

## Hermetically Sealed, High Temperature Limit Switches

HR Series

003127

Issue 1

Datasheet



### DESCRIPTION

When the application requires a hermetically sealed switch with high temperature capability, Honeywell delivers the HR Series limit switches for the most severe of environments. The HR Series is well suited for commercial and military aircraft applications where high temperatures are encountered. The switch design incorporates a choice of an integral pin plunger or roller plunger with a 3/4 inch diameter threaded bushing for ease of installation into a panel. With stainless steel material construction for the external package and high temperature rated components, the HR Series switches are capable of withstanding continuous temperatures up to 315 °C [600 °F] and suitable where corrosive environments are present.

HR Series limit switches are designed to MIL-PRF-8805 standards with select catalog listings qualified to the MIL-PRF-8805 standards.

### VALUE TO CUSTOMERS

- Honeywell HR Series hermetically sealed high-temperature switches drive solutions for precise position indication of critical applications on commercial/military aircraft and military systems

### FEATURES

- Exceptional wide temperature range of -65 °C to 315 °C [-85 °F to 600 °F]
- Select HR Series catalog listings are qualified or compliant to MIL-PRF-8805
- Hermetically sealed to MIL-PRF-8805 symbol 5
- Stainless steel housing and threaded bushing
- Different styles of integral actuators: pin plungers and roller plungers
- Several different styles of electrical termination: 4-48 terminal screws, end or side exit #20 AWG wire leads

### POTENTIAL APPLICATIONS

- Thrust reverser actuation system (TRAS) for jet engines
- Cowl-lock indication during thrust reverse actuation for jet engines

### DIFFERENTIATION

- Only manufacturer with a bushing mount high-temperature hermetically sealed limit switch
- Threaded bushing facilitates ease of installation

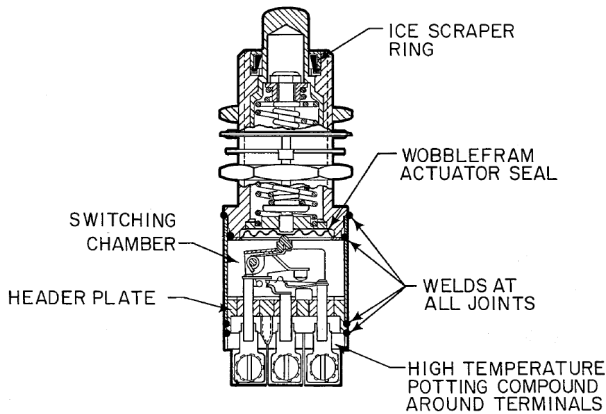
### PORTFOLIO

In addition to the HR Series hermetically sealed switches, Honeywell offers a complete range of sealed switches for aircraft and military systems. The sealed switches include the [EN Series](#), [HM Series](#), [HE Series](#), [HS Series](#), [SE Series](#), and [XE Series](#).

# Hermetically Sealed, High Temperature Limit Switches, HR Series

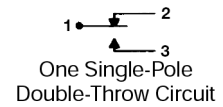
**Table 1. Specifications**

Characteristic	Parameter
Description	High temperature hermetically sealed limit switch with MIL-PRF-8805 standards
Standards	Design conforms to MIL-PRF-8805
Housing & bushing material	300 Series stainless steel
Contacts	Silver alloy
Circuitry	1PDT or 2PDT [reference circuitry illustrations below]
Electrical rating	5 A resistive or 2 A inductive @ 28 Vdc
Mechanical endurance	25000 cycles min.
Electrical endurance	25000 cycles min. at full rated load
Dielectric strength (initial)	1000 VRMS; 500 $\mu$ A. Max. leakage
Insulation resistance (initial)	500 Vdc; 1000 Megohms min.
Environmental sealing	Symbol 5, hermetic seal per MIL-PRF-8805
Temperature range	-65 °C to 315 °C [-85 °F to 600 °F]
Shock	Symbol M (100 g) per MIL-PRF-8805
Vibration	Symbol 1 (10 g peak) 10 Hz to 500 Hz sinusoidal per MIL-PRF-8805

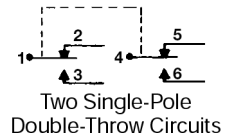


## TYPICAL CIRCUITRY

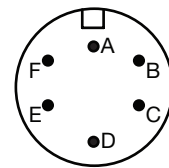
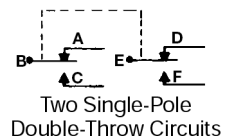
### 1PDT



### 2PDT



### 2PDT with connector



## HR SERIES SWITCHES

The HR Series high-temperature hermetically sealed switches are designed with a threaded bushing for panel mount applications. The HR Series has a threaded bushing which is 0.75 (3/4) in diameter.

The options for the electrical termination for the HR Series switches are generally end exit wire leads or screw terminals integral to the switch; however, military style connectors integral to the HR switch are also available.

## MOUNTING

Plunger actuator switches bushing mount through 0.75 inch (19,1 mm) diameter holes. Lock washer, keying washer, and wire lock hexagon mounting nuts lock the switches in their mounting.

## ACTUATORS

### Plunger

For in-line actuation. An ice scraper ring clears the actuator with each operation. Material is stainless steel.

### Roller plunger

For cam and slide actuation not to exceed 20° rise. Roller adjusts laterally in 45° increments. An ice scraper ring cleans the actuator with each operation. Material is stainless steel.

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## ELECTROMECHANICAL SWITCHES

Definitions below explain the meaning of operating characteristics. Characteristics shown in tables were chosen as most significant. They are taken at normal room temperature and humidity. These may vary as temperature and humidity conditions differ. Sketches show how characteristics are measured for in-line plunger actuation.

Linear dimensions for in-line actuation are from top of plunger to a reference line.

**Differential Travel (D.T.)** – Plunger or actuator travel from point where contacts “snap-over” to point where they “snapback.”

**Free Position (F.P.)** – Position of switch plunger or actuator when no external force is applied (other than gravity).

**Full Overtravel Force** – Force required to attain full overtravel of actuator.

**Operating Position (O.P.)** – Position of switch plunger or actuator at which point contacts snap from normal to operated position. Note that in the case of flexible or adjustable actuators, the operating position is measured from the end of the lever or its maximum length. Location of operating position measurement shown on mounting dimension drawings.

**Operating Force (O.F.)** – Amount of force applied to switch plunger or actuator to cause contact “snap-over.” Note in the case of adjustable actuators, the force is measured from the maximum length position of the lever.

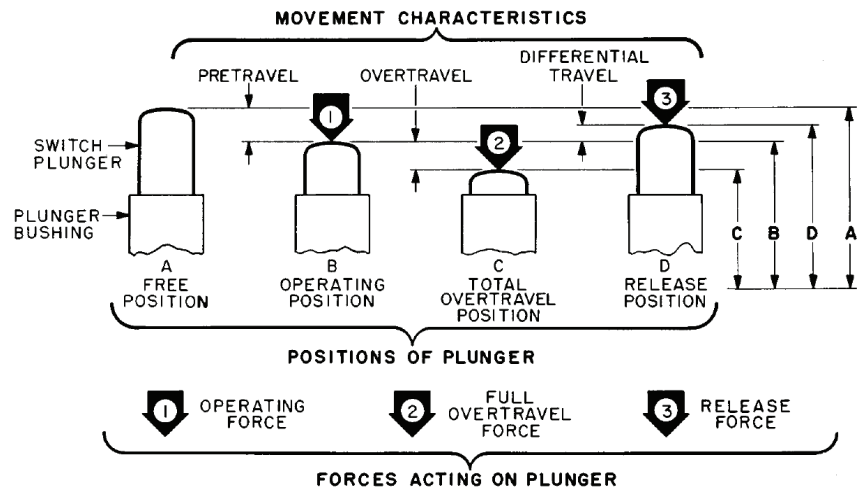
**Overtravel (O.T.)** – Plunger or actuator travel available beyond operating position.

**Pretravel (P.T.)** – Distance or angle traveled in moving plunger or actuator from free position to operating position.

**Release Force (R.F.)** – Amount of force still applied to switch plunger or actuator at moment contacts snap from operated position to unoperated position.

**Total Travel (T.T.)** – Distance from actuator free position to overtravel limit position.

## IN-LINE PLUNGER ACTUATION



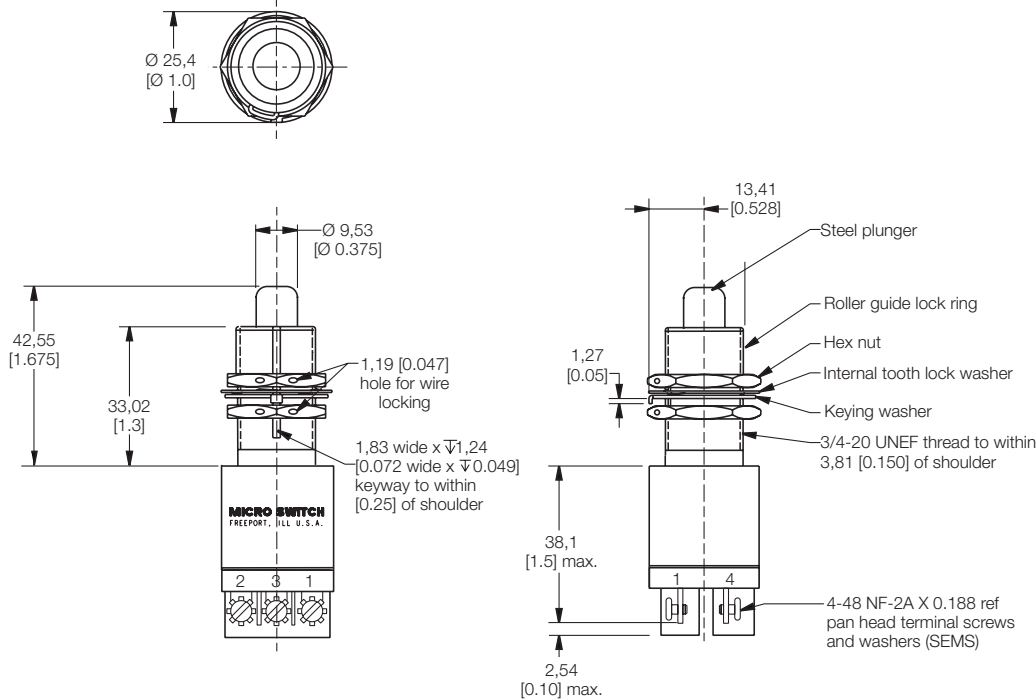
# Hermetically Sealed, High Temperature Limit Switches, HR Series

Table 2. Order Guide

Actuator	Circuitry	Catalog Listing	Military Number or Note	Electrical Termination	Switch Characteristics						Dimensional		
					Operating Force N [lb]	Release Force min. N [lb]	Free Position nom. mm [in]	Pretravel max. mm [in]	Overtravel min. mm [in]	Differential Travel max. mm [in]	Bushing Thread	Housing Height max. mm [in]	Housing Diameter nom. mm [in]
Pin plunger	2PDT	<b>12HR1-S</b>	MS24594-1	Screws (6), #4-48	26,7 to 53,4 [6 to 12]	22,2 [5]	42,55 [1.675]	1,27 [0.050]	6,35 [0.250]	0,38 [0.015]	0.750-20 UNEF	38,1 [1.50]	25,4 [1.0]
Pin plunger	1PDT	<b>12HR8-6</b>	-	Leadwire #20 AWG (end exit) per MIL-C-25038	26,7 to 53,4 [6 to 12]	22,2 [5]	42,55 [1.675]	1,27 [0.050]	6,35 [0.250]	0,38 [0.015]	0.750-20 UNEF	61,0 [2.40]	26,9 [1.06]
Roller plunger	2PDT	<b>22HR1-S</b>	-	Screws (6), #4-48	26,7 to 53,4 [6 to 12]	22,2 [5]	54,36 [2.140]	1,27 [0.050]	6,35 [0.250]	0,38 [0.015]	0.750-20 UNEF	38,1 [1.50]	25,4 [1.0]
Roller plunger	1PDT	<b>22HR8-6</b>	-	Leadwire #20 AWG (end exit) per MIL-C-25038	26,7 to 53,4 [6 to 12]	22,2 [5]	54,36 [2.140]	1,27 [0.050]	6,35 [0.250]	0,38 [0.015]	0.750-20 UNEF	61,0 [2.40]	26,9 [1.06]
Roller plunger	2PDT	<b>22HR80-RB</b>	-31 °C to 204 °C [-25 °F to 400 °F]	6-pin, end-exit connector	26,7 to 53,4 [6 to 12]	22,2 [5]	54,36 [2.140]	1,27 [0.050]	6,35 [0.250]	0,38 [0.015]	0.750-20 UNEF	76,2 [3.0]	26,9 [1.06]

## PRODUCT DIMENSIONS

Figure 1. 12HR1-S mm [in]



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Figure 2.12HE8-6 mm [in]

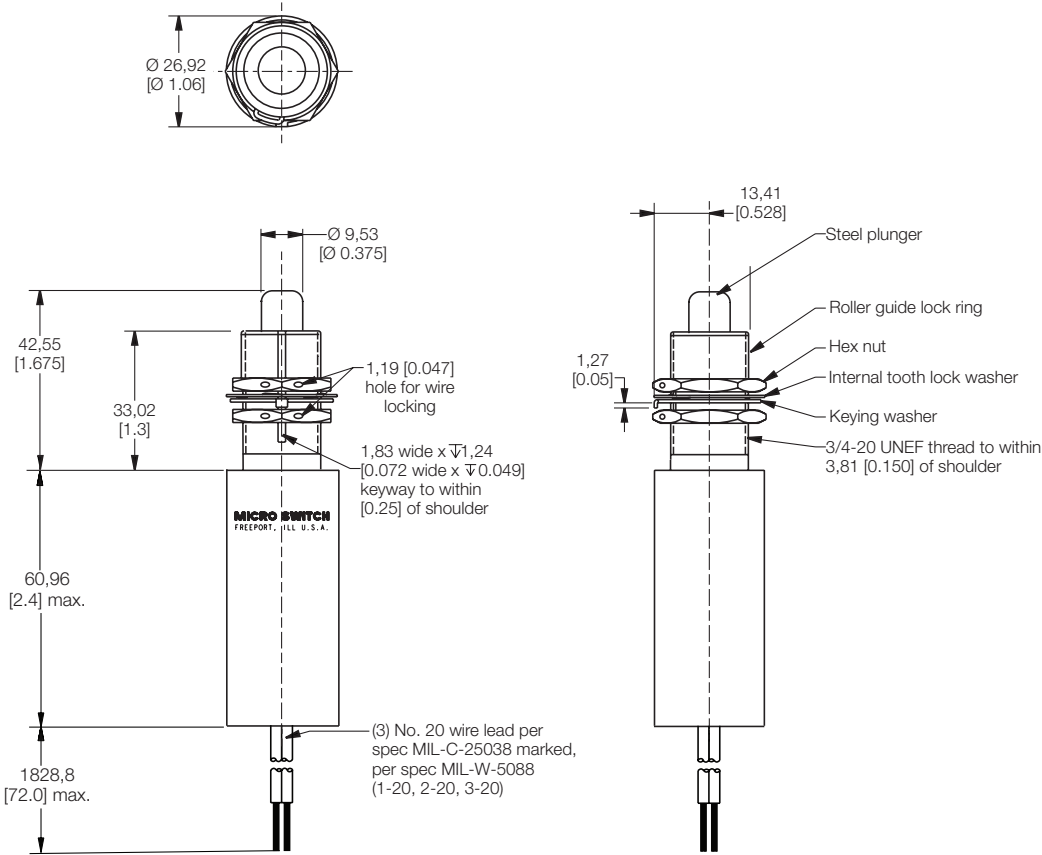
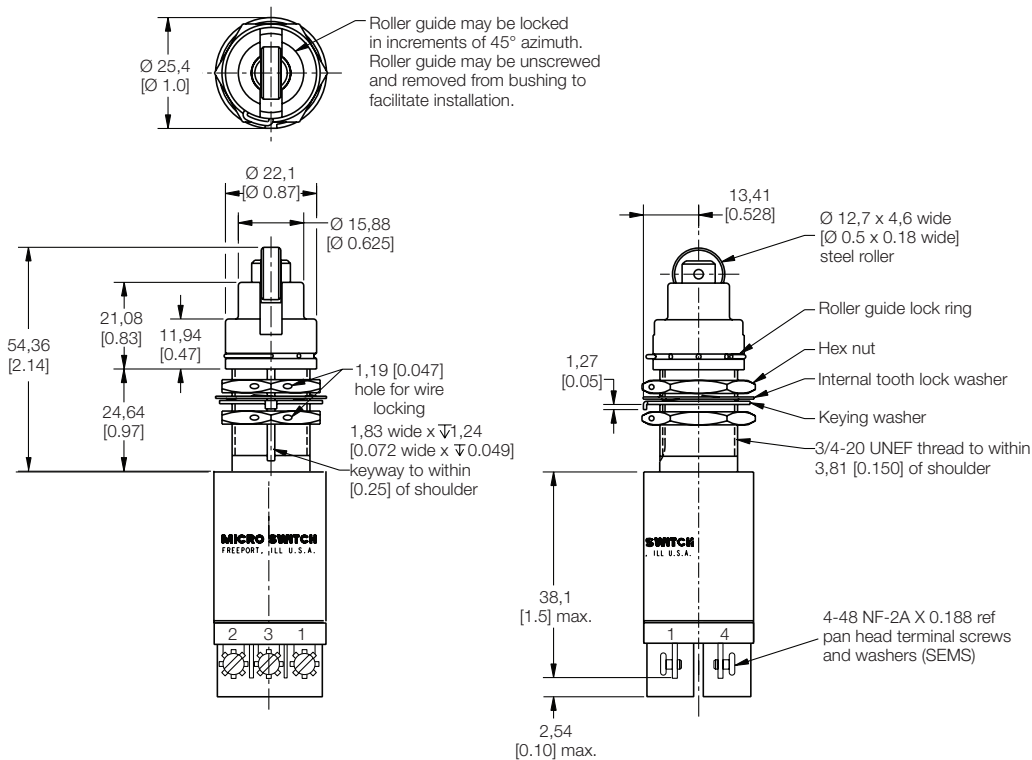


Figure 3. 22HR1-S mm [in]



# Hermetically Sealed, High Temperature Limit Switches, HR Series

Figure 4. 22HR8-6 mm [in]

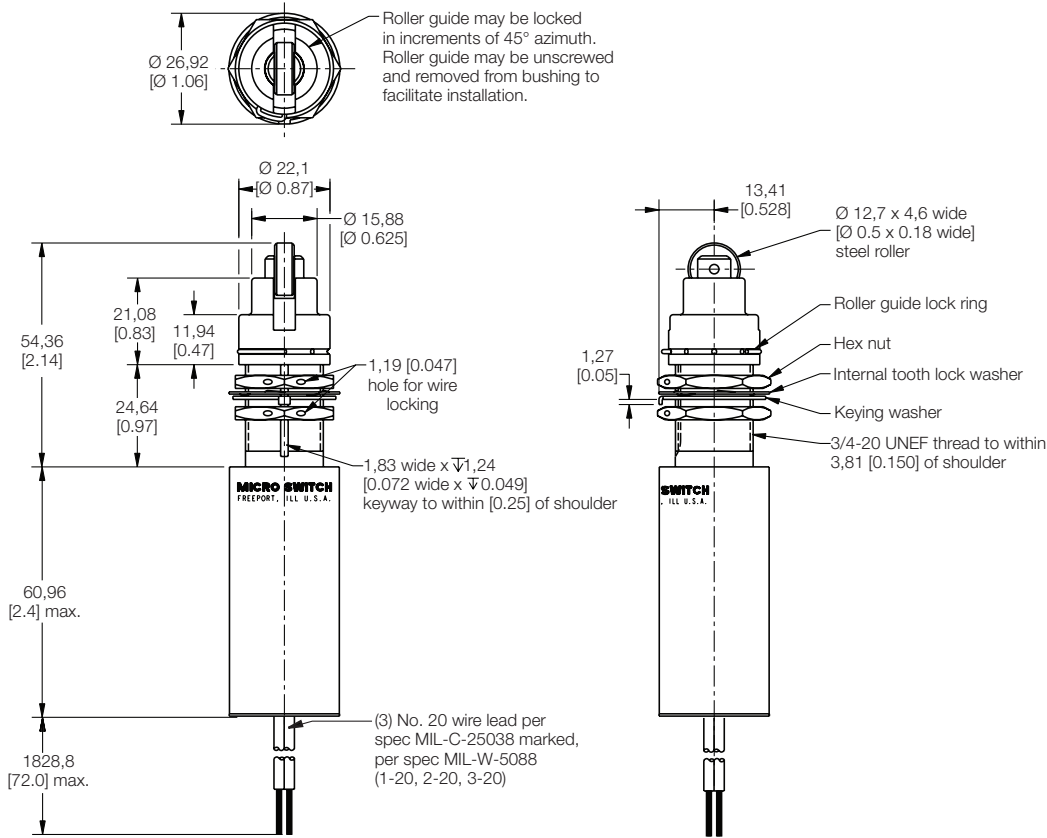
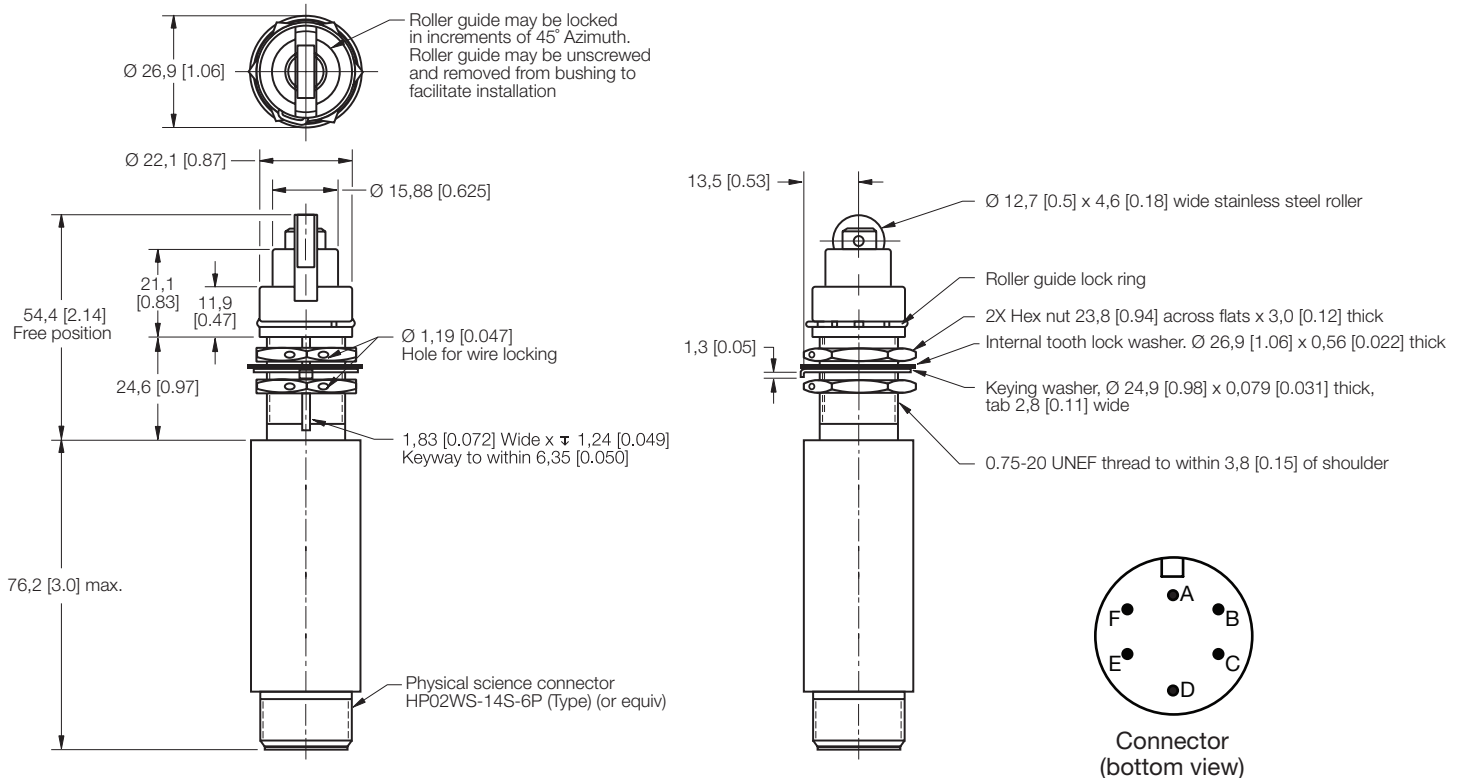


Figure 4. 22HR80-RB mm [in]



## ADDITIONAL MATERIALS

The following associated literature is available on the Honeywell web site at [sensing.honeywell.com](http://sensing.honeywell.com):

- Product installation instructions
- Aerospace range guide

### **WARNING** **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING** **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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### Honeywell Sensing and Productivity Solutions

9680 Old Bailes Road  
Fort Mill, SC 29707  
[honeywell.com](http://honeywell.com)

003127-1-EN IL50 GLO  
July 2016  
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