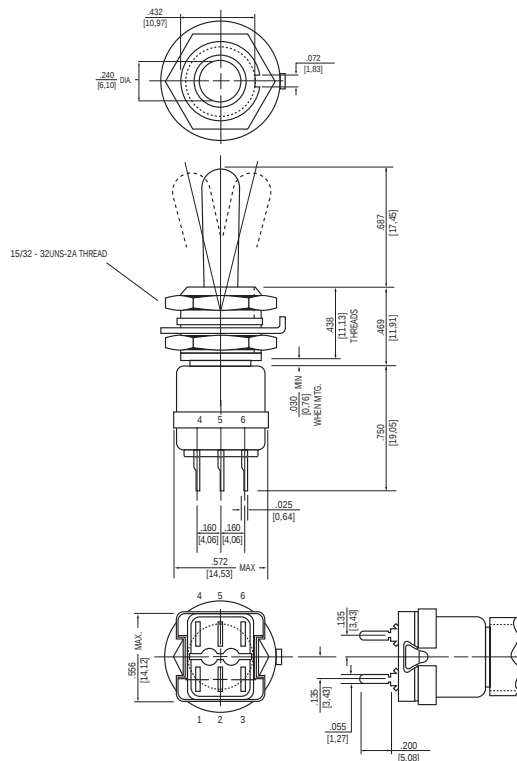
MOUNTING DIMENSIONS - TWO POLE



8867
Straight PC Mount



8867KA
Formed PC Mount



8869
Straight PC Mount

STANDARD
0.00 = inches
[0,0] = mm

Terminal Identification

Mounting dimensions for reference only.

Non-functional terminals not supplied.

MINIATURE POSITIVE ACTION SWITCHES

Series - 8866, 8867, 8868, 8869

MIL-S-8834 Miniature Positive Action Switches Printed Circuit Terminals

CAUTION AND RECOMMENDATION FOR CLEANING AND SOLDERING

Contamination of the contacts of miniature switches is the most common cause of problems in low energy circuits, resulting in the inability of current to flow through the increased resistance of the switch contacts. As most contamination occurs during the installation and cleaning of the switch, proper care when installing the switch can reduce problems in this area. The following procedures should be followed to reduce the possibility of switch contact contamination.

Hand Solder

1. Use rosin core solder .030"-.040" diameter.
2. A small soldering iron in the 30 to 40 watt range should be used.
3. The solder joint should not be overheated.
4. Do not position switch with terminations straight up.
5. No clean up should be necessary. However, if used, do not allow solvents to enter non-sealed areas of switches.

Wave Solder - Miniature Switches

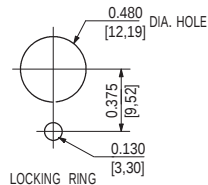
Do not immerse or spray with solvents to remove flux except for switches designed for this type of cleaning. The use of wave solder oil is not advised.

OPTIONS/ACCESSORIES

- Special mounting hardware
- Special marking
- Mounting hardware furnished assembled
- Panel seal, Part Number 32-341 (15/32" - 32 bushing only)
- Special circuits
- Special bushing and lever plating
- Mounting adapter nut
- Custom wire harnesses
- EMI/RFI capability on two pole (15/32" - 32 bushing only)
- Gold plated contacts

PANEL CUTOUT DIMENSIONS

15/32 DIA. BUSHING



1/4 - 40 DIA. BUSHING

