



## Features

- High Life Cycle
- High Temperature Capability
- Linear Position Sensor
- IP65 Dust Proof, Water Proof (Intense Spray)
- Fiberglass Substrate
- 3M Pressure Sensitive Adhesive (PSA)
- Upon Request
  - Male or Female Nicomatic Connectors
  - Wiper of 1-3 Newton Force to Actuate Part
  - Contactless Options Available

## Mechanical Specifications

- Life Cycle: >10 million
- Height:  $\leq 0.51\text{mm}$  (0.020")
- Actuation Force (with a 10mm wide active cavity):
  - 40°C 3.0 to 5.0 N
  - 25°C 2.0 to 5.0 N
  - +23°C 0.8 to 2.0 N
  - +85°C 0.7 to 1.8 N

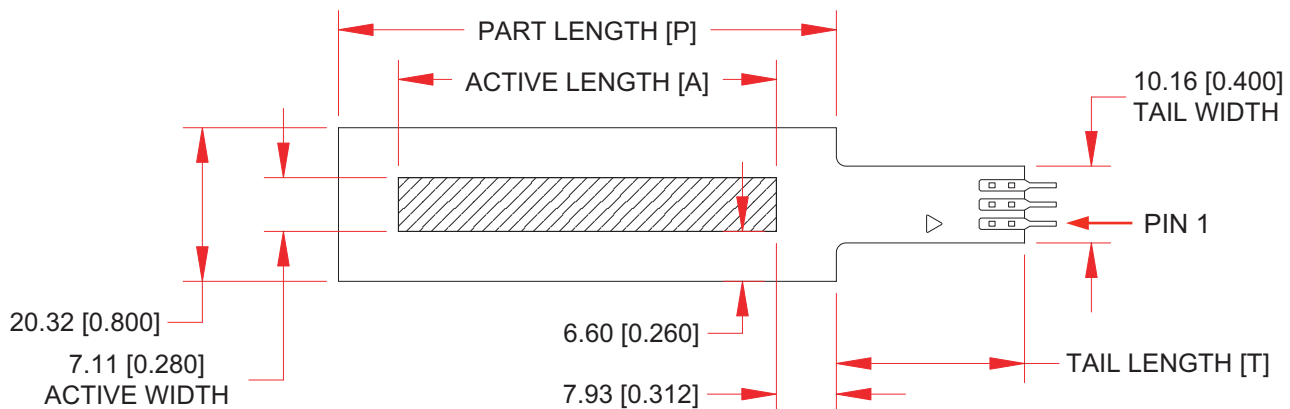
## Environmental Specifications

- Operating Temperature: -40°C to +85°C
- Humidity: No affect @ 95% RH, 24hrs 60°C
- IP Rating of Active Area: IP65

## Electrical Specifications

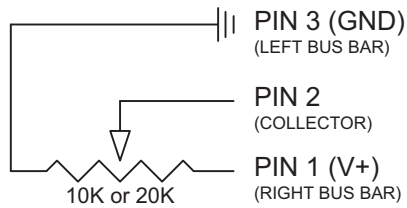
- Resistance - Standard: 10k Ohms  
(lengths >300mm = 20k Ohms)
- Resistance - Custom: 5k to 100k Ohms
- Resistance Tolerance:  $\pm 20\%$
- Effective Electrical Travel: 10 to 1200mm
- Linearity (Independent): Linear  $\pm 1\%$  or  $\pm 3\%$   
Rotary  $\pm 3\%$  or  $\pm 5\%$
- Repeatability: No hysteresis, but with any wiper looseness some hysteresis will occur
- Power Rating (depending on size, varies with length and temperature): 1 Watt max. @ 25°C,  $\leq 0.5$  Watt recommended
- Resolution: Analog output theoretically infinite; affected by variation of contact wiper surface area.
- Dielectric Value: No affect @ 500VAC for 1 minute

## Dimensional Diagram - Stock Linear HotPots

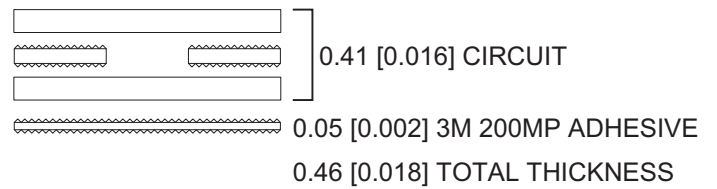


|   |                   |                   |                   |                    |                    |                    |                    |                     |                     |                     |                     |                      |
|---|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| A | 12.50mm<br>0.492" | 25.00mm<br>0.984" | 50.00mm<br>1.969" | 100.00mm<br>3.937" | 150.00mm<br>5.906" | 170.00mm<br>6.693" | 200.00mm<br>7.874" | 300.00mm<br>11.811" | 400.00mm<br>15.748" | 500.00mm<br>19.685" | 750.00mm<br>29.528" | 1000.00mm<br>39.370" |
| P | 28.36mm<br>1.117" | 40.86mm<br>1.609" | 65.86mm<br>2.593" | 115.86mm<br>4.562" | 165.86mm<br>6.531" | 185.86mm<br>7.318" | 215.86mm<br>8.499" | 315.86mm<br>12.436" | 415.86mm<br>16.373" | 515.86mm<br>20.310" | 765.86mm<br>30.153" | 1015.86mm<br>39.995" |
| T | 12.70mm<br>0.500" |                   | 24.89mm<br>0.980" |                    |                    |                    |                    |                     |                     |                     |                     |                      |

## Electrical Schematic



## Material Cross-Section



## How to Order - Linear HotPots

| HP            | L            | 0050                                                                                                                                                                                         | 103                                                                                | 3%                                                                                                                                             | ST |
|---------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Series</b> | <b>Model</b> | <b>Active Length</b>                                                                                                                                                                         | <b>Resistance</b>                                                                  | <b>Connectors</b>                                                                                                                              |    |
| HP = HotPot   | L = Linear   | 0012 = 12,5mm<br>0025 = 25mm<br>0050 = 50mm<br>0100 = 100mm<br>0150 = 150mm<br>0170 = 170mm<br>0200 = 200mm<br>0300 = 300mm<br>0400 = 400mm<br>0500 = 500mm<br>0750 = 750mm<br>1000 = 1000mm | Active Lengths ≤ 300mm<br>103 = 10 KOhm<br>Active Lengths > 300mm<br>203 = 20 KOhm | ST = Solder Tab<br>MP = Male Pins<br>RH = Receptacles w/Plain Housing<br>RL = Receptacles w/Latch Housing<br>RD = Receptacles w/Detent Housing |    |
|               |              |                                                                                                                                                                                              | <b>Ind. Linearity</b>                                                              |                                                                                                                                                |    |
|               |              |                                                                                                                                                                                              | 1% = ±1%<br>3% = ±3%                                                               |                                                                                                                                                |    |

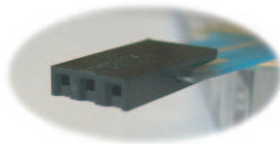
## Standard Connector Options



Crimpflex Solder Tab (ST)



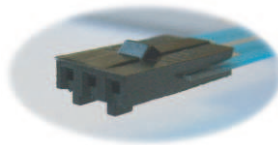
Crimpflex Short Male Pins (MP)



Crimpflex Female Receptacles with a Plain Housing (RH)



Crimpflex Female Receptacles with a Latch Housing (RL)



Crimpflex Female Receptacles with a Detent Housing (RD)

## Customization

Customize the size, shape, and even the number of tracks. Such custom requests, for example, can be: multiple ganged sensors (up to 40 tracks); serpentine active area track; custom lengths 10mm-2000mm; custom rotary diameters, etc. Feel free to contact Spectra Symbol with your custom request at [sales@spectrasymbol.com](mailto:sales@spectrasymbol.com) or (888)795-2283..

## How It Works

In simple terms, the HotPot membrane potentiometer is a resistive element, which comprises a conductive resistor, a sealed encasement and a simple wiper assembly. A membrane potentiometer can also function as a voltage divider.

The HotPot is a three-wire system with two resistive output channels and an electrical collector channel.



By pressing a wiper down onto the top circuit the HotPot produces the desired electrical output. The "wiper" is a non-conductive mechanism that depresses the top circuit actuating the potentiometer from the outside of the element. The top and bottom circuits are separated by 0.15mm (0.006") of spacer adhesive build-up and contact between the circuit occurs by pressure (usually 1-3 Newtons) from the wiper on the top circuit, pushing down until the top circuit connects with the bottom circuit to create a potentiometric output.



The construction of the wiper design can adapt to any application because most materials can serve as the wiper: plastics, metals, sliders, rollers, wheels, etc. Also, the HotPot can also be manually (hand) actuated.

## Wiper

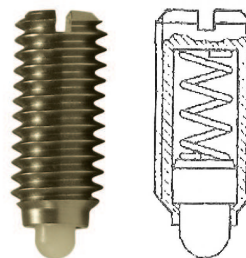
Typical wiper materials are delrin, plastic injection molded products, metal rollers with back-loaded springs, sliders attached to lead-screws, etc. With small quantities, an off-the-shelf solution might be easier, while with higher quantities or space limitations a custom wiper may be required.

The stock 1-3 Newton wiper is an excellent product for most applications. In case of unique applications, extreme environment or cycle needs, it is recommended to seek the advice of the Spectra Symbol Design Department. The selection of the correct wiper (material, form) can affect the life cycle and electrical output of the SoftPot.

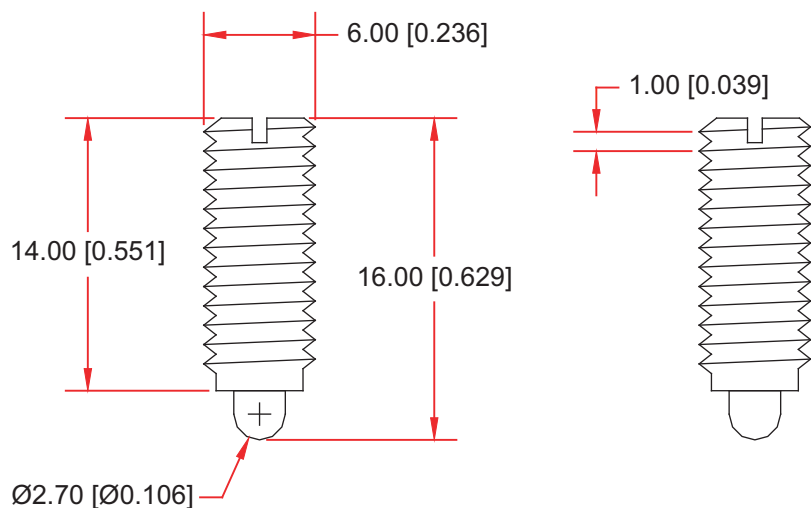
## Stock Wiper

### Mechanical Specifications

- Minimum Force: 1 Newton
- Maximum Force: 3 Newtons
- Tip Material: Delrin
- Thread Pitch: M1.0 (1mm)



### Dimensional Diagram



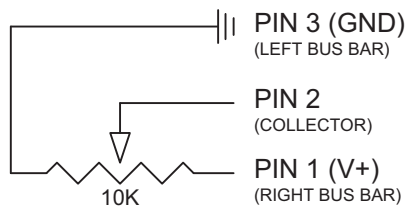
### How to Order - Stock Wiper

|            |   |              |   |               |   |                |   |                      |   |              |
|------------|---|--------------|---|---------------|---|----------------|---|----------------------|---|--------------|
| WP         | — | M1           | — | 01            | — | 03             | — | 014                  | — | DI           |
| Series     |   | Thread Pitch |   | Min. Force    |   | Max. Force     |   | Threaded Body Length |   | Tip Material |
| WP = Wiper |   | M1 = M1.0    |   | 01 = 1 Newton |   | 03 = 3 Newtons |   | 014 = 14mm           |   | DI = Delrin  |

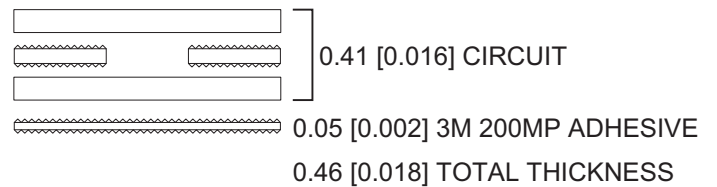
## Diagram - Stock Rotary HotPot



### Electrical Schematic



### Material Cross-Section



### How to Order - Rotary HotPot

|             |   |            |   |                        |   |              |   |                |   |                                                                                                                                                |   |    |
|-------------|---|------------|---|------------------------|---|--------------|---|----------------|---|------------------------------------------------------------------------------------------------------------------------------------------------|---|----|
| HP          | — | R          | — | 0046                   | / | 0353         | — | 103            | — | 5%                                                                                                                                             | — | ST |
| Series      |   | Model      |   | Center of Active Track |   | Active Angle |   | Resistance     |   | Connectors                                                                                                                                     |   |    |
| HP = HotPot |   | R = Rotary |   | 0046 = 45.57mm         |   | 0353 = 353°  |   | 103 = 10 KOhm  |   | ST = Solder Tab<br>MP = Male Pins<br>RH = Receptacles w/Plain Housing<br>RL = Receptacles w/Latch Housing<br>RD = Receptacles w/Detent Housing |   |    |
|             |   |            |   |                        |   |              |   | Ind. Linearity |   |                                                                                                                                                |   |    |
|             |   |            |   |                        |   |              |   | 3% = ±3%       |   |                                                                                                                                                |   |    |
|             |   |            |   |                        |   |              |   | 5% = ±5%       |   |                                                                                                                                                |   |    |