

## SERIES 77

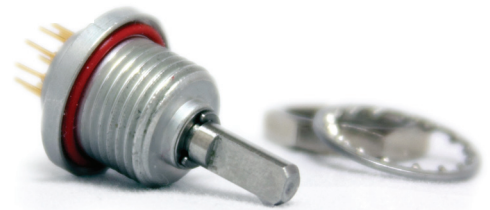
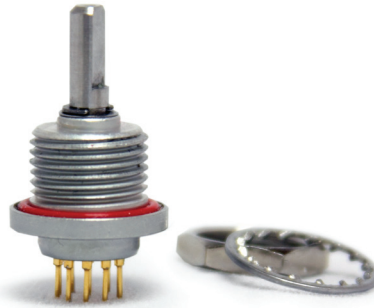
0.5" Diameter, 200 mA  
0.18" Behind Panel

### FEATURES

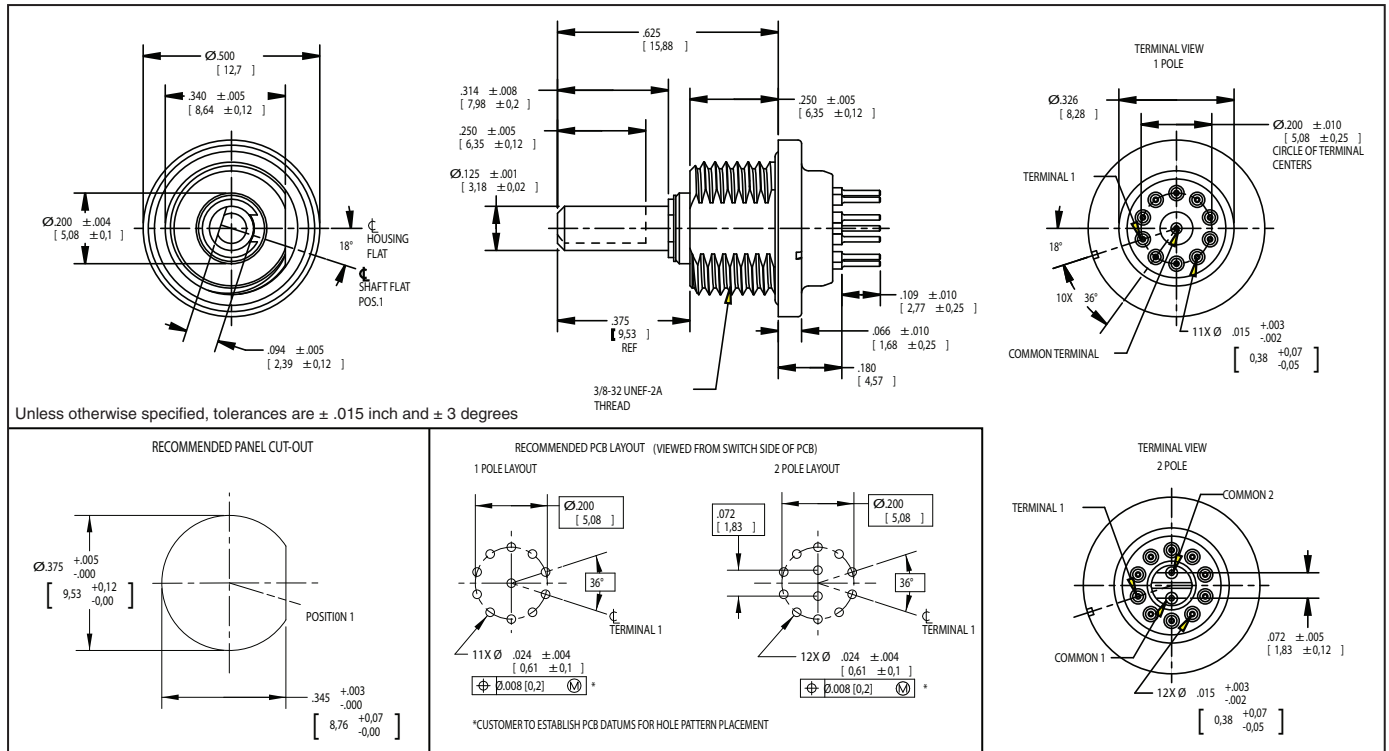
- Small Size - Minimal Space Required Behind Panel
- Available with Continuous Rotation or a Fixed Stop
- High Stop Strength
- Shaft and Panel Seal
- Process Seal available
- Single Deck with 1 or 2 Poles

### APPLICATIONS

- Handheld Radios
- Handheld Medical Devices
- Night Vision Products
- Laser Aiming Devices



### DIMENSIONS in inches [and millimeters]



Recommended Mounting Torque: Tighten mounting hex nut to 12 in-lb (15 in-lb max). Before applying torque, rotation of the switch housing must be constrained by the housing flat via the "Recommended Panel Cut-Out" or similar method. Constraining by PCB or anything soldered to the terminals will result in damage to the switch

Grayhill part number and date code marked on label. Customer part number marked on request.

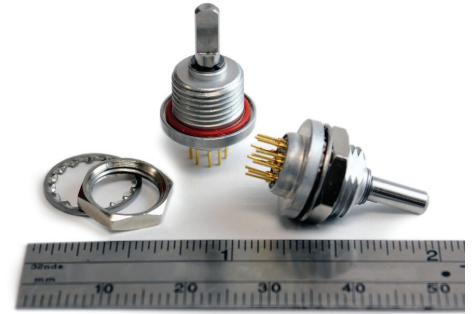


**RATED LOADS**

Switches are rated to make and break the following loads:

Environment Condition	Lamp Load		Inductive Load (140mH)		Resistive Load		Cycles Non-shorting	Cycles Shorting
	Milliamp	Volts	Milliamp	Volts	Milliamps	Volts		
Atmospheric Pressure	50	28 VDC	30	28 VDC	50	12 VDC	25,000	10,000
					10	28 VDC	25,000	10,000
					50	28 VDC	10,000	10,000
					100	28 VDC	7,500	7,500
					200	28 VDC	5,000	5,000
					50	115Vms	10,000	10,000
					10	0.03VDC	25,000	10,000
Reduced Pressure (70,000 feet)					100	28 VDC	7,500	7,500

One cycle is 360-degree rotation and a return through all switch positions to the starting position.



**Electrical Specifications**

**Contact Resistance:** 50 milliohms max (15 milliohms initially).  
100 milliohms max low level.  
**Insulation Resistance:** 50,000 Mohms initially (10,000 Mohms after life) at 100 VDC  
**Voltage Breakdown:** 600 Vac initially, 250 Vac after life

**Mechanical / Environmental Ratings**

**Operating Temperature:** -40°C to +85°C  
**Storage Temperature:** -65°C to +100°C  
**Altitude:** 70,000 feet  
**Rotational Torque:** 3 in-oz min. to 7 in-oz max  
**Stop Strength:** 7.5 inch pounds min  
**Withstanding Shaft Push Force:** 100 pounds  
**Weight:** 4.7 grams with hardware  
3.9 grams without hardware  
**Vibration:** MIL-DTL-3786, MIL-STD-202, method 204, condition "B"  
**Shock:** MIL-DTL-3786, Medium impact per MIL-STD-202, Method 213.  
**Moisture Resistance:** MIL-DTL-3786, MIL-STD-202, Method 106

**Salt Spray:** MIL-DTL-3786, MIL-STD-202, method 101, condition "B"  
**Explosion Proof:** MIL-DTL-3786, MIL-STD 202, method 109  
**Immersion:** With shaft operation – Shaft and panel seal withstands water pressure of 15 psi minimum per MIL-DTL-3786 (Equivalent to 33ft [10m] immersion for 30 minutes). Without shaft operation - Shaft and panel sealed to withstand 74ft [22m] immersion for 2 hours, MIL-DTL-810G Method 512.5.  
**Sand and Dust:** MIL-DTL-3786, MIL-STD-202 Method 110  
**Flux Seal (Process Sealed Versions):** Level 1 & 2 per MIL-DTL-3786.

**Materials and Finishes**

**Switch Base:** Diallyl Phthalate per MIL-M-14  
**Bushing:** Zinc alloy  
**Detent Rotor:** Nylon  
**Detent Balls:** Steel, nickel-plated  
**Contact Spring:** music wire  
**Detent Spring:** Stainless steel  
**Shaft:** Stainless steel

**Shaft Seal:** Ethylene Propylene  
**Panel Seal:** Silicone  
**Rotor Contact:** Silver cad-oxide, gold-plated  
**Terminals and Common:** Brass, gold plate .00002" minimum thickness over silver plate .0003" minimum.  
**Mounting Hardware:** One mounting nut .089" thick by .433" across flats and one external tooth lockwasher supplied with each switch. Mounting nut is brass, nickel plated and lockwasher is stainless steel.

**Additional Characteristics**

**Contact Type:** Non-shorting or Shorting, wiping contacts  
**Terminals:** Switches are provided with the full circle of terminals regardless of the number of active positions.

**Shorting Characteristics**

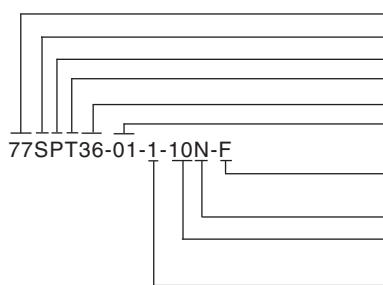
Typical values for current interruption during shorting:

Temperature	Duration
Room Temperature to +85° C	< 0.2 ms
Reduced Temperatures	< 20 ms

Values present typical current interrupt for a single bounce in a pulse train of unspecified length when rotating between switch positions.

Contact Grayhill if the life limiting criteria is more critical than those listed, if the required cycles of operation are greater than those listed, if a larger make and break current is required than the one listed for the desired number of cycles, or if elevated temperatures or reduced pressures are part of the operating environment.

**ORDERING INFORMATION**



**Series 77**  
**S** = Shaft & Panel Sealed, leave blank for no shaft & panel seal  
**P** = PC Terminals  
**T** = Process Seal\*, Leave blank for no process seal  
**Angle of throw:** 36 = 36°  
**Number of Decks:** 01 Only

**Stop arrangement:** Needed only with 1 pole switches with maximum positions. Leave blank for continuous rotation; add F for fixed stop.  
**Contacts:** N = Non-shorting; S = Shorting\*  
**Positions per pole:** 02 up to 10 positions (1 pole), 02 up to 05 positions (2 poles)  
**Poles per deck:** 1 or 2

\*Process seal (T style) is required for all Shorting contact switches

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