

## SERIES 77

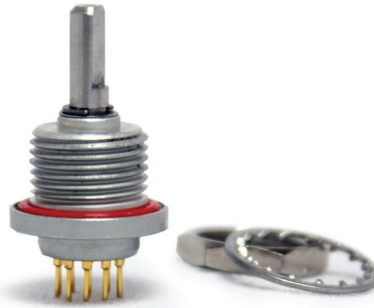
0.5" Diameter, 200 mA  
0.18" Behind Panel

### FEATURES

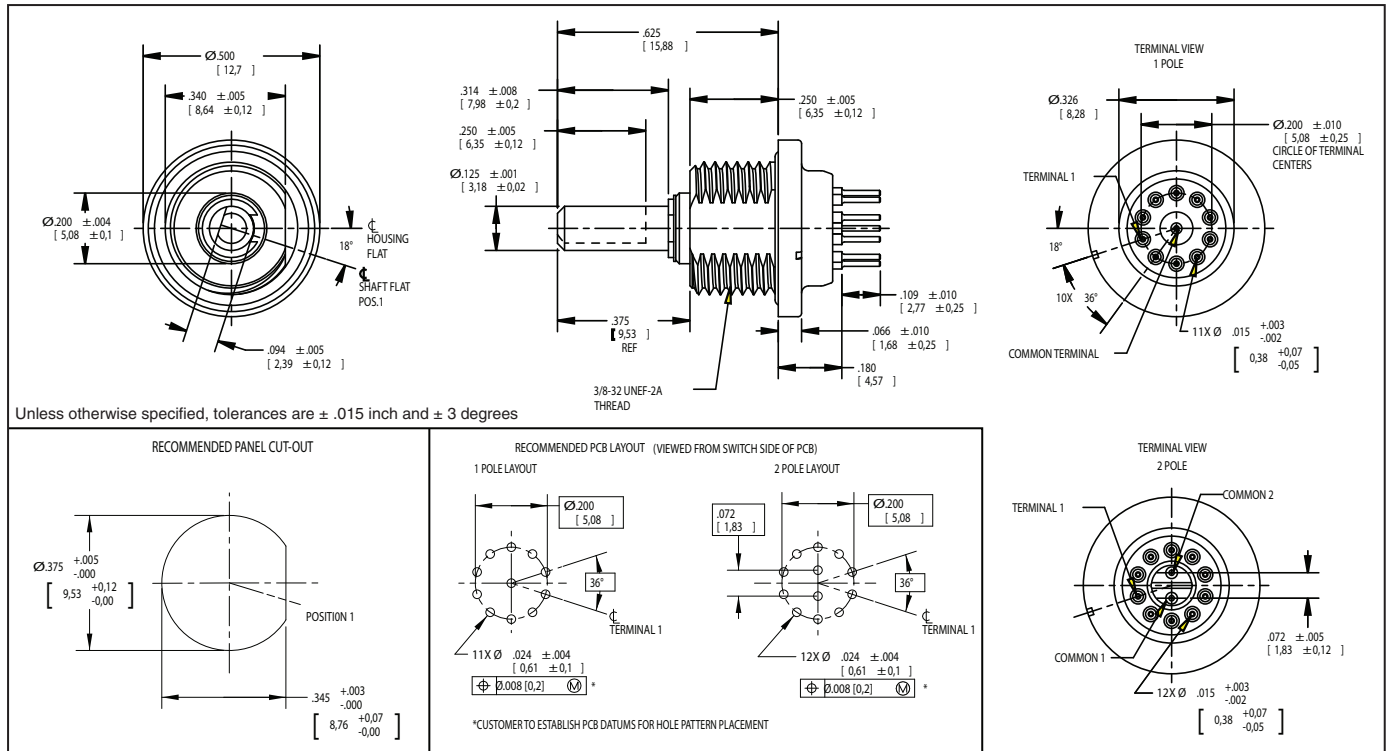
- Small Size - Minimal Space Required Behind Panel
- Available with Continuous Rotation or a Fixed Stop
- High Stop Strength
- Shaft and Panel Seal
- Process Seal available
- Single Deck with 1 or 2 Poles

### 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 |
|--------------------------------|-----------|--------|------------------------|--------|----------------|----------|--------|
|                                | Milliamp  | Volts  | Milliamp               | Volts  | Milliamps      | Volts    |        |
| Atmospheric Pressure           | 50        | 28 VDC | 30                     | 28 VDC | 50             | 12 VDC   | 25,000 |
|                                |           |        |                        |        | 10             | 28 VDC   | 25,000 |
|                                |           |        |                        |        | 50             | 28 VDC   | 10,000 |
|                                |           |        |                        |        | 100            | 28 VDC   | 7,500  |
|                                |           |        |                        |        | 200            | 28 VDC   | 5,000  |
| Reduced Pressure (70,000 feet) |           |        |                        |        | 50             | 115 Vrms | 10,000 |
|                                |           |        |                        |        | 100            | 28 VDC   | 7,500  |

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



## Electrical Specifications

**Low Level Circuit Rating:** 10 milliamperes, 30 millivolts DC or Peak AC open-circuit voltage, 25,000 cycles

**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, tin zinc plating

**Detent Rotor:** Nylon

**Detent Balls:** Steel, nickel-plated

**Contact Spring:** Tinned 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.

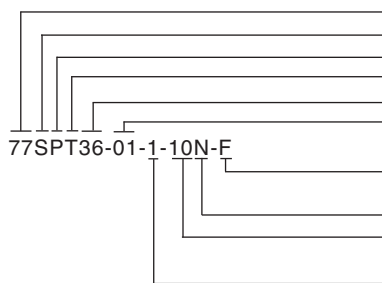
## Additional Characteristics

**Contact Type:** Non-shorting, wiping contacts

**Terminals:** Switches are provided with the full circle of terminals regardless of the number of active 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

**Positions per pole:** 02 up to 10 positions (1 pole),  
02 up to 05 positions (2 poles)

**Poles per deck:** 1 or 2

For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.