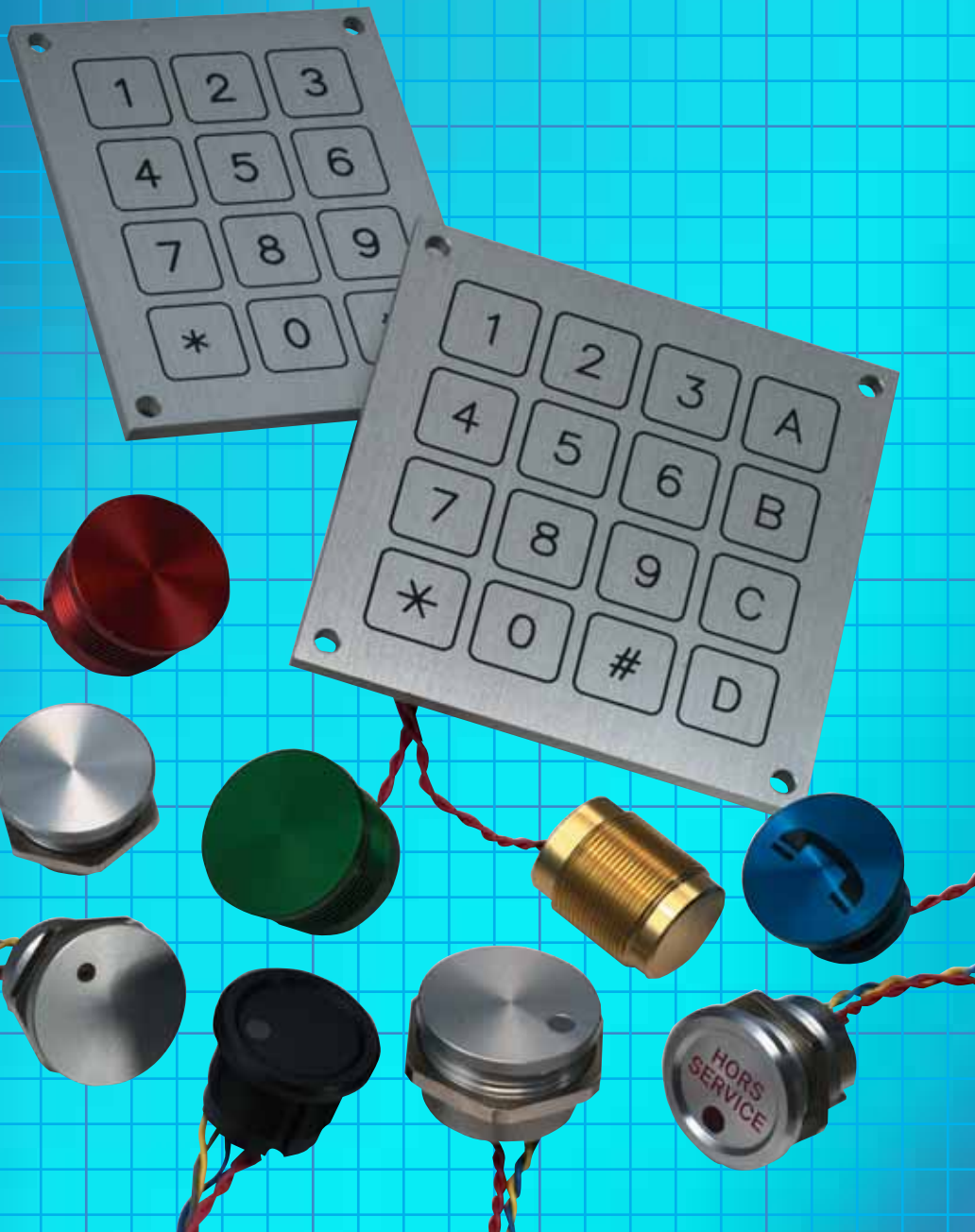


# Piezo Keypads and Pushbuttons

## Piezo Technology

Piezo Keypads and Pushbuttons function based on the Piezo effect. The external push force activates a Piezo element that releases voltage utilized for switching (MosFet)



## Benefits of Grayhill Piezo Keypads and Pushbuttons

- Vandal Resistant
- Virtually Indestructible
- Easy to Keep Clean
- Suitable for Harsh Environments
- Pressure Activated (No moving Parts)
- Water and Dust Proof
- Indoor and Outdoor Use
- Manufactured in any shape

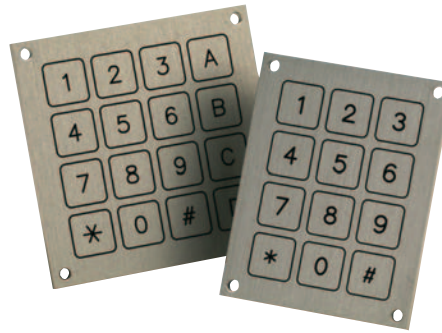
## Applications

- Lifts
- Food Industry
- Mining Equipment
- Public Internet and Information Kiosks
- Chemical and PetroChemical Industry
- Safety and Security
- Medical Equipment
- Vending machines
- Beverage Dispensers

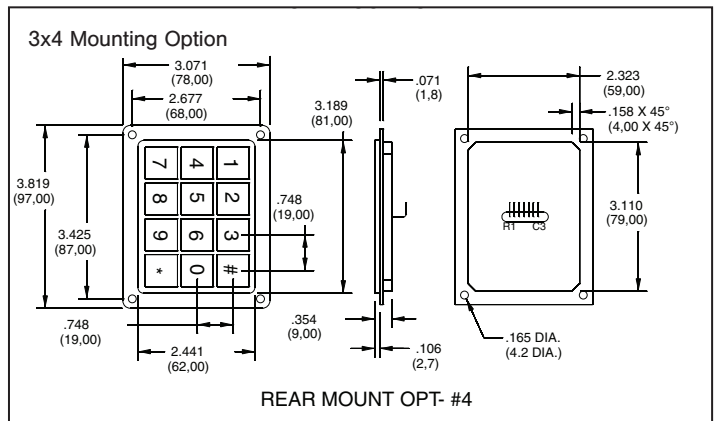
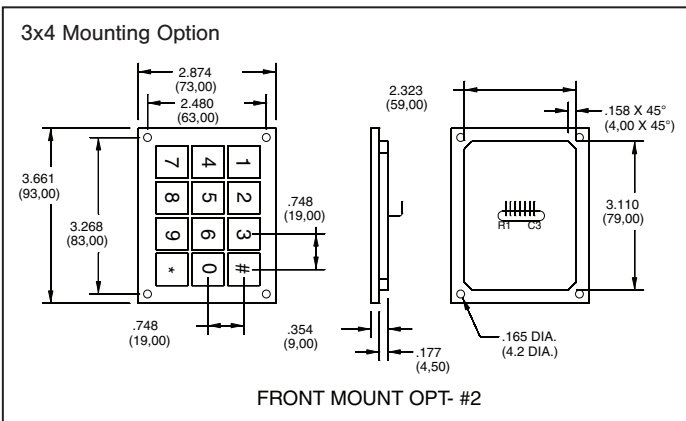
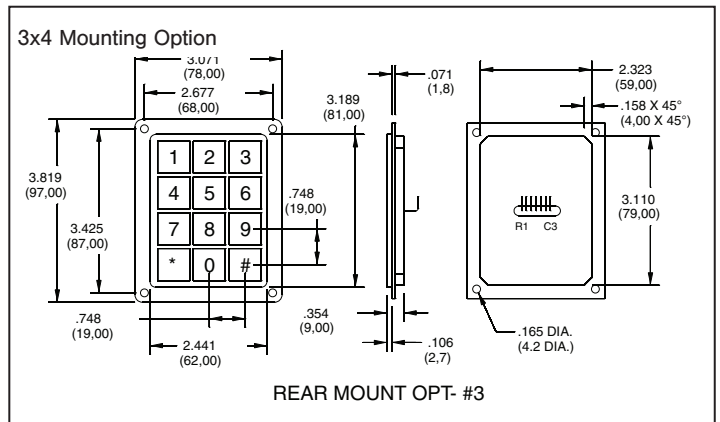
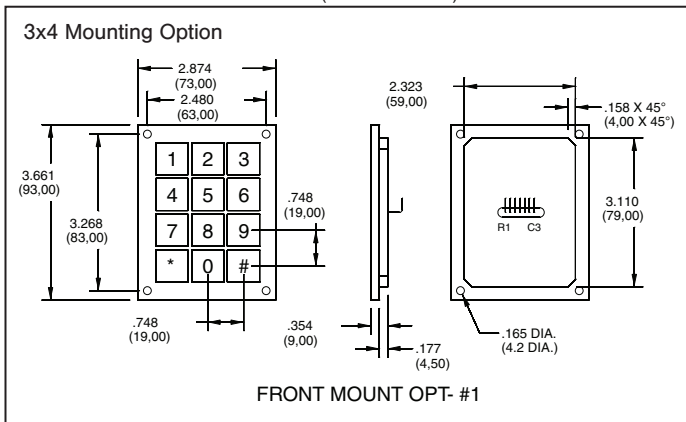
**SERIES 37F**  
**PIEZO Switches**

**FEATURES**

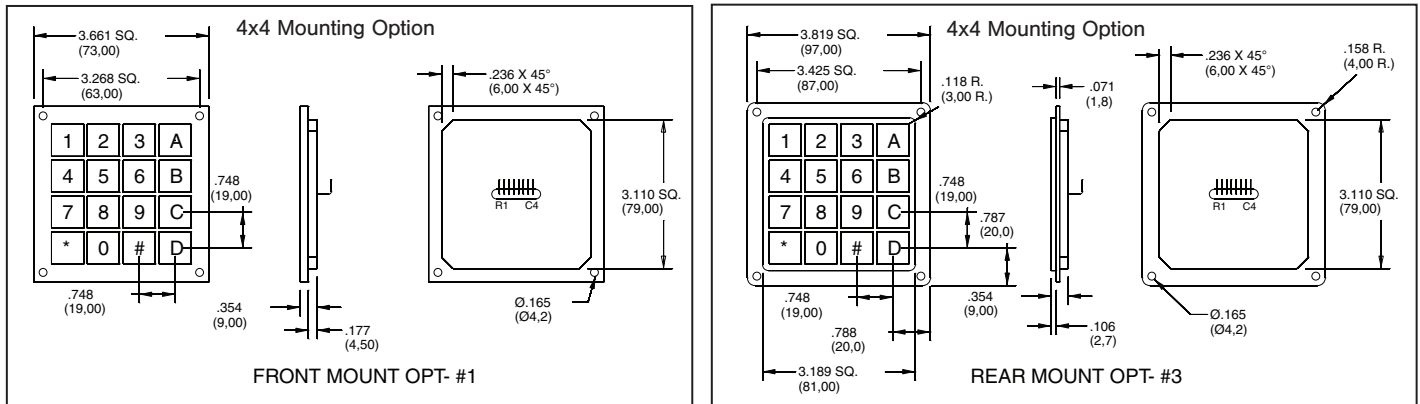
- Fully Sealed
- Virtually Indestructible
- Vandal Resistant
- Indoor and Outdoor Use



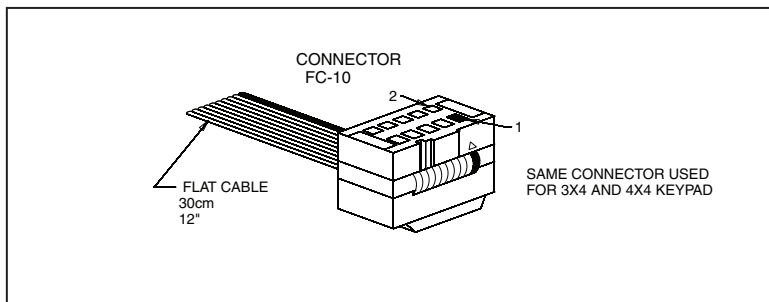
**DIMENSIONS** In inches (and millimeters)



## DIMENSIONS In inches (and millimeters)



## CONNECTORS In inches (and millimeters)



## SPECIFICATIONS

**Activation Force:** 3-5N TYP.

### Switch Action

**Momentary:** 120 Msec. Pulse Typ.

**Continuous:** circuit is closed as long as switch is pressed,  
30 sec. max.

**Toggle:** switch changes position at each activation.

Resistance "on": <10 ohms.

Resistance "off": >5 Megohms.

**RFI radiation/susceptibility:** none.

**Life cycles:** >50 million.

**Operating temp.:** -40°C to +85°C (-40°C to +125°C if requested)

**Protection system:** IP68 according to IEC 529.

**Rated voltage:** 0-24 V AC/DC

**Rated current:** 0-2 amps

**Switch capacitance:** 25pf.

**LED:** 5 V DC, I<sub>max</sub> 10mA

### TRUTH TABLES

TRUTH TABLE FOR 4X4		TRUTH TABLE FOR 3X4					
Connector Pin Number		Connector Pin Number					
	1 2 3 4 5 6 7 8		1 2 3 4 5 6 7				
	R1 R2 R3 R4 C1 C2 C3 C4		R1 R2 R3 R4 C1 C2 C3				
1	●				●		
2	●				●		
3	●					●	
A	●						●
4		●			●		
5		●			●		
6		●				●	
B		●					●
7			●		●		
8			●		●		
9			●			●	
C			●				●
*				●	●		
0				●		●	
#				●			●
D				●			●

### ORDERING INFORMATION

SERIES	MOUNTING OPTION	KEYPAD SIZE	CIRCUITRY OPTION	ELECTRICAL SPEC	HOUSING MATERIAL
<b>37F</b>	<b>1</b>	<b>A</b>	<b>B2</b>	<b>AC</b>	<b>1</b>
37F= PIEZO KEYPAD SWITCHES	OPTIONS: 1,2,3,4	OPTIONS: A=3x4 B=4x4	OPTIONS: B2=Matrix C2=Common Bus	AC=Cable and Connector AP=Terminal Pins	1=Aluminum 2=Stainless Steel
<b>Example Part Number: 37F1AB2AC1</b>					

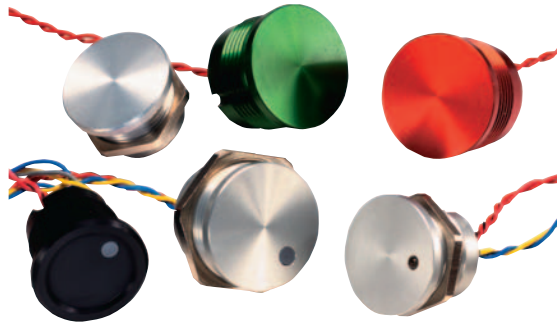
**Available from your local Grayhill Component Distributor.**  
 For prices and discounts, contact a local Sales Office, an authorized local distributor or Grayhill.

Special configurations and legends available. Contact Grayhill for more information.

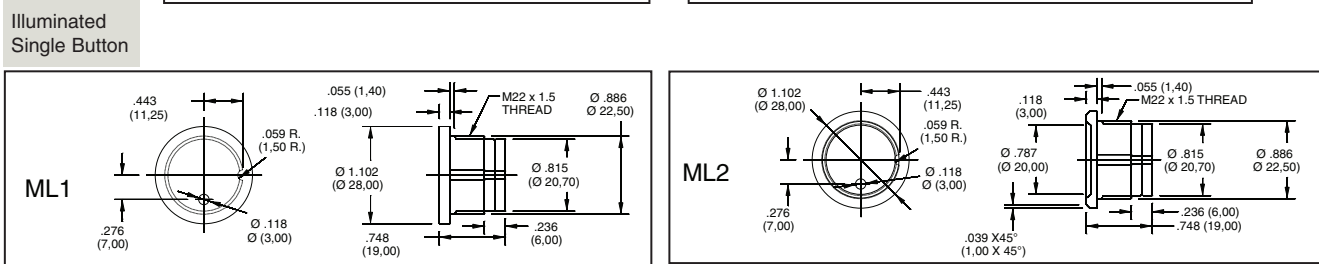
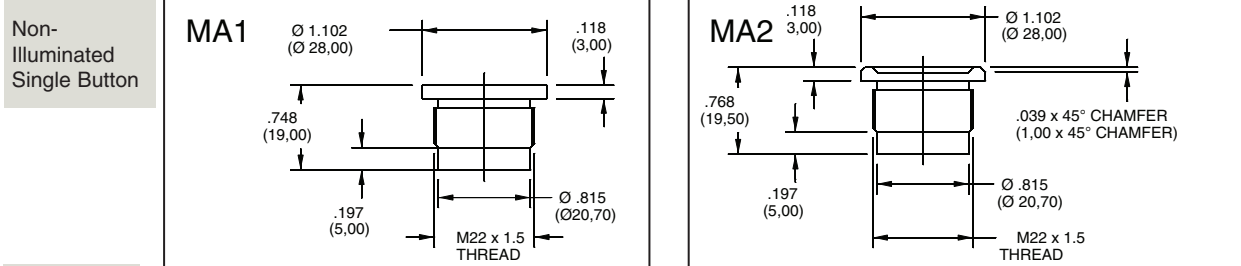
**SERIES 37F**  
**PIEZO Pushbutton Switches**

**FEATURES**

- Fully Sealed
- Virtually Indestructible
- Vandal Resistant
- Indoor and Outdoor Use



**DIMENSIONS** In inches (and millimeters)



**ORDERING INFORMATION, 37FMA and 37FML**

SERIES	HOUSING TYPE	CIRCUITRY	ELECTRICAL SPEC	LED COLOR***	HOUSING MATERIAL	HOUSING COLORS
<b>37F</b>	<b>MA1</b>	<b>A</b>	<b>AP</b>	<b>1</b>	<b>1</b>	<b>N</b>
37F= PIEZO SINGLE BUTTON SWITCHES	OPTIONS: MA1 MA2 ML1* ML2*	OPTIONS: A=N.O. B=N.C.	AW- V MAX: 24V I MAX: 0.2 A AC/DC TERM: RED WIRE  BW- V MAX: 24V I MAX: 0.2 A AC/DC 150 TRANSIENT TERM: PURPLE WIRE  CW- V MAX: 24V I MAX: 1.0 A AC/DC 150 TRANSIENT TERM: ORANGE/WHITE WIRE  EW- V MAX: 24V I MAX: 0.2 A AC/DC TERM: GREEN WIRE  AP- V MAX: 24V I MAX: 0.2 A AC/DC TERM: PIN  CP**- V MAX: 24V I MAX: 1.0 A AC/DC TERM: PIN	1=RED 2=GREEN 3=YELLOW 4=RED/GREEN	1=Aluminum 2=Stainless Steel	OPTIONS: N=Natural B=Black R=Red G=Green O=Gold L=Blue

Wire Colors Change with Electrical Spec Option

WIRE	FUNCTION
RED	} 24V AC/DC
RED	
BLUE	} 5V DC
YELLOW	
	LED (-)

\*LED Option

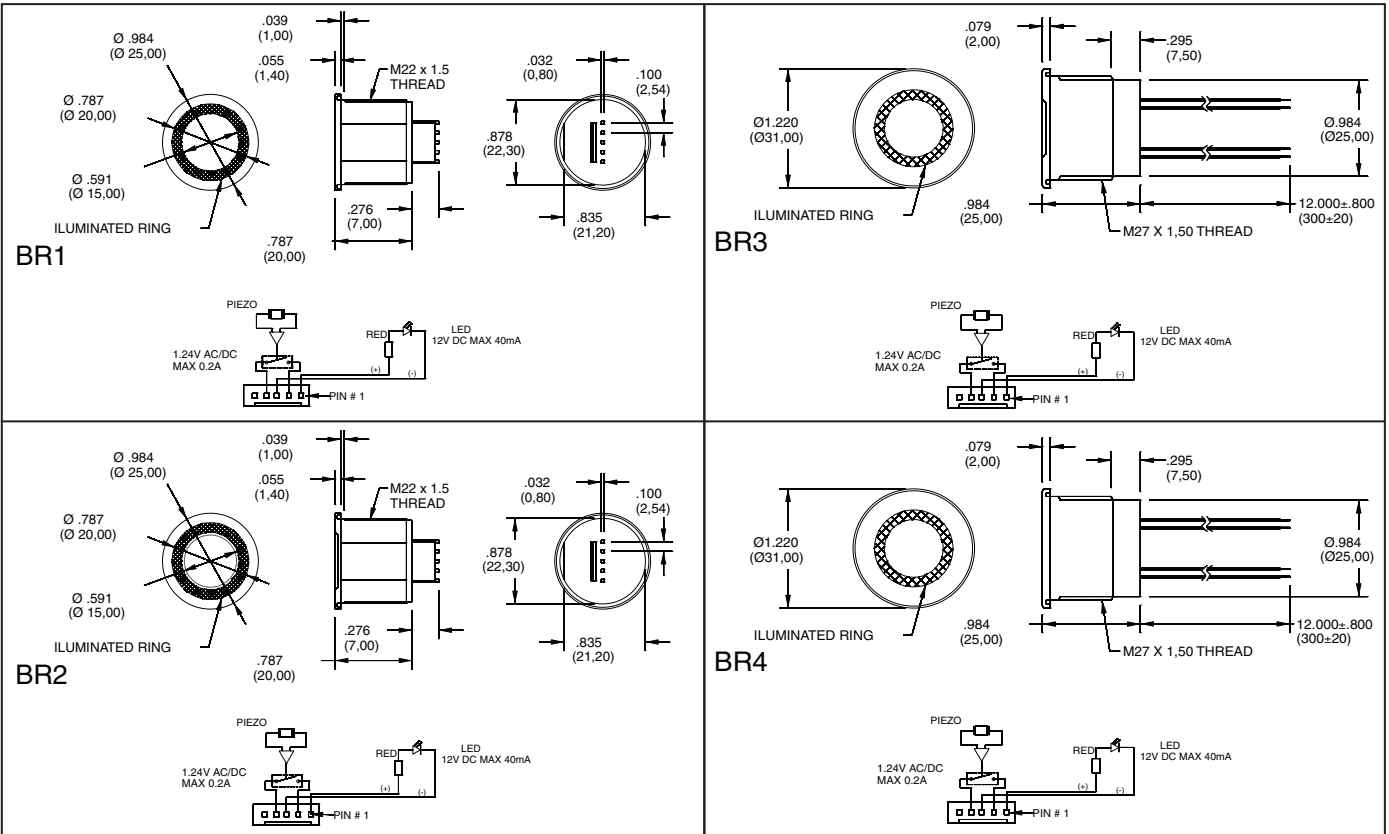
\*\*This Option Not Available with LED Housing ML1 or ML2

\*\*\*Only Available with Housing Types ML1 and ML2.

**Example Part Number: 37FMA1AAP1N**

Special configurations and legends available. Contact Grayhill for more information.

**DIMENSIONS** In inches (and millimeters)



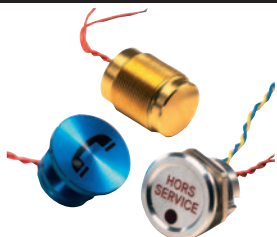
**ORDERING INFORMATION, 37FBR**

SERIES TYPE	HOUSING	CIRCUITRY SPEC	ELECTRICAL	LED COLOR	HOUSING MATERIAL	HOUSING COLORS
<b>37F</b>	<b>BR1</b>	<b>A</b>	<b>AP</b>	<b>1</b>	<b>1</b>	<b>N</b>
37F= PIEZO SINGLE BUTTON SWITCHES	OPTIONS: BR1 BR2 BR3 BR4	OPTIONS: A=N.O. B=N.C.	AW- V MAX: 24V I MAX: 0.2 A DC TERM: RED WIRE  AP- V MAX: 24V I MAX: 0.2 A DC TERM: PIN	<u>12V Option</u> 112=RED 212=GREEN 312=YELLOW 412=BLUE  <u>24V Option</u> 124=RED 224=GREEN 324=YELLOW 424=BLUE	1=Aluminum 2=Stainless Steel	OPTIONS: N=Natural B=Black R=Red G=Green O=Gold L=Blue

**Example Part Number:** 37FBR1AAP1121N

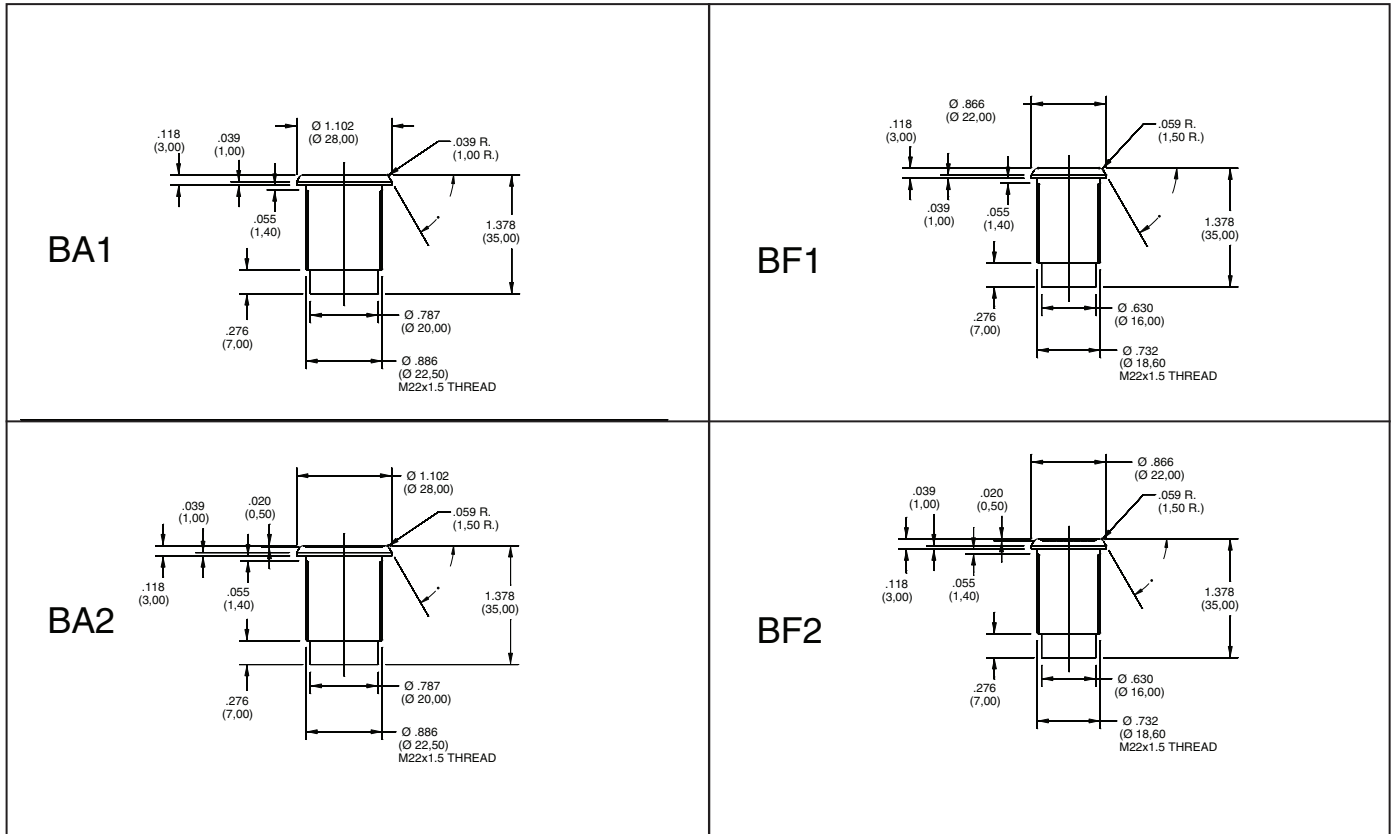
**Available from your local Grayhill Component Distributor.**

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**DIMENSIONS** In inches (and millimeters)

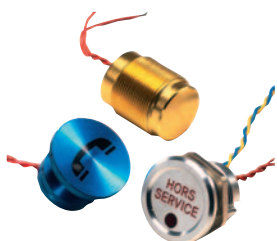


**ORDERING INFORMATION, 37FBA and 37FBF**

SERIES TYPE	HOUSING	SWITCH TYPE	CIRCUITRY	ELECTRICAL SPEC	HOUSING MATERIAL	HOUSING COLORS
<b>37F</b>	<b>BA1</b>	<b>C</b>	<b>A</b>	<b>1</b>	<b>1</b>	<b>N</b>
37F= PIEZO SINGLE BUTTON SWITCHES	OPTIONS: BA1 BA2 BF1 BF2	OPTIONS C=CONTINUOUS T=TOGGLE	OPTIONS: A=N.O. B*=N.C.	AW- 10- 24V .15A AC/DC WIRE: 1 BLACK 1 BROWN 2 BLUE  EW- 3V AND UP DC WIRE: 1 BLACK 1 BROWN 2 BLUE	1=Aluminum 2=Stainless Steel	OPTIONS: N=Natural B=Black R=Red G=Green O=Gold L=Blue
*Normally Closed (N.C.) in Continuous Only						
<b>Example Part Number:</b> 37FBA1CAAW1N						

**Available from your local Grayhill Component Distributor.**

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Special configurations and legends available.  
Contact Grayhill for more information.

Contact Grayhill or your local Grayhill sales representative for more information.



*Grayhill*

561 Hillgrove Avenue  
LaGrange, Illinois 60525  
Phone: 708-354-1040 Fax: 708-354-2820  
[www.grayhill.com](http://www.grayhill.com)